

# Welcome To Presentate!

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*Tools for creating integrated dynamic slides.*

@pacaunt | 2025-12-20

# Outline

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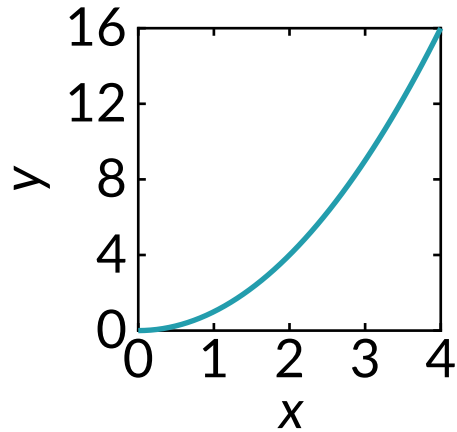
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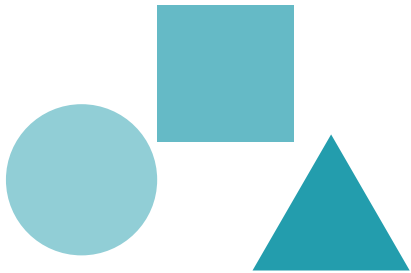
# 1 Introduction

# 1.1 Presentation by Coding?

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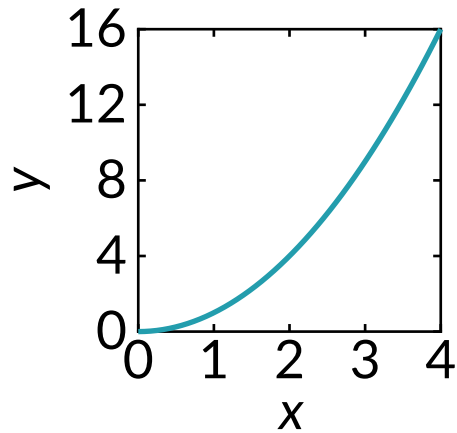


Presentation's objective is to convey information to the audiences. **Slide deck** is one of visual media we can use for such tasks.



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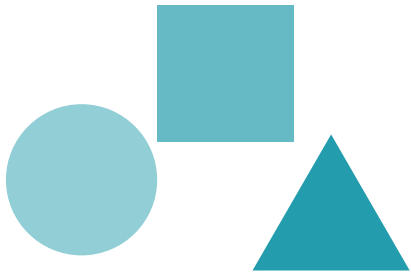
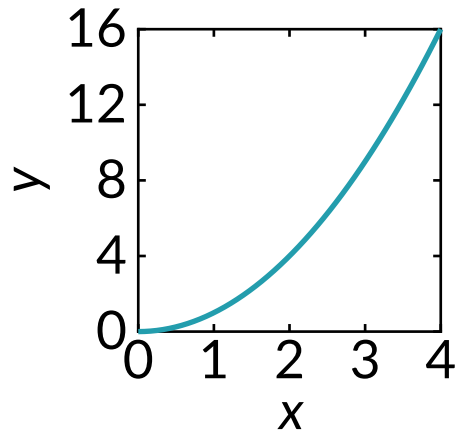
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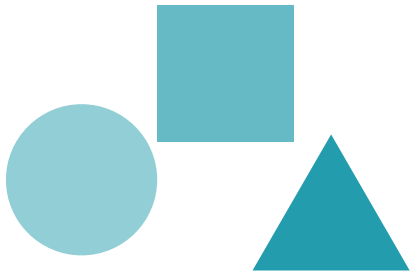
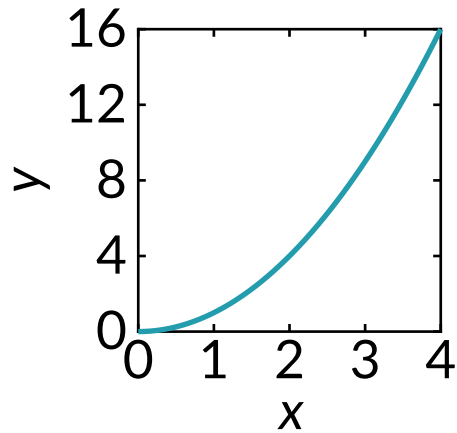
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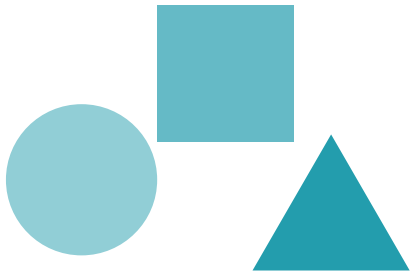
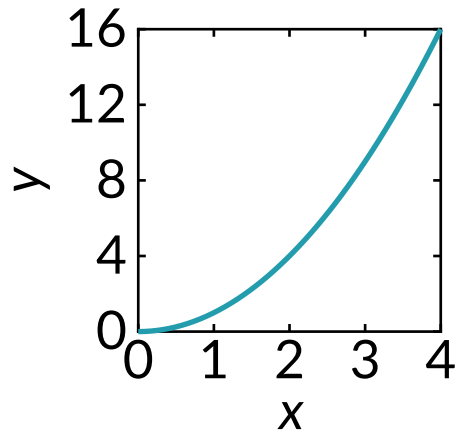
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However, the *dynamic* contents on the following examples are generated by *repeatedly printed* each page, which contains slightly different components.

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Creating presentation in Typst, especially in PDF format, cannot provide the *actual animated* scenes like videos.

However, the *dynamic* contents on the following examples are generated by *repeatedly printed* each page, which contains slightly different components.



So that when you see on the screen, it *looks like* the contents are changing.

## 1.3 Integration of Tools

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The answer is **Package Integrations**.

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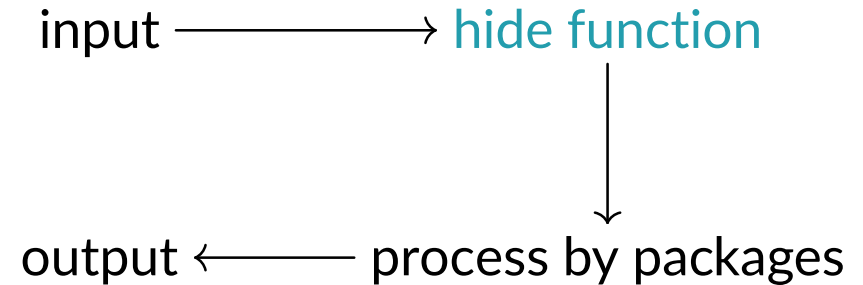
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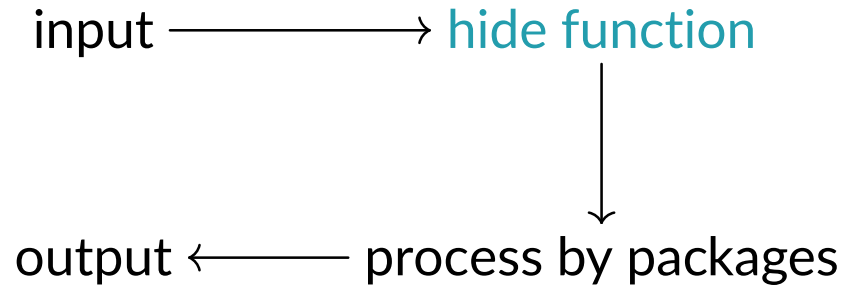


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So to create animation with those packages, we need some functionality to be able to *hide* the information *without* content generation.

# 1.3 Integration of Tools

---

Here is when presentate comes in.

---

<sup>1</sup><https://typst.app/universe/package/alchemy>



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Presentate provides a framework for rendering input and output of *any kind*.

Like the following molecule drawing animation from [Alchemist](#)<sup>1</sup> package:

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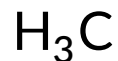
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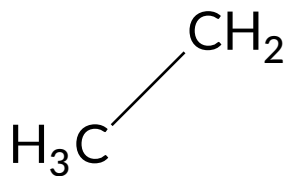
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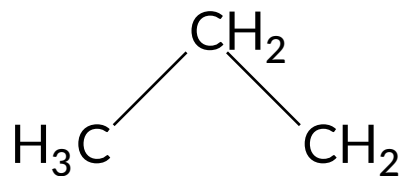
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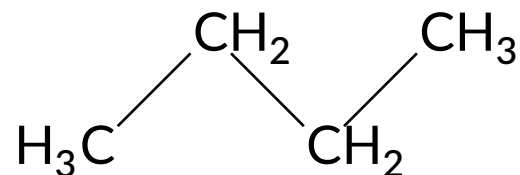
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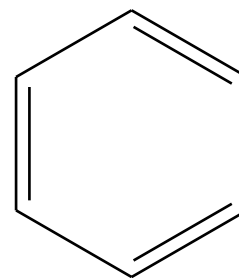
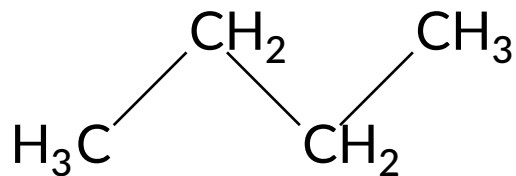
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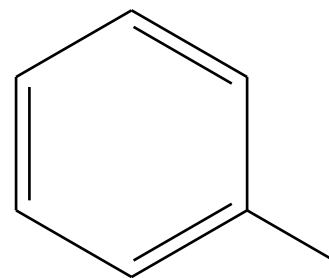
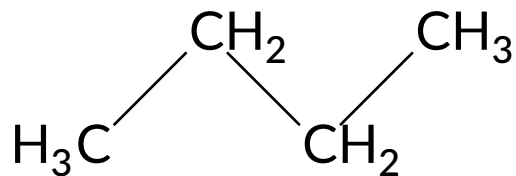
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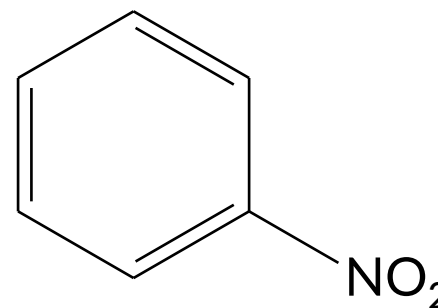
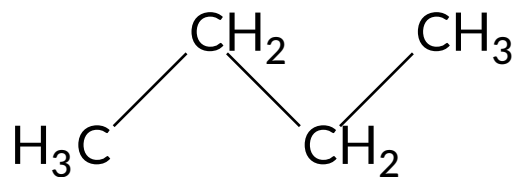
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- revealing content specifically from  
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The package provides:

- revealing content step-by-step from `#show: pause`,
- revealing content specifically from `#uncover(...)` and `#only(...)`,
- transform content by `#transform(...)`,
- relative index like `#auto` and `#none`,
- render frame for package integration, with `#animation` module.

