

Creating Slides

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¹My University is somewhere in the middle of nowhere

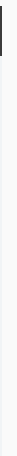
²Their University is somewhere in the middle of nowhere



Read instructions in left panel

Contents

- 1. Introduction**
2. Variety of Content Types to Display
3. Plotting and DataFrame
4. Interactive Widgets
5. Simple Animations with Frames
6. Controlling Content on Frames
7. Miscellaneous Content
8. Custom Objects Serilaization
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.



Note

This is inline markdown parsed by magic

Version: 3.2.2 as executed from below code in markdown.

Python


```
1 # get the slides instance under a python block in Markdown file, we will use it later
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. ↵

Contents

1. Introduction
2. **Variety of Content Types to Display**
3. Plotting and DataFrame
4. Interactive Widgets
5. Simple Animations with Frames
6. Controlling Content on Frames
7. Miscellaneous Content
8. Custom Objects Serilaization
9. Code to Generate Slides

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.

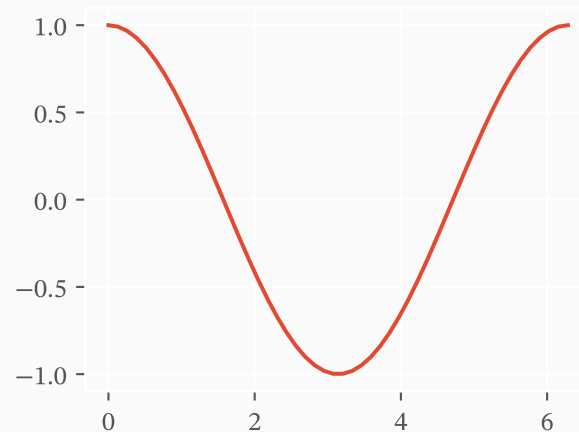
Write any object that can be displayed in a cell with some additional features:

- Strings will be parsed as 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` etc. 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.

Table of Contents

1. Introduction
2. Variety of Content Types to Display
