

Creating Slides

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¹My University is somewhere in the middle of nowhere

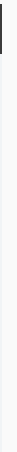
²Their University is somewhere in the middle of nowhere



Read instructions in left panel

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9. Code to Generate Slides



≡ Show Code

Introduction

To see how commands work, use `Slides.docs()` to see the documentation. Here we will focus on using all that functionality to create slides.



This is inline markdown parsed by magic

Version: 3.2.1 as executed from below code in markdown.

Python


```
1 # get the slides instance under a python block in Markdown file, we will use it la
2 myslides = get_slides_instance()
3 import ipyslides as isd
4 version = myslides.version
5 %xmd ##### This is inline markdown parsed by magic {.note .warning}
```

I was added at end by a given proxy, see the how it was done at the end of the slides

IPySlides Online Running Sources



Note

- [Edit on Kaggle](#)
- Launch example Notebook 
- Watch a [Youtube Video](#)

1. Add references like this per slide. Use `slides.cite()` or in markdown `cite`key`` to add citations generally. ↵

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IPython Display Objects

Any object with following methods could be `inwrite` command:

`_repr_pretty_`, `_repr_html_`, `_repr_markdown_`, `_repr_svg_`, `_repr_png_`, `_repr_jpeg_`,
`_repr_latex_`, `_repr_json_`, `_repr_javascript_`, `_repr_pdf_` Such as `IPython.display.`
`[HTML,SVG,Markdown,Code]` etc. or third party such as `plotly.graph_objects.Figure`.

Plots and Other Data Types

These objects are implemented to be writable in `write` command:

`matplotlib.pyplot.Figure`, `altair.Chart`, `pygal.Graph`, `pydeck.Deck`, `pandas.DataFrame`, `bokeh.plotting.Figure`, `IPython.display.Image` Many will be extended in future. If an object is not implemented, use `display(obj)` to show inline or use library's specific command to show in Notebook outside `write`.

Interactive Widgets

Any object in ipywidgets [Link to ipywidgets right here using textbox command](#)

or libraries based on ipywidgets such as **bqplot**, **ipyvolume**, **plotly's FigureWidget** ¹

(reference at end) can be included as well.

Commands which do all Magic!

`Slides.write(*objs, widths=None)`

Write `objs` to slides in columns. To create rows in a column, wrap objects in a list or tuple. You can optionally specify `widths` as a list of percentages for each column.

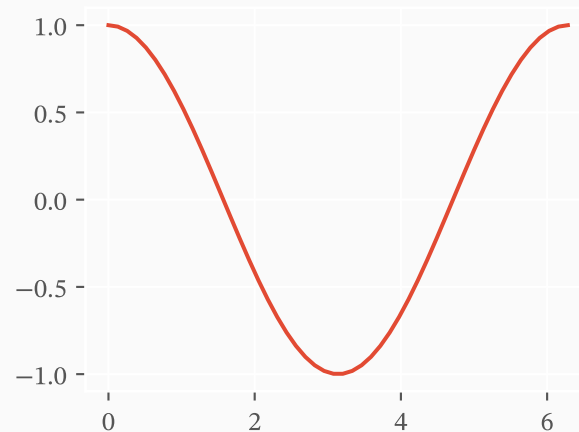
Write any object that can be displayed in a cell with some additional features:

- Strings will be parsed as as extended markdown that can have citations/python code blocks/Javascript etc.
- Display another function in order by passing it to a lambda function like `lambda: func()`. Only body of the function will be displayed/printed. Return value will be ignored.
- Display IPython widgets such as `ipywidgets` or `ipyvolume` by passing them directly.
- Display Axes/Figure from libraries such as `matplotlib`, `plotly`, `altair`, `bokeh`, `ipyvolume` ect. by passing them directly.
- Display source code of functions/classes/modules or other languages by passing them directly or using `Slides.source` API.
- Use `Slides.alt(widget, obj)` function to display widget on slides and alternative content in exported slides/report.
- `ipywidgets.HTML` and its subclasses will be displayed as `Slides.alt(widget, value)`. The value of exported HTML will be oldest one.
- Other options include but not limited to:
 - Output of functions in `ipyslides.utils` module that are also linked to `Slides` object.
 - PIL images, SVGs etc.
 - IPython display objects such as `Image`, `SVG`, `HTML`, `Audio`, `Video`, `YouTubeVideo`, `IFrame`, `Latex`, `Markdown`, `JSON`, `Javascript`, etc.
 - Any object that has a `_repr_html_` method, you can create one for your own objects/third party objects by:
 - `Slides.serializer` API.