## 1.5 Acknowledgement

---

The package was created by mixing my original motivation and inspirations from many existing presentation packages.

Thanks to: [Polylux](#)<sup>2</sup> for `subslide` implementation and pdfpc support, [Touying](#)<sup>3</sup> for idea of render frame, fake frozen states, and [Minideck](#)<sup>4</sup> for `#only`, and `#uncover` functions.

---

<sup>2</sup><https://github.com/polylux-typ/polylux>

<sup>3</sup><https://github.com/touying-typ/touying>

<sup>4</sup><https://github.com/knuesel/typst-minideck>



## 2 Usage

## 2.1 Getting Started

---

Start with the following snippets:

```
1 #import "@preview/presentate:0.2.3": *
2 #set text(size: 25pt) // of your choice
3
4 #slide[
5   Hello World!
6   #show: pause;
7
8   This is `presentate`.
9 ]
```

## 2.1 Getting Started

---

Then you will have:

Hello World!

Hello World!

This is presentate.

## 2.1 Getting Started

---

You may styling the way you want, for example:

```
1 #import "@preview/presentate:0.2.3": *
2 #set page(paper: "presentation-16-9")
3 #set text(size: 25pt, font: "FiraCode Nerd Font Mono")
4 #set align(horizon)
5 #slide[
6   = Welcome to Presentate!
7   \ A lazy author \
8   #datetime.today().display()
9 ]
```

## 2.1 Getting Started

---

(continued)

```
10 #set align(top)
11 #slide[
12   == Tips for Typst.
13   #set align(horizon)
14   Do you know that  $\pi \neq$ 
    3.141592?
15
16   #show: pause
17   Yeah. Certainly.
```

```
18
19   #show: pause
20   Also  $\pi \neq 22/7$ .
21 ]
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## 2.1 Getting Started

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(continued)

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```
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21 ]
```

Presentate does not interfere Typst styling systems, so you can set and unset anything freely.

The results are on the next slide:

## 2.1 Getting Started

---

<p><b>Welcome to Presentate!</b></p> <p>A lazy author 2025-08-11</p>	<p><b>Tips for Typst.</b></p> <p>Do you know that <math>\pi \neq 3.141592</math>?</p>
<p><b>Tips for Typst.</b></p> <p>Do you know that <math>\pi \neq 3.141592</math>? Yeah. Certainly.</p>	<p><b>Tips for Typst.</b></p> <p>Do you know that <math>\pi \neq 3.141592</math>? Yeah. Certainly. Also <math>\pi \neq \frac{22}{7}</math>.</p>

## 2.2 Dynamic Components

---

`#slide[...]` function provides a workspace for creating *animations*.  
As the example showing the use of `#show: pause` functionality.



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4. `#transform(...)` for transform the content by functions.

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Presentate provides the following functions for creating dynamic slides:

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3. `#fragments(...)` for revealing content one-by-one.
4. `#transform(...)` for transform the content by functions.
5. `#render(...)` and `#animate(...)` for handling non-content type data.

## 2.3 #pause function

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Basic usage of `#pause( . . )` is usually in the form `#show: pause`.

Apart from that, you can put any content in the `( . . )`, e.g. math equations.

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$$\begin{aligned}(x + y)^2 &= (x + y)(x + y) \\ &= x^2 + 2xy + y^2\end{aligned}$$

as from

```
1 $ (x + y)^2 #pause(&= (x + y)(x + y)) \  
2           #pause(&= x^2 + 2 x y + y^2) $
```

## 2.4 #fragments function

---

Imagine having to type

```
1 #pause[+ A]  
2 #pause[+ B]  
3 #pause[+ C]
```

to reveal A to C consecutively;

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Introducing #fragments(...):

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Output:

```
1.
2.
3.
```

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```
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2.
3.
```



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```

Output:

```
1. A
2. B
3.
```

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```
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```

Output:

```
1. A
2. B
3. C
```

**Note:** default `#hide` function cannot hide the number or list markers. To solve this, we will introduce the alternative way to 'hide' them.

## 2.5 The `#step-item` function

---

This function was created specifically for step-by-step revealing lists and enums, with ability to hide the markers and numbers.

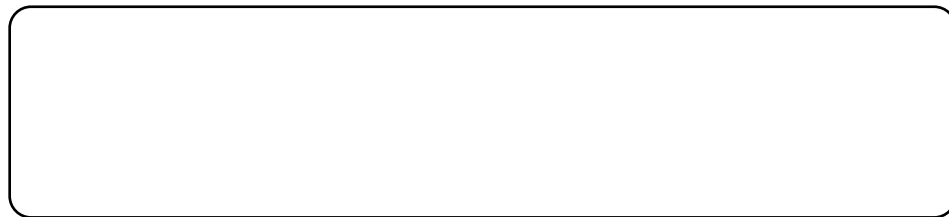
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This function was created specifically for step-by-step revealing lists and enums, with ability to hide the markers and numbers.

```
1 #step-item[  
2   + First Item  
3   + Second Item  
4   + Third Item  
5 ]
```

Output:



## 2.5 The `#step-item` function

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```
1 #step-item[  
2   + First Item  
3   + Second Item  
4   + Third Item  
5 ]
```

Output:

1. First Item

## 2.5 The `#step-item` function

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```
1 #step-item[  
2   + First Item  
3   + Second Item  
4   + Third Item  
5 ]
```

Output:

1. First Item
2. Second Item

## 2.5 The `#step-item` function

---

This function was created specifically for step-by-step revealing lists and enums, with ability to hide the markers and numbers.

```
1 #step-item[  
2   + First Item  
3   + Second Item  
4   + Third Item  
5 ]
```

Output:

1. First Item
2. Second Item
3. Third Item



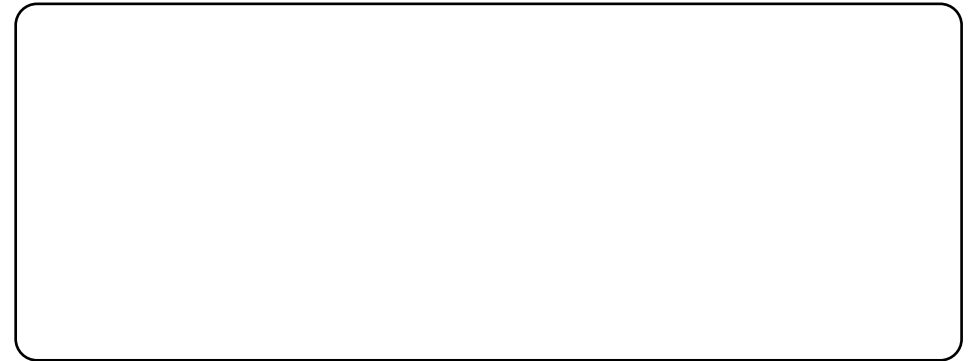
## 2.5 The `#step-item` function

---

It can be nested as long as you like.

```
1 #step-item[
2   + First Item
3   #step-item[
4     - Sub-First
5     - Sub-First-Second
6   ]
7   + Second Item
8   + Third Item
9 ]
```

Output:



## 2.5 The `#step-item` function

---

It can be nested as long as you like.

```
1 #step-item[
2   + First Item
3   #step-item[
4     - Sub-First
5     - Sub-First-Second
6   ]
7 + Second Item
8 + Third Item
9 ]
```

Output:

1. First Item

## 2.5 The `#step-item` function

---

It can be nested as long as you like.

```
1 #step-item[  
2   + First Item  
3   #step-item[  
4     - Sub-First  
5     - Sub-First-Second  
6   ]  
7   + Second Item  
8   + Third Item  
9 ]
```

Output:

1. First Item
  - Sub-First

## 2.5 The `#step-item` function

---

It can be nested as long as you like.

```
1 #step-item[
2   + First Item
3   #step-item[
4     - Sub-First
5     - Sub-First-Second
6   ]
7 + Second Item
8 + Third Item
9 ]
```

Output:

1. First Item
  - Sub-First
  - Sub-First-Second

## 2.5 The `#step-item` function

---

It can be nested as long as you like.

```
1 #step-item[
2   + First Item
3   #step-item[
4     - Sub-First
5     - Sub-First-Second
6   ]
7 + Second Item
8 + Third Item
9 ]
```

Output:

1. First Item
  - Sub-First
  - Sub-First-Second
2. Second Item

## 2.5 The `#step-item` function

---

It can be nested as long as you like.

