

# Language, Style and Format drivers for Listings

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## Abstract

This article describes the implementation of the language drivers for the listings package.

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## 1 Installation and configuration

```

1 %% The listings package is copyright 1996--2004 Carsten Heinz, and
2 %% continued maintenance on the package is copyright 2006--2007 Brooks
3 %% Moses. From 2013 on the maintenance is done by Jobst Hoffmann.
4 %% The drivers are copyright 1997/1998/1999/2000/2001/2002/2003/2004/2006/
5 %% 2007/2013 any individual author listed in this file.
6 %%
7 %% This file is distributed under the terms of the LaTeX Project Public
8 %% License from CTAN archives in directory macros/latex/base/lppl.txt.
9 %% Either version 1.3c or, at your option, any later version.
10 %%
11 %% This file is completely free and comes without any warranty.
12 %%
13 %% Send comments and ideas on the package, error reports and additional
14 %% programming languages to Jobst Hoffmann at <j.hoffmann@fh-aachen.de>.
15 %%
16 (*install)
17 \input docstrip
18 \preamble
19 \endpreamble
20
21 \ifToplevel{
22 \usedir{tex/latex/listings}
23 \keepsilent
24 \askonceonly
25 }
26
27
28 \generate{
29   \file{lstlang1.sty}{\from{lstdrvrs.dtx}{lang1}}
30   \file{lstlang2.sty}{\from{lstdrvrs.dtx}{lang2}}
31   \file{lstlang3.sty}{\from{lstdrvrs.dtx}{lang3}}
32 }
33
34 \generate{
35   \file{listings-acm.prf}{\from{lstdrvrs.dtx}{acm-prf}}
36   \file{listings-bash.prf}{\from{lstdrvrs.dtx}{bash-prf}}
37   \file{listings-fortran.prf}{\from{lstdrvrs.dtx}{fortran-prf}}
38   \file{listings-hansl.prf}{\from{lstdrvrs.dtx}{hansl-prf}}
39   \file{listings-lua.prf}{\from{lstdrvrs.dtx}{lua-prf}}
40   \file{listings-python.prf}{\from{lstdrvrs.dtx}{python-prf}}

```

```

41 }
42
43
44 \ifToplevel{
45 \Msg{*}
46 \Msg{* You probably need to move all created '.sty' and '.cfg'}
47 \Msg{* files into a directory searched by TeX.}
48 \Msg{*}
49 \Msg{* Run 'lstdrvrs.dtx' through LaTeX2e to get the documentation.}
50 \Msg{*}
51 }
52
53 \endbatchfile
54 </install>
55 <*config>

```

We mainly define default dialects.

```

56 \ProvidesFile{listings.cfg}[2020/03/24 1.8d listings configuration]
57 \def\lstlanguagefiles
58     {lstlang0.sty,lstlang1.sty,lstlang2.sty,lstlang3.sty}
59 \lstset{defaultdialect=[R/3 6.10]ABAP,
60     defaultdialect=[2005]Ada,
61     defaultdialect=[68]Algol,
62     defaultdialect=[gnu]Awk,
63     defaultdialect=[ANSI]C,
64     defaultdialect=[light]Caml,
65     defaultdialect=[1985]Cobol,
66     defaultdialect=[WinXP]command.com,
67     defaultdialect=[ISO]C++,
68     defaultdialect=[95]Fortran,
69     defaultdialect=[11.0]Mathematica,
70     defaultdialect=[OMG]OCL,
71     defaultdialect=[Standard]Pascal,
72     defaultdialect=[67]Simula,
73     defaultdialect=[plain]TeX,
74     defaultdialect=[97]VRML}
75 \lstalias []{Tk} {tk} {tcl}

```

And now some shortcuts for the ABAP versions (provided by Knut Lickert). I (Knut) think the leading R/2, R/3 is not necessary (The support for R/2 is finished). The version number with letter is important for the runtime-system, but the programming language should be the same for each version.

```

76 \lstalias [6.1]{ABAP}[R/3 6.10]{ABAP}
77 \lstalias [3.1]{ABAP}[R/3 3.1C]{ABAP}
78 \lstalias [4.6]{ABAP}[R/3 4.6C]{ABAP}
79 </config>
80 <+lang1>\ProvidesFile{lstlang1.sty}
81 <+lang2>\ProvidesFile{lstlang2.sty}
82 <+lang3>\ProvidesFile{lstlang3.sty}
83 <+acm-prf>\ProvidesFile{listings-acm.prf}
84 <+bash-prf>\ProvidesFile{listings-bash.prf}
85 <+fortran-prf>\ProvidesFile{listings-fortran.prf}
86 <+hansl-prf>\ProvidesFile{listings-hansl.prf}

```

```

87 <+lua-prf>\ProvidesFile{listings-lua.prf}
88 <+python-prf>\ProvidesFile{listings-python.prf}
89 <-config> [2020/03/24 1.8d listings language file]

```

## 2 Language drivers

### 2.1 Abap

Knut Lickert added support for Abap.<sup>1</sup>

```

90 (*lang2)
91 %%
92 %% Abap definition by Knut Lickert
93 %%

```

There are some other new commands in release 6.10. They will follow later, but up to now I don't work with 6.10.

```

94 \lst@definlanguage[R/3 6.10]{ABAP}[R/3 4.6C]{ABAP}%
95 {morekeywords={try,endtry},%
96 }[keywords,comments,strings]
97 \lst@definlanguage[R/3 4.6C]{ABAP}[R/3 3.1]{ABAP}%
98 {morekeywords={method,ref,class,create,object,%
99     methods,endmethod,private,protected,public,section,%
100     catch,system-exceptions,endcatch,%
101     },%
102     moreprocnamekeys={class},%
103     literate={->}{\rightarrow}1{=>}{\Rightarrow}1,%
104 }[keywords,comments,strings,procnames]

```

Yes there are also some more releases in R/3 (2.1...), but I know them not really. So let's start with R/3 3.1.

```

105 \lst@definlanguage[R/3 3.1]{ABAP}[R/2 5.0]{ABAP}{%}

```

As I remember all this commands exists in R/2. Many commands are new in R/2 5.0 (compared with R/2 4.3). But as I am not using R/2 4.3 any more, I start with R/2 5.0.

```

106 \lst@definlanguage[R/2 5.0]{ABAP}{%}
107     sensitive=f,%
108     procnamekeys={report,program,form,function,module},%
109     morekeywords={*, add, after, alias, analyzer, and, append, appending,%
110     area, assign, at, authority-check, before, binary, blank, break-point,%
111     calendar, call, case, change, changing, check, clear, cnt, co, collect,%
112     commit, common, component, compute, condense, corresponding, cos, cp,%
113     cs, currency-conversion, cursor, data, database, dataset, decimals,%
114     define, delete, deleting, dequeue, describe, detail, dialog, directory,%
115     div, divide, do, documentation, during, dynpro, else, end-of-page,%
116     end-of-selection, endat, endcase, enddo, endfor, endform, endif,%
117     endloop, endmodule, endselect, endwhile, enqueue, exceptions, exit,%
118     exp, export, exporting, extract, field, fields, field-groups,%
119     field-symbols, find, for, form, format, free, from, function,%
120     generating, get, giving, hide, id, if, import, importing, in, incl,%
121     include, initial, initialization, input, insert, interrupt, into, is,%

```

---

<sup>1</sup>In this section 'I' is Knut Lickert.

```

122 language, leave, leading, left-justified, like, line, lines,%
123 line-count, line-selection, list-processing, load, local, log, logfile,%
124 loop, margin, mark, mask, memory, menu, message, mod, modify, module,%
125 move, move-text, multiply, na, new, new-line, new-page, no-gaps, np,%
126 ns, number, obligatory, occurs, of, on, or, others, output, parameter,%
127 parameters, parts, perform, pf-status, places, position, process,%
128 raise, raising, ranges, read, refresh, refresh-dynpro, reject, remote,%
129 replace, report, reserve, reset, restart, right-justified, run, screen,%
130 scroll, search, segments, select, select-options, selection-screen,%
131 set, shift, sin, single, sqrt, start-of-selection, statement,%
132 structure, submit, subtract, summary, summing, suppress, system, table,%
133 tables, task, text, time, to, top-of-page, trace, transaction,%
134 transfer, transfer-dynpro, translate, type, unpack, update,%
135 user-command, using, value, when, where, while, window, with, workfile,%
136 write},%
137 morecomment=[l] ",%
138 morecomment=[f] [commentstyle] [0]*,%
139 morestring=[d] '%
140 }[keywords,comments,strings,procnames]

```

This section for R/2 4.3 is not really maintained. It is just what I remember of the past.

```

141 \lst@defineline[R/2 4.3]{ABAP}[R/2 5.0]{ABAP}%
142 {deletekeywords={function,importing,exporting,changing,exceptions,%
143     raise,raising}%
144 }[keywords,comments,strings]
145 </lang2>

```

## 2.2 ACM

ACM is the language of the Aspen Custom Modeler (<http://www.aspentech.com/products/aspen-custom-modeler.aspx>), the language definition was provided by Stefan Pinnow. It is intended for writing models. Maximilian Dammann pointed out the missing keyword “Description”.

```

146 <lang2>
147 %%
148 %% ACM and ACMscript definition
149 %% (c) 2013 Stefan Pinnow
150 %%
151 \lst@defineline{ACM}{%
152 morekeywords={ abs, After, acos, And, As, asin, atan, At, Call,%
153     Compatibility, Connect, cos, cosh, Create, Delay, Description,%
154     Difference, Do, Else, ElseIf, End, EndFor, EndIf, EndParallel,%
155     EndState, EndSwitch, EndText, EndWith, exp, External, Fixed, For,%
156     ForEach, Free, Global, Hidden, If, Implementation, In, Initial, Input,%
157     InterSection, IntegerSet, Invoke, Is, Language, Library, Link, Log10,%
158     LogE, Max, Min, Model, Of, Once, Options, Output, Parallel, Parameter,%
159     Pause, Port, Print, Private, Procedure, Product, Ramp, Repeat, Restart,%
160     Return, Round, Runs, Sigma, sin, sinh, Size, Snapshot, sqr, sqrt,%
161     SRamp, State, Stream, StringSet, Structure, Switch, SubRoutine,%
162     SymDiff, tan, tanh, Task, Text, Time, Then, Truncate, Union, Until,%
163     Uses, Variable, Wait, When, With, WithIn, Workspace},%
164 sensitive=false,%

```

```

165 morecomment=[l]{//},%
166 morecomment=[s]{/*}{*/},%
167 string=[b]{"},%
168 }[keywords,comments,strings]%
169 </lang2>

```

In addition to writing models there is a language ACMscript, which is similar to VBScript. According to Stefan Pinnow this language is used for writing scripts for the models.

```

170 <*lang2>
171 \lstdefinlanguage{ACMscript}[] {VBScript}{%
172   morekeywords={%
173     ElseIf,False,In,Resume,True%
174   },%
175   deletekeywords={%
176     Abs,Array,Clear,CreateObject,CStr,Err,ForReading,ForWriting,%
177     OpenTextFile,Replace,WriteLine%
178   }%
179 }[keywords,comments,strings]%
180 </lang2>

```

Stefan Pinnow also supplied a definition of a style for printing ACM code:

```

181 <*acm-prf>
182 \usepackage[rgb, x11names]{xcolor}
183
184 \definecolor{Comments}{rgb}{0.00,0.50,0.00}
185 \definecolor{KeyWords}{rgb}{0.00,0.00,0.63}
186 \definecolor{Strings}{rgb}{0.84,0.00,0.00}
187
188 \lstdefinestyle{ACM}{%
189   basicstyle=\scriptsize\ttfamily,%
190   keywordstyle=\color{KeyWords},%
191   showstringspaces=false,%
192   identifierstyle=\color{black},%
193   commentstyle=\color{Comments},%
194   stringstyle=\color{Strings},%
195   frame=shadowbox,%           % for ACM-Code scartcl commented out
196 %   frame=1,%                 % line on the left side
197   rulesepcolor=\color{black},%
198   numbers=left,%             % left
199   firstnumber=1,%
200   stepnumber=5,%
201   columns=fixed,%           % to prevent inserting spaces
202   fontadjust=true,%
203   basewidth=0.5em,%
204   captionpos=t,%
205   abovecaptionskip=\smallskipamount,% same amount as default
206   belowcaptionskip=\smallskipamount,% in caption package
207 }%

```

This code is provided in the file listings-acm.prf, see section 2.4.1 (Preferences) of the listings documentation.

```

208 </acm-prf>

```

## 2.3 ACSL

This language was provided by Andreas Matthias. I'm sorry for forgetting to add this language for a long time.

```
209 (*lang1)
210 %%
211 %% ACSL definition (c) 2000 by Andreas Matthias
212 %%
213 \lst@definlanguage{ACSL}[90]{Fortran}%
214   {morekeywords={algorithm,cinterval,constant,derivative,discrete,%
215               dynamic,errtag,initial,interval,maxterval,mininterval,%
216               merror,xerror,nsteps,procedural,save,schedule,sort,%
217               table,terminal,termt,variable},%
218   sensitive=false,%
219   morecomment=[l]!%
220   }[keywords,comments]%
221 </lang1>
```

## 2.4 Ada

Data come from

- BARNES, JOHN GILBERT PRESSLIE: **Programming in Ada plus language reference manual**; © 1991 Addison-Wesley Publishing Company, Inc.; ISBN 0-201-56539-0.

Torsten Neuer added support for Ada 95. I changed the definition to reduce the required string memory.

```
222 (*lang1)
223 %%
224 %% Ada 95 definition (c) Torsten Neuer
225 %%
226 %% Ada 2005 definition (c) 2006 Santiago Urue\~{n}a Pascual
227 %%                               <Santiago.Uruena@upm.es>
228 %%
229 \lst@definlanguage[2005]{Ada}[95]{Ada}%
230   {morekeywords={interface,overriding,synchronized}}%
231 \lst@definlanguage[95]{Ada}[83]{Ada}%
232   {morekeywords={abstract,aliased,protected,requeue,tagged,until}}%
233 \lst@definlanguage[83]{Ada}%
234   {morekeywords={abort,abs,accept,access,all,and,array,at,begin,body,%
235               case,constant,declare,delay,delta,digits,do,else,elsif,end,entry,%
236               exception,exit,for,function,generic,goto,if,in,is,limited,loop,%
237               mod,new,not,null,of,or,others,out,package,pragma,private,%
238               procedure,raise,range,record,rem,renames,return,reverse,select,%
239               separate,subtype,task,terminate,then,type,use,when,while,with,%
240               xor},%
241   sensitive=f,%
242   morecomment=[l]--,%
243   morestring=[m]" ,% percent not defined as stringizer so far
244   morestring=[m]'%
245   }[keywords,comments,strings]%
246 </lang1>
```



## 2.5 Algol

Data come from

- UWE PAPE: **Programmieren in ALGOL 60**; © 1973 Carl Hanser Verlag München; ISBN 3-446-11605-2
- FRANK G. PAGAN: **A practical guide to ALGOL 68**; © 1976 by John Wiley & Sohn Ltd.; ISBN 0-471-65746-8 (Cloth); ISBN 0-471-65747-6 (Pbk).

The definition of Algol 68 doesn't support comments enclosed by  $\phi$ .

```
247 (*lang3)
248 \lst@definlanguage[68]{Algol}%
249 % ??? should 'i' be a keyword
250 {morekeywords={abs,and,arg,begin,bin,bits,bool,by,bytes,case,channel,%
251   char,co,comment,compl,conj,divab,do,down,elem,elif,else,empty,%
252   end,entier,eq,esac,exit,false,fi,file,flex,for,format,from,ge,%
253   goto,gt,heap,if,im,in,int,is,isnt,le,leng,level,loc,long,lt,lwb,%
254   minusab,mod,modab,mode,ne,nil,not,od,odd,of,op,or,ouse,out,over,%
255   overab,par,plusab,plusto,pr,pragmat,prio,proc,re,real,ref,repr,%
256   round,sema,shl,short,shorten,shr,sign,skip,string,struct,then,%
257   timesab,to,true,union,up,upb,void,while},%
258   sensitive=f,% ???
259   morecomment=[s]{\#}{\#},%
260   keywordcomment={co,comment}%
261 }[keywords,comments,keywordcomments]%
262 \lst@definlanguage[60]{Algol}%
263 {morekeywords={array,begin,Boolean,code,comment,div,do,else,end,%
264   false,for,goto,if,integer,label,own,power,procedure,real,step,%
265   string,switch,then,true,until,value,while},%
266   sensitive=f,% ???
267   keywordcommentsemicolon={end}{else,end}{comment}%
268 }[keywords,keywordcomments]%
269 (/lang3)
```

## 2.6 Assembler

Credits go to Michael Franke.

```
270 (*lang3)
271 %%
272 %% Motorola 68K definition (c) 2006 Michael Franke
273 %%
274 \lst@definlanguage[Motorola68k]{Assembler}{%
275   morekeywords={ABCD,ADD,%
276     ADDA,ADDI,ADDQ,ADDX,AND,ANDI,ASL,ASR,BCC,BLS,BCS,BLT,BEQ,BMI,BF,BNE,%
277     BGE,BPL,BGT,BT,BHI,BVC,BLE,BVS,BCHG,BCLR,BRA,BSET,BSR,BTST,CHK,CLR,%
278     CMP,CMPA,CMPI,CMPM,DBCC,DBLS,DBCS,DBLT,DBEQ,DBMI,DBF,DBNE,DBGE,DBPL,%
279     DBGT,DBT,DBHI,DBVC,DBLE,DBVS,DIVS,DIVU,EOR,EORI,EXG,EXT,ILLEGAL,JMP,%
280     JSR,LEA,LINK,LSL,LSR,MOVE,MOVEA,MOVEM,MOVEP,MOVEQ,MULS,MULU,NBCD,NEG,%
281     NEGX,NOP,NOT,OR,ORI,PEA,RESET,ROL,ROR,ROXL,ROXR,RTE,RTR,RTS,SECD,%
282     SCC,SLS,SCS,SLT,SEQ,SMI,SF,SNE,SGE,SPL,SGT,ST,SHI,SVC,SLE,SVS,STOP,%
283     SUB,SUBA,SUBI,SUBQ,SUBX,SWAP,TAS,TRAP,TRAPV,TST,UNLK},%
284   sensitive=false,%
```

```

285     morecomment=[l]*,%
286     morecomment=[l];%
287     }[keywords,comments,strings]
288 </lang3>
    Credits go to Andrew Zabolotny.
289 <*lang3>
290 %%
291 %% x86masm definition (c) 2002 Andrew Zabolotny
292 %%
293 \lst@definlanguage[x86masm]{Assembler}%
294 {morekeywords={al,ah,ax,eax,bl,bh,bx,ebx,cl,ch,cx,ecx,d1,dh,dx,edx,%
295     si,esi,di,edi,bp,ebp,sp,esp,cs,ds,es,ss,fs,gs,cr0,cr1,cr2,cr3,%
296     db0,db1,db2,db3,db4,db5,db6,db7,tr0,tr1,tr2,tr3,tr4,tr5,tr6,tr7,%
297     st,aaa,aad,aam,aas,adc,add,and,arpl,bound,bsf,bsr,bswap,bt,btc,%
298     btr,bts,call,cbw,cdq,clc,cld,cli,clts,cmc,cmp,cmps,cmpsb,cmpsw,%
299     cmpsd,cmpxchg,cwd,cwde,daa,das,dec,div,enter,hlt,idiv,imul,in,%
300     inc,ins,int,into,invd,invlpg,iret,ja,jae,jb,jbe,jc,jcxz,jecxz,%
301     je,jg,jge,jl,jle,jna,jnae,jnb,jnbe,jnc,jne,jng,jnge,jnl,jnle,%
302     jno,jnp,jns,jnz,jo,jp,jpe,jpo,js,jz,jmp,lahf,lar,lea,leave,lgdt,%
303     lidt,lldt,lmsw,lock,lods,lodsb,lodsw,lodsd,loop,loopz,loopnz,%
304     loope,loopne,lds,les,lfs,lgs,lss,lsl,ltr,mov,movs,movsb,movsw,%
305     movsd,movsx,movzx,mul,neg,nop,not,or,out,outs,pop,popa,popad,%
306     popf,popfd,push,pusha,pushad,pushf,pushfd,rcl,rcr,rep,repe,%
307     repne,repz,repnz,ret,retf,rol,ror,sahf,sal,sar,sbb,scas,seta,%
308     setae,setb,setbe,setc,sete,setg,setge,setl,setle,setna,setnae,%
309     setnb,setnbe,setnc,setne,setng,setnge,setnl,setnle,setno,setnp,%
310     setns,setnz,seto,setp,setpe,setpo,sets,sez,sgdt,shl,shld,shr,%
311     shrd,sidt,sldt,smsw,stc,std,sti,stos,stosb,stosw,stosd,str,sub,%
312     test,verr,verw,wait,wbinvd,xadd,xchg,xlatb,xor,fabs,fadd,fbld,%
313     fbstp,fchs,fclex,fcom,fcos,fdecstp,fdiv,fdivr,ffree,fiadd,ficom,%
314     fidiv,fidivr,fild,fimul,fincstp,finit,fist,fisub,fisubr,fld,fld1,%
315     fldl2e,fldl2t,fldlg2,fldln2,fldpi,fldz,fldcw,fldenv,fmul,fnop,%
316     fpatan,fprem,fprem1,fptan,frndint,frstor,fsave,fscale,fsetpm,%
317     fsin,fsincos,fsqrt,fst,fstcw,fstenv,fstsw,fsb,fsbr,ftst,fucom,%
318     fwait,fxam,fxch,fextract,fyl2x,fyl2xp1,f2xm1},%
319     morekeywords=[2]{.align,.alpha,assume,byte,code,comm,comment,.const,%
320     .cref,.data,.data?,db,dd,df,dosseg,dq,dt,dw,dword,else,end,endif,%
321     endm,endp,ends,eq,equ,.err,.err1,.err2,.errb,.errdef,.errdif,%
322     .erre,.erridn,.errnb,.errndef,.errnz,event,exitm,extrn,far,%
323     .fardata,.fardata?,fword,ge,group,gt,high,if,if1,if2,ifb,ifdef,%
324     ifdif,ife,ifidn,ifnb,ifndef,include,includelib,irp,irpc,label,%
325     .lall,le,length,.lfcond,.list,local,low,lt,macro,mask,mod,.model,%
326     name,ne,near,offset,org,out,page,proc,ptr,public,purge,qword,.%
327     radix,record,rept,.sall,seg,segment,.seq,.sfcond,short,size,%
328     .stack,struct,subttl,tbyte,.tfcond,this,title,type,.type,width,%
329     word,.xall,.xcref,.xlist},%
330     alsoletter=.,alsodigit=?,%
331     sensitive=f,%
332     morestring=[b]" ,%
333     morestring=[b]' ,%
334     morecomment=[l];%
335     }[keywords,comments,strings]
336 </lang3>

```

## 2.7 Awk

Thanks to Dr. Christoph Giess for providing these definitions.

```
337 ⟨*lang1⟩
338 %%
339 %% awk definitions (c) Christoph Giess
340 %%
341 \lst@definlanguage [gnu] {Awk} [POSIX] {Awk}%
342 {morekeywords={and,asort,bindtextdomain,compl,dcgettext,gensub,%
343     lshift,mktime,or,rshift,strftime,strtonum,system,xor,extension}%
344 }%
345 \lst@definlanguage [POSIX] {Awk}%
346 {keywords={BEGIN,END,close,getline,next,nextfile,print,printf,%
347     system,fflush,atan2,cos,exp,int,log,rand,sin,sqrt,srand,gsub,%
348     index,length,match,split,sprintf,strtonum,sub,substr,tolower,%
349     toupper,if,while,do,for,break,continue,delete,exit,function,%
350     return},%
351     sensitive,%
352     morecomment=[1]\#,%
353     morecomment=[1]//,%
354     morecomment=[s]{/*}{*/},%
355     morestring=[b]"%
356 }[keywords,comments,strings]%
357 ⟨/lang1⟩
```

## 2.8 Basic

Credits go to Robert Frank.

```
358 ⟨*lang1⟩
359 %%
360 %% Visual Basic definition (c) 2002 Robert Frank
361 %%
362 \lst@definlanguage [Visual] {Basic}
363 {morekeywords={Abs,Array,Asc,AscB,AscW,Atn,Avg,CBool,CByte,CCur,%
364     CDate,CDBl,Cdec,Choose,Chr,ChrB,ChrW,CInt,CLng,Command,Cos,%
365     Count,CreateObject,CSng,CStr,CurDir,CVar,CVDate,CVErr,Date,%
366     DateAdd,DateDiff,DatePart,DateSerial,DateValue,Day,DDB,Dir,%
367     DoEvents,Environ,EOF,Error,Exp,FileAttr,FileDateTime,FileLen,%
368     Fix,Format,FreeFile,FV,GetAllStrings,GetAttr,%
369     GetAutoServerSettings,GetObject,GetSetting,Hex,Hour,IIf,%
370     IMEStatus,Input,InputB,InputBox,InStr,InstB,Int,Integer,IPmt,%
371     IsArray,IsDate,IsEmpty,IsError,IsMissing,IsNull,IsNumeric,%
372     IsObject,LBound,LCase,Left,LeftB,Len,LenB,LoadPicture,Loc,LOF,%
373     Log,Ltrim,Max,Mid,MidB,Min,Minute,MIRR,Month,MsgBox,Now,NPer,%
374     NPV,Oct,Partition,Pmt,PPmt,PV,QBColor,Rate,RGB,Right,RightB,Rnd,%
375     Rtrim,Second,Seek,Sgn,Shell,Sin,SLN,Space,Spc,Sqr,StDev,StDevP,%
376     Str,StrComp,StrConv,String,Switch,Sum,SYD,Tab,Tan,Time,Timer,%
377     TimeSerial,TimeValue,Trim,TypeName,UBound,Ucase,Val,Var,VarP,%
378     VarType,Weekday,Year},% functions
379     morekeywords=[2]{Accept,Activate,Add,AddCustom,AddFile,AddFromFile,%
380     AddFromTemplate,AddItem,AddNew,AddToAddInToolbar,%
381     AddToolboxProgID,Append,AppendChunk,Arrange,Assert,AsyncRead,%
382     BatchUpdate,BeginTrans,Bind,Cancel,CancelAsyncRead,CancelBatch,%
```

383 CancelUpdate, CanPropertyChange, CaptureImage, CellText, CellValue, %  
384 Circle, Clear, ClearFields, ClearSel, ClearSelCols, Clone, Close, Cls, %  
385 ColContaining, ColumnSize, CommitTrans, CompactDatabase, Compose, %  
386 Connect, Copy, CopyQueryDef, CreateDatabase, CreateDragImage, %  
387 CreateEmbed, CreateField, CreateGroup, CreateIndex, CreateLink, %  
388 CreatePreparedStatement, CreateProperty, CreateQuery, %  
389 CreateQueryDef, CreateRelation, CreateTableDef, CreateUser, %  
390 CreateWorkspace, Customize, Delete, DeleteColumnLabels, %  
391 DeleteColumns, DeleteRowLabels, DeleteRows, DoVerb, Drag, Draw, Edit, %  
392 EditCopy, EditPaste, EndDoc, EnsureVisible, EstablishConnection, %  
393 Execute, ExtractIcon, Fetch, FetchVerbs, Files, FillCache, Find, %  
394 FindFirst, FindItem, FindLast, FindNext, FindPrevious, Forward, %  
395 GetBookmark, GetChunk, GetClipString, GetData, GetFirstVisible, %  
396 GetFormat, GetHeader, GetLineFromChar, GetNumTicks, GetRows, %  
397 GetSelectedPart, GetText, GetVisibleCount, GoBack, GoForward, Hide, %  
398 HitTest, HoldFields, Idle, InitializeLabels, InsertColumnLabels, %  
399 InsertColumns, InsertObjDlg, InsertRowLabels, InsertRows, Item, %  
400 KillDoc, Layout, Line, LinkExecute, LinkPoke, LinkRequest, LinkSend, %  
401 Listen, LoadFile, LoadResData, LoadResPicture, LoadResString, %  
402 LogEvent, MakeCompileFile, MakeReplica, MoreResults, Move, MoveData, %  
403 MoveFirst, MoveLast, MoveNext, MovePrevious, NavigateTo, NewPage, %  
404 NewPassword, NextRecordset, OLEDrag, OnAddinsUpdate, OnConnection, %  
405 OnDisconnection, OnStartupComplete, Open, OpenConnection, %  
406 OpenDatabase, OpenQueryDef, OpenRecordset, OpenResultset, OpenURL, %  
407 Overlay, PaintPicture, Paste, PastSpecialDlg, PeekData, Play, Point, %  
408 PopulatePartial, PopupMenu, Print, PrintForm, PropertyChanged, Pset, %  
409 Quit, Raise, RandomDataFill, RandomFillColumns, RandomFillRows, %  
410 rdoCreateEnvironment, rdoRegisterDataSource, ReadFromFile, %  
411 ReadProperty, Rebind, ReFill, Refresh, RefreshLink, RegisterDatabase, %  
412 Reload, Remove, RemoveAddInFromToolbar, RemoveItem, Render, %  
413 RepairDatabase, Reply, ReplyAll, Requery, ResetCustom, %  
414 ResetCustomLabel, ResolveName, RestoreToolbar, Resync, Rollback, %  
415 RollbackTrans, RowBookmark, RowContaining, RowTop, Save, SaveAs, %  
416 SaveFile, SaveToFile, SaveToolbar, SaveToOle1File, Scale, ScaleX, %  
417 ScaleY, Scroll, Select, SelectAll, SelectPart, SelPrint, Send, %  
418 SendData, Set, SetAutoServerSettings, SetData, SetFocus, SetOption, %  
419 SetSize, SetText, SetViewport, Show, ShowColor, ShowHelp, %  
420 ShowOpen, ShowPrinter, ShowSave, ShowWhatsThis, SignOff, SignOn, Size, %  
421 Span, SplitContaining, StartLabelEdit, StartLogging, Stop, %  
422 Synchronize, TextHeight, TextWidth, ToDefaults, TwipsToChartPart, %  
423 TypeByChartType, Update, UpdateControls, UpdateRecord, UpdateRow, %  
424 Upto, WhatsThisMode, WriteProperty, ZOrder}, % methods  
425 morekeywords=[3] {AccessKeyPress, AfterAddFile, AfterChangeFileName, %  
426 AfterCloseFile, AfterColEdit, AfterColUpdate, AfterDelete, %  
427 AfterInsert, AfterLabelEdit, AfterRemoveFile, AfterUpdate, %  
428 AfterWriteFile, AmbienChanged, ApplyChanges, Associate, %  
429 AsyncReadComplete, AxisActivated, AxisLabelActivated, %  
430 AxisLabelSelected, AxisLabelUpdated, AxisSelected, %  
431 AxisTitleActivated, AxisTitleSelected, AxisTitleUpdated, %  
432 AxisUpdated, BeforeClick, BeforeColEdit, BeforeColUpdate, %  
433 BeforeConnect, BeforeDelete, BeforeInsert, BeforeLabelEdit, %  
434 BeforeLoadFile, BeforeUpdate, ButtonClick, ButtonCompleted, %  
435 ButtonGotFocus, ButtonLostFocus, Change, ChartActivated, %  
436 ChartSelected, ChartUpdated, Click, ColEdit, Collapse, ColResize, %

```

437 ColumnClick, Compare, ConfigChageCancelled, ConfigChanged, %
438 ConnectionRequest, DataArrival, DataChanged, DataUpdated, DblClick, %
439 Deactivate, DeviceArrival, DeviceOtherEvent, DeviceQueryRemove, %
440 DeviceQueryRemoveFailed, DeviceRemoveComplete, DeviceRemovePending, %
441 DevModeChange, Disconnect, DisplayChanged, Dissociate, %
442 DoGetNewFileName, Done, DonePainting, DownClick, DragDrop, DragOver, %
443 DropDown, EditProperty, EnterCell, EnterFocus, Event, ExitFocus, %
444 Expand, FootnoteActivated, FootnoteSelected, FootnoteUpdated, %
445 GotFocus, HeadClick, InfoMessage, Initialize, IniProperties, %
446 ItemActivated, ItemAdded, ItemCheck, ItemClick, ItemReloaded, %
447 ItemRemoved, ItemRenamed, ItemSeleted, KeyDown, KeyPress, KeyUp, %
448 LeaveCell, LegendActivated, LegendSelected, LegendUpdated, %
449 LinkClose, LinkError, LinkNotify, LinkOpen, Load, LostFocus, %
450 MouseDown, MouseMove, MouseUp, NodeClick, ObjectMove, %
451 OLECompleteDrag, OLEDragDrop, OLEDragOver, OLEGiveFeedback, %
452 OLESetData, OLEStartDrag, OnAddNew, OnComm, Paint, PanelClick, %
453 PanelDblClick, PathChange, PatternChange, PlotActivated, %
454 PlotSelected, PlotUpdated, PointActivated, PointLabelActivated, %
455 PointLabelSelected, PointLabelUpdated, PointSelected, %
456 PointUpdated, PowerQuerySuspend, PowerResume, PowerStatusChanged, %
457 PowerSuspend, QueryChangeConfig, QueryComplete, QueryCompleted, %
458 QueryTimeout, QueryUnload, ReadProperties, Reposition, %
459 RequestChangeFileName, RequestWriteFile, Resize, ResultsChanged, %
460 RowColChange, RowCurrencyChange, RowResize, RowStatusChanged, %
461 SelChange, SelectionChanged, SendComplete, SendProgress, %
462 SeriesActivated, SeriesSelected, SeriesUpdated, SettingChanged, %
463 SplitChange, StateChanged, StatusUpdate, SysColorsChanged, %
464 Terminate, TimeChanged, TitleActivated, TitleSelected, %
465 TitleActivated, UnboundAddData, UnboundDeleteRow, %
466 UnboundGetRelativeBookmark, UnboundReadData, UnboundWriteData, %
467 Unload, UpClick, Updated, Validate, ValidationError, WillAssociate, %
468 WillChangeData, WillDissociate, WillExecute, WillUpdateRows, %
469 WithEvents, WriteProperties}, % VB-events
470 morekeywords=[4]{AppActivate, Base, Beep, Call, Case, ChDir, ChDrive, %
471 Const, Declare, DefBool, DefByte, DefCur, DefDate, DefDbl, DefDec, %
472 DefInt, DefLng, DefObj, DefSng, DefStr, Deftype, DefVar, DeleteSetting, %
473 Dim, Do, Else, ElseIf, End, Enum, Erase, Event, Exit, Explicit, FileCopy, %
474 For, ForEach, Friend, Function, Get, GoSub, GoTo, If, Implements, Kill, %
475 Let, LineInput, Lock, Lset, Mkdir, Name, Next, OnError, On, Option, %
476 Private, Property, Public, Put, RaiseEvent, Randomize, ReDim, Rem, %
477 Reset, Resume, Return, Rmdir, Rset, SavePicture, SaveSetting, %
478 SendKeys, SetAttr, Static, Sub, Then, Type, Unlock, Wend, While, Width, %
479 With, Write}, % statements
480 sensitive=false, %
481 keywordcomment=rem, %
482 MoreSelectCharTable=\def\lst@BeginKC@{% chmod
483 \lst@ResetToken
484 \lst@BeginComment\lst@GPmode{ {\lst@commentstyle}%
485 \lst@Lmodetrue\lst@modetrue}\@empty}, %
486 morecomment=[l]{'}, %
487 morecomment=[s]{/*}{*/}, %
488 morestring=[b]" , %
489 }[keywords, comments, strings, keywordcomments]
490 </lang1>

```

Thanks to Jonathan de Halleux for reporting a missing comma after `MoreSelectCharTable`, which was the cause of a problem reported by Robert Frank. Martina Hansel also found the bug and the fix.

## 2.9 Clean

Thanks to José Romildo Malaquias. Markus Pahlow found a missing comma.

```
491  $\langle$ *lang3 $\rangle$ 
492 %%
493 %% Clean definition (c) 1999 Jos\’e Romildo Malaquias
494 %%
495 %% Clean 1.3 : some standard functional language: pure, lazy,
496 %%             polymorphic type system, modules, type classes,
497 %%             garbage collection, functions as first class citizens
498 %%
499 \lst@definlanguage{Clean}%
500 {otherkeywords={:,::,=,::=,=>,->,<-,<-:,\{,\},\{|,\|,\#,\\#!,|,\&,%
501             [,],!,.,\\\\,;,_,}%
502     morekeywords={from,definition,implementation,import,module,system,%
503             case,code,if,in,let,let!,of,where,with,infix,infixl,infixr},%
504     morekeywords={True,False,Start,Int,Real,Char,Bool,String,World,%
505             File,ProcId},%
506     sensitive,%
507     morecomment=[l]//,% missing comma: Markus Pahlow
508     morecomment=[n]{/*}{*/},%
509     morestring=[b]"%
510 }[keywords,comments,strings]%
511  $\langle$ /lang3 $\rangle$ 
```

## 2.10 Corba IDL

This language definition is due to Jens T. Berger Thielemann.

```
512  $\langle$ *lang2 $\rangle$ 
513 %%
514 %% Corba IDL definition (c) 1999 Jens T. Berger Thielemann
515 %%
516 \lst@definlanguage[CORBA]{IDL}%
517 {morekeywords={any,attribute,boolean,case,char,const,context,default,%
518             double,enum,exception,fixed,float,in,inout,interface,long,module,%
519             native,Object,octet,oneway,out,raises,readonly,sequence,short,%
520             string,struct,switch,typedef,union,unsigned,void,wchar,wstring,%
521             FALSE,TRUE},%
522     sensitive,%
523     moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
524             include,pragma,undef,warning},%
525     moredelim=[directive]\#,%
526     morecomment=[l]//,%
527     morecomment=[s]{/*}{*/},%
528     morestring=[b]"%
529 }[keywords,comments,strings,directives]%
530  $\langle$ /lang2 $\rangle$ 
```

## 2.11 C, C++, et al

531 `(*lang1)`

Michael Fiedler provided the following list of new introduced keywords for C++11.

```
532 \lst@definelanguage[11]{C++}[ISO]{C++}%
533 {morekeywords={alignas,alignof,char16_t,char32_t,constexpr,%
534     decltype,noexcept,nullptr,static_assert,thread_local},%
535 }%
```

Michael Piefel suggested some more changes and added GNU C++. For compatibility the 'ANSI' language is defined in terms of ISO.

```
536 \lst@definelanguage[ANSI]{C++}[ISO]{C++}{}%
```

Michael Piefel suggested some more changes and added GNU C++.

```
537 \lst@definelanguage[GNU]{C++}[ISO]{C++}%
538 {morekeywords={__attribute__,__extension__,__restrict,__restrict__,%
539     typeof,__typeof__},%
540 }%
```

```
541 \lst@definelanguage[Visual]{C++}[ISO]{C++}%
542 {morekeywords={__asm,__based,__cdecl,__declspec,dlexport,%
543     dllimport,__except,__fastcall,__finally,__inline,__int8,__int16,%
544     __int32,__int64,naked,__stdcall,thread,__try,__leave},%
545 }%
```

```
546 \lst@definelanguage[ISO]{C++}[ANSI]{C}%
547 {morekeywords={and,and_eq,asm,bad_cast,bad_typeid,bitand,bitor,bool,%
548     catch,class,compl,const_cast,delete,dynamic_cast,explicit,export,%
549     false,friend,inline,mutable,namespace,new,not,not_eq,operator,or,%
550     or_eq,private,protected,public,reinterpret_cast,static_cast,%
551     template,this,throw,true,try,typeid,type_info,typename,using,%
552     virtual,wchar_t,xor,xor_eq},%
553 }%
```

554 `(/lang1)`

Objective-C is due to Detlev Dröge.

555 `(*lang1)`

```
556 %%
557 %% Objective-C definition (c) 1997 Detlev Droege
558 %%
559 \lst@definelanguage[Objective]{C}[ANSI]{C}
560 {morekeywords={bycopy,id,in,inout,oneway,out,self,super,%
561     @class,@defs,@encode,@end,@implementation,@interface,@private,%
562     @protected,@protocol,@public,@selector},%
563     moredirectives={import}}%
564 }%
```

565 `(/lang1)`

Jörg Viermann provided the keywords for Handel-C.

566 `(*lang1)`

```
567 %%
568 %% Handel-C definition, refer http://www.celoxica.com
569 %%
570 \lst@definelanguage[Handel]{C}[ANSI]{C}
571 {morekeywords={assert,chan,chanin,chanout,clock,delay,expr,external,%
```

```

572     external_divide, family, ifselect, in, inline, interface, internal, %
573     internal_divid, intwidth, let, macro, mpram, par, part, prialt, proc, ram, %
574     releasesema, reset, rom, select, sema, set, seq, shared, signal, try, %
575     reset, trysema, typeof, undefined, width, with, wom}, %
576 }%
577 </lang1>
578 < *lang1 >
579 \lst@definlanguage [ANSI] {C}%
580 {morekeywords={auto, break, case, char, const, continue, default, do, double, %
581     else, enum, extern, float, for, goto, if, int, long, register, return, %
582     short, signed, sizeof, static, struct, switch, typedef, union, unsigned, %
583     void, volatile, while}, %
584     sensitive, %
585     morecomment=[s] {/} {*/}, %
586     morecomment=[l] //, % nonstandard
587     morestring=[b] " , %
588     morestring=[b] ' , %
589     moredelim=* [directive] \#, %
590     moredirectives={define, elif, else, endif, error, if, ifdef, ifndef, line, %
591     include, pragma, undef, warning}%
592 } [keywords, comments, strings, directives] %
593 </lang1 >
594 < *lang1 >

```

Thanks go to Martin Brodbeck.

```

595 %%
596 %% C-Sharp definition (c) 2002 Martin Brodbeck
597 %%
598 \lst@definlanguage [Sharp] {C}%
599 {morekeywords={abstract, base, bool, break, byte, case, catch, char, checked, %
600     class, const, continue, decimal, default, delegate, do, double, else, %
601     enum, event, explicit, extern, false, finally, fixed, float, for, foreach, %
602     goto, if, implicit, in, int, interface, internal, is, lock, long, %
603     namespace, new, null, object, operator, out, override, params, private, %
604     protected, public, readonly, ref, return, sbyte, sealed, short, sizeof, %
605     static, string, struct, switch, this, throw, true, try, typeof, uint, %
606     ulong, unchecked, unsafe, ushort, using, virtual, void, while, %
607     as, volatile, stackalloc}, % Kai K\ "ohne
608     sensitive, %
609     morecomment=[s] {/} {*/}, %
610     morecomment=[l] //, %
611     morestring=[b] "
612 } [keywords, comments, strings] %
613 </lang1 >

```

## 2.12 Caml and Objective Caml

Patrick Cousot mailed me the definition. Tom Hirschowitz added two keywords.

```

614 < *lang2 >
615 %%
616 %% (Objective) Caml definition (c) 1999 Patrick Cousot

```



```

617 %%
618 %% Objective CAML and Caml light are freely available, together with a
619 %% reference manual, at URL ftp.inria.fr/lang/caml-light for the Unix,
620 %% Windows and Macintosh OS operating systems.
621 %%
622 \lst@definlanguage[Objective]{Caml}[light]{Caml}
623   {deletekeywords={not,prefix,value,where},%
624     morekeywords={assert,asr,class,closed,constraint,external,false,%
625       functor,include,inherit,land,lazy,lor,lsl,lsr,lxor,method,mod,%
626       module,new,open,parser,private,sig,struct,true,val,virtual,when,%
627       object,ref},% TH
628   }%
629 \lst@definlanguage[light]{Caml}
630   {morekeywords={and,as,begin,do,done,downto,else,end,exception,for,%
631     fun,function,if,in,let,match,mutable,not,of,or,prefix,rec,then,%
632     to,try,type,value,where,while,with},%
633     sensitive,%
634     morecomment=[n]{*}{*},%
635     morestring=[b]",%
636     moredelim=*[directive]\#,%
637     moredirectives={open,close,include}%
638   }[keywords,comments,strings,directives]%
639 </lang2>

```

## 2.13 Common Intermediate Language

This language definition for CIL (Common Intermediate Language, part of Microsoft's .NET interface) was provided by Olaf Conradi Akim Demaille pointed out that the support for Algol was broken, but that came from a long missing '@' in the following `lst@definlanguage`.

```

640 (*lang3)
641 \lst@definlanguage{CIL}{%
642   morekeywords=[1]{assembly, beforefieldinit, class, default, cdecl, cil,%
643     corflags, culture, custom, data, entrypoint, fastcall, field, file,%
644     hidebysig, hash, il, imagebase, locals, managed, marshall, maxstack,%
645     mresource, method, module, namespace, publickey, stdcall, subsystem,%
646     thiscall, unmanaged, vararg, ver, vfixup,%
647     % types
648     bool, char, float32, float64, int, int8, int16, int32, int64, method,%
649     native, object, string, modopt, modreq, pinned, typedref, valuetype,%
650     unsigned, void,%
651     % defining types
652     abstract, ansi, auto, autochar, beforefieldinit, boxed, class,%
653     explicit, extends, implements, interface, famandassem, family,%
654     famorassem, inherits, nested, override, pack, private, property,%
655     public, rtspecialname, sealed, sequential, serializable, size,%
656     specialname, static, unicode,%
657     % postfix
658     algorithm, alignment, extern, init, from, nometadata, with},%
659   morekeywords=[2]{add, and, arglist, beq, bge, bgt, ble, blt, bne, br,%
660     break, brfalse, brtrue, call, calli, ceq, cgt, ckfinite, clt, conv,%
661     cpblk, div, dup, endfilter, endfinally, initblk, jmp, ldarg, ldarga,%

```

```

662 ldc, ldftn, ldind, ldloc, ldloca, ldnull, leave, localloc, mul, neg,%
663 nop, not, or, pop, rem, ret, shl, shr, starg, stind, stloc, sub,%
664 switch, xor,%
665 % prefix
666 tail, unaligned, volatile,
667 % postfix
668 un, s, ovf,
669 % object
670 box, callvirt, castclass, cpobj, ctor, ctor, initobj, isinst, ldelem,%
671 ldelema, ldfld, ldflda, ldlen, ldobj, ldsfld, ldsflda, ldstr, ldtoken,%
672 ldvirtftn, mkrefany, newarr, newobj, refanytype, refanyval, rethrow,%
673 sizeof, stelem, stfld, stobj, stsfld, throw, unbox},%
674 sensitive=true,%
675 morecomment=[l]{//},%
676 morestring=[b]"%
677 }[keywords,comments,strings]%
678 </lang3>

```

## 2.14 Cobol

Keywords are not marked if their names are broken by EOL, for example DEBUG-CONTENTS. Sometimes portions of a string are not printed as a string. This happens if the double quote is not doubled to insert a quote, e.g. `"bad" cobol` won't be printed correctly.

```

679 (*lang2)
680 \lst@definlanguage[ibm]{Cobol}[1985]{Cobol}%
681 {morekeywords={ADDRESS,BEGINNING,COMP-3,COMP-4,COMPUTATIONAL,%
682 COMPUTATIONAL-3,COMPUTATIONAL-4,DISPLAY-1,EGCS,EJECT,ENDING,%
683 ENTRY,GOBACK,ID,MORE-LABELS,NULL,NULLS,PASSWORD,RECORDING,%
684 RETURN-CODE,SERVICE,SKIP1,SKIP2,SKIP3,SORT-CONTROL,SORT-RETURN,%
685 SUPPRESS,TITLE,WHEN-COMPILED},%
686 }%
687 \lst@definlanguage[1985]{Cobol}[1974]{Cobol}%
688 {morekeywords={ALPHABET,ALPHABETIC-LOWER,ALPHABETIC-UPPER,%
689 ALPHANUMERIC,ALPHANUMERIC-EDITED,ANY,CLASS,COMMON,CONTENT,%
690 CONTINUE,DAY-OF-WEEK,END-ADD,END-CALL,END-COMPUTE,END-DELETE,%
691 END-DIVIDE,END-EVALUATE,END-IF,END-MULTIPLY,END-PERFORM,END-READ,%
692 END-RECEIVE,END-RETURN,END-REWRITE,END-SEARCH,END-START,%
693 END-STRING,END-SUBTRACT,END-UNSTRING,END-WRITE,EVALUATE,EXTERNAL,%
694 FALSE,GLOBAL,INITIALIZE,NUMERIC-EDITED,ORDER,OTHER,%
695 PACKED-DECIMAL,PADDING,PURGE,REFERENCE,RELOAD,REPLACE,STANDARD-1,%
696 STANDARD-2,TEST,THEN,TRUE},%
697 }%
698 \lst@definlanguage[1974]{Cobol}%
699 {morekeywords={ACCEPT,ACCESS,ADD,ADVANCING,AFTER,ALL,ALPHABETIC,ALSO,%
700 ALTER,ALTERNATE,AND,ARE,AREA,AREAS,ASCENDING,ASSIGN,AT,AUTHOR,%
701 BEFORE,BINARY,BLANK,BLOCK,BOTTOM,BY,CALL,CANCEL,CD,CF,CH,%
702 CHARACTER,CHARACTERS,CLOCK-UNITS,CLOSE,COBOL,CODE,CODE-SET,%
703 COLLATING,COLUMN,COMMA,COMMUNICATION,COMP,COMPUTE,CONFIGURATION,%
704 CONTAINS,CONTROL,CONTROLS,CONVERTING,COPY,CORR,CORRESPONDING,%
705 COUNT,CURRENCY,DATA,DATE,DATE-COMPILED,DATE-WRITTEN,DAY,DE,%
706 DEBUG-CONTENTS,DEBUG-ITEM,DEBUG-LINE,DEBUG-NAME,DEBUG-SUB1,%

```

```

707     DEBUG-SUB2,DEBUG-SUB3,DEBUGGING,DECIMAL-POINT,DECLARATIVES,%
708     DELETE,DELIMITED,DELIMITER,DEPENDING,DESCENDING,DESTINATION,%
709     DETAIL,DISABLE,DISPLAY,DIVIDE,DIVISION,DOWN,DUPLICATES,DYNAMIC,%
710     EGI,ELSE,EMI,ENABLE,END,END-OF-PAGE,ENTER,ENVIRONMENT,EOP,EQUAL,%
711     ERROR,ESI,EVERY,EXCEPTION,EXIT,EXTEND,FD,FILE,FILE-CONTROL,%
712     FILLER,FINAL,FIRST,FOOTING,FOR,FROM,GENERATE,GIVING,GO,GREATER,%
713     GROUP,HEADING,HIGH-VALUE,HIGH-VALUES,I-O,I-O-CONTROL,%
714     IDENTIFICATION,IF,IN,INDEX,INDEXED,INDICATE,INITIAL,INITIATE,%
715     INPUT,INPUT-OUTPUT,INSPECT,INSTALLATION,INTO,INVALID,IS,JUST,%
716     JUSTIFIED,KEY,LABEL,LAST,LEADING,LEFT,LENGTH,LESS,LIMIT,LIMITS,%
717     LINAGE,LINAGE-COUNTER,LINE,LINE-COUNTER,LINES,LINKAGE,LOCK,%
718     LOW-VALUE,LOW-VALUES,MEMORY,MERGE,MESSAGE,MODE,MODULES,MOVE,%
719     MULTIPLE,MULTIPLY,NATIVE,NEGATIVE,NEXT,NO,NOT,NUMBER,NUMERIC,%
720     OBJECT-COMPUTER,OCCURS,OF,OFF,OMITTED,ON,OPEN,OPTIONAL,OR,%
721     ORGANIZATION,OUTPUT,OVERFLOW,PAGE,PAGE-COUNTER,PERFORM,PF,PH,PIC,%
722     PICTURE,PLUS,POINTER,POSITION,PRINTING,POSITIVE,PRINTING,%
723     PROCEDURE,PROCEDURES,PROCEED,PROGRAM,PROGRAM-ID,QUEUE,QUOTE,%
724     QUOTES,RANDOM,RD,READ,RECEIVE,RECORD,RECORDING,RECORDS,REDEFINES,%
725     REEL,REFERENCES,RELATIVE,RELEASE,REMAINDER,REMOVAL,RENAMES,%
726     REPLACING,REPORT,REPORTING,REPORTS,RERUN,RESERVE,RESET,RETURN,%
727     REVERSED,REWIND,REWRITE,RF,RH,RIGHT,ROUNDED,RUN,SAME,SD,SEARCH,%
728     SECTION,SECURITY,SEGMENT,SEGMENT-LIMIT,SELECT,SEND,SENTENCE,%
729     SEPARATE,SEQUENCE,SEQUENTIAL,SET,SIGN,SIZE,SORT,SORT-MERGE,%
730     SOURCE,SOURCE-COMPUTER,SPACE,SPACES,SPECIAL-NAMES,STANDARD,START,%
731     STATUS,STOP,STRING,SUB-QUEUE-1,SUB-QUEUE-2,SUB-QUEUE-3,SUBTRACT,%
732     SUM,SYMBOLIC,SYNC,SYNCHRONIZED,TABLE,TALLYING,TAPE,TERMINAL,%
733     TERMINATE,TEXT,THAN,THROUGH,THRU,TIME,TIMES,TO,TOP,TRAILING,TYPE,%
734     UNIT,UNSTRING,UNTIL,UP,UPON,USAGE,USE,USING,VALUE,VALUES,VARYING,%
735     WHEN,WITH,WORDS,WORKING-STORAGE,WRITE,ZERO,ZEROES,ZEROS},%
736     alsodigit=-,%
737     sensitive=f,% ???
738     morecomment=[f] [commentstyle] [6]*,%
739     morestring=[d]"% ??? doubled
740 }[keywords,comments,strings]%

```

commentstyle (not the surrounding brackets) have been added after a bug report by Stephen Reindl.

```
741 </lang2>
```

## 2.15 Comal 80

The data is from

- BERGE R. CHRISTENSEN: **Strukturierte Programmierung mit COMAL 80** [aus dem Dänischen übertragen und bearbeitet von Margarete Kragh]; 2., verb. Auflage – München; Wien: Oldenburg, 1985; ISBN 3-486-26902-X.

```
742 (*lang3)
```

```

743 \lst@definlanguage{Comal 80}%
744 {morekeywords={AND,AUTO,CASE,DATA,DEL,DIM,DIV,DO,ELSE,ENDCASE,ENDIF,%
745     ENDPROC,ENDWHILE,EOD,EXEC,FALSE,FOR,GOTO,IF,INPUT,INT,LIST,LOAD,%
746     MOD,NEW,NEXT,NOT,OF,OR,PRINT,PROC,RANDOM,RENUM,REPEAT,RND,RUN,%
747     SAVE,SELECT,STOP,TAB,THEN,TRUE,UNTIL,WHILE,ZONE},%

```

```

748     sensitive=f,% ???
749     morecomment=[l]//,%
750     morestring=[d]"%
751 }[keywords,comments,strings]%
752 </lang3>

```

## 2.16 COMMAND.COM Batch Files

This definition for DOS and Windows batch files is from Stephan Hennig.

```

753 <*lang3>
754 \lst@definelanguage[WinXP]{command.com}%
755 {morekeywords={assoc,at,attrib,bootcfg,break,cacls,call,cd,chcp,chdir,%
756     chkdsk,chkntfs,cls,cmd,cmdextversion,color,comp,compact,convert,copy,%
757     date,defined,del,dir,diskcomp,diskcopy,do,doskey,echo,else,endlocal,%
758     erase,errorlevel,exist,exit,fc,find,findstr,for,format,ftype,goto,%
759     graftabl,help,if,in,label,md,mkdir,mode,more,move,not,off,path,%
760     pause,popd,print,prompt,pushd,rd,recover,ren,rename,replace,rmdir,%
761     set,setlocal,shift,sort,start,subst,time,title,tree,type,ver,%
762     verify,vol,xcopy},%
763     sensitive=false,%
764     alsoother={@},%
765     alsoletter={\%~:-/},%
766     morecomment=[l]{rem},%
767     morecomment=[l]{reM},%
768     morecomment=[l]{rEm},%
769     morecomment=[l]{rEM},%
770     morecomment=[l]{Rem},%
771     morecomment=[l]{ReM},%
772     morecomment=[l]{REm},%
773     morecomment=[l]{REM},%
774     morestring=[d]"%
775 }[keywords,comments,strings]%
776 </lang3>

```

## 2.17 Cmsol Multiphysics

Cmsol Multiphysics (Prior to version 3.2 known as Femlab) can be used standalone or as an extension to MatLab. This definition is due to Martin Heller.