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Plotting with Matplotlib



Python

```
1 import numpy as np, matplotlib.pyplot as plt
2 plt.rcParams['svg.fonttype'] = 'none' # Global setting, enforce same fonts as pres
3 x = np.linspace(0, 2*np.pi)
4 with plt.style.context('ggplot'):
5     fig, ax = plt.subplots(figsize=(3.4, 2.6))
6     _ = ax.plot(x, np.cos(x))
7     write([ax, s.focus_lines([1, 3, 4])])
```

Writing Pandas DataFrame

	sepal_length	sepal_width	petal_length	petal_width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.057333	3.758000	1.199333
std	0.828066	0.435866	1.765298	0.762238
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

Python

```
1 try:
2     import pandas as pd
3     df = pd.read_csv('https://raw.githubusercontent.com/mwaskom/seaborn-data/master/iris.csv')
4     df = df.describe() #Small for display
5 except:
6     df = '### Install `pandas` to view output'
```

Writing Plotly Figure

Install **plotly** to view output

Python

```
1 try:
2     import plotly.graph_objects as go
3     fig = go.Figure()
4     fig.add_trace(go.Bar(y=[1,5,8,9]))
5 except:
6     fig = '### Install `plotly` to view output'
```

Interactive Apps with Widgets

Use `ipywidgets`, `bqplot`, `ipyvolume`, `plotly` `Figurewidget` etc. to show live apps like this!



Tip

Export to Slides/Report to see what happens to this slide and next slide!

Plot will be here

Python

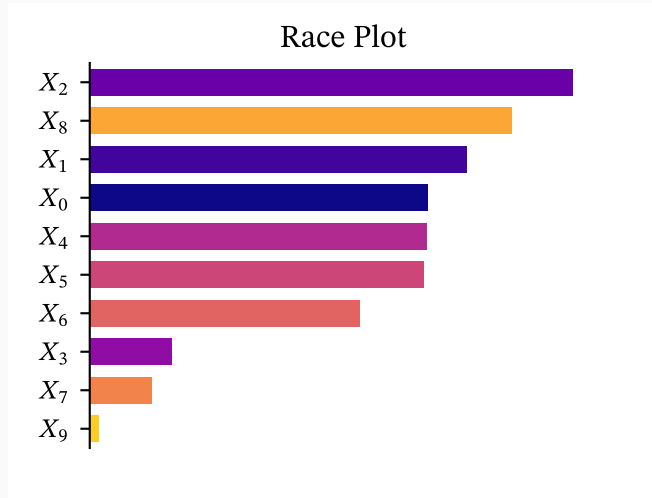
```
1 import ipywidgets as ipw
2
3 write('''
4     ## Interactive Apps with Widgets
5     Use `ipywidgets`, `bqplot`, `ipyvo
6     ::: note-tip
7         Export to Slides/Report to se
8     ''')
9 write([
10     plot_html := ipw.HTML('Plot will
11     button := ipw.Button(description=
12     ], src)
13
14 def update_plot(btn):
15     plot_html.value = race_plot().val
```

Python

```
1 def race_plot():
2     import numpy as np
3     import matplotlib.pyplot as plt
```

Dynamic Content without Widgets

Use refresh button below to update plot! Compare with previous slide!



A Silly Plot

Python

```
1 write('''
2     ## Dynamic Content without Widget
3     Use refresh button below to updat
4     ''')
5
6 def display_plot(): return race_plot(
7
8 write(lambda: slides.on_refresh(displ
9 slides.source.from_callable(race_plot
```

Python

```
1 def race_plot():
2     import numpy as np
3     import matplotlib.pyplot as plt
4
5     x = np.linspace(0,0.9,10)
6     y = np.random.random((10,))
7     _sort = np.argsort(y)
8
9     plot_theme = 'dark_background' if 'Dark' in slides.settings.theme_dd.value else
10    with plt.style.context(plot_theme):
11        fig,ax = plt.subplots(figsize=(3.4,2.6))
12        ax.barh(x,y[_sort],height=0.07,color=plt.cm.get_cmap('plasma')(x[_sort]))
13
```

