

# Codly v1.1.0 manual

Your code blocks on steroids

O RLY?

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## 1. Codly

Codly is a library that enhances the way you write code blocks in Typst. It provides a set of tools to help you manage your code blocks, highlights them, skip parts of them, and more. This manual will guide you through the different features of Codly, how to use them, and how to integrate them into your Typst projects.



#### Notification

If you find any issues with Codly, please report them on the GitHub repository: https://github.com/Dherse/codly.

#### 1.1. Initialization

To start using Codly, you must first import it into your Typst project.

```
Example code

1 #import "@preview/codly:1.0.0": *

2

3 #show: codly-init
```

As you can see, this does nothing but initialize codly. You can also import it with a specific version, as shown in the example above. For the latest version, always refer to the <u>Typst Universe page</u>.

From this point on, any code block that is included in your Typst project will be enhanced by Codly.



## 1.2. Enabling and disabling codly

By defauly Codly will be enabled after initialization. However, disabling codly can be done using the <a href="codly-disable">codly-disable</a> function, the <a href="enabled">enabled</a> argument of the codly function, or the <a href="no-codly">no-codly</a> function. To enable Codly again, use the <a href="codly-enable">codly-enable</a> function or by setting the <a href="enabled">enabled</a> parameter again.

## 2. A primer on Codly's show-rule like system

Codly uses a function called codly to create a kind of show-rule which you can use to configure how your code blocks are displayed. The codly function takes a set of arguments that define how the code block should be displayed. Here is the equivalent definition of the codly function:

```
Typst code
1 let codly(
2
     enabled: true,
3
     offset: 0,
4
      range: none,
5
     languages: (:),
6
     display-name: true,
7
     display-icon: true,
     default-color: rgb("#283593"),
8
9
     radius: 0.32em,
10
     inset: 0.32em,
11
     fill: none,
12
     zebra-fill: luma(240),
13
     stroke: 1pt + luma(240),
14
     lang-inset: 0.32em,
15
     lang-outset: (x: 0.32em, y: 0pt),
16
      lang-radius: 0.32em,
17
     lang-stroke: (lang) => lang.color + 0.5pt,
      lang-fill: (lang) => lang.color.lighten(80%),
18
     lang-format: codly.default-language-block,
19
20
     number-format: (number) => [ #number ],
21
     number-align: left + horizon,
22
      smart-indent: false,
23
     annotations: none,
24
     annotation-format: numbering.with("(1)"),
25
      highlights: none,
26
     highlight-radius: 0.32em,
      highlight-fill: (color) => color.lighten(80%),
27
28
      highlight-stroke: (color) => 0.5pt + color,
29
     highlight-inset: 0.32em,
30
      reference-by: line,
      reference-sep: "-",
31
32
      reference-number-format: numbering.with("1"),
33
     header: none,
34
     header-repeat: false,
35
     header-transform: (x) \Rightarrow x,
36
      header-cell-args: (),
37
     footer: none,
38
      footer-repeat: false,
39
     footer-transform: (x) \Rightarrow x,
40
      footer-cell-args: (),
     breakable: false,
41
42 ) = \{ \}
```

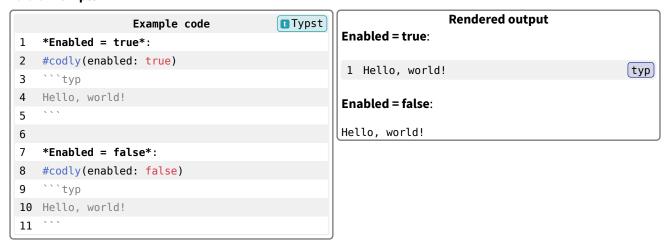
The codly functions acts like a set-rule, this means that calling it will set the configuration for all code blocks that follow it, with the exception of a few arguments that are explicitly set for each code block. To perform changes locally, you can use the <a href="local">local</a> function, or set the arguments before the code block and reset them after to their previous values.