Unfortunately, there is a conflict in that Cmsol is case-insensitive, whereas Matlab is case-sensitive; listings does not currently support different case-sensitivities in the same listing.

```

777 <*lang3>
778 \lst@definelanguage{Cmsol}%
779 {morekeywords={%
780     adaption,arc1,arc2,arrayr,assemble,aseminit,beziercurve2,block2,%
781     block3,bsplinecurve2,bsplinecurve3,bsplinesurf3,bypassplot,cardg,%
782     ccoeffgroup,chamfer,checkgeom,circ1,circ2,coeff2cell,comsol,%
783     cone2,cone3,Contents,createhexes,createprisms,createquads,csgbl2,%
784     csgbl3,csgcmpbz,csgimplbz,csginitaux,csginitnr,csgproputil,%
785     csgrbconv,csgunique3,csguniquep,csgversion,csgvvovl,curve2,%
786     curve3,cylinder2,cylinder3,dot2str,defastget,display,drawgetobj,%

```

```

787 drawreobj, drawsetobj, dst, duplicate, dxflayers, dxffread, dxffwrite, %
788 econe2, econe3, eigloop, elconstr, elcplbnd, elcplextr, elcplproj, %
789 elcplscalar, elempty, elemreobj, eleqc, eleqw, elevate, elgeom, ellip1, %
790 ellip2, ellipsoid2, ellipsoid3, ellipsoidgen_fl123, elmat, elovar, %
791 elpconstr, elshape, elvar, elvarm, embed, extrude, face3, faceprim3, %
792 fastsetop, fem2jxfem, femblocksu, femdiff, femeig, femexport, femgui, %
793 femimport, femiter, femlab, femlin, femmesh, femmeshexp, femnlin, %
794 femplot, femsfun, femsim, femsimlowlevel, femsimserver, femsol, %
795 femsolver, femstate, femstruct, femtime, femwave, festyle, fieldnames, %
796 fillet, fl1d, fl2d, fl3d, flaction, flafun, flappconvert, flappobj, %
797 flaxisequal, flbase, flbinary, flc1hs, flc2hs, flcanpnt, flcell2draw, %
798 flclear, flcolorbar, flcompact, flconeplot, flcontour2mesh, %
799 flcontour2meshaux, flconvreact, flconvreact1d, flconvreact2d, %
800 flconvreact3d, flcyl, fldc1hs, fldc2hs, fldegree, fldegreer3, %
801 fldegreet3, fldimvarset, fldisp, fldraw2cell, fldrawnnow, fldsmhs, %
802 fldsmhsign, flvalmat, flexch, flexchprop, flfastgeom, flform, flgc, %
803 flgcbo, flgdconv, flgeom2cellstr, flgeomadj, flgeomarcize, flgeomec, %
804 flgeomed, flgeomepol, flgeomes, flgeomfc, flgeomfd, flgeomfdp, %
805 flgeomff1, flgeomff2, flgeomfn, flgeomfs, flgeomgetlocalsys, %
806 flgeominit, flgeominitprop, flgeomittransform, flgeomloft, flgeommesh, %
807 flgeomnbs, flgeomnes, flgeomnmr, flgeomnv, flgeompsinv, flgeomrmsing, %
808 flgeomrotp, flgeomsd, flgeomsdim, flgeomse, flgeomsf2, flgeomspm, %
809 flgeomtransform, flgeomud, flgeomvtx, flgetdraw, flheat, flheat1d, %
810 flheat2d, flheat3d, flhelmholtz, flhelmholtz1d, flhelmholtz2d, %
811 flhelmholtz3d, flim2curve, flinterp1, fliscont, flismember, %
812 flisnumeric, fljaction, fllaplace, fllaplace1d, fllaplace2d, %
813 fllaplace3d, flload, flloadfl, flloadmatfile, flloadmfile, %
814 fllobj2cellstr, flmakeevalstr, flmapsoljac, flmat2str, flmatch, %
815 flmesh2spline, flmesh2splineaux, flml65setup, flngdof, flnull, %
816 flnullorth, flpde, flpdeac, flpdec, flpdec1d, flpdec2d, flpdec3d, %
817 flpdcdc, flpdcdc2d, flpdcdc3d, flpdedf, flpdedf1d, flpdedf2d, %
818 flpdedf3d, flpdees, flpdees2d, flpdees3d, flpdeg, flpdeg1d, flpdeg2d, %
819 flpdeg3d, flpdeht, flpdeht1d, flpdeht2d, flpdeht3d, flpdems, flpdems2d, %
820 flpdems3d, flpdens, flpdens2d, flpdens3d, flpdepn, flpdeps, flpdesm3d, %
821 flpdew, flpdew1d, flpdew2d, flpdew3d, flpdewb, flpdewb1d, flpdewb2d, %
822 flpdewb3d, flpdewc, flpdewc1d, flpdewc2d, flpdewc3d, flpdewe, %
823 flpdewe3d, flpdewp, flpdewp2d, flpdewp3d, flplot, flpoisson, %
824 flpoisson1d, flpoisson2d, flpoisson3d, flpric2, flpric3, flreobj, %
825 flreport, flresolvepath, flsave, flschrodinger, flschrodinger1d, %
826 flschrodinger2d, flschrodinger3d, flsde, flsdp, flsdt, flsetalpha, %
827 flsetdraw, flsmhs, flsmhsign, flspnull, fltherm_cond1, fltrg, flversion, %
828 flversions, flverver, flwave, flwave1d, flwave2d, flwave3d, %
829 flwriteghist, formstr, gdsread, gencyl2, gencyl3, genextrude, %
830 genextrudeaux, geom, geom0, geom0get, geom1, geom1get, geom2, geom2get, %
831 geom3, geom3get, geom3j2m, geom3m2j, geomaddlblmargin, geomanalyze, %
832 geomarrayr, geomassign, geomcoerce, geomcomp, geomconnect, geomcopy, %
833 geomcsg, geomdel, geomedit, geomexport, geomfile, geomget, %
834 geomgetlabels, geomgetwrkpln, geomimport, geominfo, geominfoaux, %
835 geomlblplot, geomload, geomnumparse, geomobject, geomparse, geomplot, %
836 geomplot1, geomplot2, geomplot3, geomposition, geomproputil, %
837 geomreconstruct, geomreobj, geomserver, geomspline, geomsurf, %
838 geomupdate, get, getfemgeom, getisocurve, getjptr, getmesh, getsdim, %
839 getvmatrixexch, handlesolnumstr, helix1, helix2, helix3, hexahedron2, %
840 hexahedron3, histfrommat, idst, igesread, importplotdata, isempty, %

```

```

841     isfield, isfunc, isscript, javaclass, jproputil, jptr2geom, jptrgeom1,%
842     jptrgeom1_fl23, jptrgeom2, jptrgeom2_fl23, jptrgeom3, jptrgeom3_fl23,%
843     keiter, line1, line2, loadobj, loft, matlabinterpdata, mesh2geom,%
844     meshassign, meshcaseadd, meshcasedel, meshcaseutil, meshcheck,%
845     meshembed, meshenrich, meshenrich1, meshenrich2, meshenrich3,%
846     meshexport, meshextend, meshextrude, meshget, meshimport, meshinit,%
847     meshintegrate, meshmap, meshoptim, meshparse, meshplot, meshplot1,%
848     meshplot2, meshplot3, meshplotpropoutil, meshpoi, meshpropoutil,%
849     meshptplot, meshqual, meshrefine, meshrevolve, meshsmooth,%
850     meshsmooth2, meshsweep, meshvolume, minus, mirror, mkreflparams,%
851     mmsolve, modetype, move, moveglobalfields, mphpropoutil, mtimes,%
852     multiphysics, mypostinterp, notscript, onlyelsconstr, outassign,%
853     paramgeom, pde2draw, pde2equ, pde2fem, pde2geom, pdeblxpd, plus, point1,%
854     point2, point3, poisson, poly1, poly2, postanim, postapplysettings,%
855     postarrow, postarrowbnd, postcolorbar, postcont, postcontdomind,%
856     postcoord, postcopyprop, postcrossplot, postdistrprops, posteval,%
857     postflow, postfnd, postgeomplot, postgetfem, postgetstylecolor,%
858     postglobaleval, postglobalplot, postgp, postinit, postint, postinterp,%
859     postiso, postlin, postmakecontcol, postmax, postmaxmin, postmin,%
860     postmkcontbar, postmknormexpr, postmovie, postnewplot,%
861     postoldmaxminprops, postpd2pm, postplot, postplotconstants,%
862     postpm2pd, postprinc, postprincbnd, postprogui, postpropoutil,%
863     postslice, postsurf, posttet, posttitle, print2file, pyramid2,%
864     pyramid3, rect1, rect2, restorefields, revolve, rmfield, rotate,%
865     rotmatrix, scale, serialize, set, setmesh, sh2str, sharg_2_5, shbub,%
866     shdisc, shdiv, shherm, shlag, shvec, simplecoerce, simreobj, slblocks,%
867     solassign, solid0, solid1, solid2, solid3, solidprim3, solpropoutil,%
868     solsize, solveraddcases, sphere2, sphere3, spiceimport, splineaux,%
869     split, splittoprim, square1, square2, stlread, submode, submodes,%
870     subsasgn, subsref, tangent, taucs, tetrahedron2, tetrahedron3,%
871     tobsplines, torus2, torus3, transform, update, updateassoc,%
872     updateassocinfo, updatefem, updateguistruct, updateobj, vmlread,%
873     xmeshinfo, xmeshinit},%
874     sensitive=false,%
875     morecomment=[l]\%,%
876     morestring=[m]'%
877 }[keywords, comments, strings]%
878  $\langle$ /lang3

```

## 2.18 bash, csh, and sh

csh is from Kai Below, but he pointed out that some keywords are probably missing.

```

879  $\langle$ *lang1
880 %%
881 %% csh definition (c) 1998 Kai Below
882 %%
883 \lst@definlanguage{csh}
884 {morekeywords={alias,awk,cat,echo,else,endif,endsw,exec,exit,%
885     foreach,glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
886     set,setenv,shift,source,switch,then,time,while,umask,unalias,%
887     unset,wait,while,@,env,argv,child,home,ignoreeof,noclobber,%
888     noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%

```

```

889     sqrt,BEGIN,END},%
890     morecomment=[l]\#,%
891     morestring=[d]"%
892 }[keywords,comments,strings]%

```

Thanks to Riccardo Murri for the following two definitions. Scott Pakin pointed out some missing keywords (`elif`, `in` for `sh`, `caller`, `compopt`, `coproc`, `dirs`, `help`, `mapfile`, `readarray` for `bash`) to the current maintainer. The `sh` list of keywords was checked against the “Manual of the Bourne Shell on Version 7”, found at <http://www.in-ulm.de/~mascheck/bourne/v7/>, last visited on 2014/09/06. Ralf Schandl indicated the missing of an apostrophe as delimiter of strings.

```

893 %%
894 %% bash,sh definition (c) 2003 Riccardo Murri <riccardo.murri@gmx.it>
895 %%
896 \lst@definlanguage{bash}[] {sh}%
897 {morekeywords={alias,bg,bind,builtin,caller,command,compgen,compopt,%
898   complete,coproc,declare,disown,dirs,enable,fc,fg,help,history,%
899   jobs,let,local,logout,mapfile,printf,pushd,popd,readarray,select,%
900   set,suspend,shopt,source,times,type,typeset,ulimit,unalias,wait},%
901 }%
902 \lst@definlanguage{sh}%
903 {morekeywords={awk,break,case,cat,cd,continue,do,done,echo,elif,else,%
904   env,esac,eval,exec,exit,export,expr,false,fi,for,function,getopts,%
905   hash,history,if,in,kill,login,newgrp,nice,nohup,ps,pwd,read,%
906   readonly,return,set,sed,shift,test,then,times,trap,true,type,%
907   ulimit,umask,unset,until,wait,while},%
908   morecomment=[l]\#,%
909   morestring=[d]" ,%
910   morestring=[d]' %
911 }[keywords,comments,strings]%
912 </lang1>

```

Jobst Hoffmann copied the definition of a style for printing Fortran code to a style for printing shell programs:

```

913 <*bash-prf>
914 \usepackage[rgb, x11names]{xcolor}
915
916 % common settings
917 \lstset{%
918   frame=tlb,%           the frame is open on the right side
919   resetmargins=false,%
920   rulesepcolor=\color{black},%
921   numbers=left,%           % left
922   numberstyle=\tiny,%
923   numbersep=5pt,%
924   firstnumber=1,%
925   stepnumber=5,%
926   columns=fixed,%           % to prevent inserting spaces
927   fontadjust=true,%
928   keepspaces=true,%
929   basewidth=0.5em,%
930   captionpos=t,%
931   abovecaptionskip=\smallskipamount,% same amount as default
932   belowcaptionskip=\smallskipamount,% in caption package

```

```

933 }
934 % settings for colored printing
935 \lstdefinestyle{bash}{%
936   backgroundcolor=\color{yellow!10},%
937   basicstyle=\small\ttfamily,%
938   identifierstyle=\color{black},%
939   keywordstyle=\color{blue},%
940   keywordstyle={[2]\color{cyan}},%
941   keywordstyle={[3]\color{olive}},%
942   stringstyle=\color{teal},%
943   commentstyle=\itshape\color{orange},%
944 }%
945 % settings for back and white printing
946 \lstdefinestyle{bashbw}{%
947   backgroundcolor={},%
948   basicstyle=\small\ttfamily,%
949   identifierstyle={},%
950   keywordstyle=\bfseries,%
951   stringstyle=\itshape,%
952   commentstyle=\slshape,%
953   rulesepcolor=\color{black},%
954 }%

```

This code is provided in the file `listings-bash.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
955 </bash-prf>
```

## 2.19 Delphi

I took the data from Delphi 1.0 (?) online help. Christian Gudrian provided the ‘double slash’ comment.

```

956 (*lang2)
957 \lst@definlanguage{Delphi}%
958 {morekeywords={and,as,asm,array,begin,case,class,const,constructor,%
959   destructor,div,do,downto,else,end,except,exports,file,finally,%
960   for,function,goto,if,implementation,in,inherited,inline,%
961   initialization,interface,is,label,library,mod,nil,not,object,of,%
962   or,packed,procedure,program,property,raise,record,repeat,set,%
963   shl,shr,string,then,to,try,type,unit,until,uses,var,while,with,%
964   xor,%
965   absolute,abstract,assembler,at,cdecl,default,dynamic,export,%
966   external,far,forward,index,name,near,nodefault,on,override,%
967   private,protected,public,published,read,resident,storedDir,%
968   virtual,write},%
969   moreendkeywords={Abs,AddExitProc,Addr,AllocMem,AnsiCompareStr,%
970   AnsiCompareText,AnsiLowerCase,AnsiUpperCase,Append,AppendStr,%
971   ArcTan,AssignCrt,Assigned,AssignFile,BlockRead,BlockWrite,Break,%
972   ChangeFileExt,ChDir,Chr,CloseFile,ClrEol,ClrScr,Concat,Continue,%
973   Copy,Cos,CSeg,CursorTo,Date,DateTimeToFileDate,DateTimeToStr,%
974   DateTimeToString,DateToStr,DayOfWeek,Dec,DecodeDate,DecodeTime,%
975   Delete,DeleteFile,DiskFree,DiskSize,Dispose,DisposeStr,%
976   DoneWinCrt,DSeg,EncodeDate,EncodeTime,Eof,Eoln,Erase,Exclude,%
977   Exit,Exp,ExpandFileName,ExtractFileExt,ExtractFileName,%

```



```

978 ExtractFilePath,FileAge,FileClose,FileDateToDateTime,FileExists,%
979 FileGetAttr,FileGetDate,FileOpen,FilePos,FileRead,FileSearch,%
980 FileSeek,FileSetAttr,FileSetDate,FileSize,FillChar,FindClose,%
981 FindFirst,FindNext,FloatToDecimal,FloatToStrF,FloatToStr,%
982 FloatToText,FloatToTextFmt,Flush,FmtLoadStr,FmtStr,Format,%
983 FormatBuf,FormatDateTime,FormatFloat,Frac,Free,FreeMem,GetDir,%
984 GetMem,GotoXY,Halt,Hi,High,Inc,Include,InitWinCrt,Insert,Int,%
985 IntToHex,IntToStr,IOResult,IsValidIdent,KeyPressed,Length,Ln,Lo,%
986 LoadStr,Low,LowerCase,MaxAvail,MemAvail,MkDir,Move,New,NewStr,%
987 Now,Odd,Ofs,Ord,ParamCount,ParamStr,Pi,Pos,Pred,Ptr,Random,%
988 Randomize,Read,ReadBuf,ReadKey,ReadLn,ReAllocMem,Rename,%
989 RenameFile,Reset,Rewrite,Rmdir,Round,RunError,ScrollTo,Seek,%
990 SeekEof,SeekEoln,Seg,SetTextBuf,Sin,SizeOf,SPtr,Sqr,Sqrt,SSeg,%
991 Str,StrCat,StrComp,StrCopy,StrDispose,StrECopy,StrEnd,StrFmt,%
992 StrLCat,StrLComp,StrLComp,StrLCopy,StrLen,StrLFmt,StrLComp,%
993 StrLower,StrMove,StrNew,StrPas,StrPCopy,StrPos,StrScan,StrRScan,%
994 StrToDate,StrToDateTime,StrToFloat,StrToInt,StrToIntDef,%
995 StrToTime,StrUpper,Succ,Swap,TextToFloat,Time,TimeToStr,%
996 TrackCursor,Trunc,Truncate,TypeOf,UpCase,UpperCase,Val,WhereX,%
997 WhereY,Write,WriteBuf,WriteChar,Writeln,%
998 sensitive=f,%
999 morecomment=[s]{(*){(*)},%
1000 morecomment=[s]{\}{\},%
1001 morecomment=[l]{//},% 2001 Christian Gudrian
1002 morestring=[d]'%
1003 }[keywords,comments,strings]%
1004 </lang2>

```

## 2.20 Eiffel

Data is from

- BERTRAND MEYER: **Eiffel: the language**; Prentice Hall International (UK) Ltd, 1992; ISBN 0-13-247925-7.

```

1005 <*lang2>
1006 \lst@definlanguage{Eiffel}%
1007 {morekeywords={alias,all,and,as,BIT,BOOLEAN,CHARACTER,check,class,%
1008 creation,Current,debug,deferred,do,DOUBLE,else,elseif,end,%
1009 ensure,expanded,export,external,false,feature,from,frozen,if,%
1010 implies,indexing,infix,inherit,inspect,INTEGER,invariant,is,%
1011 like,local,loop,NONE,not,obsolete,old,once,or,POINTER,prefix,%
1012 REAL,redefine,rename,require,rescue,Result,retry,select,%
1013 separate,STRING,strip,then,true,undefine,unique,until,variant,%
1014 when,xor},%
1015 sensitive,%
1016 morecomment=[l]--,%
1017 morestring=[d]"%,%
1018 }[keywords,comments,strings]%

```

The key=value stringtest=false has been removed after a bug report from Xavier Crégut.

```

1019 </lang2>

```

## 2.21 Elan

The data come from

- LEO H. KLINGEN, JOCHEN LIEDTKE: **Programmieren mit ELAN**; B.G. Teubner, Stuttgart 1983; ISBN 3-519-02507-8.

```
1020 ⟨*lang3⟩
1021 \lst@definlanguage{Elan}%
1022   {morekeywords={ABS, AND, BOOL, CAND, CASE, CAT, COLUMNS, CONCR, CONJ, CONST, %
1023     COR, DECR, DEFINES, DET, DIV, DOWNTO, ELIF, ELSE, END, ENDIF, ENDOP, %
1024     ENDPACKET, ENDPROC, ENDREP, ENDSELECT, FALSE, FI, FILE, FOR, FROM, IF, %
1025     INCR, INT, INV, LEAVE, LENGTH, LET, MOD, NOT, OF, OP, OR, OTHERWISE, PACKET, %
1026     PROC, REAL, REP, REPEAT, ROW, ROWS, SELECT, SIGN, STRUCT, SUB, TEXT, THEN, %
1027     TRANSP, TRUE, TYPE, UNTIL, UPTO, VAR, WHILE, WITH, XOR, %
1028     maxint, sign, abs, min, max, random, initializerandom, subtext, code, %
1029     replace, text, laenge, pos, compress, change, maxreal, smallreal, floor, %
1030     pi, e, ln, log2, log10, sqrt, exp, tan, tand, sin, sind, cos, cosd, arctan, %
1031     arctand, int, real, lastconversionok, put, putline, line, page, get, %
1032     getline, input, output, sequentialfile, maxlinelaenge, reset, eof, %
1033     close, complexzero, complexone, complexi, complex, realpart, imagpart, %
1034     dphi, phi, vector, norm, replace, matrix, idn, row, column, sub, %
1035     replacerow, replacecolumn, replaceelement, transp, errorsstop, stop}, %
1036   sensitive, %
1037   morestring=[d] "%
1038 } [keywords, strings] %
1039 ⟨/lang3⟩
```

## 2.22 Erlang

Thanks to Daniel Gazard.

```
1040 ⟨*lang3⟩
1041 %%
1042 %% Erlang definition (c) 2003 Daniel Gazard
1043 %%
1044 \lst@definlanguage{erlang}%
1045   {morekeywords={abs, after, and, apply, atom, atom_to_list, band, binary, %
1046     binary_to_list, binary_to_term, bor, bsl, bsr, bxor, case, catch, %
1047     date, div, element, erase, end, exit, export, float, float_to_list, %
1048     get, halt, hash, hd, if, info, import, integer, integer_to_list, %
1049     length, link, list, list_to_atom, list_to_float, list_to_integer, %
1050     list_to_tuple, module, node, nodes, now, of, or, pid, port, ports, %
1051     processes, put, receive, reference, register, registered, rem, %
1052     round, self, setelement, size, spawn, throw, time, tl, trace, trunc, %
1053     tuple, tuple_to_list, unlink, unregister, whereis, error, false, %
1054     infinity, nil, ok, true, undefined, when}, %
1055   otherkeywords={->, !, [, ], \{, \}}, %
1056   morecomment=[l] \%, %
1057   morestring=[b] "%, %
1058   morestring=[b] '%
1059 } [keywords, comments, strings] %
1060 ⟨/lang3⟩
```

## 2.23 Euphoria

Detlef Reimers sent me the language definition.

```
1061 (*lang2)
1062 %%
1063 %% Euphoria definition (c) 1998 Detlef Reimers
1064 %%
1065 \lst@definelanguage{Euphoria}%
1066 % for Euphoria 2.0, Rapid Deployment Software, Kanada
1067 {morekeywords={abort,and,and_bits,append,arctan,atom,by,call,%
1068     call_proc,call_func,c_proc,c_func,clear_screen,close,%
1069     command_line,compare,constant,cos,do,date,else,elsif,end,exit,%
1070     find,floor,for,function,getc,getenv,get_key,gets,global,%
1071     get_pixel,if,include,integer,length,log,match,machine_func,%
1072     machine_proc,mem_copy,mem_set,not,not_bits,or,object,open,%
1073     or_bits,procedure,puts,position,prepend,print,printf,power,peek,%
1074     poke,pixel,poke4,peek4s,peek4u,return,rand,repeat,remainder,%
1075     routine_id,sequence,sqrt,sin,system,sprintf,then,type,to,time,%
1076     trace,tan,while,with,without,xor,xor_bits},%
1077     sensitive,%
1078     morecomment=[l]--,%,
1079     morestring=[d]',%,
1080     morestring=[d]"%
1081 }[keywords,comments,strings]%
1082 </lang2>
```

## 2.24 Fortran

Took things from

- KARL HANS MÜLLER: **Fortran 77: Programmierungsanleitung**; 3., völlig neu bearb. Aufl. – Mannheim; Wien; Zürich: Bibliographisches Institut, 1984; ISBN 3-411-05804-8
- THOMAS MICHEL: **Fortran 90: Lehr- und Handbuch**; Mannheim; Leipzig; Wien; Zürich: BI-Wiss.-Verlag, 1994; ISBN 3-411-16861-7.

Another source for Fortran keywords is <http://fortranwiki.org/fortran/show/Keywords> where the keywords for Fortran 2003 and 2008 are taken from.

```
1083 (*lang1)
The current version of Fortran (Fortran 2008) is defined by ISO/IEC 1539-1:2010.
It contains nine new keywords, four of them consisting of two words: ERROR STOP,
SYNC ALL, SYNC IMAGES, SYNC MEMORY, so the list of keywords contains the single
parts ALL, ERROR, IMAGES, MEMORY, and SYNC.
1084 \lst@definelanguage[08]{Fortran}[03]{Fortran}{%
1085     morekeywords={ALL, BLOCK, CODIMENSION, CONCURRENT, CONTIGUOUS, CRITICAL,%
1086         ERROR, LOCK, SUBMODULE, SYNC, UNLOCK},%
New procedures in Fortran 2008:
1087     morekeywords=[3]{ACOSH, ASINH, ATANH, ATOMIC_DEFINE, ATOMIC_REF,%
1088         BESSEL_J0, BESSEL_J1, BESSEL_JN, BESSEL_Y0, BESSEL_Y1, BESSEL_YN,%
1089         BGE, BGT, BLE, BLT, C_SIZEOF, COMPILER_OPTIONS, COMPILER_VERSION,%
1090         DSHIFTL, DSHIFTR, ERF, ERFC, ERFC_SCALED, EXECUTE_COMMAND_LINE,%
```

```

1091 FINDLOC, GAMMA, HYPOT, IALL, IANY, IMAGE_INDEX, IPARITY, LCOBOUND,%
1092 LEADZ, LOG_GAMMA, MASKL, MASKR, MERGE_BITS, NORM2, NUM_IMAGES,%
1093 PARITY, POPCNT, POPPAR, SHIFTA, SHIFTL, SHIFTR, STORAGE_SIZE,%
1094 THIS_IMAGE, TRAILZ, UCBOUNDD}%
1095 }%

```

Fortran 2003 introduces the following keywords:

```

1096 \lst@definelanguage[03]{Fortran}[95]{Fortran}{%
1097 morekeywords={ABSTRACT, ASSOCIATE, ASYNCHRONOUS, BIND, CLASS, DEFERRED,%
1098 ENUM, ENUMERATOR, EXTENDS, FINAL, FLUSH, GENERIC, IMPORT,%
1099 NON_OVERRIDABLE, NOPASS, PASS, PROTECTED, VALUE, VOLATILE, WAIT},%

```

These are new options/specifiers:

```

1100 morekeywords=[2]{DECIMAL, ENCODING, IOMSG, ROUND},%

```

And also some new procedures:

```

1101 morekeywords=[3]{C_ASSOCIATED, C_F_POINTER, C_F_PROCPONTER, C_FUNLOC,%
1102 C_LOC, COMMAND_ARGUMENT_COUNT, EXTENDS_TYPE_OF, GET_COMMAND,%
1103 GET_COMMAND_ARGUMENT, GET_ENVIRONMENT_VARIABLE, IS_IOSTAT_END,%
1104 MOVE_ALLOC,NEW_LINE,SAME_TYPE_AS, SELECTED_CHAR_KIND}%
1105 }%

```

Denis Girou proposed to have Fortran 95 and Fortran 90 to be equivalent.

```

1106 \lst@definelanguage[90]{Fortran}[95]{Fortran}{%

```

There is no `morecomment=[f]` in Fortran 90 since otherwise `CONTAINS` could start a comment. This problem was reported by Magne Rudshaug. Moreover the keyword `INCLUDE` is due to him.

```

1107 \lst@definelanguage[95]{Fortran}[77]{Fortran}{%
1108 deletekeywords=SAVE,%
1109 morekeywords={ALLOCATABLE, ALLOCATE, ASSIGNMENT, CASE, CONTAINS, CYCLE,%
1110 DEALLOCATE, DEFAULT, EXIT, INCLUDE, IN, NONE, OUT, INTENT, INTERFACE,%
1111 MODULE, NAMELIST, NULLIFY, ONLY, OPERATOR, OPTIONAL, OUT, POINTER,%
1112 PRIVATE, PUBLIC, RECURSIVE, RESULT, SELECT, SEQUENCE, TARGET, USE,%
1113 WHERE, WHILE, BLOCKDATA, DOUBLEPRECISION, ENDBLOCKDATA, ENDFILE,%
1114 ENDFUNCTION, ENDINTERFACE, ENDMODULE, ENDPROGRAM, ENDSELECT,%
1115 ENDSUBROUTINE, ENDTYPE, ENDWHERE, INOUT, SELECTCASE,%

```

Theses keys were missing from the 1.4 version of listings:

```

1116 ELEMENTAL, ELSEWHERE, FORALL, PURE,%

```

This is another key missing from the 1.4 version of listings:

```

1117 PROCEDURE},%

```

The list of option keywords/specifiers new in Fortran 90 and 95:

```

1118 morekeywords=[2]{ACTION, ADVANCE, DELIM, IOLENGTH, LEN, NAME, NML, PAD,%
1119 POSITION, READWRITE, SIZE, STAT},% corrected NML from NMT

```

and the list of intrinsic procedures new in Fortran 90 and 95:

```

1120 morekeywords=[3]{ACHAR, ADJUSTL, ADJUSTR, ALL, ALLOCATED, ANY, ASSOCIATED,%
1121 BIT_SIZE, BTEST, CEILING, COUNT, CPU_TIME, CSHIFT, DATE_AND_TIME, DIGITS,%
1122 DOT_PRODUCT, EOSHIFT, EPSILON, EXPONENT, FLOOR, FRACTION, HUGE, IACHAR,%
1123 IAND, IBCLR, IBITS, IBSET, ICHAR, IEOR, IOR, ISHFT, ISHFTC, KIND, LBOUND,%
1124 LEN_TRIM,% left out LOGICAL
1125 MATMUL, MAXEXPONENT, MAXLOC, MAXVAL, MERGE, MINEXPONENT, MINLOC, MINVAL,%
1126 MODULO, MVBITS, NEAREST, NOT, NULL, PACK, PRECISION, PRESENT, PRODUCT,%
1127 RADIX, RANDOM_NUMBER, RANDOM_SEED, RANGE, RANK, REPEAT, RESHAPE,%

```

```

1128   RRRSPACING, SCALE, SCAN, SELECTED_INT_KIND, SELECTED_REAL_KIND,%
1129   SET_EXPONENT, SHAPE, SINH, SIZE, SPACING, SPREAD, SUM, SYSTEM_CLOCK,%
1130   TINY, TRANSFER, TRANSPOSE, TRIM, UBOUND, UNPACK, VERIFY},%
1131   deletacomment=[f],% no fixed comment line: 1998 Magne Rudshaug
1132   morecomment=[l]!%
1133 }%

```

As proposed by Jörn Wilms keywords are *not* case sensitive. Also, note that Fortran 77 (and fixed-format source in later versions) allows space in keywords; thus, this list contains some of the more common variants (e.g., ‘GO TO’ and ‘GOTO’).

```

1134 \lst@definelanguage[77]{Fortran}{%

```

Jobst Hoffmann divided the list of keywords into two lists. The first list contains the statement keywords, the second list contains the option keywords/specifiers and values. This makes the different meanings of the keywords distinguishable.

```

1135   morekeywords={ASSIGN, BACKSPACE, CALL, CHARACTER, %
1136     CLOSE, COMMON, COMPLEX, CONTINUE, DATA, DIMENSION, DO, DOUBLE, %
1137     ELSE, ELSEIF, END, ENDF, ENDDO, ENTRY, EQUIVALENCE, EXTERNAL, %
1138     FILE, FORMAT, FUNCTION, GO, TO, GOTO, IF, IMPLICIT, %
1139     INQUIRE, INTEGER, INTRINSIC, LOGICAL, %
1140     OPEN, PARAMETER, PAUSE, PRECISION, PRINT, PROGRAM, READ, REAL, %
1141     RETURN, REWIND, STOP, SUBROUTINE, THEN, %
1142     WRITE, SAVE},%
1143   morekeywords=[2]{ACCESS, BLANK, BLOCK, DIRECT, EOF, ERR, EXIST,%
1144     FMT, FORM, FORMATTED, IOSTAT, NAMED, NEXTREC, NUMBER, OPENED,%
1145     REC, RECL, SEQUENTIAL, STATUS, TYPE, UNFORMATTED, UNIT},%

```

And here is another list: the list of intrinsic procedures (remember: all functions belong to the Fortran language specification!)

```

1146   morekeywords=[3]{INT, DBLE, CMLPX, ICHAR, CHAR, AINT, ANINT,% left out real
1147     NINT, ABS, MOD, SIGN, DIM, DPROD, MAX, MIN, AIMAG, CONJG, SQRT,%
1148     EXP, LOG, LOG10, SIN, COS, TAN, ASIN, ACOS, ATAN, ATAN2, SINH,%
1149     COSH, TANH, LGE, LGT, LLE, LLT, LEN, INDEX},%

```

And here is the last list: fortran operators:

```

1150   morekeywords=[4]{AND, EQ, EQV, FALSE, GE, GT, OR, LE, LT, NE, NEQV,%
1151     NOT, TRUE},%
1152   sensitive=f,% not Fortran-77 standard, but allowed in Fortran-95 %%
1153   morecomment=[f]*,%
1154   morecomment=[f]C,%
1155   morecomment=[f]c,%
1156   morestring=[d]" ,%% not Fortran-77 standard, but allowed in Fortran-95 %%
1157   morestring=[d]' %
1158   }[keywords,comments,strings]%
1159 </lang1>

```

Jobst Hoffmann supplied a definition of a style for printing Fortran code:

```

1160 (*fortran-prf)
1161 \usepackage[rgb, x11names]{xcolor}
1162
1163 % common settings
1164 \lstset{%
1165   frame=tlb,% the frame is open on the right side
1166   resetmargins=false,%
1167   rulesepcolor=\color{black},%

```

```

1168 numbers=left,%                % left
1169 numberstyle=\tiny,%
1170 numbersep=5pt,%
1171 firstnumber=1,%
1172 stepnumber=5,%
1173 columns=fixed,%                % to prevent inserting spaces
1174 fontadjust=true,%
1175 keepspaces=true,%
1176 basewidth=0.5em,%
1177 captionpos=t,%
1178 abovecaptionskip=\smallskipamount,% same amount as default
1179 belowcaptionskip=\smallskipamount,% in caption package
1180 }
1181 % settings for colored printing
1182 \lstdefinestyle{fortran}{%
1183   backgroundcolor=\color{yellow!10},%
1184   basicstyle=\small\ttfamily,%
1185   identifierstyle=\color{black},%
1186   keywordstyle=\color{blue},%
1187   keywordstyle={[2]\color{cyan}},%
1188   keywordstyle={[3]\color{olive}},%
1189   stringstyle=\color{teal},%
1190   commentstyle=\itshape\color{orange},%
1191 }%
1192 % settings for back and white printing
1193 \lstdefinestyle{fortranbw}{%
1194   backgroundcolor={},%
1195   basicstyle=\small\ttfamily,%
1196   identifierstyle={},%
1197   keywordstyle=\bfseries,%
1198   stringstyle=\itshape,%
1199   commentstyle=\slshape,%
1200   rulesepcolor=\color{black},%
1201 }%

```

This code is provided in the file `listings-fortran.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
1202 </fortran-prf>
```

## 2.25 GAP—Groups, Algorithms, Programming

GAP is a System for Computational Discrete Algebra, a description can be found at <http://www.gap-system.org/>. Heiko Oberdiek provided a language definition without knowing this language, so any error should be announced to the current maintainer of the listings package.

```

1203 <*lang2>
1204 %%
1205 %% GAP definition
1206 %% (c) 2013 Heiko Oberdiek
1207 %%
1208 \lst@definlanguage{GAP}{%
1209   morekeywords={%
1210     Assert,Info,IsBound,QUIT,%

```

```

1211     TryNextMethod,Unbind,and,break,%
1212     continue,do,elif,%
1213     else,end,false,fi,for,%
1214     function,if,in,local,%
1215     mod,not,od,or,%
1216     quit,rec,repeat,return,%
1217     then,true,until,while%
1218 },%
1219 sensitive,%
1220 morecomment=[l]\#,%
1221 morestring=[b] ",%
1222 morestring=[b] ',%
1223 }[keywords,comments,strings]
1224 </lang2>

```

## 2.26 Go—Groups, Algorithms, Programming

From [https://en.wikipedia.org/wiki/Go\\_\(programming\\_language\)](https://en.wikipedia.org/wiki/Go_(programming_language)): Go (often referred to as Golang) is a programming language created by Google in 2009 by Robert Griesemer, Rob Pike, and Ken Thompson. Go is a statically typed, compiled language in the tradition of C, with memory safety, garbage collection, structural typing, and CSP-style concurrency. The compiler, tools, and source code are all free and open source.

Christian Maurer provided the following language definition.

```

1225 <(*lang3)>
1226 %%
1227 %% Go definition
1228 %% (c) 2018 Christian Maurer
1229 %%
1230 \lst@definlanguage{Go}{%
1231     morekeywords={append,bool,break,byte,cap,case,chan,close,complex,%
1232         complex128,complex64,const,continue,copy,default,defer,delete,%
1233         else,error,fallthrough,false,float32,float64,for,func,go,goto,%
1234         if,imag,import,int,int16,int32,int64,int8,interface,iota,len,%
1235         make,map,new,nil,package,panic,print,println,range,real,%
1236         recover,return,rune,select,string,struct,switch,true,type,%
1237         uint,uint16,uint32,uint64,uint8,uintptr,var},%
1238     sensitive,%
1239     morecomment=[s]{/*}{*/},%
1240     morecomment=[l]//,%
1241     morestring=[b] ',%
1242     morestring=[b] ",%
1243     morestring=[s]{'}{'},%
1244 }[keywords,comments,strings]%
1245 </lang3>

```

## 2.27 Guarded Command Language (GCL)

As you can read below, Mark van Eijk provided this language definition.

```

1246 <(*lang2)>

```

```

1247 %%
1248 %% Guarded Command Language (GCL) definition
1249 %% (c) 2002 Mark van Eijk
1250 %%
1251 \lst@definlanguage{GCL}%
1252 {morekeywords={const,con,var,array,of,skip,if,fi,do,od,div,mod},%
1253   literate={| |}{\ensuremath{| \hspace -0.1em |}}2%
1254           { | }{\ensuremath{| \hspace -0.1em |}}2%
1255           { [ ] }{\ensuremath{[ \hspace -0.1em ]}}2%
1256           { -> }{\ensuremath{\rightarrow}}2%
1257           { == }{\ensuremath{\equiv}}2%
1258           { >= }{\ensuremath{\geq}}2%
1259           { <= }{\ensuremath{\leq}}2%
1260           { /\ / }{\ensuremath{\land}}2%
1261           { \ / \ / }{\ensuremath{\lor}}2%
1262           { ! }{\ensuremath{\not}}1%
1263           { != }{\ensuremath{\neq}}2%
1264           { max }{\ensuremath{\uparrow}}1%
1265           { min }{\ensuremath{\downarrow}}1,%
1266   sensitive=f,%
1267   morecomment=[s]{\{\}\},%
1268   morestring=[d]'%
1269 }[keywords,comments,strings]%
1270 </lang2>

```

## 2.28 Gnuplot

Thanks to Dr. Christoph Giess for providing this definition.

```

1271 (*lang2)
1272 %%
1273 %% gnuplot definition (c) Christoph Giess
1274 %%
1275 \lst@definlanguage{Gnuplot}%
1276 {keywords={abs,acos,acosh,arg,asin,asinh,atan,atan2,atanh,besj0,%
1277   besj1,besy0,besy1,ceil,cos,cosh,erf,erfc,exp,floor,gamma,ibeta,%
1278   inverf,igamma,imag,invnorm,int,lgamma,log,log10,norm,rand,real,%
1279   sgn,sin,sinh,sqrt,tan,tanh,column,tm_hour,tm_mday,tm_min,tm_mon,%
1280   tm_sec,tm_wday,tm_yday,tm_year,valid,cd,call,clear,exit,fit,%
1281   help,if,load,pause,plot,print,pwd,quit,replot,reread,reset,save,%
1282   set,show,shell,splot,test,update,angles,arrow,autoscale,border,%
1283   boxwidth,clabel,clip,cntrparam,contour,data,dgrid3d,dummy,%
1284   format,function,functions,grid,hidden3d,isosamples,key,keytitle,%
1285   label,logscale,mapping,offsets,output,parametric,pointsize,%
1286   polar,rrange,samples,size,style,surface,terminal,tics,time,%
1287   timefmt,title,trange,urange,variables,view,vrange,xdata,xlabel,%
1288   xmargin,xrange,xtics,mxtics,mytics,xdtics,xmtics,xzeroaxis,%
1289   ydata,ylabel,yrange,ytics,ydtics,ymtics,yzeroaxis,zdata,zero,%
1290   zeroaxis,zlabel,zrange,ztics,zdtics,zmtics,timefm,using,title,%
1291   with,index,every,thru,smooth},%
1292   sensitive,%
1293   comment=[l]\#,%
1294   morestring=[b]" ,%
1295   morestring=[b]' ,%

```



```

1296   }[keywords,comments,strings]%
1297 </lang2>

```

## 2.29 Hansl/Gretl

Thanks to Ignacio Díaz-Emparanza, Riccardo (Jack) Lucchetti, and Sven Schreiber for providing the definition of hansl. Hansl is the gretl scripting language (see <http://gretl.sourceforge.net>).

```

1298 (*lang2)
1299 \lst@definlanguage{hansl}{%
1300   showstringspaces = false, %
1301   morekeywords={ % hansl commands:
1302     add, adf, anova, append, ar, ar1, arbond, arch, arima, biprobit, break,%
1303     boxplot, chow, clear, coeffsum, coint, coint2, corr, corrgm, cusum,%
1304     data, dataset, delete, diff, difftest, discrete, dpanel, dummify,%
1305     duration, elif, else, end, endif, endloop, eqnprint, equation,%
1306     estimate, eval, fcast, flush, foreign, fractint, freq, function,%
1307     funcerr, garch, genr, gmm, gnuplot, graphpg, hausman, heckit, help,%
1308     hfplot, hsk, hurst, if, include, info, intreg, join, kpss, labels, lad,%
1309     lags, ldiff, leverage, levinlin, logistic, logit, logs, loop, mahal,%
1310     makepkg, markers, meantest, midasreg, mle, modeltab, modprint, modtest,%
1311     mpi, mpols, negbin, nls, normttest, nulldata, ols, omit, open, orthdev,%
1312     outfile, panel, pca, pergm, plot, poisson, print, printf, probit,%
1313     pvalue, quantreg, qlrtest, qqplot, quit, rename, reset, restrict,%
1314     rmplot, run, runs, scatters, sdiff, set, setinfo, setobs, setopt,%
1315     setmiss, smpl, spearman, square, store,%
1316     summary, system, tabprint, textplot, tobit, tsls, var, varlist,%
1317     vartest, vecm, vif, wls, xcorrgm, xtab, debug, return, catch, pkg,%
1318     arma, deriv, params, hessian, for, foreach, while, const},%
1319   morekeywords=[2]{ % accessors:
1320     \$nobs, \$nvars, \$pd, \$t1, \$t2, \$tmax, \$datatype, \$test,%
1321     \$pvalue, \$qlrbreak, \$rlnl, \$stopwatch, \$unit, \$obsmajor,%
1322     \$obsminor, \$obsmicro, \$obsdate, \$windows, \$version, \$error,%
1323     \$seed, \$huge, \$ess, \$T, \$rsq, \$sigma, \$df, \$ncoeff, \$lnl,%
1324     \$gmmcrit, \$aic, \$bic, \$hqc, \$strsq, \$dw, \$dwpval, \$Fstat,%
1325     \$chisq, \$diagtest, \$diagpval, \$pmanteau, \$uhat, \$yhat, \$llt,%
1326     \$ahat, \$sample, \$h, \$coeff, \$stderr, \$vcv, \$rho, \$compan,%
1327     \$xtxinv, \$vecGamma, \$vma, \$fevd, \$evals, \$jalpha, \$jbeta,%
1328     \$jvbeta, \$s00, \$s11, \$s01, \$ec, \$hausman, \$sargan, \$sysGamma,%
1329     \$sysA, \$sysB, \$fcast, \$fcse, \$coeff_ci, \$ehat, \$mnlprobs,%
1330     \$xlist, \$ylist, \$command, \$depvar, \$model, \$system, \$sysinfo},%
1331   morekeywords=[3]{ % functions
1332     BFGSmax, BFGSmax, GSSmax, I, NMmax, NRmax, abs, acos, acosh,%
1333     aggregate, argname, array, asin, asinh, atan, atanh, atof, bessel,%
1334     bkfilt, bootci, bootpval, boxcox, bread, bwfilt, bwrite, cdemean, cdf,%
1335     cdiv, cdummify, ceil, cholesky, chowlin, cmult, cnameget, nameset,%
1336     cnorm, cnumber, cols, corr, corrgm, cos, cosh, cov, critical, cum,%
1337     curl, dayspan, defarray, defbundle, deflist, deseas, det, diag,%
1338     diagcat, diff, digamma, dnorm, dropcoll, dsort, dummify, easterday,%
1339     ecdf, eigengen, eigensym, eigsolve, epochday, errmsg, exists, exp,%
1340     fcstats, fdjac, feval, fevd, fft, ffti, filter, firstobs, fixname,%
1341     floor, fracdiff, fraclag, freq, gammafun, genseries, getenv, getinfo,%
1342     getkeys, getline, ghk, gini, ginv, grab, halton, hdprod, hfdiff,%

```

```

1343 hflags, hfldiff, hflist, hpfilt, imaxc, imaxr, imhof, iminc, iminr,%
1344 inbundle, infnorm, inlist, instring, int, inv, invcdf, invmills, invpd,%
1345 irf, irr, isconst, isdiscrete, isdummy, isnan, isoconv, isodate,%
1346 iwishart, jsonget, jsongetb, juldate, kdensity, ksmooth, kfilter,%
1347 kmeier, kpsscric, ksetup, ksimdata, ksimul, ksmooth, kurtosis, lags,%
1348 lastobs, ldet, ldiff, lincomb, linearize, ljungbox, lngamma, loess,%
1349 log, log10, log2, logistic, lower, lrcovar, lrvar, max, maxc, maxr,%
1350 mcorr, mcof, mcovg, mean, meanc, meanr, median, mexp, mgradient, min,%
1351 minc, minr, missing, misszero, mlag, mlincomb, mnormal, mols, monthlen,%
1352 movavg, mpiallred, mpibcast, mpirecv, mpireduce, mpiscatter, mpisend,%
1353 mpols, mrandgen, mread, mreverse, mrls, mshape, msortby, muniform,%
1354 mweights, mwrite, mxtab, naalen, nadarwat, nelem, ngetenv, nlines,%
1355 nobs, normal, normtest, npcorr, npv, nullspace, numhess, obslabel,%
1356 obsnum, ok, onenorm, ones, orthdev, pdf, pergm, pexpand, pmax, pmean,%
1357 pmin, pnobs, polroots, polyfit, princomp, printf, prodc, prodr, psd,%
1358 psdroot, pshrink, psum, pvalue, pxnobs, pxsum, qform, qlrpval, qnorm,%
1359 qrdecomp, quadtable, quantile, randgen, randgen1, randint, rank,%
1360 ranking, rcond, readfile, regsub, remove, replace, resample, rnameget,%
1361 rnameset, round, rows, sd, sdc, sdif, seasonals, selifc, selifr, seq,%
1362 setnote, simann, sin, sinh, skewness, sleep, smpls, span, sort, sortby,%
1363 sprintf, sqrt, square, sscanf, sst, stringify, strlen, strncmp,%
1364 strsplit, strstr, strip, strsub, strvals, substr, sum, small, sumc,%
1365 sumr, svd, svm, tan, tanh, toepsolv, tolower, toupper, tr, transp,%
1366 trimr, typeof, typestr, uniform, uniq, unvec, upper, urcpval, values,%
1367 var, varname, varnames, varnum, varsimul, vec, vech, weekday, wmean,%
1368 wsd, wvar, xmax, xmin, xmlget, zeromiss, zeros, NMmin, GSSmin,%
1369 BFGScmin, BFGSmin },%
1370 morekeywords=[4]{ % genr aliases:
1371     null, series, scalar, matrix, string, list, bundle, strings, matrices,%
1372     bundles, lists%
1373 },%
1374 sensitive=t,%
1375 morecomment=[1]{\#},%
1376 morecomment=[s]{/*}{*/},%
1377 morestring=[b]{"}%
1378 }%
1379 \lstalias{gretl}{hansl}
1380 </lang2>

```

The developers of the hansl support also supplied a definition of a style for printing hansl code:

```

1381 (*hansl-prf)
1382 \usepackage[rgb, x11names]{xcolor}
1383
1384 % settings for black and white
1385 \lstdefinestyle{hanslbw}{%
1386     keywordstyle = \bfseries,
1387     keywordstyle = [2]\bfseries,
1388     keywordstyle = [3]\itshape,
1389     keywordstyle = [4]\underbar,
1390     commentstyle = \ttfamily,
1391     stringstyle = \ttfamily
1392 }
1393 % settings for colored printing

```

```

1394 \lstdefinestyle{hanslcolor}{%
1395   basicstyle = \small\ttfamily,
1396   keywordstyle = \color{red},
1397   keywordstyle = [2]\color{green},
1398   keywordstyle = [3]\color{cyan},
1399   keywordstyle = [4]\color{olive},
1400   commentstyle = \color{blue}\rmfamily,%
1401   stringstyle = \color{magenta},
1402   moredelim = [1][\color{green}]{--}
1403 }%

```

This code is provided in the file `listings-hansl.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
1404 </hansl-prf>
```

## 2.30 Haskell

Thanks to Peter Bartke for providing the new definition.