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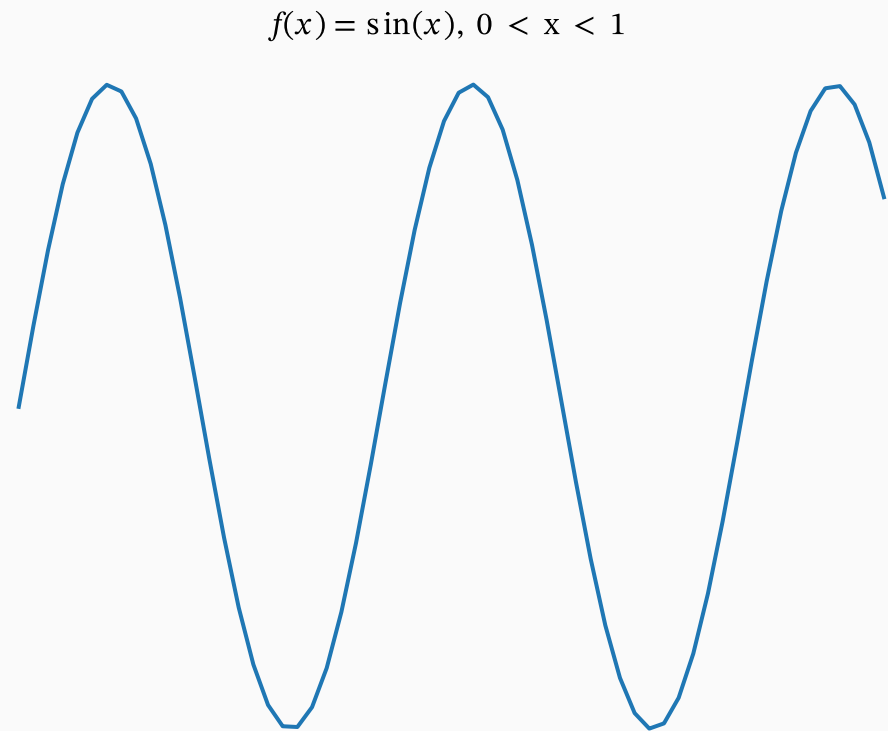
Skip All Next Frames

This is Slide 16.0

and we are animating matplotlib

Python

```
1 fig, ax = plt.subplots()
2 + 5 more lines ...
```



Python

```
1 + 5 more lines ...
2 slides.notes.insert(f'## This is under @frames decorator!')
```

2

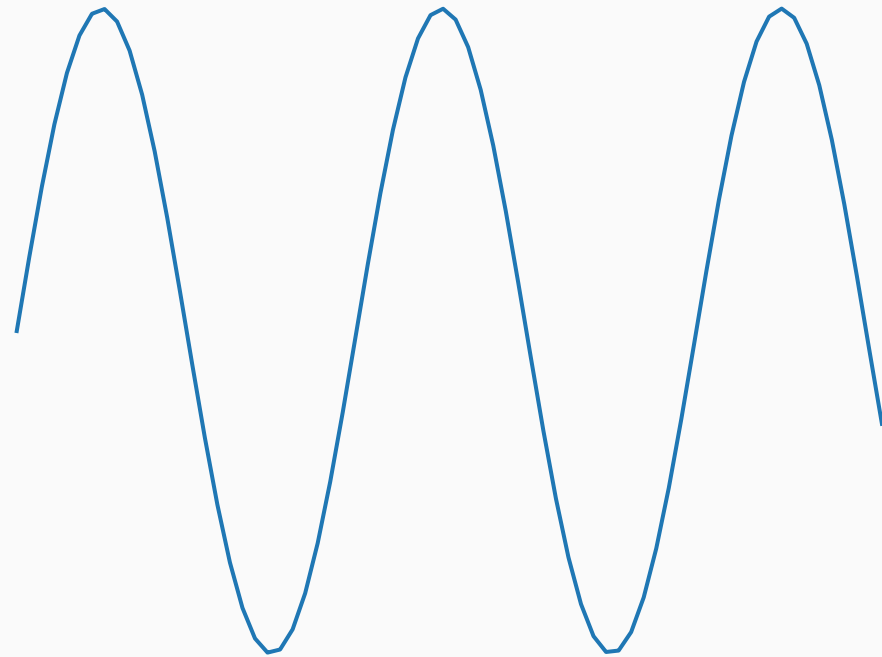
This is Slide 16.1

and we are animating matplotlib

Python

```
1  + 1 more lines ...  
2  x = np.linspace(0,obj+1,50+10  
3  + 4 more lines ...
```

