



DEPLOYMENT ON FLASK

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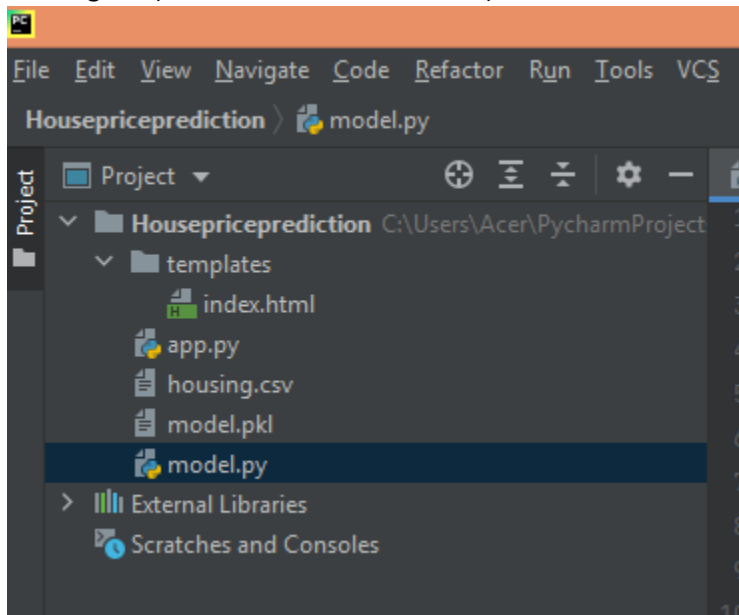
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This document contains the report of the steps carried out in order to deploy a model.

I used PyCharm, Mozilla Firefox and python programming language as well as different packages and libraries.

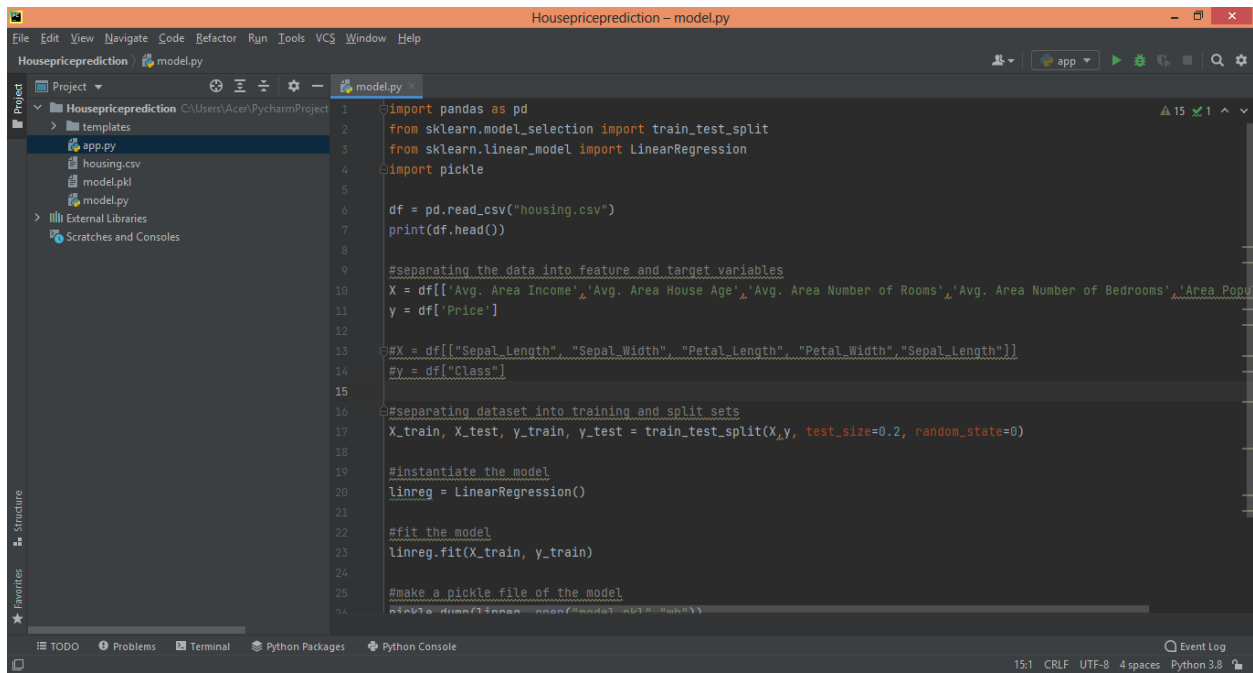
I created five files:

