

**Project Title:** Flask deployment (Predictive analysis on Home Prices)

**Report date:** 27th March 2023

**Internship Batch:** LISUM19

**Version:** 1.0

**Name:** B. Harika

**Submitted to:** Data Glacier

**Data storage location:**

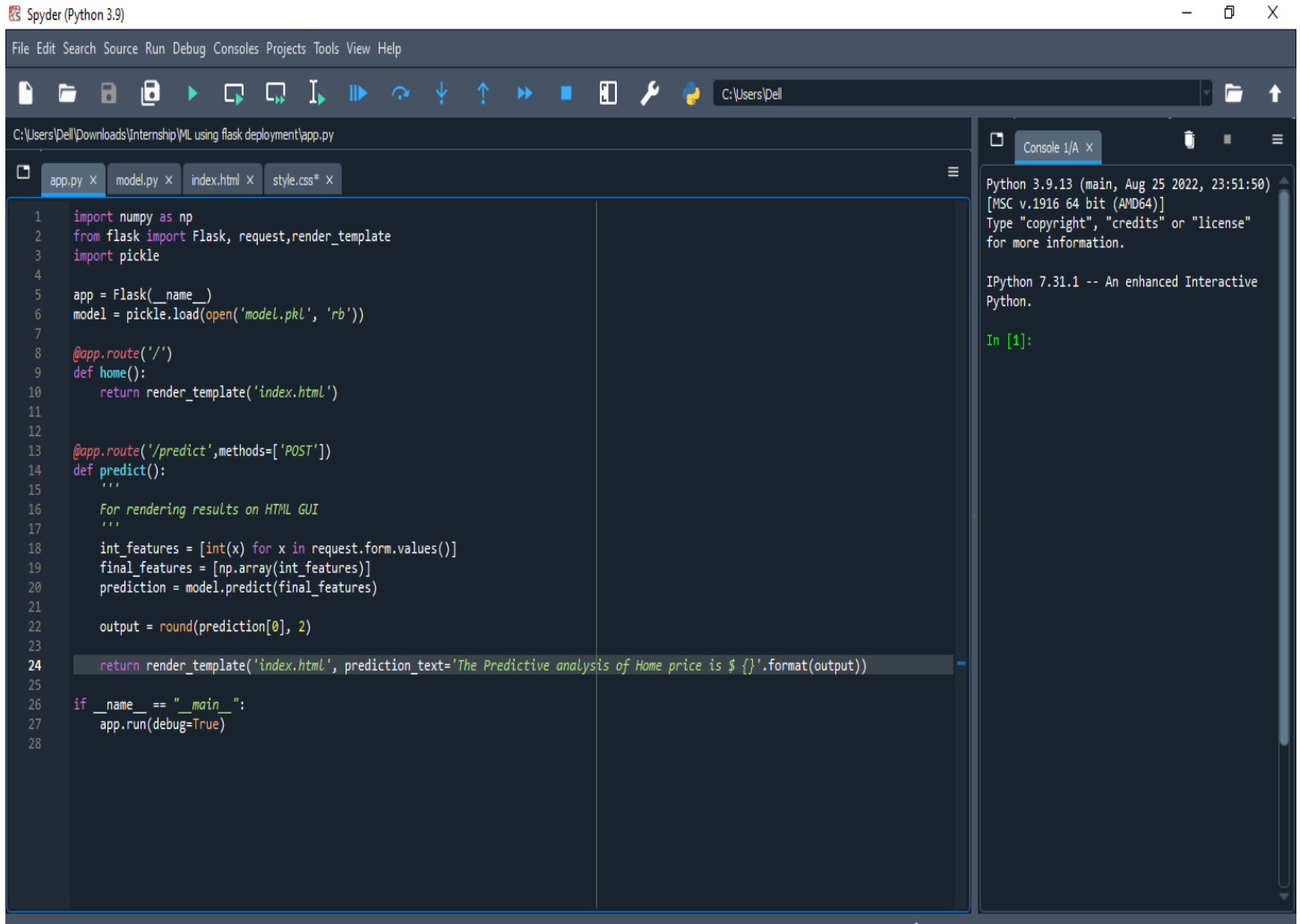
[https://github.com/HarikaReddyB/ML\\_model\\_deployment\\_on\\_Flask](https://github.com/HarikaReddyB/ML_model_deployment_on_Flask)

## Downlaoding the dataset by Kaggle datasets:

The screenshot shows the Kaggle dataset page for 'homeprices-multiple-variables'. The page is viewed in a web browser with a menu open on the right side. The dataset is titled 'homeprices-multiple-variables' and is categorized under 'Housing'. It has 11 versions and a 'New Notebook' button. The dataset is a CSV file named 'homeprices.csv' (123 B). The 'About this file' section states: 'Sample data of housing price. We have used this small data set to create a tutorial -- Machine learning for absolute beginners. The topic is Multivariate Regression.' The table below shows the structure of the dataset with 4 columns: # area, # bedrooms, # age, and # price. Each column has 6 total values.

