

Deploy a Flask App on Heroku

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Heroku lets you deploy a Flask app online for **free**.

Heroku is a container-based cloud Platform as a Service (PaaS). Developers use Heroku to deploy, manage, and scale modern apps. Our platform is **elegant, flexible**, and **easy to use**, offering developers the simplest path to getting their apps to market.

Overview

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5. Make Required Files to Deploy to Heroku
6. Deploy Your App to Heroku
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Prerequisites

Before you can start, you need to do three things:

- Install Git
- Install Python

- Sign-up Heroku account

Install Heroku

If you are using Mac, you can download HomeBrew from your Terminal.

```
$ /bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/master/install.sh)"
```

Then run this command to install Heroku.

```
$ brew tap heroku/brew && brew install heroku
```

If you want to install Heroku on Windows, go to this link:

<https://devcenter.heroku.com/articles/heroku-cli#other-installation-methods>

Getting Started With Heroku

Start with an empty project in your preferred text editor. In this tutorial, I am using VSCode.

Create a New Working Directory

```
$ mkdir <your-app-name>  
$ cd <your-app-name>
```

Create Virtual Environment

It is recommended to create a virtual environment so that there is no conflict with Heroku during the deployment.

If you have installed Python with Anaconda, you can create your empty environment this way.

```
$ conda create --name ml-model-heroku python=3.6
```

Activate the environment.

```
$ conda activate ml-model-heroku
```

or you can use venv. I recommend this way.

```
$ virtualenv venv  
$ . venv/bin/activate
```

Install Requests, Flask and Gunicorn

To run the app, we need to install the Flask Python Framework with which we will build our app and Gunicorn to be our Python WSGI HTTP Server.

```
$ pip install requests[security] flask gunicorn
```

Using Existing The Flask App

Now, let's use existing Flask app. Also, you can use create a new one in this way.

Create App Folder

```
$ mkdir app  
$ cd app
```

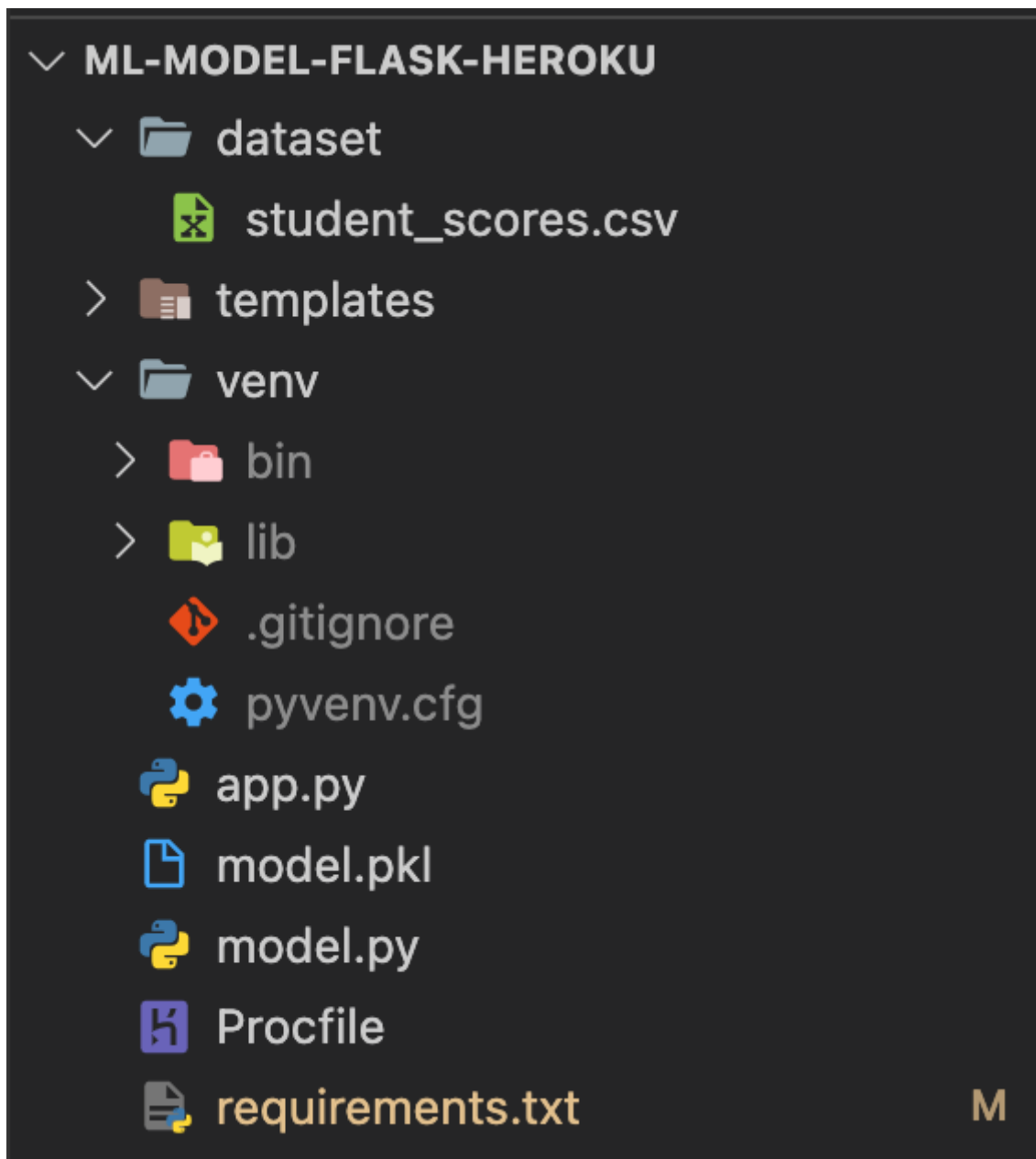
Write Your Flask app

```
app.py > ...
1  import pickle
2  import numpy as np
3  from flask import Flask, request, render_template
4
5  app = Flask(__name__)
6  model = pickle.load(open('model.pkl', 'rb'))
7
8  @app.route('/')
9  def home():
10     return render_template('index.html')
11
12  @app.route('/predict', methods=['POST'])
13  def predict():
14     init_features = float(request.form['time'])
15     y_array = np.asarray(init_features)
16     final_features = y_array.reshape(-1,1)
17     prediction = model.predict(final_features)
18     return render_template('index.html', prediction_text='Predicted Class: {}'.format(prediction))
19
20  if __name__ == "__main__":
21     app.run(debug=True)
22
```