$$f(x) = \sin(x), 0 < x < 2$$



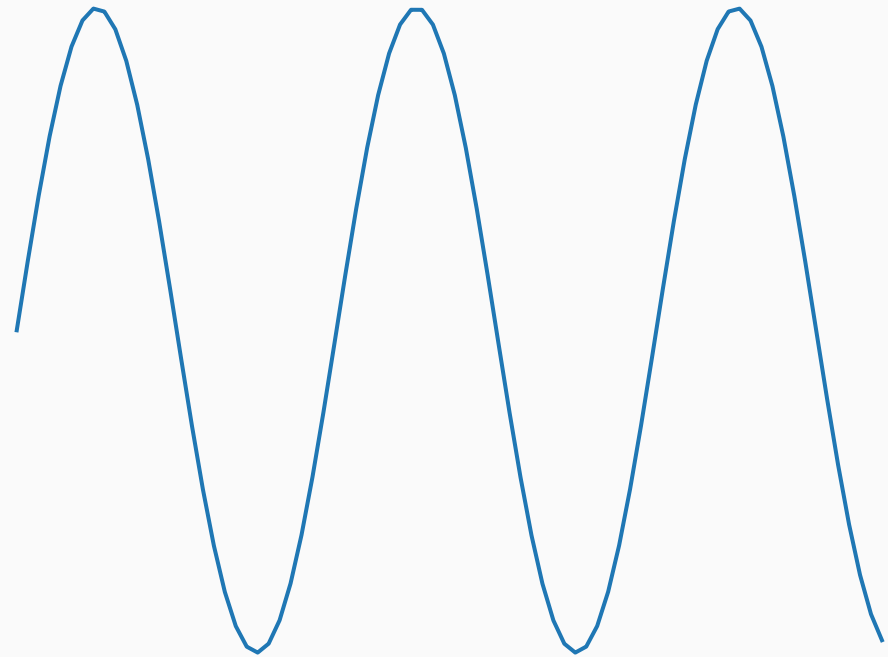
This is Slide 16.2

and we are animating matplotlib

Python

```
1 + 2 more lines ...  
2 ax.plot(x,np.sin(x));  
3 + 3 more lines ...
```

$$f(x) = \sin(x), 0 < x < 3$$



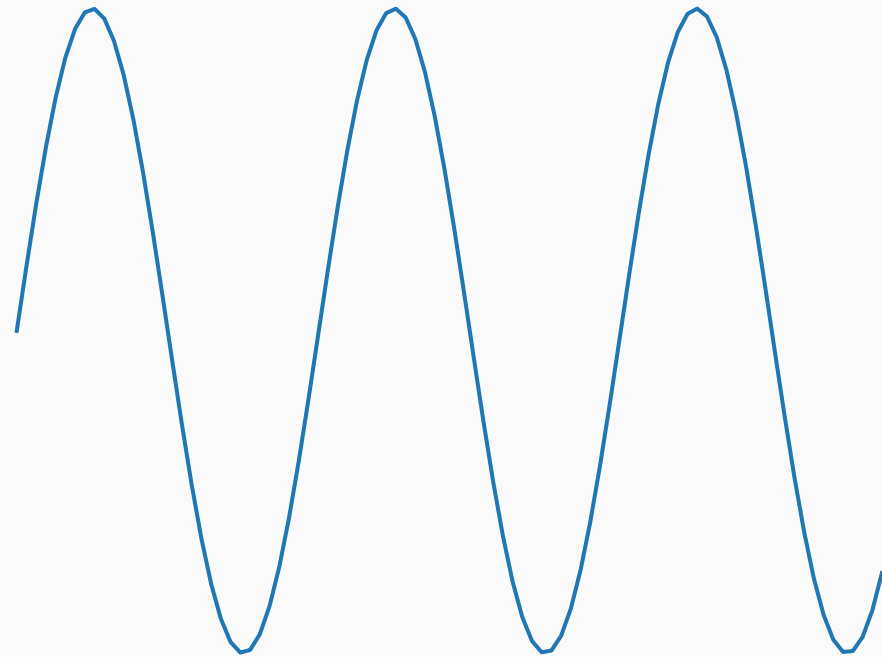
This is Slide 16.3

and we are animating matplotlib

Python

```
1 + 3 more lines ...  
2 ax.set_title(f'$f(x)=\sin(x)$')  
3 + 2 more lines ...
```