```
1 #step-item[
2   + First Item
3   #step-item[
4     - Sub-First
5     - Sub-First-Second
6   ]
7 + Second Item
8 + Third Item
9 ]
```

Output:

1. First Item
  - Sub-First
  - Sub-First-Second
2. Second Item
3. Third Item

## 2.5 The `#step-item` function

---

It can be nested as long as you like.

```
1 #step-item[
2   + First Item
3   #step-item[
4     - Sub-First
5     - Sub-First-Second
6   ]
7 + Second Item
8 + Third Item
9 ]
```

Output:

1. First Item
  - Sub-First
  - Sub-First-Second
2. Second Item
3. Third Item

It works by modifying `item` input and the markers with varying timeline of `#pause`.

## 2.6 The `#hider` argument

---

Every function that can ‘hide’ and reveal content has a named argument called `#hider`. This argument has a default value of Typst’s native `#hide()` function.



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---

Every function that can ‘hide’ and reveal content has a named argument called `#hider`. This argument has a default value of Typst’s native `#hide()` function.

However, if you want other modes of *hiding* something? E.g. make it *transparent*. You can modify this with `#text.with(fill: gray.transparentize(50%))`:

## 2.6 The `#hider` argument

---

```
1 #let lg = gray.transparentize(50%)
2 #let pause = pause.with(hider: text.with(lg))
3
4 Hello!
5 #show: pause
6
7 It's gray
```

Output:

Hello!

It's gray

## 2.6 The #hider argument

---

```
1 #let lg = gray.transparentize(50%)
2 #let pause = pause.with(hider: text.with(lg))
3
4 Hello!
5 #show: pause
6
7 It's gray
```

Output:

Hello!  
It's gray

## 2.7 #only and #uncover

---

So far, #pause and #fragments examples only show you to reveal the content *step-by-step*. How about *absolutely* reveal content? Say, at a given number of frames?

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A **frame** or **subslide** is a page that contains fragments of slides' content, so that when all pages are viewed consecutively, we can see the *change* of content.

## 2.7 **#only** and **#uncover**

---

So far, **#pause** and **#fragments** examples only show you to reveal the content *step-by-step*. How about *absolutely* reveal content? Say, at a given number of frames?

A **frame** or **subslide** is a page that contains fragments of slides' content, so that when all pages are viewed consecutively, we can see the *change* of content.

For a more complex animation, **#only** and **#uncover** functions can control when the content will be shown based on given number of frames, or *subslide number*.

## 2.7 #only and #uncover

---

```
1 Content Before
2
3 #only(2, 4)[
4   This is _only_ shown on
   subslide 2 and 4.
5 ]
6
7 Content After
```

Output: on subslide 1

Content Before

Content After

## 2.7 #only and #uncover

---

```
1 Content Before
2
3 #only(2, 4)[
4   This is _only_ shown on
   subslide 2 and 4.
5 ]
6
7 Content After
```

Output: on subslide 2

Content Before

This is *only* shown on subslide 2 and 4.

Content After

`#only(..n, body)` shows the `#body` *only* at the given subslide numbers `#n`.  
For other frames, the content is vanished, with no preserved space.



## 2.7 #only and #uncover

---

```
1 Content Before
2
3 #only(2, 4)[
4   This is _only_ shown on
   subslide 2 and 4.
5 ]
6
7 Content After
```

Output: on subslide 3

Content Before

Content After

`#only(..n, body)` shows the `#body only` at the given subslide numbers `#n`.  
For other frames, the content is vanished, with no preserved space.

## 2.7 #only and #uncover

---

```
1 Content Before
2
3 #only(2, 4)[
4   This is _only_ shown on
   subslide 2 and 4.
5 ]
6
7 Content After
```

Output: on subslide 4

Content Before

This is *only* shown on subslide 2 and 4.

Content After

`#only(..n, body)` shows the `#body` *only* at the given subslide numbers `#n`.  
For other frames, the content is vanished, with no preserved space.

## 2.7 #only and #uncover

---

```
1 Content Before
2
3 #uncover(2, from: 4)[
4   This is _uncovered_ on
5   subslide 2 and 4 onwards.
6 ]
7 Content After
```

Output: on subslide 1

Content Before

Content After

## 2.7 #only and #uncover

---

```
1 Content Before
2
3 #uncover(2, from: 4)[
4   This is _uncovered_ on
5   subslide 2 and 4 onwards.
6 ]
7 Content After
```

Output: on subslide 2

Content Before

This is *uncovered* on subslide 2 and 4 onwards.

Content After

`#uncover(..n, from: int, body)` uncovers the `#body` in the same condition as `#only`, with an exception of having *space preserved*.

## 2.7 #only and #uncover

---

```
1 Content Before
2
3 #uncover(2, from: 4)[
4   This is uncovered on
5   subslide 2 and 4 onwards.
6 ]
7 Content After
```

Output: on subslide 3

Content Before

Content After

`#uncover(..n, from: int, body)` uncovers the `#body` in the same condition as `#only`, with an exception of having *space preserved*.

## 2.7 #only and #uncover

---

```
1 Content Before
2
3 #uncover(2, from: 4)[
4   This is _uncovered_ on
5   subslide 2 and 4 onwards.
6 ]
7 Content After
```

Output: on subslide 4

Content Before

This is *uncovered* on subslide 2 and 4 onwards.

Content After

`#uncover(..n, from: int, body)` uncovers the `#body` in the same condition as `#only`, with an exception of having *space preserved*.

## 2.7 #only and #uncover

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If you noticed the last example carefully, you will see the argument `#from` being introduced in the `#uncover(from: int, ..)`.

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Both `#only` and `#uncover` can take the `#from` as integer to start revealing the content only after that subslide number `#from`.



## 2.7 `#only` and `#uncover`

---

If you noticed the last example carefully, you will see the argument `#from` being introduced in the `#uncover(from: int, ..)`.

Both `#only` and `#uncover` can take the `#from` as integer to start revealing the content only after that subslide number `#from`.

*Not only integers* can you use as subslide number, `#auto` and `#none` also can be used. What do they do?

## 2.8 Relative Indices

---

If you want to reveal a yellow box once in a frame after some stream of content, say the following code:

```
1 Content #show: pause; Content
2
3 #uncover(3, rect(
4   fill: yellow, [BOX]
5 ))
```

Output: on subslide 1

Content

## 2.8 Relative Indices

---

If you want to reveal a yellow box once in a frame after some stream of content, say the following code:

```
1 Content #show: pause; Content
2
3 #uncover(3, rect(
4   fill: yellow, [BOX]
5 ))
```

Output: on subslide 2

Content Content

## 2.8 Relative Indices

---

If you want to reveal a yellow box once in a frame after some stream of content, say the following code:

```
1 Content #show: pause; Content
2
3 #uncover(3, rect(
4   fill: yellow, [BOX]
5 ))
```

Output: on subslide 3

Content Content

BOX

You must know the current number of `#pauses` to determine the subslide number where the BOX must be shown.

## 2.8 Relative Indices

---

If you want to reveal a yellow box once in a frame after some stream of content, say the following code:

```
1 Content #show: pause; Content
2
3 #uncover(3, rect(
4   fill: yellow, [BOX]
5 ))
```

Output: on subslide 4



Content Content

You must know the current number of `#pauses` to determine the subslide number where the BOX must be shown. Is there an alternative? [Yes: Relative Indices](#)

## 2.8 Relative Indices

---

**Index** (plural: Indices) is subslide number.

Index specified in **#uncover**, **#only**, and other arguments that requires it has 2 types:

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## 2.8 Relative Indices

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Index specified in *#uncover*, *#only*, and other arguments that requires it has 2 types:

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2. **Relative** index: *#auto*, *#none* and (rel: int), relative to *number of pauses*



## 2.8 Relative Indices

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Index specified in *#uncover*, *#only*, and other arguments that requires it has 2 types:

1. **Absolute** index: the actual integer subslide number, and
2. **Relative** index: *#auto*, *#none* and (rel: int), relative to *number of pauses*
  - *#auto* means index *after* the current number of pauses.

## 2.8 Relative Indices

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Index specified in *#uncover*, *#only*, and other arguments that requires it has 2 types:

1. **Absolute** index: the actual integer subslide number, and
2. **Relative** index: *#auto*, *#none* and (rel: int), relative to *number of pauses*
  - *#auto* means index *after* the current number of pauses.
  - *#none* means index *as same as* the current number of pauses.

## 2.8 Relative Indices

---

**Index** (plural: Indices) is subslide number.

Index specified in `#uncover`, `#only`, and other arguments that requires it has 2 types:

1. **Absolute** index: the actual integer subslide number, and
2. **Relative** index: `#auto`, `#none` and `(rel: int)`, relative to *number of pauses*
  - `#auto` means index *after* the current number of pauses.
  - `#none` means index *as same as* the current number of pauses.
  - `#(rel: int)` means index that is `int` subslides away from the current number of pauses. (e.g.  `#(rel: 1)` is equivalent to `#auto`).

## 2.8 Relative Indices

---

**Example:** Uncover the yellow box on subslide 5 and after current pauses state, together with only show X on the same subslide as the current pauses.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ))
6
7 After Content #only(none, [X])
```

Output: on subslide 1

Content

## 2.8 Relative Indices

---

**Example:** Uncover the yellow box on subslide 5 and after current pauses state, together with only show X on the same subslide as the current pauses.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ))
6
7 After Content #only(none, [X])
```

Output: on subslide 2

Content Content

After Content X

## 2.8 Relative Indices

---

**Example:** Uncover the yellow box on subslide 5 and after current pauses state, together with only show X on the same subslide as the current pauses.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ))
6
7 After Content #only(none, [X])
```

Output: on subslide 3

Content Content

BOX

After Content

## 2.8 Relative Indices

---

**Example:** Uncover the yellow box on subslide 5 and after current pauses state, together with only show X on the same subslide as the current pauses.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ))
6
7 After Content #only(none, [X])
```

Output: on subslide 4

Content Content

After Content

## 2.8 Relative Indices

---

**Example:** Uncover the yellow box on subslide 5 and after current pauses state, together with only show X on the same subslide as the current pauses.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ))
6
7 After Content #only(none, [X])
```

Output: on subslide 5

Content Content

BOX

After Content



## 2.9 Varying Timeline

---

If you look at the last example carefully, it is noticeable that when After Content appears, it follows the `#show: pause` function, as if there were no `#uncover` in between.