Run Flask App

Move to the parent directory.

```
$ cd ../
```



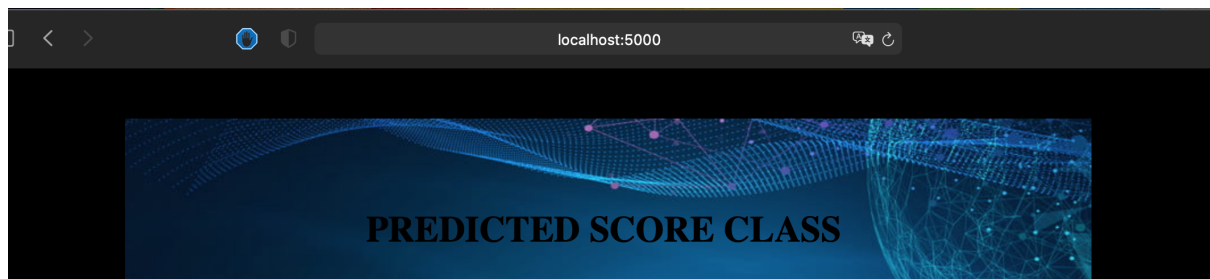
Check the files are in the correct location!

To verify if the app works, try running the app first.

```
$ python app.py
```

In your browser, go to the IP given and see if the app works.

```
(base) Ardas-MacBook-Pro:ml-model-flask-heroku ardaozmen$ . venv/bin/activate
(venv) (base) Ardas-MacBook-Pro:ml-model-flask-heroku ardaozmen$ python app.py
* Serving Flask app "app" (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: on
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 187-240-900
```



Make Required Files to Deploy to Heroku

Create Requirements.txt

Now, let's freeze the environment and add it to the requirements.txt so that the required packages are installed when deploying the app.

```
$ pip freeze > requirements.txt
```