## 2.1. Enabled (enabled)

√> Type	bool
{*} Default value	true
② Contextual function	✓ yes
<b>ூ Automatically reset</b>	× no

Whether codly is enabled or not. If it is disabled, the code block will be displayed as a normal code block, without any additional codly-specific formatting. This is useful if you want to disable codly for a specific block. You can also disable codly locally using the <a href="mailto:no-codly">no-codly</a> function, or disable it and enable it again using the <a href="mailto:codly-disable">codly-disable</a> and <a href="mailto:codly-enable">codly-enable</a> functions.

#### 2.1.1. Example

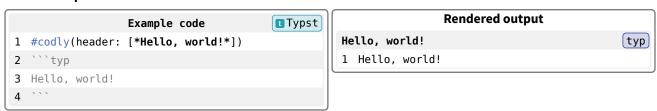


## 2.2. Header (header)

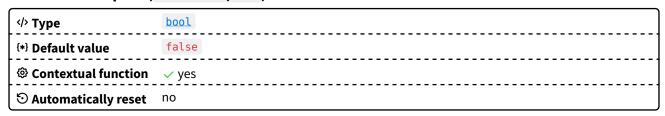


An optional header to display above the code block. It can be optionally repeated on all subsequent pages with the <a href="header-repeat">header-repeat</a> argument. And additional customizations are available with the <a href="header-cell-args">header-transform</a> arguments.

#### 2.2.1. Example



#### 2.3. Header Repeat (header-repeat)



Whether to repeat the header on each page. This is only applicable if a header is provided, if the code block is <a href="mailto:breaksble">breaksble</a>, and if it actually breaks on more than one page. For more information see <a href="mailto:grid.header:repeat">grid.header:repeat</a>.

#### 2.4. Header Cell Args (header-cell-args)

```
⟨→ Type array , dictionary , or arguments

(*) Default value ()

⑤ Contextual function ✓ yes

⑤ Automatically reset no

Output

Default value ()

No

Output

Default value ()

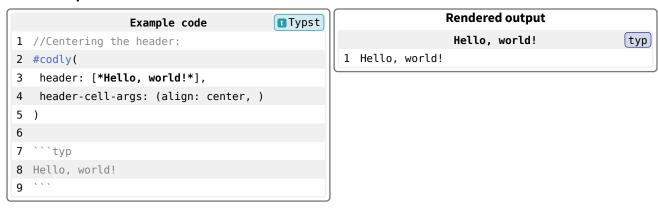
Output

Default val
```

Additional arguments to be provided to the <code>grid.cell</code> containing the header. Lets you customize the header cell further. Internally, codly wraps the content of the <code>header</code> argument in a <code>grid.cell</code> with these arguments. The only argument that is always common is the body argument which is the value of the <code>header</code> argument, and the <code>colspan</code> which is always set to <code>2</code>.

For a full description of the argument, look at the documentation of the grid.cell function.

#### 2.4.1. Example



#### 2.5. Header Transform (header-transform)

```
⟨→ Type function

(*) Default value (x) ⇒ x

⑤ Contextual function x no

⑤ Automatically reset no
```

Function that transforms the header into arbitrary content to be stored in the <code>grid.cell</code>. Can be seen as a show-rule for the header. This allows to perform global transformation/show-rule like operations on the header.

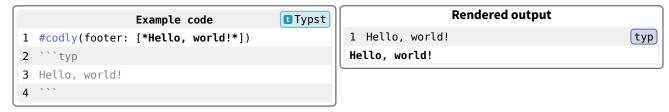
#### 2.5.1. Example



## 2.6. Footer (footer)

An optional footer to display below the code block. See <a href="header">header</a> for more information.