## 2.9 Varying Timeline

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However, what if we want to reveal some content afterwards, after every animation, without the need of specifying the subslide number?

## 2.9 Varying Timeline

---

If you look at the last example carefully, it is noticeable that when After Content appears, it follows the `#show: pause` function, as if there were no `#uncover` in between.

However, what if we want to reveal some content afterwards, after every animation, without the need of specifying the subslide number?

If only the `#pause` 'sees' the `#uncover`'s presence, it would be good, right?

*Yes, it can*, by set the argument `#uncover` (update-pause: `true`).

## 2.9 Varying Timeline

---

**Example:** The yellow box is revealed on subslide 5 and after the current pauses, with After Content appears after every animation.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ), update-pause: true)
6
7 #pause[After Content]
```

Output: on subslide 1

Content

## 2.9 Varying Timeline

---

**Example:** The yellow box is revealed on subslide 5 and after the current pauses, with After Content appears after every animation.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ), update-pause: true)
6
7 #pause[After Content]
```

Output: on subslide 2

Content Content

## 2.9 Varying Timeline

---

**Example:** The yellow box is revealed on subslide 5 and after the current pauses, with After Content appears after every animation.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ), update-pause: true)
6
7 #pause[After Content]
```

Output: on subslide 3

Content Content

BOX

## 2.9 Varying Timeline

---

**Example:** The yellow box is revealed on subslide 5 and after the current pauses, with After Content appears after every animation.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ), update-pause: true)
6
7 #pause[After Content]
```

Output: on subslide 4

Content Content

## 2.9 Varying Timeline

---

**Example:** The yellow box is revealed on subslide 5 and after the current pauses, with After Content appears after every animation.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ), update-pause: true)
6
7 #pause[After Content]
```

Output: on subslide 5

Content Content

BOX



## 2.9 Varying Timeline

---

**Example:** The yellow box is revealed on subslide 5 and after the current pauses, with After Content appears after every animation.

```
1 Content #show: pause; Content
2
3 #uncover(auto, 5, rect(
4   fill: yellow, [BOX]
5 ), update-pause: true)
6
7 #pause[After Content]
```

Output: on subslide 6

Content Content

After Content

## 2.9 Varying Timeline

---

`#update-pause` argument updates the current pauses to the maximum index. In the example, `#auto` resolves to 3, so 5 is the maximum.

## 2.9 Varying Timeline

---

`#update-pause` argument updates the current pauses to the maximum index. In the example, `#auto` resolves to 3, so 5 is the maximum.

Both `#only` and `#uncover` have `#update-pause` argument, but they are set to be `#false` by default. So these functions reveal the content *independently* from `#pause(..)`.

## 2.9 Varying Timeline

---

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Both `#only` and `#uncover` have `#update-pause` argument, but they are set to be `#false` by default. So these functions reveal the content *independently* from `#pause(..)`.

However, the ability to affect the `#pause(..)` progress unlocks one powerful key:

## 2.9 Varying Timeline

---

`#update-pause` argument updates the current pauses to the maximum index. In the example, `#auto` resolves to 3, so 5 is the maximum.

Both `#only` and `#uncover` have `#update-pause` argument, but they are set to be `#false` by default. So these functions reveal the content *independently* from `#pause( .. )`.

However, the ability to affect the `#pause( .. )` progress unlocks one powerful key:

**Number of pauses can be varied and independent from actual number of `#pauses`.**

If we use `#only` or `#uncover` to change them, for example:

## 2.9 Varying Timeline

---

Content can be revealed parallel on side by side.

```
1 #grid(columns: (1fr, 1fr))[
2   First \ #show: pause;
3   A #show: pause; B
4 ][ // `[ ]` is a dummy content.
5 #uncover(1, [], update-pause: true)
6   Second \ #show: pause;
7   A #show: pause; B
8 ]
```

Output: on subslide 1

First	Second
-------	--------

The content on both columns are shown synchronously, because the pauses are `set` to 1 (first subslide) by `#uncover`.

## 2.9 Varying Timeline

---

Content can be revealed parallel on side by side.

```
1 #grid(columns: (1fr, 1fr))[  
2   First \ #show: pause;  
3   A #show: pause; B  
4 ][ // `[ ]` is a dummy content.  
5 #uncover(1, [], update-pause: true)  
6   Second \ #show: pause;  
7   A #show: pause; B  
8 ]
```

Output: on subslide 2

First	Second
A	A

The content on both columns are shown synchronously, because the pauses are `set` to 1 (first subslide) by `#uncover`.

## 2.9 Varying Timeline

---

Content can be revealed parallel on side by side.

```
1 #grid(columns: (1fr, 1fr))[  
2   First \ #show: pause;  
3   A #show: pause; B  
4 ][ // `[ ]` is a dummy content.  
5 #uncover(1, [], update-pause: true)  
6   Second \ #show: pause;  
7   A #show: pause; B  
8 ]
```

Output: on subslide 3

First	Second
A B	A B

The content on both columns are shown synchronously, because the pauses are `set` to 1 (first subslide) by `#uncover`.



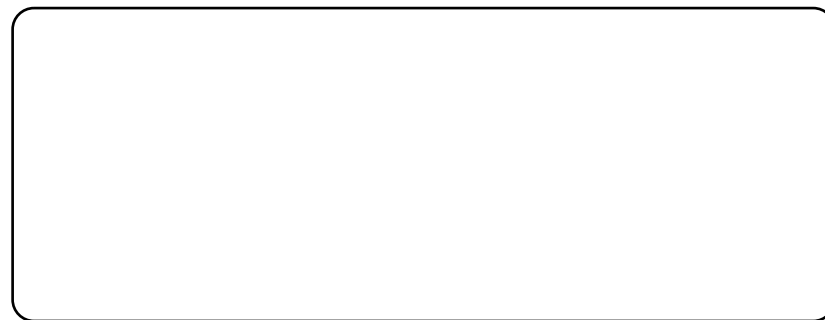
## 2.9 Varying Timeline

---

Moreover, you can set some content to be shown *before* one another by using *negative relative indices* such as `#{rel: -1}` in the example.

```
1 #step-item[
2   - First
3   - Second
4   - Third
5 ]
6 #only((rel: -1), [Second Too!],
  update-pause: true)
7 #show: pause; After Second.
```

Output: on subslide 1



So the After Second is revealed at the same time as the last item.

## 2.9 Varying Timeline

Moreover, you can set some content to be shown *before* one another by using *negative relative indices* such as `#{rel: -1}` in the example.

```
1 #step-item[
2   - First
3   - Second
4   - Third
5 ]
6 #only((rel: -1), [Second Too!],
  update-pause: true)
7 #show: pause; After Second.
```

Output: on subslide 2

- First

So the After Second is revealed at the same time as the last item.

## 2.9 Varying Timeline

Moreover, you can set some content to be shown *before* one another by using *negative relative indices* such as `#{rel: -1}` in the example.

```
1 #step-item[
2   - First
3   - Second
4   - Third
5 ]
6 #only((rel: -1), [Second Too!],
  update-pause: true)
7 #show: pause; After Second.
```

Output: on subslide 3

- First
- Second

Second Too!

So the After Second is revealed at the same time as the last item.

## 2.9 Varying Timeline

Moreover, you can set some content to be shown *before* one another by using *negative relative indices* such as `#{rel: -1}` in the example.

```
1 #step-item[
2   - First
3   - Second
4   - Third
5 ]
6 #only((rel: -1), [Second Too!],
  update-pause: true)
7 #show: pause; After Second.
```

Output: on subslide 4

- First
- Second
- Third

After Second.

So the After Second is revealed at the same time as the last item.

## 2.10 Animated Decorations

---

Most of the functions we provide up until now can only create animations of hiding and showing stuff. How about *changing* its appearance? e.g. color?

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Most of the functions we provide up until now can only create animations of hiding and showing stuff. How about *changing* its appearance? e.g. color?

You can emphasize your words by using `#alert` like in this sentence.

`#alert` can alert the audience by wrapping the input with its `#func` argument, which is `#emph` function by default.

## 2.10 Animated Decorations

---

Most of the functions we provide up until now can only create animations of hiding and showing stuff. How about *changing* its appearance? e.g. color?

You can *emphasize* your words by using `#alert` like in this sentence.

`#alert` can *alert* the audience by wrapping the input with its `#func` argument, which is `#emph` function by default.

```
1 Please #alert(auto) [FOCUS] me  
2 and  
3 #alert(auto, func: text.with(red)) [Warn]  
4 them.
```

Output:

Please FOCUS me  
and Warn them.

## 2.10 Animated Decorations

---

Most of the functions we provide up until now can only create animations of hiding and showing stuff. How about *changing* its appearance? e.g. color?

You can emphasize your words by using `#alert` like in this sentence.

`#alert` can alert the audience by wrapping the input with its `#func` argument, which is `#emph` function by default.