Create Procfile

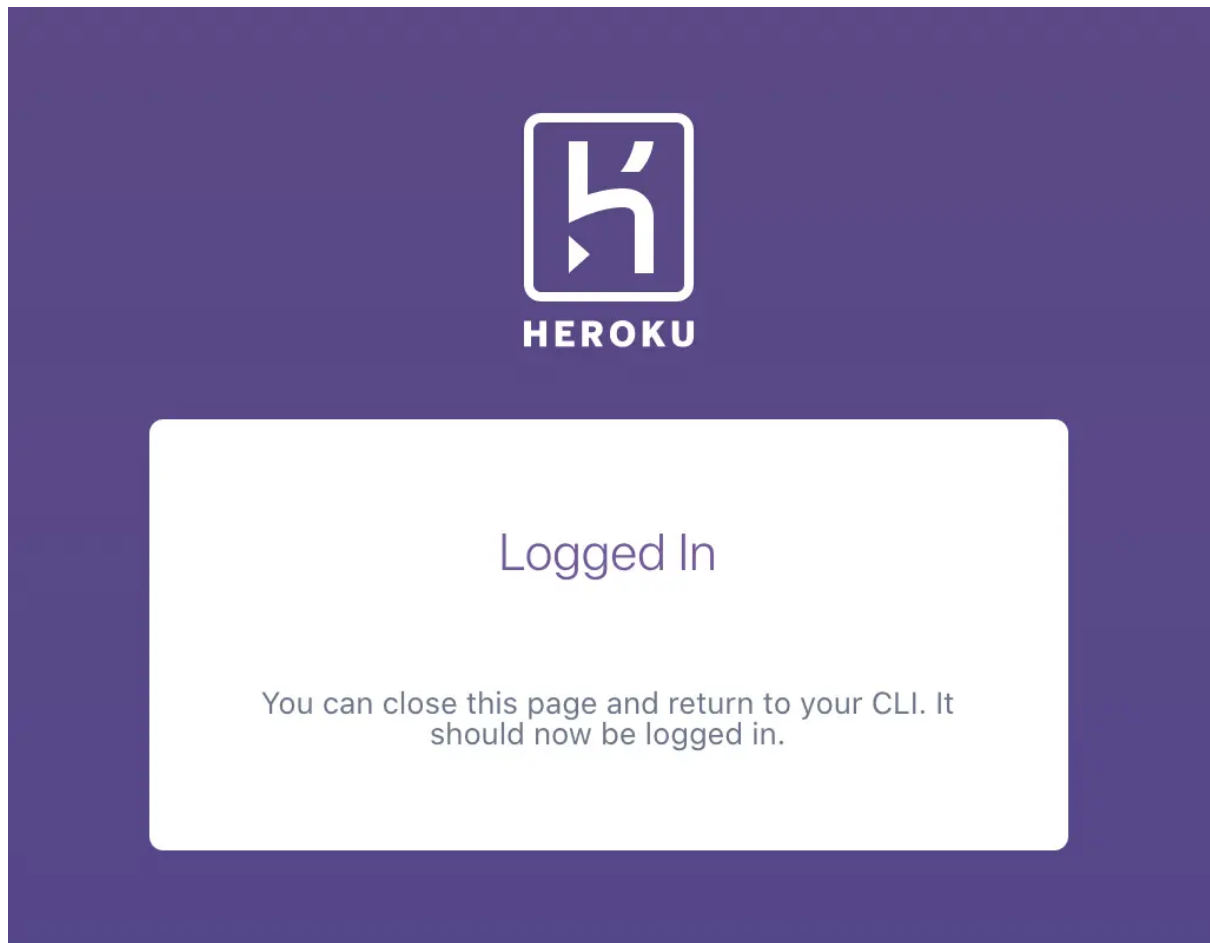
We need to create a Procfile that contains the commands that Heroku will need to run.

- To create the Procfile to run the `app.py` app:

```
$ echo web: gunicorn run:app >> Procfile
```

Deploy Your App to Heroku

Login Heroku



Create Heroku App

```
$ heroku create <app-name>
```

or Go to Heroku Dashboard

Create New App

App name

Choose a region

 United States

Add to pipeline...

Create app

Add Heroku App to Remote

```
$ git init
$ heroku git:remote -a <heroku-app-name>
$ git remote -v
```

Deploy the Flask App to Heroku

```
$ git add .
$ git commit -m "Init deploy"
```

```
$ git push heroku master
```

All done, the Flask app should be live.

