Showybox's Manual

Updated for version 1.2.0

Colorful and customizable boxes for Typst

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1. Introduction

Showybox is a Typst package for creating colorful and customizable boxes, similar as `tcolorbox` for LaTeX users.

Currently, Showybox is still on developement, and all the code can be found at its GitHub repository here. New features are welcome. So, if you have an idea that would improve this package, go on and send us the code as a Pull Request.

2. Usage

To use this library through the Typst package manager (for Typst 0.6.0 or greater), write `#import "@preview/showybox:1.2.0": showybox` at the beginning of your Typst file.

Once imported, you can create an empty showybox by using the function `showybox()` and giving a default body content inside the parenthesis or outside them using the squared brackets `[]`.

By default a showybox with these properties will be created:

- No title
- No shadow
- Not breakable
- Black borders
- White background
- `5pt` of border radius
- `1pt` of border thickness

```
#import "@preview/showybox:1.2.0": showybox

#showybox()[This is a simple showybox with the properties said before :)]
```

This is a simple showybox with the properties said before :)

3. Parameters

In version 1.2.0 all the parameters that the `showybox()` function can receive are shown below:

```
showybox(
  title: string content
  footer: string content
  frame: dictionary
  title-style: dictionary
  body-style: dictionary
  footer-style: dictionary
  sep: dictionary
  shadow: dictionary none
  width: relative-length
  align: alignment 2d-alignment
```

```
  breakable: boolean
  spacing: relative-length
  spacing: relative-length
  above: relative-length
  below: relative-length
  ..body
) → body
```

The usage and posible values of all the parameters are listed below.

3.1. Title `string` `content`

When it's not empty, correponds to a **`string`** or a **`content`** used as the title of the showybox.

Default value is `""` (empty string)

Hi there! I'm Mr. Title

And I'm Mrs. Body

And I'm Mrs. Body

```
#showybox(
  title: "Hi there! I'm Mr. Title"
)[And I'm Mrs. Body]

#showybox(/*Untitled*/)[And I'm Mrs. Body]
```

3.2. Footer `string` `content`

When it's not empy, corresponds to a **`string`** or a **`content`** used as the footer of the showybox.

Default is `""` (empty `string`).

```
#showybox(
  title: "Hi there! I'm Mr. Title",
  footer: "And finally I'm Mr. Footer"
)[And I'm Mrs. Body]
```

Hi there! I'm Mr. Title

And I'm Mrs. Body

And finally I'm Mr. Footer

3.3. Frame `dictionary`

This parameter contains all options that are useful for setting a showybox's frame properties. The frame contains the title,the body and the footer of the showybox. It even includes the showybox borders! Frame's dictionary options are listed below:

```
…
frame: (
  title-color: color
  body-color: color
  footer-color: color
  border-color: color
  radius: relative-length dictionary
  thickness: length dictionary
  dash: string
  inset: relative-length dictionary
  title-inset: relative-length dictionary
  body-inset: relative-length dictionary
  footer-inset: relative-length dictionary
),
…
```

`title-color` `color`

The color used as background where the title goes.

Default is `black`.

`body-color` `color`

The color that is used as background where the showybox's body goes.

Default is `white`.

`footer-color` `color`

The color that is used as background where the footer goes.

Default is `luma(220)`

`border-color` `color`

It's the color used for the frame's borders and the boxed-title borders. It's independent of `title-color`, `body-color` and `footer-color`, so maybe you would want to use similar colors with them.

Default is `black`.

```
#showybox(
  title: "Stokes' theorem",
  frame: (
    border-color: blue,
    title-color: blue.lighten(30%),
    body-color: blue.lighten(95%),
    footer-color: blue.lighten(80%)
  ),
  footer: "Information extracted from a well-known public encyclopedia"
)[
  Let $Sigma$ be a smooth oriented surface in $RR^3$ with boundary $diff Sigma equiv Gamma$. If a vector field $bold(F)(x,y,z)=(F_x(x,y,z), F_y(x,y,z), F_z(x,y,z))$ is defined and has continuous first order partial derivatives in a region containing $Sigma$, then

  $ integral.double_Sigma (bold(nabla) times bold(F)) dot bold(Sigma) = integral.cont_(diff Sigma) bold(F) dot dif bold(Gamma) $
]
```