```
1 Please #alert(auto) [FOCUS] me  
2 and  
3 #alert(auto, func: text.with(red)) [Warn]  
4 them.
```

Output:

Please **FOCUS** me and  
**Warn** them.



## 2.10 Animated Decorations

---

Another functions for creating multiple *alerts* is called `#transform`.  
This function wraps the content and change its through a series of functions.

## 2.10 Animated Decorations

---

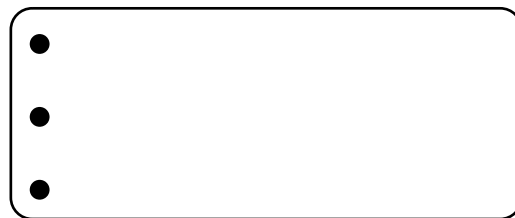
Another functions for creating multiple *alerts* is called `#transform`.

This function wraps the content and change its through a series of functions.

This is very useful for creating step-by-step list alerts or make the content dynamically changing its appearance. For example,

```
1 #let no(body) = body // original apperance
2 #let yes(body) = text(fill: red, body)
3 #transform([- First Item], yes, no)
4 #transform(start: none, [- Second Item], yes, no)
5 #transform(start: none, [- Third Item], yes, no)
```

Output:



## 2.10 Animated Decorations

---

Another functions for creating multiple *alerts* is called `#transform`.

This function wraps the content and change its through a series of functions.

This is very useful for creating step-by-step list alerts or make the content dynamically changing its appearance. For example,

```
1 #let no(body) = body // original apperance
2 #let yes(body) = text(fill: red, body)
3 #transform([- First Item], yes, no)
4 #transform(start: none, [- Second Item], yes, no)
5 #transform(start: none, [- Third Item], yes, no)
```

Output:

- First Item
- 
-

## 2.10 Animated Decorations

---

Another functions for creating multiple *alerts* is called `#transform`.

This function wraps the content and change its through a series of functions.

This is very useful for creating step-by-step list alerts or make the content dynamically changing its appearance. For example,

```
1 #let no(body) = body // original apperance
2 #let yes(body) = text(fill: red, body)
3 #transform([- First Item], yes, no)
4 #transform(start: none, [- Second Item], yes, no)
5 #transform(start: none, [- Third Item], yes, no)
```

Output:

- First Item
- Second Item
-

## 2.10 Animated Decorations

---

Another functions for creating multiple *alerts* is called `#transform`.

This function wraps the content and change its through a series of functions.

This is very useful for creating step-by-step list alerts or make the content dynamically changing its appearance. For example,

```
1 #let no(body) = body // original apperance
2 #let yes(body) = text(fill: red, body)
3 #transform([- First Item], yes, no)
4 #transform(start: none, [- Second Item], yes, no)
5 #transform(start: none, [- Third Item], yes, no)
```

Output:

- First Item
- Second Item
- **Third Item**

## 2.10 Animated Decorations

---

Another functions for creating multiple *alerts* is called `#transform`.

This function wraps the content and change its through a series of functions.

This is very useful for creating step-by-step list alerts or make the content dynamically changing its appearance. For example,

```
1 #let no(body) = body // original apperance
2 #let yes(body) = text(fill: red, body)
3 #transform([- First Item], yes, no)
4 #transform(start: none, [- Second Item], yes, no)
5 #transform(start: none, [- Third Item], yes, no)
```

Output:

- First Item
- Second Item
- Third Item

## 2.10 Animated Decorations

---

```
1 #transform(  
2     codly(highlighted-lines: (1,)),  
3     codly(highlighted-lines: (4,)) )  
4 ```python  
5 n = input("Number: ")  
6 n = int(n)  
7 for i in range(n):  
8     print("Hello World!")  
9 ```
```

You can use this to highlight different lines of code with **Codly**<sup>5</sup>.  
Output: on subslide 1

```
1 n = input("Number: ")  
2 n = int(n)  
3 for i in range(n):  
4     print("Hello World!")
```

---

<sup>5</sup><https://typst.app/universe/package/codly/>

## 2.10 Animated Decorations

---

```
1 #transform(  
2     codly(highlighted-lines: (1,)),  
3     codly(highlighted-lines: (4,)) )  
4 ```python  
5 n = input("Number: ")  
6 n = int(n)  
7 for i in range(n):  
8     print("Hello World!")  
9 ```
```

You can use this to highlight different lines of code with **Codly**<sup>5</sup>.  
Output: on subslide 2

```
1 n = input("Number: ")  
2 n = int(n)  
3 for i in range(n):  
4     print("Hello World!")
```

---

<sup>5</sup><https://typst.app/universe/package/codly/>



## 2.11 The `#motion` workspace

---

I have dreamed about having an interface to modify the flow of animations as in Powerpoint or Keynote. This is the first attempt of how to do it, see the following example:

```
1  #motion(s => [#table(  
2    columns: (1fr, 1fr),  
3    tag(s, "A", [Ant]),  
4    tag(s, "B", [Bird]),  
5    tag(s, "C", [Cat]),  
6    tag(s, "D", [Dog])  
7  )],
```

```
8    controls: (  
9      "A",  
10     ("A", "B"),  
11     "C.start",  
12     "D",  
13     ("C.stop", "B")  
14   ))
```

## 2.11 The `#motion` workspace

---

The `#motion` function accepts a callback `s => [..]` where `[..]` can be any content.

Inside the callback function, the variable `s` called the *status* is read by the *named* group of content indicated by their `#tag` function. This function has the following anatomy:

```
1 #tag(/* status */, /* ID */, /* body */)

```

where `ID` means the name of the group. It should be a unique string that you call this group of content, and `body` is the content to be “tagged”.

## 2.11 The `#motion` workspace

---

Therefore, with the `#tag` function, the content has its own name. The sequence of displaying each content can be controlled precisely by specifying the `controls` argument of the `#motion` function using *their names*.

Just like moving around the control panel in Powerpoint.

Let's see the result and how to control the sequence of these contents.

## 2.11 The #motion workspace

---

The `controls` argument must receive an array that specifies displaying sequence of showing the content, which can be

- A single name, like "A", to show the content once.
- An array of names, like ("A", "B") in line 10, to show both "A" and "B" once.
- Name + ".start" to *start* showing the content, and
- Name + ".stop" to *stop* showing (hide) the content.

Output: on subslide 1

Ant	

## 2.11 The `#motion` workspace

---

The `controls` argument must receive an array that specifies displaying sequence of showing the content, which can be

- A single name, like `"A"`, to show the content once.
- An array of names, like `( "A", "B" )` in line 10, to show both `"A"` and `"B"` once.
- Name + `".start"` to *start* showing the content, and
- Name + `".stop"` to *stop* showing (hide) the content.

Output: on subslide 2

Ant	Bird

## 2.11 The `#motion` workspace

---

The `controls` argument must receive an array that specifies displaying sequence of showing the content, which can be

- A single name, like `"A"`, to show the content once.
- An array of names, like `( "A", "B" )` in line 10, to show both `"A"` and `"B"` once.
- Name + `".start"` to *start* showing the content, and
- Name + `".stop"` to *stop* showing (hide) the content.

Output: on subslide 3

Cat	

## 2.11 The #motion workspace

---

The `controls` argument must receive an array that specifies displaying sequence of showing the content, which can be

- A single name, like "A", to show the content once.
- An array of names, like ("A", "B") in line 10, to show both "A" and "B" once.
- Name + ".start" to *start* showing the content, and
- Name + ".stop" to *stop* showing (hide) the content.

Output: on subslide 4

Cat	Dog

## 2.11 The `#motion` workspace

---

The `controls` argument must receive an array that specifies displaying sequence of showing the content, which can be

- A single name, like `"A"`, to show the content once.
- An array of names, like `( "A", "B" )` in line 10, to show both `"A"` and `"B"` once.
- Name + `".start"` to *start* showing the content, and
- Name + `".stop"` to *stop* showing (hide) the content.

Output: on subslide 5

	Bird



## 2.11 The `#motion` workspace

---

The `controls` argument must receive an array that specifies displaying sequence of showing the content, which can be

- A single name, like `"A"`, to show the content once.
- An array of names, like `( "A", "B" )` in line 10, to show both `"A"` and `"B"` once.
- Name + `".start"` to *start* showing the content, and
- Name + `".stop"` to *stop* showing (hide) the content.

Output: on subslide 6


Note that, you can select your own `#hider` in each `#tag` or all in `#motion` function. See next:

## 2.11 The #motion workspace

---