Kill The App

Deactivate app

```
$ heroku ps:scale web=0
```

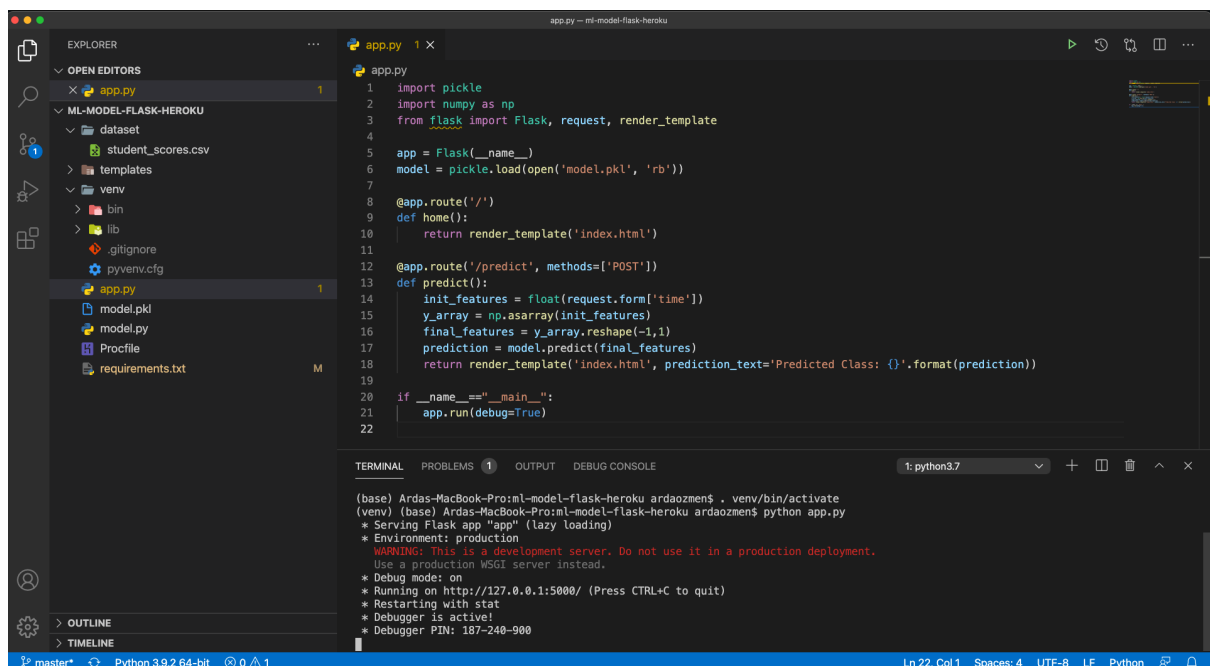
Reactivate App

```
heroku ps:scale web=1
```

Delete App

```
$ heroku apps:destroy <heroku-app-name>
```

PROJECT SNAPSHOTS



app.py

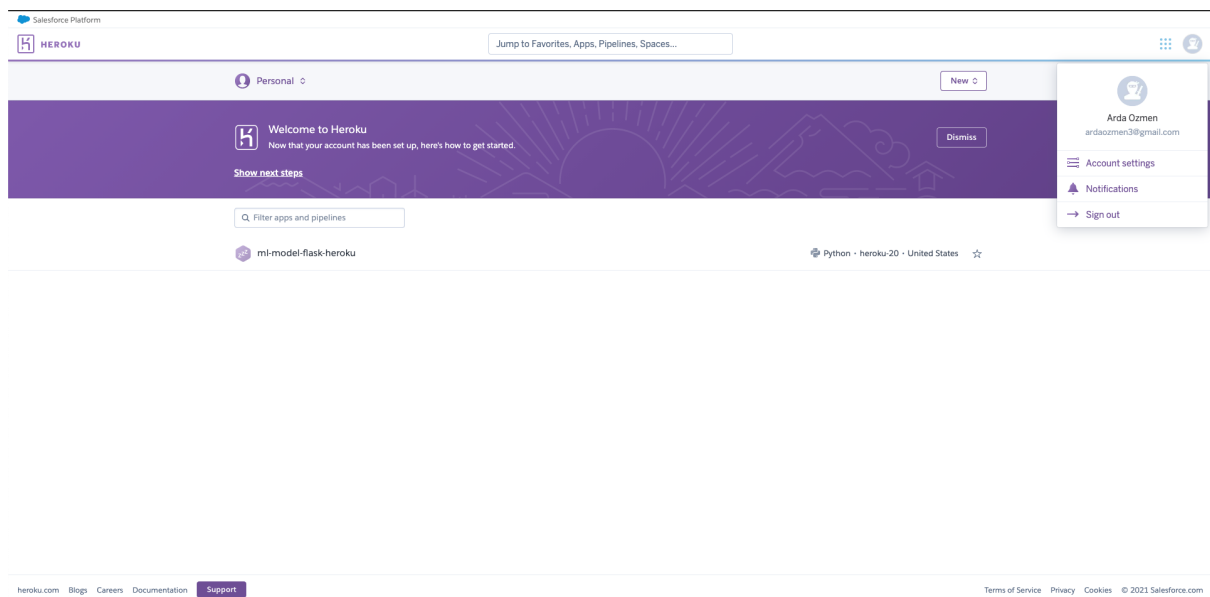
The screenshot shows a VS Code editor window with the file explorer on the left and the code editor in the center. The file explorer shows a project named 'ml-model-flask-heroku' with files like 'dataset', 'student_scores.csv', 'templates', 'venv', 'bin', 'lib', '.gitignore', 'pyvenv.cfg', 'app.py', 'model.pkl', 'model.py', 'Procfile', and 'requirements.txt'. The code editor shows the 'model.py' file with the following code:

```
1 import pickle
2 import pandas as pd
3 from sklearn.model_selection import train_test_split
4 from sklearn.linear_model import LinearRegression
5
6 df = pd.read_csv('dataset/student_scores.csv')
7 X = df.iloc[:, :-1].values
8 y = df.iloc[:, 1].values
9
10 X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=0)
11 regressor = LinearRegression()
12 regressor.fit(X_train, y_train)
13
14 pickle.dump(regressor, open('model.pkl', 'wb'))
15
16
```