3. **Plotting and DataFrame**
4. Interactive Widgets
5. Simple Animations with Frames
6. Controlling Content on Frames
7. Miscellaneous Content
8. Custom Objects Serilaization
9. Code to Generate Slides

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

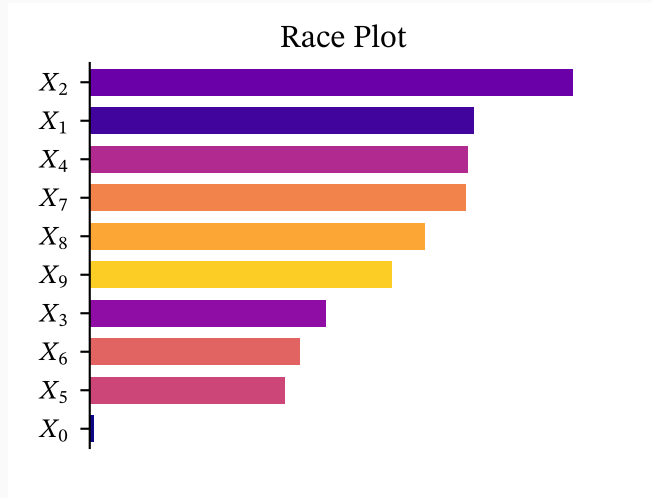
```
1 import ipywidgets as ipw
2
3 write('''
4     ## Interactive Apps with Widgets
5     Use `ipywidgets`, `bqplot`, `ipyvo
6     ::: note-tip
7         Export to Slides/Report to se
8     ''')
9 write([
10     plot_html := ipw.HTML('Plot will
11     button := ipw.Button(description=
12     ], src)
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 update
4     ''')
5
6 def display_plot(): return race_plot(
7
8 write(lambda: slides.on_refresh(display_plot))
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 'white'
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]))
```

Contents

1. Introduction
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5. **Simple Animations with Frames**
6. Controlling Content on Frames
7. Miscellaneous Content
8. Custom Objects Serilaization
9. Code to Generate Slides

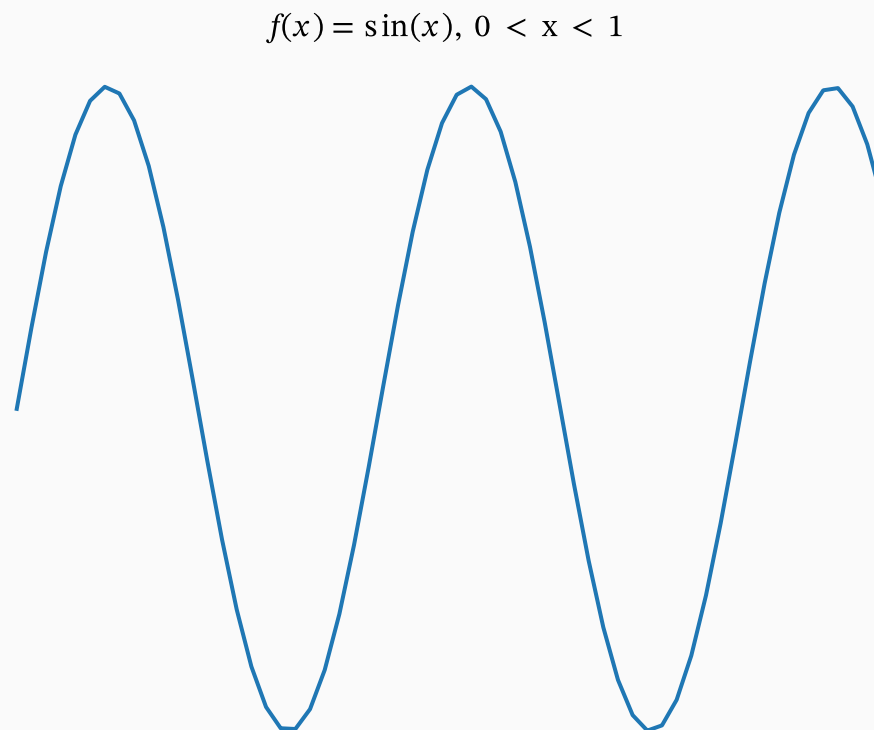
Skip All Next Frames

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

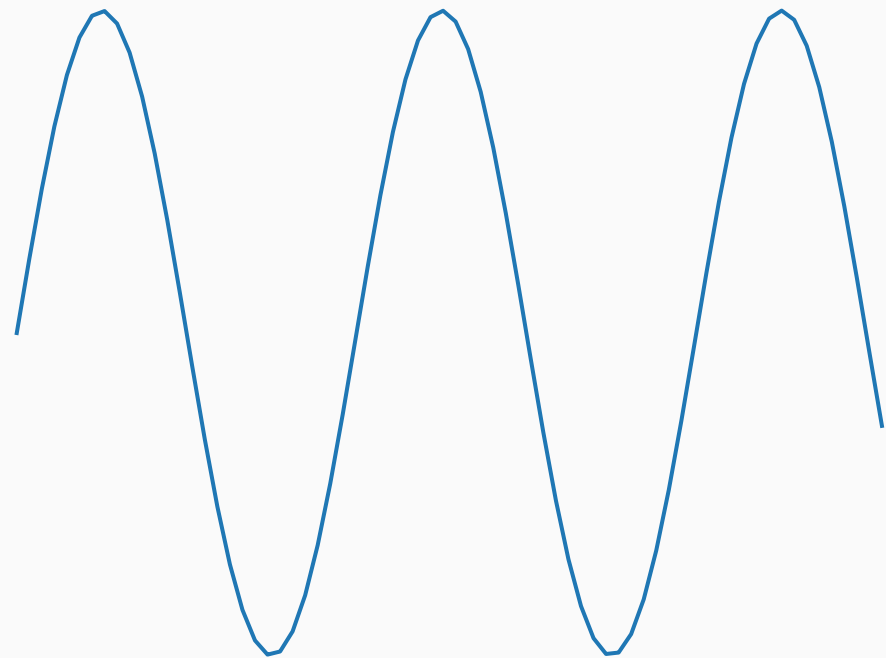
This is Slide 16.1

and we are animating matplotlib

Python

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

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