#### **2.6.1. Example**



#### 2.7. Footer Repeat (footer-repeat)

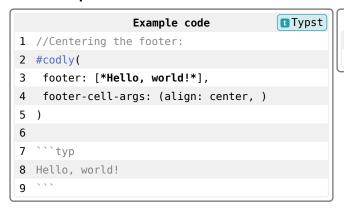
⟨/› Type	bool
{*} Default value	false
② Contextual function	✓ yes
ூ Automatically reset	no

Whether to repeat the footer on each page. See <a href="header-repeat">header-repeat</a> for more information.

## 2.8. Footer Cell Args (footer-cell-args)

Additional arguments to be provided to the grid.cell containing the footer. See header-cell-args for more information.

#### **2.8.1. Example**

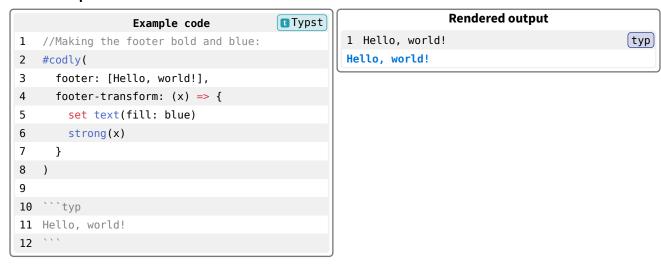




## 2.9. Footer Transform (footer-transform)

Function that transforms the footer into arbitrary content to be stored in the <code>grid.cell</code> . Can be seen as a show-rule for the footer. See <code>header-transform</code> for more information.

#### **2.9.1. Example**



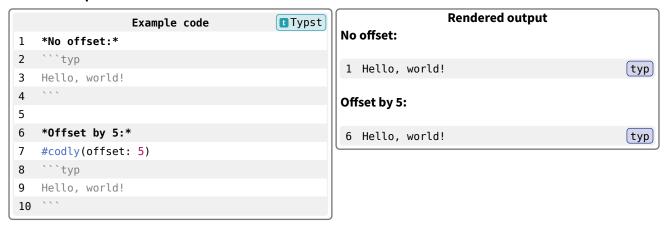
## 2.10. Offset (offset)

```
⟨→ Type int
(*) Default value 0
⑤ Contextual function ✓ yes
⑤ Automatically reset ✓ yes
```

The offset to apply to line numbers.

This is purely cosmetic, only impacting the shown line numbers in the final output.

#### 2.10.1. Example



## 2.11. Range ( range )

The range of line numbers to display, zero-indexed. If set to none, all lines are displayed. Can also be achieved using the convenience function codly-range. If set to none, all lines are displayed.

#### 2.11.1. Example

```
Example code

1 #codly(range: (2, 4))

2 ```py

3 def fib(n):

4  if n <= 1:

5  return n

6  return fib(n - 1) + fib(n - 2)

7 fib(25)

8 ```
```

```
Rendered output

2  if n <= 1:  py

3  return n

4  return fib(n - 1) + fib(n - 2)
```

## 2.12. Languages (languages)

The language definitions to use for language block formatting. It is defined as a dictionary where the keys are the language names andeach value is another dictionary containing the following keys:

- name: the "pretty" name of the language as a content/showable value
- color: the color of the language, if omitted uses the default color
- icon: the icon of the language, if omitted no icon is shown.

If an entry is missing, and language blocks are enabled, will show the "un-prettified" language name, with the default color.

#### 2.12.1. Example

```
Typst
                 Example code
  #codly(
1
2
     languages: (
3
       py: (
         name: [Python], color: green, icon:
4
         " 🕭 "
5
       ),
6
     )
7
   )
   ```py
8
   def fib(n):
10
   if n <= 1:
11
    return n
     return fib(n - 1) + fib(n - 2)
12
13 fib(25)
14
```

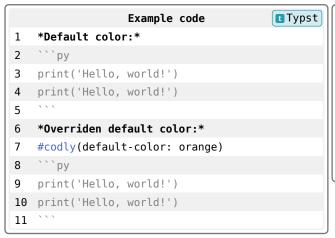
```
Rendered output

