

At End of Env

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1 Motivation

The `amsthm` package conveniently provides environments for declaring theorems and friends. By default, the `proof` environment inserts a QED symbol at the end of environment. It is sometimes also desirable to insert a similar symbol at the end of other environments, e.g. at the end of a definition or a remark, which motivates this package.

2 Usage

Let us begin with defining a theorem environment with `amsthm`:

```
\newtheorem{theorem}{Theorem}
```

And we can create a theorem like this:

```
\begin{theorem}
  This is a long theorem that will be very long, and it will be helpful if I
  can add a symbol at the end of it to mark its end.
\end{theorem}
```

Theorem 1. *This is a long theorem that will be very long, and it will be helpful if I can add a symbol at the end of it to mark its end.*

To do so, simply put after defining a theorem environment:

```
\AtEndOfEnv{theorem}{\triangleleft}
```

Now theorems look like this:

Theorem 2. *This is a long theorem that will be very long, and it will be helpful if I can add a symbol at the end of it to mark its end.* ◁

You can also change the symbol later.

```
\AtEndOfEnv{theorem}{\lrcorner}
```

Now theorems look like this:

Theorem 3. *This is a long theorem that will be very long, and it will be helpful if I can add a symbol at the end of it to mark its end.* ┘

Q: *But, couldn't I change/tweak the style of theorems when defining them?*

A: Of course, but sometimes they are defined by a class file (e.g. from publishers), and tweaking class files may be a sin in many situations.

3 Implementation

```
1 \newcommand{\AtEndOfEnv}[2]{
```

We first check whether the environment is defined. If so, save the original macros (if not saved already); otherwise report an error.

```
2 \ifcsname #1\endcsname
3   \ifcsname aeoe@old#1\endcsname\relax
4   \else
5     \expandafter\LetLtxMacro\csname aeoe@old#1\expandafter\endcsname\csname #1\endcsname
6     \fi
7   \else
8     \PackageError{atendofenv}{Environment #1 undefined}{Check the environment
9     name passed to AtEndOfEnv}
10    \fi
11  \ifcsname end#1\endcsname
12    \ifcsname aeoe@oldend#1\endcsname\relax
13    \else
14      \expandafter\LetLtxMacro\csname aeoe@oldend#1\expandafter\endcsname\csname end#1\endcsname
15      \fi
16    \else
17      \PackageError{atendofenv}{Environment #1 undefined}{Check the environment
18      name passed to AtEndOfEnv}
19    \fi
```

Then we redefine the environment, and use the QED stack of `amsthm` to get a symbol at the end.

```
20 \renewenvironment{#1}
21 {\pushQED{\qed}\renewcommand{\qedsymbol}{#2}\expandafter\csname aeoe@old#1\endcsname}
22 {\popQED\expandafter\csname aeoe@oldend#1\endcsname}
23 }
```