```
1  #import "@preview/cetz:0.4.2": canvas, draw
2  #motion(s => [
3    #canvas({ import draw: *; scale(3)
4      tag(s, "arc", arc((0, 0), start: 30deg, stop: 150deg, name: "R"))
5      tag(s, "line1", line("R.start", "R.origin"))
6      tag(s, "line2", line("R.end", "R.origin"))
7    })
8  ], hider: draw.hide.with(bounds: true), controls: (
9    "line2.start", "line1.start", "arc.start"
10 ))
```

## 2.11 The `#motion` workspace

---

The result is shown here. In this example, the `#hider` used is native `#draw.hide` of CeTZ module, so the elements can be covered compatibly.

With the `controls` argument, **the content can be shown regardless of their definition order** in the source code, like drawing this fan shape.

Output: on subslide 1



## 2.11 The `#motion` workspace

---

The result is shown here. In this example, the `#hider` used is native `#draw.hide` of CeTZ module, so the elements can be covered compatibly.

With the `controls` argument, **the content can be shown regardless of their definition order** in the source code, like drawing this fan shape.

Output: on subslide 2



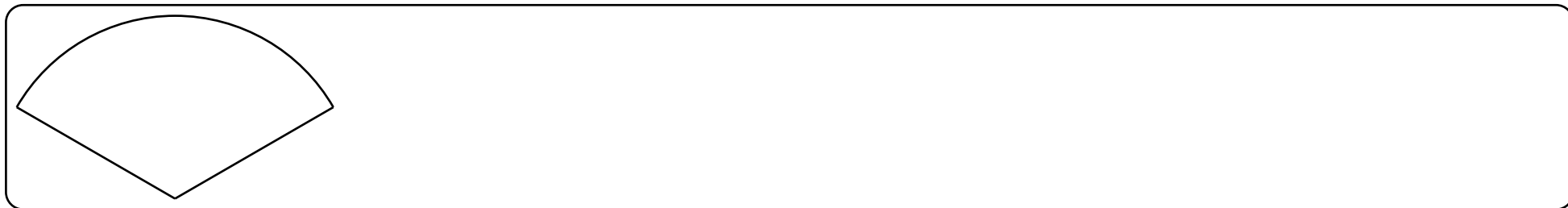
## 2.11 The `#motion` workspace

---

The result is shown here. In this example, the `#hider` used is native `#draw.hide` of CeTZ module, so the elements can be covered compatibly.

With the `controls` argument, **the content can be shown regardless of their definition order** in the source code, like drawing this fan shape.

Output: on subslide 3



## 2.12 Rendering Stuffs

---

Here comes the most powerful, but most complex utilization of Presentate: `#render` function and `#animation` module.

## 2.12 Rendering Stuffs

---

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As we have told, package integration on presentation animation is sometimes tricky, as they are not happy with `content` input data.

## 2.12 Rendering Stuffs

---

Here comes the most powerful, but most complex utilization of Presentate: `#render` function and `#animation` module.

As we have told, package integration on presentation animation is sometimes tricky, as they are not happy with `content` input data.

So presentate provides a `workspace` for rendering stuffs that are not necessary to be in content type, with `non-content updates` for number of frames needed.



## 2.12 Rendering Stuffs

---

Here comes the most powerful, but most complex utilization of Presentate: `#render` function and `#animation` module.

As we have told, package integration on presentation animation is sometimes tricky, as they are not happy with `content` input data.

So presentate provides a `workspace` for rendering stuffs that are not necessary to be in content type, with `non-content updates` for number of frames needed.

So you can focus on the animation, without worrying about number of subslides.

## 2.12 Rendering Stuffs

---

### Structure of `#render`

```
1 #render(s => ({  
2   import animation: *  
3   // your stuff goes here.  
4 }, s))
```

## 2.12 Rendering Stuffs

---

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```
1 #render(s => ({  
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`#render` only accepts one positional argument: **a function**.

## 2.12 Rendering Stuffs

---

### Structure of `#render`

```
1 #render(s => ({
2   import animation: *
3   // your stuff goes here.
4 }, s))
```

`#render` only accepts one positional argument: a function.

This function accepts the current animation states, and returns *an array*, of length 2 which

- **first** member is the shown output,
- **second** member is the updated states.

## 2.12 Rendering Stuffs

---

### Structure of `#render`

```
1 #render(s => ({
2   import animation: *
3   // your stuff goes here.
4 }, s))
```

`#render` only accepts one positional argument: **a function**.

This way, Presentate can both show your output, and update the states, so the other elements on the slide react automatically.

This function accepts the current animation states, and returns *an array*, of length 2 which

- **first** member is the shown output,
- **second** member is the updated states.

## 2.12 Rendering Stuffs

---

The first member's area only accepts `content`, intended for updating internal states.

However, to create animation with `#render` without generating `content` during the way, Presentate provides the same set of functionality like `#pause`, `#only`, `#fragments`, `#alert`, `#uncover`, and so on, with some key differences:

## 2.12 Rendering Stuffs

---

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1. These functions must be imported from `#animation` module.

## 2.12 Rendering Stuffs

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1. These functions must be imported from `#animation` module.
2. The functions will always accepts the `state` (`#s`) as first positional argument.



## 2.12 Rendering Stuffs

---

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However, to create animation with `#render` without generating `content` during the way, Presentate provides the same set of functionality like `#pause`, `#only`, `#fragments`, `#alert`, `#uncover`, and so on, with some key differences:

1. These functions must be imported from `#animation` module.
2. The functions will always accept the `state (#s)` as first positional argument.
3. **You have to update the state variable (`#s`) manually.**

## 2.12 Rendering Stuffs

---

**Example 1:** Animated `CeTZ`<sup>6</sup> diagram. Create an animation drawing two circles, in green and red.

```
1  #import "@preview/cetz:0.4.2":  
   canvas, draw  
2  #render(s => ({  
3    import animation: *  
4    canvas({  
5      import draw: *
```

```
6      pause(s, circle((0, 0),  
   fill: green,))  
7      s.push(auto) // update s  
8      pause(s, circle((1, 0),  
   fill: red))  
9    })  
10 }, s))
```

---

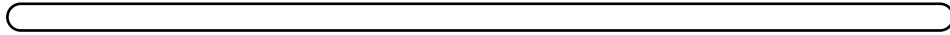
<sup>6</sup><https://typst.app/universe/package/cetz>

Usage

## 2.12 Rendering Stuffs

---

Output: on subslide 1



## 2.12 Rendering Stuffs

---

Output: on subslide 2



## 2.12 Rendering Stuffs

---

Output: on subslide 3



## 2.12 Rendering Stuffs

---

Output: on subslide 4



The default hider of `animation.pause` is  
it => `none`, so it *does not* preserve space.

## 2.12 Rendering Stuffs

---

Output: on subslide 5



The default hider of `animation.pause` is `it => none`, so it *does not* preserve space.

However, you can change this by the `#draw.hide.with(bounds: true)` from native CeTZ to preserve space, by adding the following line before `#canvas`:

```
1 let pause = pause.with(hider: draw.hide.with(bounds: true))
```

Similarly, you can change the default hider functions to suit your package.

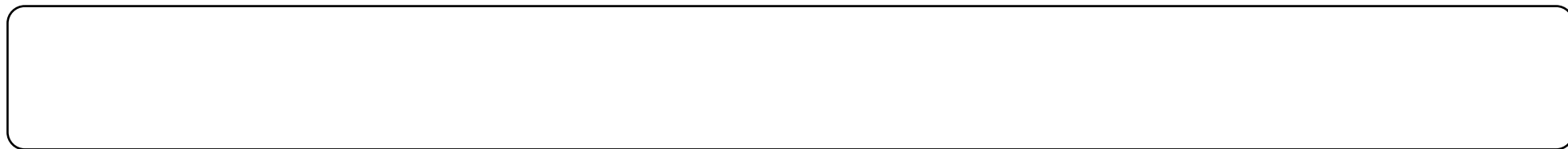
## 2.12 Rendering Stuffs

---

You can change the default `#hider` by using `#settings` functions, which will return a dictionary containing the functions:

```
1 // import "@preview/cetz:0.4.2": canvas, draw
2 let (uncover, pause) = settings(hider: draw.hide.with(bounds: true))
```

For this change, the last example would become the Output:





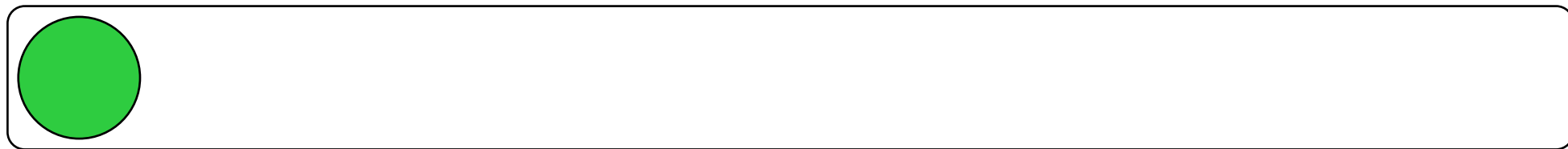
## 2.12 Rendering Stuffs

---

You can change the default `#hider` by using `#settings` functions, which will return a dictionary containing the functions:

```
1 // import "@preview/cetz:0.4.2": canvas, draw
2 let (uncover, pause) = settings(hider: draw.hide.with(bounds: true))
```

For this change, the last example would become the Output:



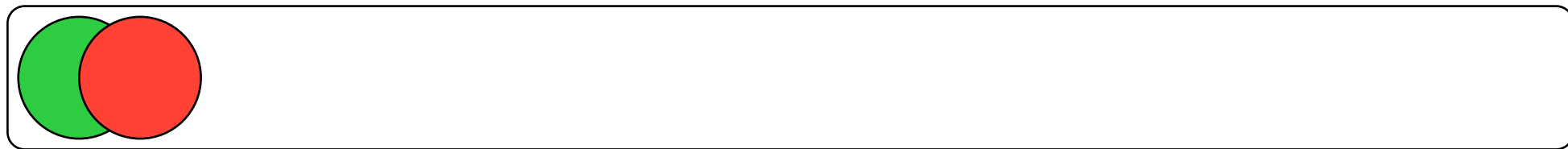
## 2.12 Rendering Stuffs

---

You can change the default `#hider` by using `#settings` functions, which will return a dictionary containing the functions:

```
1 // import "@preview/cetz:0.4.2": canvas, draw
2 let (uncover, pause) = settings(hider: draw.hide.with(bounds: true))
```

For this change, the last example would become the Output:



## 2.12 Rendering Stuffs

---

**Updating States:** In render function, the state variable `#s` is the sole information about the number of subslides needed to render all of the animations.

## 2.12 Rendering Stuffs

---

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So updating it is crucial to produce the correct number of subslides. But how?

## 2.12 Rendering Stuffs

---

**Updating States:** In render function, the state variable `#s` is the sole information about the number of subslides needed to render all of the animations.

So updating it is crucial to produce the correct number of subslides. But how?

The state variable `s` is an `array`, so updating it is basically `push` the new information to it. The information added determine the current animation states as

## 2.12 Rendering Stuffs

---

**Updating States:** In render function, the state variable `#s` is the sole information about the number of subslides needed to render all of the animations.

So updating it is crucial to produce the correct number of subslides. But how?

The state variable `s` is an `array`, so updating it is basically `push` the new information to it. The information added determine the current animation states as

- `#auto` is pushed to **increase the number of pauses by 1**.

## 2.12 Rendering Stuffs

---

**Updating States:** In render function, the state variable `#s` is the sole information about the number of subslides needed to render all of the animations.

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- `#auto` is pushed to **increase the number of pauses by 1**.
- `(rel: int)` relative index is pushed to **modify the number of pauses by int**.

## 2.12 Rendering Stuffs

---

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So updating it is crucial to produce the correct number of subslides. But how?

The state variable `s` is an `array`, so updating it is basically `push` the new information to it. The information added determine the current animation states as

- `#auto` is pushed to **increase the number of pauses by 1**.
- `(rel: int)` relative index is pushed to **modify the number of pauses by int**.
- `1, 2, 3, ..` integers are pushed to set the **current number of pauses**.



## 2.12 Rendering Stuffs

---

**Updating States:** In render function, the state variable `#s` is the sole information about the number of subslides needed to render all of the animations.

So updating it is crucial to produce the correct number of subslides. But how?

The state variable `s` is an *array*, so updating it is basically *push* the new information to it. The information added determine the current animation states as

- `#auto` is pushed to **increase the number of pauses by 1**.
- `(rel: int)` relative index is pushed to **modify the number of pauses by int**.
- `1, 2, 3, ..` integers are pushed to set the **current number of pauses**.
- `(1, 2, ..)` array of integers are pushed to set the **minimum number of subslides**, *without* updating pauses.

## 2.12 Rendering Stuffs

Example 2: CeTZ drawings with `#uncover` and `#only`

```
1  #import "@preview/cetz:0.4.2":  
    canvas, draw  
2  #render(s => ({  
3    import animation: *  
4    canvas({  
5      import draw: *  
6      let (uncover, pause) =  
        settings(hider:  
          draw.hide.with(bounds:  
            true))
```

```
7      pause(s, circle((0, 0)))  
8      s.push(auto)  
9      uncover(s, 3,  
10         rect((-1, -1), (1, 1)))  
11     s.push((3,))  
12     only(s, 4, circle((1, 1)))  
13     s.push(4)  
14   })  
15 }, s))
```

## 2.12 Rendering Stuffs

---

Output: on subslide 1



Notice that the circle produced by `only()` does not preserve space, as it uses it => `none` as hider.

## 2.12 Rendering Stuffs

---

Output: on subslide 2



Notice that the circle produced by `only()` does not preserve space, as it uses it => `none` as hider.

## 2.12 Rendering Stuffs

---

Output: on subslide 3

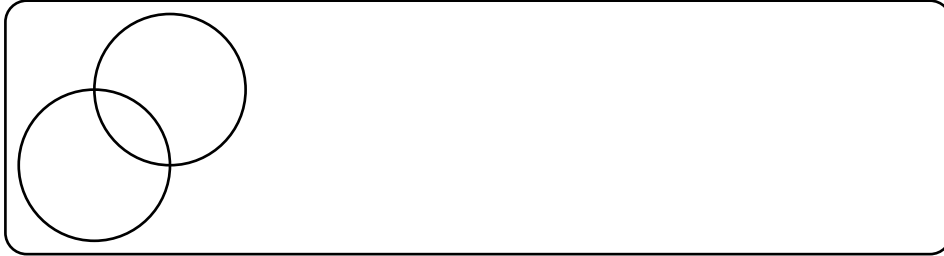


Notice that the circle produced by `only()` does not preserve space, as it uses it => `none` as hider.

## 2.12 Rendering Stuffs

---

Output: on subslide 4



Notice that the circle produced by `only()` does not preserve space, as it uses it => `none` as hider.

## 2.12 Rendering Stuffs

---

Output: on subslide 5



Notice that the circle produced by `only()` does not preserve space, as it uses it => `none` as hider.

The updates: The first `#auto increments` the pauses, the second  `#(3, )` set the *minimum subslides* to at least 3 and `#4` set the number of *pauses* to 4.

## 2.12 Rendering Stuffs

---

Output: on subslide 6



Notice that the circle produced by `only()` does not preserve space, as it uses it => `none` as hider.

The updates: The first `#auto increments` the pauses, the second  `#(3, )` set the `minimum subslides` to at least 3 and `#4` set the number of `pauses` to 4.

All you need to do is to update the `#s` for each animation.

For total number of subslides needed, Presentate will do the job *automatically*.

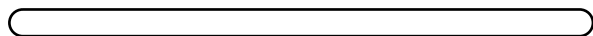


## 2.12 Rendering Stuffs

---

**Example 3:** Fletcher in math mode diagram, with `it => none` as hider.

Output: on subslide 1




```
1 #render(s => ({
2   import animation: *
3   diagram($
4     pause(#s, A edge(->)) #s.push(auto)
5     & pause(#s, B edge(->)) #s.push(auto)
6     pause(#s, edge(->, "d") & C) \
7     & pause(#s, D)
8   $,)
9 }, s,))
```

## 2.12 Rendering Stuffs

**Example 3:** Fletcher in math mode diagram, with `it => none` as hider.

Output: on subslide 2

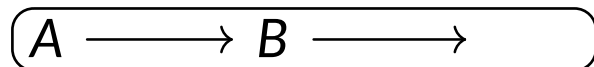


```
1 #render(s => ({
2   import animation: *
3   diagram($
4     pause(#s, A edge(->)) #s.push(auto)
5     & pause(#s, B edge(->)) #s.push(auto)
6     pause(#s, edge(->, "d") & C) \
7     & pause(#s, D)
8   $,)
9 }, s,))
```

## 2.12 Rendering Stuffs

**Example 3:** Fletcher in math mode diagram, with `it => none` as hider.

Output: on subslide 3



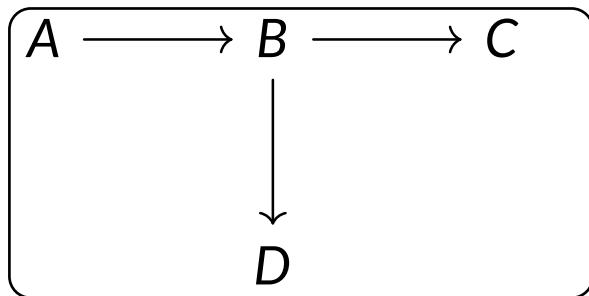
```

1  #render(s => ({
2    import animation: *
3    diagram($
4      pause(#s, A edge(->)) #s.push(auto)
5      & pause(#s, B edge(->)) #s.push(auto)
6      pause(#s, edge(->, "d") & C) \
7      & pause(#s, D)
8    $,)
9  }, s,))
  
```

## 2.12 Rendering Stuffs

**Example 3:** Fletcher in math mode diagram, with `it => none` as hider.

Output: on subslide 4

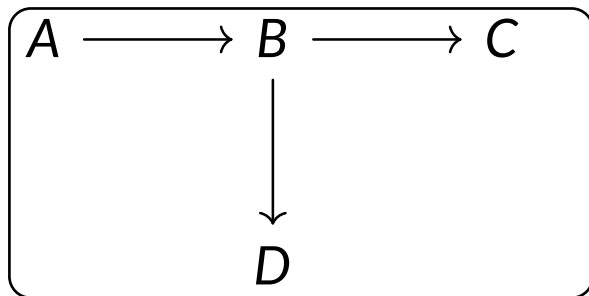


```
1 #render(s => ({
2   import animation: *
3   diagram($
4     pause(#s, A edge(->)) #s.push(auto)
5     & pause(#s, B edge(->)) #s.push(auto)
6     pause(#s, edge(->, "d") & C) \
7     & pause(#s, D)
8   $,)
9 }, s,))
```

## 2.12 Rendering Stuffs

**Example 3:** Fletcher in math mode diagram, with `it => none` as hider.

Output: on subslide 5



Although not perfect, it is doable.

