Introduction to Database Systems: CS305 Streamlit

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Midterm

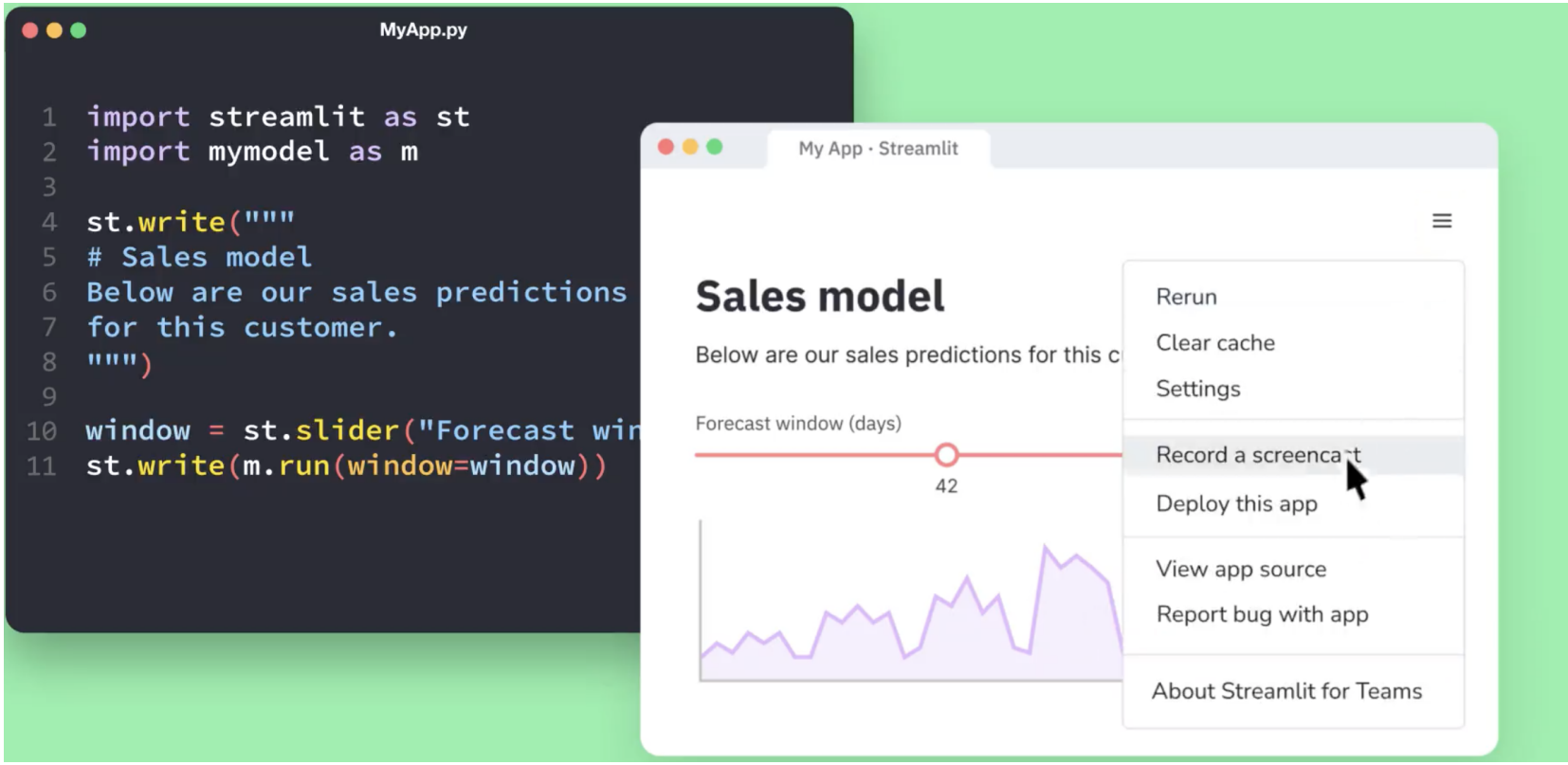
Thursday 9^{th} November in class

- Starting: Thursday, 9^{th} November 9:30am during **class**
- Finishing: Thursday, 9^{th} November 3:30pm during **lab**
- You will have 6 hours to submit the completed exam to GitHub
- Follow the Honor code: no sharing ideas with others or using ChatGTP for help
- Topics include:
  - Builder files to create SQLite3 databases
  - Creating a database from a datasets: Adding tables and data
  - Writing queries
  - Updating tables and data
  - Using Python for abstraction and automation

Moving on

Streamlit

Turn Python code into interactive ideas



Main website `https://streamlit.io/`
Project Gallery `https://streamlit.io/gallery`

Objectives of Project

We are going to build a Database Management System

Objectives

- Automatically creates a database from loaded `csv` files
- Give a formatted view of the available tables in created database
- Give a space where users can *interact* with the created database

Python Virtual Environments

Another way to set up a virtual environment (called, "myvenv")

Some versions of Python already have *virtualizing* software already installed

- or, `python3 -m venv myvenv`

If not ...