```

1405 <{*lang2}>
1406 %%
1407 %% Haskell98 as implemented in Hugs98. See http://www.haskell.org
1408 %% All keywords from Prelude and Standard Libraries
1409 %% (c) 1999 Peter Bartke
1410 %%
1411 \lst@definelanguage{Haskell}%
1412   {otherkeywords={=>},%
1413   morekeywords={abstype,if,then,else,case,class,data,default,deriving,%
1414     hiding,if,in,infix,infixl,infixr,import,instance,let,module,%
1415     newtype,of,qualified,type,where,do,AbsoluteSeek,AppendMode,%
1416     Array,BlockBuffering,Bool,BufferMode,Char,Complex,Double,Either,%
1417     FilePath,Float,Int,Integer,IO,IOError,Ix,LineBuffering,Maybe,%
1418     Ordering,NoBuffering,ReadMode,ReadWriteMode,ReadS,RelativeSeek,%
1419     SeekFromEnd,SeekMode,ShowS,StdGen,String,Void,Bounded,Enum,Eq,%
1420     Eval,ExitCode,exitFailure,exitSuccess,Floating,Fractional,%
1421     Functor,Handle,HandlePosn,IOMode,Integral,List,Monad,MonadPlus,%
1422     MonadZero,Num,Numeric,Ord,Random,RandomGen,Ratio,Rational,Read,%
1423     Real,RealFloat,RealFrac,Show,System,Prelude,EQ,False,GT,Just,%
1424     Left,LT,Nothing,Right,WriteMode,True,abs,accum,accumArray,%
1425     accumulate,acos,acosh,all,and,any,ap,appendFile,applyM,%
1426     approxRational,array,asTypeOf,asin,asinh,assocs,atan,atan2,atanh,%
1427     bounds,bracket,bracket_,break,catch,catMaybes,ceiling,chr,cis,%
1428     compare,concat,concatMap,conjugate,const,cos,cosh,curry,cycle,%
1429     decodeFloat,delete,deleteBy,deleteFirstBy,denominator,%
1430     digitToInt,div,divMod,drop,dropWhile,either,elem,elems,elemIndex,%
1431     elemIndices,encodeFloat,enumFrom,enumFromThen,enumFromThenTo,%
1432     enumFromTo,error,even,exitFailure,exitWith,exp,exponent,fail,%
1433     filter,filterM,find,findIndex,findIndices,flip,floatDigits,%
1434     floatRadix,floatRange,floatToDigits,floor,foldl,foldM,foldl1,%
1435     foldr,foldr1,fromDouble,fromEnum,fromInt,fromInteger,%
1436     fromIntegral,fromJust,fromMaybe,fromRat,fromRational,%
1437     fromRealFrac,fst,gcd,genericLength,genericTake,genericDrop,%
1438     genericSplitAt,genericIndex,genericReplicate,getArgs,getChar,%
1439     getContents,getEnv,getLine,getProgName,getStdGen,getStdRandom,%

```

```

1440     group,groupBy,guard,hClose,hFileSize,hFlush,hGetBuffering,%
1441     hGetChar,hGetContents,hGetLine,hGetPosn,hIsClosed,hIsEOF,hIsOpen,%
1442     hIsReadable,hIsSeekable,hIsWritable,hLookAhead,hPutChar,hPutStr,%
1443     hPutStrLn,hPrint,hReady,hSeek,hSetBuffering,hSetPosn,head,%
1444     hugsIsEOF,hugsHIsEOF,hugsIsSearchErr,hugsIsNameErr,%
1445     hugsIsWriteErr,id,ioError,imagPart,index,indices,init,inits,%
1446     inRange,insert,insertBy,interact,intersect,intersectBy,%
1447     intersperse,intToDigit,ioeGetErrorString,ioeGetFileName,%
1448     ioeGetHandle,isAlreadyExistsError,isAlreadyInUseError,isAlpha,%
1449     isAlphaNum,isAscii,isControl,isDenormalized,isDoesNotExistError,%
1450     isDigit,isEOF,isEOFError,isFullError,isHexDigit,isIEEE,%
1451     isIllegalOperation,isInfinite,isJust,isLower,isNaN,%
1452     isNegativeZero,isNothing,isOctDigit,isPermissionError,isPrefixOf,%
1453     isPrint,isSpace,isSuffixOf,isUpper,isUserError,iterate,ixmap,%
1454     join,last,lcm,length,lex,lexDigits,lexLitChar,liftM,liftM2,%
1455     liftM3,liftM4,liftM5,lines,listArray,listToMaybe,log,logBase,%
1456     lookup,magnitude,makePolar,map,mapAccumL,mapAccumR,mapAndUnzipM,%
1457     mapM,mapM_,mapMaybe,max,maxBound,maximum,maximumBy,maybe,%
1458     maybeToList,min,minBound,minimum,minimumBy,mkPolar,mkStdGen,%
1459     mplus,mod,msum,mzero,negate,next,newStdGen,not,notElem,nub,nubBy,%
1460     null,numerator,odd,openFile,or,ord,otherwise,partition,phase,pi,%
1461     polar,pred,print,product,properFraction,putChar,putStr,putStrLn,%
1462     quot,quotRem,random,randomIO,randomR,randomRIO,randomRs,randoms,%
1463     rangeSize,read,readDec,readFile,readFloat,readHex,readInt,readIO,%
1464     readList,readLitChar,readLn,readParen,readOct,readSigned,reads,%
1465     readsPrec,realPart,realToFrac,recip,rem,repeat,replicate,return,%
1466     reverse,round,scaleFloat,scanl,scanl1,scanr,scanr1,seq,sequence,%
1467     sequence_,setStdGen,show,showChar,showEFloat,showFFloat,%
1468     showFloat,showGFloat,showInt,showList,showLitChar,showParen,%
1469     showSigned,showString,shows,showsPrec,significand,signum,sin,%
1470     sinh,snd,sort,sortBy,span,split,splitAt,sqrt,stderr,stdin,stdout,%
1471     strict,subtract,succ,sum,system,tail,tails,take,takeWhile,tan,%
1472     tanh,toEnum,toInt,toInteger,toLower,toRational,toUpper,transpose,%
1473     truncate,try,uncurry,undefined,unfoldr,union,unionBy,unless,%
1474     unlines,until,unwords,unzip,unzip3,unzip4,unzip5,unzip6,unzip7,%
1475     userError,when,words,writeFile,zero,zip,zip3,zip4,zip5,zip6,zip7,%
1476     zipWith,zipWithM,zipWithM_,zipWith3,zipWith4,zipWith5,zipWith6,%
1477     zipWith7},%
1478     sensitive,%
1479     morecomment=[1]--, %
1480     morecomment=[n]{\{-}\{-\}},%
1481     morestring=[b]"%
1482 }[keywords,comments,strings]%
1483 </lang2>

```

## 2.31 HTML

I'm quite the opposite of a HTML wizard. In particular this is true for the defined keywords. Matthias Bethke helped me out and extended the list.

```

1484 (*lang1)
1485 \lst@definlanguage{HTML}%
1486 {morekeywords={A,ABBR,ACRONYM,ADDRESS,APPLET,AREA,B,BASE,BASEFONT,%
1487     BDO,BIG,BLOCKQUOTE,BODY,BR,BUTTON,CAPTION,CENTER,CITE,CODE,COL,%

```

```

1488 COLGROUP, DD, DEL, DFN, DIR, DIV, DL, DOCTYPE, DT, EM, FIELDSET, FONT, FORM, %
1489 FRAME, FRAMESET, HEAD, HR, H1, H2, H3, H4, H5, H6, HTML, I, IFRAME, IMG, INPUT, %
1490 INS, ISINDEX, KBD, LABEL, LEGEND, LH, LI, LINK, LISTING, MAP, META, MENU, %
1491 NOFRAMES, NOSCRIPT, OBJECT, OPTGROUP, OPTION, P, PARAM, PLAINTEXT, PRE, %
1492 OL, Q, S, SAMP, SCRIPT, SELECT, SMALL, SPAN, STRIKE, STRING, STRONG, STYLE, %
1493 SUB, SUP, TABLE, TBODY, TD, TEXTAREA, TFOOT, TH, THEAD, TITLE, TR, TT, U, UL, %
1494 VAR, XMP, %
1495 accesskey, action, align, alink, alt, archive, axis, background, bgcolor, %
1496 border, cellpadding, cellspacing, charset, checked, cite, class, classid, %
1497 code, codebase, codetype, color, cols, colspan, content, coords, data, %
1498 datetime, defer, disabled, dir, event, error, for, frameborder, headers, %
1499 height, href, hreflang, hspace, http-equiv, id, ismap, label, lang, link, %
1500 longdesc, marginwidth, marginheight, maxlength, media, method, multiple, %
1501 name, nohref, noresize, noshade, nowrap, onblur, onchange, onclick, %
1502 ondblclick, onfocus, onkeydown, onkeypress, onkeyup, onload, onmousedown, %
1503 profile, readonly, onmousemove, onmouseout, onmouseover, onmouseup, %
1504 onselect, onunload, rel, rev, rows, rowspan, scheme, scope, scrolling, %
1505 selected, shape, size, src, standby, style, tabindex, text, title, type, %
1506 units, usemap, valign, value, valuetype, vlink, vspace, width, xmlns}, %
1507 tag=**[s] <>, %
1508 sensitive=f, %
1509 morestring=[d]", % ??? doubled

```

Now we take care of comments. We don't enter comment mode if we aren't inside <>.

```

1510 MoreSelectCharTable=%
1511   \lst@CArgX--\relax\lst@DefDelimB{}{}%
1512     {\ifnum\lst@mode=\lst@tagmode\else
1513       \expandafter\@gobblethree
1514       \fi}%
1515     \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
1516   \lst@CArgX--\relax\lst@DefDelimE{}{}{}%
1517     \lst@EndComment\lst@commentmode
1518 }[keywords, comments, strings, html]%

```

Peter Biechele reported a problem which was due to missing \@empty in value of SelectCharTable. And after receiving a bug report from Jochen Schneider I converted the version 0.21 contents of MoreSelectCharTable to version 1.0.

```
1519 </lang1>
```

## 2.32 IDL

The definition is from Jürgen Heim.

```

1520 <{*lang2}>
1521 %%
1522 %% IDL definition (c) 1998 Juergen Heim
1523 %%
1524 \lst@definlanguage{IDL}%
1525 {morekeywords={and, begin, case, common, do, else, end, endcase, endelse, %
1526   endfor, endif, endrep, endwhile, eq, for, function, ge, goto, gt, if, le, lt, %
1527   mod, ne, not, of, on_ioerror, or, pro, repeat, return, then, until, while, %
1528   xor, on_error, openw, openr, openu, print, printf, printu, plot, read, %
1529   readf, readu, writeu, stop}, %
1530 sensitive=f, %

```

```

1531   morecomment=[l];,%
1532   morestring=[d]'%
1533   }[keywords,comments,strings]%
1534 </lang2>

```

## 2.33 Inform

Thanks to Jonathan Sauer for this language definition. Ulrike Fischer pointed out that `\lstdefinlanguage` should be `\lst@definlanguage`.

```

1535 <(*lang2)>
1536 %%
1537 %% Inform definition (c) 2003 Jonathan Sauer
1538 %%
1539 \lst@definlanguage{inform}{%
1540   % Language keywords
1541   morekeywords={breakdo,else,false,for,has,hasnt,if,%
1542     in,indirect,jump,notin,nothing,NULL,objectloop,ofclass,%
1543     private,property,provides,return,rfalse,rtrue,self,string,%
1544     switch,to,true,until,while,with,%
1545     creature,held,multiexcept,multiheld,multiinside,noun,number,%
1546     scope,topic},%
1547   %
1548   % Inform functions
1549   morekeywords=[2]{box,child,children,font,give,inversion,metaclass,move,%
1550     new_line,parent,print,print_ret,read,remove,restore,sibling,%
1551     save,spaces,quit,style,bold,underline,reverse,roman remaining,%
1552     create,destroy,recreate,copy},%
1553   %
1554   % Inform definitions
1555   morekeywords=[3]{Attribute,Array,Class,Constant,Default,End,Endif,Extend,%
1556     Global,Ifdef,Iffalse,Ifndef,Ifnot,Iftrue,Include,Object,%
1557     Property,Verb,Release,Serial,Statusline},%
1558   %
1559   % Library attributes
1560   morekeywords=[4]{absent,animate,clothing,concealed,container,door,edible,%
1561     enterable,female,general,light,lockable locked,male,moved,%
1562     neuter,on,open,openable,pluralname,proper,scenery,scored,%
1563     static,supporter,switchable,talkable,transparent,visited,%
1564     workflag,worn},%
1565   %
1566   % Library properties
1567   morekeywords=[5]{n_to,s_to,e_to,w_to,ne_to,nw_to,se_to,sw_to,in_to,%
1568     out_to,u_to,d_to,add_to_scope,after,article,articles,before,%
1569     cant_go,capacity,daemon,describe,description,door_dir,door_to,%
1570     each_turn,found_in,grammar,initial,inside_description,invent,%
1571     life,list_together,name number,orders,parse_name,plural,%
1572     react_after,react_before,short_name,short_name_indef,time_left,%
1573     time_out,when_closed,when_open,when_on,when_off,%
1574     with_key},%
1575   %
1576   % Library routines
1577   morekeywords=[6]{Achieved,AfterRoutines,AllowPushDir,Banner,ChangePlayer,%
1578     CommonAncestor,DictionaryLookup,GetGNAOfObject,HasLightSource,%

```

```

1579   IndirectlyContains, IsSeeThrough, Locale, LoopOverScope, LTI_Insert, %
1580   MoveFloatingObjects, NextWord, NextWordStopped, NounDomain, %
1581   ObjectIsUntouchable OffersLight, ParseToken, PlaceInScope, PlayerTo, %
1582   PronounNotice, PronounValue, ScopeWithin, SetPronoun, SetTime, %
1583   StartDaemon, StartTimer, StopDaemon, StopTimer, TestScope, TryNumber, %
1584   UnsignedCompare, WordAddress, WordInProperty, WordLength, %
1585   WriteListFrom, YesOrNo}, %
1586   %
1587   % Library, entry points
1588   morekeywords=[7]{AfterLife, AfterPrompt, Amusing, BeforeParsing, ChooseObjects, %
1589     DarkToDark, DeathMessage, GamePostRoutine GamePreRoutine, %
1590     Initialise, InScope, LookRoutine, NewRoom, ParseNoun, ParseNumber, %
1591     ParserError, PrintRank, PrintTaskName, PrintVerb, TimePasses, %
1592     UnknownVerb}, %
1593   %
1594   % Library constants
1595   morekeywords=[8]{NEWLINE_BIT, INDENT_BIT, FULLINV_BIT, ENGLISH_BIT, %
1596     RECURSE_BIT, ALWAYS_BIT, TERSE_BIT, PARTINV_BIT, DEFART_BIT, %
1597     WORKFLAG_BIT, ISARE_BIT, CONCEAL_BIT}, %
1598   %
1599   % Library, meta actions
1600   morekeywords=[9]{Pronouns, Quit, Restart, Restore, Save, Verify, ScriptOn, %
1601     ScriptOff, NotifyOn, NotifyOff, Places, Objects, Score, FullScore, Version, %
1602     LMode1, LMode2, LMode3}, %
1603   %
1604   % Library, main actions
1605   morekeywords=[10]{Close, Disrobe, Drop, Eat, Empty, EmptyT, Enter, Examine, %
1606     Exit, GetOff, Give, Go, GoIn, Insert, Inv, InvTall, InvWide, Lock, Look, Open, %
1607     PutOn, Remove, Search, Show, SwitchOff, SwitchOn, Take, Transfer, %
1608     Unlock VagueGo, Wear}, %
1609   %
1610   % Library, stub actions
1611   morekeywords=[11]{Answer, Ask, AskFor, Attack, Blow, Burn, Buy, Climb, %
1612     Consult, Cut, Dig, Drink, Fill, Jump, JumpOver, Kiss, Listen, LookUnder, %
1613     Mild, No, Pray, Pull, Push, PushDir, Rub, Set, SetTo, Sing, Sleep, Smell, %
1614     Sleep, Smell, Sorry, Squeeze, Strong, Swim, Swing, Taste, Tell, Think, %
1615     ThrowAt, Tie, Touch, Turn,
1616     Wait, Wake, WakeOther, Wave, WaveHands, Yes}, %
1617   %
1618   otherkeywords={->, -->}, %
1619   sensitive=false, %
1620   morestring=[d]{"}, %
1621   morecomment=[l]{"!}%
1622 }[keywords, comments, strings]%
1623 </lang2>

```

## 2.34 Java and other JVM based languages

Robert Wenner sent in the first of the following two definitions.

```

1624 (*lang1)
1625 %%
1626 %% AspectJ definition (c) Robert Wenner
1627 %%

```

```

1628 \lst@definelanguage[AspectJ]{Java}[] {Java}%
1629 {morekeywords={%
1630     adviceexecution,after,args,around,aspect,aspectOf,before,%
1631     call,cflow,cflowbelow,%
1632 % declare error,declare parents,declare precedence,
1633 % declare soft,declare warning,
1634     execution,get,handler,if,initialization,issingleton,pointcut,%
1635     percflow,percflowbelow,perthis,pertarget,preinitialization,%
1636     privileged,proceed,returning,set,staticinitialization,strictfp,%
1637     target,this,thisEnclosingJoinPoint,thisJoinPoint,throwing,%
1638     within,withincode},%
1639 MoreSelectCharTable=%
1640     \lst@DefSaveDef{'.'}\lst@umdot{\lst@umdot\global\let\lst@derefop\@empty}%
1641     \ifx\lst@derefinstalled\@empty\else
1642         \global\let\lst@derefinstalled\@empty
1643 \lst@AddToHook{Output}%
1644 {\lst@ifkeywords
1645     \ifx\lst@derefop\@empty
1646         \global\let\lst@derefop\relax
1647         \ifx\lst@thestyle\lst@gkeywords@sty
1648             \ifx\lst@currstyle\relax
1649                 \let\lst@thestyle\lst@identifierstyle
1650             \else
1651                 \let\lst@thestyle\lst@currstyle
1652             \fi
1653         \fi
1654     \fi
1655 \fi}
1656 \lst@AddToHook{BOL}{\global\let\lst@derefop\relax}%
1657 \lst@AddTo\lst@ProcessSpace{\global\let\lst@derefop\relax}%
1658     \fi
1659 }%
1660 </lang1>
    Got data from http://java.sun.com.
1661 (*lang1)
1662 \lst@definelanguage{Java}%
1663 {morekeywords={abstract,boolean,break,byte,case,catch,char,class,%
1664     const,continue,default,do,double,else,extends,false,final,%
1665     finally,float,for,goto,if,implements,import,instanceof,int,%
1666     interface,label,long,native,new,null,package,private,protected,%
1667     public,return,short,static,super,switch,synchronized,this,throw,%
1668     throws,transient,true,try,void,volatile,while},%
1669     sensitive,%
1670     morecomment=[l]//,%
1671     morecomment=[s]{/*}{*/},%
1672     morestring=[b]" ,%
1673     morestring=[b]' ,%
1674 }[keywords,comments,strings]%
    Herbert Voss added the keyword label.
1675 </lang1>
    Martine Gautier made the following contribution.
1676 (*lang1)

```



```

1677 %%
1678 %% ByteCodeJava definition (c) 2004 Martine Gautier
1679 %%
1680 \lst@definlanguage{JVMIS}%
1681 {morekeywords={aload,astore,acnst_null,aload,aload_0,aload_1,%
1682     aload_2,aload_3,anewarray,areturn,arraylength,astore,astore_0,%
1683     astore_1,astore_2,astore_3,athrow,baload,bastore,bipush,caload,%
1684     castore,checkcast,d2f,d2i,d2l,dadd,daload,dastore,dcmpg,dcmpl,%
1685     dconst_0,dconst_1,ddiv,dload,dload_0,dload_1,dload_2,dload_3,%
1686     dmul,dneg,drem,dreturn,dstore,dstore_0,dstore_1,dstore_2,%
1687     dstore_3,dsub,dup,dup_x1,dup_x2,dup2,dup2_x1,dup2_x2,f2d,%
1688     f2i,f2l,fadd,faload,fastore,fcmpg,fcmpl,fconst_0,fconst_1,%
1689     fconst_2,fdiv,fload,fload_0,fload_1,fload_2,fload_3,fmul,%
1690     fneg,frem,freturn,fstore,fstore_0,fstore_1,fstore_2,fstore_3,%
1691     fsub,getfield,getstatic,goto,goto_w,i2b,i2c,i2d,i2f,i2l,i2s,%
1692     iadd,iaload,iand,iastore,iconst_0,iconst_1,iconst_2,iconst_3,%
1693     iconst_4,iconst_5,idiv,if_acmpeq,if_acmpne,if_icmpeq,if_icmpne,%
1694     if_icmplt,if_cmpge,if_cmpgt,if_cmple,ifeq,ifne,iflt,ifge,ifgt,%
1695     ifle,ifnonnull,ifnull,iinc,iload,iload_0,iload_1,iload_2,%
1696     iload_3,imul,ineg,instanceof,invokeinterface,invokespecial,%
1697     invokestatic,invokevirtual,ior,irem,ireturn,ishl,ishr,istore,%
1698     istore_0,istore_1,istore_2,istore_3,isub,iushr,ixor,jsr,jsr_w,%
1699     ldc,ldc_w,ldc2_w,ldiv,lload,lload_0,lload_1,lload_2,lload_3,%
1700     lmul,lneg,lookupswitch,lor,lrem,lreturn,lshl,lshr,lstore,%
1701     lstore_0,lstore_1,lstore_2,lstore_3,lsb,lushr,lxor,%
1702     monitorenter,monitorexit,multianewarray,new,newarray,nop,pop,%
1703     pop2,putfield,putstatic,ret,return,saload,sastore,sipush,swap,%
1704     tableswitch,wide,limit,locals,stack},%
1705 }[keywords]%
1706 }[keywords]%
1707 </lang1>

```

### 2.34.1 Scala

Bastian Germann asked to include the Scala definition provided by Frank Teubler (2009). Here it is:

```

1708 <*lang3>
1709 \lst@definlanguage{Scala}%
1710 {morekeywords={abstract,case,catch,class,def,%
1711     do,else,extends,false,final,finally,%
1712     for,if,implicit,import,lazy,match,mixin,%
1713     new,null,object,override,package,%
1714     private,protected,requires,return,sealed,%
1715     super,this,trait,true,try,%
1716     type,val,var,while,with,yield},%+
1717 % otherkeywords={_,: ,=>,<<:,<\%,>:,\#,@},%
1718 otherkeywords={=,>,<,<\%,<:,>:,\#,@},%
1719     sensitive,%
1720     morecomment=[l]//,%
1721     morecomment=[n]{/*}{*/},%
1722     morestring=[b]" ,%
1723     morestring=[b]' ,%
1724     morestring=[b]"" ,%

```

```

1725 }[keywords,comments,strings]%
1726 </lang3>

```

## 2.35 ksh

Thanks to Jeffrey Ratcliffe for this language definition.

```

1727 <(*lang3)>
1728 \lst@definlanguage{ksh}
1729   {morekeywords={alias,awk,cat,echo,else,elif,fi,exec,exit,%
1730     for,in,do,done,select,case,esac,while,until,function,%
1731     time,export,cd,eval,fc,fg,kill,let,pwd,read,return,rm,%
1732     glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
1733     set,setenv,shift,source,switch,then,umask,unalias,%
1734     unset,wait,@,env,argv,child,home,ignoreeof,noclobber,%
1735     noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
1736     sqrt,BEGIN,END},%
1737   morecomment=[l]\#,%
1738   morestring=[d]" ,%
1739   morestring=[d]' ,%
1740   morestring=[d]'%
1741 }[keywords,comments,strings]%
1742 %   \begin{macrocode}
1743 </lang3>

```

Herbert Voss suggested to add the string delimiter `.

## 2.36 Lingo

Thanks to Mark Schade for this language definition.

```

1744 <(*lang3)>
1745 \lst@definlanguage{Lingo}{%
1746   morekeywords={abort, after, and, before, do, down, halt, me, new, not,%
1747     of, on, or, otherwise, pass, put, result, return, set, tell, the, then,%
1748     to, with, repeat, while, case, if, else, true, false, global, property,%
1749     \_global, \_key, \_mouse, \_movie, \_player, \_sound, \_system, abbr,%
1750     abbrev, abbreviated, abs, actionsenabled, activateapplication,%
1751     activatewindow, active3drenderer, activecastlib, activewindow,%
1752     actorlist, add, addat, addbackdrop, addcamera, addchild, addmodifier,%
1753     addoverlay, addprop, addtoworld, addvertex, alert, alerthook,%
1754     alignment, allowcustomcaching, allowgraphicmenu, allowsavelocal,%
1755     allowtransportcontrol, allowvolumecontrol, allowzooming,%
1756     alphathreshold, ambient, ambientcolor, ancestor, angle, anglebetween,%
1757     animationenabled, antialias, antialiasthreshold, append,%
1758     applicationname, applicationpath, appminimize, atan, attenuation,%
1759     attributevalue, auto, autoblend, automask, autotab, axisangle, back,%
1760     backcolor, backdrop, backgroundcolor, backspace, beep, beepon,%
1761     beginrecording, beginsprite, beveldepth, beveltype, bgcolor, bias,%
1762     bitand, bitmap, bitmapsizes, bitnot, bitor, bitrate, bitspersample,%
1763     bitxor, blend, blendconstant, blendconstantlist, blendfactor,%
1764     blendfunction, blendfunctionlist, blendlevel, blendrange, blendsource,%
1765     blendsourcelist, blendtime, bone, bonesplayer, border, both, bottom,%
1766     bottomcap, bottomradius, bottomspacing, boundary, boundingsphere, box,%

```

1767 boxdropshadow, boxtype, breakconnection, breakloop, brightness,%  
1768 broadcastprops, browsername, buffersize, build, buttonsenabled,%  
1769 buttonstyle, buttontype, bytesstreamed, boolean, cachedocverify,%  
1770 cachesize, call, callancestor, camera, cameracount, cameraposition,%  
1771 camerarotation, cancelidleload, castlib, castlibnum, castmemberlist,%  
1772 center, centerregpoint, centerstage, changearea, channelcount, char,%  
1773 characteraset, charpostoloc, chars, charspacing, chartonum,%  
1774 checkboxaccess, checkboxtype, checkmark, checknetmessages, child,%  
1775 chunksize, clearatrender, clearcache, clearerror, clearframe,%  
1776 clearglobals, clearvalue, clickloc, clickmode, clickon, clone,%  
1777 clonedeep, clonemodelfromcastmember, clonemotionfromcastmember, close,%  
1778 closed, closewindow, closexlib, collision, collisiondata,%  
1779 collisionnormal, color, world, colorbuffer, colorbufferdepth,%  
1780 colordepth, colorlist, colorrange, colors, colorsteps, commanddown,%  
1781 comments, compressed, connecttonetserver, constrainh, constraint,%  
1782 constrainv, continue, controldown, controller, copypixels,%  
1783 copyrightinfo, copyto, copytoclipboard, cos, count, cpuhogticks,%  
1784 creaseangle, creases, [contains], createfolder, createmask,%  
1785 creatematte, creationdate, creator, crop, cross, crossproduct,%  
1786 cuepassed, cuepointnames, cuepointtimes, currentloopstate,%  
1787 currentspritenum, currenttime, cursor, cursorsize, curve, cylinder,%  
1788 ate, day, deactivateapplication, deactivatewindow, debug,%  
1789 debugplaybackenabled, decaymode, defaultrect, defaultrectmode, delay,%  
1790 delete, deleteall, deleteat, deletecamera, deletefolder, deleteframe,%  
1791 deletegroup, deletelight, deletemodel, deletemodelresource,%  
1792 deletemotion, deleteone, deletetext, deleteshader, deletetexture,%  
1793 deletevertex, density, depth, depthbufferdepth, desktoprectlist,%  
1794 diffuse, diffusecolor, diffuselightmap, digitalvideotimescale,%  
1795 digitalvideotype, direction, directionalcolor, directionalpreset,%  
1796 directtostage, disableimagingtransformation, displayface, displaymode,%  
1797 distanceto, distribution, dither, done, doneparsing, dot, dotproduct,%  
1798 doubleclick, downloadnetthing, drag, draw, drawrect, dropshadow,%  
1799 duplicate, duplicateframe, duration, editable, editshortcutsenabled,%  
1800 elapsedtime, emissive, emitter, empty, emulatemultibuttonmouse,%  
1801 enabled, enablehotspot, end, endangle, endcolor, endframe,%  
1802 endrecording, endsprite, endtime, enter, enterframe, environment,%  
1803 erase, error, eventpassmode, exchange, exists, exit, exitframe,%  
1804 exitlock, exp, externalevent, externalparamcount, externalparamname,%  
1805 externalparamvalue, extractalpha, extrude3d, face, fadein, fadeout,%  
1806 fadeto, far, field, fieldofview, filename, fill, fillcolor, fillcycles,%  
1807 filldirection, filled, fillmode, filloffset, fillscale, findempty,%  
1808 findlabel, findpos, findposnear, finishidleload, firstindent,%  
1809 fixedlinespace, fixedrate, fixstagesize, flashrect, flashtostage, flat,%  
1810 fliph, flipv, float, floatp, floatprecision, flush, flushinputevents,%  
1811 fog, folderchar, font, fontsize, fontstyle, forecolor, forget, frame,%  
1812 framecount, framelabel, framepalette, framerate, frameready,%  
1813 framescript, framesound1, framesound2, framestohms, frametempo,%  
1814 frametransition, freeblock, freebytes, fromcastmember, fromimageobject,%  
1815 front, frontwindow, generatenormals, getaprop, getat,%  
1816 getbehaviordescription, getbehaviortooltip, getboneid, geterror,%  
1817 geterrorstring, gethardwareinfo, gethotspotrect, getlast,%  
1818 getlatestnetid, getnetaddresscookie, getneterrorstring, getnetmessage,%  
1819 getnetoutgoingbytes, getnettext, getnormalized, getnthfilenameinfolder,%  
1820 getnumberwaitingnetmessages, getone, getpeerconnectionlist, getpixel,%

1821 getplaylist, getpos, getpref, getprop, getpropat,%  
1822 getpropertydescriptionlist, getrendererservices, getstreamstatus,%  
1823 gettemppath, getworldtransform, globals, glossmap, go, gotoframe,%  
1824 gotonetmovie, gotonetpage, gradienttype, gravity, group, handler,%  
1825 handlers, height, heightvertices, high, highlightpercentage,%  
1826 highlightstrength, hilite, hither, hittest, hmstoframes, hold, hotspot,%  
1827 html, hyperlink, hyperlinkclicked, hyperlinkrange, hyperlinks,%  
1828 hyperlinkstate, id3tags, identity, idle, idlehandlerperiod,%  
1829 idlleloaddone, idlleloadmode, idlleloadperiod, idlleloadtag,%  
1830 idlreadchunksize, ilk, image, imagecompression, imageenabled,%  
1831 imagequality, immovable, importfileinto, inflate, ink, inker,%  
1832 inlineimeenabled, insertbackdrop, insertframe, insertoverlay, inside,%  
1833 installmenu, instance, integer, integerp, interface, interpolate,%  
1834 interpolateto, intersect, index, interval, inverse, invert, invertmask,%  
1835 isbusy, isinworld, isoktoattach, ispastcuepoint, item, itemdelimiter,%  
1836 kerning, kerningthreshold, key, keyboardfocussprite, keycode, keydown,%  
1837 keydownscript, keyframeplayer, keypressed, keyup, keyupscript, label,%  
1838 labellist, last, lastchannel, lastclick, lastevent, lastframe, lastkey,%  
1839 lastroll, left, leftindent, length, lengthvertices, level, lifetime,%  
1840 light, line, linearlist, linecolor, linecount, linedirection,%  
1841 lineheight, lineoffset, linepostlocv, linesize, linkas, linked, list,%  
1842 listp, loaded, loadfile, loc, loch, locked, locktranslation,%  
1843 loctocharpos, locv, locvtolinepos, locz, lod, log, long, loop,%  
1844 loopcount, loopendtime, loopsremaining, loopstarttime, machinetype,%  
1845 magnitude, map, mapImageToStage, mapmembertostage, mapstagetomember,%  
1846 margin, marker, markerlist, mask, max, maxinteger, maxspeed, mci,%  
1847 media, mediaready, member, membertnum, members, memorysize, menu, mesh,%  
1848 meshdeform, milliseconds, min, minspeed, modal, mode, model, modela,%  
1849 modelb, modelresource, modelsunderloc, modelsunderray, modelunderloc,%  
1850 modified, modifiedby, modifieddate, modifier, modifiers, month,%  
1851 mostrecentcuepoint, motion, mousechar, mousedown, mousedownscript,%  
1852 mouseenter, mouseh, mouseitem, mouseleave, mouselevel, mouseline,%  
1853 mouseloc, mousemember, mouseoverbutton, mouseup, mouseupoutside,%  
1854 mouseupscript, mousev, mousewithin, mouseword, move, moveablesprite,%  
1855 movetoback, movetofront, movevertex, movevertexhandle, movewindow,%  
1856 movie, movieaboutinfo, moviecopyrightinfo, moviefilefreesize,%  
1857 moviefilesize, moviefileversion, movieimagecompression,%  
1858 movieimagequality, moviename, moviepath, movierate, movietime,%  
1859 moviextralist, mpegplayer, multiply, multisound, name, near,%  
1860 nearfiltering, neighbor, netabort, netdone, neterror, netlastmoddate,%  
1861 netmime, netpresent, netstatus, nettextrresult, netthrottleticks,%  
1862 newcamera, newcurve, newgroup, newlight, newmesh, newmodel,%  
1863 newmodelresource, newmotion, newshader, newtexture, next, none,%  
1864 normalize, normallist, normals, nothing, notify, nudge, number,%  
1865 numchannels, numparticles, numsegments, numtochar, objectp, offset,%  
1866 open, openresfile, openwindow, openxlib, optiondown, organizationname,%  
1867 originalfont, originh, originmode, originpoint, originv, orthoheight,%  
1868 overlay, pageheight, palette, palettemapping, paletteref, paletteindex,%  
1869 pan, paragraph, param, paramcount, parent, parsestring, particle,%  
1870 pasteclipboardinto, path, pathname, pathstrength, pattern, pause,%  
1871 pausedatstart, pausestate, percentplayed, percentstreamed, period,%  
1872 perpendicularto, persistent, pi, picture, picturep, plane, platform,%  
1873 play, playbackmode, playfile, playing, playlist, playnext, playrate,%  
1874 point, pointat, pointatorientation, pointinhyperlink, pointofcontact,%

1875 pointtochar, pointtoitem, pointtoline, pointtoparagraph, pointtoword,%  
1876 position, positionreset, posterframe, postnettext, power,%  
1877 preferred3drenderer, preload, preloadbuffer, preloadeventabort,%  
1878 preloadmember, preloadmode, preloadmovie, preloadnetthing, preloadram,%  
1879 preloadtime, premultiply, prepareframe, preparemovie, prerotate,%  
1880 prescale, pretranslate, previous, primitives, printfrom,%  
1881 productversion, projection, projectionangle, propList, proxyserver,%  
1882 pttohotspotid, puppet, puppetpalette, puppetsound, puppetsprite,%  
1883 puppettempo, puppettransition, purgepriority, qtregisteraccesskey,%  
1884 qtunregisteraccesskey, quad, quality, queue, quit, quote, radius,%  
1885 ramneeded, random, randomseed, randomvector, rateshift, rawnew, read,%  
1886 readvalue, recordfont, rect, ref, reflectionmap, reflectivity, region,%  
1887 registerforevent, registerscript, regpoint, regpointvertex,%  
1888 removebackdrop, removefromworld, removelast, removemodifier,%  
1889 removeoverlay, rename, renderer, rendererdevicelist, renderformat,%  
1890 renderstyle, resetworld, resizewindow, resolution, resolve, resolvea,%  
1891 resolveb, resource, restart, resume, reverttoworlddefaults, rewind,%  
1892 rgb, rgba4444, rgba5550, rgba5551, rgba5650, rgba8880, rgba8888, right,%  
1893 rightindent, rightmousedown, rightmouseup, rollover, romanlingo,%  
1894 rootlock, rootnode, rotate, rotation, rotationreset, rtf, runmode,%  
1895 runpropertydialog, safeplayer, samplecount, samplerate, samplesize,%  
1896 save, savedlocal, savemovie, scale, scalemode, score, scorecolor,%  
1897 scoreselection, script, scriptexecutionstyle, scriptinstancelist,%  
1898 scriptlist, scriptnum, scriptsenabled, scripttext, scripttype,%  
1899 scrollbar, scrollbarpage, scrollbar, sds, searchcurrentfolder,%  
1900 searchpath, searchpaths, seconds, selectedtext, selection, selend,%  
1901 selstart, sendallsprites, sendevent, sendnetmessage, sendsprite,%  
1902 serialnumber, setalpha, setaprop, setat, setcollisioncallback,%  
1903 setflashproperty, setnetbufferlimits, setnetmessagehandler, setpixel,%  
1904 setplaylist, setpref, setprop, setscripthead, settrackenabled,%  
1905 setvariable, shader, shaderlist, shadowpercentage, shadowstrength,%  
1906 shapetype, shiftdown, shininess, shockwave3d, short, showglobals,%  
1907 showlocals, showprops, showresfile, showxlib, shutdown, silhouettes,%  
1908 sin, size, sizerange, skew, sleep, smoothness, sort, sound, soundbusy,%  
1909 soundchannel, sounddevice, sounddevicelist, soundenabled,%  
1910 soundkeepdevice, soundlevel, soundmixmedia, source, sourcerect, space,%  
1911 specular, specularcolor, specularlightmap, sphere, spotangle,%  
1912 spotdecay, sprite, spritenum, spritespacetoworldspace, sqrt, stage,%  
1913 stagebottom, stagecolor, stageleft, stageright, stagetoflash, stagetop,%  
1914 standard, startangle, startframe, startmovie, starttime, starttimer,%  
1915 state, static, status, stepframe, stilldown, stop, stopevent,%  
1916 stopmovie, stoptime, stream, streammode, streamname, streamsize,%  
1917 streamstatus, string, stringp, strokecolor, strokewidth, style,%  
1918 subdivision, sweep, swing, switchcolordepth, symbol, symbolp,%  
1919 systemdate, tab, tabcount, tabs, tan, target, tellstreamstatus,%  
1920 tension, text, texture, texturecoordinatelist, texturecoordinates,%  
1921 texturelayer, texturelist, texturemember, texturemode, texturemodelist,%  
1922 texturerenderformat, texturerepeat, texturerepeatlist,%  
1923 texturetransform, texturetransformlist, texturetype, thumbnail, ticks,%  
1924 tilt, time, timeout, timeouthandler, timeoutkeydown, timeoutlapsed,%  
1925 timeoutlength, timeoutlist, timeoutmouse, timeoutplay, timeoutscript,%  
1926 timer, timescale, title, titlevisible, toon, top, topcap, topradius,%  
1927 topspacing, trace, traceload, tracelogfile, trackcount, trackenabled,%  
1928 tracknextkeytime, tracknextsampletime, trackpreviouskeytime,%

```

1929 trackpreviousampletime, trackstarttime, trackstoptime, tracktext,%
1930 tracktype, trails, transform, transitiontype, translate,%
1931 triggercallback, trimwhitespace, tunneldepth, tweened, tweenmode, type,%
1932 [transparent], union, unload, unloadmember, unloadmovie,%
1933 unregistrerallevents, update, updateframe, updatelock,%
1934 updatemovieenabled, updatestage, url, usealpha, usediffusewithtexture,%
1935 usefastquads, usehypertextstyles, uselineoffset, userdata, username,%
1936 value, vector, version, vertex, vertexlist, vertices, video,%
1937 videoforwindowspresent, viewh, viewpoint, viewscale, viewv, visibility,%
1938 visible, void, voidp, volume, volumeinfo, wait, waitfornetconnection,%
1939 warpmode, width, widthvertices, wind, window, windowlist,%
1940 windowpresent, windowtype, word, wordwrap, world, worldposition,%
1941 worldspacetospritespace, worldtransform, wraptransform,%
1942 wraptransformlist, write, writevalue, xaxis, xtra, xtralist, xtras,%
1943 yaxis, year, yon, zaxis, zoomwindow, repeat, Conditional,%
1944 Boolean, TypeDef, Statement, Operator, String, Comment, Identifier,%
1945 Special, x, y, z},%
1946 sensitive=false,%
1947 morecomment=[l]{--},%
1948 morestring=[b]",%
1949 }[keywords,comments,strings]%
1950 % \begin{macrocode}
1951 </lang3>

```

## 2.37 Lisp, AutoLisp and Emacs Lisp (elisp)

Most data are from

- GUY STEELE: **Common Lisp**; Copyright 1990 by Digital Equipment Corporation; ISBN 1-55558-042-4.

Thanks to Aslak Raanes for the ‘single comment’ delimiters. The keywords are the ‘one-word’ functions and macros of Common Lisp, i.e. words not containing a minus. But I left out the `caaaa`, ... functions. If anyone types them in, I’d like to get them. Hilmar Preuß informed about an issue mentioned at <https://bugs.debian.org/499422>, the issue got corrected.

```

1952 (*lang2)
1953 \lst@definlanguage{Lisp}%
1954 {morekeywords={abort,abs,acons,acos,acosh,adjoin,alphanumericp,alter,%
1955 append,apply,apropos,aref,arrayp,ash,asin,asinh,assoc,atan,atanh,%
1956 atom,bit,boole,boundp,break,butlast,byte,catenate,ceiling,cerror,%
1957 char,character,characterp,choose,chunk,cis,close,clrhash,coerce,%
1958 collect,commonp,compile,complement,complex,complexp,concatenate,%
1959 conjugate,cons,consp,constantp,continue,cos,cosh,cotruncate,%
1960 count,delete,denominator,describe,directory,disassemble,%
1961 documentation,dpb,dribble,ed,eighth,elt,enclose,endp,eq,eql,%
1962 equal,equalp,error,eval,evalhook,evenp,every,exp,expand,export,%
1963 expt,fboundp,fceiling,fdefinition,ffloor,fifth,fill,find,first,%
1964 float,floatp,floor,fmakunbound,format,fourth,fround,ftruncate,%
1965 funcall,functionp,gatherer,gcd,generator,gensym,gentemp,get,getf,%
1966 gethash,identity,imagpart,import,inspect,integerp,intern,%
1967 intersection,tively,isqrt,keywordp,last,latch,lcm,ldb,ldiff,%
1968 length,list,listen,listp,load,log,logand,logbitp,logcount,logeqv,%

```

```

1969     logior, lognand, lognor, lognot, logtest, logxor, macroexpand,%
1970     makunbound, map, mapc, mapcan, mapcar, mapcon, maphash, mapl, maplist,%
1971     mask, max, member, merge, min, mingle, minusp, mismatch, mod, namestring,%
1972     nbutlast, nconc, nintersection, ninth, not, notany, notevery, nreconc,%
1973     nreverse, nsublis, nsubst, nth, nthcdr, null, numberp, numerator, nunion,%
1974     oddp, open, packagep, pairlis, pathname, pathnamep, phase, plusp,%
1975     position, positions, pprint, previous, princ, print, proclaim, provide,%
1976     random, rassoc, rational, rationalize, rationalp, read, readtablep,%
1977     realp, realpart, reduce, rem, remhash, remove, remprop, replace, require,%
1978     rest, revappend, reverse, room, round, rplaca, rplacd, sbit, scan, schar,%
1979     search, second, series, set, seventh, shadow, signal, signum, sin, sinh,%
1980     sixth, sleep, some, sort, split, sqrt, streamp, string, stringp, sublis,%
1981     subseq, subseries, subsetp, subst, substitute, subtypep, svref, sxhash,%
1982     symbolp, tailp, tan, tanh, tenth, terpri, third, true-name, truncate,%
1983     typep, unexport, unintern, union, until, values, vector, vectorp, warn,%
1984     write, zerop, and, assert, case, ccase, cond, ctypecase, decf, declaim,%
1985     defclass, defconstant, defgeneric, defmacro, defmethod, defpackage,%
1986     defparameter, defsetf, defstruct, deftype, defun, defvar, do, dolist,%
1987     dotimes, ecase, encapsulated, etypecase, flet, formatter, gathering,%
1988     incf, iterate, labels, let, locally, loop, macrolet, mapping, or, pop,%
1989     producing, prog, psetf, psetq, push, pushnew, remf, return, rotatef,%
1990     setf, shiftf, step, time, trace, typecase, unless, untrace, when},%
1991     sensitive=false,% ???
1992     alsodigit=-,%
1993     morecomment=[l];,%
1994     morecomment=[s]{\#|}{|\#},% 1997 Aslak Raanes
1995     morestring=[b]"%
1996 }[keywords, comments, strings]%
1997 </lang2>
1998 <*lang2>

Stefan Lagotzki warned me to define this as a lisp dialect ...

1999 %%
2000 %% AutoLISP/VisualLISP - Stefan Lagotzki, info@lagotzki.de
2001 %%
2002 \lst@definlanguage[Auto]{Lisp}%
2003 {morekeywords={abs, acad_colordlg, acad_helpdlg, acad_strlsort,%
2004     action_tile, add_list, alert, alloc, and, angle, angtof, angtos, append,%
2005     apply, arx, arxload, arxunload, ascii, assoc, atan, atof, atoi, atom,%
2006     atoms-family, autoarxload, autoload, Boole, boundp, caddr, cadr, car,%
2007     cdr, chr, client_data_tile, close, command, cond, cons, cos, cvunit,%
2008     defun, defun-q, defun-q-list-ref, defun-q-list-set, dictadd, dictnext,%
2009     dictremove, dictrename, dictsearch, dimx_tile, dimy_tile, distance,%
2010     distof, done_dialog, end_image, end_list, entdel, entget, entlast,%
2011     entmake, entmakex, entmod, entnext, entsel, entupd, eq, equal, *error*,%
2012     eval, exit, exp, expand, expt, fill_image, findfile, fix, float, foreach,%
2013     function, gc, gcd, get_attr, get_tile, getangle, getcfg, getcname,%
2014     getcorner, getdist, getenv, getfiled, getint, getkeyword, getorient,%
2015     getpoint, getreal, getstring, getvar, graphscr, grclear, grdraw, gread,%
2016     grtext, grvecs, handent, help, if, initdia, initget, inters, itoa, lambda,%
2017     last, layoutlist, length, list, listp, load, load_dialog, log, logand,%
2018     logior, lsh, mapcar, max, mem, member, menucmd, menugroup, min, minusp,%
2019     mode_tile, namedobjdict, nentsel, nentselp, new_dialog, not, nth,%
2020     null, numberp, open, or, osnap, polar, prin1, princ, print, progn, prompt,%

```

2021 quit, quote, read, read-char, read-line, redraw, regapp, rem, repeat, %  
2022 reverse, rtos, set, set\_tile, setcfg, setenv, setfunhelp, setq, %  
2023 setvar, setview, sin, slide\_image, snvalid, sqrt, ssadd, ssdel, ssget, %  
2024 ssgetfirst, sslength, ssmemb, ssmemb, ssmemb, ssmemb, ssmemb, ssmemb, %  
2025 start\_dialog, start\_image, start\_list, strcase, strcat, strlen, subst, %  
2026 substr, tablet, tblnext, tblobjname, tblsearch, term\_dialog, terpri, %  
2027 textbox, textpage, textscr, trace, trans, type, unload\_dialog, untrace, %  
2028 vector\_image, ver, vl-acad-defun, vl-acad-undefun, vl-arx-import, %  
2029 vl-bb-ref, vl-bb-set, vl-catch-all-apply, %  
2030 vl-catch-all-error-message, vl-catch-all-error-p, vl-cmdf, vl-consp, %  
2031 vl-directory-files, vl-doc-export, vl-doc-import, vl-doc-ref, %  
2032 vl-doc-set, vl-every, vl-exit-with-error, vl-exit-with-value, %  
2033 vl-file-copy, vl-file-delete, vl-file-directory-p, vl-file-rename, %  
2034 vl-file-size, vl-file-system, vl-filename-base, %  
2035 vl-filename-directory, vl-filename-extension, vl-filename-mktemp, %  
2036 vl-get-resource, vl-list\*, vl-list->string, %  
2037 vl-list-exported-functions, vl-list-length, vl-list-loaded-vlx, %  
2038 vl-load-all, vl-load-com, vl-load-reactors, vl-member-if, %  
2039 vl-member-if-not, vl-position, vl-print1-to-string, %  
2040 vl-princ-to-string, vl-propagate, vl-registry-delete, %  
2041 vl-registry-descendants, vl-registry-read, vl-registry-write, %  
2042 vl-remove, vl-remove-if, vl-remove-if-not, vl-some, vl-sort, %  
2043 vl-sort-i, vl-string->list, vl-string-elt, vl-string-left-trim, %  
2044 vl-string-mismatch, vl-string-position, vl-string-right-trim, %  
2045 vl-string-search, vl-string-subst, vl-string-translate, %  
2046 vl-string-trim, vl-symbol-name, vl-symbol-value, vl-symbolp, %  
2047 vl-unload-vlx, vl-vbaload, vl-vbarun, vl-vlx-loaded-p, vlax-3D-point, %  
2048 vlax-add-cmd, vlax-create-object, vlax-curve-getArea, %  
2049 vlax-curve-getDistAtParam, vlax-curve-getDistAtPoint, %  
2050 vlax-curve-getEndParam, vlax-curve-getEndPoint, %  
2051 vlax-curve-getParamAtDist, vlax-curve-getParamAtPoint, %  
2052 vlax-curve-getPointAtDist, vlax-curve-getPointAtParam, %  
2053 vlax-curve-getStartParam, vlax-curve-getStartPoint, %  
2054 vlax-curve-isClosed, vlax-curve-isPeriodic, vlax-curve-isPlanar, %  
2055 vlax-curve-getClosestPointTo, %  
2056 vlax-curve-getClosestPointToProjection, vlax-curve-getFirstDeriv, %  
2057 vlax-curve-getSecondDeriv, vlax-dump-object, %  
2058 vlax-ename->vla-object, vlax-erased-p, vlax-for, %  
2059 vlax-get-acad-object, vlax-get-object, vlax-get-or-create-object, %  
2060 vlax-get-property, vlax-import-type-library, vlax-invoke-method, %  
2061 vlax-ldata-delete, vlax-ldata-get, vlax-ldata-list, vlax-ldata-put, %  
2062 vlax-ldata-test, vlax-make-safearray, vlax-make-variant, %  
2063 vlax-map-collection, vlax-method-applicable-p, %  
2064 vlax-object-released-p, vlax-product-key, %  
2065 vlax-property-available-p, vlax-put-property, vlax-read-enabled-p, %  
2066 vlax-release-object, vlax-remove-cmd, vlax-safearray-fill, %  
2067 vlax-safearray-get-dim, vlax-safearray-get-element, %  
2068 vlax-safearray-get-l-bound, vlax-safearray-get-u-bound, %  
2069 vlax-safearray-put-element, vlax-safearray-type, %  
2070 vlax-safearray->list, vlax-tmatrix, vlax-typeinfo-available-p, %  
2071 vlax-variant-change-type, vlax-variant-type, vlax-variant-value, %  
2072 vlax-vla-object->ename, vlax-write-enabled-p, vlisp-compile, %  
2073 vlr-acdb-reactor, vlr-add, vlr-added-p, vlr-beep-reaction, %  
2074 vlr-command-reactor, vlr-current-reaction-name, vlr-data, %



```

2075     vlr-data-set,vlr-deepclone-reactor,vlr-docmanager-reactor,%
2076     vlr-dwg-reactor,vlr-dxf-reactor,vlr-editor-reactor,%
2077     vlr-insert-reactor,vlr-linker-reactor,vlr-lisp-reactor,%
2078     vlr-miscellaneous-reactor,vlr-mouse-reactor,vlr-notification,%
2079     vlr-object-reactor,vlr-owner-add,vlr-owner-remove,vlr-owners,%
2080     vlr-pers,vlr-pers-list,vlr-pers-p,vlr-pers-release,%
2081     vlr-reaction-names,vlr-reaction-set,vlr-reactions,vlr-reactors,%
2082     vlr-remove,vlr-remove-all,vlr-set-notification,%
2083     vlr-sysvar-reactor,vlr-toolbar-reactor,vlr-trace-reaction,%
2084     vlr-type,vlr-types,vlr-undo-reactor,vlr-wblock-reactor,%
2085     vlr-window-reactor,vlr-xref-reactor,vports,wcmatch,while,%
2086     write-char,write-line,xdroom,xdsize,zerop},%
2087     alsodigit=->,%
2088     otherkeywords={1+,1-},%
2089     sensitive=false,%
2090     morecomment=[1];,%
2091     morecomment=[1];;%
2092     morestring=[b]"%
2093 }[keywords,comments,strings]%
2094 </lang2>
2095 (*lang2)

```

A first approach to elisp by one of the maintainers (Jobst Hoffmann), it is far away from completeness, the list of keywords is defined according to the needs of the maintainer...