Stokes' theorem

Let Σ be a smooth oriented surface in $\mathbb{R}^3$ with boundary $\partial\Sigma \equiv \Gamma$. If a vector field $\boldsymbol{F}(x,y,z) = \left(F_{x(x,y,z)}, F_{y(x,y,z)}, F_{z(x,y,z)}\right)$ is defined and has continuous first order partial derivatives in a region containing Σ, then

$$\iint_{\Sigma} (\boldsymbol{\nabla} \times \boldsymbol{F}) \cdot \boldsymbol{\Sigma} = \oint_{\partial\Sigma} \boldsymbol{F} \cdot \mathrm{d}\boldsymbol{\Gamma}$$

Information extracted from a well-known public encyclopedia

`radius` `relative-length` `dictionary`

Indicates how much round are the borders of the frame. It sets *all* the border radii together if a `relative-length` passed, or individually if a `dictionary` is given.

It excludes the boxed-title border radii (if present). Their radius is set in `boxed-style` dictionary inside `title-style`.

Default is `5pt`.

`thickness` `length` `dictionary`

Indicates the thickness of the frame borders as a `length` or a `dictionary`. If it's a dictionary, it can specify `top`, `bottom`, `left`, `right`, `x`, `y` or `rest` thickness.

It excludes the thickness of any separator located inside the box (their thickness is set in `sep` property).

Default is `1pt`.

`dash` `string`

Corresponds to the frame border's style. It can be any kind of style used for `line()`. For instance, it can be `"solid"`, `"dotted"`, `"densely-dotted"`, `"loosely-dotted"`, `"dashed"`, `"densely-dashed"`, `"loosely-dashed"`, `"dash-dotted"`, `"densely-dash-dotted"` or `"loosely-dash-dotted"`

Default is `"solid"`.

`inset, title-inset, body-inset, and footer-inset` `relative-length` `dictionary`

How much to pad the showybox's content. It can be a **`relative-length`** or a **`dictionary`**. If it's a dictionary, it can specify `top`, `bottom`, `left`, `right`, `x`, `y` or `rest` insets.

If `title-inset`, `body-inset` or `footer-inset` is given, this property is ignored while setting the inset of the title, the body or the footer, respectively.

Default is `(x: 1em, y: 0.65em)`.

```
#showybox(
  frame: (
    border-color: red.darken(30%),
    title-color: red.darken(30%),
    radius: 0pt,
    thickness: 2pt,
    body-inset: 2em,
    dash: "densely-dash-dotted"
  ),
  title: "Gauss's Law"
)[
  The net electric flux through any hypothetical closed surface is equal to $1/epsilon_0$ times the net electric charge enclosed within that closed surface. The closed surface is also referred to as Gaussian surface. In its integral form:

  $ Phi_E = integral.surf_S bold(E) dot dif bold(A) = Q/epsilon_0 $
]
```

Gauss's Law

The net electric flux through any hypothetical closed surface is equal to $\frac{1}{\varepsilon_0}$ times the net electric charge enclosed within that closed surface. The closed surface is also referred to as Gaussian surface. In its integral form:

$$\Phi_E = \oiint_S \boldsymbol{E} \cdot \mathrm{d}\boldsymbol{A} = \frac{Q}{\varepsilon_0}$$

3.4. Title style `dictionary`

This parameter contains all options that are useful for setting showybox's title properties. Despite you can set some of this properties while setting `title` parameter, it becomes a useful option while making several showyboxes with similar styles.

```
…
title-style: (
  color: color
  weight: integer string
  align: alignment 2d-alignment
  sep-thickness: length
  boxed-style: dictionary none
),
…
```

`color` `color`

Title's text color.

Default is `white`.

`weight` `integer` `string`

Title's font weight. It can be an integer between `100` and `900`, or a predefined weight name (`"thin"`, `"extralight"`, `"light"`, `"regular"`, `"medium"`, `"semibold"`, `"bold"`, `"extrabold"` and `"black"`).