$$f(x) = \sin(x), 0 < x < 4$$



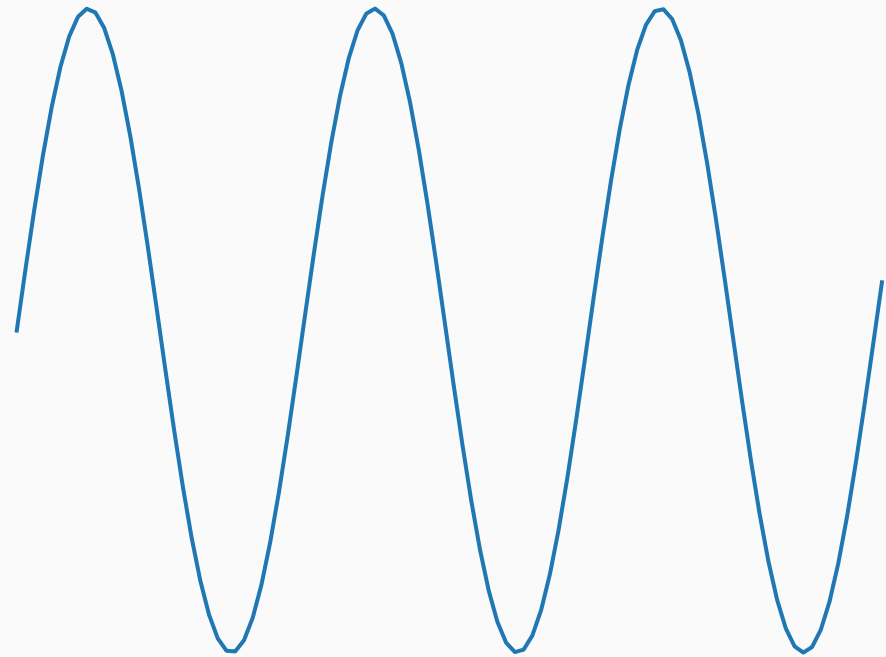
This is Slide 16.4

and we are animating matplotlib

Python

```
1 + 4 more lines ...  
2 ax.set_axis_off()  
3 + 1 more lines ...
```

$$f(x) = \sin(x), 0 < x < 5$$



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Frames with

`repeat = False`

1

Frames with

`repeat = False`

2

Frames with

`repeat = False`

3

Frames with

`repeat = False`

4

Frames with

repeat = True and Fancy Bullet List



1

Frames with

repeat = True and Fancy Bullet List



1



2

Frames with

repeat = True and Fancy Bullet List



1



2



3

Frames with

repeat = True and Fancy Bullet List



1



2



3



4

Frames with

`repeat = [(0,1),(2,3)]`

1

2

Python

```
1 slides.write('# Frames with \n#### `repeat = [(0,1),(2,3)]`')  
2 slides.write(*obj)
```

Frames with

`repeat = [(0,1),(2,3)]`

3

4

Python

```
1 slides.write('# Frames with \n#### `repeat = [(0,1),(2,3)]`')  
2 slides.write(*obj)
```


Displaying image from url from somewhere in Kashmir (کشمیر)



Python

```
1 backward_skipper.display()
2 forward_skipper.set_target()
3 slides.format_css({'goto-button .fa.fa-minus': slides.icon('arrow', color='crimson')
4 slides.write('## Displaying image from url from somewhere in Kashmir color[crimson
5 try:
6     slides.image(r'https://assets.gqindia.com/photos/616d2712c93aeaf2a32d61fe/mast
7 except:
```

Watching Youtube Video?

Want to do some drawing instead? Click on pencil icon and draw something on tldraw!

IPySlides-Demo



Python

```
1 write(f"### Watching Youtube Video?")
2 write('**Want to do some drawing instead?**\nClick on pencil icon and draw something')
3
4 write(YouTubeVideo('thgLGl14-tg',width='100%',height='266px'))
5
6 @slides.on_load
7 def push():
8     t = time.localtime()
9     slides.notify(f'You are watching Youtube at Time-{t.tm_hour:02}:{t.tm_min:02}')
10    slides.set_overlay_url('https://tldraw.com')
11
12 ys.get_source().display()
```

Block API

New block API is as robust as `write` command. On top of it, it makes single unit of related content.

