

lemmify

Lemmify is a library for typesetting mathematical theorems in typst. It aims to be easy to use while trying to be as flexible and idiomatic as possible. This means that the interface might change with updates to typst (for example if user-defined element functions are introduced). But no functionality should be lost.

If you are encountering any bugs, have questions or are missing features, feel free to open an issue on GitHub.

Basic usage

1. Import lemmify:

```
#import "@preview/lemmify:0.2.0": default-theorems, select-kind
```

2. Generate some common theorem kinds with pre-defined style:

```
#let (  
  theorem, lemma, corollary,  
  remark, proposition, example,  
  proof, theorem-rules  
) = default-theorems(lang: "en")
```

3. Apply the generated style:

```
#show: theorem-rules
```

4. Customize the theorems using show rules. For example, to add a block around proofs:

```
#show select-kind(proof): block.with(  
  breakable: true,  
  width: 100%,  
  fill: gray,  
  inset: 1em,  
  radius: 5pt  
)
```

5. Create theorems, lemmas, and proofs:

```
#theorem(name: "Some theorem") [  
  Theorem content goes here.  
]<thm>  
  
#theorem(numbering: none) [  
  Another theorem.  
]  
  
#proof(link-to: <thm>)[  
  Complicated proof.  
]<proof>  
  
@proof and @thm[theorem]
```

The result should now look something like this:

Theorem 1 (*Some theorem*) Theorem content goes here.

Theorem Another theorem.

Proof Complicated proof.



Proof 1 and theorem 1

Examples

This example shows how corollaries can be numbered after the last theorem.

```
#import "@preview/lemmify:0.2.0": theorem-rules, theorem-kind, select-kind, reset-counter

#let theorem = theorem-kind("Theorem")
#let corollary = theorem-kind(
  "Corollary",
  group: "CorollaryGroup",
  link-to: select-kind(theorem)
)
#show: theorem-rules
#show select-kind(theorem): it => {it; reset-counter(corollary)}

#theorem(lorem(5))
#corollary(lorem(5))
#corollary(lorem(5))
#theorem(lorem(5))
#corollary(lorem(5))
```

Theorem 2 Lorem ipsum dolor sit amet.

Corollary 2.1 Lorem ipsum dolor sit amet.

Corollary 2.2 Lorem ipsum dolor sit amet.

Theorem 3 Lorem ipsum dolor sit amet.

Corollary 3.1 Lorem ipsum dolor sit amet.

Custom style example

```
#import "@preview/lemmify:0.2.0": default-theorems, get-theorem-parameters

#let my-style-func(thm, is-proof: false) = {
  let params = get-theorem-parameters(thm)
  let number = (params.numbering)(thm, false)
  let content = grid(
    columns: (1fr, 3fr),
    column-gutter: 1em,
    stack(spacing: .5em, strong(params.kind-name), number, emph(params.name)),
    params.body
  )
}
```

```

if is-proof {
  block(inset: 2em, content)
} else {
  block(inset: 1em, block(fill: gray, inset: 1em, radius: 5pt, content))
}
}

#let my-style = (
  style: my-style-func,
  proof-style: my-style-func.with(is-proof: true)
)

#let (
  theorem, proof, theorem-rules
) = default-theorems(lang: "en", ..my-style)
#show: theorem-rules

#lorem(20)
#theorem(name: "Some theorem") [
  #lorem(40)
]
#lorem(20)
#proof [
  #lorem(30)
]

```

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua quaerat.

Theorem

4

Some theorem

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua quaerat voluptatem. Ut enim aequae doleamus animo, cum corpore dolemus, fieri tamen permagna accessio potest, si aliquod aeternum et infinitum impendere.

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua quaerat.

Proof

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua quaerat voluptatem. Ut enim aequae doleamus animo, cum corpore dolemus, fieri.

assert(type(text) == str)

assert(type(text) == str)

Documentation

theorem-kind

Creates a new

theorem-function

Parameters

theorem-kind(
kind-name:

str

group:

str

link-to:

label

selector

selector-function

none

numbering:

theorem-numbering-function

none

subnumbering:

numbering-function

str

none

style:

style-function

) ->

theorem-function

kind-name

str

The name of the theorem kind. It also acts as an identifier together with

group

when using

select-kind

, so it should be unique.

group

str

The group identifier. Each theorem group shares one counter.

Default:

LEMMIFY-DEFAULT-THEOREM-GROUP

link-to

label

or

selector

or

selector-function

or

none

This parameter sets what the

theorem

s created by the

theorem-function

will be linked to by default.

Default:

last-heading

numbering

theorem-numbering-function

or

none

Specify a default value for the

numbering

parameter of the

theorem-function

.

Default:

numbering-concat

subnumbering

numbering-function

or

str

or

none

The subnumbering is needed to convert the

theorem

s counter to content, which is then used in the

theorem-numbering-function

.

Default:

"1"

style

style-function

Specifies how the

theorem

s will look. This will only be visible once the

theorem-rules()

have been applied.

Default:

style-simple

theorem-rules

Apply the style of every

theorem

and handle references to

theorem

s.

Parameters

theorem-rules(content:

content

)

->

content

default-theorems

Generate a few common theorem kinds in the specified language.

Returns a dictionary of the form

(theorem, lemma, corollary, remark, proposition, example, definition, proof, theorem-rules)

. The

theorem-rules

can be applied using a show statement. If

max-reset-level

is

none

it will be the same as

theorem-rules()

.

This function accepts all parameters of

theorem-kind()

once for proofs and once for all kinds except for proofs.