Default is `"regular"`.

`align` `alignment` `2d-alignment`

How to align title's content. It can be an unidimensional alignment or a bidimensional alignment.

Default is `left`.

`sep-thickness` `length`

How much is the thickness of the separator line that is between the title and the body.

Default is `1pt`.

```
#showybox(
  title-style: (
    weight: 900,
    color: red.darken(40%),
    sep-thickness: 0pt,
    align: center
  ),
  frame: (
    title-color: red.lighten(80%),
    border-color: red.darken(40%),
    thickness: (left: 1pt),
    radius: 0pt
  ),
  title: "Carnot cycle's efficency"
)[
  Inside a Carnot cycle, the efficiency $eta$ is defined to be:

  $ eta = W/Q_H = frac(Q_H + Q_C, Q_H) = 1 - T_C/T_H $
]
```

Carnot cycle's efficency

Inside a Carnot cycle, the efficiency η is defined to be:

$$\eta = \frac{W}{Q_H} = \frac{Q_H + Q_C}{Q_H} = 1 - \frac{T_C}{T_H}$$

`boxed-style` `dictionary` `none`

If it's not `none` (i.e. it's a **`dictionary`**), indicates that the title must be placed as a "floating box" around the top side of the showybox's body.

Further details are present in Section 3.5

Default is `none`.

3.5. Boxed style `dictionary`

```
…
title-style: (
  …,
```

```
  boxed-style (
    anchor: dictionary
    offset: dictionary
    radius: relative-length dictionary
  ),
  …
),
…
```

`anchor` `dictionary`

A `dictionary` with keys `x` and `y` indicating where to place the anchor of the boxed-title. The possible values for each direction are listed below:

For `x` anchor:

- `left` : Set the anchor to the left side of the boxed-title.
- `center` : Set the anchor to the center of the horizontal center of the boxed-title.
- `right` : Set the anchor to the right side of the boxed-title.

For `y` anchor:

- `top` : Set the anchor to the top of the boxed-title.
- `horizon` : Set the anchor to the vertical center of the boxed-title.
- `bottom` : Set the anchor to the bottom of the boxed-title.

Default is `(x: left, y: horizon)` .

`offset` `dictionary`

A `dictionary` with keys `x` and `y` indicating how much to offset the boxed-title in x and y directions.

Default is `(x: 0pt, y: 0pt)` .

Observation

By default, the boxed-title has a `1em` "invisible-offset" (it's not set via `offset` property) at both left and right sides. This is made for aesthetic purposes, so the boxed-title will look nicer by default.

Additionally, the boxed-title **never** will have the full width of the showybox's main container, because otherwise it'll look like a "strange" version of default titles, loosing the "floating" illusion.

`radius` `relative-length` `dictionary`

Radius of the boxed-title. It is applied to all corners simultaneously if a `relative-length` is given, or it's applied individually to each of them according to a `dictionary` keys.

Default is `5pt`.

```
#showybox(
  title-style: (
    boxed-style: (
      anchor: (
        x: center,
        y: horizon
      ),
      radius: (top-left: 10pt, bottom-right: 10pt, rest: 0pt),
    )
  ),
  frame: (
    title-color: green.darken(40%),
    body-color: green.lighten(80%),
    footer-color: green.lighten(60%),
    border-color: green.darken(60%),
    radius: (top-left: 10pt, bottom-right: 10pt, rest: 0pt)
  ),
  title: "Clairaut's theorem",
  footer: text(size: 10pt, weight: 600, emph("This will be useful every time you want to interchange partial derivatives in the future."))
)[
  Let $f: A arrow RR$ with $A subset RR^n$ an open set such that its cross derivatives of any order exist and are continuous in $A$. Then for any point $(a_1, a_2, ..., a_n) in A$ it is true that

  $ frac(diff^n f, diff x_i ... diff x_j)(a_1, a_2, ..., a_n) = frac(diff^n f, diff x_j ... diff x_i)(a_1, a_2, ..., a_n) $
]
```

Clairaut's theorem

Let $f : A \to \mathbb{R}$ with $A \subset \mathbb{R}^n$ an open set such that its cross derivatives of any order exist and are continuous in A. Then for any point $(a_1, a_2, ..., a_n) \in A$ it is true that

$$\frac{\partial^n f}{\partial x_i ... \partial x_j}(a_1, a_2, ..., a_n) = \frac{\partial^n f}{\partial x_j ... \partial x_i}(a_1, a_2, ..., a_n)$$

This will be useful every time you want to interchange partial derivatives in the future.