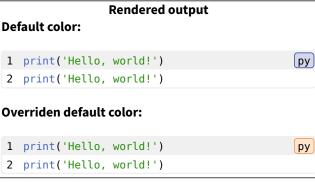
1 def fib(n):
2 if n <= 1:
3 return n
4 return fib(n - 1) + fib(n - 2)
5 fib(25)
```

#### 2.13. Default language color (default-color)

The default color to use for language blocks. Used when a language is not defined in the <u>languages</u> argument. Also note that it is only used when the <u>lang-format</u> is its <u>auto</u> or you are using it in a custom formatter. If you are using a custom formatter, it is passed to the formatter as a named argument <u>color</u>.

#### 2.13.1. Example

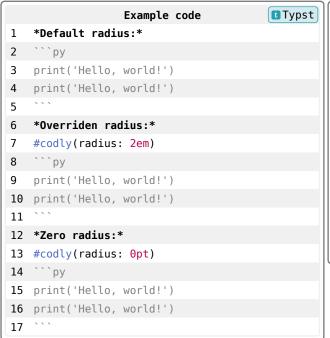


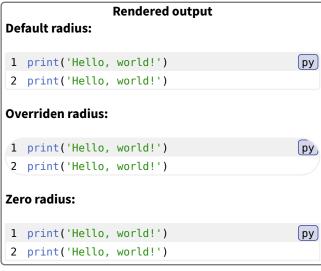


## 2.14. Radius (radius)

The radius of the border of the code block, see block, radius for more information.

## 2.14.1. Example

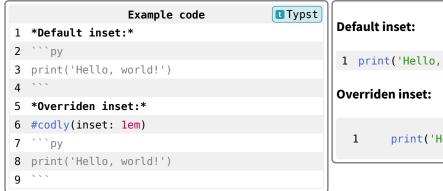


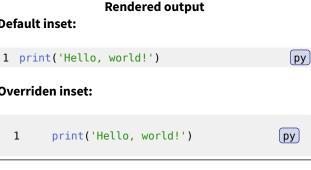


## 2.15. Inset (inset)

Inset of the code lines, that is the distance between the border and the code lines.

#### 2.15.1. Example

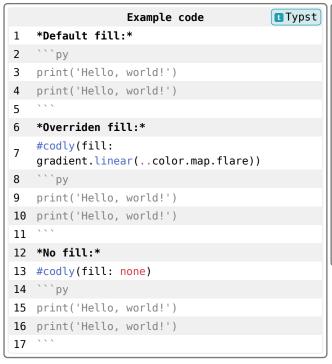


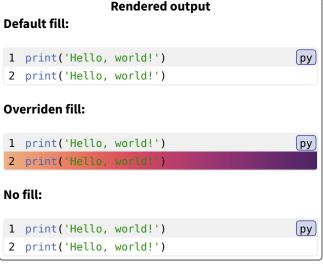


## 2.16. Fill (fill)

The fill of the code block when not zebra-striped.

#### 2.16.1. Example

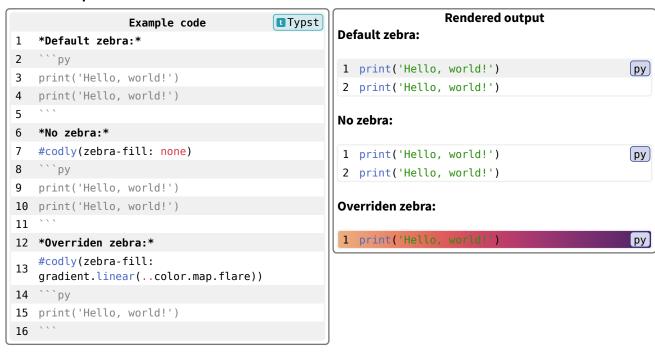




## 2.17. Zebra fill (zebra-fill)

Background color of the code lines when zebra-stripped. If set to none, no zebra-striping is applied.

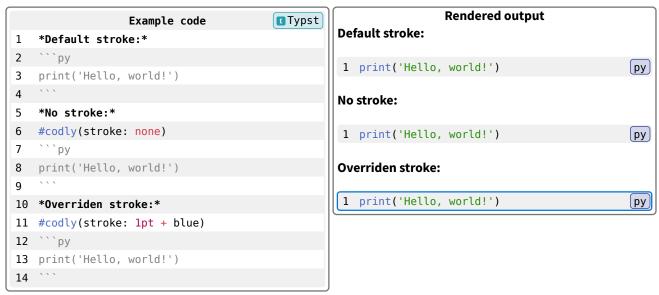