```

2096 \lst@definlanguage{elisp}[]{}{Lisp}{%
2097     morekeywords={begin, car, cdr, cons, define, display, drop, filter,%
2098         hash-ref, hash-set, if, load-file, lambda, length, map, message,%
2099         progn, quote, require, setq, string-append, take, vector,%
2100     },%
2101     sensitive,%
2102     alsodigit=->,%
2103     otherkeywords={1+,1-},%
2104     sensitive=true,%
2105     morecomment=[1];,%
2106     morecomment=[1];;%
2107     morestring=[b]"%
2108 }[keywords,comments,strings]%
2109 </lang2>

```

## 2.38 LLVM

LLVM provides a collection of modular and reusable compiler and toolchain technologies, all further information can be found at its home page <http://llvm.org/>. Scott Pakin provided a language definition for the LLVM intermediate presentation according to <http://llvm.org/docs/>.<sup>2</sup> The language provides

```

2110 (*lang3)
2111 \lst@definlanguage{LLVM}{%
2112     morekeywords={%

```

---

<sup>2</sup>In this section ‘I’ is Scott Pakin.

- Instructions
  - 2113           ret,br,switch,indirectbr,invoke,resume,unreachable,%
  - 2114           add,fadd,sub,fsub,mul,fmul,udiv,sdiv,fdiv,urem,srem,frem,%
  - 2115           shl,lshr,ashr,and,or,xor,%
  - 2116           extractelement,insertelement,shufflevector,%
  - 2117           extractvalue,insertvalue,%
  - 2118           alloca,load,store,fence,cmpxchg,atomicrmw,getelementptr,%
  - 2119           trunc,zext,sext,fptrunc,fpext,fptoui,fptosi,uitofp,sitofp,ptrtoint,%
  - 2120           inttoptr,bitcast,to,%
  - 2121           icmp,fcmp,phi,select,call,va\_arg,landingpad,%
- Atomic operations – some duplication with the above
  - 2122           xchg,add,sub,and,nand,or,xor,max,min,umax,umin,%
- Comparisons
  - 2123           eq,ne,ugt,uge,ult,ule,sgt,sge,slt,sle,%
  - 2124           false,oeq,ogt,oge,olt,ole,one,ord,ueq,ugt,uge,ult,ule,une,uno,true,%
- Linkage types
  - 2125           private,linker\_private,linker\_private\_weak,linker\_private\_weak\_def\_auto,%
  - 2126           internal,available\_externally,linkonce,common,weak,appending,extern\_weak,%
  - 2127           linkonce\_odr,weak\_odr,external,dllimport,dllexport,%
- Function headers
  - 2128           define,declare,%
- Parameter attributes
  - 2129           zeroext,signext,inreg,byval,sret,noalias,nocapture,next,%
- Garbage collector names
  - 2130           gc,%
- Function attributes
  - 2131           address\_safety,alignstack,alwaysinline,nonlazybind,inlinehint,naked,%
  - 2132           noimplicitfloat,noinline,noredzone,noreturn,nounwind,optsize,readnone,%
  - 2133           readonly,returns\_twice,ssp,sspreq,uwtable,%
- Module-level inline assembly
  - 2134           module,asm,%
- Data layout
  - 2135           target,datalayout,%
- Inline assembler expressions
  - 2136           sideeffect,alignstack,%
- Other keywords – I'm probably missing some here.
  - 2137           nuw,nsw,exact,inbounds,unnamed\_addr},%
  - 2138           morekeywords=[2]{%

- Types

```

2139         i1,i2,i4,i8,i16,i32,i64,i128,i256,i512,i1024,% <-- Most common integers
2140         half,float,double,x86_fp80,fp128,ppc_fp128,x86mmx,%
2141         void,label,metadata},%
2142         alsoletter=.,%
2143         sensitive=false,%
2144         morecomment=[l];,%
2145         morestring=[b]"%
2146     }
2147 </lang3>

```

## 2.39 Logo

I don't know where the keywords are from and what kind of Logo it is. Help me!

```

2148 <*lang3>
2149 \lst@definelanguage{Logo}%
2150 % ??? {end,unix} also keywords
2151 {morekeywords={and,atan,arctan,both,break,bf,bl,butfirst,butlast,%
2152     cbreak, close,co,continue,cos,count,clearscreen,cs,debut,%
2153     describe,diff,difference,ed,edit,either,empty,equalp,er,erase,%
2154     errpause,errquit,fifp,filefprint,fifty,fileftype,fip,fileprint,%
2155     fird,fileread,fity,filetype,fiwd,fileword,f,first,or,fp,fprint,%
2156     fput,fty,ftype,full,fullscreen,go,bye,goodbye,gprop,greaterp,%
2157     help,if,iff,iffalse,ift,iftrue,nth,item,keyp,llast,lessp,list,%
2158     local,lput,make,max,maximum,memberp,memtrace,min,minimum,namep,%
2159     not,numberp,oflush,openr,openread,openw,openwrite,op,output,%
2160     pause,plist,pots,pow,pprop,pps,pr,print,product,quotient,random,%
2161     rc,readchar,rl,readlist,remprop,repcount,repeat,request,rnd,run,%
2162     se,sentence,sentencep,setc,setcolor,setipause,setqpause,po,show,%
2163     sin,split,splitscreen,sqrt,stop,sum,test,text,textscreen,thing,%
2164     to,tone,top,toplevel,type,untrace,wait,word,wordp,yaccdebug,is,%
2165     mod,remainder,trace,zerop,back,bk,bto,btouch,fd,forward,fto,%
2166     ftouch,getpen,heading,hit,hitoot,ht,hideturtle,loff,lampoff,lon,%
2167     lampon,lt,left,lot,lotoot,lto,ltouch,penc,pencolor,pd,pendown,pe,%
2168     penerase,penmode,pu,penup,px,penreverse,rt,right,rto,rtouch,%
2169     scrunch,seth,setheading,setscreen,setscrunch,setxy,shownp,st,%
2170     showturtle,towardsxy,clean,wipeclean,xcor,ycor,tur,turtle,%
2171     display,dpy},%
2172     sensitive=f% ???
2173 }[keywords]%
2174 </lang3>

```

## 2.40 Lua

Stephan Hennig contributed the Lua keywords.

```

2175 <*lang2>
2176 We begin with the keywords for Lua 5.0:
2177 %%
2178 %% Lua definitions (c) 2013 Stephan Hennig
2179 %%
2179 \lst@definelanguage[5.0]{Lua}{%

```

To enable highlighting of library keywords, the dot needs to be a letter.

```
2180 alsoletter={.},%
```

The language definition knows

- language keywords

```
2181     morekeywords=[1]{%
2182         and, break, do, else, elseif, end, false, for, function, if, in,%
2183         local, nil, not, or, repeat, return, then, true, until, while,%
2184     },%
```

- the standard library identifiers

```
2185     morekeywords=[2]{%
```

- coming from the base library

```
2186         _G, _LOADED, _REQUIREDNAME, _VERSION, LUA_PATH,%
2187         assert, collectgarbage, dofile, error, gcinfo, getfenv,%
2188         getmetatable, ipairs, loadfile, loadlib, loadstring, newproxy,%
2189         next, pairs, pcall, print, rawequal, rawget, rawset, require,%
2190         setfenv, setmetatable, tonumber, tostring, type, unpack, xpcall,%
```

- coming from the coroutine library

```
2191         coroutine, coroutine.create, coroutine.resume,%
2192         coroutine.status, coroutine.wrap, coroutine.yield,%
```

- the debug library

```
2193         _TRACEBACK, debug, debug.debug, debug.gethook, debug.getinfo,%
2194         debug.getlocal, debug.getupvalue, debug.sethook, debug.setlocal,%
2195         debug.setupvalue, debug.traceback,%
```

- the io library

```
2196         io, io.close, io.flush, io.input, io.lines, io.open, io.output,%
2197         io.popen, io.read, io.stderr, io.stdin, io.stdout, io.tmpfile,%
2198         io.type, io.write,%
```

- the mathematical library

```
2199         __pow, math, math.abs, math.acos, math.asin, math.atan, math.atan2,%
2200         math.ceil, math.cos, math.deg, math.exp, math.floor, math.frexp,%
2201         math.ldexp, math.log, math.log10, math.max, math.min, math.mod,%
2202         math.pi, math.pow, math.rad, math.random, math.randomseed, math.sin,%
2203         math.sqrt, math.tan,%
```

- the os library

```
2204         os, os.clock, os.date, os.difftime, os.execute, os.exit, os.getenv,%
2205         os.remove, os.rename, os.setlocale, os.time, os.tmpname,%
```

- the string library

```
2206         string, string.byte, string.char, string.dump, string.find,%
2207         string.format, string.gfind, string.gsub, string.len, string.lower,%
2208         string.rep, string.sub, string.upper,%
```

- the table library

```
2209         table, table.concat, table.foreach, table.foreachi, table.getn,%
2210         table.insert, table.remove, table.setn, table.sort,%
2211     },%
```

```

and some additional identifiers
2212  morekeywords=[2]{%
2213    _PROMPT, _PROMPT2, arg,%
2214  },%

These are the common language settings
2215  sensitive=true,%
2216  % single line comments
2217  morecomment=[1]{--},%
2218  % multi line comments
2219  morecomment=[s]{--[{}]},%
2220  % backslash escaped strings
2221  morestring=[b]",,%
2222  morestring=[b]',,%
2223  % multi line strings
2224  morestring=[s]{[{}]},%
2225 }[keywords,comments,strings]%

And here are the new definitions for Lua 5.1:
2226 \lst@definelanguage[5.1]{Lua}[5.0]{Lua}{%

There are some deletions
2227  deletekeywords=[2]{%
concerning


- the base library


2228    _LOADED, _REQUIREDNAME, LUA_PATH, gcinfo, loadlib,%


- the debug library


2229    _TRACEBACK,%


- the mathematical library


2230    __pow, math.mod,%


- the string library


2231    string.gfind,%


- the table library


2232    table.foreach, table.foreachi, table.getn, table.setn,%
2233  },%

and some new identifiers in standard libraries like
2234  morekeywords=[2]{%


- the base library


2235    load, select,%


- coroutine library


2236    coroutine.running,%

```

- debug library
 

```
2237         debug.getfenv, debug.getmetatable, debug.getregistry, debug.setfenv,%
2238         debug.setmetatable,%
```
- the mathematical library
 

```
2239         math.cosh, math.fmod, math.huge, math.modf, math.sinh, math.tanh,%
```
- the package library which itself is new in Lua 5.1
 

```
2240         module, package, package.config, package.cpath, package.loaded,%
2241         package.loaders, package.loadlib, package.path, package.preload,%
2242         package.seeall,%
```
- the string library and
 

```
2243         string.gmatch, string.match, string.reverse,%
```
- the table library
 

```
2244         table.maxn,%
2245     },%
```

In Lua 5.1 long bracket comments were introduced also

```
2246  morecomment=[s]{--[[]{}=]},%
2247  morecomment=[s]{--[==[]{}==]},%
2248  morecomment=[s]{--[===[]{}===]},%
2249  morecomment=[s]{--[====[]{}====]},%
2250  morecomment=[s]{--[=====[]{}=====]},%
2251  morecomment=[s]{--[=====[[]{}=====]},%
2252  morecomment=[s]{--[=====[]{}=====]},%
2253  morecomment=[s]{--[=====[]{}=====]},%
2254  morecomment=[s]{--[=====[]{}=====]},%
2255  morecomment=[s]{--[=====[]{}=====]},%
```

as well as long bracket strings

```
2256  morestring=[s]{[[]{}=]},%
2257  morestring=[s]{[==[]{}==]},%
2258  morestring=[s]{[===[]{}===]},%
2259  morestring=[s]{[====[]{}====]},%
2260  morestring=[s]{[=====[]{}=====]},%
2261  morestring=[s]{[=====[]{}=====]},%
2262  morestring=[s]{[=====[]{}=====]},%
2263  morestring=[s]{[=====[]{}=====]},%
2264  morestring=[s]{[=====[]{}=====]},%
2265  morestring=[s]{[=====[]{}=====]},%
2266 }[keywords,comments,strings]%
```

Lua 5.2 again has some changed features. These are

```
2267 \lst@definlanguage[5.2]{Lua}[5.1]{Lua}{%
```

- new language keywords

```
2268         morekeywords=[1]{%
2269         goto,%
2270     },%
```

- deleted identifiers from the standard libraries like

```

2271     deletekeywords=[2]{%
        – the base library
2272         getfenv, loadstring, module, newproxy, setfenv, unpack,%
        – the debug library
2273         debug.getfenv, debug.setfenv,%
        – the mathematical library
2274         math.log10,%
        – the package library and
2275         package.loaders, package.seeall,%
        – the table library
2276         table.maxn,%
2277     },%

```

Again there are some new identifiers in the standard libraries

```
2278 morekeywords=[2]{%
```

like

- the base library

```
2279     rawlen,%
```

- the bit library

```

2280     bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%
2281     bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%
2282     bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%

```

- the debug library

```

2283     debug.getuservalue, debug.setuservalue, debug.upvalueid,%
2284     debug.upvaluejoin,%

```

- the package library

```
2285     package.searchers, package.searchpath,%
```

- the table library

```

2286     table.pack, table.unpack,%
2287     },%

```

There is a new additional identifier

```

2288 morekeywords=[2]{%
2289     _ENV,%
2290     },%

```

and labels are also new in Lua 5.2

```

2291 moredelim=[s][keywordstyle3]{:}{:},{%
2292 }[keywords,comments,strings]%

```

In January 2015 Lua 5.3 was released, Stephan Hennig again contributed the Lua keywords.

```
2293 \lst@definelanguage[5.3]{Lua}[5.2]{Lua}{%
    • some libraries are deprecated, so the following identifiers are deleted
2294     deletekeywords=[2]{%
        – the bit32 library
2295         bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%
2296         bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%
2297         bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%
        – the mathematical library
2298         math.atan2, math.cosh, math.frexp, math.ldexp, math.pow,%
2299         math.sinh, math.tanh,%
2300     },%
```

Again there are some new identifiers in the standard libraries

```
2301 morekeywords=[2]{%
    like
    • the coroutine library
2302     coroutine.isyieldable,%
    • the mathematical library
2303     math.maxinteger, math.mininteger, math.tointeger, math.type,%
2304     math.ult,%
    • the string library
2305     string.pack, string.packsize, string.unpack,%
    • the table library
2306     table.move,%
    • the utf-8 library
2307     utf8, utf8.char, utf8.charpattern, utf8.codepoint, utf8.codes,%
2308     utf8.len, utf8.offset,%
2309     },%
2310 }[keywords,comments,strings]%
2311 </lang2>
```

Stephan Hennig also supplied a definition of a style for printing Lua code:

```
2312 <lua-prf>
2313 \usepackage[rgb, x11names]{xcolor}
2314 \lstdefinestyle{Lua}{%
2315     language=[5.2]Lua,
2316     basicstyle=\ttfamily,
2317     columns=spaceflexible,
2318     keywordstyle=\bfseries\color{Blue4},% language keywords
```



```

2319 keywordstyle=[2]\bfseries\color{RoyalBlue3},% std. library identifiers
2320 keywordstyle=[3]\bfseries\color{Purple3},% labels
2321 stringstyle=\bfseries\color{Coral4},% strings
2322 commentstyle=\itshape\color{Green4},% comments
2323 }

```

This code is provided in the file `listings-lua.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
2324 </lua-prf>
```

## 2.41 Make

Rolf Niepraschk sent me the new definitions. Markus Pahlow found a missing comma and added some keywords, which improve the highlighting with `makemacrouse=true` (but I haven't tested this).

```

2325 <*lang2>
2326 %%
2327 %% Make definitions (c) 2000 Rolf Niepraschk
2328 %%
2329 \lst@definlanguage[gnu]{make}%
2330 {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,$<,$?,$^,$+,$*},%
2331   @,^,<,\%,+,,?,*,% Markus Pahlow
2332   export,unexport,include,override,define,ifdef,ifneq,ifeq,else,%
2333   endif,vpath,subst,patsubst,strip,findstring,filter,filter-out,%
2334   sort,dir,notdir,suffix,basename,addsuffix,addprefix,join,word,%
2335   words,firstword,wildcard,shell,origin,foreach,%
2336   @D,@F,*D,*F,\%D,\%F,<D,<F,^D,^F,+D,+F,?D,?F,%
2337   AR,AS,CC,CXX,CO,CPP,FC,GET,LEX,PC,YACC,YACCR,MAKEINFO,TEXI2DVI,%
2338   WEAVE,CWEAVE,TANGLE,CTANGLE,RM,M2C,LINT,COMPILE,LINK,PREPROCESS,%
2339   CHECKOUT,%
2340   ARFLAGS,ASFLAGS,CFLAGS,CXXFLAGS,COFLAGS,CPPFLAGS,FFLAGS,GFLAGS,%
2341   LDFLAGS,LOADLIBES,LFLAGS,PFLAGS,RFLAGS,YFLAGS,M2FLAGS,MODFLAGS,%
2342   LINTFLAGS,MAKEINFO_FLAGS,TEXI2DVI_FLAGS,COFLAGS,GFLAGS,%
2343   OUTPUT_OPTION,SCCS_OUTPUT_OPTION,% missing comma: Markus Pahlow
2344   .PHONY,.SUFFIXES,.DEFAULT,.PRECIOUS,.INTERMEDIATE,.SECONDARY,%
2345   .IGNORE,.SILENT,.EXPORT_ALL_VARIABLES,MAKEFILES,VPATH,MAKESHELL,%
2346   MAKELEVEL,MAKECMDGOALS,SUFFIXES},%
2347   sensitive=true,
2348   morecomment=[1]\#,%
2349   morestring=[b]"%
2350 }[keywords,comments,strings,make]%
2351 \lst@definlanguage{make}
2352 {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,$<,$?,$^,$+,$*},%
2353   sensitive=true,%
2354   morecomment=[1]\#,%
2355   morestring=[b]"%
2356 }[keywords,comments,strings,make]%

```

The two `[b]`-arguments have been added after a bug report by Dr. Jobst Hoffmann

```
2357 </lang2>
```

## 2.42 Matlab

I took the keywords from <http://www.utexas.edu/math/Matlab/Manual>, but I removed the keywords `i`, `j` and `tmp`—the change was proposed by Kai Below.

```
2358 (*lang1)
2359 \lst@definelanguage{Matlab}%
2360 {morekeywords={gt,lt,gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
2361   all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
2362   auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
2363   betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
2364   cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
2365   clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
2366   comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
2367   contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
2368   cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
2369   csvwrite,cumprod,cumsum,cylinder,date,dbclean,dbcont,dbdown,%
2370   dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
2371   ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
2372   del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
2373   dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
2374   end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
2375   engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
2376   engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,error,%
2377   errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
2378   feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
2379   fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%
2380   flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
2381   fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
2382   gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
2383   getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
2384   gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
2385   hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
2386   imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
2387   invhilb,isempty,isglobal,ishold,isieee,isin,isletter,isnan,%
2388   isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
2389   legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
2390   loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
2391   matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
2392   matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
2393   matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
2394   meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
2395   mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
2396   mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
2397   min,more,movie,moviein,mu2lin,mxMalloc,mxCopyCharacterToPtr,%
2398   mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
2399   mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
2400   mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
2401   mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
2402   mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
2403   mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
2404   mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
2405   mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nnls,nnz,%
2406   nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
2407   pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
```

```

2408     pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
2409     pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
2410     quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
2411     rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
2412     return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
2413     round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
2414     semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
2415     spalloc,sparse,spaugment,spconvert,spdiags,specular,speye,spfun,%
2416     sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
2417     sprank,sprintf,spy,sqrt,sqrtm,sscanf,stair,startup,std,stem,%
2418     str2mat,str2num,strcmp,strings,strcmp,strtok,subplot,subscribe,%
2419     subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
2420     symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
2421     toc,toeplitz,trace,trapez,tril,triu,type,uicontrol,uigetfile,%
2422     uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
2423     viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
2424     whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
2425     wk1write,xlabel,xor,ylabel,zeros,zlabel,zoom},%
2426     sensitive,%
2427     morecomment=[1]\%,%
2428     morestring=[m]'%
2429 }[keywords,comments,strings]%
2430 </lang1>

```

## 2.43 Mathematica

Michael Wiese typed in all the keywords for the 1.0 and 3.0 versions. Oliver Ruebenkoenig wrote a script to generate the lists for the 5.2 version. Simon Pearce provided the list of keywords for Mathematica 11.0.

```

2431 (*lang1)
2432 \lst@definlanguage[11.0]{Mathematica}[5.2]{Mathematica}{%
2433     morekeywords={
2434         "AASTriangle", "AbelianGroup", "Abort", "AbortKernels",%
2435         "AbortProtect", "AbortScheduledTask", "Above", "Abs", "AbsArg",%
2436         "Absolute", "AbsoluteCorrelation", "AbsoluteCorrelationFunction",%
2437         "AbsoluteCurrentValue", "AbsoluteDashing", "AbsoluteFileName",%
2438         "AbsoluteOptions", "AbsolutePointSize", "AbsoluteThickness",%
2439         "AbsoluteTime", "AbsoluteTiming", "AccountingForm", "Accumulate",%
2440         "Accuracy", "AccuracyGoal", "ActionDelay", "ActionMenu",%
2441         "ActionMenuBar", "ActionMenuBarOptions", "Activate", "Active",%
2442         "ActiveItem", "ActiveStyle", "AcyclicGraphQ", "AddOnHelpPath",%
2443         "AddTo", "AddUsers", "AdjacencyGraph", "AdjacencyList",%
2444         "AdjacencyMatrix", "AdjustmentBox", "AdjustmentBoxOptions",%
2445         "AdjustTimeSeriesForecast", "AdministrativeDivisionData",%
2446         "AffineHalfSpace", "AffineSpace", "AffineStateSpaceModel",%
2447         "AffineTransform", "After", "AircraftData", "AirportData",%
2448         "AirPressureData", "AirTemperatureData", "AiryAi", "AiryAiPrime",%
2449         "AiryAiZero", "AiryBi", "AiryBiPrime", "AiryBiZero",%
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2451         "AlgebraicNumberNorm", "AlgebraicNumberPolynomial",%
2452         "AlgebraicNumberTrace", "AlgebraicRules", "AlgebraicRulesData",%
2453         "Algebraics", "AlgebraicUnitQ", "Alignment", "AlignmentMarker",%
2454         "AlignmentPoint", "All", "AllowedDimensions", "AllowedHeads",%

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2455 "AllowGroupClose", "AllowIncomplete", "AllowInlineCells",%  
 2456 "AllowKernelInitialization", "AllowLooseGrammar",%  
 2457 "AllowReverseGroupClose", "AllowScriptLevelChange", "AllTrue",%  
 2458 "Alphabet", "AlphabeticOrder", "AlphabeticSort", "AlphaChannel",%  
 2459 "AlternateImage", "AlternatingFactorial", "AlternatingGroup",%  
 2460 "AlternativeHypothesis", "Alternatives", "AltitudeMethod",%  
 2461 "AmbientLight", "AmbiguityFunction", "AmbiguityList", "Analytic",%  
 2462 "AnatomyData", "AnatomyForm", "AnatomyPlot3D", "AnchoredSearch",%  
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 2464 "AngleVector", "AngularGauge", "Animate", "AnimationCycleOffset",%  
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 2466 "AnimationDisplayTime", "AnimationRate", "AnimationRepetitions",%  
 2467 "AnimationRunning", "AnimationRunTime", "AnimationTimeIndex",%  
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 2471 "AntisymmetricMatrixQ", "AnyOrder", "AnySubset", "AnyTrue", "Apart",%  
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4096 "$RootDirectory", "$ScheduledTask", "$ScriptCommandLine",%
4097 "$ScriptInputString", "$Services", "$SessionID", "$SetParentLink",%
4098 "$SharedFunctions", "$SharedVariables", "$SMSDestination",%
4099 "$SoundDisplay", "$SoundDisplayFunction", "$SourceLink",%
4100 "$SuppressInputFormHeads", "$SynchronousEvaluation",%
4101 "$SyntaxHandler", "$System", "$SystemCharacterEncoding", "$SystemID",%
4102 "$SystemMemory", "$SystemShell", "$SystemTimeZone",%
4103 "$SystemWordLength", "$TemplatePath", "$TemporaryDirectory",%
4104 "$TemporaryPrefix", "$TextStyle", "$TimedOut", "$TimeUnit",%
4105 "$TimeZone", "$TimeZoneEntity", "$TopDirectory", "$TraceOff",%
4106 "$TraceOn", "$TracePattern", "$TracePostAction", "$TracePreAction",%
4107 "$UnitSystem", "$Urgent", "$UserAddOnsDirectory",%
4108 "$UserAgentLanguages", "$UserAgentMachine", "$UserAgentName",%
4109 "$UserAgentOperatingSystem", "$UserAgentString", "$UserAgentVersion",%
4110 "$UserBaseDirectory", "$UserDocumentsDirectory", "$UserName",%
4111 "$Version", "$VersionNumber", "$WolframID", "$WolframUUID"%
4112 }%
4113 }

4114 \lst@definelineage[5.2]{Mathematica}[3.0]{Mathematica}{%
4115 morekeywords={Above, AbsoluteOptions, AbsoluteTiming, AccountingForm,%
4116 AccuracyGoal, Active, ActiveItem, AddOnHelpPath, AdjustmentBox,%
4117 AdjustmentBoxOptions, After, AiryAiPrime, AlgebraicRulesData,%
4118 Algebraics, Alias, AlignmentMarker, AllowInlineCells,%
4119 AllowScriptLevelChange, Analytic, AnimationCycleOffset,%
4120 AnimationCycleRepetitions, AnimationDirection, AnimationDisplayTime,%
4121 ApartSquareFree, AppellF1, ArgumentCountQ, ArrayDepth, ArrayPlot,%
4122 ArrayQ, ArrayRules, AspectRatioFixed, Assuming, Assumptions,%
4123 AutoDelete, AutoEvaluateEvents, AutoGeneratedPackage, AutoIndent,%
4124 AutoIndentSpacings, AutoItalicWords, AutoloadPath, AutoOpenNotebooks,%
4125 AutoOpenPalettes, AutoScroll, AutoSpacing, AutoStyleOptions, Axis,%
4126 BackgroundTasksSettings, Backsubstitution, Backward, Baseline, Before,%
4127 BeginDialogPacket, BeginFrontEndInteractionPacket, Below, BezoutMatrix,%
4128 BinaryFormat, BinaryGet, BinaryRead, BinaryReadList, BinaryWrite,%

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4129 BitAnd, BitNot, BitOr, BitXor, Black, BlankForm, Blue, Boole, Booleans,%  
4130 Bottom, Bounds, Box, BoxBaselineShift, BoxData, BoxDimensions,%  
4131 BoxFormFormatTypes, BoxFrame, BoxMargins, BoxRegion, Brown, Buchberger,%  
4132 Button, ButtonBox, ButtonBoxOptions, ButtonCell, ButtonContents,%  
4133 ButtonData, ButtonEvaluator, ButtonExpandable, ButtonFrame,%  
4134 ButtonFunction, ButtonMargins, ButtonMinHeight, ButtonNote,%  
4135 ButtonNotebook, ButtonSource, ButtonStyle, ButtonStyleMenuListing,%  
4136 ByteOrdering, CallPacket, CarmichaelLambda, Cell, CellAutoOverwrite,%  
4137 CellBaseline, CellBoundingBox, CellBracketOptions, CellContents,%  
4138 CellDingbat, CellEditDuplicate, CellElementsBoundingBox,%  
4139 CellElementSpacings, CellEvaluationDuplicate, CellFrame,%  
4140 CellFrameColor, CellFrameLabelMargins, CellFrameLabels,%  
4141 CellFrameMargins, CellGroup, CellGroupData, CellGrouping,%  
4142 CellGroupingRules, CellHorizontalScrolling, CellLabel,%  
4143 CellLabelAutoDelete, CellLabelMargins, CellLabelPositioning,%  
4144 CellMargins, CellObject, CellOpen, CellPasswords, CellPrint, CellSize,%  
4145 CellStyle, CellTags, CellularAutomaton, Center, CharacterEncoding,%  
4146 CharacterEncodingsPath, CharacteristicPolynomial, CharacterRange,%  
4147 CheckAll, CholeskyDecomposition, Clip, ClipboardNotebook, Closed,%  
4148 ClosingAutoSave, CoefficientArrays, CoefficientDomain,%  
4149 CofactorExpansion, ColonForm, ColorFunctionScaling, ColorRules,%  
4150 ColorSelectorSettings, Column, ColumnAlignments, ColumnLines,%  
4151 ColumnsEqual, ColumnSpacings, ColumnWidths, CommonDefaultFormatTypes,%  
4152 CompileOptimizations, CompletionsListPacket, Complexes,%  
4153 ComplexityFunction, Compose, ComposeSeries, ConfigurationPath,%  
4154 ConjugateTranspose, Connect, ConsoleMessage, ConsoleMessagePacket,%  
4155 ConsolePrint, ContentsBoundingBox, ContextToFileName,%  
4156 ContinuedFraction, ConversionOptions, ConversionRules,%  
4157 ConvertToBitmapPacket, ConvertToPostScript, ConvertToPostScriptPacket,%  
4158 Copyable, CoshIntegral, CounterAssignments, CounterBox,%  
4159 CounterBoxOptions, CounterEvaluator, CounterFunction,%  
4160 CounterIncrements, CounterStyle, CounterStyleMenuListing,%  
4161 CreatePalettePacket, Cross, CurrentlySpeakingPacket, Cyan,%  
4162 CylindricalDecomposition, DampingFactor, DataRange, Debug, DebugTag,%  
4163 Decimal, DedekindEta, DefaultDuplicateCellStyle, DefaultFontProperties,%  
4164 DefaultFormatType, DefaultFormatTypeForStyle, DefaultInlineFormatType,%  
4165 DefaultInputFormatType, DefaultNaturalLanguage, DefaultNewCellStyle,%  
4166 DefaultNewInlineCellStyle, DefaultNotebook, DefaultOutputFormatType,%  
4167 DefaultStyleDefinitions, DefaultTextFormatType,%  
4168 DefaultTextInlineFormatType, DefaultValues, DefineExternal,%  
4169 DegreeLexicographic, DegreeReverseLexicographic, Deletable,%  
4170 DeleteContents, DeletionWarning, DelimiterFlashTime, DelimiterMatching,%  
4171 Delimiters, DependentVariables, DiacriticalPositioning, DialogLevel,%  
4172 DifferenceOrder, DigitCharacter, DigitCount, DiracDelta, Direction,%  
4173 DirectoryName, DisableConsolePrintPacket, DiscreteDelta,%  
4174 DisplayAnimation, DisplayEndPacket, DisplayFlushImagePacket,%  
4175 DisplayForm, DisplayPacket, DisplayRules, DisplaySetSizePacket,%  
4176 DisplayString, DivisionFreeRowReduction, DOSTextFormat,%  
4177 DoubleExponential, DoublyInfinite, Down, DragAndDrop, DrawHighlighted,%  
4178 DualLinearProgramming, DumpGet, DumpSave, Edit, Editable,%  
4179 EditButtonSettings, EditCellTagsSettings, EditDefinition, EditIn,%  
4180 Element, EliminationOrder, EllipticExpPrime, EllipticNomeQ,%  
4181 EllipticReducedHalfPeriods, EllipticThetaPrime, Empty,%  
4182 EnableConsolePrintPacket, Encoding, EndAdd, EndDialogPacket,%

4183 EndFrontEndInteractionPacket, EndOfLine, EndOfString, Enter,%  
4184 EnterExpressionPacket, EnterTextPacket, EqualColumns, EqualRows,%  
4185 EquatedTo, Erfi, ErrorBox, ErrorBoxOptions, ErrorNorm, ErrorPacket,%  
4186 ErrorsDialogSettings, Evaluatable, EvaluatePacket, EvaluationCell,%  
4187 EvaluationCompletionAction, EvaluationMonitor, EvaluationNotebook,%  
4188 Evaluator, EvaluatorNames, EventEvaluator, ExactNumberQ,%  
4189 ExactRootIsolation, Except, ExcludedForms, Exists, ExitDialog,%  
4190 ExponentPosition, ExponentStep, Export, ExportAutoReplacements,%  
4191 ExportPacket, ExportString, ExpressionPacket, ExpToTrig, Extension,%  
4192 ExternalCall, ExternalDataCharacterEncoding, Extract, Fail,%  
4193 FEDisableConsolePrintPacket, FEEEnableConsolePrintPacket, Fibonacci,%  
4194 File, FileFormat, FileInformation, FileName, FileNameDialogSettings,%  
4195 FindFit, FindInstance, FindMaximum, FindSettings, FitAll,%  
4196 FlushPrintOutputPacket, Font, FontColor, FontFamily, FontName,%  
4197 FontPostScriptName, FontProperties, FontReencoding, FontSize,%  
4198 FontSlant, FontSubstitutions, FontTracking, FontVariations, FontWeight,%  
4199 ForAll, FormatRules, FormatTypeAutoConvert, FormatValues, FormBox,%  
4200 FormBoxOptions, Forward, ForwardBackward, FourierCosTransform,%  
4201 FourierParameters, FourierSinTransform, FourierTransform,%  
4202 FractionalPart, FractionBox, FractionBoxOptions, FractionLine,%  
4203 FrameBox, FrameBoxOptions, FresnelC, FresnelS, FromContinuedFraction,%  
4204 FromDigits, FrontEndExecute, FrontEndObject, FrontEndStackSize,%  
4205 FrontEndToken, FrontEndTokenExecute, FrontEndVersion, Full, FullAxes,%  
4206 FullSimplify, FunctionExpand, FunctionInterpolation, GaussKronrod,%  
4207 GaussPoints, GenerateBitmapCaches, GenerateConditions, GeneratedCell,%  
4208 GeneratedParameters, Generic, GetBoundingBoxSizePacket, GetContext,%  
4209 GetFileName, GetFrontEndOptionsDataPacket,%  
4210 GetLinebreakInformationPacket, GetMenusPacket,%  
4211 GetPageBreakInformationPacket, Glaisher, GlobalPreferences,%  
4212 GlobalSession, Gradient, GraphicsData, GraphicsGrouping, Gray, Green,%  
4213 Grid, GridBaseline, GridBox, GridBoxOptions, GridCreationSettings,%  
4214 GridDefaultElement, GridFrame, GridFrameMargins, GroupPageBreakWithin,%  
4215 HarmonicNumber, Hash, HashTable, HeadCompose, HelpBrowserLookup,%  
4216 HelpBrowserNotebook, HelpBrowserSettings, HessenbergDecomposition,%  
4217 Hessian, HoldAllComplete, HoldComplete, HoldPattern, Horizontal,%  
4218 HorizontalForm, HorizontalScrollPosition, HTMLSave,%  
4219 HypergeometricOF1Regularized, Hypergeometric1F1Regularized,%  
4220 Hypergeometric2F1Regularized, HypergeometricPFQ,%  
4221 HypergeometricPFQRegularized, HyperlinkCreationSettings, Hyphenation,%  
4222 HyphenationOptions, IgnoreCase, ImageCache, ImageCacheValid,%  
4223 ImageMargins, ImageOffset, ImageRangeCache, ImageRegion,%  
4224 ImageResolution, ImageRotated, ImageSize, Import,%  
4225 ImportAutoReplacements, ImportString, IncludeFileExtension,%  
4226 IncludeSingularTerm, IndentingNewlineSpacings, IndentMaxFraction,%  
4227 IndexCreationOptions, Inequality, InexactNumberQ, InexactNumbers,%  
4228 Inherited, InitializationCell, InitializationCellEvaluation,%  
4229 InitializationCellWarning, InlineCounterAssignments,%  
4230 InlineCounterIncrements, InlineRules, InputAliases, InputAutoFormat,%  
4231 InputAutoReplacements, InputGrouping, InputNamePacket, InputNotebook,%  
4232 InputPacket, InputSettings, InputStringPacket, InputToBoxFormPacket,%  
4233 InputToInputForm, InputToStandardForm, InsertionPointObject,%  
4234 IntegerExponent, IntegerPart, Integers, Interactive, Interlaced,%  
4235 InterpolationOrder, InterpolationPoints, InterpolationPrecision,%  
4236 InterpretationBox, InterpretationBoxOptions, InterpretTemplate,%

4237 InterruptSettings, Interval, IntervalIntersection, IntervalMemberQ,%  
4238 IntervalUnion, InverseBetaRegularized, InverseEllipticNomeQ,%  
4239 InverseErf, InverseErfc, InverseFourierCosTransform,%  
4240 InverseFourierSinTransform, InverseFourierTransform,%  
4241 InverseGammaRegularized, InverseJacobiCD, InverseJacobiCN,%  
4242 InverseJacobiCS, InverseJacobiDC, InverseJacobiDN, InverseJacobiDS,%  
4243 InverseJacobiNC, InverseJacobiND, InverseJacobiNS, InverseJacobiSC,%  
4244 InverseJacobiSD, InverseLaplaceTransform, InverseWeierstrassP,%  
4245 InverseZTransform, Jacobian, JacobiCD, JacobiCN, JacobiCS, JacobiDC,%  
4246 JacobiDN, JacobiDS, JacobiNC, JacobiND, JacobiNS, JacobiSC, JacobiSD,%  
4247 JordanDecomposition, K, Khinchin, KleinInvariantJ, KroneckerDelta,%  
4248 Language, LanguageCategory, LaplaceTransform, Larger, Launch,%  
4249 LayoutInformation, Left, LetterCharacter, Lexicographic, LicenseID,%  
4250 LimitsPositioning, LimitsPositioningTokens, LinearSolveFunction,%  
4251 LinebreakAdjustments, LineBreakWithin, LineForm, LineIndent,%  
4252 LineSpacing, LineWrapParts, LinkActivate, LinkClose, LinkConnect,%  
4253 LinkConnectedQ, LinkCreate, LinkError, LinkFlush, LinkHost,%  
4254 LinkInterrupt, LinkLaunch, LinkMode, LinkObject, LinkOpen, LinkOptions,%  
4255 LinkPatterns, LinkProtocol, LinkRead, LinkReadHeld, LinkReadyQ, Links,%  
4256 LinkWrite, LinkWriteHeld, ListConvolve, ListCorrelate, Listen,%  
4257 ListInterpolation, ListQ, LiteralSearch, LongestMatch, LongForm,%  
4258 Loopback, LUBackSubstitution, LUdecomposition, MachineID, MachineName,%  
4259 MachinePrecision, MacintoshSystemPageSetup, Magenta, Magnification,%  
4260 MakeBoxes, MakeExpression, MakeRules, Manual, MatchLocalNameQ,%  
4261 MathematicaNotation, MathieuC, MathieuCharacteristicA,%  
4262 MathieuCharacteristicB, MathieuCharacteristicExponent, MathieuCPrime,%  
4263 MathieuS, MathieuSPrime, MathMLForm, MathMLText, MatrixRank, Maximize,%  
4264 MaxIterations, MaxPlotPoints, MaxPoints, MaxRecursion, MaxStepFraction,%  
4265 MaxSteps, MaxStepSize, Mean, Median, MeijerG, MenuPacket,%  
4266 MessageOptions, MessagePacket, MessagesNotebook, MetaCharacters,%  
4267 Method, MethodOptions, Minimize, MinRecursion, MinSize, Mode,%  
4268 ModularLambda, MonomialOrder, MonteCarlo, Most, MousePointerNote,%  
4269 MultiDimensional, MultilaunchWarning, MultilineFunction,%  
4270 MultiplicativeOrder, Multiplicity, Nand,%  
4271 NeedCurrentFrontEndPackagePacket, NeedCurrentFrontEndSymbolsPacket,%  
4272 NestedScriptRules, NestWhile, NestWhileList, NevilleThetaC,%  
4273 NevilleThetaD, NevilleThetaN, NevilleThetaS, Newton, Next, NHoldAll,%  
4274 NHoldFirst, NHoldRest, NMaximize, NMinimize, NonAssociative,%  
4275 NonPositive, Nor, Norm, NormalGrouping, NormalSelection, NormFunction,%  
4276 Notebook, NotebookApply, NotebookAutoSave, NotebookClose,%  
4277 NotebookConvert, NotebookConvertSettings, NotebookCreate,%  
4278 NotebookCreateReturnObject, NotebookDefault, NotebookDelete,%  
4279 NotebookDirectory, NotebookFind, NotebookFindReturnObject, NotebookGet,%  
4280 NotebookGetLayoutInformationPacket, NotebookGetMisspellingsPacket,%  
4281 NotebookInformation, NotebookLocate, NotebookObject, NotebookOpen,%  
4282 NotebookOpenReturnObject, NotebookPath, NotebookPrint, NotebookPut,%  
4283 NotebookPutReturnObject, NotebookRead, NotebookResetGeneratedCells,%  
4284 Notebooks, NotebookSave, NotebookSaveAs, NotebookSelection,%  
4285 NotebookSetupLayoutInformationPacket, NotebooksMenu, NotebookWrite,%  
4286 NotElement, NProductExtraFactors, NProductFactors, NRoots,%  
4287 NSumExtraTerms, NSumTerms, NumberMarks, NumberMultiplier, NumberString,%  
4288 NumericFunction, NumericQ, NValues, Offset, OLEData,%  
4289 OneStepRowReduction, Open, OpenFunctionInspectorPacket,%  
4290 OpenSpecialOptions, OptimizationLevel, OptionInspectorSettings,%

4291 OptionQ, OptionsPacket, OptionValueBox, OptionValueBoxOptions, Orange,%  
 4292 Ordering, Oscillatory, OutputAutoOverwrite, OutputFormData,%  
 4293 OutputGrouping, OutputMathEditExpression, OutputNamePacket,%  
 4294 OutputToOutputForm, OutputToStandardForm, Over, Overflow, Overlaps,%  
 4295 Overscript, OverscriptBox, OverscriptBoxOptions, OwnValues, PadLeft,%  
 4296 PadRight, PageBreakAbove, PageBreakBelow, PageBreakWithin,%  
 4297 PageFooterLines, PageFooters, PageHeaderLines, PageHeaders,%  
 4298 PalettePath, PaperWidth, ParagraphIndent, ParagraphSpacing,%  
 4299 ParameterVariables, ParentConnect, ParentForm, Parenthesize,%  
 4300 PasteBoxFormInlineCells, Path, PatternTest, PeriodicInterpolation,%  
 4301 Pick, Piecewise, PiecewiseExpand, Pink, Pivoting, PixelConstrained,%  
 4302 Placeholder, Plain, Plot3Matrix, PointForm, PolynomialForm,%  
 4303 PolynomialReduce, Polynomials, PowerModList, Precedence,%  
 4304 PreferencesPath, PreserveStyleSheet, Previous, PrimaryPlaceholder,%  
 4305 Primes, PrincipalValue, PrintAction, PrintingCopies, PrintingOptions,%  
 4306 PrintingPageRange, PrintingStartingPageNumber,%  
 4307 PrintingStyleEnvironment, PrintPrecision, PrivateCellOptions,%  
 4308 PrivateEvaluationOptions, PrivateFontOptions, PrivateNotebookOptions,%  
 4309 PrivatePaths, ProductLog, PromptForm, Purple, Quantile,%  
 4310 QuasiMonteCarlo, QuasiNewton, RadicalBox, RadicalBoxOptions,%  
 4311 RandomSeed, RationalFunctions, Rationals, RawData, RawMedium,%  
 4312 RealBlockForm, Reals, Reap, Red, Refine, Refresh, RegularExpression,%  
 4313 Reinstall, Release, Removed, RenderingOptions, RepeatedString,%  
 4314 ReplaceList, Rescale, ResetMenusPacket, Resolve, ResumePacket,%  
 4315 ReturnExpressionPacket, ReturnInputFormPacket, ReturnPacket,%  
 4316 ReturnTextPacket, Right, Root, RootReduce, RootSum, Row, RowAlignments,%  
 4317 RowBox, RowLines, RowMinHeight, RowsEqual, RowSpacings, RSolve,%  
 4318 RuleCondition, RuleForm, RulerUnits, Saveable, SaveAutoDelete,%  
 4319 ScreenRectangle, ScreenStyleEnvironment, ScriptBaselineShifts,%  
 4320 ScriptLevel, ScriptMinSize, ScriptRules, ScriptSizeMultipliers,%  
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 4322 SelectedNotebook, Selection, SelectionAnimate, SelectionCell,%  
 4323 SelectionCellCreateCell, SelectionCellDefaultStyle,%  
 4324 SelectionCellParentStyle, SelectionCreateCell, SelectionDuplicateCell,%  
 4325 SelectionEvaluate, SelectionEvaluateCreateCell, SelectionMove,%  
 4326 SelectionSetStyle, SelectionStrategy, SendFontInformationToKernel,%  
 4327 SequenceHold, SequenceLimit, SeriesCoefficient, SetBoxFormNamesPacket,%  
 4328 SetEvaluationNotebook, SetFileLoadingContext, SetNotebookStatusLine,%  
 4329 SetOptionsPacket, SetSelectedNotebook, SetSpeechParametersPacket,%  
 4330 SetValue, ShortestMatch, ShowAutoStyles, ShowCellBracket,%  
 4331 ShowCellLabel, ShowCellTags, ShowClosedCellArea, ShowContents,%  
 4332 ShowCursorTracker, ShowGroupOpenCloseIcon, ShowPageBreaks,%  
 4333 ShowSelection, ShowShortBoxForm, ShowSpecialCharacters,%  
 4334 ShowStringCharacters, ShrinkWrapBoundingBox, SingleLetterItalics,%  
 4335 SingularityDepth, SingularValueDecomposition, SingularValueList,%  
 4336 SinhIntegral, Smaller, Socket, SolveDelayed, SoundAndGraphics, Sow,%  
 4337 Space, SpaceForm, SpanAdjustments, SpanCharacterRounding,%  
 4338 SpanLineThickness, SpanMaxSize, SpanMinSize, SpanningCharacters,%  
 4339 SpanSymmetric, Sparse, SparseArray, SpeakTextPacket,%  
 4340 SpellingDictionaries, SpellingDictionariesPath, SpellingOptions,%  
 4341 SpellingSuggestionsPacket, Spherical, Split, SqrtBox, SqrtBoxOptions,%  
 4342 StandardDeviation, StandardForm, StartingStepSize, StartOfLine,%  
 4343 StartOfString, StartupSound, StepMonitor, StieltjesGamma, StoppingTest,%  
 4344 StringCases, StringCount, StringExpression, StringFreeQ, StringQ,%

4345 StringReplaceList, StringReplacePart, StringSplit, StripBoxes,%  
4346 StripWrapperBoxes, StructuredSelection, StruveH, StruveL, StyleBox,%  
4347 StyleBoxAutoDelete, StyleBoxOptions, StyleData, StyleDefinitions,%  
4348 StyleForm, StyleMenuListing, StyleNameDialogSettings, StylePrint,%  
4349 StyleSheetPath, Subresultants, SubscriptBox, SubscriptBoxOptions,%  
4350 Subsets, Subsuperscript, SubsuperscriptBox, SubsuperscriptBoxOptions,%  
4351 SubtractFrom, SubValues, SugarCube, SuperscriptBox,%  
4352 SuperscriptBoxOptions, SuspendPacket, SylvesterMatrix, SymbolName,%  
4353 Syntax, SyntaxForm, SyntaxPacket, SystemException, SystemHelpPath,%  
4354 SystemStub, Tab, TabFilling, TabSpacings, TagBox, TagBoxOptions,%  
4355 TaggingRules, TagStyle, TargetFunctions, TemporaryVariable, TensorQ,%  
4356 TeXSave, TextAlignment, TextBoundingBox, TextData, TextJustification,%  
4357 TextLine, TextPacket, TextParagraph, TextRendering, TextStyle,%  
4358 ThisLink, TimeConstraint, TimeVariable, TitleGrouping, ToBoxes,%  
4359 ToColor, ToFileName, Toggle, ToggleFalse, Tolerance, TooBig, Top,%  
4360 ToRadicals, Total, Tr, TraceAction, TraceInternal, TraceLevel,%  
4361 TraditionalForm, TraditionalFunctionNotation, TraditionalNotation,%  
4362 TraditionalOrder, TransformationFunctions, TransparentColor,%  
4363 Trapezoidal, TrigExpand, TrigFactor, TrigFactorList, TrigReduce,%  
4364 TrigToExp, Tuples, UnAlias, Underflow, Underoverscript,%  
4365 UnderoverscriptBox, UnderoverscriptBoxOptions, Underscript,%  
4366 UnderscriptBox, UnderscriptBoxOptions, UndocumentedTestFEParserPacket,%  
4367 UndocumentedTestGetSelectionPacket, UnitStep, Up, URL, Using, V2Get,%  
4368 Value, ValueBox, ValueBoxOptions, ValueForm, Variance, Verbatim,%  
4369 Verbose, VerboseConvertToPostScriptPacket, VerifyConvergence,%  
4370 VerifySolutions, Version, VersionNumber, Vertical, VerticalForm,%  
4371 ViewPointSelectorSettings, Visible, VisibleCell,%  
4372 WeierstrassHalfPeriods, WeierstrassInvariants, WeierstrassSigma,%  
4373 WeierstrassZeta, White, Whitespace, WhitespaceCharacter,%  
4374 WindowClickSelect, WindowElements, WindowFloating, WindowFrame,%  
4375 WindowFrameElements, WindowMargins, WindowMovable, WindowSize,%  
4376 WindowTitle, WindowToolbars, WindowWidth, WordBoundary, WordCharacter,%  
4377 WynnDegree, XMLElement},%  
4378 moreendkeywords={\$,\$AddOnsDirectory,\$AnimationDisplayFunction,%  
4379 \$AnimationFunction,%  
4380 \$Assumptions,\$BaseDirectory,\$BoxForms,\$ByteOrdering,%  
4381 \$CharacterEncoding,\$ConditionHold,\$CurrentLink,\$DefaultPath,%  
4382 \$ExportEncodings,\$ExportFormats,\$FormatType,\$FrontEnd,%  
4383 \$HistoryLength,\$HomeDirectory,\$ImportEncodings,\$ImportFormats,%  
4384 \$InitialDirectory,\$InstallationDate,\$InstallationDirectory,%  
4385 \$InterfaceEnvironment,%  
4386 \$LaunchDirectory,\$LicenseExpirationDate,\$LicenseID,\$LicenseProcesses,%  
4387 \$LicenseServer,\$MachineDomain,\$MaxExtraPrecision,\$MaxLicenseProcesses,%  
4388 \$MaxNumber,\$MaxPiecewiseCases,\$MaxPrecision,\$MaxRootDegree,%  
4389 \$MinNumber,\$MinPrecision,\$NetworkLicense,\$NumberMarks,%  
4390 \$Off,\$OutputForms,\$ParentLink,\$ParentProcessID,%  
4391 \$PasswordFile,\$PathnameSeparator,\$PreferencesDirectory,\$PrintForms,%  
4392 \$PrintLiteral,\$ProcessID,\$ProcessorType,\$ProductInformation,%  
4393 \$ProgramName,\$PSDirectDisplay,\$RandomState,\$RasterFunction,%  
4394 \$RootDirectory,\$SetParentLink,\$SoundDisplay,\$SuppressInputFormHeads,%  
4395 \$SystemCharacterEncoding,\$SystemID,\$TemporaryPrefix,\$TextStyle,%  
4396 \$TopDirectory,\$TraceOff,\$TraceOn,\$TracePattern,%  
4397 \$TracePostAction,\$TracePreAction,\$UserAddOnsDirectory,\$UserBaseDirectory,%  
4398 \$UserName,Constant,Flat,HoldAll,%

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4399   HoldAllComplete, HoldFirst, HoldRest, Listable, %
4400   Locked, NHoldAll, NHoldFirst, NHoldRest, %
4401   NumericFunction, OneIdentity, Orderless, Protected, %
4402   ReadProtected, SequenceHold}, %
4403 }%

4404 %%
4405 %% Mathematica definitions (c) 1999 Michael Wiese
4406 %%
4407 \lst@definlanguage[3.0]{Mathematica}[1.0]{Mathematica}%
4408   {morekeywords={Abort, AbortProtect, AbsoluteDashing, AbsolutePointSize, %
4409     AbsoluteThickness, AbsoluteTime, AccountingFormAiry, AiPrime, AiryBi, %
4410     AiryBiPrime, Alternatives, AnchoredSearch, AxesEdge, AxesOrigin, %
4411     AxesStyle, Background, BetaRegularized, BoxStyle, C, CheckAbort, %
4412     Circle, ClebschGordan, CMYKColor, ColorFunction, ColorOutput, Compile, %
4413     Compiled, CompiledFunction, ComplexExpand, ComposeList, Composition, %
4414     ConstrainedMax, ConstrainedMin, Contexts, ContextToFilename, %
4415     ContourLines, Contours, ContourShading, ContourSmoothing, %
4416     ContourStyle, CopyDirectory, CopyFile, CosIntegral, CreateDirectory, %
4417     Cuboid, Date, DeclarePackage, DefaultColor, DefaultFont, Delete, %
4418     DeleteCases, DeleteDirectory, DeleteFile, Dialog, DialogIndent, %
4419     DialogProlog, DialogSymbols, DigitQ, Directory, DirectoryStack, Disk, %
4420     Dispatch, DownValues, DSolve, Encode, Epilog, Erfc, Evaluate, %
4421     ExponentFunction, FaceGrids, FileByteCount, FileDate, FileNames, %
4422     FileType, Find, FindList, FixedPointList, FlattenAt, Fold, FoldList, %
4423     Frame, FrameLabel, FrameStyle, FrameTicks, FromCharacterCode, %
4424     FromDate, FullGraphics, FullOptions, GammaRegularized, %
4425     GaussianIntegers, GraphicsArray, GraphicsSpacing, GridLines, %
4426     GroebnerBasis, Heads, HeldPart, HomeDirectory, Hue, IgnoreCases, %
4427     InputStream, Install, InString, IntegerDigits, InterpolatingFunction, %
4428     InterpolatingPolynomial, Interpolation, Interrupt, InverseFunction, %
4429     InverseFunctions, JacobiZeta, LetterQ, LinearProgramming, ListPlay, %
4430     LogGamma, LowerCaseQ, MachineNumberQ, MantissaExponent, MapIndexed, %
4431     MapThread, MatchLocalNames, MatrixExp, MatrixPower, MeshRange, %
4432     MeshStyle, MessageList, Module, NDSolve, NSolve, NullRecords, %
4433     NullWords, NumberFormat, NumberPadding, NumberSigns, OutputStream, %
4434     PaddedForm, ParentDirectory, Pause, Play, PlayRange, PlotRegion, %
4435     PolygonIntersections, PolynomialGCD, PolynomialLCM, PolynomialMod, %
4436     PostScript, PowerExpand, PrecisionGoal, PrimePi, Prolog, %
4437     QRDecomposition, Raster, RasterArray, RealDigits, Record, RecordLists, %
4438     RecordSeparators, ReleaseHold, RenameDirectory, RenameFile, %
4439     ReplaceHeldPart, ReplacePart, ResetDirectory, Residue, %
4440     RiemannSiegelTheta, RiemannSiegelZ, RotateLabel, SameTest, %
4441     SampleDepth, SampledSoundFunction, SampledSoundList, SampleRate, %
4442     SchurDecomposition, SessionTime, SetAccuracy, SetDirectory, %
4443     SetFileDate, SetPrecision, SetStreamPosition, Shallow, SignPadding, %
4444     SinIntegral, SixJSymbol, Skip, Sound, SpellingCorrection, %
4445     SphericalRegion, Stack, StackBegin, StackComplete, StackInhibit, %
4446     StreamPosition, Streams, StringByteCount, StringConversion, %
4447     StringDrop, StringInsert, StringPosition, StringReplace, %
4448     StringReverse, StringTake, StringToStream, SurfaceColor, %
4449     SyntaxLength, SyntaxQ, TableAlignments, TableDepth, %
4450     TableDirections, TableHeadings, TableSpacing, ThreeJSymbol, TimeUsed, %
4451     TimeZone, ToCharacterCode, ToDate, ToHeldExpression, TokenWords, %
4452     ToLowerCase, ToUpperCase, Trace, TraceAbove, TraceBackward, %

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4453     TraceDepth,TraceDialog,TraceForward,TraceOff,TraceOn,%
4454     TraceOriginal,TracePrint,TraceScan,Trig,Unevaluated,Uninstall,%
4455     UnsameQ,UpperCaseQ,UpValues,ViewCenter,ViewVertical,With,Word,%
4456     WordSearch,WordSeparators},%
4457     morendkeywords={Stub,Temporary,$Aborted,$BatchInput,$BatchOutput,%
4458     $CreationDate,$DefaultFont,$DumpDates,$DumpSupported,$Failed,%
4459     $Input,$Inspector,$IterationLimit,$Language,$Letters,$Linked,%
4460     $LinkSupported,$MachineEpsilon,$MachineID,$MachineName,%
4461     $MachinePrecision,$MachineType,$MaxMachineNumber,$MessageList,%
4462     $MessagePrePrint,$MinMachineNumber,$ModuleNumber,$NewMessage,%
4463     $NewSymbol,$Notebooks,$OperatingSystem,$Packages,$PipeSupported,%
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4465     $StringConversion,$StringOrder,$SyntaxHandler,$TimeUnit,%
4466     $VersionNumber}%
4467 }%

4468 \lst@definelineage[1.0]{Mathematica}%
4469 {morekeywords={Abs,Accuracy,AccurayGoal,AddTo,AiryAi,AlgebraicRules,%
4470     AmbientLight,And,Apart,Append,AppendTo,Apply,ArcCos,ArcCosh,%
4471     ArcCot,ArcCoth,ArcCsc,ArcCsch,ArcSec,ArcSech,ArcSin,ArcSinh,%
4472     ArcTan,ArcTanh,Arg,ArithmeticGeometricMean,Array,AspectRatio,%
4473     AtomQ,Attributes,Axes,AxesLabel,BaseForm,Begin,BeginPackage,%
4474     BernoulliB,BesselI,BesselJ,BesselK,BesselY,Beta,Binomial,Blank,%
4475     BlankNullSequence,BlankSequence,Block,Boxed,BoxRatios,Break,Byte,%
4476     ByteCount,Cancel,Cases,Catch,Ceiling,CForm,Character,Characters,%
4477     ChebyshevT,ChebyshevU,Check,Chop,Clear,ClearAll,ClearAttributes,%
4478     ClipFill,Close,Coefficient,CoefficientList,Collect,ColumnForm,%
4479     Complement,Complex,CompoundExpression,Condition,Conjugate,%
4480     Constants,Context,Continuation,Continue,ContourGraphics,%
4481     ContourPlot,Cos,Cosh,Cot,Coth,Count,Csc,Csch,Cubics,Cyclotomic,%
4482     D,Dashing,Decompose,Decrement,Default,Definition,Denominator,%
4483     DensityGraphics,DensityPlot,Depth,Derivative,Det,DiagonalMatrix,%
4484     DigitBlock,Dimensions,DirectedInfinity,Display,DisplayFunction,%
4485     Distribute,Divide,DivideBy,Divisors,DivisorSigma,Do,Dot,Drop,Dt,%
4486     Dump,EdgeForm,Eigensystem,Eigenvalues,Eigenvectors,Eliminate,%
4487     EllipticE,EllipticExp,EllipticF,EllipticK,EllipticLog,EllipticPi,%
4488     EllipticTheta,End,EndPackage,EngineeringForm,Environment,Equal,%
4489     Erf,EulerE,EulerPhi,EvenQ,Exit,Exp,Expand,ExpandAll,%
4490     ExpandDenominator,ExpandNumerator,ExpIntegralE,ExpIntegralEi,%
4491     Exponent,Expression,ExtendedGCD,FaceForm,Factor,FactorComplete,%
4492     Factorial,Factorial2,FactorInteger,FactorList,FactorSquareFree,%
4493     FactorSquareFreeList,FactorTerms,FactorTermsList,FindMinimum,%
4494     FindRoot,First,Fit,FixedPoint,Flatten,Floor,FontForm,For,Format,%
4495     FormatType,FortranForm,Fourier,FreeQ,FullDefinition,FullForm,%
4496     Function,Gamma,GCD,GegenbauerC,General,Get,Goto,Graphics,%
4497     Graphics3D,GrayLevel,Greater,GreaterEqual,Head,HermiteH,%
4498     HiddenSurface,Hold,HoldForm,HypergeometricOF1,Hypergeometric1F1,%
4499     Hypergeometric2F1,HypergeometricU,Identity,IdentityMatrix,If,Im,%
4500     Implies,In,Increment,Indent,Infix,Information,Inner,Input,%
4501     InputForm,InputString,Insert,Integer,IntegerQ,Integrate,%
4502     Intersection,Inverse,InverseFourier,InverseJacobiSN,%
4503     InverseSeries,JacobiAmplitude,JacobiP,JacobiSN,JacobiSymbol,Join,%
4504     Label,LaguerreL,Last,LatticeReduce,LCM,LeafCount,LegendreP,%
4505     LegendreQ,LegendreType,Length,LerchPhi,Less,LessEqual,Level,%
4506     Lighting,LightSources,Limit,Line,LinearSolve,LineBreak,List,%