3.6. Body style `dictionary`

This parameter contains all options that are useful for setting general-style properties for the showybox's body.

```
…
body-style: (
  color: color
  align: alignment 2d-alignment
),
…
```

`color` `color`

Body's text color.

Default is `black`.

`align` `alignment` `2d-alignment`

How to align body's content. It can be an unidimensional alignement or a bidimensional alignement.

Default is `left`.

```
#showybox(
  body-style: (
    align: center,
    color: red.darken(20%)
  ),
  frame: (
    body-color: yellow.lighten(60%),
    title-color: red.darken(20%),
    thickness: 0pt,
    body-inset: (y: 1em)
  ),
  title-style: (
    sep-thickness: 0pt,
    color: yellow.lighten(80%),
    align: center
  ),
  width: 70%,
  align: center,
  title: "That is the question"
)[
  To be, or not to be, that is the question: \
  Whether 'tis nobler in the mind to suffer \
  The slings and arrows of outrageous fortune, \
  Or to take Arms against a Sea of troubles, \
  And by opposing end them: to die, to sleep \
  No more; and by a sleep, to say we end \
  The heart-ache, and the thousand natural shocks \
```

```
  That Flesh is heir to? 'Tis a consummation \
  Devoutly to be wished. To die, to sleep, \
  To sleep, perchance to Dream...
]
```

That is the question

To be, or not to be, that is the question:
Whether 'tis nobler in the mind to suffer
The slings and arrows of outrageous fortune,
Or to take Arms against a Sea of troubles,
And by opposing end them: to die, to sleep
No more; and by a sleep, to say we end
The heart-ache, and the thousand natural shocks
That Flesh is heir to? 'Tis a consummation
Devoutly to be wished. To die, to sleep,
To sleep, perchance to Dream...

3.7. Footer style `dictionary`

This parameter contains all options that are useful for setting showybox's footer properties. Despite you can set some of this properties while setting `footer` parameter, it becomes a useful option while making several showyboxes with similar styles.

```
…
footer-style: (
  color: color
  weight: integer string
  align: alignment 2d-alignment
  sep-thickness: length
),
…
```

`color` `color`

Footer's text color.

Default is `luma(85)`.

`weight` `integer` `string`

Footer's font weight. It can be an integer between `100` and `900`, or a predefined weight name (`"thin"`, `"extralight"`, `"light"`, `"regular"`, `"medium"`, `"semibold"`, `"bold"`, `"extrabold"` and `"black"`).

Default is `"regular"`.

`align` `alignment` `2d-alignment`

How to align footer's content. It can be an unidimensional alignment or a bidimensional alignment.

Default is `left`.

`sep-thickness` `length`

How much is the thickness of the separator line that is between the footer and the body.

Default is `1pt`.

Divergence theorem

Suppose V is a subset of $\mathbb{R}^n$ which is compact and has a piecewise smooth boundary S (also indicated with $\partial V = S$). If $\boldsymbol{F}$ is a continuously differentiable vector field defined on a neighborhood of V, then:

$$\iiint_V (\boldsymbol{\nabla} \cdot \boldsymbol{F})\,\mathrm{d}V = \oiint_S (\boldsymbol{F} \cdot \hat{\boldsymbol{n}})\,\mathrm{d}S$$

In the case of $n = 3$, V represents a volumne in three-dimensional space, and $\partial V = S$ its surface

3.8. Separator properties (`sep`) `dictionary`

This parameter contains all options that are used for setting all the separator's styles of your showybox. To learn more about how to use separators, see Section 4.

```
…
sep: (
  thickness: length
  dash: string
  gutter: relative-length
),
…
```

`thickness` `length`

Corresponds to the separator thickness.