#### 2.17.1. Example



#### 2.18. Stroke (stroke)

The stroke to surround the whole code block with?

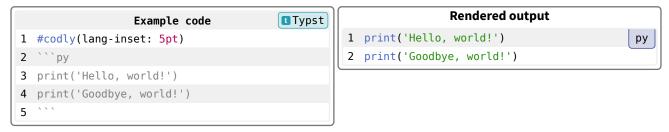
#### 2.18.1. Example



#### 2.19. Language box inset (lang-inset)

The inset of the language block. This only applies if you're using the default language block formatter.

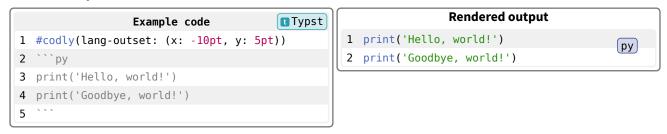
#### 2.19.1. Example



#### 2.20. Language box outset (lang-outset)

The X and Y outset of the language block, applied as a dx and dy during the place operation. This applies in every case, whether or not you're using the default language block formatter. The default value is chosen to get rid of the inset applied to each line.

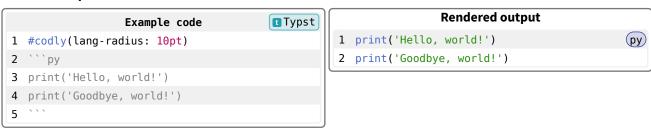
#### 2.20.1. Example



## 2.21. Language box radius (lang-radius)

The radius of the border of the language block.

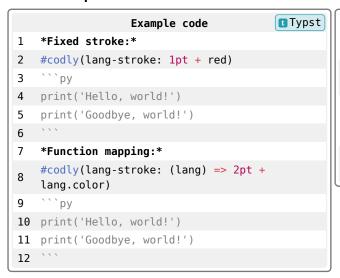
#### 2.21.1. Example

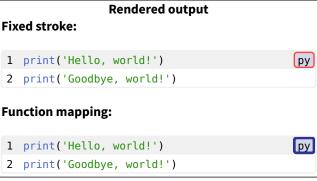


#### 2.22. Language box stroke (lang-stroke)

The stroke of the language block. Can be a function that takes in the language dictionary or none (see argument languages) and returns a stroke.

#### 2.22.1. Example

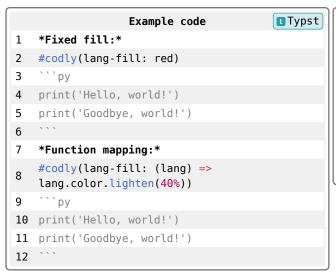




#### 2.23. Language box fill (lang-fill)

The background color of the language block. Can be a function that takes in the language dictionary or none (see argument <u>languages</u>) and returns a stroke.

#### 2.23.1. Example



