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# Cheat Sheet

This is a summary of the docs, as of [Streamlit v1.13.0](#).

## Install & Import

```
streamlit run first_app.py
```

```
# Import convention
```

```
>>> import streamlit as st
```

## Command line

```
streamlit --help
```

```
streamlit run your_script.py
```

```
streamlit hello
```

```
streamlit config show
```

```
streamlit cache clear
```

```
streamlit docs
```

```
streamlit --version
```

## Pre-release features

```
pip uninstall streamlit
```

```
pip install streamlit-nightly --upgrade
```

Learn more about [experimental features](#)

## Magic commands

```
# Magic commands implicitly
```

```
# call st.write().
```

```
'_This_ is some Markdown'
```

```
my_variable
```

```
'dataframe:', my_data_frame
```

## Display text

```
st.text('Fixed width text')
st.markdown('_Markdown_') # see *
st.latex(r''' e^{i\pi} + 1 = 0 ''')
st.write('Most objects') # df, err, func, keras!
st.write(['st', 'is <', 3]) # see *
st.title('My title')
st.header('My header')
st.subheader('My sub')
st.code('for i in range(8): foo()')
* optional kwarg unsafe_allow_html = True
```

## Display data

```
st.dataframe(my_dataframe)
st.table(data.iloc[0:10])
st.json({'foo': 'bar', 'fu': 'ba'})
st.metric('My metric', 42, 2)
```

## Display media

```
st.image('./header.png')
st.audio(data)
st.video(data)
```

## Add widgets to sidebar

```
# Just add it after st.sidebar:
>>> a = st.sidebar.radio('Select one:', [1, 2])

# Or use "with" notation:
>>> with st.sidebar:
>>>     st.radio('Select one:', [1, 2])
```

## Columns

```
# Two equal columns:
```

```
>>> col1, col2 = st.columns(2)
>>> col1.write("This is column 1")
>>> col2.write("This is column 2")

# Three different columns:
>>> col1, col2, col3 = st.columns([3, 1, 1])
# col1 is larger.

# You can also use "with" notation:
>>> with col1:
>>>     st.radio('Select one:', [1, 2])
```

## Tabs

```
# Insert containers separated into tabs:
>>> tab1, tab2 = st.tabs(["Tab 1", "Tab2"])
>>> tab1.write("this is tab 1")
>>> tab2.write("this is tab 2")

# You can also use "with" notation:
>>> with tab1:
>>>     st.radio('Select one:', [1, 2])
```

## Control flow

```
# Stop execution immediately:
st.stop()

# Rerun script immediately:
st.experimental_rerun()

# Group multiple widgets:
>>> with st.form(key='my_form'):
>>>     username = st.text_input('Username')
>>>     password = st.text_input('Password')
>>>     st.form_submit_button('Login')
```

## Display interactive widgets

```
st.button('Click me')
st.checkbox('I agree')
st.radio('Pick one', ['cats', 'dogs'])
st.selectbox('Pick one', ['cats', 'dogs'])
st.multiselect('Buy', ['milk', 'apples', 'potatoes'])
st.slider('Pick a number', 0, 100)
st.select_slider('Pick a size', ['S', 'M', 'L'])
st.text_input('First name')
st.number_input('Pick a number', 0, 10)
st.text_area('Text to translate')
st.date_input('Your birthday')
st.time_input('Meeting time')
st.file_uploader('Upload a CSV')
st.download_button('Download file', data)
st.camera_input("Take a picture")
st.color_picker('Pick a color')
```

*# Use widgets' returned values in variables:*

```
>>> for i in range(int(st.number_input('Num:'))):
>>>     foo()
>>> if st.sidebar.selectbox('I:', ['f']) == 'f':
>>>     b()
>>> my_slider_val = st.slider('Quinn Mallory', 1, 88)
>>> st.write(slider_val)
```

*# Disable widgets to remove interactivity:*

```
>>> st.slider('Pick a number', 0, 100, disabled=True)
```

## Mutate data

*# Add rows to a dataframe after*

*# showing it.*

```
>>> element = st.dataframe(df1)
>>> element.add_rows(df2)
```

*# Add rows to a chart after*

```
# Add rows to a chart after  
# showing it.  
>>> element = st.line_chart(df1)  
>>> element.add_rows(df2)
```

## Display code

```
>>> with st.echo():  
>>>     st.write('Code will be executed and printed')
```

## Placeholders, help, and options

```
# Replace any single element.  
>>> element = st.empty()  
>>> element.line_chart(...)  
>>> element.text_input(...) # Replaces previous.  
  
# Insert out of order.  
>>> elements = st.container()  
>>> elements.line_chart(...)  
>>> st.write("Hello")  
>>> elements.text_input(...) # Appears above "Hello".
```

```
st.help(pandas.DataFrame)  
st.get_option(key)  
st.set_option(key, value)  
st.set_page_config(layout='wide')  
st.experimental_show(objects)  
st.experimental_get_query_params()  
st.experimental_set_query_params(**params)
```

## Optimize performance

### Legacy caching

```
>>> @st.cache  
... def foo(bar):  
...     # Do something expensive in here...
```

```
...     return data
>>> # Executes foo
>>> d1 = foo(ref1)
>>> # Does not execute foo
>>> # Returns cached item by reference, d1 == d2
>>> d2 = foo(ref1)
>>> # Different arg, so function foo executes
>>> d3 = foo(ref2)
```

## Cache data objects

*# E.g. Dataframe computation, storing downloaded data, etc.*

```
>>> @st.experimental_memo
... def foo(bar):
...     # Do something expensive and return data
...     return data
# Executes foo
>>> d1 = foo(ref1)
# Does not execute foo
# Returns cached item by value, d1 == d2
>>> d2 = foo(ref1)
# Different arg, so function foo executes
>>> d3 = foo(ref2)
# Clear all cached entries for this function
>>> foo.clear()
# Clear values from *all* memoized functions
>>> st.experimental_memo.clear()
```

## Cache non-data objects

*# E.g. TensorFlow session, database connection, etc.*

```
>>> @st.experimental_singleton
... def foo(bar):
...     # Create and return a non-data object
...     return session
# Executes foo
>>> s1 = foo(ref1)
```

```
# Does not execute too
# Returns cached item by reference, s1 == s2
>>> s2 = foo(ref1)
# Different arg, so function foo executes
>>> s3 = foo(ref2)
# Clear all cached entries for this function
>>> foo.clear()
# Clear all singleton caches
>>> st.experimental_singleton.clear()
```

## Display progress and status

```
>>> with st.spinner(text='In progress'):
>>>     time.sleep(5)
>>>     st.success('Done')
```

```
st.progress(progress_variable_1_to_100)
st.balloons()
st.snow()
st.error('Error message')
st.warning('Warning message')
st.info('Info message')
st.success('Success message')
st.exception(e)
```

## Personalize apps for users

```
# Show different content based on the user's email address.
>>> if st.user.email == 'jane@email.com':
>>>     display_jane_content()
>>> elif st.user.email == 'adam@foocorp.io':
>>>     display_adam_content()
>>> else:
>>>     st.write("Please contact us to get access!")
```