CS-GY 6083 A: Principles of Database Systems

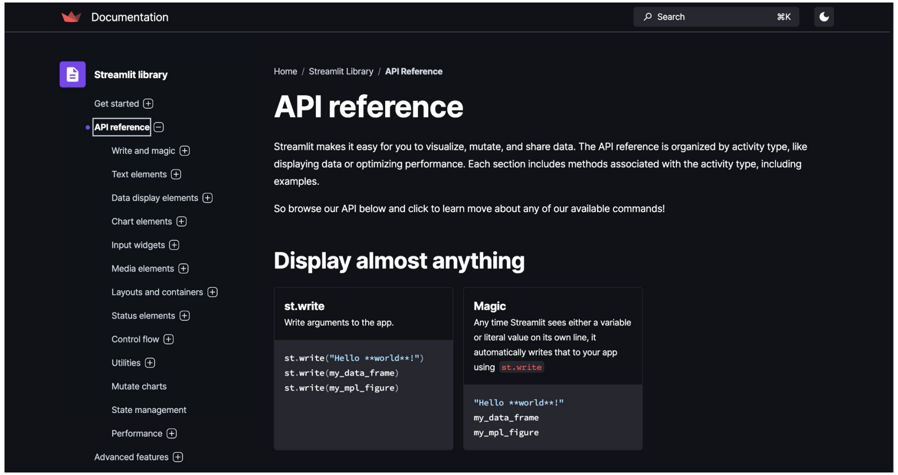
Lab 6: Deploying and Building a Streamlit Application

Streamlit Demonstration

1. Review Streamlit API
2. Upload files to jedi
3. Create and populate a database
4. Run the Streamlit application
5. Common questions and issues
6. Ship it 🚢🚢🚢

Streamlit API

https://docs.streamlit.io/library/api-reference



API reference

Streamlit makes it easy for you to visualize, mutate, and share data. The API reference is organized by activity type, like displaying data or optimizing performance. Each section includes methods associated with the activity type, including examples.

So browse our API below and click to learn move about any of our available commands!

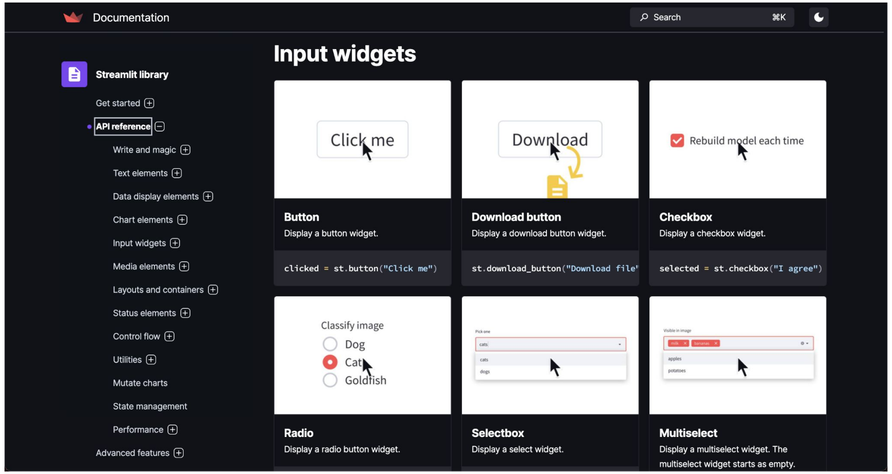
Display almost anything

st.write
Write arguments to the app.

```
st.write("Hello **world**!")
st.write(my_data_frame)
st.write(my_mpl_figure)
```

Magic
Any time Streamlit sees either a variable or literal value on its own line, it automatically writes that to your app using `st.write`

```
"Hello **world**!"
my_data_frame
my_mpl_figure
```



Input widgets

Button
Display a button widget.

```
clicked = st.button("Click me")
```

Download button
Display a download button widget.

```
st.download_button("Download file"
```

Checkbox
Display a checkbox widget.