```

1  #render(s => ({
2    import animation: *
3    diagram($
4        pause(#s, A edge(->)) #s.push(auto)
5        & pause(#s, B edge(->)) #s.push(auto)
6        pause(#s, edge(->, "d") & C) \
7        & pause(#s, D)
8    $,)
9  }, s,))
  
```

## 2.13 Animate the inanimate

---

Last examples show us how to hack for drawing stuff that has its own `#hider`, either provided by the package or we created it.

---

<sup>7</sup><https://typst.app/universe/package/alchemist/>

## 2.13 Animate the inanimate

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Last examples show us how to hack for drawing stuff that has its own `#hider`, either provided by the package or we created it.

However, I admitted that using `#pause(s, ..)` a lot is tedious, do we have a better way?

---

<sup>7</sup><https://typst.app/universe/package/chemist/>

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However, I admitted that using `#pause(s, ..)` a lot is tedious, do we have a better way? How about making the input *reactive* to the states?

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## 2.13 Animate the inanimate

---

Last examples show us how to hack for drawing stuff that has its own `#hider`, either provided by the package or we created it.

However, I admitted that using `#pause(s, ..)` a lot is tedious, do we have a better way? How about making the input *reactive* to the states?

Introducing `#animation.animate` function, together with a package for drawing molecular structure: `Alchemist`<sup>7</sup>.

---

<sup>7</sup><https://typst.app/universe/package/alchemist/>

## 2.13 Animate the inanimate

---

Alchemist does not provide any hider functions to hide the structure. However, we came up with an idea: setting the hidden bond's stroke to `#0pt` should effectively hide the bonds, right?

## 2.13 Animate the inanimate

---

Alchemist does not provide any hider functions to hide the structure. However, we came up with an idea: setting the hidden bond's stroke to `#0pt` should effectively hide the bonds, right?

So we use the hider as a `#modifier` the function's argument.

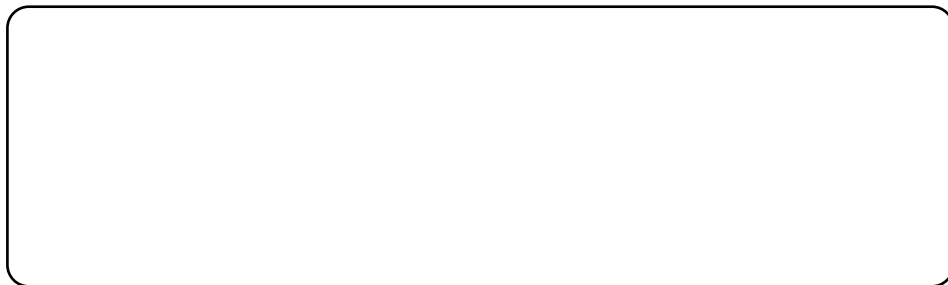
```
1 #import "@preview/alchemist:0.1.8": *  
2 #let (single,) = animation.animate(  
3   single, modifier: (func, ..args) => func(stroke: 0pt, ..args)  
4 )
```

**Note!** The animated functions require `#s` as the first positional argument.

## 2.13 Animate the inanimate

---

Output: on subslide 1

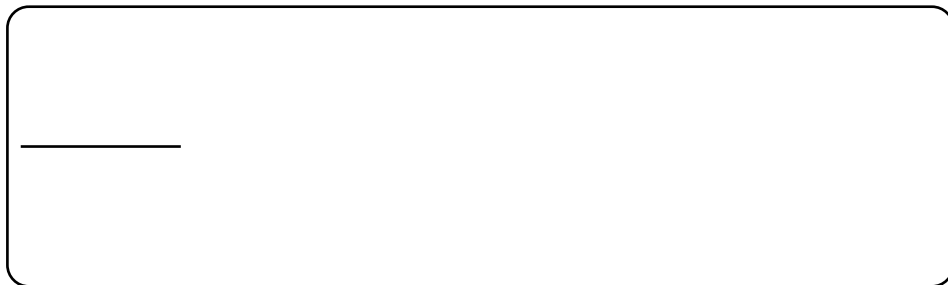


```
1  #render(s => ({
2    skeletize({
3      single(s) // Note the `s`!
4      branch({
5        s.push(auto)
6        single(s, angle: -1)
7      })
8      s.push(auto)
9      single(s, angle: 1)
10   })
11 }, s))
```

## 2.13 Animate the inanimate

---

Output: on subslide 2



```
1  #render(s => ({
2    skeletize({
3      single(s) // Note the `s`!
4      branch({
5        s.push(auto)
6        single(s, angle: -1)
7      })
8      s.push(auto)
9      single(s, angle: 1)
10   })
11 }, s))
```

## 2.13 Animate the inanimate

---

Output: on subslide 3

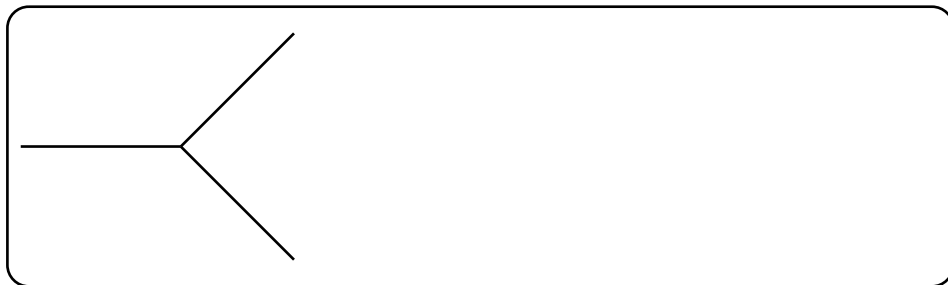


```
1  #render(s => ({
2    skeletize({
3      single(s) // Note the `s`!
4      branch({
5        s.push(auto)
6        single(s, angle: -1)
7      })
8      s.push(auto)
9      single(s, angle: 1)
10   })
11 }, s))
```

## 2.13 Animate the inanimate

---

Output: on subslide 4



```
1  #render(s => ({
2    skeletize({
3      single(s) // Note the `s`!
4      branch({
5        s.push(auto)
6        single(s, angle: -1)
7      })
8      s.push(auto)
9      single(s, angle: 1)
10   })
11 }, s))
```

## 2.13 Animate the inanimate

Output: on subslide 5



Now the molecule is drawn!

```
1  #render(s => ({
2    skeletize({
3      single(s) // Note the `s`!
4      branch({
5        s.push(auto)
6        single(s, angle: -1)
7      })
8      s.push(auto)
9      single(s, angle: 1)
10   })
11 }, s))
```



## 2.13 Animate the inanimate

Output: on subslide 6



Now the molecule is drawn!

The `#animate` is like *modifier* to make the function *aware* to the `#s` updates.

```
1  #render(s => ({
2    skeletize({
3      single(s) // Note the `s`!
4      branch({
5        s.push(auto)
6        single(s, angle: -1)
7      })
8      s.push(auto)
9      single(s, angle: 1)
10   })
11 }, s))
```

## 2.14 Modes and Utility

---

Presentate provides three modes for different purposes:

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## 2.14 Modes and Utility

---

Presentate provides three modes for different purposes:

- **Normal** for animated slides. [Default]
- **Handout** for disabling all animations.
- **Drafted** for showing the subslide number.

Normal mode is to do nothing, for the last two options, you can set them via

```
1 #set-options(handout: true, drafted: true)
```

## 2.15 Themes

---

The slide you are viewing is the *simple* theme of Presentate. You can use it by typing the following lines:

```
1 #import themes.simple: *
2 #show: template.with(
3   author: [Pacaunt], // change to yours!
4   title: [Welcome To Presentate!],
5   subtitle: [Slides Tools.],
6 )
```

## 2.15 Themes

---

The theme provides the following slides:

- `#slide(title, body)` which if no title, it will repeat the last topic.
- `#empty-slide(body)` which is empty and has no margin, header, and footer.
- `#focus-slide(body)` which is colored, vibrant slide for getting attention.

The preview is on the next slide:



# 2.15 Themes

---

<p><b>Welcome To Presentate!</b></p> <hr/> <p><i>Slides Tools.</i> Pacaunt   2025-08-15</p>	<p>New Section</p>	<p>New Section <b>Hello</b></p> <hr/> <p>This is Simple theme slide.</p> <p>Pacaunt 1</p>
<p>New Section <b>Hello</b></p> <hr/> <p>Slide with no title will continue from the last title.</p> <p>Pacaunt 2</p>	<p><i>This should be focus!</i></p>	<p>#empty-slide is the slide with nothing, even the header and footer.</p>

## 2.15 Themes

---

```
1  = New Section
2  #slide[Hello][
3      This is Simple theme slide.
4  ]
5
6  #slide[
7      Slide with no title will
        continue from the last title.
8  ]
9
```

```
10 #focus-slide[
11     This should be focus!
12 ]
13
14 #empty-slide[
15     #set align(center + horizon)
16     `#empty-slide` is the slide
        with nothing, \
17     even the `header` and
        `footer`.
18 ]
```

## 2.15 Themes

---

Another theme is *default* theme. It is very minimal, as it sets the paper and text font and sizes, provided with new section slides.

## 2.15 Themes

---

Another theme is *default* theme. It is very minimal, as it sets the paper and text font and sizes, provided with new section slides.

You can import it with

```
1 #import themes.default: *  
2 #show: template.with(  
3   aspect-ratio: "16-9"  
4 )
```

## 2.15 Themes

---

Another theme is `default` theme. It is very minimal, as it sets the paper and text font and sizes, provided with new section slides.

You can import it with

```
1 #import themes.default: *  
2 #show: template.with(  
3   aspect-ratio: "16-9"  
4 )
```

and then you will have `#slide`(body), which are normal slide function, and `#empty-slide`(body) for a slide with no header, footer, and margins.

## 2.15 Themes

---

Some example of the Default theme.

New Section	<b>Hello</b> This is default theme slide.	<code>#empty-slide</code> is the slide with nothing, even the header and footer.
-------------	--	---

## 2.15 Themes

---

```
1  = New Section
2
3  #slide[
4      == Hello
5      This is default theme slide.
6  ]
7
```

```
8  #empty-slide[
9      #set align(center + horizon)
10     `#empty-slide` is the slide
    with nothing, \
11     even the `header` and
    `footer`.
12 ]
```

## 2.15 Themes

---

By default Presentate is still young and does not provide more themes currently, but the integration of Typst styling in Presentate should be seamless, and convenient enough to create by yourself :)



For more information, you can contact us at  
Presentate's github  
(<https://github.com/pacaunt/typst-presentate/>)

Enjoy making presentation!