Building Your Own Website with Flask/HTML

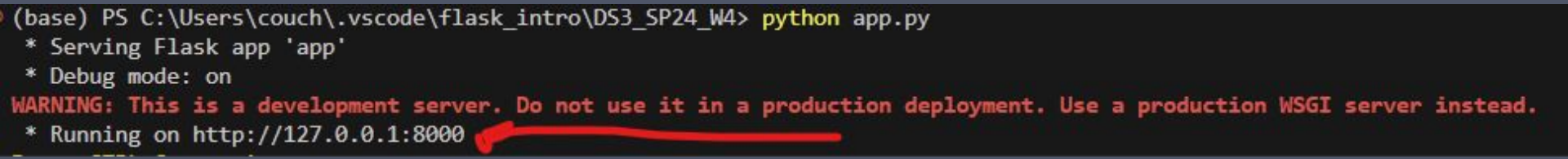
What is Flask?

- Flask is a python framework used for building web applications
  - Create applications by building URLs and creating HTML templates for each webpage
- Flask Documentation: https://flask.palletsprojects.com/en/3.0.x/

Flask

Example Website

- Clone this repository into your IDE: https://github.com/couchsnail/DS3_SP24_W4
- In your terminal, make sure you have pip installed
- Then run the command `pip install Flask`
  - Alternatively: `$ pip install -U Flask`
- Make sure you are in the DS3_SP24_W4 folder
- Run the command `flask run`
  - If this doesn't work run `python app.py`
- You should see the lines below:



I'm Camille, the upcoming Workshops Director for DS3!

You can do a lot of cool things with Flask!

Click the button to open Google

Open Google!

How did I make this? HTML Templates!

```
<!doctype html>
<title>Welcome to my Website!</title>

<body>
    <h1>I'm Camille, the upcoming Workshops Director for DS3!</h1>
    <img src={{url_for('static',filename='20240329_133241.jpg')}} alt="A picture of me" width="400" height="500"/>
    <br><br>
    <text>You can do a lot of cool things with Flask!</text>
    <br><br>
    <h3>Click the button to open Google</h3>
        <!-- <button onclick="window.open(('https://google.com'))">Click me!</button>  -->
        <form id="openTabForm" action="{{url_for('open_new_tab')}}" method="post" target="_blank">
          <button type="submit">Open Google!</button>
        </form>
</body>
```

How does HTML work?

- HTML stands for HyperText Markup Language
  - Most web pages are made using it
- HTML elements are made of different elements, denoted by < >
- Ex: <h1> Hello world! </h1> indicates a heading
- HTML Documentation: https://developer.mozilla.org/en-US/docs/Web/HTML

Let’s make your own version of my website!

```
from flask import Flask, render_template, redirect
app = Flask(__name__)
```

- Exit out of the DS3_SP24_W4 folder and create an python file called app.py
- You always need the lines `from flask install Flask` and `app = Flask(__name__)`
  - These tell Flask how to run
- Because we’re using HTML templates and a redirect, we’ll need to import these too

Making the Home Page

```
@app.route("/")
def home():
    return render_template("home.html")
```

This is a decorator telling what the URL is! This tells you what will happen when you first click on http://127.0.0.1:8000/

- This tells the app where to go when you first load up the page
- You will be rendering the HTML page 'home.html'
- Create a folder called `Templates` in the same folder as your app.py
- Within `Templates` create a file called `home.html` and include these lines
  - Feel free to change the the title and heading text to anything you want!

```
<!doctype html>
<title>Welcome to my Website!</title>

<body>
    <h1>I'm Camille, the upcoming Workshops Director for DS3!</h1>
```

Including Images in Flask applications

- You'll notice I included an image of myself with this line:

```
<img src={{url_for('static',filename='20240329_133241.jpg')}} alt="A picture of me" width="400" height="500"/>
```

- To insert an image of your choice, drag an image from your computer into the folder you're working in.
- Create a folder called `static`. This will ensure the image path is successfully retrieved when rendering the Flask application.
- Copy the line above and paste it into your HTML file, changing the name of the image to the appropriate filename.
    - Feel free to change the image dimensions and alt text if you like.

Buttons that Redirect to New Pages

```
    <h3>Click the button to open Google</h3>
        <!-- <button onclick="window.open(('https://google.com'))">Click me!</button>  -->
        <form id="openTabForm" action="{{url_for('open_new_tab')}}" method="post" target="_blank">
          <button type="submit">Open Google!</button>
        </form>
</body>
```

- There are many ways to do this, but this line can be altered to render any page in a new tab. For my web page I just used a new Google Tab, but you could even change it to other HTML templates.
  - See the commented out text
- `POST` sends the `openTabForm` information to the server.
- `_blank` tells the server to open the information in a new tab

Code for Redirecting to New Tab

```
@app.route('/open_new_tab', methods=['POST'])
def open_new_tab():
    return redirect("https://google.com")
```

- `http://127.0.0.1:8000/open_new_tab` is the URL that will be opened when this method is called
  - You give it the `methods=POST` to let the app know it can expect HTML form data to be sent
- As you can see this will redirect the new tab to Google
  - However you can return other HTML templates or even other websites if you like

End App Code

```
if __name__ == "__main__":
    app.run(debug=True,port=8000)
```

- This tells the app how to run
- Right now the app is running on a debug server
  - By default this is set to False
- It's also running on port 8000
  - Default port is 5000
  - Can forward ports to make sure app runs on the other devices

Conclusion

- Hopefully you've enjoyed this quick tutorial on how to make a Flask web application!
- There's a lot of cool things you can do in Flask that I haven't covered here. You can look at the documentation listed above to try more things with form submission and user interaction!
- A lot of the nice UI elements are done through more complex HTML. I encourage you to look further into it when you have the time!
- With these skills, you can make your own website and beef up your resume. (̀• ω •́)✧