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Batch code: LISP01

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API URL: <https://housesalaryprediction-api.herokuapp.com>

Name of the dataset is “kc_house_data.csv” taken from Kaggle. This dataset includes information about characteristics of the houses like how many bathrooms, bedroom, etc. and what is the price of these house.

Index	price	bedrooms	bathrooms	sqft_living	sqft_lot	floors	waterfront	view	condition	grade
0	221900	3	1	1180	5650	1	0	0	3	7
1	538000	3	2.25	2570	7242	2	0	0	3	7
2	180000	2	1	770	10000	1	0	0	3	6
3	604000	4	3	1960	5000	1	0	0	5	7
4	510000	3	2	1680	8080	1	0	0	3	8
5	1.225e+06	4	4.5	5420	101930	1	0	0	3	11
6	257500	3	2.25	1715	6819	2	0	0	3	7
7	291850	3	1.5	1060	9711	1	0	0	3	7
8	229500	3	1	1780	7470	1	0	0	3	7
9	323000	3	2.5	1890	6560	2	0	0	3	7
10	662500	3	2.5	3560	9796	1	0	0	3	8
11	468000	2	1	1160	6000	1	0	0	4	7
12	310000	3	1	1430	19901	1.5	0	0	4	7
13	400000	3	1.75	1370	9680	1	0	0	4	7
14	530000	5	2	1810	4850	1.5	0	0	3	7

This is the snapshot of the dataset.

Waterfront: There is waterfront=1 ; There is not waterfront=0

- Linear regression model had conducted to predict house price, taking some characteristics of the houses as predictors.

```
/Users/irem/Desktop/Heroku/model.py
model.py request.py app.py

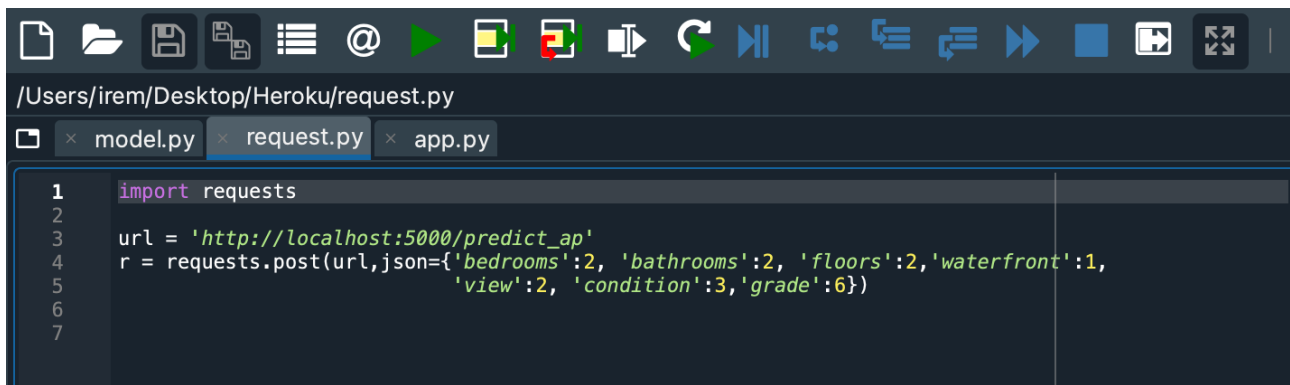
1 # Importing the libraries
2 import numpy as np
3 import matplotlib.pyplot as plt
4 import pandas as pd
5 import pickle
6
7 dataset = pd.read_csv('kc_house_data.csv')
8
9
10 X = dataset.iloc[:, [3,4,7,8,9,10,11]] # selecting covariates from dataset
11 y = dataset.iloc[:, 2] # selecting response from dataset
12
13 from sklearn.linear_model import LinearRegression
14 regressor = LinearRegression()
15
16 #Fitting model with training data
17 regressor.fit(X, y)
18
19 # Saving model to disk
20 pickle.dump(regressor, open('model.pkl','wb'))
21
22 # Loading model to compare the results
23 model = pickle.load(open('model.pkl','rb'))
24 print(model.predict([[2, 2, 2,1,2,3,6]]))
25
```