```
Rendered output

Fixed fill:

1 print('Hello, world!')
2 print('Goodbye, world!')

Function mapping:

1 print('Hello, world!')
2 print('Goodbye, world!')
```

## 2.24. Language box formatter (lang-format)

```
⟨→ Type type(auto), none, or function

(*) Default value auto

⑤ Contextual function × no

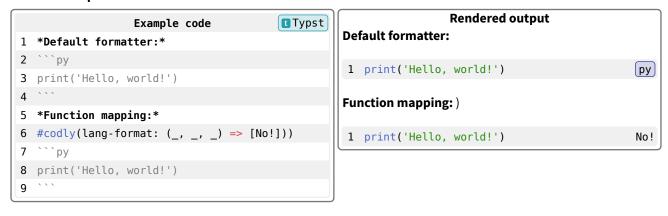
⑤ Automatically reset no
```

The formatter for the language block. A value of none will not display the language block. To use the default formatter, set to auto. The function takes three arguments:

- lang: the language key (e.g. py)
- icon: the language icon, can be none or empty content
- color: the language color

The function should return a content/showable value.

#### 2.24.1. Example



## 2.25. Display language name (display-name)

```
⟨→ Type bool

⟨*) Default value true

⑤ Contextual function ✓ yes

⑤ Automatically reset no
```

Whether to display the name of the language in the language block. This only applies if you're using the default language block formatter.

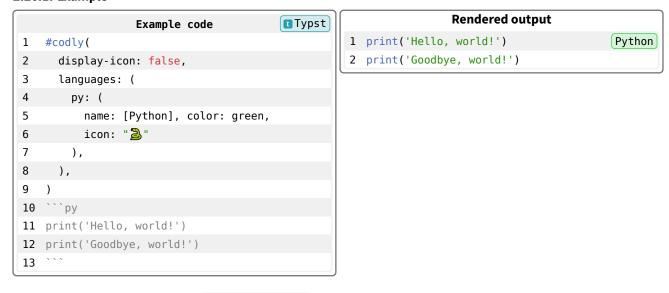
#### 2.25.1. Example

```
Rendered output
                 Example code
                                       Typst
  2
   1 print('Hello, world!')
1 #codly(
   2 print('Goodbye, world!')
2
     display-name: false,
3
     languages: (
4
5
         name: [Python], color: green,
         icon: ">>"
6
7
       ),
8
   ),
9 )
10 ```py
11 print('Hello, world!')
12 print('Goodbye, world!')
13
```

## 2.26. Display language icon (display-icon)

Whether to display the icon of the language in the language block. This only applies if you're using the default language block formatter.

#### 2.26.1. Example



## 2.27. Line number format ( number-format )

The format of the line numbers, a function that takes in number and returns a content. If set to none, disables line numbers.

#### 2.27.1. Example

```
Example code

1 #codly(number-format: numbering.with("I."))
2 ```py
3 print('Hello, world!')
4 print('Goodbye, world!')
5 ```
```

## 2.28. Line number alignment (number-align)

The alignment of the numbers.

#### 2.28.1. Example

```
■ Typst
               Example code
1 #codly(number-align: right + top)
2 ```py
3 # Iterative Fibonacci
4 # As opposed to the recursive
5 # version
6 def fib(n):
7 if n <= 1:
8 return n
9 last, current = 0, 1
10 for \_ in range(2, n + 1):
11 last, current = current, last + current
12 return current
13 fib(25)
14
```

## 2.29. Smart indentation (smart-indent)

Whether to use smart indentation, which will check for indentation on a line and use a bigger left side inset instead of spaces. This allows for linebreaks to continue at the same level of indentation. This is on by default, but disabling it can improve performance.

#### 2.29.1. Example

```
Example code
                                      Typst
   *Enabled (default):*
2 ```py
3 def quicksort(L):
    gsort = lambda L: [] if L==[] else
   2
  qsort([x for x in L[1:] if x < L[0]]) +
   L[0:1] + qsort([x for x in L[1:] if
   x>=L[0]]
5 qsort(L)
6
7 *Disabled:*
8 #codly(smart-indent: false)
9 ```py
10 def quicksort(L):
     qsort = lambda L: [] if L==[] else
   qsort([x for x in L[1:] if x < L[0]]) +
   L[0:1] + qsort([x for x in L[1:] if
   x>=L[0]])
12 qsort(L))
```