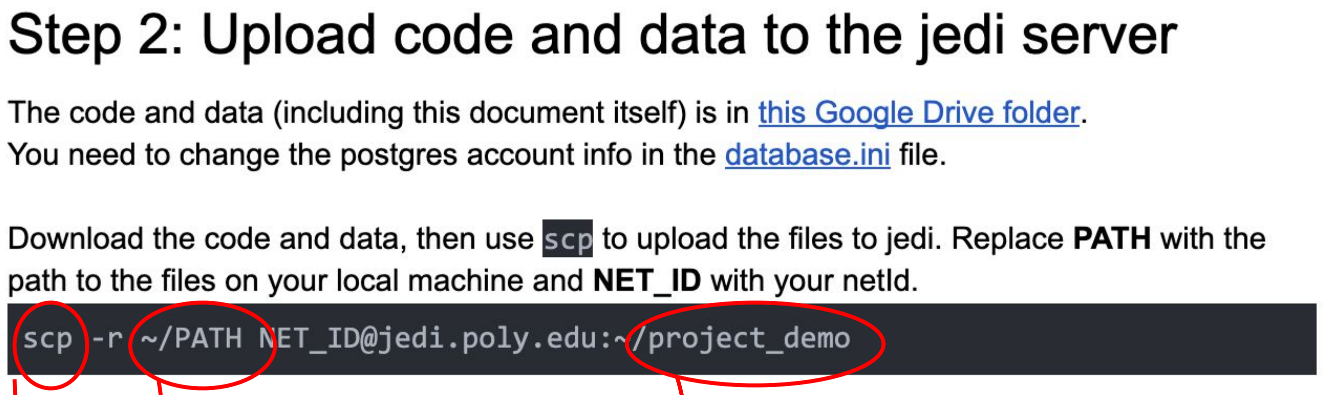
```
selected = st.checkbox("I agree")
```

Radio
Display a radio button widget.

Selectbox
Display a select widget.

Multiselect
Display a multiselect widget. The multiselect widget starts as empty.

Uploading files



Step 2: Upload code and data to the jedi server

The code and data (including this document itself) is in this Google Drive folder.
You need to change the postgres account info in the database.ini file.

Download the code and data, then use `scp` to upload the files to jedi. Replace **PATH** with the path to the files on your local machine and **NET_ID** with your netId.

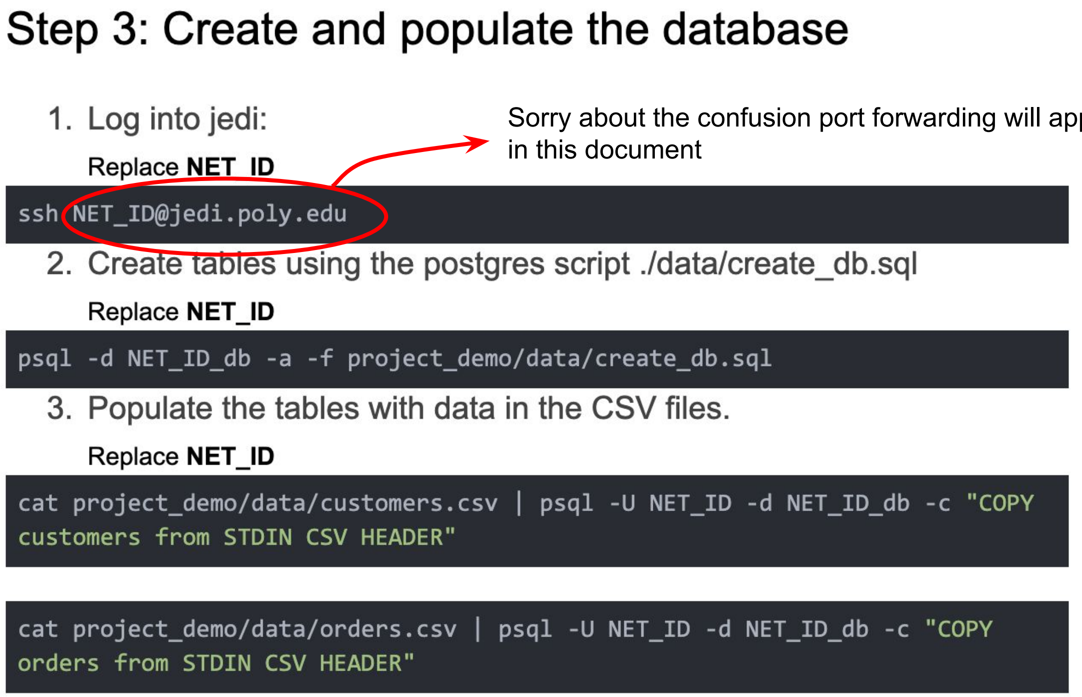
```
scp -r ~/PATH NET_ID@jedi.poly.edu:~/project_demo
```

path to directory on **your** local machine

project directory name (on remote)

Tutorial on how to use scp (click me)