Parameters

default-theorems(

group:

str

proof-group:

str

lang:

str

style:

style-function

proof-style:

style-function

numbering:

theorem-numbering-function

none

proof-numbering:

theorem-numbering-function

none

link-to:

label

selector

selector-function

none

proof-link-to:

label

selector

selector-function

none

subnumbering:

numbering-function

str

none

max-reset-level:

int

none

) ->

lang

str

The language in which the theorem kinds are generated.

Default:

"en"

max-reset-level

int

or

none

If it is not none the theorem counter will be reset on headings below

max-reset-level

. And if

link-to

is set to

last-heading

higher levels will not be displayed in the numbering.

Default:

none

Function types

theorem-function

TODO

Parameters

`theorem-function(`

name:

content

str

link-to:

label

selector

selector-function

none

numbering:

theorem-numbering-function

none

body:

content

) ->

theorem

name

content

or

str

The name of the

`theorem`

.

Default:

none

link-to

label

or

selector

or

selector-function

or

none

Link the

theorem

to some other content. For

label

s and

selector

s the last match before the

theorem

is used.

Default:

theorem-kind.link-to

numbering

`theorem-numbering-function`

or

`none`

See

`theorem-numbering-function`

for more information. Can be set to

`none`

for unnumbered

`theorem`

s.

Default:

`theorem-kind.numbering`

theorem-numbering-function

Create combined numberings from

`theorem`

and the content linked to it.

There are two pre-defined

`theorem-numbering-function`

s:

`numbering-concat()`

and

`numbering-proof()`

.

Parameters

`theorem-numbering-function(`

`thm:`

`theorem`

`referenced:`

`bool`

`) ->`

`content`

thm

`theorem`

The

`theorem`

for which the numbering should be generated. See also

`get-theorem-parameters()`

.

referenced

`bool`

This is false if the numbering was requested from the

`theorem`

it belongs to. Otherwise it is false. See

`numbering-proof()`

as an example.

style-function

Defines how the

`theorem`

will look. Use

```
get-theorem-parameters()
```

to get all information stored in the

```
theorem
```

.

There are two pre-defined

```
style-function
```

s:

```
style-simple()
```

and

```
style-reversed()
```

.

Parameters

`style-function`(thm:

```
theorem
```

->

```
content
```

selector-function

Useful for more advanced queries. See

```
last-heading()
```

for an example.

Parameters

`selector-function`(loc:

```
location
```

->

```
content
```

```
none
```

loc

location

When used in

link-to

parameter of some

theorem

its

location

will be passed when resolving the link with

resolve-link()

.

numbering-function

A normal numbering function as described in the [typst documentation](#).

Parameters

`numbering-function`(`..state:`

`int`

)

->

`content`

theorem

A

theorem

is a

figure

with some additional information stored in one of its parameters.

is-theorem

Check if argument is

theorem

.

Parameters

`is-theorem`(c:

any

->

bool

get-theorem-parameters

Extract theorem parameters from figure. Returns a

dictionary

of the form

(body, group, kind-name, name, link-to, numbering, subnumbering, style)

.

Parameters

`get-theorem-parameters`(thm:

theorem

->

dictionary

resolve-link

Return the

content

that is linked to the

theorem

.

Parameters

`resolve-link`(thm:

theorem

->

content

numbered

A

numbered

is a

heading

,

page

,

math.equation

or

figure

that is already embedded in the document (that means it was obtained by a query). The

numbering

also has to be different from

none

.

is-numbered

Check if argument is

numbered

.

Parameters

`is-numbered`(n:

any

)

->

bool

display-numbered

Display the numbering of the argument at its location.

Parameters

`display-numbered(n:`

`numbered`

`->`

`content`

Styles

numbering-concat

If the linked content is numbered combine it with the numbering of the

`theorem`

Parameters

`numbering-concat(`

`thm:`

`theorem`

`referenced:`

`bool`

`separator:`

`content`

`str`

`)`

separator

`content`

`or`

`str`

The separator is put between both numberings.

Default:

`" . "`

numbering-proof

Copy the numbering of a linked

theorem

if referenced. Otherwise no numbering is returned.

Parameters

numbering-proof(

thm:

theorem

referenced:

bool

)

style-simple

Simple theorem style. Check the documentation for images.

Parameters

style-simple(

thm:

theorem

qed:

bool

)

qed

bool

Select if a box should be shown at the end.

Default:

false

style-reversed

Reverses numbering and

kind-name

, otherwise the same as

style-simple()

.

Parameters

`style-reversed(`

`thm:`

`theorem`

`qed:`

`bool`

`)`

qed

`bool`

Select if a box should be shown at the end.

Default:

`false`

Selectors

The selectors can be used in show-rules to customize the

`theorem`

s styling as well as with the

`link-to`

parameter.

last-heading

Selector-function which selects the last heading.

Parameters

`last-heading(`

`ignore-unnumbered:`

`bool`

`max-level:`

`int`

`none`

`loc:`

`location`

`) ->`

`heading`

`none`

ignore-unnumbered

bool

Use the last heading which is numbered.

Default:

false

max-level

int

or

none

Do not select headings above this level.

Default:

none

select-group

Generate selector that selects all theorems of the same group as the argument.

Parameters

`select-group`(thm-func:

theorem-function

)

->

selector

select-kind

Generate selector that selects only theorems that were create from the

theorem-function

.

Parameters

`select-kind`(thm-func:

theorem-function

->

selector

Resetting counters

reset-counter

Reset theorem group counter to zero. The result needs to be added to the document.

Parameters

`reset-counter`(thm-func:

theorem-function

->

content

thm-func

theorem-function

The group is obtained from this argument.

reset-counter-heading

Reset counter of theorem group on headings with at most the specified level.

Parameters

`reset-counter-heading`(

thm-func:

theorem-function

max-level:

int

content:

content

) ->

content

thm-func

theorem-function

The group is obtained from this argument.

max-level

int

Should be at least 1.