```

```

4507 ListContourPlot,ListDensityPlot,ListPlot,ListPlot3D,Literal,Log,%
4508 LogicalExpand,LogIntegral,MainSolve,Map,MapAll,MapAt,MatchQ,%
4509 MatrixForm,MatrixQ,Max,MaxBend,MaxMemoryUsed,MemberQ,%
4510 MemoryConstrained,MemoryInUse,Mesh,Message,MessageName,Messages,%
4511 Min,Minors,Minus,Mod,Modulus,MoebiusMu,Multinomial,N,NameQ,Names,%
4512 NBernoulliB,Needs,Negative,Nest,NestList,NIntegrate,%
4513 NonCommutativeMultiply,NonConstants,NonNegative,Normal,Not,%
4514 NProduct,NSum,NullSpace,Number,NumberForm,NumberPoint,NumberQ,%
4515 NumberSeparator,Numerator,0,OddQ,Off,On,OpenAppend,OpenRead,%
4516 OpenTemporary,OpenWrite,Operate,Optional,Options,Or,Order,%
4517 OrderedQ,Out,Outer,OutputForm,PageHeight,PageWidth,%
4518 ParametricPlot,ParametricPlot3D,Part,Partition,PartitionsP,%
4519 PartitionsQ,Pattern,Permutations,Plot,Plot3D,PlotDivision,%
4520 PlotJoined,PlotLabel,PlotPoints,PlotRange,PlotStyle,Pochhammer,%
4521 Plus,Point,PointSize,PolyGamma,Polygon,PolyLog,PolynomialQ,%
4522 PolynomialQuotient,PolynomialRemainder,Position,Positive,Postfix,%
4523 Power,PowerMod,PrecedenceForm,Precision,PreDecrement,Prefix,%
4524 PreIncrement,Prepend,PrependTo,Prime,PrimeQ,Print,PrintForm,%
4525 Product,Protect,PseudoInverse,Put,PutAppend,Quartics,Quit,%
4526 Quotient,Random,Range,Rational,Rationalize,Raw,Re,Read,ReadList,%
4527 Real,Rectangle,Reduce,Remove,RenderAll,Repeated,RepeatedNull,%
4528 Replace,ReplaceAll,ReplaceRepeated,Rest,Resultant,Return,Reverse,%
4529 RGBColor,Roots,RotateLeft,RotateRight,Round,RowReduce,Rule,%
4530 RuleDelayed,Run,RunThrough,SameQ,Save,Scaled,Scan,ScientificForm,%
4531 Sec,Sech,SeedRandom,Select,Sequence,SequenceForm,Series,%
4532 SeriesData,Set,SetAttributes,SetDelayed,SetOptions,Shading,Share,%
4533 Short,Show,Sign,Signature,Simplify,Sin,SingularValues,Sinh,%
4534 Skeleton,Slot,SlotSequence,Solve,SolveAlways,Sort,%
4535 SphericalHarmonicY,Splice,Sqrt,StirlingS1,StirlingS2,String,%
4536 StringBreak,StringForm,StringJoin,StringLength,StringMatchQ,%
4537 StringSkeleton,Subscript,Subscripted,Subtract,SubtractForm,Sum,%
4538 Superscript,SurfaceGraphics,Switch,Symbol,Table,TableForm,TagSet,%
4539 TagSetDelayed,TagUnset,Take,Tan,Tanh,ToString,TensorRank,TeXForm,%
4540 Text,TextForm,Thickness,Thread,Through,Throw,Ticks,%
4541 TimeConstrained,Times,TimesBy,Timing,ToExpression,Together,%
4542 ToRules,ToString,TotalHeight,TotalWidth,Transpose,TreeForm,TrueQ,%
4543 Unequal,Union,Unique,Unprotect,Unset,Update,UpSet,UpSetDelayed,%
4544 ValueQ,Variables,VectorQ,ViewPoint,WeierstrassP,%
4545 WeierstrassPPrime,Which,While,WorkingPrecision,Write,WriteString,%
4546 Xor,ZeroTest,Zeta},%
4547 morendkeywords={All,Automatic,Catalan,ComplexInfinity,Constant,%
4548 Degree,E,EndOfFile,EulerGamma,False,Flat,GoldenRatio,HoldAll,%
4549 HoldFirst,HoldRest,I,Indeterminate,Infinity,Listable,Locked,%
4550 Modular,None,Null,OneIdentity,Orderless,Pi,Protected,%
4551 ReadProtected,True,$CommandLine,$Context,$ContextPath,$Display,%
4552 $DisplayFunction,$Echo,$Epilog,$IgnoreEOF,$Line,$Messages,%
4553 $Output,$Path,$Post,$Pre,$PrePrint,$RecursionLimit,$System,%
4554 $Urgent,$Version},%
4555 sensitive,%
4556 morecomment=[s]{(*)}{(*)},%
4557 morestring=[d]"%
4558 }[keywords,comments,strings]%
4559 </lang1>

```



```

4603     dotprod,floor,fontsize,greenpart,hex,infont,intersectionpoint,%
4604     intersectiontimes,inverse,known,length,lft,llcorner,lrcorner,%
4605     makepath,makepen,mexp,mlog,mod,normaldeviate,not,numeric,oct,%
4606     odd,or,pair,path,pen,penoffset,picture,point,postcontrol,%
4607     precontrol,redpart,reverse,rotated,round,rt,scaled,shifted,%
4608     sind,slanted,sqrt,str,string,subpath,substring,top,transform,%
4609     transformed,ulcorner,uniformdeviate,unitvector,unknown,%
4610     urcorner,whatever,xpart,xscaled,xxpart,ypart,yscaled,%
4611     ypart,yypart,zscaled,of,reflectedabout,rotatedaround,ulft,urt,%
4612     llft,lrt,readfrom,write,stroked,filled,textual,clipped,bounded,%
4613     pathpart,penpart,dashpart,textpart,fontpart},%
4614 % keywords[3] = Commands (Table 10)
4615 morekeywords=[3]{addto,clip,cutdraw,draw,drawarrow,drawdblearrow,%
4616     fill,filldraw,interim,let,loggingall,newinternal,pickup,%
4617     save,setbounds,shipout,show,showdependencies,showtoken,%
4618     showvariable,special,tracingall,tracingnone,undraw,unfill,%
4619     unfilldraw,to,also,contour,doublepath,withcolor,withpen,%
4620     dashed,randomseed},%
4621 % keywords[4] = Function-Like Macros (Table 11)
4622 morekeywords=[4]{boxit,boxjoin,bpath,buildcycle,circleit,dashpattern,%
4623     decr,dotlabel,dotlabels,drawboxed,drawboxes,drawoptions,%
4624     drawunboxed,fixpos,fixsize,incr,interpath,label,labels,max,min,pic,%
4625     thelabel,z,image},%
4626 % keywords[5] = Internal and Predefined Variables (Tables 3, 4)
4627 morekeywords=[5]{ahangle,ahlength,bboxmargin,charcode,ircmargin,%
4628     day,defaultdx,defaultdy,defaultpen,defaultscale,labeloffset,%
4629     linecap,linejoin,miterlimit,month,pausing,prologues,showstopping,%
4630     time,tracingcapsules,tracingchoices,tracingcommands,%
4631     tracingequations,tracinglostchars,tracingmacros,tracingonline,%
4632     tracingoutput,tracingrestores,tracingspecs,tracingstats,%
4633     tracingtitles,truecorners,warningcheck,year},
4634 morekeywords=[5]{background,currentpen,currentpicture,cuttings,%
4635     defaultfont},%
4636 % keywords[6] = Predefined Constants (Table 5)
4637 morekeywords=[6]{beveled,black,blue,bp,butt,cc,cm,dd,ditto,down,%
4638     epsilon,evenly,false,fullcircle,green,halfcircle,identity,%
4639     in,infinity,left,mitered,mm,nullpicture,origin,pc,pencircle,%
4640     pt,quartercircle,red,right,rounded,squared,true,unitssquare,%
4641     up,white,withdots},
4642 sensitive=false,%
4643 alsoother={0123456789$},%
4644 morecomment=[1]\%,%
4645 morestring=[mf]{input\ },%
4646 morestring=[b]"%
4647 }[keywords,comments,strings,mf]%
4648  $\end{code}$ 

```

## 2.46 Miranda

Thanks to Peter Bartke for providing the definition.

```

4649  $\begin{code}$ 
4650 %%
4651 %% Miranda definition (c) 1998 Peter Bartke

```

```

4652 %%
4653 %% Miranda: pure lazy functional language with polymorphic type system,
4654 %%           garbage collection and functions as first class citizens
4655 %%
4656 \lst@definlanguage{Miranda}%
4657 {morekeywords={abstype,div,if,mod,otherwise,readvals,show,type,where,%
4658   with,bool,char,num,sys_message,False,True,Appendfile,Closefile,%
4659   Exit,Stderr,Stdout,System,Tofile,\%include,\%export,\%free,%
4660   \%insert,abs,and,arctan,cjustify,code,concat,const,converse,cos,%
4661   decode,digit,drop,dropwhile,entier,error,exp,filemode,filter,%
4662   foldl,foldl1,foldr,foldr1,force,fst,getenv,hd,hugenum,id,index,%
4663   init,integer,iterate,last,lam,lam2,letter,limit,lines,ljustify,%
4664   log,log10,map,map2,max,max2,member,merge,min,min2,mkset,neg,%
4665   numval,or,pi,postfix,product,read,rep,repeat,reverse,rjustify,%
4666   scan,seq,showfloat,shownum,showscaled,sin,snd,sort,spaces,sqrt,%
4667   subtract,sum,system,take,takewhile,tinyint,tl,transpose,undef,%
4668   until,zip2,zip3,zip4,zip5,zip6,zip},%
4669   sensitive,%
4670   morecomment=[l]||,%
4671   morestring=[b]"%
4672 }[keywords,comments,strings]%
4673 </lang2>

```

## 2.47 Mizar

As you can read below, Adam Grabowski provided this language definition.

```

4674 (*lang3)
4675 %%
4676 %% Mizar definition (c) 2003 Adam Grabowski
4677 %%
4678 %% Mizar is freely available at URL www.mizar.org for the Linux x86,
4679 %% Solaris x86, and Windows operating systems.
4680 %%
4681 \lst@definlanguage{Mizar}%
4682 {otherkeywords={->,(\\#,\\#),. =),\\&},%
4683   morekeywords={vocabulary,constructors,$1,$1,$2,$3,$4,$5,$6,$7,$8,%
4684     @proof,according,aggregate,and,antonym,as,associativity,assume,%
4685     asymmetry,attr,be,begin,being,by,canceled,case,cases,cluster,%
4686     clusters,coherence,commutativity,compatibility,connectedness,%
4687     consider,consistency,constructors,contradiction,correctness,def,%
4688     deffunc,define,definition,definitions,defpred,end,environ,equal,%
4689     ex,exactly,existence,for,from,func,given,hence,hereby,holds,%
4690     idempotence,if,iff,implies,involutiveness,irreflexivity,is,it,%
4691     let,means,mode,non,not,notation,now,of,or,otherwise,over,per,%
4692     pred,prefix,projectivity,proof,provided,qua,reconsider,redefine,%
4693     reflexivity,requirements,reserve,scheme,schemes,section,selector,%
4694     set,st,struct,such,suppose,symmetry,synonym,take,that,the,then,%
4695     theorem,theorems,thesis,thus,to,transitivity,uniqueness,%
4696     vocabulary,where},%
4697   sensitive=t,%
4698   morecomment=[l]:;%
4699 }[keywords,comments]%
4700 </lang3>

```

## 2.48 ML

Thanks to Torben Hoffmann for providing the definition.

```
4701  $\langle *lang2 \rangle$ 
4702 %%
4703 %% ML definition (c) 1999 Torben Hoffmann
4704 %%
4705 \lst@definlanguage{ML}%
4706 {morekeywords={abstype, and, andalso, as, case, do, datatype, else, end, %
4707     eqtype, exception, fn, fun, functor, handle, if, in, include, infix, %
4708     infixr, let, local, nonfix, of, op, open, orelse, raise, rec, sharing, sig, %
4709     signature, struct, structure, then, type, val, with, withtype, while}, %
4710     sensitive, %
4711     morecomment=[n]{(*){(*)}}, %
4712     morestring=[d]"%
4713 }[keywords, comments, strings]%
4714  $\langle /lang2 \rangle$ 
```

## 2.49 Modula-2

Took data from

- NIKLAUS WIRTH: **Programmieren in Modula-2**, Übers. Guido Pfeiffer; 2. Auflage – Berlin; Heidelberg; New York; London; Paris; Tokyo; Hong Kong: Springer, 1991; ISBN 3-540-51689-1.

```
4715  $\langle *lang3 \rangle$ 
4716 \lst@definlanguage{Modula-2}%
4717 {morekeywords={AND, ARRAY, BEGIN, BY, CASE, CONST, DIV, DO, ELSE, ELSIF, END, %
4718     EXIT, EXPORT, FOR, FROM, IF, IMPLEMENTATION, IMPORT, IN, MOD, MODULE, NOT, %
4719     OF, OR, POINTER, PROCEDURE, QUALIFIED, RECORD, REPEAT, RETURN, SET, THEN, %
4720     TYPE, UNTIL, VAR, WHILE, WITH, ABS, BITSET, BOOLEAN, CAP, CARDINAL, CHAR, %
4721     CHR, DEC, EXCL, FALSE, FLOAT, HALT, HIGH, INC, INCL, INTEGER, LONGCARD, %
4722     LONGINT, LONGREAL, MAX, MIN, NIL, ODD, ORD, PROC, REAL, SIZE, TRUE, TRUNC, %
4723     VAL, DEFINITION, LOOP}, % added keywords due to Peter Bartke 99/07/22
4724     sensitive, %
4725     morecomment=[n]{(*){(*)}}, %
4726     morestring=[d]', %
4727     morestring=[d]"%
4728 }[keywords, comments, strings]%
4729  $\langle /lang3 \rangle$ 
```

## 2.50 MuPAD

This definition was provided by Christopher Creutzig. Again thanks to Ulrike Fischer for pointing to a missing @ in \lstdefinlanguage.

```
4730  $\langle *lang3 \rangle$ 
4731 \lst@definlanguage{MuPAD}{%
4732     morekeywords={end, next, break, if, then, elif, else, end_if, case, end_case, %
4733         otherwise, for, from, to, step, downto, in, end_for, while, end_while, %
4734         repeat, until, end_repeat, or, and, not, xor, div, mod, union, minus, %
4735         intersect, subset, proc, begin, end_proc, domain, end_domain, category, %
```

```

4736     end_category, axiom, end_axiom, quit, delete, frame},%
4737 morekeywords=[2]{NIL, FAIL, TRUE, FALSE, UNKNOWN, I, RD_INF, RD_NINF,%
4738     RD_NAN, name, local, option, save, inherits, of, do},%
4739 otherkeywords={\%if, ?, !, :=, <, >, =, <=, <>, >=, ==>, <=>, ::, . . ., . . ., ->,%
4740     @, @@, \$},%
4741 sensitive=true,%
4742 morecomment=[l]{//},%
4743 morecomment=[n]{/*}{*/},%
4744 morestring=[b]" ,%
4745 morestring=[d]{ '%
4746 }[keywords, comments, strings]
4747 </lang3>

```

## 2.51 NASTRAN

```
4748 (*lang3)
```

The definition is from Jeffrey Ratcliffe—except the MoreSelectCharTable part which simulates the keyword BEGIN BULK.

```

4749 \lst@definlanguage{NASTRAN}
4750 {morekeywords={ENDDATA},%
4751   morecomment=[l]$,%
4752   MoreSelectCharTable=%
4753     \lst@CArgX BEGIN\ BULK\relax\lst@CDef{%
4754     {\lst@ifmode\else \ifnum\lst@length=\z@
4755       \lst@EnterMode{\lst@GPmode}{\lst@modetrue
4756         \let\lst@currstyle\lst@gkeywords@sty}%
4757       \fi \fi}%
4758     {\ifnum\lst@mode=\lst@GPmode
4759       \lst@XPrintToken \lst@LeaveMode
4760       \fi}%
4761   }[keywords, comments]%
4762 </lang3>

```

## 2.52 Oberon-2

```
4763 (*lang3)
```

```

4764 \lst@definlanguage{Oberon-2}%
4765 {morekeywords={ARRAY, BEGIN, BOOLEAN, BY, CASE, CHAR, CONST, DIV, DO, ELSE,%
4766     ELSIF, END, EXIT, FALSE, FOR, IF, IMPORT, IN, INTEGER, IS, LONGINT,%
4767     LONGREAL, LOOP, MOD, MODULE, NIL, OF, OR, POINTER, PROCEDURE, REAL, RECORD,%
4768     REPEAT, RETURN, SET, SHORTINT, THEN, TO, TRUE, TYPE, UNTIL, VAR, WHILE,%
4769     WITH, ABS, ASH, CAP, CHR, COPY, DEC, ENTIER, EXCL, HALT, INC, INCL, LEN, LONG,%
4770     MAX, MIN, NEW, ODD, ORD, SHORT, SIZE},%
4771   sensitive,%
4772   morecomment=[n]{(*)}{(*)},%
4773   morestring=[d]' ,%
4774   morestring=[d]"%
4775 }[keywords, comments, strings]%
4776 </lang3>

```

## 2.53 OCL

This definition is based on chapter 7 of the OMG UML standard version 1.3:

- **OMG: OMG Unified Modeling Language Specification; © 1999**  
OMG; Available at <ftp://ftp.omg.org/pub/docs/ad/99-06-08.pdf>.

This language is due to Achim D. Brucker.

```
4777 (*lang3)
4778 %%
4779 %% OCL definition (c) 2000 Achim D. Brucker
4780 %%
4781 %% You are allowed to use, modify and distribute this code either under
4782 %% the terms of the LPPL (version 1.0 or later) or the GPL (version 2.0
4783 %% or later).
4784 %%
```

First we define are very decorative style. In the OMG standard only the boolean (infix (?)) operations are highlighted, but I think all OCL-defined operations should be highlighted, because they are *guaranteed* to be side-effect-free (in OCL only side effect free evaluations or path expressions are allowed).

```
4785 \lst@definelanguage[decorative]{OCL}[OMG]{OCL}
4786   {otherkeywords={@pre},%
4787     morekeywords={name,attributes,associatoinEnds,operations,%
4788       supertypes,allSupertypes,allInstances,oclIsKindOf,oclIsTypeOf,%
4789       oclAsType,oclInState,oclIsNew,evaluationType,abs,floor,round,max,%
4790       min,div,mod,size,concat,toUpper,toLower,substring,includes,%
4791       excludes,count,includesAll,excludesAll,isEmpty,notEmpty,sum,%
4792       exists,forAll,isUnique,sortedBy,iterate,union,intersection,%
4793       including,excluding,symmetricDifference,select,reject,collect,%
4794       asSequence,asBag,asSequence,asSet,append,prepend,subSequence,at,%
4795       first,last,true,false,isQuery}%
4796   }%
```

Remark: "isQuery" is not real OCL, but a important attribute of the underlying UML model.

The dialect called **OMG** is a very spare version. If you use this variant with bold style for first and second order keywords you get the look and feel of the **OMG** standard. First order keywords are the OCL context declarations (see section 7.3 of the **OMG** standard):

```
4797 \lst@definelanguage[OMG]{OCL}%
4798   {morekeywords={context,pre,inv,post},%
```

Second order keywords are the operation which are defined for type Boolean (see pages 7-34/35 of the **OMG** standard) and the let-operation (in principle these are the infix operations):

```
4799   ndkeywords={or,xor,and,not,implies,if,then,else,endif},%
```

Third order keywords are the basic data types as declared in section 7.4 of the **OMG** standard:

```
4800   morekeywords=[3]{Boolean,Integer,Real,String,Set,Sequence,Bag,%
4801     OclType,OclAny,OclExpression,Enumeration,Collection,},%
4802   sensitive=t,%
4803   morecomment=[1]--,%
4804   morestring=[d]'%
4805   }[keywords,comments,strings]%
```

After a bug report by Martin Süßkraut `moreerdkeywords` has been changed to the correct optional argument [3].

```
4806 </lang3>
```



## 2.54 Octave

4807 (\*lang1)

As you can read below the definition is due to Ulrich G. Wortmann. Additions due to Sebastian Schubert.

```
4808 %%
4809 %% Octave definition (c) 2001,2002 Ulrich G. Wortmann
4810 %%
4811 \lst@definlanguage{Octave}%
4812 {morekeywords={gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
4813     all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
4814     auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
4815     betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
4816     cart2sph,caxis,cd,cdf2rdf,credit,ceil,chol,cla,clabel,clc,clear,%
4817     clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
4818     comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
4819     contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
4820     cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
4821     csvwrite,cumprod,cumsum,cylinder,date,dbclear,dbcont,dbdown,%
4822     dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
4823     ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
4824     del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
4825     dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
4826     end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
4827     engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
4828     engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,%
4829     errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
4830     feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
4831     fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%
4832     flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
4833     fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
4834     gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
4835     getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
4836     gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
4837     hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
4838     imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
4839     invhilb,isempty,isglobal,ishold,isieee,isinfl,isletter,isnan,%
4840     isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
4841     legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
4842     loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
4843     matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
4844     matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
4845     matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
4846     meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
4847     mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
4848     mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
4849     min,more,movie,moviein,mu2lin,mxMalloc,mxCopyCharacterToPtr,%
4850     mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
4851     mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
4852     mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
4853     mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
4854     mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
4855     mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
4856     mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
```

```

4857     mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nls,nnz,%
4858     nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
4859     pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
4860     pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
4861     pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
4862     quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
4863     rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
4864     return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
4865     round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
4866     semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
4867     spalloc,sparse,spaugment,spconvert,spdiags,specular,speye,spfun,%
4868     sph2cart,sphere,spinmap,spline,spones,sparms,sprandn,sprandsym,%
4869     sprank,sprintf,spy,sqrt,sqrtm,sscanf,stair,stairs,startup,std,stem,%
4870     str2mat,str2num,strcmp,strings,strcmp,strtok,subplot,subscribe,%
4871     subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
4872     symmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
4873     toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
4874     uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
4875     viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
4876     whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
4877     stderr,stdout,plot,set,endif,wk1write,xlabel,xor,ylabel,zeros,%
4878     xlabel,zoom,endwhile,endfunction,printf,case,switch,otherwise,%
4879     system,lsode,endfor,error,ones,oneplot,__gnuplot_set__,do,until},%
4880     sensitive=t,%
4881     morecomment=[l]\#,%
4882     morecomment=[l]\#\#,%
4883     morecomment=[l]\%,%
4884     morestring=[m]',%
4885     morestring=[m]"%
4886 }[keywords,comments,strings]%
4887 </lang1>

```

## 2.55 Oz

```
4888 (*lang2)
```

Thanks to Andres Becerra Sandoval for providing this language definition.

```

4889 %%
4890 %% Oz definition (c) Andres Becerra Sandoval
4891 %%
4892 \lst@definlanguage{Oz}%
4893 {morekeywords={andthen,at,attr,case,catch,choice,class,%
4894     cond,declare,define,dis,div,else,elsecase,%
4895     elseif,end,export,fail,false,feat,finally,%
4896     from,fun,functor,if,import,in,local,%
4897     lock,meth,mod,not,of,or,orelse,%
4898     prepare,proc,prop,raise,require,self,skip,%
4899     then,thread,true,try,unit},%
4900     sensitive=true,%
4901     morecomment=[l]{\%},%
4902     morecomment=[s]{/*}{*/},%
4903     morestring=[b]" ,%
4904     morestring=[d] '%
4905 }[keywords,comments,strings]%
4906 </lang2>

```

## 2.56 Pascal

4907 (\*lang1)

Thanks to Andreas Stephan for reporting non-keywords alpha, byte, pack and unpack.

```
4908 \lst@definlanguage[XSC]{Pascal}[Standard]{Pascal}
4909   {deletekeywords={alfa,byte,pack,unpack},% 1998 Andreas Stephan
4910     morekeywords={dynamic,external,forward,global,module,nil,operator,%
4911       priority,sum,type,use,dispose,mark,page,release,cimatrix,%
4912       cinterval,civector,cmatrix,complex,cvector,dotprecision,imatrix,%
4913       interval,ivector,rmatrix,rvector,string,im,inf,re,sup,chr,comp,%
4914       eof,eoln,expo,image,ival,lb,lbound,length,loc,mant,maxlength,odd,%
4915       ord,pos,pred,round,rval,sign,substring,succ,trunc,ub,ubound}%
4916   }%
4917 \lst@definlanguage[Borland6]{Pascal}[Standard]{Pascal}
4918   {morekeywords={asm,constructor,destructor,implementation,inline,%
4919     interface,nil,object,shl,shr,string,unit,uses,xor},%
4920     moreendkeywords={Abs,Addr,ArcTan,Chr,Concat,Copy,Cos,CSEg,DiskFree,%
4921       DiskSize,DosExitCode,DosVersion,DSEg,EnvCount,EnvStr,Eof,Eoln,%
4922       Exp,FExpand,FilePos,FileSize,Frac,FSearch,GetBkColor,GetColor,%
4923       GetDefaultPalette,GetDriverName,GetEnv,GetGraphMode,GetMaxMode,%
4924       GetMaxX,GetMaxY,GetModeName,GetPaletteSize,GetPixel,GetX,GetY,%
4925       GraphErrorMsg,GraphResult,Hi,ImageSize,InstallUserDriver,%
4926       InstallUserFont,Int,IOResult,KeyPressed,Length,Lo,MaxAvail,%
4927       MemAvail,MsDos,Odd,Ofs,Ord,OvrGetBuf,OvrGetRetry,ParamCount,%
4928       ParamStr,Pi,Pos,Pred,Ptr,Random,ReadKey,Round,SeekEof,SeekEoln,%
4929       Seg,SetAspectRatio,Sin,SizeOf,Sound,SPtr,Sqr,Sqrt,SSEg,Succ,%
4930       Swap,TextHeight,TextWidth,Trunc,TypeOf,UpCase,WhereX,WhereY,%
4931       Append,Arc,Assign,AssignCrt,Bar,Bar3D,BlockRead,BlockWrite,ChDir,%
4932       Circle,ClearDevice,ClearViewPort,Close,CloseGraph,ClrEol,ClrScr,%
4933       Dec,Delay>Delete,Delete,DelLine,DetectGraph,Dispose,DrawPoly,Ellipse,%
4934       Erase,Exec,Exit,FillChar,FillEllipse,FillPoly,FindFirst,FindNext,%
4935       FloodFill,Flush,FreeMem,FSplit,GetArcCoords,GetAspectRatio,%
4936       GetDate,GetDefaultPalette,GetDir,GetCBreak,GetFAttr,%
4937       GetFillSettings,GetFTime,GetImage,GetIntVec,GetLineSettings,%
4938       GetMem,GetPalette,GetTextSettings,GetTime,GetVerify,%
4939       GetViewSettings,GoToXY,Halt,HighVideo,Inc,InitGraph,Insert,%
4940       InsLine,Intr,Keep,Line,LineRel,LineTo,LowVideo,Mark,MkDir,Move,%
4941       MoveRel,MoveTo,MsDos,New,NormVideo,NoSound,OutText,OutTextXY,%
4942       OvrClearBuf,OvrInit,OvrInitEMS,OvrSetBuf,PackTime,PieSlice,%
4943       PutImage,PutPixel,Randomize,Rectangle,Release,Rename,%
4944       RestoreCrtMode,Rmdir,RunError,Sector,Seek,SetActivePage,%
4945       SetAllPalette,SetBkColor,SetCBreak,SetColor,SetDate,SetFAttr,%
4946       SetFillPattern,SetFillStyle,SetFTime,SetGraphBufSize,%
4947       SetGraphMode,SetIntVec,SetLineStyle,SetPalette,SetRGBPalette,%
4948       SetTextBuf,SetTextJustify,SetTextStyle,SetTime,SetUserCharSize,%
4949       SetVerify,SetViewPort,SetVisualPage,SetWriteMode,Sound,Str,%
4950       SwapVectors,TextBackground,TextColor,TextMode,Truncate,%
4951       UnpackTime,Val,Window}%
4952   }%
4953 \lst@definlanguage[Standard]{Pascal}%
4954   {morekeywords={alfa,and,array,begin,boolean,byte,case,char,const,div,%
4955     do,downto,else,end,false,file,for,function,get,goto,if,in,%
```

```

4956     integer,label,maxint,mod,new,not,of,or,pack,packed,page,program,%
4957     put,procedure,read,readln,real,record,repeat,reset,rewrite,set,%
4958     text,then,to,true,type,unpack,until,var,while,with,write,%
4959     writeln},%
4960     sensitive=f,%
4961     morecomment=[s]{(*){(*)},%
4962     morecomment=[s]{\}{\}\},%
4963     morestring=[d]'%
4964 }[keywords,comments,strings]%
4965 </lang1>

```

## 2.57 Perl

I got the data from <http://www.perl.com>. But I wish to thank Herbert Weinhandl for the book ‘Learning Perl’.

```

4966 (*lang1)
4967 \lst@definlanguage{Perl}%
4968 {morekeywords={abs,accept,alarm,atan2,bind,binmode,bless,caller,%
4969     chdir,chmod,chomp,chop,chown,chr,chroot,close,closedir,connect,%
4970     continue,cos,crypt,dbmclose,dbmopen,defined,delete,die,do,dump,%
4971     each,else,elsif,endgrent,endhostent,endnetent,endprotoent,%
4972     endpwent,endservent,eof,eval,exec,exists,exit,exp,fcntl,fileno,%
4973     flock,for,foreach,fork,format,formline,getc,getgrent,getgrgid,%
4974     getgrnam,gethostbyaddr,gethostbyname,gethostent,getlogin,%
4975     getnetbyaddr,getnetbyname,getnetent,getpeername,getpgrp,%
4976     getppid,getpriority,getprotobyname,getprotobynumber,getprotoent,%
4977     getpwent,getpwnam,getpwuid,getservbyname,getservbyport,%
4978     getservent,getsockname,getsockopt,glob,gmtime,goto,grep,hex,if,%
4979     import,index,int,iocctl,join,keys,kill,last,lc,lcfirst,length,%
4980     link,listen,local,localtime,log,lstat,m,map,mkdir,msgctl,msgget,%
4981     msgrcv,msgsnd,my,next,no,oct,open,opendir,ord,pack,package,pipe,%
4982     pop,pos,print,printf,prototype,push,q,qq,quotemeta,qw,qx,rand,%
4983     read,readdir,readlink,recv,redo,ref,rename,require,reset,return,%
4984     reverse,rewinddir,rindex,rmdir,s,scalar,seek,seekdir,select,%
4985     semctl,semget,semop,send,setgrent,sethostent,setnetent,setpgrp,%
4986     setpriority,setprotoent,setpwent,setservent,setsockopt,shift,%
4987     shmctl,shmget,shmread,shmwrite,shutdown,sin,sleep,socket,%
4988     socketpair,sort,splICE,split,sprintf,sqrt,srand,stat,study,sub,%
4989     substr,symlink,syscall,sysopen,sysread,system,syswrite,tell,%
4990     telldir,tie,tied,time,times,tr,truncate,uc,ucfirst,umask,undef,%
4991     unless,unlink,unpack,unshift,untie,until,use,utime,values,vec,%
4992     wait,waitpid,wantarray,warn,while,write,y},%
4993     sensitive,%
4994     morecomment=[l]\#,%
4995     morestring=[b]" ,%
4996     morestring=[b]' ,%
4997     MoreSelectCharTable=%
4998     \lst@ReplaceInput{\$\#}\{\lst@ProcessOther\$\lst@ProcessOther\#\}%
4999 }[keywords,comments,strings]%
5000 </lang1>

```

## 2.58 PHP

Luca Balzerani sent me this language definition.

```
5001 (*lang2)
5002 %%
5003 %% PHP definition by Luca Balzerani
5004 %%
5005 \lst@definelanguage{PHP}%
5006 {morekeywords={%
5007 %--- core language
5008 <?,?>,::,break,case,continue,default,do,else,%
5009 elseif,for,foreach,if,include,require,phpinfo,%
5010 switch,while,false,FALSE,true,TRUE,%
5011 %--- apache functions
5012 apache_lookup_uri,apache_note,ascii2ebcdic,ebcdic2ascii,%
5013 virtual,apache_child_terminate,apache_setenv,%
5014 %--- array functions
5015 array,array_change_key_case,array_chunk,array_count_values,%
5016 array_filter,array_flip,array_fill,array_intersect,%
5017 array_keys,array_map,array_merge,array_merge_recursive,%
5018 array_pad,array_pop,array_push,array_rand,array_reverse,%
5019 array_shift,array_slice,array_splice,array_sum,array_unique,%
5020 array_values,array_walk,arsort,asort,compact,count,current,each,%
5021 extract,in_array,array_search,key,krsort,ksort,list,natsort,%
5022 next,pos,prev,range,reset,rsort,shuffle,sizeof,sort,uasort,%
5023 usort,%
5024 %--- aspell functions
5025 aspell_new,aspell_check,aspell_check_raw,aspell_suggest,%
5026 %--- bc functions
5027 bcadd,bccomp,bcdiv,bcmod,bcmul,bcpow,bcscale,bcsqrt,bcsub,%
5028 %--- bzip2 functions
5029 bzclose,bzcompress,bzdecompress,bzerrno,bzerror,bzerrstr,%
5030 bzopen,bzread,bzwrite,%
5031 %--- calendar functions
5032 JDToGregorian,GregorianToJD,JDToJulian,JulianToJD,JDToJewish,%
5033 JDToFrench,FrenchToJD,JDMonthName,JDDayOfWeek,easter_date,%
5034 unixtojd,jdtounix,cal_days_in_month,cal_to_jd,cal_from_jd,%
5035 %--- ccvs functions
5036 ccvs_init,ccvs_done,ccvs_new,ccvs_add,ccvs_delete,ccvs_auth,%
5037 ccvs_reverse,ccvs_sale,ccvs_void,ccvs_status,ccvs_count,%
5038 ccvs_report,ccvs_command,ccvs_textvalue,%
5039 %--- classobj functions
5040 call_user_method,call_user_method_array,class_exists,get_class,%
5041 get_class_vars,get_declared_classes,get_object_vars,%
5042 is_a,is_subclass_of,method_exists,%
5043 %--- com functions
5044 COM,VARIANT,com_load,com_invoke,com_propget,com_get,com_propput,%
5045 com_set,com_addrref,com_release,com_isenum,com_load_typelib,%
5046 %--- cpdf functions
5047 cpdf_add_annotation,cpdf_add_outline,cpdf_arc,cpdf_begin_text,%
5048 cpdf_clip,cpdf_close,cpdf_closepath,cpdf_closepath_fill_stroke,%
5049 cpdf_continue_text,cpdf_curveto,cpdf_end_text,cpdf_fill,%
5050 cpdf_finalize,cpdf_finalize_page,%
5051 cpdf_import_jpeg,cpdf_lineto,cpdf_moveto,cpdf_newpath,cpdf_open,%
```

```

5052 cpdf_page_init, cpdf_place_inline_image, cpdf_rect, cpdf_restore, %
5053 cpdf_rmoveto, cpdf_rotate, cpdf_rotate_text, cpdf_save, %
5054 cpdf_scale, cpdf_set_char_spacing, cpdf_set_creator, %
5055 cpdf_set_font, cpdf_set_horiz_scaling, cpdf_set_keywords, %
5056 cpdf_set_page_animation, cpdf_set_subject, cpdf_set_text_matrix, %
5057 cpdf_set_text_rendering, cpdf_set_text_rise, cpdf_set_title, %
5058 cpdf_setdash, cpdf_setflat, cpdf_setgray, cpdf_setgray_fill, %
5059 cpdf_setlinecap, cpdf_setlinejoin, cpdf_setlinewidth, %
5060 cpdf_setrgbcolor, cpdf_setrgbcolor_fill, cpdf_setrgbcolor_stroke, %
5061 cpdf_show_xy, cpdf_stringwidth, cpdf_set_font_directories, %
5062 cpdf_set_viewer_preferences, cpdf_stroke, cpdf_text, %
5063 cpdf_set_action_url, %
5064 %--- crack functions
5065 crack_opendict, crack_closedict, crack_check, crack_getlastmessage, %
5066 %--- ctype functions
5067 ctype_alnum, ctype_alpha, ctype_cntrl, ctype_digit, ctype_lower, %
5068 ctype_print, ctype_punct, ctype_space, ctype_upper, ctype_xdigit, %
5069 %--- curl functions
5070 curl_init, curl_setopt, curl_exec, curl_close, curl_version, %
5071 curl_error, curl_getinfo, %
5072 %--- cybercash functions
5073 cybercash_encr, cybercash_decr, cybercash_base64_encode, %
5074 %--- cybermut functions
5075 cybermut_creerformulairecm, cybermut_testmac, %
5076 %--- cyrus functions
5077 cyrus_connect, cyrus_authenticate, cyrus_bind, cyrus_unbind, %
5078 cyrus_close, %
5079 %--- datetime functions
5080 checkdate, date, getdate, gettimeofday, gmdate, gmmktime, gmstrftime, %
5081 microtime, mktime, strftime, time, strtotime, %
5082 %--- dbase functions
5083 dbase_create, dbase_open, dbase_close, dbase_pack, dbase_add_record, %
5084 dbase_delete_record, dbase_get_record, %
5085 dbase_numfields, dbase_numrecords, %
5086 %--- dba functions
5087 dba_close, dba_delete, dba_exists, dba_fetch, dba_firstkey, %
5088 dba_nextkey, dba_popen, dba_open, dba_optimize, dba_replace, %
5089 %--- dbm functions
5090 dbmopen, dbmclose, dbmexists, dbmfetch, dbminsert, dbmreplace, %
5091 dbmfirstkey, dbmnextkey, dblist, %
5092 %--- dbx functions
5093 dbx_close, dbx_connect, dbx_error, dbx_query, dbx_sort, dbx_compare, %
5094 %--- dio functions
5095 dio_open, dio_read, dio_write, dio_truncate, dio_stat, dio_seek, %
5096 dio_close, %
5097 %--- dir functions
5098 chroot, chdir, dir, closedir, getcwd, opendir, readdir, rewinddir, %
5099 %--- dotnet functions
5100 dotnet_load, %
5101 %--- errorfunc functions
5102 error_log, error_reporting, restore_error_handler, %
5103 trigger_error, user_error, %
5104 %--- exec functions
5105 escapeshellarg, escapeshellcmd, exec, passthru, system, shell_exec, %

```

```

5106 %--- fbsql functions
5107     fbsql_affected_rows,fbsql_autocommit,fbsql_change_user,%
5108     fbsql_commit,fbsql_connect,fbsql_create_db,fbsql_create_blob,%
5109     fbsql_database_password,fbsql_data_seek,fbsql_db_query,%
5110     fbsql_drop_db,fbsql_errno,fbsql_error,fbsql_fetch_array,%
5111     fbsql_fetch_field,fbsql_fetch_lengths,fbsql_fetch_object,%
5112     fbsql_field_flags,fbsql_field_name,fbsql_field_len,%
5113     fbsql_field_table,fbsql_field_type,fbsql_free_result,%
5114     fbsql_list_dbs,fbsql_list_fields,fbsql_list_tables,%
5115     fbsql_num_fields,fbsql_num_rows,fbsql_pconnect,fbsql_query,%
5116     fbsql_read_clob,fbsql_result,fbsql_rollback,fbsql_set_lob_mode,%
5117     fbsql_start_db,fbsql_stop_db,fbsql_tablename,fbsql_warnings,%
5118     fbsql_get_autostart_info,fbsql_hostname,fbsql_password,%
5119     fbsql_username,%
5120 %--- fdf functions
5121     fdf_open,fdclose,fdcreate,fdsave,fdget_value,%
5122     fdf_next_field_name,fdset_ap,fdset_status,fdget_status,%
5123     fdf_get_file,fdset_flags,fdset_opt,%
5124     fdf_set_javascript_action,fdset_encoding,fdadd_template,%
5125 %--- filepro functions
5126     filepro,filepro_fieldname,filepro_fieldtype,filepro_fieldwidth,%
5127     filepro_fieldcount,filepro_rowcount,%
5128 %--- filesystem functions
5129     basename,chgrp,chmod,chown,clearstatcache,copy,delete,dirname,%
5130     diskfreespace,disk_total_space,fclose,feof,fflush,fgetc,fgetcsv,%
5131     fgets,file_get_contents,file,file_exists,fileatime,filetime,%
5132     fileinode,filemtime,fileowner,fileperms,filesize,filetype,flock,%
5133     fopen,fpassthru,fputs,fread,fscanf,fseek,fstat,ftell,ftruncate,%
5134     set_file_buffer,is_dir,is_executable,is_file,is_link,%
5135     is_writable,is_writeable,is_uploaded_file,link,linkinfo,mkdir,%
5136     parse_ini_file,pathinfo,pclose,popen,readfile,readlink,rename,%
5137     rmdir,stat,lstat,realpath,symlink,tempnam,tmpfile,touch,umask,%
5138 %--- fribidi functions
5139     fribidi_log2vis,%
5140 %--- ftp functions
5141     ftp_connect,ftp_login,ftp_pwd,ftp_cdup,ftp_chdir,ftp_mkdir,%
5142     ftp_nlist,ftp_rawlist,ftp_systype,ftp_pasv,ftp_get,ftp_fget,%
5143     ftp_fput,ftp_size,ftp_mdtm,ftp_rename,ftp_delete,ftp_site,%
5144     ftp_quit,ftp_exec,ftp_set_option,ftp_get_option,%
5145 %--- funchand functions
5146     call_user_func_array,call_user_func,create_function,%
5147     func_get_args,func_num_args,function_exists,%
5148     register_shutdown_function,register_tick_function,%
5149 %--- gettext functions
5150     bindtextdomain,bind_textdomain_codeset,dcgettext,dcngettext,%
5151     dngettext,gettext,ngettext,textdomain,%
5152 %--- gmp functions
5153     gmp_init,gmp_intval,gmp_strval,gmp_add,gmp_sub,gmp_mul,%
5154     gmp_div_r,gmp_div_qr,gmp_div,gmp_mod,gmp_divexact,gmp_cmp,%
5155     gmp_com,gmp_abs,gmp_sign,gmp_fact,gmp_sqrt,gmp_sqrtrm,%
5156     gmp_pow,gmp_powm,gmp_prob_prime,gmp_gcd,gmp_gcdext,gmp_invert,%
5157     gmp_jacobi,gmp_random,gmp_and,gmp_or,gmp_xor,gmp_setbit,%
5158     gmp_scan0,gmp_scan1,gmp_popcount,gmp_hamdist,%
5159 %--- http functions

