

"Web App" Exercise

Prerequisites:

- [Software Products and Services](#)
- [The flask Package](#)
- [Web Service Exercise](#), especially the deployment process

FYI: this web application involves some basic HTML code. To gain familiarity with HTML and the Twitter Bootstrap front-end framework, see these resources:

- https://www.w3schools.com/html/html_basic.asp
- https://www.w3schools.com/html/html_forms.asp
- https://www.w3schools.com/html/html_tables.asp
- <https://getbootstrap.com/docs/4.0/components/navbar/>
- <https://getbootstrap.com/docs/4.0/components/alerts/>

Learning Objectives

- Practice leveraging third-party APIs and Python packages.
- Practice security and privacy best practices by using a "dotenv" approach in conjunction with a ".gitignore" file.
- Gain high-level exposure to basic HTML.
- Learn how to use the Flask package to create a basic web application in Python.
- Learn how to "deploy" a Python web application to a user-facing "production" environment, namely an application server hosted by Heroku, and configure the server to host the application publicly over the Internet.

Instructions

So, you've [deployed a background web service](#) to send you an email every day. But what if you wanted your information on-demand at the click of a button, without waiting for the next daily email? And what if you wanted to allow other people to register for your service? Let's build a web application interface into your application's functionality!



Weather Form

Request an hourly forecast for your zip code...

Zip Code:

Follow along in class as the professor guides you through the process of building a web application from scratch.

Solution

If you'd like to work ahead or asynchronously, you can reference this [Draft Pull Request in the Daily Briefings Repo](#) which includes a [step-by-step commit history](#) and [comprehensive file diffs](#).

Or follow these written "checkpoints" sequentially:

1. [Basic App](#)
2. [Application Factory](#)
3. [Rendering HTML Templates](#)
4. [Shared HTML Layouts](#)
5. [Bootstrap Layouts](#)
6. [Web Forms](#), POST Requests, and Flash Messaging
7. [Integrating Weather Functionality](#)

Setup

To use the Flask package, you'll need to add **Flask** to the "requirements.txt" file and re-install packages:

```
pip install -r requirements.txt
```

Running Locally

Depending on the way a Flask app is organized, the run command will differ, but based on the provided organizational structure (with the `create_app()` function in the "web_app/__init__.py" file), the following command should run web application locally so you can view it in a browser at localhost:5000:

```
# Mac:
FLASK_APP=web_app flask run

# Windows:
export FLASK_APP=web_app # first time, to set the env var
flask run # subsequent times
```

Deploying to Production

FYI: [Reference Code](#)

After demonstrating the ability to successfully run the web app locally, repeat the process that you followed when [deploying a web service](#) to upload the source code onto a remote server:

```
git push heroku master
```

There are no scripts to be scheduled, so skip that part. Instead, you'll need to create a special file called the "Procfile" in the repo's root directory to instruct the Heroku server which command to invoke in order to run the app:

```
web: gunicorn "web_app:create_app()"
```

NOTE: since we're instructing the server to use the "gunicorn" package (Heroku's preferred tool) to run the web app on production, we'll also need to add `gunicorn` to the "requirements.txt" file so it will be installed on the server during the deployment process.

Save the "Procfile" and "requirements.txt" files, and make a commit before re-attempting to deploy your app to the server.

```
git push heroku master
```

View the server logs and troubleshoot as necessary until you're able to see the weather forecast in the browser. Nice!

```
heroku logs --tail
```

Evaluation

If you'd like to submit this exercise for evaluation, submit links to both your GitHub repo and your production app via the designated form.