Default is `1pt`.

`gutter` `relative-length`

The size of the gutter space above and below the separator.

Default is `0.65em`.

`dash` `string`

It's the separator's dash pattern. It can be any kind of style used for `line()`. For instance, it can be `"solid"`, `"dotted"`, `"densely-dotted"`, `"loosely-dotted"`, `"dashed"`, `"densely-dashed"`, `"loosely-dashed"`, `"dash-dotted"`, `"densely-dash-dotted"` or `"loosely-dash-dotted"`

Default is `"solid"`.

```
#showybox(
  sep: (
    thickness: 0.5pt,
    dash: "loosely-dashed"
  ),
  title: "Coordinate systems"
)[
  *Cartesian coordinate system*

  A Cartesian coordinate system for a three-dimensional space consists of an ordered triplet of lines (the axes) that go through a common point (the origin), and are pair-wise perpendicular.

  A way to represent a point $r$ is using the unit vectors ($bold(i)$, $bold(j)$, and $bold(k)$) is:

  $ bold(r) = x bold(i) + y bold(j) + z bold(k) $
][
  *Spherical coordinate system*

  A spherical coordinate system is a coordinate system for three-dimensional space where the position of a point is specified by three numbers: the radial distance of that point from a fixed origin ($r$); its polar angle measured from a fixed polar axis or zenith direction ($theta$); and the azimuthal angle of its orthogonal projection on a reference plane that passes through the origin and is orthogonal to the fixed axis, measured from another fixed reference direction on that plane ($phi$).

  The position of a point or particle (although better written as a triple $(r, theta, phi)$ can be written as:

  $ bold(r) = r bold(hat(r)) $
]
```

Coordinate systems

Cartesian coordinate system

A Cartesian coordinate system for a three-dimensional space consists of an ordered triplet of lines (the axes) that go through a common point (the origin), and are pair-wise perpendicular.

A way to represent a point r is using the unit vectors ($\boldsymbol{i}$, $\boldsymbol{j}$, and $\boldsymbol{k}$) is:

$$\boldsymbol{r} = x\boldsymbol{i} + y\boldsymbol{j} + z\boldsymbol{k}$$

Spherical coordinate system

A spherical coordinate system is a coordinate system for three-dimensional space where the position of a point is specified by three numbers: the radial distance of that point from a fixed origin (r); its polar angle measured from a fixed polar axis or zenith direction (θ); and the azimuthal angle of its orthogonal projection on a reference plane that passes through the origin and is orthogonal to the fixed axis, measured from another fixed reference direction on that plane (φ).

The position of a point or particle (although better written as a triple (r, θ, φ) can be written as:

$$\boldsymbol{r} = r\hat{\boldsymbol{r}}$$

3.9. Shadow properties `dictionary`

The given `dictionary` contains all properties that are used for showing a showybox with a shadow. When this property is absent (i.e. it's not set or set as `none`), the showybox has no shadow.

```
…
shadow: (
  color: color
  offset: relative-length dictionary
),
…
```

`color` `color`

Shadow's color.

Default is `luma(128)`.

`offset` `relative-length` `dictionary`

How much to offset the shadow in x and y direction either as a `relative-length` or a `dictionary` with keys `x` and `y`.

Default is `4pt`.

```
#showybox(
  shadow: (
    color: yellow.lighten(55%),
    offset: 3pt
  ),
  frame: (
    title-color: red.darken(30%),
    border-color: red.darken(30%),
    body-color: red.lighten(80%)
  ),
  title: "Coulomb's law"
)[
  Coulomb's law in vector form states that the electrostatic force $bold(F)$ experienced by a charge $q_1$ at position $bold(r)$ in the vecinity of another charge $q_2$ at position $bold(r')$, in a vacuum is equal to

  $ bold(F) = frac(q_1 q_2, 4 pi epsilon_0) frac(bold(r) - bold(r'), bar.v bold(r) - bold(r') bar.v^3) $
]
```