```

```

5160     header,headers_sent,setcookie,%
5161 %--- hw functions
5162     hw_Array2Objrec,hw_Children,hw_ChildrenObj,hw_Close,hw_Connect,%
5163     hw_Deleteobject,hw_DocByAnchor,hw_DocByAnchorObj,%
5164     hw_Document_BodyTag,hw_Document_Content,hw_Document_SetContent,%
5165     hw_ErrorMsg,hw_EditText,hw_Error,hw_Free_Document,hw_GetParents,%
5166     hw_GetChildColl,hw_GetChildCollObj,hw_GetRemote,%
5167     hw_GetSrcByDestObj,hw_GetObject,hw_GetAndLock,hw_GetText,%
5168     hw_GetObjectByQueryObj,hw_GetObjectByQueryColl,%
5169     hw_GetChildDocColl,hw_GetChildDocCollObj,hw_GetAnchors,%
5170     hw_Mv,hw_Identify,hw_InCollections,hw_Info,hw_InsColl,hw_InsDoc,%
5171     hw_InsertObject,hw_mapid,hw_Modifyobject,hw_New_Document,%
5172     hw_Output_Document,hw_pConnect,hw_PipeDocument,hw_Root,%
5173     hw_Who,hw_getusername,hw_stat,hw_setlinkroot,hw_connection_info,%
5174     hw_insertanchors,hw_getrellink,hw_changeobject,%
5175 %--- ibase functions
5176     ibase_connect,ibase_pconnect,ibase_close,ibase_query,%
5177     ibase_fetch_row,ibase_fetch_object,ibase_field_info,%
5178     ibase_free_result,ibase_prepare,ibase_execute,ibase_trans,%
5179     ibase_rollback,ibase_timefmt,ibase_num_fields,ibase_blob_add,%
5180     ibase_blob_close,ibase_blob_create,ibase_blob_echo,%
5181     ibase_blob_import,ibase_blob_info,ibase_blob_open,%
5182 %--- icap functions
5183     icap_open,icap_close,icap_fetch_event,icap_list_events,%
5184     icap_delete_event,icap_snooze,icap_list_alarms,%
5185     icap_rename_calendar,icap_delete_calendar,icap_reopen,%
5186 %--- iconv functions
5187     iconv,iconv_get_encoding,iconv_set_encoding,ob_iconv_handler,%
5188 %--- ifx functions
5189     ifx_connect,ifx_pconnect,ifx_close,ifx_query,ifx_prepare,ifx_do,%
5190     ifx_errormsg,ifx_affected_rows,ifx_getsqlca,ifx_fetch_row,%
5191     ifx_fieldtypes,ifx_fieldproperties,ifx_num_fields,ifx_num_rows,%
5192     ifx_create_char,ifx_free_char,ifx_update_char,ifx_get_char,%
5193     ifx_copy_blob,ifx_free_blob,ifx_get_blob,ifx_update_blob,%
5194     ifx_textasvarchar,ifx_byteasvarchar,ifx_nullformat,%
5195     ifxus_free_slob,ifxus_close_slob,ifxus_open_slob,%
5196     ifxus_seek_slob,ifxus_read_slob,ifxus_write_slob,%
5197 %--- iisfunc functions
5198     iis_get_server_by_path,iis_get_server_by_comment,iis_add_server,%
5199     iis_set_dir_security,iis_get_dir_security,iis_set_server_rights,%
5200     iis_set_script_map,iis_get_script_map,iis_set_app_settings,%
5201     iis_stop_server,iis_stop_service,iis_start_service,%
5202 %--- image functions
5203     exif_imagetype,exif_read_data,exif_thumbnail,getimagesize,%
5204     imagealphablending,imagearc,imagefilledarc,imageellipse,%
5205     imagechar,imagecharup,imagecolorallocate,imagecolordeallocate,%
5206     imagecolorclosest,imagecolorclosestalpha,imagecolorclosestthwb,%
5207     imagecolorexactalpha,imagecolorresolve,imagecolorresolvealpha,%
5208     imagecolorset,imagecolorsforindex,imagecolorstotal,%
5209     imagecopy,imagecopymerge,imagecopymergegray,imagecopyresized,%
5210     imagecreate,imagecreatetruecolor,imagetruecolorpalette,%
5211     imagecreatefromgd2,imagecreatefromgd2part,imagecreatefromgif,%
5212     imagecreatefrompng,imagecreatefromwbmp,imagecreatefromstring,%
5213     imagecreatefromxpm,imagedashedline,imagedestroy,imagefill,%

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5214     imagefilledrectangle, imagefilltoborder, imagefontheight, %
5215     imagegd, imagegd2, imagegif, imagepng, imagejpeg, imagewbmp, %
5216     imageline, imageloadfont, imagepalettecopy, imagepolygon, %
5217     imagepsencodefont, imagepsfreefont, imagepsloadfont, %
5218     imagepslntfont, imagepstext, imagerectangle, imagesetpixel, %
5219     imagesetstyle, imagesettile, imagesetthickness, imagestring, %
5220     imagesx, imagesy, imagettfbbox, imageftbbox, imagettftext, %
5221     imagetypes, jpeg2wbmp, png2wbmp, iptcembed, read_exif_data, %
5222 %--- imap functions
5223     imap_8bit, imap_alerts, imap_append, imap_base64, imap_binary, %
5224     imap_bodystruct, imap_check, imap_clearflag_full, imap_close, %
5225     imap_delete, imap_deletemailbox, imap_errors, imap_expunge, %
5226     imap_fetchbody, imap_fetchheader, imap_fetchstructure, %
5227     imap_getmailboxes, imap_getsubscribed, imap_header, %
5228     imap_headers, imap_last_error, imap_listmailbox, %
5229     imap_mail, imap_mail_compose, imap_mail_copy, imap_mail_move, %
5230     imap_mime_header_decode, imap_msgno, imap_num_msg, imap_num_recent, %
5231     imap_ping, imap_popen, imap_qprint, imap_renamemailbox, imap_reopen, %
5232     imap_rfc822_parse_headers, imap_rfc822_write_address, %
5233     imap_search, imap_setacl, imap_set_quota, imap_setflag_full, %
5234     imap_status, imap_subscribe, imap_uid, imap_undelete, %
5235     imap_utf7_decode, imap_utf7_encode, imap_utf8, imap_thread, %
5236 %--- info functions
5237     assert, assert_options, extension_loaded, dl, getenv, get_cfg_var, %
5238     get_defined_constants, get_extension_funcs, getmygid, %
5239     get_loaded_extensions, get_magic_quotes_gpc, %
5240     getlastmod, getmyinode, getmypid, getmyuid, get_required_files, %
5241     ini_alter, ini_get, ini_get_all, ini_restore, ini_set, phpcredits, %
5242     phpversion, php_logo_guid, php_sapi_name, php_uname, putenv, %
5243     set_time_limit, version_compare, zend_logo_guid, zend_version, %
5244 %--- ircg functions
5245     ircg_pconnect, ircg_fetch_error_msg, ircg_set_current, ircg_join, %
5246     ircg_msg, ircg_notice, ircg_nick, ircg_topic, ircg_channel_mode, %
5247     ircg_whois, ircg_kick, ircg_ignore_add, ircg_ignore_del, %
5248     ircg_is_conn_alive, ircg_lookup_format_messages, %
5249     ircg_set_on_die, ircg_set_file, ircg_get_username, %
5250     ircg_nickname_unescape, %
5251 %--- java functions
5252     java_last_exception_clear, java_last_exception_get, %
5253 %--- ldap functions
5254     ldap_add, ldap_bind, ldap_close, ldap_compare, ldap_connect, %
5255     ldap_delete, ldap_dn2ufn, ldap_err2str, ldap_errno, ldap_error, %
5256     ldap_first_attribute, ldap_first_entry, ldap_free_result, %
5257     ldap_get_dn, ldap_get_entries, ldap_get_option, ldap_get_values, %
5258     ldap_list, ldap_modify, ldap_mod_add, ldap_mod_del, %
5259     ldap_next_attribute, ldap_next_entry, ldap_read, ldap_rename, %
5260     ldap_set_option, ldap_unbind, ldap_8859_to_t61, %
5261     ldap_next_reference, ldap_parse_reference, ldap_parse_result, %
5262     ldap_sort, ldap_start_tls, ldap_t61_to_8859, %
5263 %--- mail functions
5264     mail, ezmlm_hash, %
5265 %--- math functions
5266     abs, acos, acosh, asin, asinh, atan, atanh, atan2, base_convert, bindec, %
5267     cos, cosh, decbin, dechex, decoct, deg2rad, exp, expm1, floor, %

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5268     hexdec,hypot,is_finite,is_infinite,is_nan,lcg_value,log,log10,%
5269     max,min,mt_rand,mt_srand,mt_getrandmax,number_format,octdec,pi,%
5270     rad2deg,rand,round,sin,sinh,sqrt,srand,tan,tanh,%
5271 %--- mbstring functions
5272     mb_language,mb_parse_str,mb_internal_encoding,mb_http_input,%
5273     mb_detect_order,mb_substitute_character,mb_output_handler,%
5274     mb_strlen,mb_strpos,mb_strrpos,mb_substr,mb_strcut,mb_strwidth,%
5275     mb_convert_encoding,mb_detect_encoding,mb_convert_kana,%
5276     mb_decode_mimeheader,mb_convert_variables,%
5277     mb_decode_numericentity,mb_send_mail,mb_get_info,%
5278     mb_ereg,mb_eregi,mb_ereg_replace,mb_eregi_replace,mb_split,%
5279     mb_ereg_search,mb_ereg_search_pos,mb_ereg_search_regs,%
5280     mb_ereg_search_getregs,mb_ereg_search_getpos,%
5281 %--- mcal functions
5282     mcal_open,mcal_popen,mcal_reopen,mcal_close,%
5283     mcal_rename_calendar,mcal_delete_calendar,mcal_fetch_event,%
5284     mcal_append_event,mcal_store_event,mcal_delete_event,%
5285     mcal_list_alarms,mcal_event_init,mcal_event_set_category,%
5286     mcal_event_set_description,mcal_event_set_start,%
5287     mcal_event_set_alarm,mcal_event_set_class,mcal_is_leap_year,%
5288     mcal_date_valid,mcal_time_valid,mcal_day_of_week,%
5289     mcal_date_compare,mcal_next_recurrence,%
5290     mcal_event_set_recur_daily,mcal_event_set_recur_weekly,%
5291     mcal_event_set_recur_monthly_wday,mcal_event_set_recur_yearly,%
5292     mcal_event_add_attribute,mcal_expunge,mcal_week_of_year,%
5293 %--- mcrypt functions
5294     mcrypt_get_cipher_name,mcrypt_get_block_size,%
5295     mcrypt_create_iv,mcrypt_cbc,mcrypt_cfb,mcrypt_ecb,mcrypt_ofb,%
5296     mcrypt_list_modes,mcrypt_get_iv_size,mcrypt_encrypt,%
5297     mcrypt_module_open,mcrypt_module_close,mcrypt_generic_deinit,%
5298     mcrypt_generic,mdecrypt_generic,mcrypt_generic_end,%
5299     mcrypt_enc_is_block_algorithm_mode,%
5300     mcrypt_enc_is_block_mode,mcrypt_enc_get_block_size,%
5301     mcrypt_enc_get_supported_key_sizes,mcrypt_enc_get_iv_size,%
5302     mcrypt_enc_get_modes_name,mcrypt_module_self_test,%
5303     mcrypt_module_is_block_algorithm,mcrypt_module_is_block_mode,%
5304     mcrypt_module_get_algo_key_size,%
5305 %--- mhash functions
5306     mhash_get_hash_name,mhash_get_block_size,mhash_count,mhash,%
5307 %--- misc functions
5308     connection_aborted,connection_status,connection_timeout,%
5309     define,defined,die,eval,exit,get_browser,highlight_file,%
5310     ignore_user_abort,iptcparse,leak,pack,show_source,sleep,uniqid,%
5311     usleep,%
5312 %--- mnogosearch functions
5313     udm_add_search_limit,udm_alloc_agent,udm_api_version,%
5314     udm_cat_list,udm_clear_search_limits,udm_errno,udm_error,%
5315     udm_free_agent,udm_free_ispell_data,udm_free_res,%
5316     udm_get_res_field,udm_get_res_param,udm_load_ispell_data,%
5317     udm_check_charset,udm_check_stored,udm_close_stored,udm_crc32,%
5318 %--- msession functions
5319     msession_connect,msession_disconnect,msession_count,%
5320     msession_destroy,msession_lock,msession_unlock,msession_set,%
5321     msession_uniq,msession_randstr,msession_find,msession_list,%

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5322     msession_set_array,msession_listvar,msession_timeout,%
5323     msession_getdata,msession_setdata,msession_plugin,%
5324 %--- msql functions
5325     msql,msql_affected_rows,msql_close,msql_connect,msql_create_db,%
5326     msql_data_seek,msql_dbname,msql_drop_db,msql_dropdb,msql_error,%
5327     msql_fetch_field,msql_fetch_object,msql_fetch_row,%
5328     msql_field_seek,msql_fieldtable,msql_fieldtype,msql_fieldflags,%
5329     msql_free_result,msql_freeresult,msql_list_fields,%
5330     msql_list_dbs,msql_listdbs,msql_list_tables,msql_listtables,%
5331     msql_num_rows,msql_numfields,msql_numrows,msql_pconnect,%
5332     msql_regcase,msql_result,msql_select_db,msql_selectdb,%
5333 %--- mssql functions
5334     mssql_close,mssql_connect,mssql_data_seek,mssql_fetch_array,%
5335     mssql_fetch_object,mssql_fetch_row,mssql_field_length,%
5336     mssql_field_seek,mssql_field_type,mssql_free_result,%
5337     mssql_min_error_severity,mssql_min_message_severity,%
5338     mssql_num_fields,mssql_num_rows,mssql_pconnect,mssql_query,%
5339     mssql_select_db,mssql_bind,mssql_execute,mssql_fetch_assoc,%
5340     mssql_guid_string,mssql_init,mssql_rows_affected,%
5341 %--- muscat functions
5342     muscat_setup,muscat_setup_net,muscat_give,muscat_get,%
5343 %--- mysql functions
5344     mysql_affected_rows,mysql_change_user,mysql_character_set_name,%
5345     mysql_connect,mysql_create_db,mysql_data_seek,mysql_db_name,%
5346     mysql_drop_db,mysql_errno,mysql_error,mysql_escape_string,%
5347     mysql_fetch_assoc,mysql_fetch_field,mysql_fetch_lengths,%
5348     mysql_fetch_row,mysql_field_flags,mysql_field_name,%
5349     mysql_field_seek,mysql_field_table,mysql_field_type,%
5350     mysql_info,mysql_insert_id,mysql_list_dbs,mysql_list_fields,%
5351     mysql_list_tables,mysql_num_fields,mysql_num_rows,%
5352     mysql_ping,mysql_query,mysql_unbuffered_query,%
5353     mysql_result,mysql_select_db,mysql_tablename,mysql_thread_id,%
5354     mysql_get_host_info,mysql_get_proto_info,mysql_get_server_info,%
5355 %--- network functions
5356     checkdnsrr,closelog,debugger_off,debugger_on,%
5357     fsockopen,gethostbyaddr,gethostbyname,gethostbyname1,getmxrr,%
5358     getprotobynumber,getservbyname,getservbyport,ip2long,long2ip,%
5359     pfsockopen,socket_get_status,socket_set_blocking,%
5360     syslog,%
5361 %--- nis functions
5362     yp_get_default_domain,yp_order,yp_master,yp_match,yp_first,%
5363     yp_errno,yp_err_string,yp_all,yp_cat,%
5364 %--- oci8 functions
5365     OCIDefineByName,OCIBindByName,OCILogon,OCIPLogon,OCINLogon,%
5366     OCIExecute,OCICommit,OCIRollback,OCINewDescriptor,OCIRowCount,%
5367     OCIResult,OCIFetch,OCIFetchInto,OCIFetchStatement,%
5368     OCIColumnName,OCIColumnSize,OCIColumnType,OCIServerVersion,%
5369     OCINewCursor,OCIFreeStatement,OCIFreeCursor,OCIFreeDesc,%
5370     OCIError,OCIInternalDebug,OCICancel,OCISetPrefetch,%
5371     OCISaveLobFile,OCISaveLob,OCILoadLob,OCIColumnScale,%
5372     OCIColumnTypeRaw,OCINewCollection,OCIFreeCollection,%
5373     OCICollAppend,OCICollAssignElem,OCICollGetElem,OCICollMax,%
5374     OCICollTrim,%
5375 %--- oracle functions

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5376 Ora_Bind,Ora_Close,Ora_ColumnName,Ora_ColumnSize,Ora_ColumnType,%
5377 Ora_CommitOff,Ora_CommitOn,Ora_Do,Ora_Error,Ora_ErrorCode,%
5378 Ora_Fetch,Ora_Fetch_Into,Ora_GetColumn,Ora_Logoff,Ora_Logon,%
5379 Ora_Numcols,Ora_Numrows,Ora_Open,Ora_Parse,Ora_Rollback,%
5380 %--- outcontrol functions
5381 flush,ob_start,ob_get_contents,ob_get_length,ob_get_level,%
5382 ob_flush,ob_clean,ob_end_flush,ob_end_clean,ob_implicit_flush,%
5383 %--- ovrimos functions
5384 ovrimos_connect,ovrimos_close,ovrimos_longreadlen,%
5385 ovrimos_execute,ovrimos_cursor,ovrimos_exec,ovrimos_fetch_into,%
5386 ovrimos_result,ovrimos_result_all,ovrimos_num_rows,%
5387 ovrimos_field_name,ovrimos_field_type,ovrimos_field_len,%
5388 ovrimos_free_result,ovrimos_commit,ovrimos_rollback,%
5389 %--- pcntl functions
5390 pcntl_fork,pcntl_signal,pcntl_waitpid,pcntl_wexitstatus,%
5391 pcntl_wifsignaled,pcntl_wifstopped,pcntl_wstopsig,%
5392 pcntl_exec,%
5393 %--- pcre functions
5394 preg_match,preg_match_all,preg_replace,preg_replace_callback,%
5395 preg_quote,preg_grep,Pattern Modifiers,Pattern Syntax,%
5396 %--- pdf functions
5397 pdf_add_annotation,pdf_add_bookmark,pdf_add_launchlink,%
5398 pdf_add_note,pdf_add_outline,pdf_add_pdflink,pdf_add_thumbnail,%
5399 pdf_arc,pdf_arcn,pdf_attach_file,pdf_begin_page,%
5400 pdf_begin_template,pdf_circle,pdf_clip,pdf_close,pdf_closepath,%
5401 pdf_closepath_stroke,pdf_close_image,pdf_close_pdi,%
5402 pdf_concat,pdf_continue_text,pdf_curveto,pdf_delete,%
5403 pdf_endpath,pdf_end_pattern,pdf_end_template,pdf_fill,%
5404 pdf_findfont,pdf_get_buffer,pdf_get_font,pdf_get_fontname,%
5405 pdf_get_image_height,pdf_get_image_width,pdf_get_parameter,%
5406 pdf_get_pdi_value,pdf_get_majorversion,pdf_get_minorversion,%
5407 pdf_initgraphics,pdf_lineto,pdf_makespotcolor,pdf_moveto,%
5408 pdf_open,pdf_open_CCITT,pdf_open_file,pdf_open_gif,%
5409 pdf_open_image_file,pdf_open_jpeg,pdf_open_memory_image,%
5410 pdf_open_pdi_page,pdf_open_png,pdf_open_tiff,pdf_place_image,%
5411 pdf_rect,pdf_restore,pdf_rotate,pdf_save,pdf_scale,pdf_setcolor,%
5412 pdf_setflat,pdf_setfont,pdf_setgray,pdf_setgray_fill,%
5413 pdf_setlinecap,pdf_setlinejoin,pdf_setlinewidth,pdf_setmatrix,%
5414 pdf_setpolydash,pdf_setrgbcolor,pdf_setrgbcolor_fill,%
5415 pdf_set_border_color,pdf_set_border_dash,pdf_set_border_style,%
5416 pdf_set_duration,pdf_set_font,pdf_set_horiz_scaling,%
5417 pdf_set_info_author,pdf_set_info_creator,pdf_set_info_keywords,%
5418 pdf_set_info_title,pdf_set_leading,pdf_set_parameter,%
5419 pdf_set_text_rendering,pdf_set_text_rise,pdf_set_text_matrix,%
5420 pdf_set_word_spacing,pdf_show,pdf_show_boxed,pdf_show_xy,%
5421 pdf_stringwidth,pdf_stroke,pdf_translate,%
5422 %--- pfp functions
5423 pfp_init,pfp_cleanup,pfp_process,pfp_process_raw,%
5424 %--- pgsq functions
5425 pg_close,pg_affected_rows,pg_connect,pg_dbname,pg_end_copy,%
5426 pg_query,pg_fetch_array,pg_fetch_object,pg_fetch_row,%
5427 pg_field_name,pg_field_num,pg_field_prtlen,pg_field_size,%
5428 pg_free_result,pg_last_oid,pg_host,pg_last_notice,pg_lo_close,%
5429 pg_lo_export,pg_lo_import,pg_lo_open,pg_lo_read,pg_lo_seek,%

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5430 pg_lo_read_all,pg_lo_unlink,pg_lo_write,pg_num_fields,%
5431 pg_options,pg_pconnect,pg_port,pg_put_line,pg_fetch_result,%
5432 pg_client_encoding,pg_trace,pg_tty,pg_untrace,pg_get_result,%
5433 pg_send_query,pg_cancel_query,pg_connection_busy,%
5434 pg_connection_status,pg_copy_from,pg_copy_to,pg_escape_bytea,%
5435 pg_result_error,%
5436 %--- posix functions
5437 posix_kill,posix_getpid,posix_getppid,posix_getuid,%
5438 posix_getgid,posix_getegid,posix_setuid,posix_seteuid,%
5439 posix_setegid,posix_getgroups,posix_getlogin,posix_getpgrp,%
5440 posix_setpgid,posix_getpgid,posix_getsid,posix_uname,%
5441 posix_ctermid,posix_ttyname,posix_isatty,posix_getcwd,%
5442 posix_getgrnam,posix_getgrgid,posix_getpwnam,posix_getpwuid,%
5443 %--- printer functions
5444 printer_open,printer_abort,printer_close,printer_write,%
5445 printer_set_option,printer_get_option,printer_create_dc,%
5446 printer_start_doc,printer_end_doc,printer_start_page,%
5447 printer_create_pen,printer_delete_pen,printer_select_pen,%
5448 printer_delete_brush,printer_select_brush,printer_create_font,%
5449 printer_select_font,printer_logical_fontheight,%
5450 printer_draw_rectangle,printer_draw_ellipse,printer_draw_text,%
5451 printer_draw_chord,printer_draw_pie,printer_draw_bmp,%
5452 %--- pspell functions
5453 pspell_add_to_personal,pspell_add_to_session,pspell_check,%
5454 pspell_config_create,pspell_config_ignore,pspell_config_mode,%
5455 pspell_config_repl,pspell_config_runtogether,%
5456 pspell_new,pspell_new_config,pspell_new_personal,%
5457 pspell_store_replacement,pspell_suggest,%
5458 %--- qtdom functions
5459 qdom_tree,qdom_error,%
5460 %--- readline functions
5461 readline,readline_add_history,readline_clear_history,%
5462 readline_info,readline_list_history,readline_read_history,%
5463 %--- recode functions
5464 recode_string,recode,recode_file,%
5465 %--- regex functions
5466 ereg,ereg_replace,eregi,eregi_replace,split,spliti,sql_regcase,%
5467 %--- sem functions
5468 sem_get,sem_acquire,sem_release,sem_remove,shm_attach,%
5469 shm_remove,shm_put_var,shm_get_var,shm_remove_var,ftok,%
5470 %--- sesam functions
5471 sesam_connect,sesam_disconnect,sesam_settransaction,%
5472 sesam_rollback,sesam_execimm,sesam_query,sesam_num_fields,%
5473 sesam_diagnostic,sesam_fetch_result,sesam_affected_rows,%
5474 sesam_field_array,sesam_fetch_row,sesam_fetch_array,%
5475 sesam_free_result,%
5476 %--- session functions
5477 session_start,session_destroy,session_name,session_module_name,%
5478 session_id,session_register,session_unregister,session_unset,%
5479 session_get_cookie_params,session_set_cookie_params,%
5480 session_encode,session_set_save_handler,session_cache_limiter,%
5481 session_write_close,%
5482 %--- shmop functions
5483 shmop_open,shmop_read,shmop_write,shmop_size,shmop_delete,%

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5484 %--- snmp functions
5485     snmpget,snmpset,snmpwalk,snmpwalkoid,snmp_get_quick_print,%
5486     snmprealwalk,%
5487 %--- strings functions
5488     addcslashes,addslashes,bin2hex,chop,chr,chunk_split,%
5489     count_chars,crc32,crypt,echo,explode,get_html_translation_table,%
5490     hebreve,hebrevc,htmlentities,htmlspecialchars,implode,join,%
5491     localeconv,ltrim,md5,md5_file,metaphone,nl_langinfo,nl2br,ord,%
5492     print,printf,quoted_printable_decode,quotemeta,str_rot13,rtrim,%
5493     setlocale,similar_text,soundex,sprintf,strcasecmp,strcmp,%
5494     strcmp,strcmp,strcmp,strip_tags,stripclashes,stripslashes,%
5495     strlen,strnatcmp,strnatcasecmp,strcmp,str_pad,strpos,substr,%
5496     strrev, strrpos, strspn, strstr, strtok, strtolower, strtoupper,%
5497     strstr,substr,substr_count,substr_replace,trim,ucfirst,ucwords,%
5498     vsprintf,wordwrap,%
5499 %--- swf functions
5500     swf_openfile,swf_closefile,swf_labelframe,swf_showframe,%
5501     swf_getframe,swf_mulcolor,swf_addcolor,swf_placeobject,%
5502     swf_removeobject,swf_nextid,swf_startdoaction,%
5503     swf_actiongeturl,swf_actionnextframe,swf_actionprevframe,%
5504     swf_actionstop,swf_actiontogglequality,swf_actionwaitforframe,%
5505     swf_actiongotolabel,swf_enddoaction,swf_defineline,%
5506     swf_definepoly,swf_startshape,swf_shapelinesolid,%
5507     swf_shapefillsolid,swf_shapefillbitmapclip,%
5508     swf_shapemoveto,swf_shapelineto,swf_shapecurveto,%
5509     swf_shapearc,swf_endshape,swf_definefont,swf_setfont,%
5510     swf_fontslant,swf_fonttracking,swf_getfontinfo,swf_definetext,%
5511     swf_definebitmap,swf_getbitmapinfo,swf_startsymbol,%
5512     swf_startbutton,swf_addbuttonrecord,swf_oncondition,%
5513     swf_viewport,swf_ortho,swf_ortho2,swf_perspective,swf_polarview,%
5514     swf_pushmatrix,swf_popmatrix,swf_scale,swf_translate,swf_rotate,%
5515 %--- sybase functions
5516     sybase_affected_rows,sybase_close,sybase_connect,%
5517     sybase_fetch_array,sybase_fetch_field,sybase_fetch_object,%
5518     sybase_field_seek,sybase_free_result,sybase_get_last_message,%
5519     sybase_min_error_severity,sybase_min_message_severity,%
5520     sybase_num_fields,sybase_num_rows,sybase_pconnect,sybase_query,%
5521     sybase_select_db,%
5522 %--- uodbc functions
5523     odbc_autocommit,odbc_binmode,odbc_close,odbc_close_all,%
5524     odbc_connect,odbc_cursor,odbc_do,odbc_error,odbc_errormsg,%
5525     odbc_execute,odbc_fetch_into,odbc_fetch_row,odbc_fetch_array,%
5526     odbc_fetch_object,odbc_field_name,odbc_field_num,%
5527     odbc_field_len,odbc_field_precision,odbc_field_scale,%
5528     odbc_longreadlen,odbc_num_fields,odbc_pconnect,odbc_prepare,%
5529     odbc_result,odbc_result_all,odbc_rollback,odbc_setoption,%
5530     odbc_tableprivileges,odbc_columns,odbc_columnprivileges,%
5531     odbc_primarykeys,odbc_foreignkeys,odbc_procedures,%
5532     odbc_specialcolumns,odbc_statistics,%
5533 %--- url functions
5534     base64_decode,base64_encode,parse_url,rawurldecode,rawurlencode,%
5535     urlencode,%
5536 %--- var functions
5537     doubleval,empty,floatval,gettype,get_defined_vars,%

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```

5538 import_request_variables,intval,is_array,is_bool,is_double,%
5539 is_int,is_integer,is_long,is_null,is_numeric,is_object,is_real,%
5540 is_scalar,is_string,isset,print_r,serialize,settype,strval,%
5541 unset,var_dump,var_export,is_callable,%
5542 %--- vpopmail functions
5543 vpopmail_add_domain,vpopmail_del_domain,%
5544 vpopmail_add_domain_ex,vpopmail_del_domain_ex,%
5545 vpopmail_add_user,vpopmail_del_user,vpopmail_passwd,%
5546 vpopmail_auth_user,vpopmail_alias_add,vpopmail_alias_del,%
5547 vpopmail_alias_get,vpopmail_alias_get_all,vpopmail_error,%
5548 %--- w32api functions
5549 w32api_set_call_method,w32api_register_function,%
5550 w32api_deftype,w32api_init_dtype,%
5551 %--- wddx functions
5552 wddx_serialize_value,wddx_serialize_vars,wddx_packet_start,%
5553 wddx_add_vars,wddx_deserialize,%
5554 %--- xml functions
5555 xml_parser_create,xml_set_object,xml_set_element_handler,%
5556 xml_set_processing_instruction_handler,xml_set_default_handler,%
5557 xml_set_notation_decl_handler,%
5558 xml_parse,xml_get_error_code,xml_error_string,%
5559 xml_get_current_column_number,xml_get_current_byte_index,%
5560 xml_parser_free,xml_parser_set_option,xml_parser_get_option,%
5561 utf8_encode,xml_parser_create_ns,%
5562 xml_set_start_namespace_decl_handler,%
5563 %--- xslt functions
5564 xslt_set_log,xslt_create,xslt_errno,xslt_error,xslt_free,%
5565 xslt_set_sax_handler,xslt_set_scheme_handler,%
5566 xslt_set_base,xslt_set_encoding,xslt_set_sax_handlers,%
5567 %--- yaz functions
5568 yaz_addinfo,yaz_close,yaz_connect,yaz_errno,yaz_error,yaz_hits,%
5569 yaz_database,yaz_range,yaz_record,yaz_search,yaz_present,%
5570 yaz_scan,yaz_scan_result,yaz_ccl_conf,yaz_ccl_parse,%
5571 yaz_wait,yaz_sort,%
5572 %--- zip functions
5573 zip_close,zip_entry_close,zip_entry_compressedsize,%
5574 zip_entry_filesize,zip_entry_name,zip_entry_open,zip_entry_read,%
5575 zip_read,%
5576 %--- zlib functions
5577 gzclose,gzEOF,gzfile,gzgetc,gzgets,gzgetss,gzopen,gzpassthru,%
5578 gzread,gzrewind,gzseek,gztell,gzwrite,readgzfile,gzcompress,%
5579 gzdeflate,gzinflate,gzencode,},%
5580 sensitive,%
5581 morecomment=[l]\#,%
5582 morecomment=[l]//,%
5583 morecomment=[s]{/*}{*/},%
5584 morestring=[b]" ,%
5585 morestring=[b]' %
5586 }[keywords,comments,strings]%
5587 </lang2>

```

## 2.59 Plasm

Alessio Pace provided the following definition.

```
5588 (*lang3)
5589 \lst@definlanguage{Plasm}%
5590 {sensitive=false,%
5591   morekeywords={aa,abs,ac,acolor,acos,actor,al,alias,align,and,%
5592     animation,animation,appearance,apply,ar,arc,as,asin,assoc,atan,%
5593     axialcamera,axialcameras,basehermite,bbox,bbox,bernstein,%
5594     bernsteinbasis,bezier,beziercurve,beziermanifold,bezierstripe,%
5595     beziersurface,bigger,biggest,bilinearsurface,binormal,%
5596     biquadraticsurface,black,blend,blue,bottom,box,brown,bspize,%
5597     bspline,bsplinebasis,c,cabinet,camera,case,cat,catch,ceil,%
5598     centeredcameras,centralcavalier,char,charset,choose,circle,%
5599     circumference,class,cmap,color,comp,computecoords,cone,%
5600     conicalsurface,cons,control,convexcoords,convexhull,coonspatch,%
5601     copy,cos,cosh,crease,crosspolytope,cube,cubiccardinal,%
5602     cubiccardinalbasis,cubichermite,cubicbspline,cubicbsplinebasis,%
5603     cuboid,curl,curvature,curve2cspath,curve2mapvect,cyan,cylinder,%
5604     cylindricalsurface,d,deboor,def,depol,depth_sort,depth_test,%
5605     derbernstein,derbernsteinbase,derbezier,determinant,difference,%
5606     differencepr,dim,dimetric,dirproject,displaygraph,displaynubspline,%
5607     displaynurbspline,distl,distr,div,divergence,dodecahedron,dot,down,%
5608     dp,drawedges,drawforks,drawtree,ds,dsphere,dump,dumprep,ellipse,%
5609     embed,end,eq,ex,exp,explode,export,extract_bodies,extract_polygons,%
5610     extract_wires,extrude,extrusion,fact,false,feature,ff,fillcolor,%
5611     filter,finitecone,first,flash,flashani,floor,fontcolor,fontheight,%
5612     fontspacing,fontwidth,fractalsimplex,frame,frame,frameflash,fromto,%
5613     gausscurvature,ge,grad,gradient,gradmap,gray,green,gt,help,hermite,%
5614     hermitebasis,hermitesurface,hexahedron,icosahedron,id,idnt,if,in,%
5615     inarcs,innerprod,inset,insl,insr,intersection,intersectionpr,%
5616     intervals,intmax,intmin,intsto,inv,isa,isanimpol,isbool,ischar,%
5617     isclosedshape,iscloseto,isempty,iseven,isfun,isfunvect,isge,isgt,%
5618     isint,isintneg,isinto,isintpos,isle,islt,ismat,ismatof,isnat,%
5619     isnull,isnum,isnumneg,isnumpos,isodd,isometric,isorthoshape,ispair,%
5620     ispoint,ispointseq,ispol,ispoldim,ispolytope,ispurepol,isreal,%
5621     isrealneg,isrealpos,isrealvect,isseq,isseqof,issshape,issimplex,%
5622     issqmat,istring,isvect,iszero,jacobian,join,joints,k,last,le,%
5623     left,leftcavalier,len,less,lesseq,lex,lift,light,linecolor,%
5624     linesize,list,ln,load,loadlib,loop,lt,lxmy,magenta,map,mapshapes,%
5625     markersize,mat,matdotprod,material,mathom,max,mean,meanpoint,med,%
5626     merge,mesh,min,minkowski,mirror,mixedprod,mk,mkframe,mkpol,%
5627     mkvector,mkversork,mod,model,move,mul,multextrude,mxby,mxmy,mxty,%
5628     myfont,n,nat2string,neq,ngon,norm2,normalmap,not,nu_grid,nubspline,%
5629     nubsplineknots,nurbspline,nurbsplineknots,octahedron,offset,%
5630     onepoint,open,optimize,or,orange,ord,ortho,orthoproject,orthox,%
5631     orthoy,orthoz,outarcs,outerloop,outerwarp,pairdiff,parallel,%
5632     pascaltriangle,pdiff,pdifference,permutahedron,permutations,%
5633     perspective,perspective,pi,pivotop,plane,planemapping,pmap,%
5634     points2shape,polar,polyline,polymarker,polypoint,power,powerset,%
5635     presort,principalnormal,print,prism,profileprodsurface,%
5636     progressivesum,project,projection,purple,pyramid,q,quadarray,%
5637     quadmesh,quote,r,raise,range,rationalbezier,rationalblend,%
5638     rationalbspline,rationalize,red,rev,reverse,rgbacolor,right,%
```



```

5639     rightcavalier,ring,rn,rotatedtext,rotationalsurface,rotn,rtail,%
5640     ruledsurface,rxmy,s,save,scalarmatprod,scalarvectprod,schlegel2d,%
5641     schlegel3d,sdifference,sdifferencepr,segment,sel,setand,setdiff,%
5642     setfontcolor,setor,setxor,sex,shape_0,shape_1,shape2points,%
5643     shape2pol,shapeclosed,shapecomb,shapediff,shapedist,%
5644     shapeinbetweening,shapeinf,shapejoin,shapelen,shapenorm,%
5645     shapenormal,shapeprod,shaperot,shapesum,shapesup,shapezero,shift,%
5646     showprop,sign,signal,simplex,simplexpile,sin,sinh,size,skeleton,%
5647     skew,smaller,smallest,solidifier,solidify,sort,sphere,spline,%
5648     splinesampling,splitcells,splitpols,sqr,sqrt,star,string,%
5649     stringtokens,struct,sub,svg,sweep,t,tail,tan,tangent,tanh,%
5650     tensorprodsurface,tetrahedron,text,texture,textwithattributes,%
5651     thinsolid,threepoints,time,tmax,tmin,top,torus,torusmap,trace,%
5652     trans,tree,trianglefan,trianglestripe,trimetric,true,truncone,tt,%
5653     tube,twopoints,uk,ukpol,ukpolf,union,unionpr,unitvect,unprune,up,%
5654     vect2dtoangle,vect2mat,vectdiff,vectnorm,vectprod,vectsum,view,%
5655     viewmodel,viewmodel,vrml,warp,warp,where,white,with,xcavalier,xor,%
5656     xquarray,xx,ycavalier,yellow},%
5657     moredirectives={loadlib},%
5658     otherkeywords={-,+,*,**,/ ,~,|,...,^,\&,\&\&,\#,\#\#},%
5659     morecomment=[s]{\%}{\%},%
5660     morestring=[b]',%
5661     literate={~}{\sim$}{1} {^}{\wedge$}{1},%
5662 }[keywords,directives,comments,strings]%
5663 </lang3>

```

## 2.60 PL/I

Found the data in

- BERNHARD FISCHER, HERMAN FISCHER: **Structured Programming in PL/I and PL/C**; Copyright © 1976 by Marcel Dekker, Inc.; ISBN 0-8247-6394-7

```

5664 (*lang3)
5665 \lst@definlanguage{PL/I}{%
5666     morekeywords={ABS, ATAN, AUTOMATIC, AUTO, ATAND, BEGIN, BINARY, BIN, BIT,%
5667     BUILTIN, BY, CALL, CHARACTER, CHAR, CHECK, COLUMN, COL, COMPLEX, CPLX,%
5668     COPY, COS, COSD, COSH, DATA, DATE, DECIMAL, DEC, DECLARE, DCL, DO,%
5669     EDIT, ELSE, END, ENDFILE, ENDPAGE, ENTRY, EXP, EXTERNAL, EXT, FINISH,%
5670     FIXED, FIXEDOVERFLOW, FOFL, FLOAT, FORMAT, GET, GO, GOTO, IF, IMAG,%
5671     INDEX, INITIAL, INIT, INTERNAL, INT, LABEL, LENGTH, LIKE, LINE, LIST,%
5672     LOG, LOG2, LOG10, MAIN, MAX, MIN, MOD, NOCHECK, NOFIXEDOVERFLOW,%
5673     NOFOFL, NOOVERFLOW, NOOFL, NOSIZE, NOUNDERFLOW, NOUFL, NOZERODIVIDE,%
5674     NOZDIV, ON, OPTIONS, OVERFLOW, OFL, PAGE, PICTURE, PROCEDURE, PROC,%
5675     PUT, READ, REPEAT, RETURN, RETURNS, ROUND, SIN, SIND, SINH, SIZE, SKIP,%
5676     SQRT, STATIC, STOP, STRING, SUBSTR, SUM, SYSIN, SYSPRINT, TAN, TAND,%
5677     TANH, THEN, TO, UNDERFLOW, UFL, VARYING, WHILE, WRITE, ZERODIVIDE,%
5678     ZDIV},%
5679     sensitive=f,%
5680     morecomment=[s]{/*}{*/},%
5681     morestring=[d] '%
5682 }[keywords,comments,strings]%
5683 </lang3>

```

## 2.61 PostScript

Herbert Voss provided the following definition, written by Christophe Jorssen provided the following definition.

```
5684 (*lang3)
5685 %%
5686 %% PostScript language definition (c) 2005 Christophe Jorssen.
5687 %%
5688 \lst@definlanguage{PostScript}{%
5689   morekeywords={abs, add, aload, anchorsearch, and, arc, arcn, arct, arcto,%
5690     array, ashow, astore, atan, awidthshow, begin, bind, bitshift,%
5691     bytesavailable, cachestatus, ceiling, charpath, clear, cleartomark,%
5692     cleardictstack, clip, clippath, closefile, closepath, colorimage,%
5693     concat, concatmatrix, condition, copy, cypage, cos, count,%
5694     countdictstack, countexecstack, counttomark, cshow,%
5695     currentblackgeneration, currentcacheparams, currentcmykcolor,%
5696     currentcolor, currentcolorrendering, currentcolorscreen,%
5697     currentcolorspace, currentcolortransfer, currentcontext, currentdash,%
5698     currentdevparams, currentdict, currentfile, currentflat, currentfont,%
5699     currentglobal, currentgray, currentgstate, currenthalftone,%
5700     currenthalftonephase, currenthsbcolor, currentlinecap, currentlinejoin,%
5701     currentlinewidth, currentmatrix, currentmiterlimit,%
5702     currentobjectformat, currentpacking, currentpagedevice, currentpoint,%
5703     currentrgbcolor, currentscreen, currentshared, currentstrokeadjust,%
5704     currentsystemparams, currenttransfer, currentundercolorremoval,%
5705     currentuserparams, curveto, cvi, cvlit, cvn, cvr, cvrs, cvs, cvx, def,%
5706     defaultmatrix, definefont, defineresource, defineusername,%
5707     defineuserobject, deletefile, detach, deviceinfo, dict, dictstack, div,%
5708     dtransform, dup, echo, eexec, end, eoclip, eofill, eoviewclip, eq,%
5709     erasepage, errordict, exch, exec, execform, execstack, execuserobject,%
5710     executeonly, executive, exit, exp, false, file, filenameforall,%
5711     fileposition, fill, filter, findencoding, findfont, findresource,%
5712     flattenpath, floor, flush, flushfile, FontDirectory, for, forall, fork,%
5713     ge, get, getinterval, globaldict, GlobalFontDirectory, glyphshow,%
5714     grestore, grestoreall, gsave, gstate, gt, identmatrix, idiv,%
5715     idtransform, if, ifelse, image, imagemask, index, ineofill, infill,%
5716     initclip, initgraphics, initmatrix, initviewclip, instroke,%
5717     internaldict, inueofill, inufill, inustroke, invertmatrix,%
5718     ISOLatin1Encoding, itransform, join, kshow, known, languagelevel, le,%
5719     length, lineto, ln, load, lock, log, loop, lt, makefont, makepattern,%
5720     mark, matrix, maxlength, mod, monitor, moveto, mul, ne, neg, newpath,%
5721     noaccess, not, notify, null, nulldevice, or, packedarray, pathbbox,%
5722     pathforall, pop, print, printobject, product, prompt, pstack, put,%
5723     putinterval, quit, rand, rcurveto, read, readhexstring, readline,%
5724     readonly, readstring, realtime, rectclip, rectfill, rectstroke,%
5725     rectviewclip, renamefile, repeat, resetfile, resourceforall,%
5726     resourcestatus, restore, reversepath, revision, rlineto, rmoveto, roll,%
5727     rootfont, rotate, round, rrand, run, save, scale, scalefont, scheck,%
5728     search, selectfont, serialnumber, setbbox, setblackgeneration,%
5729     setcachedevice, setcachedevice2, setcachelimit, setcacheparams,%
5730     setcharwidth, setcmykcolor, setcolor, setcolorrendering,%
5731     setcolorscreen, setcolorspace, setcolortransfer, setdash, setdevparams,%
5732     setfileposition, setflat, setfont, setglobal, setgray, setgstate,%
5733     sethalftone, sethalftonephase, sethsbcolor, setlinecap, setlinejoin,%
```

```

5734 setlinewidth, setmatrix, setmiterlimit, setobjectformat, setoverprint,%
5735 setpacking, setpagedevice, setpattern, setrgbcolor, setscreen,%
5736 setshared, setstrokeadjust, setsystemparams, settransfer,%
5737 setucacheparams, setundercolorremoval, setuserparams, setvmthreshold,%
5738 shareddict, show, showpage, sin, sqrt, srand, stack, StandardEncoding,%
5739 start, startjob, status, statusdict, stop, stopped, store, string,%
5740 stringwidth, stroke, strokepath, sub, systemdict, transform, translate,%
5741 true, truncate, type, token, uappend, ucache, ucachestatus, ueofill,%
5742 ufill, undef, upath, userdict, UserObjects, usertime, ustroke,%
5743 ustrokepath, version, viewclip, viewclippath, vmreclaim, vmstatus,%
5744 wait, wcheck, where, widthshow, write, writehexstring, writeobject,%
5745 writestring, wtranslation, xcheck, xor, xshow, xyshow, yield, yshow},%
5746 sensitive,%
5747 morecomment=[1]\%}[keywords,comments]
5748 </lang3>

```

## 2.62 POV-Ray

Berthold Höllmann sent me the definition. But I removed `blankstring=false` and `flexiblecolumns=true` from the driver since they have nothing to do with a language definition.

```

5749 (*lang1)
5750 %%
5751 %% POV definition (c) 1999 Berthold H\ollmann
5752 %%
5753 \lst@definelanguage{POV}%
5754 {morekeywords={abs,absorption,acos,acosh,adaptive,adc_bailout,agate,%
5755 agate_turb,all,alpha,ambient,ambient_light,angle,aperture,append,%
5756 arc_angle,area_light,array,asc,asin,asinh,assumed_gamma,atan,%
5757 atan2,atanh,average,background,bezier_spline,bicubic_patch,%
5758 black_hole,blob,blue,blur_samples,bounded_by,box,boxed,bozo,%
5759 break,brick,brick_size,brightness,brilliance,bumps,bump_map,%
5760 bump_size,camera,case,caustics,ceil,checker,chr,clipped_by,clock,%
5761 clock_delta,color,color_map,colour,colour_map,component,%
5762 composite,concat,cone,confidence,conic_sweep,control0,control1,%
5763 cos,cosh,count,crackle,crand,cube,cubic,cubic_spline,cubic_wave,%
5764 cylinder,cylindrical,debug,declare,default,defined,degrees,%
5765 density,density_file,density_map,dents,difference,diffuse,%
5766 dimensions,dimension_size,direction,disc,distance,%
5767 distance_maximum,div,eccentricity,else,emission,end,error,%
5768 error_bound,exp,extinction,fade_distance,fade_power,falloff,%
5769 falloff_angle,false,fclose,file_exists,filter,finish,fisheye,%
5770 flatness,flip,floor,focal_point,fog,fog_alt,fog_offset,fog_type,%
5771 fopen,frequency,gif,global_settings,gradient,granite,%
5772 gray_threshold,green,height_field,hexagon,hf_gray_16,hierarchy,%
5773 hollow,hypercomplex,if,ifdef,iff,ifndef,image_map,include,int,%
5774 interior,interpolate,intersection,intervals,inverse,ior,irid,%
5775 irid_wavelength,jitter,julia_fractal,lambda,lathe,leopard,%
5776 light_source,linear_spline,linear_sweep,local,location,log,%
5777 looks_like,look_at,low_error_factor,macro,mandel,map_type,marble,%
5778 material,material_map,matrix,max,max_intersections,max_iteration,%
5779 max_trace_level,media,media_attenuation,media_interaction,merge,%
5780 mesh,metallic,min,minimum_reuse,mod,mortar,nearest_count,no,%

```

```

5781     normal,normal_map,no_shadow,number_of_waves,object,octaves,off,%
5782     offset,omega,omnimax,on,once,onion,open,orthographic,panoramic,%
5783     perspective,pgm,phase,phong,phong_size,pi,pigment,pigment_map,%
5784     planar,plane,png,point_at,poly,polygon,poly_wave,pot,pow,ppm,%
5785     precision,prism,pwr,quadratic_spline,quadric,quartic,quaternion,%
5786     quick_color,quick_colour,quilted,radial,radians,radiosity,radius,%
5787     rainbow,ramp_wave,rand,range,ratio,read,reciprocal,%
5788     recursion_limit,red,reflection,reflection_exponent,refraction,%
5789     render,repeat,rgb,rgbf,rgbft,rgbt,right,ripples,rotate,roughness,%
5790     samples,scale,scallop_wave,scattering,seed,shadowless,sin,%
5791     sine_wave,sinh,sky,sky_sphere,slice,slope_map,smooth,%
5792     smooth_triangle,sor,specular,sphere,spherical,spiral1,spiral2,%
5793     spotlight,spotted,sqr,sqrt,statistics,str,strcmp,strength,strlen,%
5794     strtolw,strupr, Sturm,substr,superellipsoid,switch,sys,t,tan,tanh,%
5795     text,texture,texture_map,tga,thickness,threshold,tightness,tile2,%
5796     tiles,torus,track,transform,translate,transmit,triangle,%
5797     triangle_wave,true,ttf,turbulence,turb_depth,type,u,%
5798     ultra_wide_angle,undef,union,up,use_color,use_colour,use_index,%
5799     u_steps,v,val,variance,vaxis_rotate,vcross,vdot,version,vlength,%
5800     vnormalize,vrotate,v_steps,warning,warp,water_level,waves,while,%
5801     width,wood,wrinkles,write,x,y,yes,z},%
5802     moredirectives={break,case,debug,declare,default,else,end,fclose,%
5803         fopen,local,macro,read,render,statistics,switch,undef,version,%
5804         warning,write},%
5805     moredelim=*[directive]\#,%
5806     sensitive,%
5807     morecomment=[l]//,%
5808     morecomment=[s]{/*}{*/},%
5809     morestring=[d]" ,%
5810 }[keywords,directives,comments,strings]%
5811 </lang1>

```

## 2.63 Prolog

Dominique de Waleffe mailed me the data for Prolog. He took the keywords from the LGrind language definition file.

```

5812 <lang2>
5813 %%
5814 %% Prolog definition (c) 1997 Dominique de Waleffe
5815 %%
5816 \lst@definlanguage{Prolog}%
5817 {morekeywords={op,mod,abort,ancestors,arg,ascii,ask,assert,asserta,%
5818     assertz,atom,atomic,char,clause,close,concat,consult,ed,ef,em,%
5819     eof,fail,file,findall,write,functor,getc,integer,is,length,%
5820     listing,load,name,nl,nonvar,not,numbervars,op,or,pp,prin,print,%
5821     private,prompt,putc,ratom,read,read_from_this_file,rename,repeat,%
5822     retract,retractall,save,see,seeing,seen,sh,skip,statistics,%
5823     subgoal_of,system,tab,tell,telling,time,told,trace,true,unload,%
5824     untrace,var,write},%
5825     sensitive=f,%
5826     morecomment=[l]\%,%
5827     morecomment=[s]{/*}{*/},%
5828     morestring=[bd]" ,%

```

```

5829   morestring=[bd] '%'
5830   }[keywords,comments,strings]%
5831 </lang2>

```

## 2.64 Promela

Thanks to William ThimblebyPromela for this language definition.

```

5832 <*lang3>
5833 %%
5834 %% Promela definition (c) 2004 William Thimbleby
5835 %%
5836 \lst@definlanguage{Promela}
5837   {morekeywords={active,assert,atomic,bit,bool,break,byte,chan,d_step,%
5838     Dproctype,do,else,empty,enabled,fi,full,goto,hidden,if,init,int,%
5839     len,mtype,nempty,never,nfull,od,of,pcvalue,printf,priority,%
5840     proctype,provided,run,short,skip,timeout,typedef,unless,unsigned,%
5841     xr,xs,true,false,inline,eval},%
5842   moredirectives={define,ifdef,ifndef,if,if,else,endif,undef,include},%
5843   moredelim={*[directive]\#,%
5844   morecomment=[s]{/*}{*/},%
5845   morestring=[b]"%
5846   }[keywords,comments,strings,directives]%
5847 </lang3>

```

## 2.65 PSTricks

PSTricks is a T<sub>E</sub>X macro package bundle. Herbert Voss provided the following definition.

```

5848 <*lang3>
5849 %%
5850 %% PSTricks definition (c) 2006 Herbert Voss
5851 %%
5852 \lst@definlanguage{PSTricks}%
5853   {morekeywords={%
5854     begin,end,definecolor,multido,%
5855     KillGlue,DontKillGlue,pslbrace,bsrbrace,psscalebox,psset,pstVerb,pstverb,%
5856     pst@def,psframebox,psclip,endclip,endsppicture,psframe,%
5857     % pspicture,%
5858     multirput,multips,Rput,rput,uput,cput,lput,%
5859     newrgbcolor,newgray,newcmykcolor,%
5860     %
5861     % pstricks-add
5862     psStep,psgraph,psbrace,psPrintValue,%
5863     %
5864     % pst-plot
5865     psvlabel,pslabel,psplot,psline,pscuro,pscurve,psccurve,%
5866     readdata,savedata,fileplot,dataplot,listplot,%
5867     psecurve,psgraph,parametricplot,%
5868     psellipse,psaxes,ncline,nccurve,psbezier,parabola,%
5869     qdisk,qline,clipbox,endspsclip,%
5870     psgrid,pscircle,pscirclebox,psdiabox,pstribox,%

```

```

5871 newpsfontdot,psdot,psdots,%
5872 pspolygon,psdiamond,psoval,pstriangle,%
5873 psarc,psarcn,psellipticarc,psellipticarcn,pswedge,psellipticwedge,%
5874 pcline,pcdiag,pcdiagg,pccurve,pccurve,pcecurve,%
5875 scalebox,scaleboxto,psmathboxtrue,everypsbox,psverbboxtrue,overlaybox,%
5876 psoverlay,putoverlaybox,%
5877 newpsstyle,newpsobject,%
5878 moveto,newpath,closepath,stroke,fill,gsave,grestore,msave,mrestore,%
5879 translate,scale,swapaxes,rotate,openshadow,closedshadow,movetpath,%
5880 lineto,rlineto,curveto,rcurveto,code,dim,coor,rcoor,file,arrows,%
5881 setcolor,rotateleft,rotateright,rotatedown,%
5882 %%
5883 %% pst-node
5884 nput,naput,nbput,ncput,%
5885 ncarc,ncbox,ncangle,ncangles,ncloop,ncdiag,ncdiagg,ncarcbox,ncbar,%
5886 cnodeput,nccircle,%
5887 pnode,rnode,Rnode,Cnode,cnode,fnode,%
5888 circnode,ovalnode,trinode,dianode,%
5889 psmatrix,endpsmatrix,psspan,%
5890 %%
5891 %% pst-tree
5892 pstree,Tcircle,TCircle,Ttri,Tn,TC,Tc,Tfan,TR,Tr,Tdia,Toval,Tdot,Tp,Tf,%
5893 skiplevel,skiplevels,endskiplevels,tSPACE,tlput,%
5894 %%
5895 %% pst-text
5896 pscharpath,pstextpath,%
5897 %%
5898 %% pst-barcode
5899 psbarcode,%
5900 %%
5901 %% pst-coil
5902 psboxfill,pscoil,psCoil,pszigzag,nccoil,%
5903 psshadow,pstilt,psTilt,ThreeDput,%
5904 %%
5905 %% pst-gr3d
5906 PstGridThreeDNodeProcessor,%
5907 %%
5908 %% pst-vue3d
5909 PstGridThreeD,%
5910 AxesThreeD,LineThreeD,DieThreeD,FrameThreeD,SphereCircleThreeD,%
5911 SphereMeridienThreeD,QuadrillageThreeD,TetraedreThreeD,%
5912 PyramideThreeD,ConeThreeD,CylindreThreeD,DodecahedronThreeD,%
5913 ConeThreeD,SphereThreeD,SphereInverseThreeD,DemiSphereThreeD,%
5914 SphereCreuseThreeD,SphereCircledThreeD,PortionSphereThreeD,%
5915 pNodeThreeD,CubeThreeD,%
5916 %%
5917 %% pst-3dplot
5918 pstThreeDCoor, pstThreeDDot, pstThreeDTriangle, pstThreeDCircle,%
5919 pstPlanePut, pstThreeDBox, pstThreeDEllipse, pstThreeDLine,%
5920 pstThreeDPut, pstThreeDNode, pstThreeDSquare, psplotThreeD,%
5921 parametricplotThreeD, fileplotThreeD, dataplotThreeD,%
5922 pstScalePoints,%
5923 %%
5924 %% pst-circ

```

```

5925 resistor,battery,Ucc,Icc,capacitor,coil,diode,Zener,LED,lamp,switch,%
5926 wire,tension,circledipole,multidipole,OA,transistor,Tswitch,%
5927 potentiometer,transformer,optoCoupler,logic,%
5928 %%
5929 %% pst-eucl
5930 pstTriangle,pstMediatorAB,pstInterLL,pstMiddleAB,pstProjection,%
5931 pstCircleOA,pstLineAB,%
5932 %%
5933 %% pst-func
5934 psBessel,psPolynomial,psFourier,psGaussI,psGauss,psSi,psSi,psCi,psCi,%
5935 %%
5936 %% pst-infixplot
5937 psPlot,%
5938 %%
5939 %% pst-ob3d
5940 PstDie,PstCube,%
5941 %%
5942 %% pst-poly
5943 PstPolygon,pspolygonbox,%
5944 %%
5945 %% pst-bar
5946 psbarchart,readpsbardata,psbarscale,newpsbarstyle,%
5947 %%
5948 %% pst-lens
5949 PstLens,%
5950 %%
5951 %% pst-geo
5952 WorldMap,WorldMapII,WorldMapThreeD,WorldMapThreeDII,pnodeMap,MapPut,%
5953 %%
5954 %% pst-autoseg
5955 asr,firstnode,merge,massoc,labelmerge,%
5956 %%
5957 %% gastex
5958 node,imark,fmark,rmark,drawqbpedge,drawedge,drawloop,%
5959 %%
5960 %% pst-labo
5961 Distillation,Ballon,%
5962 %%
5963 %% pst-optic
5964 lens,Transform,%
5965 %%
5966 %% pst-light3d
5967 PstLightThreeDText,%
5968 %%
5969 %% calendrier
5970 Calendrier,%
5971 %%
5972 %% pst-osci
5973 Oscillo%
5974 },%
5975 sensitive,%
5976 alsoother={0123456789$_},%
5977 morecomment=[1]\% %
5978 }[keywords,comments]%

```

5979  $\langle$ /lang3 $\rangle$

## 2.66 Python

Michael Weber sent me the definition. He got data from MARK LUTZ: **Programming Python**; O'Reilly 1996; ISBN 1-56592-197-6. Stephen Kelly reported some problems that indicated that the comment definitions needed to be moved after the string definitions to work correctly.