```
Rendered output
Enabled (default):
1 def quicksort(L):
  (py)
     qsort = lambda L: [] if L==[] else
     qsort([x for x in L[1:] if x < L[0]]) +
     L[0:1] + qsort([x for x in L[1:] if
     X>=L[0]
3 qsort(L)
Disabled:
1 def quicksort(L):
  (py)
     qsort = lambda L: [] if L==[] else
   qsort([x for x in L[1:] if x< L[0]]) +</pre>
   L[0:1] + qsort([x for x in L[1:] if
   X>=L[0])
3 qsort(L))
```

#### 2.30. Breakable (breakable)

```
⟨→ Type bool
⟨*) Default value true

⊕ Contextual function × no

□ Automatically reset no
```

Whether the codeblocks are breakable across page and column breaks.

## 2.31. Skips (skips)

Insert a skip at the specified line numbers, setting its offset to the length of the skip. The skip is formatted using the <a href="mailto:skip-number">skip-number</a> argument. Each skip is an array with two values: the line where the skip is inserted (zero indexed) and the number of lines of the skip. The same behavior can be achieved using the <a href="mailto:codly-skip">codly-skip</a> function.

#### 2.31.1. Example

```
Example code

1 #codly(skips: ((4, 32), ))

2 ```py

3 def fib(n):

4 if n <= 1:

5 return n

6 return fib(n - 1) + fib(n - 2)

7 fib(25)

8 ```
```

```
Rendered output

1  def fib(n):
2  if n <= 1:
3   return n
4  return fib(n - 1) + fib(n - 2)
...
37  fib(25)
```

## 2.32. Skip line (skip-line)

Sets the content with which the line code is filled when a skip is encountered.

#### 2.32.1. Example

```
Example code
                                      Typst
1 #codly(
2 skips: ((4, 32), ),
     skip-line: align(center,
3
     emoji.face.shock)
4 )
  ```py
5
6 def fib(n):
7 if n \le 1:
      return n
     return fib(n - 1) + fib(n - 2)
10 fib(25)
11
```

## 2.33. Skip number (skip-number)

Sets the content with which the line number columns is filled when a skip is encountered. If line numbers are disabled, this has no effect.

#### 2.33.1. Example

```
Example code

1  #codly(
2  skips: ((4, 32), ),
3  skip-number: align(center,
  emoji.face.shock)
4  )
5  ```py
6  def fib(n):
7  if n <= 1:
8  return n
9  return fib(n - 1) + fib(n - 2)
10  fib(25)
11  ```
```

```
Rendered output

1  def fib(n):
2   if n <= 1:
3    return n
4   return fib(n - 1) + fib(n - 2)
    ...
37  fib(25)</pre>
```

## 2.34. Annotations (annotations)

The annotations to display on the code block. A list of annotations that are automatically numbered and displayed on the right side of the code block.

Each entry is a dictionary with the following keys:

- start: the line number to start the annotation
- end: the line number to end the annotation, if missing or none the annotation will only contain the start line
  - content: the content of the annotation as a showable value, if missing or none the annotation will only contain the number
  - ▶ label: if and only if the code block is in a figure, sets the label by which the annotation can be referenced.

Generally you probably want the content to be contained within a rotate (90deg).

#### Note: Annotations cannot overlap. Known issues:

- Annotations that spread over a page break will not work correctly
- Annotations on the first line of a code block will not work correctly.
- · Annotations that span lines that overflow (one line of code two lines of text) will not work correctly.

## Experiment

This feature should be considered experimental. Please report any issues you encounter on GitHub: <a href="https://github.com/Dherse/codly">https://github.com/Dherse/codly</a>.