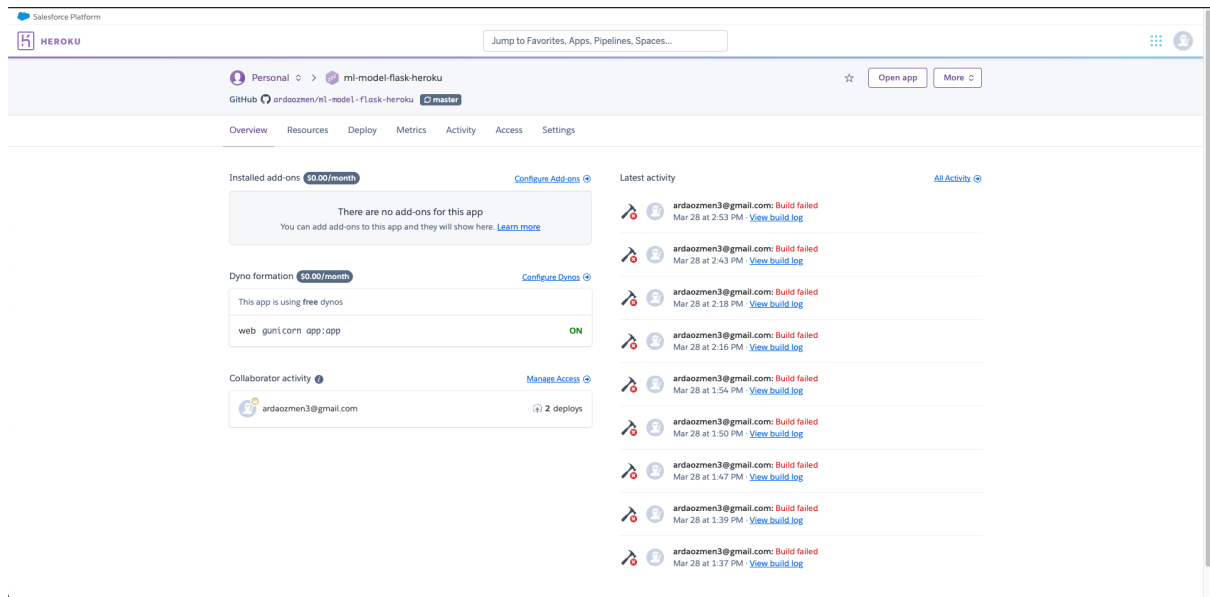
The terminal at the bottom shows the output of running the application:

```
(base) Ardas-MacBook-Pro:ml-model-flask-heroku ardaozmen$ . venv/bin/activate
(venv) (base) Ardas-MacBook-Pro:ml-model-flask-heroku ardaozmen$ python app.py
* Serving Flask app "app" (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
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* Restarting with stat
* Debugger is active!
* Debugger PIN: 187-240-900
```

model.py



heroku_snapshot_1



heroku_snapshot_2

Conclusion

LOOK AT THE PROJECT ON HEROKU