In August 2013 Alexis Dimitriadis reworked the definition by supplying the builtins.

5980  $\langle$ \*lang1 $\rangle$

```
5981 %%
5982 %% Python definition (c) 1998 Michael Weber
5983 %% Additional definitions (2013) Alexis Dimitriadis
5984 %%
5985 \lst@definlanguage{Python}{%
5986   morekeywords={access, and, break, class, continue, def, del, elif, else,%
5987     except, exec, finally, for, from, global, if, import, in, is, lambda,%
5988     not, or, pass, print, raise, return, try, while},%
```

Python has a long list of builtin-in functions (<http://docs.python.org/2/library/functions.html>) and it is a good idea to make them visible in printed code

```
5989   % Built-ins
5990   morekeywords=[2]{abs, all, any, basestring, bin, bool, bytearray,%
5991     callable, chr, classmethod, cmp, compile, complex, delattr, dict, dir,%
5992     divmod, enumerate, eval, execfile, file, filter, float, format,%
5993     frozenset, getattr, globals, hasattr, hash, help, hex, id, input, int,%
5994     isinstance, issubclass, iter, len, list, locals, long, map, max,%
5995     memoryview, min, next, object, oct, open, ord, pow, property, range,%
5996     raw_input, reduce, reload, repr, reversed, round, set, setattr, slice,%
5997     sorted, staticmethod, str, sum, super, tuple, type, unichr, unicode,%
5998     vars, xrange, zip, apply, buffer, coerce, intern},%
5999   sensitive=true,%
6000   morecomment=[1]\#,%
6001   morestring=[b]',,%
6002   morestring=[b]",,%
```

According to PEP (Python Enhancement Proposals) comment should be distinguished from documentation strings, so we define

```
6003   morecomment=[s]{'''}{'''},% used for documentation text
6004                                     % (multiline strings)
6005   morecomment=[s]{"""}{"""},% added by Philipp Matthias Hahn
```

Jürgen Dietel provided an example with a wrong representation of documentation strings, so the two lines above got changed from `morestring` → `morecomment`.

Python now supports so called *raw strings* and also Unicode strings. Here is the definition of these strings:

```
6006   morestring=[s]{r'}{'},% 'raw' strings
6007   morestring=[s]{r"}{"},%
6008   morestring=[s]{r'''}{'''},%
6009   morestring=[s]{r"""}{"""},%
6010   morestring=[s]{u'}{'},% unicode strings
```



```

6011 morestring=[s]{u"}{"},%
6012 morestring=[s]{u'''}{'''},%
6013 morestring=[s]{u"""}{"""}%
6014 }%

```

Philipp Matthias Hahn added the third comment. eRreuR found a bug using Python and Nicolas Markey informed me about the corresponding thread on `fr.comp.text.tex` and provided the fix—adding `[b]` to both `morestring` declarations.

```
6015 </lang1>
```

Alexis Dimitriadis also proposes the following configuration for printing Python code which simulates colorizing the code as it's done by the IDLE GUI:

```

6016 (*python-prf)
6017 \usepackage{xcolor}
6018 \usepackage{textcomp}
6019
6020 %% Actual colors from idlelib/config-highlight.def
6021 %% --> corrected to 'web-safe'
6022 %% strings = #00aa00 / 0,170,0 (a darker green)
6023 %% builtins = #900090 / 144,0,144 (purple-ish)
6024 %% keywords = #FF7700 / 255,119,0 (quite close to plain 'orange')
6025 \%definecolor{IDLEorange}{RGB}{255,119,0} % pretty close to real orange
6026 \%definecolor{IDLEpurple}{RGB}{144,0,144}
6027 \%definecolor{IDLEgreen}{RGB}{0,170,0}
6028 \%definecolor{IDLERed}{RGB}{221,0,0}
6029 %% Corrected to 'web-safe'
6030 \%definecolor{orange2}{RGB}{255,102,0}
6031 \%definecolor{purple2}{RGB}{153,0,153} % there's actually no standard purple
6032 \%definecolor{green2}{RGB}{0,153,0} % a darker green
6033 \%definecolor{red2}{RGB}{221,0,0}
6034
6035 % Except for green and purple, the other colors are pretty good in standard
6036 % hue
6037 \lstdefinestyle{python-idle-code}{%
6038   language=Python, % the language
6039   basicstyle=\normalsize\ttfamily, % size of the fonts for the code
6040   % Color settings to match IDLE style
6041   keywordstyle=\color{orange}, % core keywords
6042   keywordstyle={ [2] \color{purple2}}, % built-ins
6043   stringstyle=\color{green2},%
6044   commentstyle=\color{red},%
6045   upquote=true, % requires textcomp
6046 }
6047 % Unimplemented IDLE syntax: function/class names being defined should be
6048 % blue

```

This code is provided in the file `listings-python.prf`, see section 2.4.1 (Preferences) of the `listings` documentation.

```
6049 </python-prf>
```

## 2.67 Rexx

Patrick TJ McPhee provided this definition.

```

6050 (*lang2)
6051 %%
6052 %% classic rexx listings definition
6053 %% by Patrick TJ McPhee <ptjm@interlog.com>
6054 %%
6055 \lst@definlanguage{Rexx}
6056   {morekeywords={address, arg, call, do, drop, else, end, exit, if, iterate, %
6057               interpret, leave, nop, numeric, options, otherwise, parse, %
6058               procedure, pull, push, queue, return, say, signal, then, to, %
6059               trace, when}, %
6060   sensitive=false, %
6061   morecomment=[n]{/*}{*/}, %
6062   morestring=[d]{'}, %
6063   morestring=[d]{"}, %
6064   }[keywords, comments, strings]%
6065 (/lang2)

```

There are two dialects of Rexx: the one from System Product Interpreter Reference, VM/XA SP Release 1 and Release 2 and the modern version ooRexx (see <http://www.oorexx.org/>).

### 2.67.1 Rexx—VM/XA

```

6066 (*lang2)
6067 %%
6068 %% REXX keywords from System Product Interpreter Reference, VM/XA SP Release 1
6069 %% and Release 2
6070 \lst@definlanguage [VM/XA] {Rexx} [] {Rexx} {%
6071   morekeywords={all, by, digits, commands, end, engineering, error, errors, expose, %
6072               external, for, form, fuzz, halt, labels, intermediates, negative, normal, novalue, %
6073               on, off, results, scan, scientific, select, source, stream, syntax, until, upper, %
6074               value, var, version, while, with}, %
6075   ndkeywords={abbrev, abs, address, bitand, bitor, bitxor, center, centre, %
6076               compare, copies, c2d, c2x, datatype, date, delstr, delword, diag, diagrc, %
6077               d2c, d2x, errortext, externals, find, format, index, insert, justify, %
6078               lastpos, left, length, linesize, max, min, overlay, pos, queued, random, %
6079               reverse, righth, sign, sourceline, space, storage, strip, substr, subword, %
6080               symbol, time, translate, trunc, userid, value, verify, word, wordindex, %
6081               wordlength, words, xrange, x2c, x2d}, %
6082   sensitive=false, %
6083   morestring=[d] ", %
6084   morestring=[d] ', %
6085   morecomment=[s]{/*}{*/}, %
6086   alsoletter={:}, %
6087   }[keywords, comments, strings]%
6088 (/lang2)

```

### 2.67.2 ooRexx

```

6089 (*lang2)
6090 %%
6091 %% ooREXX keywords (http://www.oorexx.org/)
6092 \lst@definlanguage [] {OORexx} [VM/XA] {Rexx} {%

```

```

6093 morekeywords={::class, ::method, ::attribute},%
6094 }
6095 </lang2>

```

## 2.68 Reduce

was provided by Geraint Paul Bevan.

```

6096 (*lang3)
6097 %%
6098 %% Reduce definition (c) 2002 Geraint Paul Bevan
6099 %%
6100 \lst@definelanguage{Reduce}%
6101 {morekeywords={%
6102 %% reserved identifiers
6103 abs,acos,acosh,acot,acoth,acsc,acsch,%
6104 adjprec,algebraic,algint,allbranch,allfac,and,%
6105 antisymmetric,append,arglength,array,asec,asech,%
6106 asin,asinh,atan,atan2,atanh,begin,bfspace,bye,%
6107 card_no,ceiling,clear,clearrules,coeff,coeffn,%
6108 cofactor,combineexpt,combinelogs,comment,comp,%
6109 complex,conj,cons,cont,cos,cosh,cot,coth,cramer,%
6110 cref,csc,csch,decompose,define,defn,deg,demo,den,%
6111 depend,det,df,difference,dilog,display,div,do,e,%
6112 echo,ed,editdef,ei,end,eps,eq,equal,erf,errcont,%
6113 evallhseq,eval_mode,even,evenp,exp,expandlogs,%
6114 expr,expt,ezgcd,factor,factorial,factorize,fexpr,%
6115 first,fix,fixp,floor,for,forall,foreach,fort,%
6116 fort_width,freeof,fullroots,g,gcd,geq,go,goto,%
6117 greaterp,high_pow,hypot,i,if,ifactor,impart,in,%
6118 index,infinity,infix,input,int,integer,interpol,%
6119 intstr,k,korder,lambda,lcm,lcof,length,leq,lessp,%
6120 let,lhs,linear,linelength,lisp,list,listargp,%
6121 listargs,ln,load,load_package,log,log10,logb,%
6122 low_pow,lterm,macro,mainvar,mass,mat,match,%
6123 mateigen,matrix,max,mcd,member,memq,min,minus,mkid,%
6124 modular,msg,mshell,multiplicities,nat,neq,nero,%
6125 nextprime,nil,nodepend,noncom,nonzero,nosplit,%
6126 nospur,nullspace,num,numberp,odd,off,on,operator,%
6127 or,order,ordp,out,output,part,pause,period,pf,pi,%
6128 plus,precedence,precise,precision,pret,pri,primep,%
6129 print_precision,procedure,product,quit,quotient,%
6130 random,random_new_seed,rank,rat,ratarg,rational,%
6131 rationalize,ratpri,real,rederr,reduct,remainder,%
6132 remfac,remind,repert,repeat,rest,resultant,retry,%
6133 return,reverse,revpri,rhs,rlisp88,%
6134 root_multiplicity,round,roundall,roundbf,rounded,%
6135 saveas,savestructr,scalar,sec,sech,second,set,%
6136 setmod,setq,share,showrules,showtime,shut,sign,sin,%
6137 sinh,smacro,solve,solvesingular,spur,sqrt,structr,%
6138 sub,sum,symbolic,symmetric,t,tan,tanh,third,time,%
6139 times,tp,tra,trace,trfac,trigform,trint,until,%
6140 varname,vecdim,vector,weight,when,where,while,%
6141 write,ws,wtlevel,%
6142 %% identifiers with spaces

```

```

6143 %% for all,for each,go to,such that,%
6144 },%
6145   sensitive=false,%
6146   morecomment=[l]\%,%
6147   morecomment=[s]{COMMENT}{;},%
6148   morecomment=[s]{COMMENT}{$},%
6149   morestring=""
6150 }[keywords,comments,strings]%
6151 \</lang3>

```

## 2.69 RSL

Thanks go to Brian Christensen.

```

6152 \*lang3>
6153 %%
6154 %% RSL definition (c) 2004 Brian Christensen
6155 %%
6156 \lst@definlanguage{RSL}%
6157 {morekeywords={Bool,Char,devt_relation,Int,Nat,Real,Text,Unit,abs,any,%
6158   as,axiom,card,case,channel,chaos,class,do,dom,elems,else,elsif,end,%
6159   extend,false,for,hd,hide,if,in,inds,initialise,int,len,let,local,%
6160   object,of,out,post,pre,read,real,rng,scheme,skip,stop,swap,%
6161   test_case,theory,then,tl,true,type,until,use,value,variable,while,%
6162   with,write},%
6163 literate=%
6164 {<}{<$}{1}%
6165 {>}{>$}{1}%
6166 {[]}{[$]{1}%
6167 {}{}{}{1}%
6168 {~}{\mbox{$\widehat{\;}}}{1}%
6169 {'}{\raisebox{1ex}[1ex][0ex]{\protect\scriptsize$\prime$}}{1}%
6170 {| |}{\mbox{$\parallel$}}{2}%
6171 {|-}{\vdash}{1}%
6172 {|=|}{\mbox{$\lceil\!\!\!\! \rceil\!\!\!\! \!\!\!\! \!\!\!\! \!\!\!\! \!\!\!\! \lfloor\!\!\!\! \rfloor$}}{1}%
6173 {**}{\uparrow}{1}%
6174 {/\}{\wedge}{1}%
6175 {inter}{\cap}{1}%
6176 {-\}{\lambda}{1}%
6177 {->}{\rightarrow}{1}%
6178 {-m->}{\mbox{$\rightarrow$ \hspace{-2.5\lst@width} _{m}\;}}{1}%
6179 {-~m->}{\mbox{$\stackrel{\sim}{\rightarrow}$ \hspace{-2.5\lst@width} _{m}\;}}{1}%
6180   \hspace{-2.5\lst@width} _{m}\;}}{1}%
6181 {-~->}{\mbox{$\stackrel{\sim}{\rightarrow}$}}{1}%
6182 {-set}{\bf{-set}}{4}%
6183 {-list}{\textasciicircum}{1}%
6184 {-inflist}{\textasciicircum\omega}{1}%
6185 {-infset}{\mbox{\bf{-infset}}}{7}%
6186 {\#}{\circ}{1}%
6187 {:-}{\raisebox{.4ex}{\tiny $\bullet$}}{1}%
6188 {=}{=$}{1}%
6189 {==}{==$}{2}%
6190 {=>}{\rightarrow}{1}%
6191 {\ is\protect\^M}{\;\equiv}{2}%

```

6192  $\{\backslash is\ }{\{\{\$\equiv\}\}\{3}\}%%$   
6193  $\{\backslash isin\protect\^M\}\{\$\;\in\}\{2}\}%%$   
6194  $\{\sim\}\{\$\sim\}\{1}\}%%$   
6195  $\{\sim=\}\{\$\neq\}\{1}\}%%$   
6196  $\{\sim isin\}\{\$\notin\}\{1}\}%%$   
6197  $\{+\>\}\{\$\mapsto\}\{1}\}%%$   
6198  $\{++\}\{\}\{1}\}%%$   
6199  $\{\lceil\rceil\}\{\{\mbox{\$\lceil\!\rceil}\}\}\{1}\}%%$   
6200  $\{\backslash\backslash/\}\{\$\vee\}\{1}\}%%$   
6201  $\{\exists\}\{\$\exists\}\{1}\}%%$   
6202  $\{\cup\}\{\$\cup\}\{1}\}%%$   
6203  $\{\geq\}\{\$\geq\}\{1}\}%%$   
6204  $\{\times\}\{\$\times\}\{1}\}%%$   
6205  $\{\supset\}\{\$\supset\}\{1}\}%%$   
6206  $\{\supseteq\}\{\$\supseteq\}\{1}\}%%$   
6207  $\{\leq\}\{\$\leq\}\{1}\}%%$   
6208  $\{\subset\}\{\$\subset\}\{1}\}%%$   
6209  $\{\langle.\rangle\}\{\$\langle\rangle\}\{1}\}%%$   
6210  $\{\subseteq\}\{\$\subseteq\}\{1}\}%%$   
6211  $\{\leftrightarrow\}\{\$\leftrightarrow\}\{1}\}%%$   
6212  $\{[\sqsubset\}\{\$\sqsubset\}\{1}\}%%$   
6213  $\{\preceq\}\{\$\preceq\}\{1}\}%%$   
6214  $\{\backslash all\protect\^M\}\{\$\forall\}\{2}\}%%$   
6215  $\{\backslash all\ }{\{\$\forall\}\}\{3}\}%%$   
6216  $\{\dagger\}\{\$\dagger\}\{1}\}%%$   
6217  $\{\Box\}\{\$\Box\}\{1}\}%%$   
6218  $\{\rangle\}\{\$\rangle\}\{1}\}%%$   
6219  $\{\alpha\}\{\$\alpha\}\{1}\}%%$   
6220  $\{\beta\}\{\$\beta\}\{1}\}%%$   
6221  $\{\gamma\}\{\$\gamma\}\{1}\}%%$   
6222  $\{\delta\}\{\$\delta\}\{1}\}%%$   
6223  $\{\epsilon\}\{\$\epsilon\}\{1}\}%%$   
6224  $\{\zeta\}\{\$\zeta\}\{1}\}%%$   
6225  $\{\eta\}\{\$\eta\}\{1}\}%%$   
6226  $\{\theta\}\{\$\theta\}\{1}\}%%$   
6227  $\{\iota\}\{\$\iota\}\{1}\}%%$   
6228  $\{\kappa\}\{\$\kappa\}\{1}\}%%$   
6229  $\{\mu\}\{\$\mu\}\{1}\}%%$   
6230  $\{\nu\}\{\$\nu\}\{1}\}%%$   
6231  $\{\xi\}\{\$\xi\}\{1}\}%%$   
6232  $\{\pi\}\{\$\pi\}\{1}\}%%$   
6233  $\{\rho\}\{\$\rho\}\{1}\}%%$   
6234  $\{\sigma\}\{\$\sigma\}\{1}\}%%$   
6235  $\{\tau\}\{\$\tau\}\{1}\}%%$   
6236  $\{\upsilon\}\{\$\upsilon\}\{1}\}%%$   
6237  $\{\phi\}\{\$\phi\}\{1}\}%%$   
6238  $\{\chi\}\{\$\chi\}\{1}\}%%$   
6239  $\{\psi\}\{\$\psi\}\{1}\}%%$   
6240  $\{\omega\}\{\$\omega\}\{1}\}%%$   
6241  $\{\Gamma\}\{\$\Gamma\}\{1}\}%%$   
6242  $\{\Delta\}\{\$\Delta\}\{1}\}%%$   
6243  $\{\Theta\}\{\$\Theta\}\{1}\}%%$   
6244  $\{\Lambda\}\{\$\Lambda\}\{1}\}%%$   
6245  $\{\Xi\}\{\$\Xi\}\{1}\}%%$

```

6246 {'Pi}{\Pi}{1}%
6247 {'Sigma}{\Sigma}{1}%
6248 {'Upsilon}{\Upsilon}{1}%
6249 {'Phi}{\Phi}{1}%
6250 {'Psi}{\Psi}{1}%
6251 {'Omega}{\Omega}{1},%
6252   sensitive=true,%
6253   morecomment=[1]{--},%
6254   morecomment=[s]{/*}{*/}%
6255 }[keywords,comments]%
6256 </lang3>

```

## 2.70 Ruby

Christian Kaiser provided the initial definition. Xavier Noria replaced the keywords with the keywords from the at the time of writing current stable Ruby version. An erroneous string delimiter was removed following a bug reported on comp.text.tex on 2006/09/01.

Ruby supports string delimiters of the form %q!...!, where ! can be any character, or can be matched braces or parentheses or brackets. The included string definitions include most of the common variants, but are of course not comprehensive.

```

6257 <*lang2>
6258 \lst@definlanguage{Ruby}%
6259   {morekeywords={__FILE__, __LINE__, BEGIN, END, alias, and, begin, break,%
6260     case, class, def, defined?, do, else, elsif, end, ensure, false, for,%
6261     if, in, module, next, nil, not, or, redo, rescue, retry, return, self,%
6262     super, then, true, undef, unless, until, when, while, yield},%
6263   sensitive=true,%
6264   morecomment=[1]\#,%
6265   morecomment=[1]\#\#,%
6266   morecomment=[s]{=BEGIN}{=END},%
6267   morestring=[b]',%
6268   morestring=[b]" ,%
6269   morestring=[s]{\%q/}{/},%
6270   morestring=[s]{\%q!}{!},%
6271   morestring=[s]{\%q\}{\},%
6272   morestring=[s]{\%q()}{},%
6273   morestring=[s]{\%q[]}{},%
6274   morestring=[s]{\%q-}{-},%
6275   morestring=[s]{\%Q/}{/},%
6276   morestring=[s]{\%Q!}{!},%
6277   morestring=[s]{\%Q\}{\},%
6278   morestring=[s]{\%Q()}{},%
6279   morestring=[s]{\%Q[]}{},%
6280   morestring=[s]{\%Q-}{-}%
6281 }[keywords,comments,strings]%
6282 %   \begin{macrocode}
6283 </lang2>

```

## 2.71 Scilab

Thanks go to Jean-Philippe Grivet.

```
6284 (*lang1)
6285 %%
6286 %% Scilab definition (c) 2002,2003 Jean-Philippe Grivet
6287 %%
6288 \lst@definlanguage{Scilab}%
6289 {morekeywords={abcd,abinv,abort,abs,acoshm,acosh,acosm,acos,addcolor,%
6290     addf,addinter,addmenu,add_edge,add_node,adj2sp,adj_lists,aff2ab,%
6291     amell,analpf,analyze,ans,apropos,arc_graph,arc_number,argn,arhmk,%
6292     arl2,arma2p,armac,armax1,armax,arma,arsimul,artest,articul,ascii,%
6293     asinhm,asinh,asinm,asin,atanhm,atanh,atanm,atan,augment,auread,%
6294     auwrite,balanc,balreal,bandwr,basename,bdiag,besseli,besselj,%
6295     besserk,bessely,best_match,bezout,bifish,bilin,binomial,black,%
6296     bloc2exp,bloc2ss,bode,bool2s,boolean,boucle,break,bstap,buttmg,%
6297     bvode,cainv,calerf,calfrq,call,canon,casc,case,ccontrg,cdfbet,%
6298     cdfbin,cdfchi,cdfchn,cdfnc,cdff,cdfgam,cdfnbn,cdfnor,cdfpoi,%
6299     cdft,ceil,center,cepstrum,chaintest,chain_struct,champ1,champ,%
6300     chart,chdir,cheb1mag,cheb2mag,check_graph,check_io,chepol,chfact,%
6301     chol,chsolve,circuit,classmarkov,clean,clearfun,clearglobal,%
6302     clear,close,cls2dls,cmb_lin,cmdred,cmoment,code2str,coeff,coffg,%
6303     coff,colcompr,colcomp,colinout,colormap,colregul,companion,comp,%
6304     cond,conj,connex,contour2di,contour2d,contourf,contour,%
6305     contract_edge,contrss,contr,cont_frm,cont_mat,convex_hull,convol,%
6306     convstr,con_nodes,copfac,copy,correl,corr,coshm,cosh,cosm,cos,%
6307     cotg,cothm,coth,covar,csim,cspect,ctr_gram,cumprod,cumsum,%
6308     curbloc,cycle_basis,czt,c_link,dasrt,dassl,datafit,date,dbphi,%
6309     dcf,ddp,debug,dec2hex,deff,definedfields,degree,delbpt,%
6310     delete_arcs,delete_nodes,delete,delip,delmenu,demos,denom,%
6311     derivative,derivat,des2ss,des2tf,determ,detr,det,dft,dhinf,%
6312     dhnorm,diag,diary,diff,diophant,dirname,dispbpt,dispfiles,disp,%
6313     dlgamma,double,dragrect,drawaxis,drawlater,drawnow,draw,driver,%
6314     dscr,dsearch,dsimul,dtsi,dt_ility,duplicate,edge_number,%
6315     edit_curv,edit_graph_menus,edit_graph,edit,eigenmarkov,ell1mag,%
6316     elseif,else,emptystr,endfunction,end,eqfir,eqiir,equi11,equil,%
6317     ereduc,erfcx,erfc,erf,errbar,errcatch,errclear,error,eval3dp,%
6318     eval3d,eval,evans,evstr,excel2sci,execstr,exec,exists,exit,expm,%
6319     exp,external,eye,fac3d,factors,faurre,fchamp,fcontour2d,fcontour,%
6320     fec,feedback,feval,ffilt,fftshift,fft,fgrayplot,figure,fileinfo,%
6321     file,filter,findm,findobj,findx0BD,find_freq,find_path,find,%
6322     findABCD,findAC,findBD,findBDK,findR,fit_dat,fix,floor,flts,foo,%
6323     formatman,format,fort,for,fourplan,fplot2d,fplot3d1,fplot3d,%
6324     fprintf,fprintfMat,frep2tf,freq,freson,frexp,frfit,frmag,fscanf,%
6325     fscanfMat,fsfirlin,fsolve,fspecg,fstabst,fstair,fstest,ftuneq,%
6326     fullrfk,fullrf,full,fun2string,funcprot,functions,function,%
6327     funptr,fusee,gainplot,gamitg,gammaln,gamma,gcare,gcd,gcf,%
6328     genfac3d,genlib,genmarkov,gen_net,geom3d,geomean,getblocklabel,%
6329     getcolor,getcurblock,getcwd,getdate,getd,getenv,getfield,getfont,%
6330     getf,getio,getlinestyle,getmark,getpid,getsicosvars,getsymbol,%
6331     getvalue,getversion,get_function_path,get,gfare,gfrancis,girth,%
6332     givens,glever,glist,global,glue,gpeche,graduate,grand,%
6333     graphics_entities,graph_2_mat,graph_center,graph_complement,%
6334     graph_diameter,graph_power,graph_simp,graph_sum,graph_union,%
```

```

6335 graph-list,graycolormap,grayplot,graypolarplot,grep,group,%
6336 gr_menu,gschur,gsort,gspec,gstacksize,gtild,g_margin,h2norm,halt,%
6337 hamilton,hankelsv,hank,harmean,havewindow,help,hermit,hess,%
6338 hex2dec,hilb,hinf,hist3d,histplot,horner,host,hotcolormap,%
6339 householder,hrmt,htrianr,hypermat,h_cl,h_inf_st,h_inf,h_norm,%
6340 iconvert,icon_edit,ieee,if,iirgroup,iirlp,iir,ilib_build,%
6341 ilib_compile,ilib_for_link,ilib_gen_gateway,ilib_gen_loader,%
6342 ilib_gen_Make,imag,impl,imrep2ss,imult,im_inv,inistate,input,%
6343 int16,int2d,int32,int3d,int8,intc,intdec,integrate,interp,%
6344 interp,intersci,intersect,intg,intl,intppty,intsplin,inttrap,%
6345 inttype,int,invr,invsyslin,inv_coeff,inv,iqr,isdef,isdir,isequal,%
6346 iserror,isglobal,isinfl,isnan,isoview,isreal,is_connex,jmat,%
6347 justify,kalm,karmarkar,kernel,keyboard,knapsack,kpure,krac2,%
6348 kroneck,kron,lasterror,lattn,lattp,lcf,lcmdiag,lcm,ldivf,ldiv,%
6349 leastsq,legends,length,leqr,levin,lev,lex_sort,lft,lgfft,library,%
6350 lib,lin2mu,lincos,lindquist,lines,line_graph,linfn,linf,link,%
6351 linreq,linpro,linsolve,linspace,lin,listfiles,list,lmisolver,%
6352 lmitool,loadmatfile,loadplots,loadwave,load_graph,load,locate,%
6353 log10,log1p,log2,logm,logspace,log,lotest,lqe,lqg2stan,lqg_ltr,%
6354 lqg,lqr,lsq,lsslist,lstcat,lstsize,ltitr,ludel,lufact,luget,%
6355 lusolve,lu,lyap,macglov,macr2lst,macrovar,macro,mad,make_graph,%
6356 make_index,manedit,man,mapsound,markp2ss,matfile2sci,matrix,%
6357 mat_2_graph,maxi,max_cap_path,max_clique,max_flow,max,mclearerr,%
6358 mclose,meanf,mean,median,meof,mese,mesh2d,mfft,mfile2sci,mgeti,%
6359 mgetl,mgetstr,mget,milk_drop,mine,mini,minreal,minss,%
6360 min_lcost_cflow,min_lcost_flow1,min_lcost_flow2,min_qcost_flow,%
6361 min_weight_tree,min,mlist,mode,modulo,moment,mopen,move,%
6362 mps2linpro,mputl,mputstr,mput,mrfit,msd,mseek,mtell,mtlb_load,%
6363 mtlb_mode,mtlb_save,mtlb_sparse,mu2lin,mulf,mvvacov,m_circle,%
6364 names,nand2mean,nanmax,nanmeanf,nanmean,nanmedian,nanmin,%
6365 nanstdev,nansum,narsimul,ndims,nearfloat,nehari,neighbors,%
6366 netclose,netwindows,netwindow,newest,newfun,nextpow2,nf3d,nfreq,%
6367 nlev,nnz,nodes_2_path,nodes_degrees,node_number,noiseq,norm,%
6368 null,numdiff,numer,nyquist,obscont1,obscont,observer,obsvss,%
6369 obsv_mat,obs_gram,odedc,odedi,odeoptions,ode_discrete,ode_root,%
6370 ode,oldload,oldsave,ones,optim,orth,param3d1,param3d,%
6371 paramfplot2d,parrot,part,pathconvert,path_2_nodes,pause,pbig,%
6372 pdiv,pen2ea,penanc,penlaur,perctl,perfect_match,pertrans,pfss,%
6373 phasemag,phc,pinv,pipe_network,playsnd,plot2d1,plot2d2,plot2d3,%
6374 plot2d4,plot2d,plot3d1,plot3d2,plot3d3,plot3d,plotframe,%
6375 plotprofile,plot_graph,plot,plzr,pmodulo,pol2des,pol2str,pol2tex,%
6376 polarplot,polar,polfact,poly,portr3d,portrait,power,ppol,prbs_a,%
6377 predecessors,predef,printf,printing,print,prod,profile,projsl,%
6378 projspec,proj,psmall,pspect,pvm_addhosts,pvm_barrier,pvm_bcast,%
6379 pvm_bufinfo,pvm_config,pvm_delhosts,pvm_error,pvm_exit,%
6380 pvm_f772sci,pvm_getinst,pvm_gettid,pvm_get_timer,pvm_gsize,%
6381 pvm_halt,pvm_joiningroup,pvm_kill,pvm_lvgroup,pvm_mytid,pvm_parent,%
6382 pvm_probe,pvm_recv,pvm_reduce,pvm_sci2f77,pvm_send,pvm_set_timer,%
6383 pvm_spawn_independent,pvm_spawn,pvm_start,pvm_tasks,%
6384 pvm_tidtohost,pvm,pwd,p_margin,qassign,qr,quapro,quart,quaskro,%
6385 quit,randpencil,rand,range,rankqr,rank,rat,rcond,rdivf,read4b,%
6386 readb,readc_,readmps,read,real,recur,reglin,regress,remezb,remez,%
6387 repfreq,replot,residu,resume,return,riccati,riccs1,ricc,ric_desc,%
6388 rlist,roots,rotate,round,routh_t,rowcompr,rowcomp,rowinout,%

```



```

6389 rowregul,rowshuff,rpem,rref,rtitr,rubberbox,salesman,savewave,%
6390 save_graph,save,scaling,scanf,schur,sci2exp,sci2for,sci2map,%
6391 sciargs,scicosim,scicos,scifunc_block,sd2sci,secto3d,select,%
6392 semidef,sensi,setbpt,seventhandler,setfield,setmenu,%
6393 setscicosvars,set,sfact,sgrid,shortest_path,showprofile,%
6394 show_arcs,show_graph,show_nodes,sident,signm,sign,simp_mode,simp,%
6395 sincd,sinc,sinc,sinhm,sinh,sinm,sin,size,sm2des,sm2ss,smooth,%
6396 solve,sorder,sort,sound,sp2adj,spaninter,spanplus,spantwo,sparse,%
6397 spchol,spcompact,specfact,spec,speye,spget,splin,split_edge,%
6398 spones,sprand,sprintf,spzeros,sqroot,sqrtm,sqrt,squarewave,%
6399 square,srfaur,srkf,ss2des,ss2ss,ss2tf,sscanf,sskf,ssprint,ssrand,%
6400 stabil,stacksize,standard_define,standard_draw,standard_input,%
6401 standard_origin,standard_output,startup,stdevf,stdev,steadycos,%
6402 str2code,strange,strcat,strindex,strings,string,stripblanks,%
6403 strong_connex,strong_con_nodes,strsubst,st_deviation,st_ility,%
6404 subf,subgraph,subplot,successors,sum,supernode,sva,svd,svplot,%
6405 sylv,sylv,sysconv,sysdiag,sysfact,syslin,sysize,systems,system,%
6406 systmat,tabul,tangent,tanhm,tanh,tanm,tan,tdinit,testmatrix,%
6407 texprint,tf2des,tf2ss,then,thrownan,timer,time_id,titlepage,%
6408 tk_getdir,tk_getfile,tlist,toeplitz,tokenpos,tokens,trace,%
6409 translatepaths,trans_closure,trans,trfmod,rianfml,tril,trimmean,%
6410 trisolve,tri_u,trzeros,typename,typeof,type,uicontrol,uimenu,%
6411 uint16,uint32,uint8,ui_observer,ulink,unglue,union,unique,unix_g,%
6412 unix_s,unix_w,unix_x,unix,unobs,unsetmenu,user,varargin,%
6413 varargout,variancef,variance,varn,warning,wavread,wavwrite,%
6414 wcenter,wfir,what,whereami,whereis,where,while,whos,who_user,who,%
6415 wiener,wigner>window,winsid,with_gtk,with_pvm,with_texmacs,%
6416 with_tk,writb,write4b,write,xarcs,xarc,xarrows,xaxis,xbas,%
6417 xbasimp,xbasr,xchange,xclear,xclea,xclick,xclip,xdel,xend,xfarcs,%
6418 xfarc,xfpolys,xfpoly,xfrect,xgetech,xgetfile,xgetmouse,xget,%
6419 xgraduate,xgrid,xinfo,xinit,xlfont,xload,xname,xnumb,xpause,%
6420 xpolys,xpoly,xrects,xrect,xrpoly,xs2fig,xs2gif,xs2ppm,xs2ps,%
6421 xsave,xsegs,select,xsetech,xsetm,xset,xstringb,xstringl,xstring,%
6422 xtape,xtitle,x_choices,x_choose,x_dialog,x_matrix,x_mdialog,%
6423 x_message_modeless,x_message,yulewalk,zeropen,zeros,zgrid,zbutt,%
6424 zpch1,zpch2,zpell,mfprintf,mfscanf,mprintf,mscanf,msprintf,%
6425 msscanf,mucomp,%
6426 ABSBLK_f,AFFICH_f,ANDLOG_f,ANIMXY_f,BIGSOM_f,CLINDUMMY_f,CLKIN_f,%
6427 CLKINV_f,CLKOUT_f,CLKOUTV_f,CLKSOM_f,CLKSOMV_f,CLKSPLIT_f,%
6428 CLOCK_f,CLR_f,CLSS_f,CONST_f,COSBLK_f,CURV_f,DELAY_f,DELAYV_f,%
6429 DEMUX_f,DLR_f,DLRADAPT_f,DLSS_f,EVENTSCOPE_f,EVTDLY_f,EVTGEN_f,%
6430 EXPBLK_f,G_make,GAIN_f,GAINBLK_f,GENERAL_f,GENERIC_f,GENSIN_f,%
6431 GENSQR_f,HALT_f,IFTHEL_f,IN_f,INTEGRAL_f,INTRP2BLK_f,INTRPLBLK_f,%
6432 INVBLK_f,LOGBLK_f,LOOKUP_f,Matplot1,Matplot,MAX_f,MCLOCK_f,%
6433 MFCLCK_f,MIN_f,MUX_f,NDcost,NEGTOPOS_f,OUT_f,POSTONEG_f,POWBLK_f,%
6434 PROD_f,QUANT_f,RAND_f,READC_f,REGISTER_f,RELAY_f,RFILE_f,%
6435 ScilabEval,Sfgrayplot,Sgrayplot,SAMPLEHOLD_f,SAT_f,SAWTOOTH_f,%
6436 SCOPE_f,SCOPY_f,SELECT_f,SINBLK_f,SOM_f,SPLIT_f,STOP_f,SUPER_f,%
6437 TANBLK_f,TCLSS_f,TEXT_f,TIME_f,TK_EvalFile,TK_EvalStr,TK_GetVar,%
6438 TK_SetVar,TRASH_f,WFILE_f,WRITEC_f,ZCROSS_f,%
6439 \%asn,\%helps,\%k,\%sn},%
6440 alsoletter=\%,% chmod
6441 sensitive,%
6442 morecomment=[l]//,%

```

```

6443   morestring=[b] ",%
6444   morestring=[m] '%
6445   }[keywords,comments,strings]%
6446 </lang1>

```

## 2.72 SHELXL

Thanks to Aidan Philip Heerdegen for mailing this definition.

```

6447 <(*lang2)>
6448 %%
6449 %% SHELXL definition (c) 1999 Aidan Philip Heerdegen
6450 %%
6451 \lst@definlanguage{SHELXL}%
6452   {morekeywords={TITL,CELL,ZERR,LATT,SYMM,SFAC,DISP,UNIT,LAUE,%
6453     REM,MORE,TIME,END,HKLF,OMIT,SHEL,BASF,TWIN,EXTI,SWAT,%
6454     MERG,SPEC,RESI,MOVE,ANIS,AFIX,HFIX,FRAG,FEND,EXYZ,EADP,%
6455     EQIV,OMIT,CONN,PART,BIND,FREE,DFIX,BUMP,SAME,SADI,CHIV,%
6456     FLAT,DELU,SIMU,DEFS,ISOR,SUMP,L.S.,CGLS,SLIM,BLOC,DAMP,%
6457     WGHT,FVAR,BOND,CONF,MPLA,RTAB,LIST,ACTA,SIZE,TEMP,WPDB,%
6458     FMAP,GRID,PLAN,MOLE},%
6459     sensitive=false,%
6460     alsoother=_,% Makes the syntax highlighting ignore the underscores
6461     morecomment=[l]{! },%
6462   }%
6463 </lang2>

```

## 2.73 Simula

Took data from

- GÜNTHER LAMPRECHT: **Introduction to SIMULA 67**; Braunschweig; Wiesbaden: Vieweg, 1981

```

6464 <(*lang3)>
6465 \lst@definlanguage[IBM]{Simula}[DEC]{Simula}{}%
6466 \lst@definlanguage[DEC]{Simula}[67]{Simula}%
6467   {morekeywords={and,eq,eqv,ge,gt,hidden,imp,le,long,lt,ne,not,%
6468     options,or,protected,short}}%
6469   }%
6470 \lst@definlanguage[CII]{Simula}[67]{Simula}%
6471   {morekeywords={and,equiv,exit,impl,not,or,stop}}%
6472 \lst@definlanguage[67]{Simula}%
6473   {morekeywords={activate,after,array,at,before,begin,boolean,%
6474     character,class,comment,delay,detach,do,else,end,external,false,%
6475     for,go,goto,if,in,inner,inspect,integer,is,label,name,new,none,%
6476     notext,otherwise,prior,procedure,qua,reactivate,real,ref,resume,%
6477     simset,simulation,step,switch,text,then,this,to,true,until,value,%
6478     virtual,when,while},%
6479     sensitive=f,%
6480     keywordcommentsemicolon={end}{else,end,otherwise,when}{comment},%
6481     morestring=[d] ",%

```

```

6482   morestring=[d] '%
6483   }[keywords,keywordcomments,strings]%
6484 </lang3>

```

## 2.74 SPARQL

This definition for the SPARQL query language (SPARQL Protocol and RDF Query Language, <http://www.w3.org/TR/rdf-sparql-query/>) was provided by Christoph Kiefer.

```

6485 (*lang3)
6486 %%
6487 %% SPARQL definition (c) 2006 Christoph Kiefer
6488 %%
6489 \lst@definlanguage{SPARQL}%
6490   {morekeywords={BASE,PREFIX,SELECT,DISTINCT,CONSTRUCT,DESCRIBE,ASK,%
6491     FROM,NAMED,WHERE,ORDER,BY,ASC,DESC,LIMIT,OFFSET,OPTIONAL,%
6492     GRAPH,UNION,FILTER,a,STR,LANG,LANGMATCHES,DATATYPE,BOUND,%
6493     isIRI,isURI,isBLANK,isLITERAL,REGEX,true,false},%
6494     sensitive=false,%
6495     morecomment=[l]\#,%
6496     morestring=[d] ',%
6497     morestring=[d]"%
6498   }[keywords,comments,strings]%
6499 </lang3>

```

## 2.75 SQL

Data come from Christian Haul. Neil Conway added some keywords, ditto Torsten Flatter, Robert Frank and Dirk Jesko. Hilmar Preuße informed about an issue mentioned at <https://bugs.debian.org/626521>, the issue got corrected.

```

6500 (*lang1)
6501 %%
6502 %% SQL definition (c) 1998 Christian Haul
6503 %%           (c) 2002 Neil Conway
6504 %%           (c) 2002 Robert Frank
6505 %%           (c) 2003 Dirk Jesko
6506 %%
6507 \lst@definlanguage{SQL}%
6508   {morekeywords={ABSOLUTE,ACTION,ADD,ALLOCATE,ALTER,ARE,AS,ASSERTION,%
6509     AT,BEGIN,BETWEEN,BIT_LENGTH,BOTH,BY,CASCADE,CASCADED,CASE,CAST,%
6510     CATALOG,CHAR_LENGTH,CHARACTER_LENGTH,CLUSTER,COALESCE,%
6511     COLLATE,COLLATION,COLUMN,CONNECT,CONNECTION,CONSTRAINT,%
6512     CONSTRAINTS,CONVERT,CORRESPONDING,CREATE,CROSS,CURRENT_DATE,%
6513     CURRENT_TIME,CURRENT_TIMESTAMP,CURRENT_USER,DAY,DEALLOCATE,%
6514     DEC,DEFERRABLE,DEFERED,DESCRIBE,DESCRIPTOR,DIAGNOSTICS,%
6515     DISCONNECT,DOMAIN,DROP,ELSE,END,EXEC,EXCEPT,EXCEPTION,EXECUTE,%
6516     EXTERNAL,EXTRACT,FALSE,FIRST,FOREIGN,FROM,FULL,GET,GLOBAL,%
6517     GRAPHIC,HAVING,HOUR,IDENTITY,IMMEDIATE,INDEX,INITIALLY,INNER,%
6518     INPUT,INSENSITIVE,INSERT,INTO,INTERSECT,INTERVAL,%
6519     ISOLATION,JOIN,KEY,LAST,LEADING,LEFT,LEVEL,LIMIT,LOCAL,LOWER,%
6520     MATCH,MINUTE,MONTH,NAMES,NATIONAL,NATURAL,NCHAR,NEXT,NO,NOT,NULL,%

```

```

6521     NULLIF, OCTET_LENGTH, ON, ONLY, ORDER, ORDERED, OUTER, OUTPUT, OVERLAPS, %
6522     PAD, PARTIAL, POSITION, PREPARE, PRESERVE, PRIMARY, PRIOR, READ, %
6523     RELATIVE, RESTRICT, REVOKE, RIGHT, ROWS, SCROLL, SECOND, SELECT, SESSION, %
6524     SESSION_USER, SIZE, SPACE, SQLSTATE, SUBSTRING, SYSTEM_USER, %
6525     TABLE, TEMPORARY, THEN, TIMEZONE_HOUR, %
6526     TIMEZONE_MINUTE, TRAILING, TRANSACTION, TRANSLATE, TRANSLATION, TRIM, %
6527     TRUE, UNIQUE, UNKNOWN, UPPER, USAGE, USING, VALUE, VALUES, %
6528     VARGRAPHIC, VARYING, WHEN, WHERE, WRITE, YEAR, ZONE, %
6529     AND, ASC, avg, CHECK, COMMIT, count, DECODE, DESC, DISTINCT, GROUP, IN, % FF
6530     LIKE, NUMBER, ROLLBACK, SUBSTR, sum, VARCHAR2, % FF
6531     MIN, MAX, UNION, UPDATE, % RF
6532     ALL, ANY, CUBE, CUBE, DEFAULT, DELETE, EXISTS, GRANT, OR, RECURSIVE, % DJ
6533     ROLE, ROLLUP, SET, SOME, TRIGGER, VIEW}, % DJ
6534     morekeywords={BIT, BLOB, CHAR, CHARACTER, CLOB, DATE, DECIMAL, FLOAT, % DJ
6535     INT, INTEGER, NUMERIC, SMALLINT, TIME, TIMESTAMP, VARCHAR}, % moved here
6536     sensitive=false, % DJ
6537     morecomment=[l]--, %
6538     morecomment=[s]{/*}{*/}, %
6539     morestring=[d]', %
6540     morestring=[d]"%
6541     }[keywords, comments, strings]%
6542 </lang1>

```

## 2.76 Swift

The definition for Swift was provided by Stefan Jager.

```

6543 <lang3>
6544 \lst@definlanguage{Swift}{%
6545     morekeywords={associatedtype, class, deinit, enum, extension, fileprivate, %
6546     func, import, init, inout, internal, let, open, operator, private, protocol, %
6547     public, static, struct, subscript, typealias, var, break, case, continue, %
6548     default, defer, do, else, fallthrough, for, guard, if, in, repeat, return, %
6549     switch, where, while, as, Any, catch, false, is, nil, rethrows, super, self, %
6550     Self, throw, throws, true, try, _, associativity, convenience, dynamic, %
6551     didSet, final, get, infix, indirect, lazy, left, mutating, none, %
6552     nonmutating, optional, override, postfix, precedence, prefix, Protocol, %
6553     required, right, set, Type, unowned, weak, willSet}, %
6554     sensitive, %
6555     morecomment=[s]{/*}{*/}, %
6556     morecomment=[s]{/**}{*/}, %
6557     morecomment=[l]//, %
6558     morecomment=[l]///, %
6559     morestring=[b]", %
6560     morestring=[b]""", %
6561     moredelim=[directive]\#, %
6562     moredirectives={available, colorLiteral, column, else, elseif, endif, file, %
6563     fileLiteral, function, if, imageLiteral, line, selector, sourceLocation}%
6564     }[keywords, comments, strings, directives]%
6565 </lang3>

```

## 2.77 Tcl/Tk

Tcl/Tk is a very dynamic language. A statical analysis might not be adequate. Nevertheless the following definitions produce the desired result for my programs with a minimum of “misses”.

Data come from

- WELCH, BRENT B.: **Practical Programming in Tcl and Tk**; © 1997 Prentice Hall, Inc.; ISBN 0-13-616830-2.
- OUSTERHOUT, JOHN K.: **Tcl and the Tk Toolkit**; © 1997 Addison-Wesley Publishing Company; ISBN 0-201-6337-X.