#### 2.34.1. Example

```
Typst
                  Example code
   #codly(
1
2
     annotations:(
3
4
          start: 1, end: 4,
          content: block(
5
6
            width: 2em,
            rotate(-90deg,align(center,
7
            box(width: 100pt)[Function body])
8
9
        ),
10
     ),)
11 )
12 ```py
13 def fib(n):
14
    if n <= 1:
15
        return n
16
17
        return fib(n - 1) + fib(n - 2)
18 fib(25)
19
```

## 2.35. Annotation formatter (annotation-format)

The format of the annotation number. Can be none or a function that formats the annotation number.

## 2.36. Highlights (highlights)

You can apply highlights to the code block using the highlights argument. It consists of a list of dictionaries, each with the following keys:

- line: the line number to start highlighting
  - start : the character position to start highlighting, zero if omitted or none
- end: the character position to end highlighting, the end of the line if omitted or none
- fill: the fill of the highlight, defaults to the default color
- tag: an optional tag to be displayed alongside the highlight.
- label: if and only if the code block is in a figure, sets the label by which the highlight can be referenced.

As with other code block settings, annotations are reset after each code block.

**Note**: This feature performs what I loosely call "globbing", this means that instead of highlighting individual characters, it highlights the whole word or sequence of characters that the start and end positions are part of. This is done to avoid having to deal with the complexity of highlighting individual characters, and needing to re-style them manually. While also making the API a tad less error prone at the cost of sometimes goofy looking highlights if they overlap.

#### 2.36.1. Example

```
Example code
                                        Typst
  #codly(highlights: (
     (line: 3, start: 3, end: none, fill:
2
     red),
     (line: 4, start: 12, end: 21, fill:
3
     green, tag: "(a)"),
     (line: 4, start: 28, end: 38, fill: blue,
4
     tag: "(b)"),
5 ))
   ```py
6
  def fib(n):
     if n <= 1:
8
9
       return n
10
     else:
    return fib(n - 1) + fib(n - 2)
11
12 print(fib(25))
13
```

## 2.37. Highlight radius (highlight-radius)

⟨→ Type	length
{*} Default value	0.32em
	√ yes
<b>O</b> Automatically reset	✓ yes

The radius of the highlights.

## 2.38. Highlight fill (highlight-fill)

√y Type	function
{*} Default value	(color) => color.lighten(80%)
© Contextual function	× no
<b>⊙</b> Automatically reset	no

The fill transformer of the highlights, is a function that takes in the highlight color and returns a fill.

## 2.39. Highlight stroke (highlight-stroke)

√> Type	stroke or function
{*} Default value	(color) => 0.5pt + color
© Contextual function	× no
ூ Automatically reset	no

The stroke transformer of the highlights, is a function that takes in the highlight color and returns a stroke.

## 2.40. Highlight inset (highlight-inset)

⟨/› Type	length
{*} Default value	0.32em
	✓ yes
<b>ூ Automatically reset</b>	no

The inset of the highlights.

## 2.41. Reference by (reference-by)

Type	str
{*} Default value	"line"
② Contextual function	✓ yes
ூ Automatically reset	no

The mode by which references are displayed. Two modes are available:

- line: references are displayed as line numbers
- item: references are displayed as items, i.e by the tag for highlights and content for annotations.

## 2.42. Reference separator (reference-sep)

√> Type	str or content
{*} Default value	" _ "
© Contextual function	✓ yes
<b>ூ Automatically reset</b>	no

The separator to use when referencing highlights and annotations.

## 2.43. Reference number format ( reference-number-format )

Type	function
{*} Default value	numbering.with("1")
② Contextual function	× no
<b>ூ Automatically reset</b>	no

The format of the reference number line number, only used if reference-by is set to "line".

## 3. Getting nice icons

## 4. Other functions

- 4.1. Reset (codly-reset)
- 4.2. Skip (codly-skip)
- 4.3. Range (codly-range)
- 4.4. Offset (codly-offset)
- 4.5. Local (local)
- 4.6. No codly (no-codly)
- 4.7. Enable (codly-enable)
- 4.8. Disable (codly-disable)