# area	# bedrooms	# age	# price
area of home in square feet	number of bedrooms in a house	age of a house	price of a house
6 total values	6 total values	6 total values	6 total values

## app.py for flask deployment



The image shows the Spyder Python IDE interface. The main editor window displays the code for `app.py`, which is a Flask application. The code imports `numpy` and `Flask`, loads a pre-trained model from `model.pkl`, and defines two routes: `home()` and `predict()`. The `predict()` route handles POST requests, processes the input features, and returns a prediction. The console window on the right shows the Python version (3.9.13) and the IPython version (7.31.1).

```
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
13 @app.route('/predict', methods=['POST'])
14 def predict():
15     """
16     For rendering results on HTML GUI
17     """
18     int_features = [int(x) for x in request.form.values()]
19     final_features = [np.array(int_features)]
20     prediction = model.predict(final_features)
21
22     output = round(prediction[0], 2)
23
24     return render_template('index.html', prediction_text='The Predictive analysis of Home price is $ {}'.format(output))
25
26 if __name__ == "__main__":
27     app.run(debug=True)
28
```

Console 1/A X

Python 3.9.13 (main, Aug 25 2022, 23:51:50)  
[MSC v.1916 64 bit (AMD64)]  
Type "copyright", "credits" or "license"  
for more information.

IPython 7.31.1 -- An enhanced Interactive  
Python.

In [1]:

## Model.py

Spyder (Python 3.9)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Del\Downloads\Internship\ML using flask deployment\model.py

C:\Users\Del\Downloads\Internship\ML using flask deployment\model.py

app.py x model.py x index.html x style.css\* x

```
1 # Importing the libraries
2 import pandas as pd
3 import pickle
4
5 dataset = pd.read_csv('https://raw.githubusercontent.com/HarikaReddy8/Flask_deployment/main/homeprices.csv')
6
7 dataset = dataset[['area', 'bedrooms', 'age', 'price']]
8
9 # Replacing missing values
10 dataset['area'].fillna(dataset['area'].mean(), inplace=True)
11 dataset['bedrooms'].fillna(0, inplace=True)
12
13 X = dataset.iloc[:, :3]
14
15
16 y = dataset.iloc[:, -1]
17
18 from sklearn.linear_model import LinearRegression
19 regressor = LinearRegression()
20
21 #Fitting model with trainig data
22 regressor.fit(X, y)
23
24 # Saving model to disk
25 pickle.dump(regressor, open('model.pkl', 'wb'))
26
27 # Loading model to compare the results of analysis
28 model = pickle.load(open('model.pkl', 'rb'))
29 print(model.predict([[2200, 2, 5]]))
30
31
32
```

Console 1/A x

Python 3.9.13 (main, Aug 25 2022, 23:51:50)  
[MSC v.1916 64 bit (AMD64)]  
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IPython 7.31.1 -- An enhanced Interactive  
Python.

In [1]:

LSP Python: starting conda (Python 3.9.13) Line 6, Col 1 ASCII CRLF RW Mem 85%

## Index.html

Spyder (Python 3.9)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Del\Downloads\Internship\ML using flask deployment\templates\index.html

C:\Users\Del\Downloads\Internship\ML using flask deployment\templates\index.html

app.py x model.py x index.html x style.css x

```
1 <!DOCTYPE html>
2 <html >
3 <head>
4   <meta charset="UTF-8">
5   <title>ML API</title>
6   <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet' type='text/css'>
7   <link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet' type='text/css'>
8   <link href='https://fonts.googleapis.com/css?family=Hind:300' rel='stylesheet' type='text/css'>
9   <link href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300' rel='stylesheet' type='text/css'>
10  <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
11
12
13 </head>
14
15 <body>
16   <div class="login">
17     <h1>Predictive analysis of Home Price</h1>
18
19     <!-- Main Input For Receiving Query to our ML -->
20     <form action="{{ url_for('predict')}}" method="post">
21       <input type="text" name="Area" placeholder="Area (in square feet)" required="required" />
22       <input type="text" name="no.of bed rooms" placeholder="Bed Rooms" required="required" />
23       <input type="text" name="age" placeholder="Age" required="required" />
24
25       <button type="submit" class="btn btn-primary btn-block btn-large">Predict</button>
26     </form>
27
28     <br>
29     <br>
30     {{ prediction_text }}
31
32   </div>
33
34 </body>
35 </html>
36
```

