Hacking on the μ macro package

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What is μ?

μ or *mu* is a simple macro package for troff designed to abstract as little as possible from troff itself, while still providing a powerful framework for writing advanced documents.

How is the source code of μ organized?

If you run `grep -n [-]-` on the *u.tmac* source file, you are presented with an overview of μ's macros:

```
30:.\" Internal macros ----------------------------
32:.\" @a -- setup document
120:.\" @c -- copy environment
128:.\" (e -- set environment
133:.\" @e -- set extended environment
175:.\" @f -- footer
181:.\" @h -- header
188:.\" @tf -- footer trap
204:.\" @th -- header trap
213:.\" @tn -- footnote trap
244:.\" Inline macros ------------------------------
246:.\" " -- inline quotation
251:.\" b -- bold font
256:.\" c -- constant-width font
284:.\" i -- italic font
289:.\" x -- bold italic font
295:.\" Environment macros -------------------------
298:.\" d -- centered date
305:.\" h -- heading
312:.\" l -- literal display
319:.\" p -- paragraph
326:.\" q -- quotation
333:.\" s -- subheading
340:.\" t -- centered title
347:.\" Other macros -------------------------------
349:.\" ( -- begin footnote
363:.\" ) -- end footnote
383:.\" w -- want space
```

This is a sufficient summary of the entire μ source code, as nothing is performed outside of these macros. All initialization is performed in the `@a` macro, which is automatically called at the first invocation of any other macro.

The above summary reflects a categorization in the macros defined by μ. There are internal and external macros. The former are to be used within *u.tmac* itself, while the latter are to be used in μ documents. Among the external macros, there are inline, environment (or block-level) and other macros.

The inline macros all follow the same pattern. They take three arguments: the string to be formatted, an optional suffix and an optional prefix.

The environment or block-level macros generally take no arguments (except `d`). Instead, they activate a given environment, affecting the formatting of the following text. Each environment macro is associated with a specific environment, carrying the same one-letter name as the macro itself.

As you can see, the macros in each category are arranged alphabetically.

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Where is document state stored?

Most state is stored by troff itself within the different environments. In addition, μ associates three extra registers with each environment: `sp`, the amount of space to be added by `@e` before an environment; `sq`, the same (except the space is not added if the new environment is identical to the previous one); and `ti`, the indentation of the first line in the `p` environment. These are stored in registers named `@ENV_sp`, `@ENV_sq` and `@ENV_ti`, where `ENV` is the name of the associated environment.

The strings `%env` and `%penv` contain the name of the current and previous environment.

The `@a` register is set to 1 if the document has been initialized (i.e. if `@a` has been invoked).

The `@m` register is non-zero if "manual footer" mode is active. If `@m` is non-zero, `@tf` decrements it by one and exits when invoked, unless called with the `f` (force) argument. This is useful if you want to trigger the footer manually, but do not want the printed footer to trigger the footer trap again.

`@.t` contains the absolute vertical position of the first trap following the first footnote reference on a page; it is set and used by `)` to place the footnote trap in the correct vertical position. `@dn` contains the height of all collected footnotes on a page; it is set by `)` and reset to zero by `@tn`. `@n` contains the total number of collected footnotes.

Note that none of these registers and strings should be directly accessed or modified by μ documents.