Name	Type	Size
dataset	DataFrame	(21613, 21)
X	DataFrame	(21613, 7)
y	Series	(21613,)

```
/Users/irem/Desktop/Deployment-flask-master-2/templates/index.html
app.py request.py index.html model2.py model.py

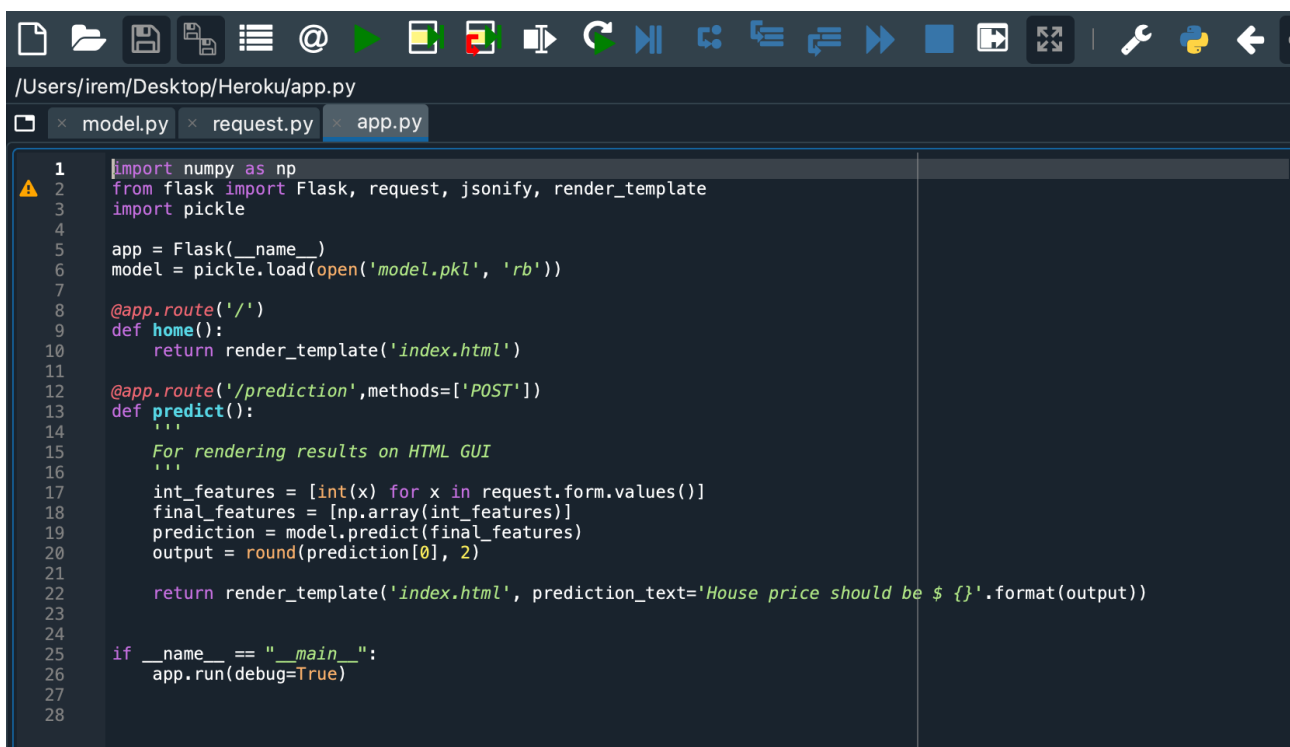
1 <!DOCTYPE html>
2 <html>
3 <!--From https://codepen.io/frytyler/pen/EGdtg-->
4 <head>
5 <meta charset="UTF-8">
6 <title>ML API</title>
7 <link href='https://fonts.googleapis.com/css?family=Pacifico' rel='stylesheet' type='text/css'>
8 <link href='https://fonts.googleapis.com/css?family=Arimo' rel='stylesheet' type='text/css'>
9 <link href='https://fonts.googleapis.com/css?family=Hind:300' rel='stylesheet' type='text/css'>
10 <link href='https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300' rel='stylesheet' type='text/css'>
11 <link rel="stylesheet" href="{{ url_for('static', filename='css/style.css') }}">
12
13 </head>
14
15 <body>
16 <div class="login">
17 <h1>Prediction of House 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="bedrooms" placeholder="Bedrooms" required="required" />
22 <input type="text" name="bathrooms" placeholder="Bathrooms" required="required" />
23 <input type="text" name="floors" placeholder="Floors" required="required" />
24 <input type="text" name="waterfront" placeholder="Waterfront" required="required" />
25 <input type="text" name="view" placeholder="View" required="required" />
26 <input type="text" name="condition" placeholder="Condition" required="required" />
27 <input type="text" name="grade" placeholder="Grade" required="required" />
28
29 <button type="submit" class="btn btn-primary btn-block btn-large">Predict</button>
30 </form>
31
32 <br>
33 <br>
34 {{ prediction_text }}
35
36 </div>
37
38
39 </body>
40 </html>
```

