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Batch Code: LIMSUM 11

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Topic: Deployment on Flask

Step 1: Create your model and Use python pickle library to save the model in a pickle file.

```
In [51]: 1 print(lr_4.summary())

OLS Regression Results
=====
Dep. Variable: price R-squared: 0.676
Model: OLS Adj. R-squared: 0.667
Method: Least Squares F-statistic: 77.18
Date: Tue, 16 Aug 2022 Prob (F-statistic): 3.13e-04
Time: 13:05:24 Log-Likelihood: 378.51
No. Observations: 381 AIC: -735.0
Df Residuals: 378 BIC: -691.7
Df Model: 10
Covariance Type: nonrobust
=====
coef std err t P>|t| [0.025 0.975]
-----
const 0.0428 0.014 2.958 0.003 0.014 0.071
area 0.2335 0.030 7.772 0.000 0.174 0.293
bathrooms 0.2019 0.021 9.397 0.000 0.160 0.244
stories 0.1081 0.017 6.277 0.000 0.074 0.142
mainroad 0.0497 0.014 3.468 0.001 0.022 0.078
guestroom 0.0402 0.013 3.124 0.002 0.015 0.065
hotwaterheating 0.0876 0.022 4.051 0.000 0.045 0.130
airconditioning 0.0682 0.011 6.028 0.000 0.046 0.090
parking 0.0629 0.018 3.482 0.001 0.027 0.098
prefarea 0.0637 0.012 5.452 0.000 0.041 0.087
unfurnished -0.0337 0.010 -3.295 0.001 -0.054 -0.014
=====
Omnibus: 97.054 Durbin-Watson: 2.099
Prob(Omnibus): 0.000 Jarque-Bera (JB): 322.034
Skew: 1.124 Prob(JB): 1.18e-70
Kurtosis: 6.902 Cond. No. 10.3
=====

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.

In [80]: 1 import pickle
2
3 with open('model.pkl','wb') as f:
4     pickle.dump(lr_4, f)
```

Step 2: Create an html page to be our front end for the flask app.

```
<body>
<fieldset>
<div class="login">
<h1>Predict House Price</h1>

<!-- Main Input For Receiving Query to our ML -->
<form action="{{ url_for('predict')}}"method="post">
<input type="text" name="area" placeholder="Area (in square feet)" required="required" /><br>
<input type="text" name="bedrooms" placeholder="No of Bedrooms" required="required" /><br>
<input type="text" name="bathrooms" placeholder="Number of Bathrooms" required="required" /><br>
<input type="text" name="stories" placeholder="No of floors" required="required" /><br>
<input type="text" name="parking" placeholder="No of Parking Spaces" required="required" /><br>

<legend>Choose:</legend>

<div>
<input type="hidden" name="mainroad" value=0>
<input type="checkbox" id="mainroad" name="mainroad" value = 1>
<label for="mainroad">mainroad</label>
</div>

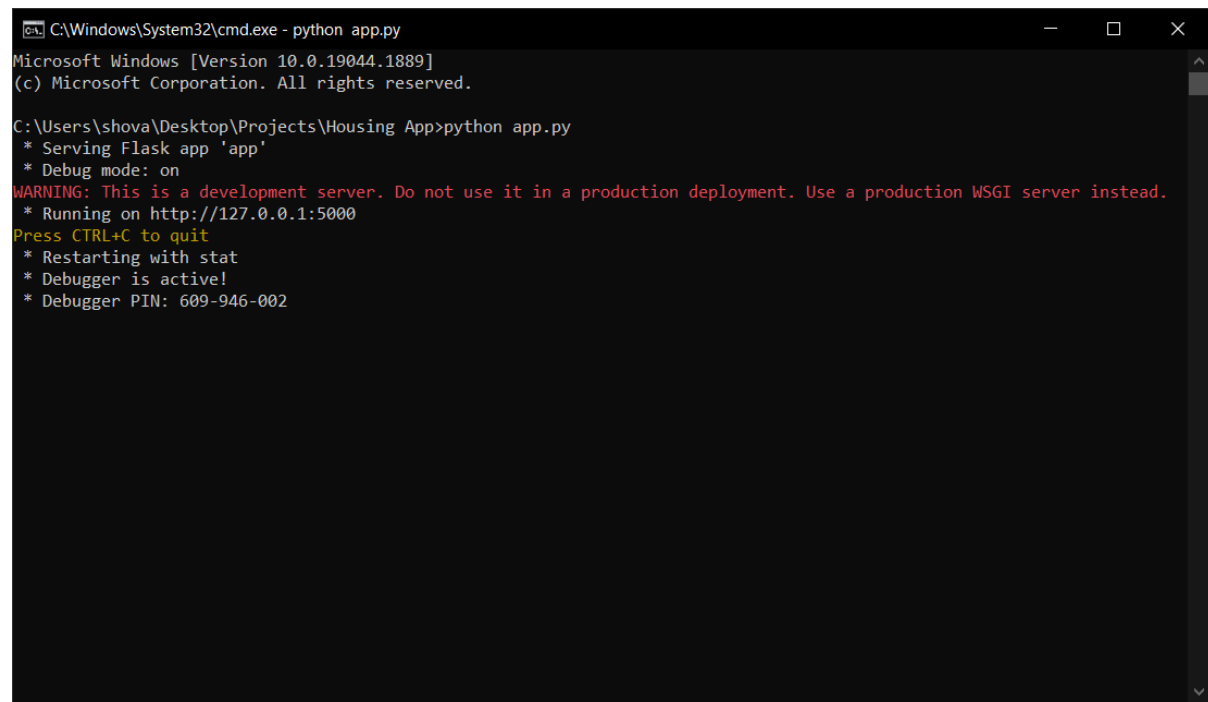
<div>
<input type="hidden" name="guestroom" value=0>
<input type="checkbox" id="guestroom" name="guestroom" value = 1>
<label for="guestroom">guestroom</label>
</div>

<div>
<input type="hidden" name="basement" value=0>
<input type="checkbox" id="basement" name="basement" value = 1>
<label for="basement">basement</label>
</div>
</div>
```

