The `eucal` and `euscript` packages

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1   Introduction

This package was written originally by Frank Mittelbach and Rainer Schöpf; later it was moved into the AMSFonts distribution with only minor modifications. It can be used with LaTeX 2_ε with no dependency on the `amsmath` package.

This file sets up some font shape definitions to use the Euler script symbols in math mode. These fonts are part of the AMSFonts collection which can be found on many TeX servers. It is also directly available from the AMS and from TeX user groups.

\EuScript   The expected normal use of the Euler Script alphabet is as a substitute for the Computer Modern calligraphic alphabet found in `cmsy`. Therefore we change the meaning of `\mathcal`.

`\[ \mathcal{A} = \EuScript{A} \neq \CMcal{A} \]`

will produce

$$\mathcal{A} = \mathcal{A} \neq \mathcal{A}$$

Here is a complete table of the beautiful letters drawn by Hermann Zapf:

$$\mathcal{A} \quad \mathcal{B} \quad \mathcal{C} \quad \mathcal{D} \quad \mathcal{E} \quad \mathcal{F} \quad \mathcal{G} \quad \mathcal{H} \quad \mathcal{I}$$
$$\mathcal{J} \quad \mathcal{K} \quad \mathcal{L} \quad \mathcal{M} \quad \mathcal{N} \quad \mathcal{O} \quad \mathcal{P} \quad \mathcal{Q} \quad \mathcal{R}$$
$$\mathcal{S} \quad \mathcal{T} \quad \mathcal{U} \quad \mathcal{V} \quad \mathcal{W} \quad \mathcal{X} \quad \mathcal{Y} \quad \mathcal{Z}$$

2   The Implementation

Package identification.

```
1 \NeedsTeXFormat{LaTeX2e}% LaTeX 2.09 can't be used (nor non-LaTeX)
2 [1994/12/01]% LaTeX date must be December 1994 or later
3 ⟨euscript⟩\ProvidesPackage{euscript}[2009/06/22 v3.00 Euler Script fonts]
4 ⟨eucal⟩\ProvidesPackage{eucal}[2009/06/22 v3.00 Euler Script fonts]
```

We have three things to do: 1) identify the current package, 2) enlarge the font shape tables and 3) define the ⟨*math alphabet identifier*⟩.

\EuScript   Now we define the ⟨*math alphabet identifier*⟩ \EuScript both for the normal and the bold math version

```
5 \DeclareMathAlphabet\EuScript{U}{eus}{m}{n}
6 \SetMathAlphabet\EuScript{bold}{U}{eus}{b}{n}
```

For flexibility and backward compatibility with versions 2.1c and earlier, we save the old meaning of `\mathcal` as `\CMcal`, and use `\EuScript` as the initial name of the new math alphabet. Notice that we don't do any checking to make sure the previous version of `\mathcal` actually refers to `cmsy`.

```
7 \newcommand{\CMcal}{}
8 \let\CMcal=\mathcal
```

See the `amsfonts` package documentation for a discussion of the obsolescence of the `psamfonts` option.

```
9 \DeclareOption{psamsfonts}{}
```

Here is a table describing the action of the `eucal`, `euscript`, and `eufrak` packages.

Package	Option	Commands provided
`eucal`	none	`\mathcal`
`eucal`	`[mathcal]`	`\mathcal`
`eucal`	`[mathscr]`	`\mathscr` (`\mathcal` unchanged)
`euscript`	none	`\EuScript` (obsolete)
`euscript`	`[mathcal]`	`\mathcal`
`eufrak`	none	`\mathfrak` (also obsolete `\EuFrak` for compatibility)

```
10 \DeclareOption{mathcal}{\renewcommand{\mathcal}{\EuScript}}
11 \DeclareOption{mathscr}{%
12   \providecommand{\mathscr}{}\renewcommand{\mathscr}{\EuScript}%
13 ⟨eucal⟩   \let\mathcal=\CMcal
14 }
```

Process the package options.

```
15 ⟨eucal⟩\ExecuteOptions{mathcal}
16 \ProcessOptions
```

The usual `\endinput` to ensure that random garbage at the end of the file doesn't get copied by `docstrip`.

```
17 \endinput
```

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Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.