Gerd Neugebauer added support for Tcl/Tk.

```
6566 (*lang2)
6567 %%
6568 %% Tcl/Tk definition (c) Gerd Neugebauer
6569 %%
6570 \lst@definlanguage[tk]{tcl}[] {tcl}%
6571 {morekeywords={activate,add,separator,radiobutton,checkboxbutton,%
6572     command,cascade,all,bell,bind,bindtags,button,canvas,canvasx,%
6573     canvasy,cascade,cget,checkboxbutton,config,configu,configur,%
6574     configure,clipboard,create,arc,bitmap,image,line,oval,polygon,%
6575     rectangle,text,textwindow,curseselection,delete,destroy,end,entry,%
6576     entrycget,event,focus,font,actual,families,measure,metrics,names,%
6577     frame,get,grab,current,release,status,grid,columnconfigure,%
6578     rowconfigure,image,image,create,bitmap,photo,delete,height,types,%
6579     widt,names,index,insert,invoke,itemconfigure,label,listbox,lower,%
6580     menu,menubutton,message,move,option,add,clear,get,readfile,pack,%
6581     photo,place,radiobutton,raise,scroll,scrollbar,search,see,%
6582     selection,send,stdin,stdout,stderr,tag,bind,text,tk,tkerror,%
6583     tkwait>window,variable,visibility,toplevel,unknown,update,winfo,%
6584     class,exists,ismapped,parent,reqwidth,reqheight,rootx,rooty,%
6585     width,height,wm,aspect,client,command,deiconify,focusmodel,frame,%
6586     geometry,group,iconbitmap,iconify,iconmask,iconname,iconposition,%
6587     iconwindow,maxsize,minsize,overrideredirect,positionfrom,%
6588     protocol,sizefrom,state,title,transient,withdraw,xview,yview,%
6589     yposition,%
6590     -accelerator,-activebackground,-activeborderwidth,%
6591     -activeforeground,-after,-anchor,-arrow,-arrowshape,-aspect,%
6592     -async,-background,-before,-bg,-bigincrement,-bitmap,-bordermode,%
6593     -borderwidth,-button,-capstyle,-channel,-class,-closeenough,%
6594     -colormap,-column,-columnspan,-command,-confine,-container,%
6595     -count,-cursor,-data,-default,-detail,-digits,-direction,%
6596     -displayof,-disableforeground,-elementborderwidth,-expand,%
6597     -exportselection,-extend,-family,-fg,-file,-fill,-focus,-font,%
6598     -fontmap,-foreground,-format,-from,-gamma,-global,-height,%
6599     -highlightbackground,-highlightcolor,-highlightthickness,-icon,%
6600     -image,-in,-insertbackground,-insertborderwidth,-insertofftime,%
6601     -insertontime,-insertwidth,-ipadx,-ipady,-joinstyle,-jump,%
6602     -justify,-keycode,-keysym,-label,-lastfor,-length,-maskdata,%
6603     -maskfile,-menu,-message,-mode,-offvalue,-onvalue,-orient,%
6604     -outlien,-outlinestipple,-overstrike,-override,-padx,-pady,%
6605     -pageanchor,-pageheight,-pagewidth,-pagey,-pagey,-palette,%
6606     -parent,-place,-postcommand,-relheight,-relief,-relwidth,-relx,%
```

```

6607     -rely,-repeatdelay,-repeatinterval,-resolution,-root,-rootx,%
6608     -rooty,-rotate,-row,-rowspan,-screen,-selectcolor,-selectimage,%
6609     -sendevent,-serial,-setgrid,-showvalue,-shrink,-side,-size,%
6610     -slant,-sliderlength,-sliderrelief,-smooth,-splinesteps,-state,%
6611     -sticky,-stipple,-style,-subsample,-subwindow,-tags,-takefocus,%
6612     -tearoff,-tearoffcommand,-text,-textvariable,-tickinterval,-time,%
6613     -title,-to,-troughcolor,-type,-underline,-use,-value,-variable,%
6614     -visual,-width,-wrap,-wraplength,-x,-xscrollcommand,-y,%
6615     -bgstipple,-fgstipple,-lmargin1,-lmargin2,-rmargin,-spacing1,%
6616     -spacing2,-spacing3,-tabs,-yscrollcommand,-zoom,%
6617     activate,add,addtag,bbox,cget,clone,configure,coords,%
6618     curselection,debug,delete,delta,deselect,dlineinfo,dtag,dump,%
6619     entrycget,entryconfigure,find,flash,fraction,get,gettags,handle,%
6620     icursor,identify,index,insert,invoke,itemcget,itemconfigure,mark,%
6621     moveto,own,post,postcascade,postscript,put,redither,ranges,%
6622     scale,select,show,tag,type,unpost,xscrollcommand,xview,%
6623     yscrollcommand,yview,yposition}%
6624 }%

6625 \lst@definlanguage[] {tcl}%
6626 {alsoletter={.:,*=&-},%
6627   morekeywords={after,append,array, names,exists, anymore,donesearch,%
6628     get,nextelement,set,size,startsearch,auto_mkindex,binary,break,%
6629     case,catch,cd,clock,close,concat,console,continue,default,else,%
6630     elseif,eof,error,eval,exec,-keepnewline,exit,expr,fblocked,%
6631     fconfigure,fcopy,file,atime,dirname,executable,exists,extension,%
6632     isdirectory,isfile,join,lstat,mtime,owned,readable,readlink,%
6633     rootname,size,stat,tail,type,writable,-permissions,-group,-owner,%
6634     -archive,-hidden,-readonly,-system,-creator,-type,-force,%
6635     fileevent,flush,for,foreach,format,gets,glob,global,history,if,%
6636     incr,info,argsbody,cmdcount,commands,complete,default,exists,%
6637     globals,level,library,locals,patchlevel,procs,script,tclversion,%
6638     vars,interp,join,lappend,lindex,linsert,list,llength,lrange,%
6639     lreplace,lsearch,-exact,-regexp,-glob,lsort,-ascii,-integer,%
6640     -real,-dictionary,-increasing,-decreasing,-index,-command,load,%
6641     namespace,open,package,forget,ifneeded,provide,require,unknown,%
6642     vcompare,versions,vsatisfies,pid,proc,puts,-nonewline,pwd,read,%
6643     regexp,-indices,regsub,-all,-nocasereaname,return,scan,seek,set,%
6644     socket,source,split,string,compare,first,index,last,length,match,%
6645     range,tolower,toupper,trim,trimleft,trimright,subst,switch,tell,%
6646     time,trace,variable,vdelete,vinfo,unknown,unset,uplevel,upvar,%
6647     vwait,while,acos,asin,atan,atan2,ceil,cos,cosh,exp,floor,fmod,%
6648     hypot,log,log10,pow,sin,sinh,sqrt,tan,tanh,abs,double,int,round%
6649   },%
6650   morestring=[d] "%,%
6651   morecomment=[f] \#,%
6652   morecomment=[l] {;\#},%
6653   morecomment=[l] {\#},%
6654   morecomment=[l] {\{\#}}%
6655 } [keywords,comments,strings]%

```

And after receiving a bug report from Vitaly A. Repin I converted the version 0.21 contents of MoreSelectCharTable to version 1.0.

```
6656 </lang2>
```

## 2.78 Statistical languages

These languages have been added by Winfried Theis. Robert Denham contributed the additional string delimiter '.

```
6657 (*lang3)
6658 \lst@defineline{S} [] {R}{-}
6659 \lst@defineline[PLUS]{S} [] {R}{-}
6660 \lst@defineline{R}%
6661 {keywords={abbreviate,abline,abs,acos,acosh,action,add1,add,%
6662     aggregate,alias,Alias,alist,all,anova,any,aov,aperm,append,apply,%
6663     approx,approxfun,apropos,Arg,args,array,arrows,as,asin,asinh,%
6664     atan,atan2,atanh,attach,attr,attributes,autoload,autoloader,ave,%
6665     axis,backsolve,barplot,basename,besselI,besselJ,besselK,bessely,%
6666     beta,binomial,body,box,boxplot,break,browser,bug,builtins,bxp,by,%
6667     c,C,call,Call,case,cat,category,cbind,ceiling,character,char,%
6668     charmatch,check,chol,chol2inv,choose,chull,class,close,cm,codes,%
6669     coef,coefficients,co,col,colnames,colors,colours,commandArgs,%
6670     comment,complete,complex,conflicts,Conj,contents,contour,%
6671     contrasts,contr,control,helmert,contrib,convolve,cooks,coords,%
6672     distance,coplot,cor,cos,cosh,count,fields,cov,covratio,wt,CRAN,%
6673     create,crossprod,cummax,cummin,cumprod,cumsum,curve,cut,cycle,D,%
6674     data,dataentry,date,dbeta,dbinom,dcauchy,dchisq,de,debug,%
6675     debugger,Defunct,default,delay,delete,deltat,demo,de,density,%
6676     deparse,dependencies,Deprecated,deriv,description,detach,%
6677     dev2bitmap,dev,cur,deviance,off,prev,,dexp,df,dfbetas,dffits,%
6678     dgamma,dgeom,dget,dhyper,diag,diff,digamma,dim,dimnames,dir,%
6679     dirname,dlnorm,dlogis,dnbinom,dnchisq,dnorm,do,dotplot,double,%
6680     download,dpois,dput,drop,drop1,dsignrank,dt,dummy,dump,dunif,%
6681     duplicated,dweibull,dwilcox,dyn,edit,eff,effects,eigen,else,%
6682     emacs,end,environment,env,erase,eval,equal,evalq,example,exists,%
6683     exit,exp,expand,expression,External,extract,extractAIC,factor,%
6684     fail,family,fft,file,filled,find,fitted,fivenum,fix,floor,for,%
6685     For,formals,format,formatC,formula,Fortran,forwardsolve,frame,%
6686     frequency,ftable,ftable2table,function,gamma,Gamma,gammaCody,%
6687     gaussian,gc,gcinfo,gctorture,get,getenv,geterrmessage,getOption,%
6688     getwd,gl,glm,globalenv,gnome,GNOME,graphics,gray,grep,greyscale,grid,%
6689     gsub,hasTsp,hat,heat,help,hist,home,hsv,httpClient,I,identify,if,%
6690     ifelse,Im,image,\%in\%,index,influence,measures,inherits,install,%
6691     installed,integer,interaction,interactive,Internal,intersect,%
6692     inverse,invisible,IQR,is,jitter,kappa,kronecker,labels,lapply,%
6693     layout,lbeta,lchoose,lcm,legend,length,levels,lgamma,library,%
6694     licence,license,lines,list,lm,load,local,locator,log,log10,log1p,%
6695     log2,logical,loglin,lower,lowess,ls,lsfit,lsf,ls,machine,Machine,%
6696     mad,mahalanobis,make,link,margin,match,Math,matlines,mat,matplot,%
6697     matpoints,matrix,max,mean,median,memory,menu,merge,methods,min,%
6698     missing,Mod,mode,model,response,mosaicplot,mtext,mvfft,na,nan,%
6699     names,omit,nargs,nchar,ncol,NCOL,new,next,NextMethod,nextn,%
6700     nlevels,nlm,noquote,NotYetImplemented,NotYetUsed,nrow,NROW,null,%
6701     numeric,\%o\%,objects,offset,old,on,Ops,optim,optimize,%
6702     options,or,order,ordered,outer,package,packages,page,pairlist,%
6703     pairs,palette,panel,par,parent,parse,paste,path,pbeta,pbinom,%
6704     pcauchy,pchisq,pentagamma,persp,pexp,pf,pgamma,pgeom,phyper,pico,%
6705     pictex,piechart,Platform,plnorm,plogis,plot,pmatch,pmax,pmin,%
6706     pnbinom,pnchisq,pnorm,points,poisson,poly,polygon,polyroot,pos,%
```

```

6707     postscript, power, ppoints, ppois, predict, preplot, pretty, Primitive, %
6708     print, prmatrix, proc, prod, profile, proj, prompt, prop, provide, %
6709     psignrank, ps, pt, ptukey, punif, pweibull, pwilcox, q, qbeta, qbinom, %
6710     qcauchy, qchisq, qexp, qf, qgamma, qgeom, qhyper, qlnorm, qllogis, qnbinom, %
6711     qnchisq, qnorm, qpois, qqline, qqnorm, qqplot, qr, Q, qty, qy, qsignrank, %
6712     qt, qtkey, quantile, quasi, quit, qunif, quote, qweibull, qwilcox, %
6713     rainbow, range, rank, rbeta, rbind, rbinom, rcauchy, rchisq, Re, read, csv, %
6714     csv2, fwf, readline, socket, real, Recall, rect, reformulate, regexpr, %
6715     relevel, remove, rep, repeat, replace, replications, report, require, %
6716     resid, residuals, restart, return, rev, rexp, rf, rgamma, rgb, rgeom, R, %
6717     rhyper, rle, rlnorm, rlogis, rm, rnbinom, RNGkind, rnorm, round, row, %
6718     rownames, rowsum, rpois, rsignrank, rstandard, rstudent, rt, rug, runif, %
6719     rweibull, rwilcox, sample, sapply, save, scale, scan, scan, screen, sd, se, %
6720     search, searchpaths, segments, seq, sequence, setdiff, setequal, set, %
6721     setwd, show, sign, signif, sin, single, sinh, sink, solve, sort, source, %
6722     spline, splinefun, split, sqrt, stars, start, stat, stem, step, stop, %
6723     storage, strheight, stripplot, strsplit, structure, strwidth, sub, %
6724     subset, substitute, substr, substring, sum, summary, sunflowerplot, svd, %
6725     sweep, switch, symbol, symbols, symnum, sys, status, system, t, table, %
6726     tabulate, tan, tanh, tapply, tempfile, terms, terrain, tetragamma, text, %
6727     time, title, topo, trace, traceback, transform, tri, trigamma, trunc, try, %
6728     ts, tsp, typeof, unclass, undebug, undoc, union, unique, uniroot, unix, %
6729     unlink, unlist, unname, untrace, update, upper, url, UseMethod, var, %
6730     variable, vector, Version, vi, warning, warnings, weighted, weights, %
6731     which, while, window, write, \%x\%, x11, X11, xedit, xemacs, xinch, xor, %
6732     xpdrows, xy, xyinch, yinch, zapsmall, zip}, %
6733 otherkeywords={!, !=, ~, $, *, \&, \%/\%, \%*\%, \%\\%, <-, <<- , /}, %
6734 alsoother={. $}, %
6735 sensitive, %
6736 morecomment=[l]\#, %
6737 morestring=[d] ", %
6738 morestring=[d]'% 2001 Robert Denham
6739 }%

```

Benjamin Janson got a prockeywords undefined error, which was removed by Heiko Oberdiek.

```

6740 \lst@definelanguage{SAS}{%
6741     procnamekeys={proc}, %
6742     morekeywords={DATA, AND, OR, NOT, EQ, GT, LT, GE, LE, NE, INFILE, INPUT, %
6743     DO, BY, TO, SIN, COS, OUTPUT, END, PLOT, RUN, LIBNAME, VAR, TITLE, %
6744     FIRSTOBS, OBS, DELIMITER, DLM, EOF, ABS, DIM, HBOUND, LBOUND, MAX, MIN, %
6745     MOD, SIGN, SQRT, CEIL, FLOOR, FUZZ, INT, ROUND, TRUNC, DIGAMMA, ERF, %
6746     ERFC, EXP, GAMMA, LGAMMA, LOG, LOG2, LOG10, ARCCOS, ARSIN, ATAN, COSH, %
6747     SINH, TANH, TAN, POISSON, PROBBETA, PROBBNML, PROBCHI, PROBF, PROBGAM, %
6748     PROBYPR, PROBNEGB, PROBNORM, PROBT, BETAINV, CINV, FINV, GAMINV, %
6749     PROBIT, TINV, CSS, CV, KURTOSIS, MEAN, NMISS, RANGE, SKEWNESS, STD, %
6750     STDERR, SUM, USS, NORMAL, RANBIN, RANCAU, RANEXP, RANGAM, RANNOR, %
6751     RANPOI, RANTBL, RANTRI, RANUNI, UNIFORM, IF, THEN, ELSE, WHILE, UNTIL, %
6752     DROP, KEEP, LABEL, DEFAULT, ARRAY, MERGE, CARDS, CARDS4, PUT, SET, %
6753     UPDATE, ABORT, DELETE, DISPLAY, LIST, LOSTCARD, MISSING, STOP, WHERE, %
6754     ARRAY, DROP, KEEP, WINDOW, LENGTH, RENAME, RETAIN, MEANS, UNIVARIATE, %
6755     SUMMARY, TABULATE, CORR, FREQ, FOOTNOTE, NOTE, SHOW}, %
6756     otherkeywords={!, !=, ~, $, *, \&, _ , / , < , > , = , < , > }, %
6757     morestring=[d]'%

```



```
6758 }[keywords,comments,strings,procnames]%
6759 </lang3>
```

## 2.79 T<sub>E</sub>X

I extracted the data from plain.tex, latex.ltx, and size10.clo. Dr. Peter Leibner reported that some keywords are missing and also added a couple.

```
6760 <lang3>
6761 \lst@definlanguage [AllaTeX]{TeX}[LaTeX]{TeX}%
6762   {moretexcs={AtBeginDocument,AtBeginDvi,AtEndDocument,AtEndOfClass,%
6763     AtEndOfPackage,ClassError,ClassInfo,ClassWarning,%
6764     ClassWarningNoLine,CurrentOption,DeclareErrorFont,%
6765     DeclareFixedFont,DeclareFontEncoding,DeclareFontEncodingDefaults,%
6766     DeclareFontFamily,DeclareFontShape,DeclareFontSubstitution,%
6767     DeclareMathAccent,DeclareMathAlphabet,DeclareMathAlphabet,%
6768     DeclareMathDelimiter,DeclareMathRadical,DeclareMathSizes,%
6769     DeclareMathSymbol,DeclareMathVersion,DeclareOldFontCommand,%
6770     DeclareOption,DeclarePreloadSizes,DeclareRobustCommand,%
6771     DeclareSizeFunction,DeclareSymbolFont,DeclareSymbolFontAlphabet,%
6772     DeclareTextAccent,DeclareTextAccentDefault,DeclareTextCommand,%
6773     DeclareTextCommandDefault,DeclareTextComposite,%
6774     DeclareTextCompositeCommand,DeclareTextFontCommand,%
6775     DeclareTextSymbol,DeclareTextSymbolDefault,ExecuteOptions,%
6776     GenericError,GenericInfo,GenericWarning,IfExists,%
6777     InputIfExists,LoadClass,LoadClassWithOptions,MessageBreak,%
6778     OptionNotUsed,PackageError,PackageInfo,PackageWarning,%
6779     PackageWarningNoLine,PassOptionsToClass,PassOptionsToPackage,%
6780     ProcessOptionsProvidesClass,ProvidesFile,ProvidesFile,%
6781     ProvidesPackage,ProvideTextCommand,RequirePackage,%
6782     RequirePackageWithOptions,SetMathAlphabet,SetSymbolFont,%
6783     TextSymbolUnavailable,UseTextAccent,UseTextSymbol},%
6784   morekeywords={array,center,displaymath,document,enumerate,eqnarray,%
6785     equation,flushleft,flushright,itemize,list,lrbox,math,minipage,%
6786     picture,sloppypar,tabbing,tabular,trivlist,verbatim}%
6787   }%
6788 \lst@definlanguage [LaTeX]{TeX}[common]{TeX}%
6789   {moretexcs={a,AA,aa,addcontentsline,addpenalty,addtocontents,%
6790     addtocounter,addtolength,addtoversion,addvspace,alph,Alph,and,%
6791     arabic,array,arraycolsep,arrayrulewidth,arraystretch,author,%
6792     baselinestretch,begin,bezier,bfseries,bibcite,bibdata,bibitem,%
6793     bibliography,bibliographystyle,bibstyle,bigskip,boldmath,%
6794     botfigrule,bottomfraction,Box,caption,center,CheckCommand,circle,%
6795     citation,cite,cleardoublepage,clearpage,cline,columnsep,%
6796     columnseprule,columnwidth,contentsline,dashbox,date,dblfigrule,%
6797     dblfloatpagefraction,dblfloatsep,dbltextfloatsep,dbltopfraction,%
6798     defaultscritratio,defaultscritscritratio,depth,Diamond,%
6799     displaymath,document,documentclass,documentstyle,doublerulesep,%
6800     em,emph,endarray,endcenter,endeddisplaymath,endeddocument,%
6801     endenumerate,endeqnarray,endequation,endflushleft,endflushright,%
6802     enditemize,endlist,endlrbox,endmath,endminipage,endpicture,%
6803     endsloppypar,endtabbing,endtabular,endtrivlist,endverbatim,%
6804     enlargethispage,ensuremath,enumerate,eqnarray,equation,%
```

```

6805     evensidemargin,extracolsep,fbox,fboxrule,fboxsep,filecontents,%
6806     fill,floatpagefraction,floatsep,flushbottom,flushleft,flushright,%
6807     fnsymbol,fontencoding,fontfamily,fontseries,fontshape,fontsize,%
6808     fontsubfuzz,footnotemark,footnotesep,footnotetext,footskip,frac,%
6809     frame,framebox,fussy,glossary,headheight,headsep,height,hline,%
6810     hspace,I,include,includeonly,index,inputlineno,intextsep,%
6811     itemindent,itemize,itemsep,iterate,itshape,Join,kill,label,%
6812     labelsep,labelwidth,LaTeX,LaTeXe,leadsto,lefteqn,leftmargin,%
6813     leftmargini,leftmarginii,leftmarginiii,leftmarginiv,leftmarginv,%
6814     leftmarginvi,leftmark,lhd,lim,linebreak,linespread,linethickness,%
6815     linewidth,list,listfiles,listfiles,listparindent,lrbox,%
6816     makeatletter,makeatother,makebox,makeglossary,makeindex,%
6817     makelabel,MakeLowercase,MakeUppercase,marginpar,marginparpush,%
6818     marginparsep,marginparwidth,markboth,markright,math,mathbf,%
6819     mathellipsis,mathgroup,mathit,mathrm,mathsf,mathsterling,mathtt,%
6820     mathunderscore,mathversion,mbox,mdseries,mho,minipage,%
6821     multicolumn,multiput,NeedsTeXFormat,newcommand,newcounter,%
6822     newenvironment,newfont,newhelp,newlabel,newlength,newline,%
6823     newmathalphabet,newpage,newsavebox,newtheorem,nobreakspace,%
6824     nobreakspace,nocite,nocorr,nocorrlist,nofiles,nolinebreak,%
6825     nonumber,nopagebreak,normalcolor,normalfont,normalmarginpar,%
6826     numberline,obeycr,oddsidemargin,oldstylenums,onecolumn,oval,%
6827     pagebreak,pagenumbering,pageref,pagestyle,paperheight,paperwidth,%
6828     paragraphmark,parbox,parsep,partopsep,picture,poptabs,pounds,%
6829     protect,pushtabs,put,qbezier,qbeziermax,r,raggedleft,raisebox,%
6830     ref,refstepcounter,renewcommand,renewenvironment,restorecr,%
6831     reversemarginpar,rhd,rightmargin,rightmark,rmfamily,roman,Roman,%
6832     rootbox,rule,samepage,sbox,scshape,secdef,section,sectionmark,%
6833     selectfont,setcounter,settodepth,settotoheight,settowidth,ssfamly,%
6834     shortstack,showoutput,showoverfull,sloppy,sloppypar,slshape,%
6835     smallskip,sqsubset,sqsupset,SS,stackrel,stepcounter,stop,stretch,%
6836     subparagraphmark,subsectionmark,subsubsectionmark,sum,%
6837     suppressfloats,symbol,tabbing,tabbingsep,tabcolsep,tabular,%
6838     tabularnewline,textasciicircum,textasciitilde,textbackslash,%
6839     textbar,textbf,textbraceleft,textbraceright,textbullet,%
6840     textcircled,textcompwordmark,textdagger,textdaggerdbl,textdollar,%
6841     textellipsis,textemdash,textendash,textexclamdown,textfloatsep,%
6842     textfraction,textgreater,textheight,txtit,textless,txmd,%
6843     textnormal,textparagraph,textperiodcentered,textquestiondown,%
6844     textquotedblleft,textquotedblright,textquoteleft,textquoteright,%
6845     textregistered,textrm,textsc,textsection,textsf,textsl,%
6846     textsterling,textsuperscript,txttrademark,txttt,textunderscore,%
6847     textup,textvisiblespace,textwidth,thanks,thefootnote,thempfn,%
6848     thempfn,thempfootnote,thepage,thepage,thicklines,thinlines,%
6849     thispagestyle,title,today,topfigrule,topfraction,topmargin,%
6850     topsep,totalheight,tracingfonts,trivlist,ttfamily,twocolumn,%
6851     typein,typeout,unboldmath,unitlength,unlhd,unrhd,upshape,usebox,%
6852     usecounter,usefont,usepackage,value,vector,verb,verbatim,vline,%
6853     vspace,width,%
6854     normalsize,small,footnotesize,scriptsize,tiny,large,Large,LARGE,%
6855     huge,Huge}%
6856 }%

6857 \lst@definlanguage[plain]{TeX}[common]{TeX}%
6858 {moretexcs={advancepageno,beginsection,bf,bffam,bye,cal,cleartabs,%

```

```

6859     columns,dosupereject,endinsert,equalign,equalignno,fiverm,fivebf,%
6860     fivei,fivesy,folio,footline,hang,headline,it,itemitem,itfam,%
6861     leqalignno,magnification,makefootline,makeheadline,midinsert,mit,%
6862     mscount,nopagenumbers,normalbottom,of,oldstyle,pagebody,%
6863     pagecontents,pageinsert,pageno,plainoutput,preloaded,proclaim,rm,%
6864     settabs,sevenbf,seveni,sevency,sevenrm,sl,slfam,supereject,%
6865     tabalign,tabs,tabsdone,tabsyet,tenbf,tenex,teni,tenit,tenrm,%
6866     tensl,tensy,tentt,textindent,topglue,topins,topinsert,tt,ttfam,%
6867     ttragedright,vfootnote}%
6868 }%

```

The following language is only a helper.

```

6869 \lst@definlanguage[common]{TeX}[primitive]{TeX}
6870 {moretexcs={active,acute,ae,AE,aleph,allocationnumber,allowbreak,%
6871     alpha,amalg,angle,approx,arccos,arcsin,arctan,arg,arrowvert,%
6872     Arrowvert,ast,asyp,b,backslash,bar,beta,bgroup,big,Big,bigbreak,%
6873     bigcap,bigcirc,bigcup,bigg,Bigg,biggl,Biggl,biggm,Biggm,bigr,%
6874     Biggr,bigl,Bigl,bigm,Bigm,bigodot,bigoplus,bigotimes,bigr,Bigr,%
6875     bigskip,bigskipamount,bigsqcup,bigtriangledown,bigtriangleup,%
6876     biguplus,bigvee,bigwedge,bmod,bordermatrix,bot,bowtie,brace,%
6877     bracehd,bracelu,bracerd,braceru,bracevert,brack,break,breve,%
6878     buildrel,bullet,c,cap,cases,cdot,cdotp,cdots,centering,%
6879     centerline,check,chi,choose,circ,clubsuit,colon,cong,coprod,%
6880     copyright,cos,cosh,cot,coth,csc,cup,d,dag,dagger,dashv,ddag,%
6881     ddagger,ddot,ddots,deg,delta,Delta,det,diamond,diamondsuit,dim,%
6882     displaylines,div,do,dospecials,dot,doteq,dotfill,dots,downarrow,%
6883     Downarrow,downbracefill,egroup,eject,ell,empty,emptyset,endgraf,%
6884     endline,enskip,enspace,epsilon,equiv,eta,exists,exp,filbreak,%
6885     flat,fmtname,fmtversion,footins,footnote,footnoterule,forall,%
6886     frenchspacing,frown,gamma,Gamma,gcd,ge,geq,gets,gg,goodbreak,%
6887     grave,H,hat,hbar,heartsuit,hglue,hideskip,hidewidth,hom,%
6888     hookleftarrow,hookrightarrow,hphantom,hrulefill,i,ialign,iff,Im,%
6889     imath,in,inf,infty,int,interdisplaylinepenalty,%
6890     interfootnotelinepenalty,intop,iota,item,j,jmath,joinrel,jot,%
6891     kappa,ker,l,L,lambda,Lambda,land,langle,lbrace,lbrack,lceil,%
6892     ldotp,ldots,le,leavevmode,leftarrow,Leftarrow,leftarrowfill,%
6893     leftharpoondown,leftharpoonup,leftline,leftrightharrow,%
6894     Leftrightarrow,leq,lfloor,lg,lgroup,lhook,lim,liminf,limsup,line,%
6895     ll,llap,lmoustache,ln,lnot,log,longleftarrow,Longleftarrow,%
6896     longleftrightharrow,Longleftrightharrow,longmapsto,longrightarrow,%
6897     Longrightarrow,loop,lor,lq,magstep,magstep,magstephalf,mapsto,%
6898     mapstochar,mathhexbox,mathpalette,mathstrut,matrix,max,maxdimen,%
6899     medbreak,medskip,medskipamount,mid,min,models,mp,mu,multispan,%
6900     nabla,narrower,natural,ne,nearrow,neg,negthinspace,neq,newbox,%
6901     newcount,newdimen,newfam,newif,newinsert,newlanguage,newmuskip,%
6902     newread,newskip,newtoks,newwrite,next,ni,nobreak,nointerlineskip,%
6903     nonfrenchspacing,normalbaselines,normalbaselineskip,%
6904     normallineskip,normallineskiplimit,not,notin,nu,null,nwarrow,o,O,%
6905     oalign,obeylines,obeyspaces,odot,oe,OE,offinterlineskip,oint,%
6906     ointop,omega,Omega,ominus,ooalign,openup,oplus,oslash,otimes,%
6907     overbrace,overleftarrow,overrightarrow,owns,P,parallel,partial,%
6908     perp,phantom,phi,Phi,pi,Pi,pm,pmatrix,pmod,Pr,prec,preceq,prime,%
6909     prod,propto,psi,Psi,qquad,quad,raggedbottom,raggedright,rangle,%
6910     rbrace,rbrack,rceil,Re,relbar,Relbar,removelastskip,repeat,%

```

```

6911 rfloor,rgroup,rho,rhook,rightarrow,Rightarrow,rightarrowfill,%
6912 rightharpoondown,rightharpoonup,rightleftharpoons,rightline,rlap,%
6913 rmoustache,root,rq,S,sb,searrow,sec,setminus,sharp,showhyphens,%
6914 sigma,Sigma,sim,simeq,sin,sinh,skew,slash,smallbreak,smallint,%
6915 smallskip,smallskipamount,smash,smile,sp,space,spadesuit,sqcap,%
6916 sqcup,sqrt,sqsubseteq,sqsupseteq,ss,star,strut, strutbox,subset,%
6917 subseteq,succ,succeq,sum,sup,supset,supseteq,surd,swarrow,t,tan,%
6918 tanh,tau,TeX,theta,Theta,thinspace,tilde,times,to,top,tracingall,%
6919 triangle,triangleleft,triangleright,u,underbar,underbrace,%
6920 uparrow,Uparrow,upbracefill,updownarrow,Updownarrow,uplus,%
6921 upsilon,Upsilon,v,varepsilon,varphi,varpi,varrho,varsigma,%
6922 vartheta,vdash,vdots,vec,vee,vert,Vert,vglue,vphantom,wedge,%
6923 widehat,widetilde,wlog,wp,wr,xi,Xi,zeta}%
6924 }%

```

Herbert Voss pointed to a typo: the  $\TeX$  primitive is `lineskiplimit` instead of `lineskiplimits`.

```

6925 \lst@definlanguage[primitive]{TeX}%
6926 {moretexcs={above,abovedisplayshortskip,abovedisplayskip,aftergroup,%
6927 abovewithdelims,accent,adjdemerits,advance,afterassignment,atop,%
6928 atopwithdelims,badness,baselineskip,batchmode,begingroup,%
6929 belowdisplayshortskip,belowdisplayskip,binoppenalty,botmark,box,%
6930 boxmaxdepth,brokenpenalty,catcode,char,chardef,cleaders,closein,%
6931 closeout,clubpenalty,copy,count,countdef,cr,cr cr,csname,day,%
6932 deadcycles,def,defaultthyphenchar,defaultskewchar,delcode,%
6933 delimiter,delimiterfactor,delimitershortfall,dimen,dimendef,%
6934 discretionary,displayindent,displaylimits,displaystyle,%
6935 displaywidowpenalty,displaywidth,divide,doublehyphenemerits,dp,%
6936 edef,else,emergencystretch,end,endcsname,endgroup,endif,%
6937 endlchar,eqno,errhelp,errmsg,errmsg,errmsg,errorcontextlines,%
6938 errorstopmode,escapechar,everycr,everydisplay,everyhbox,everyjob,%
6939 everymath,everypar,everyvbox,exhyphenpenalty,expandafter,fam,fi,%
6940 finalhyphenemerits,firstmark,floatingpenalty,font,fontdimen,%
6941 fontname,futurelet,gdef,global,globaldefs,halign,hangafter,%
6942 hangindent,hbadness,hbox,hfil,hfill,hfilneg,hfuzz,hoffset,%
6943 holdinginserts,hrule,hsize,hskip,hss,ht,hyphenation,hyphenchar,%
6944 hyphenpenalty,if,ifcase,ifcat,ifdim,ifeof,iffalse,ifhbox,ifhmode,%
6945 ifinner,ifmmode,ifnum,ifodd,iftrue,ifvbox,ifvmode,ifvoid,ifx,%
6946 ignorespaces,immediate,indent,input,insert,insertpenalties,%
6947 interlinepenalty,jobname,kern,language,lastbox,lastkern,%
6948 lastpenalty,lastskip,lccode,leaders,left,lefthyphenmin,leftskip,%
6949 leqno,let,limits,linepenalty,lineskip,lineskiplimit,long,%
6950 looseness,lower,lowercase,mag,mark,mathaccent,mathbin,mathchar,%
6951 mathchardef,mathchoice,mathclose,mathcode,mathinner,mathop,%
6952 mathopen,mathord,mathpunct,mathrel,mathsurround,maxdeadcycles,%
6953 maxdepth,meaning,medmuskip,message,mkern,month,movelf,%
6954 moveright,mskip,multiply,muskip,muskipdef,newlinechar,noalign,%
6955 noboundary,noexpand,noindent,nolimits,nonscript,nonstopmode,%
6956 nulldelimiterspace,nullfont,number,omit,openin,openout,or,outer,%
6957 output,outputpenalty,over,overfullrule,overline,overwithdelims,%
6958 pagedepth,pagefillllstretch,pagefillstretch,pagefilstretch,%
6959 pagegoal,pageshrink,pagewidth,pagegoal,par,parfillskip,%
6960 parindent,parshape,parskip,patterns,pausing,penalty,%
6961 postdisplaypenalty,predisplaypenalty,predisplaysize,pretolerance,%

```

```

6962     prevdepth,prevgraf,radical,raise,read,relax,relpenalty,right,%
6963     rightlyphenmin,rightskip,romannumeral,scriptfont,%
6964     scriptscriptfont,scriptscriptstyle,scriptspace,scriptstyle,%
6965     scrollmode,setbox,setlanguage,sfcode,shipout,show,showbox,%
6966     showboxbreadth,showboxdepth,showlists,showthe,skewchar,skip,%
6967     skipdef,spacefactor,spaceskip,span,special,splitbotmark,%
6968     splitfirstmark,splitmaxdepth,splittopskip,string,tabskip,%
6969     textfont,textstyle,the,thickmuskip,thinmuskip,time,toks,toksdef,%
6970     tolerance,topmark,topskip,tracingcommands,tracinglostchars,%
6971     tracingmacros,tracingonline,tracingoutput,tracingpages,%
6972     tracingparagraphs,tracingrestores,tracingstats,uccode,uchyph,%
6973     underline,unhbox,unhcopy,unhern,unpenalty,unskip,unvbox,unvcopy,%
6974     uppercase,vadjust,valign,vbadness,vbox,vcenter,vfil,vfill,%
6975     vfilneg,vfuzz,voffset,vrule,vsize,vskip,vsplit,vss,vtop,wd,%
6976     widowpenalty,write,xdef,xleaders,xspaceskip,year},%
6977     sensitive,%
6978     alsoother={0123456789$_},%$ to make Emacs fontlocking happy
6979     morecomment=[l]\%%
6980 }[keywords,TeX,comments]%
6981 </lang3>

```

## 2.80 VBScript

Sonja Weidmann VBScript sent me this language definition.

```

6982 <(*lang2)>
6983 %%
6984 %% VBScript definition (c) 2000 Sonja Weidmann
6985 %%
6986 \lst@definlanguage{VBScript}%
6987 {morekeywords={Call,Case,Const,Dim,Do,Each,Else,End,Erase,Error,Exit,%
6988     Explicit,For,Function,If,Loop,Next,On,Option,Private,Public,%
6989     Randomize,ReDim,Rem,Select,Set,Sub,Then,Wend,While,Abs,Array,Asc,%
6990     Atn,CBool,CByte,CCur,CDate,CDBl,Chr,CInt,CLng,Cos,CreateObject,%
6991     CSng,CStr,Date,DateAdd,DateDiff,DatePart,DateSerial,DateValue,%
6992     Day,Exp,Filter,Fix,FormatCurrency,FormatDateTime,FormatNumber,%
6993     FormatPercent,GetObject,Hex,Hour,InputBox,InStr,InStrRev,Int,%
6994     IsArray,IsDate,IsEmpty,IsNull,IsNumeric,IsObject,Join,LBound,%
6995     LCase,Left,Len,LoadPicture,Log,LTrim,Mid,Minute,Month,MonthName,%
6996     MsgBox,Now,Oct,Replace,RGB,Right,Rnd,Round,RTrim,ScriptEngine,%
6997     ScriptEngineBuildVersion,ScriptEngineMajorVersion,%
6998     ScriptEngineMinorVersion,Second,Sgn,Sin,Space,Split,Sqr,StrComp,%
6999     StrReverse,String,Tan,Time,TimeSerial,TimeValue,Trim,TypeName,%
7000     UBound,UCase,VarType,Weekday,WeekdayName,Year, And,Eqv,Imp,Is,%
7001     Mod,Not,Or,Xor,Add,BuildPath,Clear,Close,Copy,CopyFile,%
7002     CopyFolder,CreateFolder,CreateTextFile,Delete,DeleteFile,%
7003     DeleteFolder,Dictionary,Drive,DriveExists,Drives,Err,Exists,File,%
7004     FileExists,FileSystemObject,Files,Folder,FolderExists,Folders,%
7005     GetAbsolutePathName,GetBaseName,GetDrive,GetDriveName,%
7006     GetExtensionName,GetFile,GetFileName,GetFolder,%
7007     GetParentFolderName,GetSpecialFolder,GetTempName,Items,Keys,Move,%
7008     MoveFile,MoveFolder,OpenAsTextStream,OpenTextFile,Raise,Read,%
7009     ReadAll,ReadLine,Remove,RemoveAll,Skip,SkipLine,TextStream,Write,%
7010     WriteBlankLines,WriteLine,Alias,Archive,CDROM,Compressed,%

```

```

7011     Directory,Fixed,ForAppending,ForReading,ForWriting,Hidden,Normal,%
7012     RAMDisk,ReadOnly,Remote,Removable,System,SystemFolder,%
7013     TemporaryFolder,TristateFalse,TristateTrue,TristateUseDefault,%
7014     Unknown,Volume,WindowsFolder,vbAbortRetryIgnore,%
7015     vbApplicationModal,vbArray,vbBinaryCompare,vbBlack,vbBlue,%
7016     vbBoolean,vbByte,vbCr,vbCrLf,vbCritical,vbCurrency,vbCyan,%
7017     vbDataObject,vbDate,vbDecimal,vbDefaultButton1,vbDefaultButton2,%
7018     vbDefaultButton3,vbDefaultButton4,vbDouble,vbEmpty,vbError,%
7019     vbExclamation,vbFirstFourDays,vbFirstFullWeek,vbFirstJan1,%
7020     vbFormFeed,vbFriday,vbGeneralDate,vbGreen,vbInformation,%
7021     vbInteger,vbLf,vbLong,vbLongDate,vbLongTime,vbMagenta,vbMonday,%
7022     vbNewLine,vbNull,vbNullChar,vbNullString,vbOKC,ancel,vbOKOnly,%
7023     vbObject,vbObjectError,vbQuestion,vbRed,vbRetryCancel,vbSaturday,%
7024     vbShortDate,vbShortTime,vbSingle,vbString,vbSunday,vbSystemModal,%
7025     vbTab,vbTextCompare,vbThursday,vbTuesday,vbUseSystem,%
7026     vbUseSystemDayOfWeek,vbVariant,vbVerticalTab,vbWednesday,vbWhite,%
7027     vbYellow,vbYesNo,vbYesNoCancel},%
7028     sensitive=f,%
7029     morecomment=[l]',%
7030     morestring=[d]"%
7031 }[keywords,comments,strings]%
7032 </lang2>

```

## 2.81 Verilog

Thanks to Cameron H. G. Wright for providing the definition. After a bug report by George M. Georgiou I changed the declaration of directives to use normal keywords.

```

7033 (*lang3)
7034 %%
7035 %% Verilog definition (c) 2003 Cameron H. G. Wright <c.h.g.wright@ieee.org>
7036 %% Based on the IEEE 1364-2001 Verilog HDL standard
7037 %% Ref: S. Palnitkar, "Verilog HDL: A Guide to Digital Design and Synthesis,"
7038 %%     Prentice Hall, 2003. ISBN: 0-13-044911-3
7039 %%
7040 \lst@definlanguage{Verilog}%
7041 {morekeywords={% reserved keywords
7042     always,and,assign,automatic,begin,buf,bufif0,bufif1,case,casex,%
7043     casez,cell,cmos,config,deassign,default,defparam,design,disable,%
7044     edge,else,end,endcase,endconfig,endfunction,endgenerate,%
7045     endmodule,endprimitive,endspecify,enttable,enttask,event,for,%
7046     force,forever,fork,function,generate,genvar,highz0,highz1,if,%
7047     ifnone,inclDir,include,initial,inout,input,instance,integer,join,%
7048     large,liblist,library,localparam,macromodule,medium,module,nand,%
7049     negedge,nmos,nor,noshowcancelled,not,notif0,notif1,or,output,%
7050     parameter,pmos,posedge,primitive,pull0,pull1,pulldown,pullup,%
7051     pulsetyle_oneevent,pulsetyle_ondetect,rcmos,real,realtime,reg,%
7052     release,repeat,rnmos,rpmos,rtran,rtranif0,rtranif1,scalared,%
7053     showcancelled,signed,small,specify,specparam,strong0,strong1,%
7054     supply0,supply1,table,task,time,tran,tranif0,tranif1,tri,tri0,%
7055     tri1,triand,terior,triereg,unsigned,use,vectored,wait,wand,weak0,%
7056     weak1,while,wire,wor,xnor,xor},%
7057     morekeywords=[2]{% system tasks and functions

```

```

7058     $bitstoreal,$countdrivers,$display,$fclose,$fdisplay,$fmonitor,%
7059     $fopen,$fstrobe,$fwrite,$finish,$getpattern,$history,$incsave,%
7060     $input,$itor,$key,$list,$log,$monitor,$monitoroff,$monitoron,%
7061     $nokey},%
7062     morekeywords=[3]{% compiler directives
7063     'accelerate,'autoexpand_vectornets,'celldefine,'default_nettype,%
7064     'define,'else,'elsif,'endcelldefine,'endif,'endprotect,%
7065     'endprotected,'expand_vectornets,'ifdef,'ifndef,'include,%
7066     'no_accelerate,'noexpand_vectornets,'noremove_gatenames,%
7067     'nounconnected_drive,'protect,'protected,'remove_gatenames,%
7068     'remove_netnames,'resetall,'timescale,'unconnected_drive},%
7069     alsoletter='\',%
7070     sensitive,%
7071     morecomment=[s]{/*}{*/},%
7072     morecomment=[l]//,% nonstandard
7073     morestring=[b]"%
7074     }[keywords,comments,strings]%
7075 </lang3>

```

## 2.82 VHDL

This language is due to Kai WollenweberVHDL. I've done conversion to version 0.19 only. Gaurav Aggarwal reported that VHDL is case insensitive and Arnaud Tisserand added three keywords.

```

7076 (*lang1)
7077 %%
7078 %% VHDL definition (c) 1997 Kai Wollenweber
7079 %%
7080 \lst@definlanguage{VHDL}%
7081 {morekeywords={ALL,ARCHITECTURE,ABS,AND,ASSERT,ARRAY,AFTER,ALIAS,%
7082     ACCESS,ATTRIBUTE,BEGIN,BODY,BUS,BLOCK,BUFFER,CONSTANT,CASE,%
7083     COMPONENT,CONFIGURATION,DOWNTO,ELSE,ELSIF,END,ENTITY,EXIT,%
7084     FUNCTION,FOR,FILE,GENERIC,GENERATE,GUARDED,GROUP,IF,IN,INOUT,IS,%
7085     INERTIAL,IMPURE,LIBRARY,LOOP,LABEL,LITERAL,LINKAGE,MAP,MOD,NOT,%
7086     NOR,NAND,NULL,NEXT,NEW,OUT,OF,OR,OTHERS,ON,OPEN,PROCESS,PORT,%
7087     PACKAGE,PURE,PROCEDURE,POSTPONED,RANGE,REM,ROL,ROR,REPORT,RECORD,%
7088     RETURN,REGISTER,REJECT,SIGNAL,SUBTYPE,SLL,SRL,SLA,SRA,SEVERITY,%
7089     SELECT,THEN,TYPE,TRANSPORT,TO,USE,UNITS,UNTIL,VARIABLE,WHEN,WAIT,%
7090     WHILE,XOR,XNOR,%
7091     DISCONNECT,ELIF,WITH},% Arnaud Tisserand
7092     sensitive=f,% 1998 Gaurav Aggarwal
7093     morecomment=[l]--,%
7094     morestring=[d]{"}%
7095     }[keywords,comments,strings]%

```

The VHDL-AMS dialect has been added by Steffen Klupsch.

```

7096 %%
7097 %% VHDL-AMS definition (c) Steffen Klupsch
7098 %%
7099 \lst@definlanguage[AMS]{VHDL}[] {VHDL}%
7100 {morekeywords={ACROSS,ARRAY,BREAK,DISCONNECT,NATURE,NOISE,PORT,%
7101     PROCEDURAL,QUANTITY,SHARED,SPECTRUM,SUBNATURE,TERMINAL,THROUGH,%
7102     TOLERANCE,UNAFFECTED,UNITS}}

```

7103 </lang1>

## 2.83 VRML

This language is due to Oliver BaumVRML.

7104 <\*lang2>

```
7105 %%
7106 %% VRML definition (c) 2001 Oliver Baum
7107 %%
7108 \lst@definlanguage[97]{VRML}{%
7109   morekeywords={DEF, EXTERNPROTO, FALSE, IS, NULL, PROTO, ROUTE, TO, TRUE,%
7110     USE, eventIn, eventOut, exposedField, field, Introduction, Anchor,%
7111     Appearance, AudioClip, Background, Billboard, Box, Collision, Color,%
7112     ColorInterpolator, Cone, Coordinate, CoordinateInterpolator, Cylinder,%
7113     CylinderSensor, DirectionalLight, ElevationGrid, Extrusion, Fog,%
7114     FontStyle, Group, ImageTexture, IndexedFaceSet, IndexedLineSet, Inline,%
7115     LOD, Material, MovieTexture, NavigationInfo, Normal,%
7116     NormalInterpolator, OrientationInterpolator, PixelTexture, PlaneSensor,%
7117     PointLight, PointSet, PositionInterpolator, ProximitySensor,%
7118     ScalarInterpolator, Script, Shape, Sound, Sphere, SphereSensor,%
7119     SpotLight, Switch, Text, TextureCoordinate, TextureTransform,%
7120     TimeSensor, TouchSensor, Transform, Viewpoint, VisibilitySensor,%
7121     WorldInfo},%
7122   morecomment=[l]\#,% bug: starts comment in the first column
7123   morestring=[b]"%
7124 }[keywords,comments,strings]
7125 </lang2>
```

## 2.84 XML et al

Bernhard Walle provided the following two definitions.

7126 <\*lang1>

```
7127 \lst@definlanguage{XSLT}[] {XML}%
7128 {morekeywords={%
7129   % main elements
7130   xsl:stylesheet, xsl:transform,%
7131   % childs of the main element
7132   xsl:apply-imports, xsl:attribute-set, xsl:decimal-format, xsl:import,%
7133   xsl:include, xsl:key, xsl:namespace-alias, xsl:output, xsl:param,%
7134   xsl:preserve-space, xsl:strip-space, xsl:template, xsl:variable,%
7135   % 21 directives
7136   xsl:apply-imports, xsl:apply-templates, xsl:attribute,%
7137   xsl:call-template, xsl:choose, xsl:comment, xsl:copy, xsl:copy-of,%
7138   xsl:element, xsl:fallback, xsl:for-each, xsl:if, xsl:message,%
7139   xsl:number, xsl:otherwise, xsl:processing-instruction, xsl:text,%
7140   xsl:value-of, xsl:variable, xsl:when, xsl:with-param},%
7141   alsodigit={-},%
7142 }%
7143 \lst@definlanguage{Ant}[] {XML}{%
7144   morekeywords={%
7145     project, target, patternset, include, exclude, excludesfile,%
```



```

7146 includesfile, filterset, filter, filtersfile, libfileset, custom,%
7147 classpath, fileset, none, depend, mapper, filename, not, date,%
7148 contains, selector, depth, or, and, present, majority, size, dirset,%
7149 filelist, pathelement, path, param, filterreader, extension,%
7150 filterchain, linecontainsregexp, regexp, classconstants, headfilter,%
7151 tabstospaces, striplinebreaks, tailfilter, stripjavacomments,%
7152 expandproperties, linecontains, replacetokens, token,%
7153 striplinecomments, comment, prefixlines, classfileset, rootfileset,%
7154 root, description, xmlcatalog, entity, dtd, substitution, extensionSet,%
7155 propertyfile, entry, vsscheckin, sql, transaction, cvspass, csc,%
7156 dirname, wlrn, wlclasspath, p4label, replaceregexp, get, jjtree,%
7157 sleep, jarlib, dependset, targetfileset, srcfileset, srcfilelist,%
7158 targetfilelist, zip, zipgroupfileset, zipfileset, patch, jspc, webapp,%
7159 style, test, arg, jvmarg, sysproperty, testlet, env, tstamp, format,%
7160 unwar, vsshhistory, icontract, cvschangelog, user, p4submit, ccmcheckin,%
7161 p4change, bzip2, vssadd, javadoc, bottom, source, doctitle, header,%
7162 excludepackage, bootclasspath, doclet, taglet, packageset, sourcepath,%
7163 link, footer, package, group, title, tag, translate, signjar, vajload,%
7164 vajproject, jarlib, extensionset, WsdnToDotnet, buildnumber,%
7165 jpcovmerge, tomcat, ejbjar, weblogictoplink, jboss, borland, weblogic,%
7166 iplanet, jonas, support, websphere, wasclasspath, war, manifest,%
7167 attribute, section, metainf, lib, classes, webinf, rename, sequential,%
7168 serverdeploy, generic, property, move, copydir, cccheckin, wljspc,%
7169 fixcrlf, sosget, pathconvert, map, record, p4sync, exec, p4edit,%
7170 maudit, rulespath, searchpath, antlr, netrexxc, jpcovreport, reference,%
7171 filters, coveragepath, execon, targetfile, srcfile, ccmcheckout, ant,%
7172 xmlvalidate, xslt, iplanet, ccmcheckintask, gzip, native2ascii,%
7173 starteam, ear, archives, input, rmic, extdirs, compilerarg, checksum,%
7174 mail, bcc, message, cc, to, from, loadfile, vsscheckout, stylebook,%
7175 soscheckin, mimemail, stlabel, gunzip, concat, cab, touch, parallel,%
7176 splash, antcall, cccheckout, typedef, p4have, xmlproperty, copy,%
7177 tomcat, antstructure, ccmcreatetask, rpm, delete, replace,%
7178 replacefilter, replacetoken, replacevalue, mmetrics, waitfor, isfalse,%
7179 equals, available, filepath, os, filesmatch, istrue, isset, socket,%
7180 http, uptodate, srcfiles, untar, loadproperties, echoproperties,%
7181 vajexport, stcheckout, bunzip2, copyfile, vsscreate, ejbc, unjar,%
7182 tomcat, wsdltodotnet, mkdir, condition, cvs, commandline, marker,%
7183 argument, tempfile, junitreport, report, taskdef, echo, ccupdate, java,%
7184 renameext, vsslablel, basename, javadoc2, vsscp, tar, tarfileset,%
7185 tomcat, vajimport, setproxy, wlstop, p4counter, ilasm, soscheckout,%
7186 apply, ccuncheckout, jarlib, location, url, cvstagdiff, jlink,%
7187 mergefiles, addfiles, javacc, pvcs, pvcsproject, jarlib, options,%
7188 depends, chmod, jar, sound, fail, success, mparse, blgenclient, genkey,%
7189 dname, javah, class, ccmreconfigure, unzip, javac, src, p4add,%
7190 soslabel, jpcovrage, triggers, method, vssget, deltree, ddcreator},%
7191 deletekeywords={default},%
7192 }
7193 </lang1>

This is my first attempt to support XML. It is from 2000/07/18.
7194 <lang1>
7195 \lst@definlanguage{XML}%
7196 {keywords={,CDATA,DOCTYPE,ATTLIST,termdef,ELEMENT,EMPTY,ANY,ID,%
7197 IDREF,IDREFS,ENTITY,ENTITIES,NMTOKEN,NMTOKENS,NOTATION,%

```

```

7198     INCLUDE, IGNORE, SYSTEM, PUBLIC, NDATA, PUBLIC, %
7199     PCDATA, REQUIRED, IMPLIED, FIXED, %% preceded by #
7200     xml, xml:space, xml:lang, version, standalone, default, preserve}, %
7201 alsoother=$, %
7202 alsoletter=:, %
7203 tag=**[s]<>, %
7204 morestring=[d]", % ??? doubled
7205 morestring=[d]', % ??? doubled
7206 MoreSelectCharTable=%
7207     \lst@CArgX--\relax\lst@DefDelimB{}-{}%
7208         {\ifnum\lst@mode=\lst@tagmode\else
7209             \expandafter\@gobblethree
7210             \fi}%
7211     \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
7212 \lst@CArgX--\relax\lst@DefDelimE{}-{}-{}%
7213     \lst@endComment\lst@commentmode
7214 \lst@CArgX[CDATA[\relax\lst@CDef{}]%
7215     {\ifnum\lst@mode=\lst@tagmode
7216         \expandafter\lst@BeginCDATA
7217         \else \expandafter\lst@CArgEmpty
7218         \fi}%
7219     \@empty
7220 \lst@CArgX]]\relax\lst@CDef{}%
7221     {\ifnum\lst@mode=\lst@GPmode
7222         \expandafter\lst@endComment
7223         \else \expandafter\lst@CArgEmpty
7224         \fi}%
7225     \@empty
7226 }[keywords, comments, strings, html]%

```

And after receiving a bug report from Michael Niedermair I converted the version 0.21 contents of MoreSelectCharTable to version 1.0.

7227 </lang1>