Create and populate database



Step 3: Create and populate the database

1. Log into jedi:

   Replace **NET_ID**

```
ssh NET_ID@jedi.poly.edu
```

Sorry about the confusion port forwarding will appear later in this document

2. Create tables using the postgres script ./data/create_db.sql

   Replace **NET_ID**

```
psql -d NET_ID_db -a -f project_demo/data/create_db.sql
```

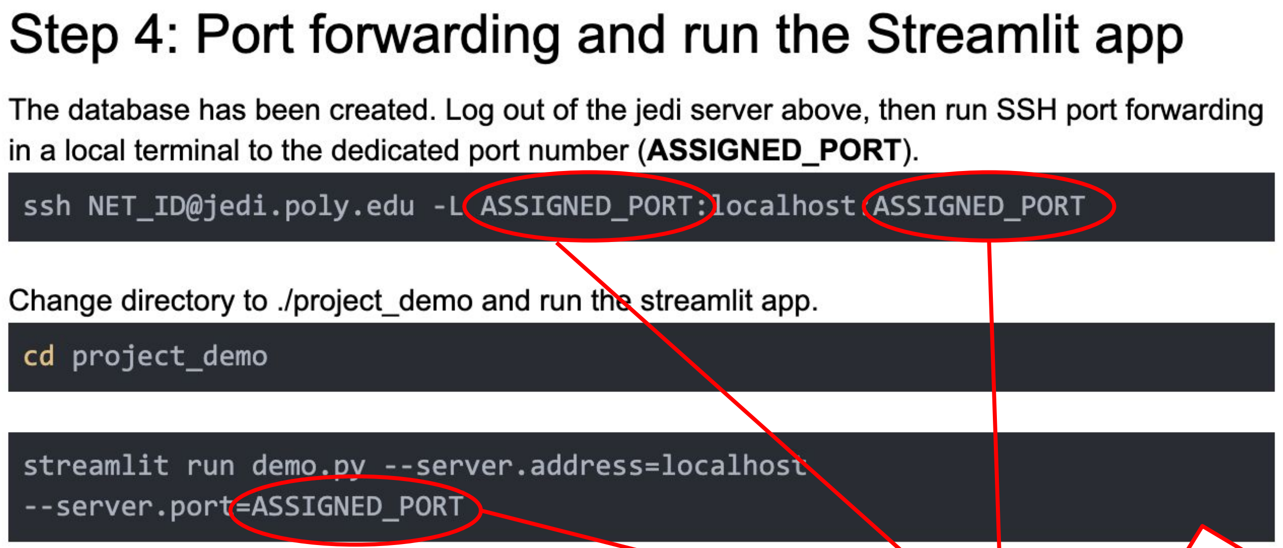
3. Populate the tables with data in the CSV files.

   Replace **NET_ID**

```
cat project_demo/data/customers.csv | psql -U NET_ID -d NET_ID_db -c "COPY
customers from STDIN CSV HEADER"
```

```
cat project_demo/data/orders.csv | psql -U NET_ID -d NET_ID_db -c "COPY
orders from STDIN CSV HEADER"
```

Run the Streamlit application



Step 4: Port forwarding and run the Streamlit app

The database has been created. Log out of the jedi server above, then run SSH port forwarding in a local terminal to the dedicated port number (**ASSIGNED_PORT**).

```
ssh NET_ID@jedi.poly.edu -L ASSIGNED_PORT:localhost:ASSIGNED_PORT
```

Change directory to ./project_demo and run the streamlit app.

```
cd project_demo
```

```
streamlit run demo.py --server.address=localhost
--server.port=ASSIGNED_PORT
```

must use **your** assigned port emailed to you

Common questions and issues

How do I keep my Streamlit project running?

Tmux

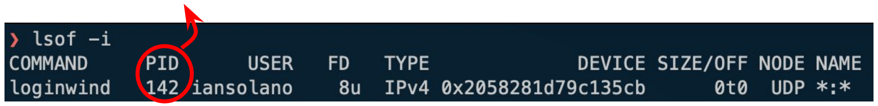
https://tmuxcheatsheet.com/

https://linuxize.com/post/getting-started-with-tmux/

My port is already in use, what do I do?

Killing errant processes

```
lsof -i :port_number
kill -9 PID
```



```
❯ lsof -i
COMMAND     PID      USER   FD   TYPE             DEVICE SIZE/OFF NODE NAME
loginwind   142 iansolano   8u  IPv4 0x2058281d79c135cb      0t0  UDP *:*
```

*** only works on unix-like machines

Also see: Project FAQs