Step 3: Write program for app.py and import pickle in it.

```
1 import numpy as np
2 from flask import Flask, request, render_template
3 import pickle
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
15
16     int_features = [int(x) for x in request.form.values()]
17     final_features = [np.array(int_features)]
18     prediction = model.predict(final_features)
19
20     output = round(prediction[0],2)
21
22     return render_template('index.html', prediction_text='House price should be $ {}'.format(output))
23
24 if __name__ == "__main__":
25     app.run(port=5000, debug=True)
```

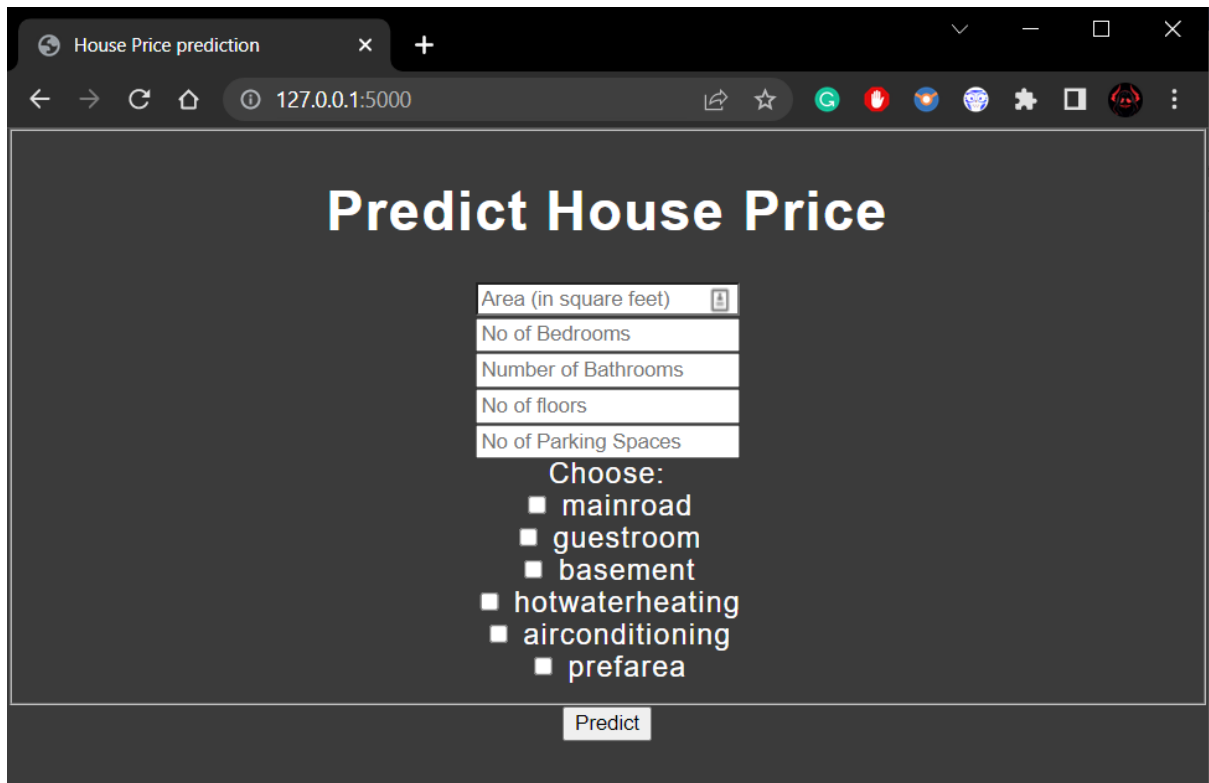
Step 4: Run “python app.py” to run the flask app.



```
C:\Windows\System32\cmd.exe - python app.py
Microsoft Windows [Version 10.0.19044.1889]
(c) Microsoft Corporation. All rights reserved.

C:\Users\shova\Desktop\Projects\Housing App>python app.py
* Serving Flask app 'app'
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:5000
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 609-946-002
```

Step 5: Copy the url in the command prompt into any web browser .



The screenshot shows a web browser window with the title 'House Price prediction'. The address bar displays the URL '127.0.0.1:5000'. The main content area has a dark background with the heading 'Predict House Price' in large white text. Below the heading is a form with several input fields and a list of checkboxes. The input fields are labeled 'Area (in square feet)', 'No of Bedrooms', 'Number of Bathrooms', 'No of floors', and 'No of Parking Spaces'. Below these is a section titled 'Choose:' followed by a list of checkboxes with labels: 'mainroad', 'guestroom', 'basement', 'hotwaterheating', 'airconditioning', and 'prefarea'. At the bottom of the form is a 'Predict' button.

House Price prediction

127.0.0.1:5000

Predict House Price

Area (in square feet)

No of Bedrooms

Number of Bathrooms

No of floors

No of Parking Spaces

Choose:

- ☐ mainroad
- ☐ guestroom
- ☐ basement
- ☐ hotwaterheating
- ☐ airconditioning
- ☐ prefarea

Predict