

Dashboards - supplement

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Control flow: what code exactly does streamlit run?

- Every time the user loads the app or interacts with an input widget:
 - the entire `.py` file re-runs from top to bottom
 - the UI is rebuilt
 - the app refreshes
- To avoid re-running unnecessary parts of the dashboard, you can wrap it in a function and only call it when necessary
 - We can extend this further by wrapping the function in a decorator so that it only runs *the first time* it is called (more in this later)
- This is why the multipage and uber dashboards examples used functions

Multipage + selection box: simple example

[3/multipage_simple.py](#): (link)

```
1 import streamlit as st
2
3 # This message is always displayed
4 st.write("Welcome message")
5
6 # define functions for what each page displays
7 def my_first_page():
8     st.write("my first page")
9 def my_second_page():
10     st.write("my second page")
11
12 # define dictionary for what is in the selection box
13 page_names_to_funcs = {
14     "First Page": my_first_page,
15     "Second Page": my_second_page
16 }
17
18 # define the selection box (default is "First Page")
```

Syntax for conditional call to each function

The following two code snippets will do the same thing. First one:

```
1 if demo_name == "First Page":  
2     my_first_page()  
3 elif demo_name == "Second Page":  
4     my_second_page()
```

Second one (seen in `multipage.py`):

```
1 page_names_to_funcs[demo_name]()
```

Second snippet uses `demo_name` as key, looks up corresponding function in `page_names_to_funcs` dictionary, and then calls it (by adding `()` to the end)

Ordering of code within your `app.py`

- Because streamlit reads your code from top to bottom, you need to define all functions first *before* you define any streamlit widgets that call those functions
- The following code would lead to an error (next slide)

Ordering of code within your `app.py`

[3/multipage_simple_wrongorder.py](#): (link)

```
1 import streamlit as st
2
3 # This message is always displayed
4 st.write("Welcome message")
5
6 # define dictionary for what is in the selection box
7 page_names_to_funcs = {
8     "First Page": my_first_page,
9     "Second Page": my_second_page
10 }
11
12 # define the selection box
13 demo_name = st.sidebar.selectbox(
14     "Choose a page",
15     page_names_to_funcs.keys()
16 )
17
18 # only run a function if the user has selected that page
19 # my_first_page() if demo_name == "First Page"
20 # my_second_page() if demo_name == "Second Page"
```

What you would have seen in terminal

```
1  _____ Traceback (most recent call last) _____
2  /Users/mengdishih/anaconda3/envs/dap/lib/python3.13/site-packages/streamli
3  criptrunner/exec_code.py:129 in exec_func_with_error_handling
4
5  /Users/mengdishih/anaconda3/envs/dap/lib/python3.13/site-packages/streamli
6  criptrunner/script_runner.py:672 in code_to_exec
7
8  /Users/mengdishih/Github/dashboards/3/multipage_simple_wrongorder.py:8 in
9
10     5
11     6 # define dictionary for what is in the selection box
12     7 page_names_to_funcs = {
13     8 |     "First Page": my_first_page,
14     9 |     "Second Page": my_second_page
15    10 }
16    11
17
18  NameError: name 'my_first_page' is not defined
```