- This is the root node where API URL should go.
- index.html file is like our home page.



```
1 import requests
2
3 url = 'http://localhost:5000/predict_ap'
4 r = requests.post(url,json={'bedrooms':2, 'bathrooms':2, 'floors':2,'waterfront':1,
5                             'view':2, 'condition':3,'grade':6})
6
7
```

- We create request.py file to give URL. We are just saying that request or post URL and we give json values.



```
1 import numpy as np
2 from flask import Flask, request, jsonify, 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('/prediction',methods=['POST'])
13 def predict():
14     '''
15     For rendering results on HTML GUI
16     '''
17     int_features = [int(x) for x in request.form.values()]
18     final_features = [np.array(int_features)]
19     prediction = model.predict(final_features)
20     output = round(prediction[0], 2)
21
22     return render_template('index.html', prediction_text='House price should be $ {}'.format(output))
23
24
25 if __name__ == "__main__":
26     app.run(debug=True)
27
28
```

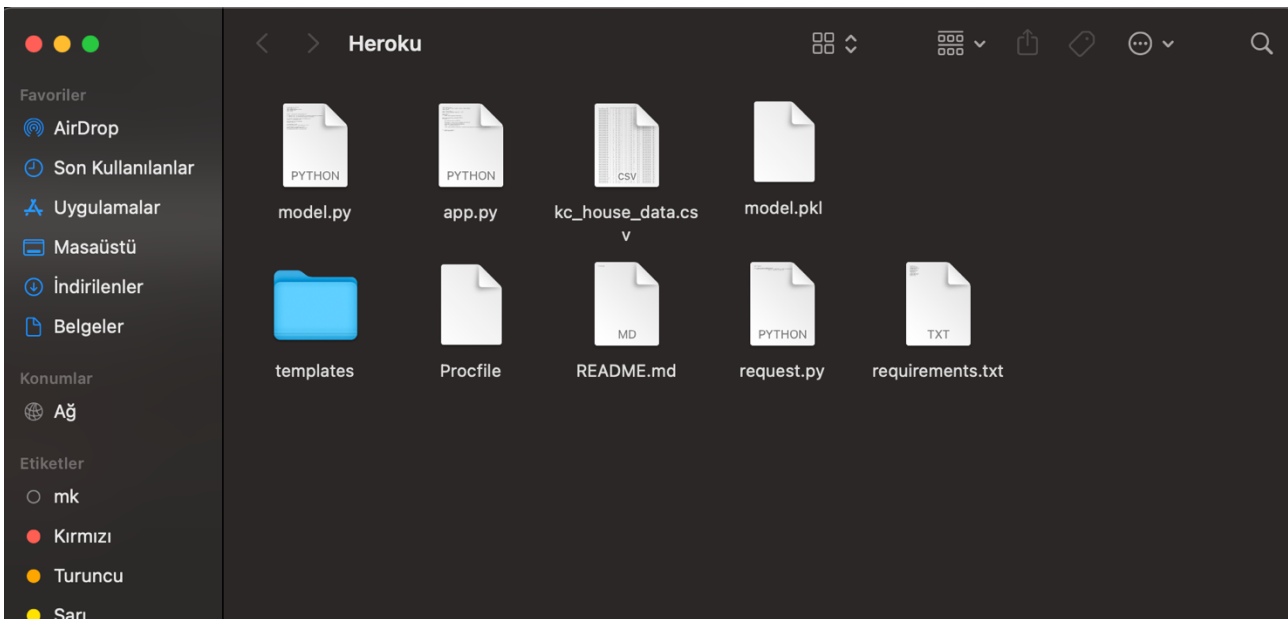
- In this app.py file, we create flask environment where we will be creating our API, and where we will read this file and then we will give the input to the file.