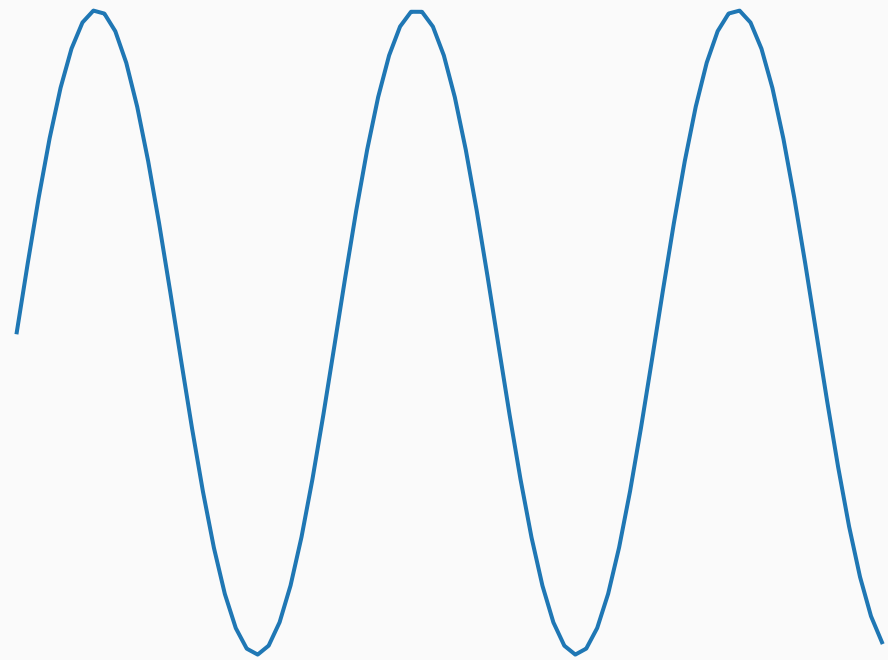
This is Slide 16.2

and we are animating matplotlib

Python

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

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



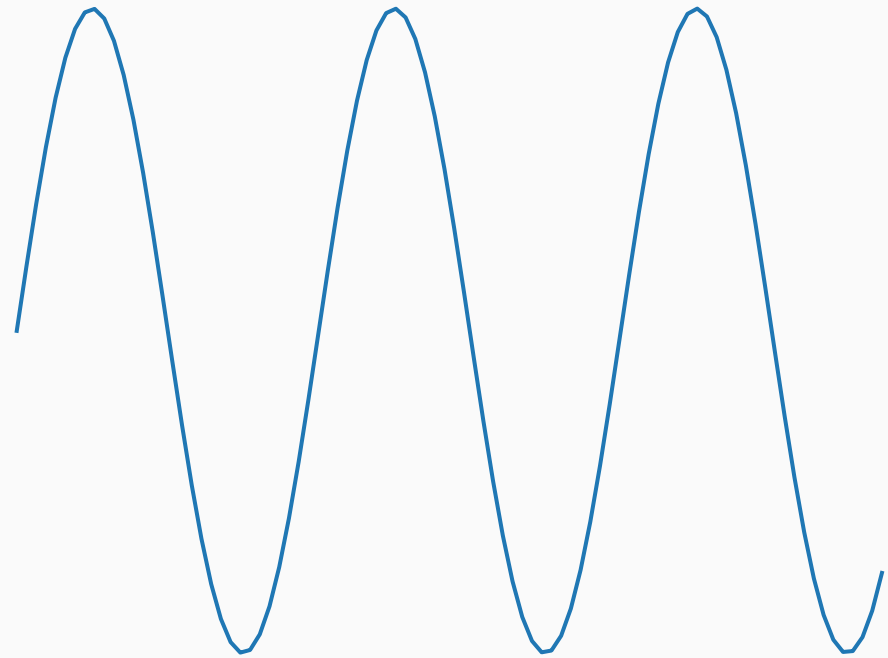
This is Slide 16.3

and we are animating matplotlib

Python

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

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



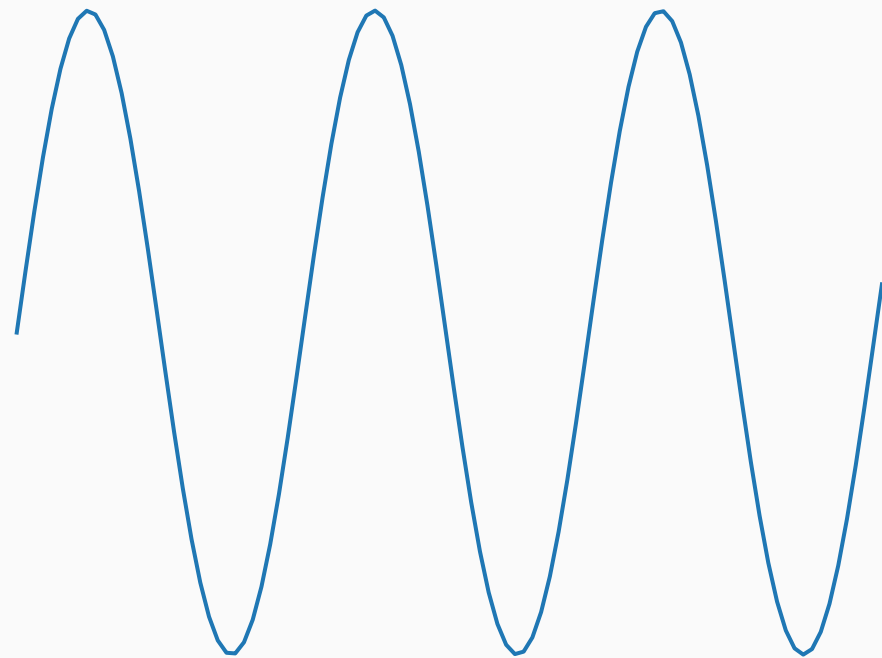
This is Slide 16.4

and we are animating matplotlib

Python

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

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



Contents

1. Introduction
2. Variety of Content Types to Display
3. Plotting and DataFrame
4. Interactive Widgets
5. Simple Animations with Frames
6. **Controlling Content on Frames**
7. Miscellaneous Content
8. Custom Objects Serilaization
9. Code to Generate Slides

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/masthead-1200x800.jpg')
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 somethi
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/repor
'jupyter-only'	Hidden on exported slides/report, but will appear on main slide

Contents

1. Introduction
2. Variety of Content Types to Display
3. Plotting and DataFrame
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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 reference 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()
```