If not then you may have to research how to implement a virtual environment on your machine

Steps to Set Up a Virtual Environment

MacOS and Linux Commands

Some commands may require sudo for *superuser*

- Setup: Create an environment `myenv` for use with python3

- `python3 -m venv myvenv`

- Activate the environment

- `source myenv/bin/activate`

- Note: You will now see `(myvenv)` on the right of your terminal prompt
- Install the Streamlit software packages in the environment

- `pip3 install streamlit`

Steps to Set Up a Virtual Environment

Windows Commands

- Setup: Create an environment `myenv` for use with python3

- `python3 -m venv myvenv`

- Activate the environment

- `cd myenv/Scripts/`
- Execute: `activate`

- Note: You will now see `(myvenv)` on the right of your terminal prompt
- Install the Streamlit software packages in the environment

- `pip3 install streamlit`

Steps to install libraries, organize files

- Add more libraries to your virtual environment to work with data

- `pip3 install pandas`
- `pip3 install numpy as np`

- Organize your files, ready your workspace

- Make a directory in which to work (i.e., `streamlit-dbms/`)
- Copy in the data file from your `sandbox/` into `streamlit-dbms/`
- Start a blank file in this directory called `streamlit-dbms.py`

Boilerplate code for `streamlit-dbms.py`

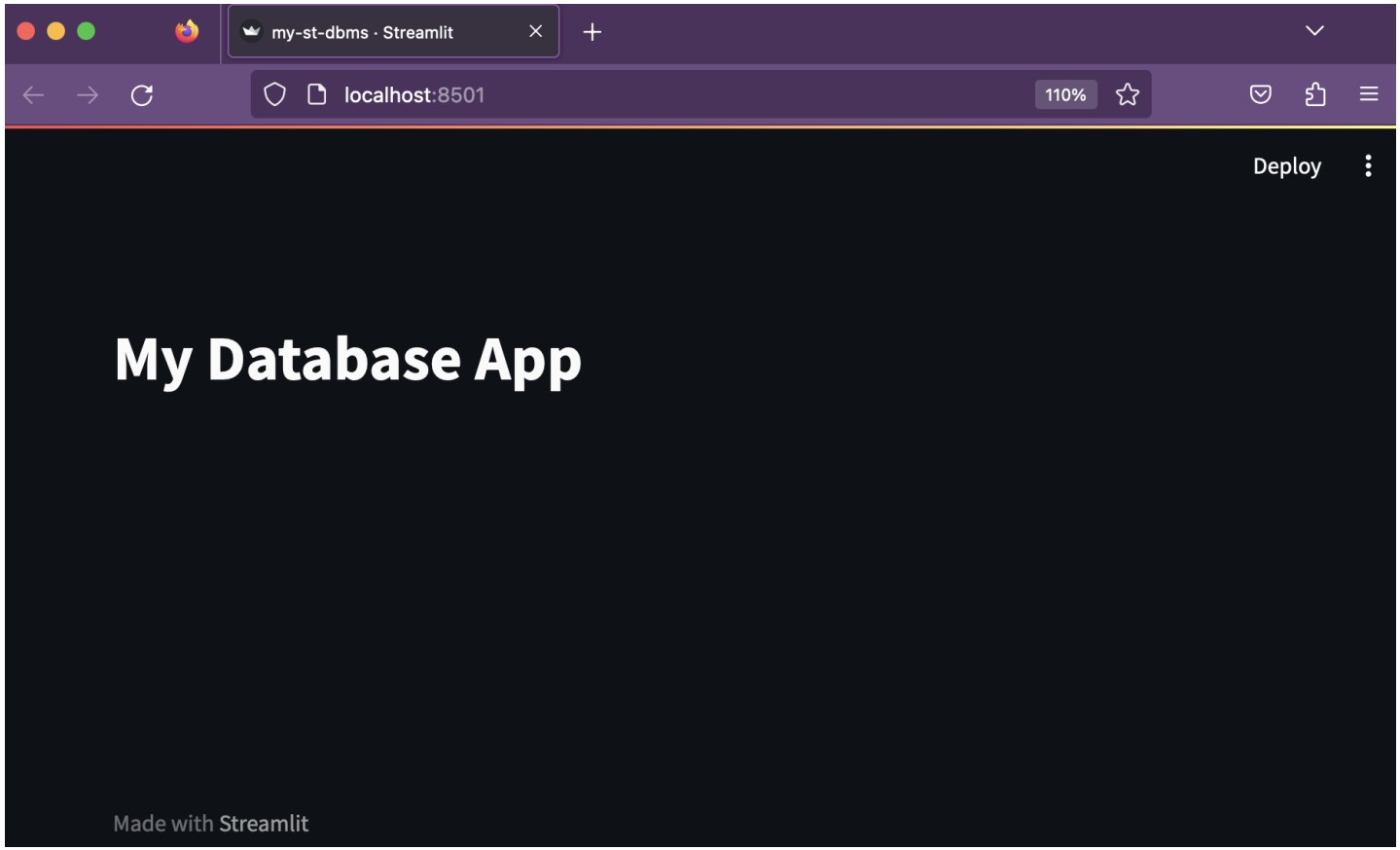
Starter code

```
#!/usr/bin/env python3

import streamlit as st
import pandas as pd
import numpy as np
import sqlite3

def main():
  """driver function of program"""
  st.title('My Database App')
# end of main()

main()
```

Execute the code

```
streamlit run streamlit-dbms.py
```

Execute `streamlit-dbms.py`



Switch over to your browser and goto this URL

`http://localhost:8501/`

Begin coding `streamlit-dbms.py`