Coulomb's law

Coulomb's law in vector form states that the electrostatic force $\boldsymbol{F}$ experienced by a charge q_1 at position $\boldsymbol{r}$ in the vecinity of another charge q_2 at position $\boldsymbol{r}'$, in a vacuum is equal to

$$\boldsymbol{F} = \frac{q_1 q_2}{4\pi\varepsilon_0} \frac{\boldsymbol{r} - \boldsymbol{r}'}{|\boldsymbol{r} - \boldsymbol{r}'|^3}$$

3.10. Width `relative-length`

This parameter sets the showybox's width.

Default is `100%`.

3.11. Align `alignment`

How to align showybox inside it's container (useful for showyboxes with `width < 100%`).

Default is `left`.

3.12. Breakable `boolean`

This parameter indicates whether a showybox can or cannot break if it reaches an end of page or the end of its container.

Default is `false`

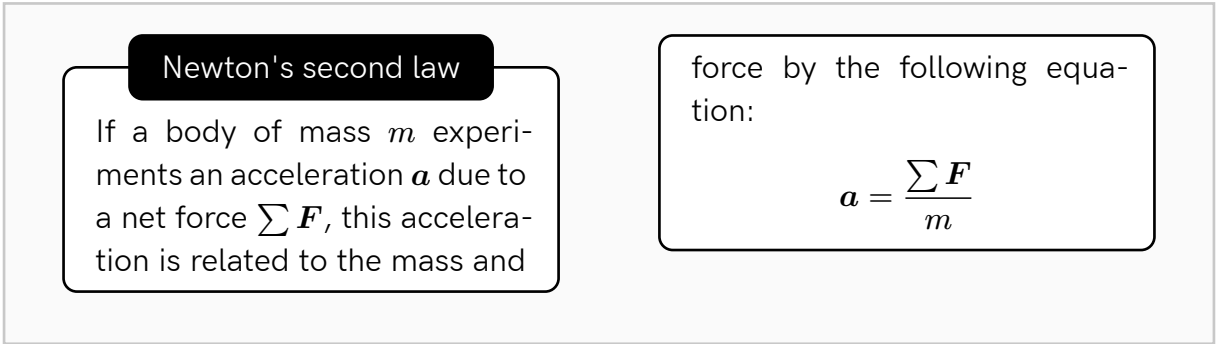
3.13. Spacing, above, and below `relative-length`

`spacing` sets how much space to insert above and below the showybox, unless `above` or `below` are given.

By default it's the `block`'s default spacing in your document.

```
#block(
  height: 4.5cm,
  inset: 1em,
  fill: luma(250),
  stroke: luma(200),
  columns(2)[
    #showybox(
      title-style: (
        boxed-style: (
          anchor: (x: center, y: horizon)
        )
      ),
      breakable: true,
      width: 90%,
      align: center,
      title: "Newton's second law"
    )[
      If a body of mass $m$ experiments an acceleration $bold(a)$ due to a net force $sum bold(F)$, this acceleration is related to the mass and force by the following equation:

      $ bold(a) = frac(sum bold(F), m) $
    ]
  ]
)
```



4. Separators

Sometimes you would wish to split a content into two or more sections inside the same showybox. The `showybox()` function allows you to do that by putting several `content`

elements separated by commas inside the parenthesis `()` of the function. Each individual `content` element will be a separated section inside the showybox.

Alternatively, you can put adjacent `content` elements one after another next to the closing parenthesis of the function. Both cases generates the same outcome.

5. Encapsulation

Showyboxes can be put inside another showyboxes! As you may think, it's easy to do it: just put a showybox inside the body of another, and ta-da!

```
#showybox(
  title: "Parent container",
  lorem(10),
  columns(2)[
    #showybox(
      title-style: (boxed-style: (:)),
      title: "Child 1",
      lorem(10)
    )
    #colbreak()
    #showybox(
      title-style: (boxed-style: (:)),
      title: "Child 2",
      lorem(10)
    )
  ]
)
```