

The `l3flag` package: expandable flags*

The L^AT_EX3 Project[†]

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Flags are the only data-type on which T_EX can perform assignments in expansion-only contexts. This module is meant mostly for kernel use: in almost all cases, booleans or integers should be preferred to flags, because they are faster.

A flag can hold any non-negative value, which we call its *height*. In expansion-only contexts, a flag can only be “raised”: this normally increases the *height* by 1, but can be configured by defining specific traps. The *height* can also be queried expandably. However, decreasing it, or setting it to zero requires non-expandable assignments.

Flag variables are always local. They are referenced by a *name* of the form *package*_*flag name*, for instance, `str_missing`.

1 Setting up flags

`\flag_new:n` `\flag_new:n {<flag name>}`

Creates a new *flag* with a name given by *flag name*, or raises an error if the name is already taken. The *flag name* must consist of character tokens only. The declaration is global, but flags are always local variables. The *flag* will initially have zero height.

`\flag_clear:n` `\flag_clear:n {<flag name>}`

The *flag*’s height is set to zero. The assignment is local.

`\flag_clear_new:n` `\flag_clear_new:n {<flag name>}`

Ensures that the *flag* exists globally by applying `\flag_new:n` if necessary, then applies `\flag_zero:n`, setting the height to zero locally.

`\flag_set_trap:nn` `\flag_set_trap:nn {<flag name>} {<inline function>}`

Changes the action that is taken when the *flag* is raised using `\flag_raise:n`. Instead of the default action which is to increase the *flag*’s height by 1, the *inline function* will be called, receiving the current flag’s height as #1. The *inline function* should expand to nothing; e.g., it could call `\msg_expandable_error:n`. This function is very experimental.

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2 Expandable flag commands

`\flag_if_exist_p:n` ★ `\flag_if_exist:n` {*⟨flag name⟩*}

`\flag_if_exist:nTF` ★ This function returns `true` if the *⟨flag name⟩* references a flag that has been defined previously, and `false` otherwise.

`\flag_if_raised_p:n` ★ `\flag_if_raised:n` {*⟨flag name⟩*}

`\flag_if_raised:nTF` ★ This function returns `true` if the *⟨flag⟩* has non-zero height, and `false` if the *⟨flag⟩* has zero height.

`\flag_height:n` ★ `\flag_height:n` {*⟨flag name⟩*}

Expands to the height of the *⟨flag⟩* as an integer denotation.

`\flag_raise:n` ★ `\flag_raise:n` {*⟨flag name⟩*}

The *⟨flag⟩*'s trap is performed, taking the current height as its argument. The default behaviour is to increase the *⟨flag⟩*'s height by 1 locally. This function is expandable, as long as the trap is expandable (the default trap is expandable, despite being an assignment).

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