The l3flag package: expandable flags*

The LaTeX3 Project†

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Flags are the only data-type on which TeX 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:nTF` ⋆

`\flag_if_exist:n {⟨flag name⟩}`

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:nTF` ⋆

`\flag_if_raised:n {⟨flag name⟩}`

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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