Streamlit

Build data dashboards quickly

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About Me

- Graduated from DA-IICT with a B. Tech Honors
- Working with Infocusp Innovations Pvt. Ltd. since January 2017 on different projects with multiple top-notch clients (http://infocusp.in/)
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Outline

Introduction to Streamlit

Main concepts

Components

Fully functional app demo

Streamlit

Motivation: Why Streamlit?

Answer: Need for easy to use Python module to create web apps to present ML results

Streamlit (continued)

Other alternatives and difficulties associated with it for the use:

- Jupyter Notebook: Not a good way to deploy it in production
- Dash by Plotly: One needs to have more knowledge about HTML and CSS for formatting things and also it just focuses on plotly graphs
- Flask: Complex to use

[1] https://raw.githubusercontent.com/streamlit/demo-uber-nyc-pickups/master/app.py

[1] https://raw.githubusercontent.com/streamlit/demo-self-driving/master/app.py

Main Concepts

- Embraces Python scripting (Pure Python app in their terms)
- Immediate and interactive live environment
- Re-executes the script top to bottom whenever something changes in the app

Wouldn't that slow down the app?

Caching

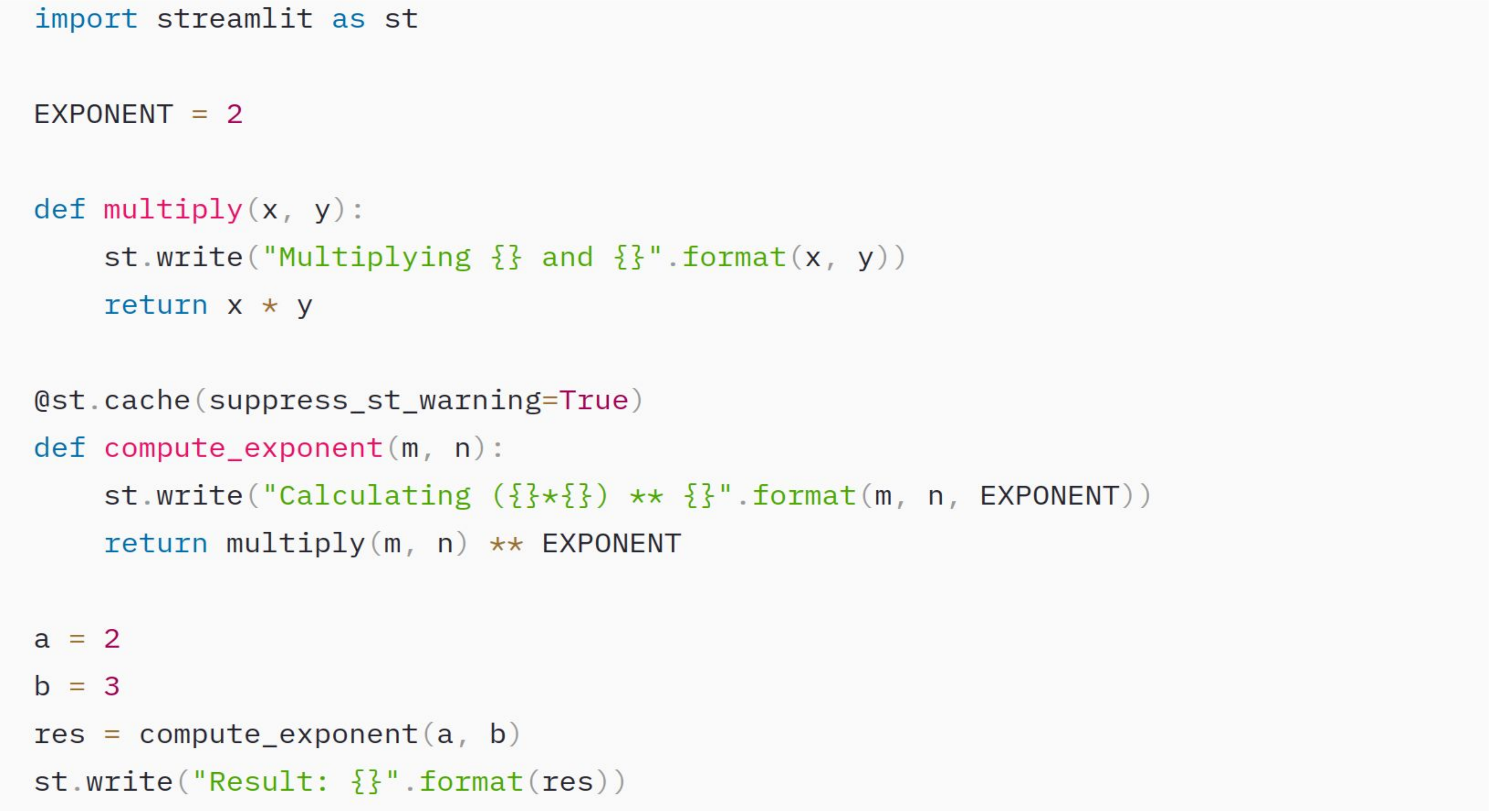
Skips the redundant data fetching and computation part

Provides the functionality in Pythonic way of using a decorator (@st.cache)

Caching (continued)

Checks for the following conditions:

- Input parameters passed to the function
- Value of external variable used in the function
- Body of the function
- Body of any function used within the cached function



```python
import streamlit as st

EXPONENT = 2

def multiply(x, y):
    st.write("Multiplying {} and {}".format(x, y))
    return x * y

@st.cache(suppress_st_warning=True)
def compute_exponent(m, n):
    st.write("Calculating ({}*{}) ** {}".format(m, n, EXPONENT))
    return multiply(m, n) ** EXPONENT

a = 2
b = 3
res = compute_exponent(a, b)
st.write("Result: {}".format(res))
```

Components

Writing out data to the app using a single function “st.write()”

- Normal text data
- Dataframe
- Graphs

Also, it provides the user with the Markdown support so as to help the user to easily add markdown content “st.markdown()”

Moreover, it provides the user with latex support to let the user write the things in LaTeX in the app “st.latex()”

Components (continued)

Widgets to make the app interactive and more user friendly

- Text input
- Slider
- Check box
- Select box

All these different interactive widgets allows the end user to play with the app and get output based on the selected user input.

Components (continued)

Sidebar utility

- All the widgets at one place in left panel
- More cleaner and focused look

Installation

pip install streamlit (requires Python 3.6+)

Run the following command to check if everything’s working fine:

```
streamlit hello
```

Demo

https://github.com/jaiminkhanderia/streamlit-pygeekle2020.git

References

- Streamlit documentation: https://docs.streamlit.io/en/stable/index.html
- Streamlit API documentation: https://docs.streamlit.io/en/stable/api.html
- Blog by Adrien Truielle (co-founder of Streamlit) https://towardsdatascience.com/coding-ml-tools-like-you-code-ml-models-ddba3357eace
- Awesome streamlit documentation: https://awesome-streamlit.readthedocs.io/en/latest/index.html

Any Questions?

Thank you!