Table

h1	h2	h3
d1	d2	d3
r1	r2	r3

Widgets

Python

```
1 write('## Block API\nNew `block` API is as robust as `write` command. On top of it
2 slides.block_red(
3     [
4         '### Table',
5         '''
6         |h1 |h2 |h3 |
7         |---|---|---|
8         |d1 |d2 |d3 |
9         |r1 |r2 |r3 |
10        ''',
11     ],
12     [
13         '### Widgets',
14         ipw.Checkbox(description='Select to do nothing',indent=False),
15         ipw.IntSlider(),
```

LAT_{EX} in Slides

Alert







Use $\$$ $\$$ or $\$ \$$ $\$ \$$ to display latex in Markdown, or embed images of equations LAT_{EX} needs time to load, so keeping it in view until it loads would help.

$$\int_0^1 \frac{1}{1-x^2} dx$$

```
1 slides.write('## Built-in CSS styles')
2 slides.css_styles.display()
```

Built-in CSS styles

Use any or combinations of these styles in className argument of writing functions:

className	Formatting Style
'align-center'	——Text——
'align-left'	Text——
'align-right'	——Text
'rtl'	—— اردو عربی
'info'	Blue text. Icon  for note-info class.
'tip'	Blue Text. Icon  for note-tip class.
'warning'	Orange Text. Icon  for note-warning class.
'success'	Green text. Icon  for note-success class.
'error'	Red Text. Icon  for note-error class.
'note'	 Text with note icon.
'slides-only'	Text will not appear in exported html report.
'report-only'	Text will not appear on slides. Use to fill content in report.
'export-only'	Hidden on main slides, but will appear in exported slides/report
'jupyter-only'	Hidden on exported slides/report, but will appear on main slide

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Serialize Custom Objects to HTML

This is useful for displaying user defined/third party objects in slides

0 1 2 3 4 5 6 7 8 9

Python

```
1 slides.write('## Serialize Custom Objects to HTML\nThis is useful for displaying u
2 with slides.suppress_stdout(): # suppress stdout from register fuction below
3     @slides.serializer.register(int)
4     def colorize(obj):
5         color = 'red' if obj % 2 == 0 else 'green'
6         return f'<span style="color:{color};">{obj}</span>'
7     slides.write(*range(10))
8
9 some_slide.get_source().display()
```

This is all code to generate slides

Python

```
1 def demo(self):
2     "Demo slides with a variety of content."
3     self.close_view() # Close any previous view to speed up loading 10x faster on
4     self.clear() # Clear previous content
5
6     with self.set_dir(os.path.split(__file__)[0]):
7         file = '../_demo.py'
8         raw_source = self.source.from_file(file).raw
9         N = raw_source.count('auto.') + raw_source.count('\n---') + 1 # Count number of slides
10        self.create(*range(N)) # Create slides first, this is faster
11        self.shell.run_line_magic('run', file) # Run demo in same namespace
12
13    return self #_demo.demo(self) # Run demo
```

e:\research\ipyslides\ipyslides_demo.py

```
1 # Author: Abdul Saboor
2 # This demonstrates that you can generate slides from a .py file too, which you can
3 import time
4
5 from ipyslides.core import Slides
6 from ipyslides.writer import write
7 from ipyslides.formatters import libraries, __reprs__, plt2html
8 from ipyslides._base.intro import logo_svg
9
10
11 slides = Slides() # It returns running slides instance or creates a new one
```




Slides keep their full code if they are not made by @frames decorator!

Source Code

Markdown: Slide 0

```
1 # Creating Slides
2 ::: align-center
3     alert`Abdul Saboor`sup`1`, Unknown Authorsup`2`
4     center`today``
5     ::: text-box
6         sup`1`My University is somewhere in the middle of nowhere
7         sup`2`Their University is somewhere in the middle of nowhere
8 <h4 style=""color:green;"> 🖐 Read instructions in left panel</h4>
```

Markdown: Slide 1

```
1 section`Introduction` toc`### Contents`
```

Markdown: Slide 2

```
1 proxy`something will be here in start`
2 # Introduction
3 To see how commands work, use `Slides.docs()` to see the documentation.
4 Here we will focus on using all that functionality to create slides.
5 ```python run source
6 # get the slides instance under a python block in Markdown file, we will use it la
7 myslides = get_slides_instance()
8 import ipyslides as isd
9 version = myslides.version
10 %xmd ##### This is inline markdown parsed by magic {.note .warning}
```

Reference via Markdown

1. This is refernce to FigureWidget using `slides.cite` command
2. I was cited for no reason

Python

```
1 slides.write('citations`## Reference via Markdown\n——`')
2 bib_slide.get_source().display()
```