Console 1/A x

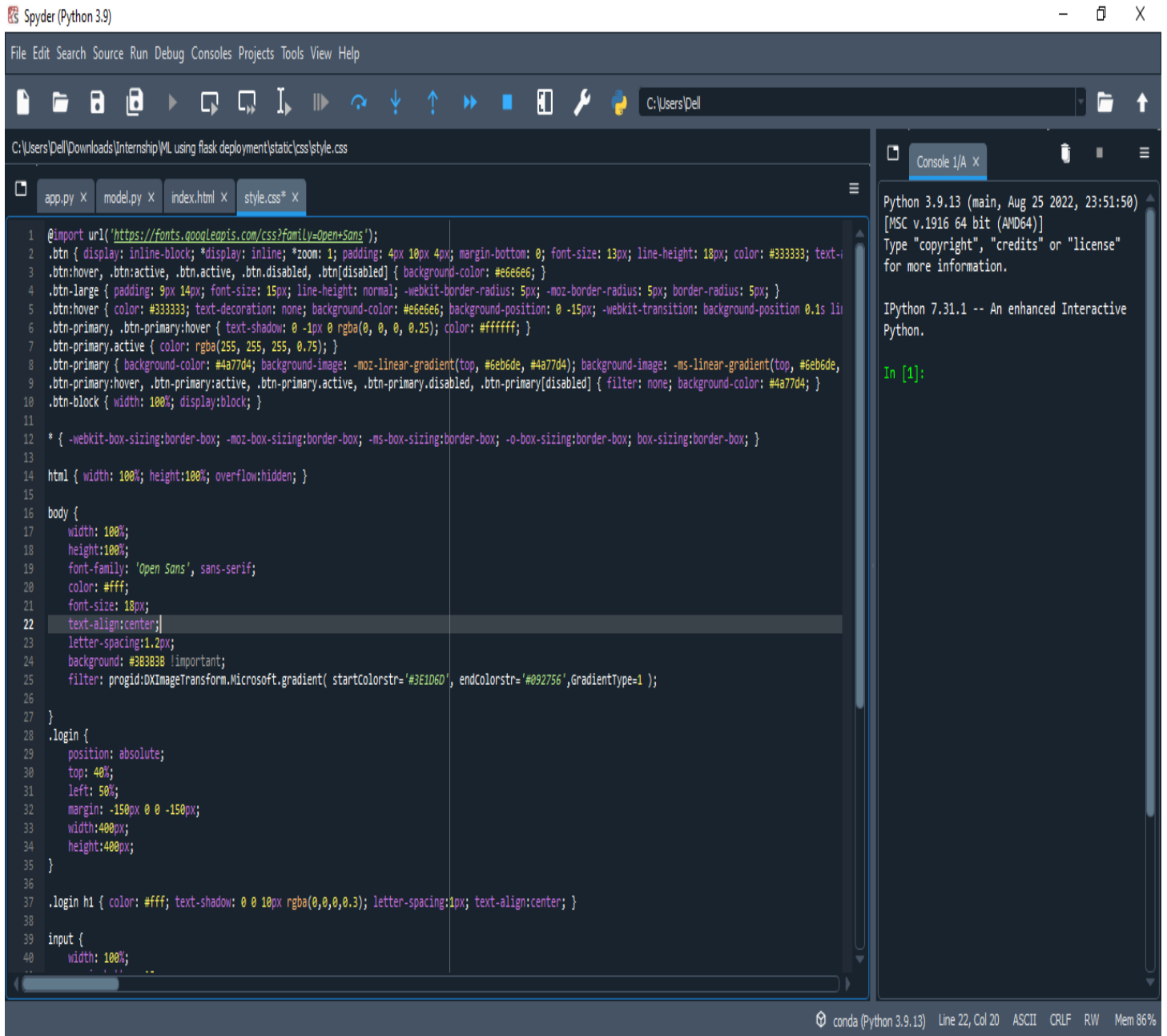
Python 3.9.13 (main, Aug 25 2022, 23:51:50)  
[MSC v.1916 64 bit (AMD64)]  
Type "copyright", "credits" or "license"  
for more information.

IPython 7.31.1 -- An enhanced Interactive  
Python.