Then we open the terminal, and the read app.py file on the terminal.

```
Deployment-flask-master-2 — python ◀ python app.py — 97x24
Last login: Sat Mar 20 16:10:34 on ttys001
[base] irem@irem-MacBook-Air Deployment-flask-master-2 % 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 fsevents reloader
* Debugger is active!
* Debugger PIN: 281-513-114
```

We see that address of the demo is <http://127.0.0.1:5000/> ,so we created API. This link only opened in our browsers. Therefore, I deployed the model on open source cloud which is Heroku.

Firstly, I upload the python files which include model deployment part and required files to the github.



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API 1 branch 0 tags Go to file Add file Code

iremtanriverdi api	b26df38	23 minutes ago	5 commits
templates	api	39 minutes ago	
.DS_Store	api	24 minutes ago	
.gitattributes	Initial commit	42 minutes ago	
LICENSE	api	25 minutes ago	
Procfile	api	39 minutes ago	
README.md	api	25 minutes ago	
app.py	api	23 minutes ago	
kc_house_data.csv	api	25 minutes ago	
model.pkl	api	39 minutes ago	
model.py	api	23 minutes ago	
request.py	api	39 minutes ago	
requirements.txt	api	39 minutes ago	

Then, I opened the Heroku and, upload the link of my repositories in Github.

Salesforce Platform

HEROKU Jump to Favorites, Apps, Pipelines, Spaces...

App connected to GitHub
Code diffs, manual and auto deploys are available for this app.

Connected to [iremtanriverdi/Heroku](#) by [iremtanriverdi](#) Disconnect...

Releases in the [activity feed](#) link to GitHub to view commit diffs

Then, our files are uploaded, and API URL is created by Heroku.

Manual deploy
Deploy the current state of a branch to this app.

Deploy a GitHub branch
This will deploy the current state of the branch you specify below. [Learn more.](#)

Choose a branch to deploy
API Deploy Branch

Receive code from GitHub ✓

Build API b26df38d

```

2.1.0
-----> Discovering process types
Procfile declares types => web
-----> Compressing...
Done: 146.5M
-----> Launching...
Released v3
https://housesalaryprediction-api.herokuapp.com/ deployed to Heroku

```

☒ Autoscroll with output [View build log](#)

Release phase

Deploy to Heroku

Deploy a GitHub branch

This will deploy the current state of the branch you specify below. [Learn more.](#)

Choose a branch to deploy

API

Deploy Branch

Receive code from GitHub



Build API b26df38d



Release phase



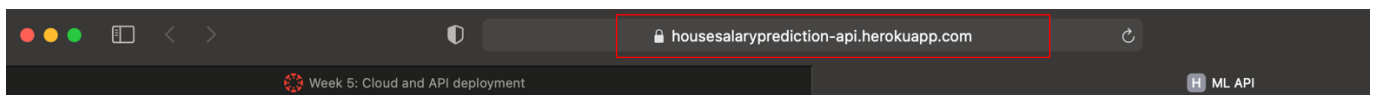
Deploy to Heroku



Your app was successfully deployed.

View

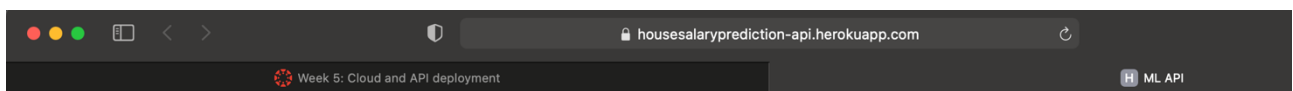
Then we view the URL:



Prediction of House Price

BedroomsBathroomsFloorsWaterfrontViewConditionGradePredict

Let's test it:



Prediction of House Price

3231426Predict

6

Prediction of House Price

BedroomsBathroomsFloorsWaterfrontViewConditionGradePredict

House price should be \$ 1018848.45