- Model.py (ML model)
- Model.pkl (Pickle file of the ML model)
- app.py (Flask application)
- index.html
- housing.csv (data to build the ML model)



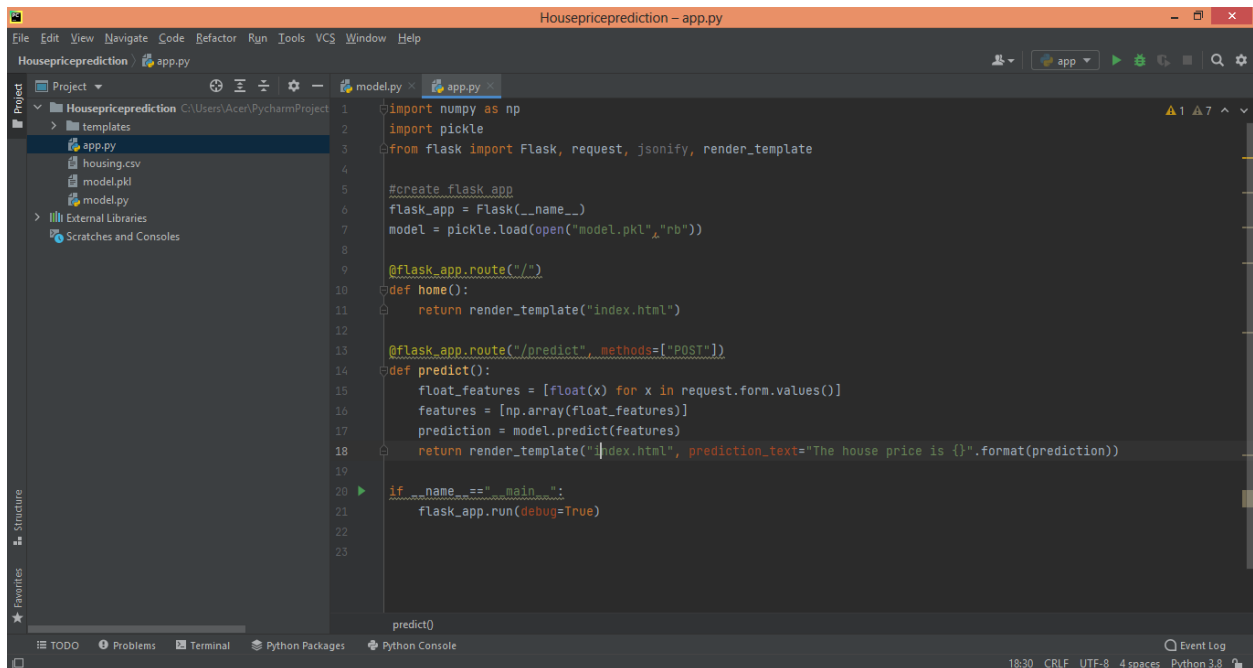
These files are on <https://github.com/cate6495/housepriceprediction-flask>

First, I created the model:



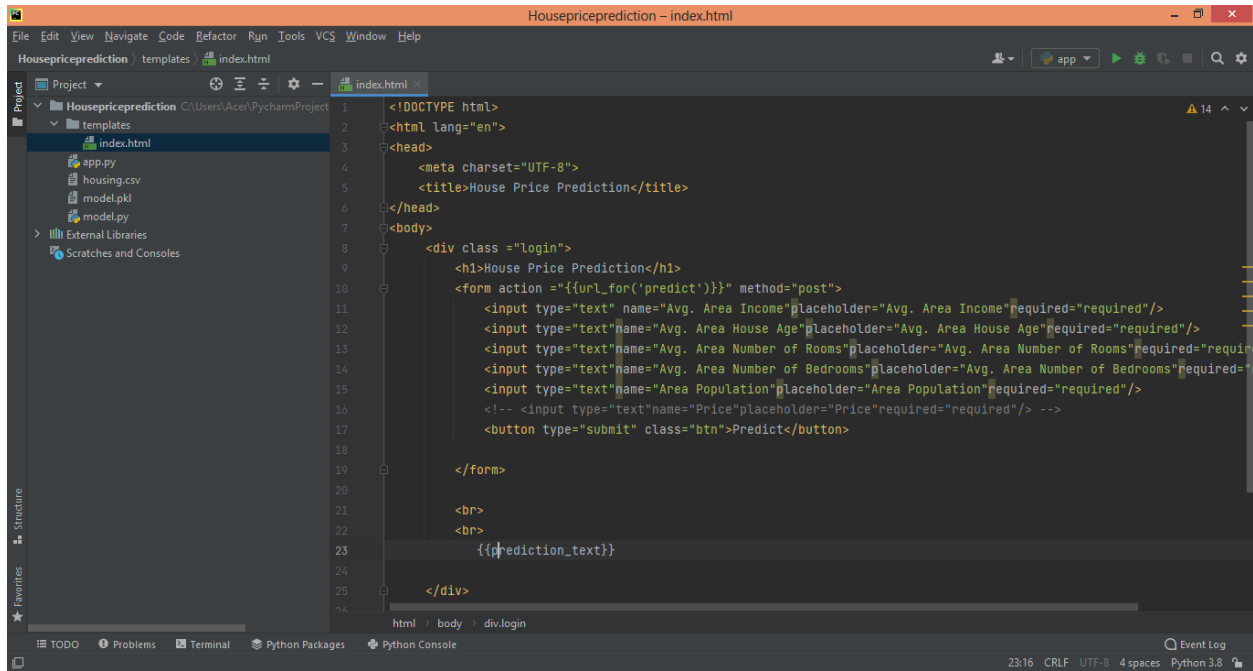
```
1 import pandas as pd
2 from sklearn.model_selection import train_test_split
3 from sklearn.linear_model import LinearRegression
4 import pickle
5
6 df = pd.read_csv("housing.csv")
7 print(df.head())
8
9 #separating the data into feature and target variables
10 X = df[['Avg. Area Income', 'Avg. Area House Age', 'Avg. Area Number of Rooms', 'Avg. Area Number of Bedrooms', 'Area Population']]
11 y = df['Price']
12
13 #X = df[['Sepal.Length', 'Sepal.Width', 'Petal.Length', 'Petal.Width', 'Sepal.Length']]
14 #y = df['Class']
15
16 #separating dataset into training and split sets
17 X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=0)
18
19 #instantiate the model
20 linreg = LinearRegression()
21
22 #fit the model
23 linreg.fit(X_train, y_train)
24
25 #make a pickle file of the model
26 pickle.dump(linreg, open("model.pkl", "wb"))
```

Then the flask app:



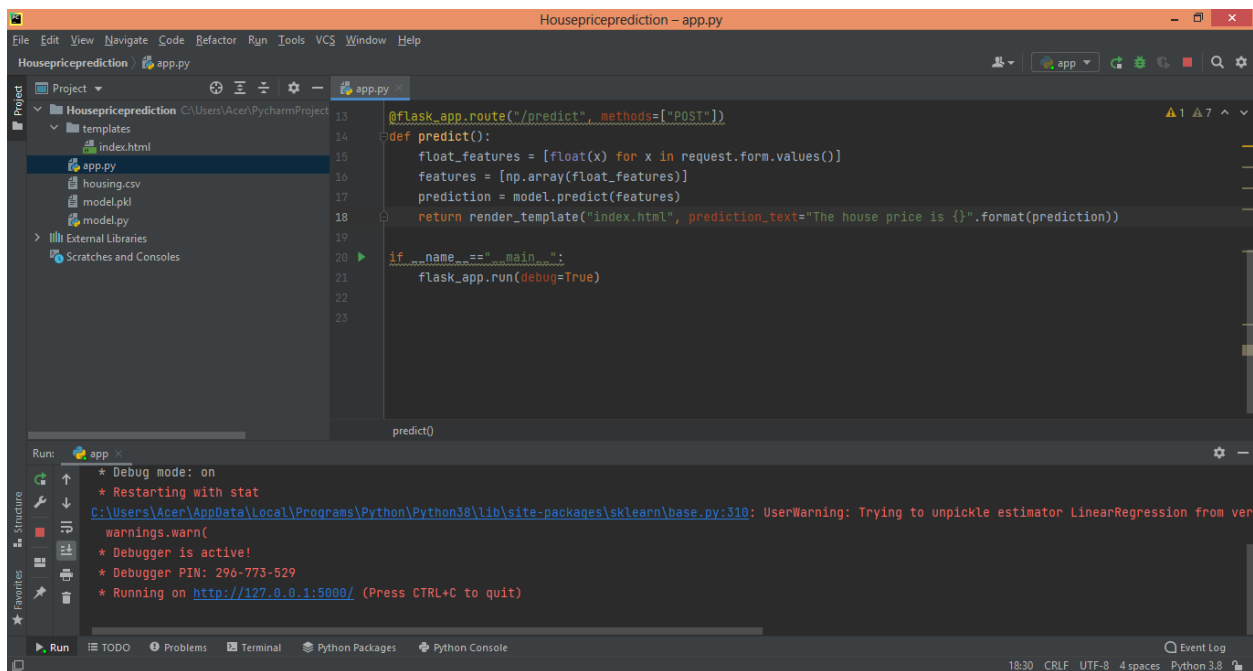
```
1 import numpy as np
2 import pickle
3 from flask import Flask, request, jsonify, render_template
4
5 #create flask app
6 flask_app = Flask(__name__)
7 model = pickle.load(open("model.pkl", "rb"))
8
9 @flask_app.route("/")
10 def home():
11     return render_template("index.html")
12
13 @flask_app.route("/predict", methods=["POST"])
14 def predict():
15     float_features = [float(x) for x in request.form.values()]
16     features = [np.array(float_features)]
17     prediction = model.predict(features)
18     return render_template("index.html", prediction_text="The house price is {}".format(prediction))
19
20 if __name__ == "__main__":
21     flask_app.run(debug=True)
```

The index.html:



```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<title>House Price Prediction</title>
</head>
<body>
<div class="login">
<h1>House Price Prediction</h1>
<form action="{{url_for('predict')}}" method="post">
<input type="text" name="Avg. Area Income"placeholder="Avg. Area Income"required="required"/>
<input type="text" name="Avg. Area House Age"placeholder="Avg. Area House Age"required="required"/>
<input type="text" name="Avg. Area Number of Rooms"placeholder="Avg. Area Number of Rooms"required="required"/>
<input type="text" name="Avg. Area Number of Bedrooms"placeholder="Avg. Area Number of Bedrooms"required="required"/>
<input type="text" name="Area Population"placeholder="Area Population"required="required"/>
<!-- <input type="text" name="Price"placeholder="Price"required="required"/> -->
<button type="submit" class="btn">Predict</button>
</form>
<br>
<br>
{{prediction_text}}
</div>
```

On the running the app:



```
@flask_app.route("/predict", methods=["POST"])
def predict():
    float_features = [float(x) for x in request.form.values()]
    features = [np.array(float_features)]
    prediction = model.predict(features)
    return render_template("index.html", prediction_text="The house price is {}".format(prediction))

if __name__ == "__main__":
    flask_app.run(debug=True)
```

```
* Debug mode: on
* Restarting with stat
C:\Users\Acer\AppData\Local\Programs\Python\Python38\lib\site-packages\sklearn\base.py:310: UserWarning: Trying to unpickle estimator LinearRegression from version 0.24.0
warnings.warn(
* Debugger is active!
* Debugger PIN: 296-773-529
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
```

Checking how well our model functions:

House Price Prediction

127.0.0.1:5000

House Price Prediction

Avg. Area Income

Avg. Area House Age

Avg. Area Number of Ro

Avg. Area Number of Bel

Area Population

Predict

House Price Prediction

127.0.0.1:5000/predict

House Price Prediction

Avg. Area Income

Avg. Area House Age

Avg. Area Number of Ro

Avg. Area Number of Bel

Area Population

Predict

The house price is [1223913.24300159]