In [1]:

conda (Python 3.9.13) Line 28, Col 8 ASCII CRLF RW Mem 91%

## Style.css



Spyder (Python 3.9)

File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\ DELL \Downloads\Internship\ML using flask deployment\static\css\style.css

```
1 @import url('https://fonts.googleapis.com/css?family=Open+Sans');
2 .btn { display: inline-block; *display: inline; *zoom: 1; padding: 4px 10px 4px; margin-bottom: 0; font-size: 13px; line-height: 18px; color: #333333; text-
3 .btn:hover, .btn.active, .btn.active, .btn.disabled, .btn[disabled] { background-color: #e6e6e6; }
4 .btn-large { padding: 9px 14px; font-size: 15px; line-height: normal; -webkit-border-radius: 5px; -moz-border-radius: 5px; border-radius: 5px; }
5 .btn:hover { color: #333333; text-decoration: none; background-color: #e6e6e6; background-position: 0 -15px; -webkit-transition: background-position 0.1s lin
6 .btn-primary, .btn-primary:hover { text-shadow: 0 -1px 0 rgba(0, 0, 0, 0.25); color: #ffffff; }
7 .btn-primary.active { color: rgba(255, 255, 255, 0.75); }
8 .btn-primary { background-color: #4a77d4; background-image: -moz-linear-gradient(top, #6eb6de, #4a77d4); background-image: -ms-linear-gradient(top, #6eb6de,
9 .btn-primary:hover, .btn-primary.active, .btn-primary.active, .btn-primary.disabled, .btn-primary[disabled] { filter: none; background-color: #4a77d4; }
10 .btn-block { width: 100%; display: block; }
11
12 * { -webkit-box-sizing: border-box; -moz-box-sizing: border-box; -ms-box-sizing: border-box; -o-box-sizing: border-box; box-sizing: border-box; }
13
14 html { width: 100%; height: 100%; overflow: hidden; }
15
16 body {
17     width: 100%;
18     height: 100%;
19     font-family: 'Open Sans', sans-serif;
20     color: #fff;
21     font-size: 18px;
22     text-align: center;
23     letter-spacing: 1.2px;
24     background: #383838 !important;
25     filter: progid:DXImageTransform.Microsoft.gradient( startColorstr='#3E1D6D', endColorstr='#092756', GradientType=1 );
26 }
27
28 .login {
29     position: absolute;
30     top: 40%;
31     left: 50%;
32     margin: -150px 0 0 -150px;
33     width: 400px;
34     height: 400px;
35 }
36
37 .login h1 { color: #fff; text-shadow: 0 0 10px rgba(0,0,0,0.3); letter-spacing: 1px; text-align: center; }
38
39 input {
40     width: 100%;
41     height: 40px;
42     border: 1px solid #ccc;
43     border-radius: 5px;
44     margin-top: 10px;
45     margin-bottom: 10px;
46 }
```

Console 1/A x

Python 3.9.13 (main, Aug 25 2022, 23:51:50)  
[MSC v.1916 64 bit (AMD64)]  
Type "copyright", "credits" or "license"  
for more information.

IPython 7.31.1 -- An enhanced Interactive  
Python.

In [1]:

conda (Python 3.9.13) Line 22, Col 20 ASCII CRLF RW Mem 86%

## Executing the Flask on Command Prompt

```
Command Prompt - python app.py
C:\Users\Dell\Downloads>cd internship
C:\Users\Dell\Downloads\Internship>cd ml using flask deployment
C:\Users\Dell\Downloads\Internship\ML using flask deployment>python app.py
C:\Users\Dell\AppData\Local\Programs\Python\Python311\Lib\site-packages\sklearn\base.py:318: UserWarning: Trying to unpickle estimator LinearRegression from version 0.2
2.1 when using version 1.2.2. This might lead to breaking code or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
  warnings.warn(
* 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
C:\Users\Dell\AppData\Local\Programs\Python\Python311\Lib\site-packages\sklearn\base.py:318: UserWarning: Trying to unpickle estimator LinearRegression from version 0.2
2.1 when using version 1.2.2. This might lead to breaking code or invalid results. Use at your own risk. For more info please refer to:
https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
  warnings.warn(
* Debugger is active!
* Debugger PIN: 252-841-195
127.0.0.1 - - [27/Mar/2023 12:15:59] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [27/Mar/2023 12:16:01] "GET /static/css/style.css HTTP/1.1" 200 -
127.0.0.1 - - [27/Mar/2023 12:16:22] "POST /predict HTTP/1.1" 200 -
127.0.0.1 - - [27/Mar/2023 12:16:23] "GET /static/css/style.css HTTP/1.1" 304 -
127.0.0.1 - - [27/Mar/2023 12:16:38] "POST /predict HTTP/1.1" 200 -
127.0.0.1 - - [27/Mar/2023 12:16:38] "GET /static/css/style.css HTTP/1.1" 304 -
127.0.0.1 - - [27/Mar/2023 12:16:43] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [27/Mar/2023 12:16:43] "GET /static/css/style.css HTTP/1.1" 304 -
```

## Testing for analysis:

ML API

127.0.0.1:5000

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## Predictive analysis of Home Price

Area (in square feet)

Bed\_Rooms

Age

Predict

