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Batch Code: LISUM20  
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Submitted to: Data Glacier

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Model Saving and deploying:

### Model Prediction

```
In [18]: X = df.iloc[:,[0,1,2,3,4]]
y = df.iloc[:,6]
X_train, X_test, y_train, y_test = train_test_split(X,y,test_size = 0.25,random_state = 1)

Charges_model = LinearRegression()
Charges_model.fit(X_train, y_train)

y_predict = Charges_model.predict(X_train).reshape(-1,1)
score = Charges_model.score(X_test, y_test)
print (f"Accuracy: {score}")

Accuracy: 0.7314978720846357

In [20]: import pickle
pickle.dump(Charges_model, open("Insurance_Charges_model.pkl", "wb"))

#Loading model
Charges_model = pickle.load(open("Insurance_Charges_model.pkl", "rb"))

In [22]: print (Charges_model.predict([[19, 0, 27.900, 0, 1]]))

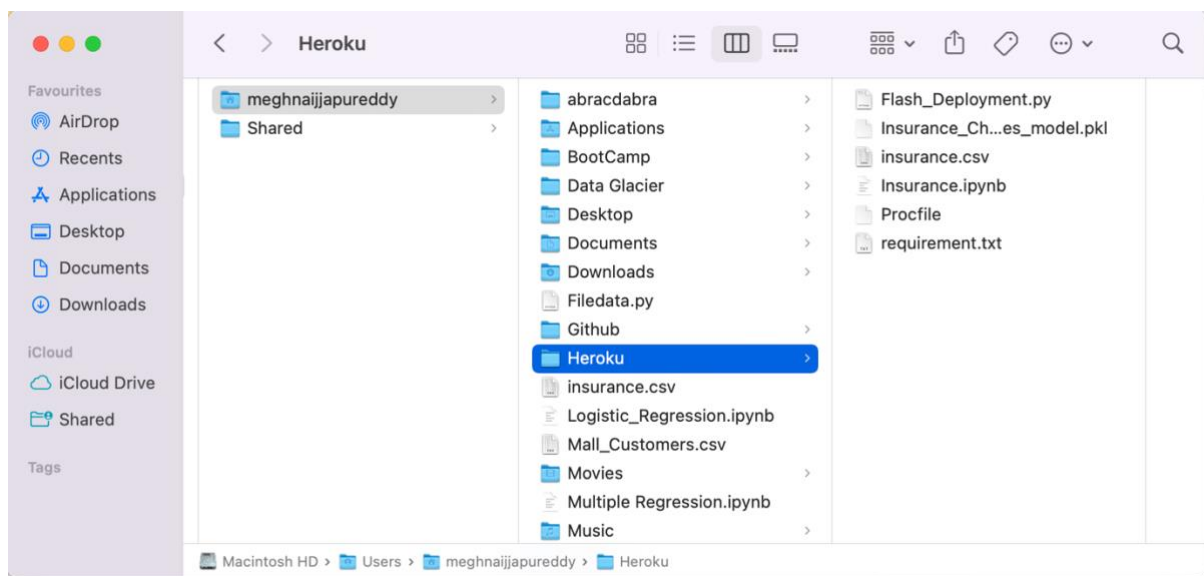
[26235.64288856]

/Users/meghnaijjapureddy/opt/anaconda3/lib/python3.9/site-packages/sklearn/base.py:450: UserWarning: X does not have
valid feature names, but LinearRegression was fitted with feature names
warnings.warn(

In [23]: print (Charges_model.predict([[18, 1, 33.770, 1, 0]]))

[3829.52048233]

/Users/meghnaijjapureddy/opt/anaconda3/lib/python3.9/site-packages/sklearn/base.py:450: UserWarning: X does not have
valid feature names, but LinearRegression was fitted with feature names
warnings.warn(
```



## Flask Deployment

```
Flash_Deployment.py x Profile requirements.txt Heroku.html flaskdata.html
Flash_Deployment.py > ...
1 from flask import Flask, request, json
2 import pickle
3 from sklearn.linear_model import LogisticRegression
4 from sklearn.model_selection import train_test_split
5 from flask_cors import CORS
6
7 app = Flask(__name__)
8 CORS(app)
9
10 @app.route('/InsurancePredict', methods=['POST'])
11
12 def predict():
13     Charges_model = pickle.load(open("/Users/meghnaijapureddy/Heroku/Insurance_Charges_model.pkl", "rb"))
14     input = []
15     for key, value in json.loads(request.data).items():
16         input.append(value)
17     return (Charges_model.predict([input]).tolist())
18
```

## HTML code:

```
Code File Edit Selection View Go Run Terminal Window Help
Heroku.html - Heroku
Flash_Deployment.py Profile requirements.txt Heroku.html x flaskdata.html
Users > meghnaijapureddy > Desktop > Needed folders > Heroku > Heroku.html > html > body > form > select#sex
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <title>Predict Medical Charges</title>
5 </head>
6 <body>
7 <h1>Predict Medical Charges</h1>
8 <form>
9 <label for="age">Age:</label>
10 <input type="text" id="age" name="age"><br><br>
11 <label for="sex">Sex:</label>
12 <select id="sex" name="sex">
13 <option value="0">Female</option>
14 <option value="1">Male</option>
15 </select><br><br>
16 <label for="bmi">BMI:</label>
17 <input type="text" id="bmi" name="bmi"><br><br>
18 <label for="children">Number of Children:</label>
19 <input type="text" id="children" name="children"><br><br>
20 <label for="smoker">Smoker:</label>
21 <select id="smoker" name="smoker">
22 <option value="0">No</option>
23 <option value="1">Yes</option>
24 </select><br><br>
25 <input type="button" value="Submit" onclick="sendData()">
26 </form>
27 <div id="response"></div>
28 <script>
29 function sendData() {
30     const age = document.getElementById("age").value;
31     const sex = document.getElementById("sex").value;
32     const bmi = document.getElementById("bmi").value;
33     const children = document.getElementById("children").value;
34     const smoker = document.getElementById("smoker").value;
35     const data = JSON.stringify({ "age": parseFloat(age), "sex": parseInt(sex), "bmi": parseFloat(bmi), "children": parseInt(children), "smoker": parseInt(smoker) });
36     console.log(data);
37     fetch('http://127.0.0.1:5000/InsurancePredict', {
38         method: 'POST',
39
```

```
25 <select><div></div>
26 </form>
27 <div id="response"></div>
28 <script>
29   function sendData() {
30     const age = document.getElementById("age").value;
31     const sex = document.getElementById("sex").value;
32     const bmi = document.getElementById("bmi").value;
33     const children = document.getElementById("children").value;
34     const smoker = document.getElementById("smoker").value;
35     const data = JSON.stringify({ "age": parseFloat(age), "sex": parseInt(sex), "bmi": parseFloat(bmi), "children": parseI
36     console.log(data);
37
38     fetch('http://127.0.0.1:5000/InsurancePredict', {
39       method: 'POST',
40       body: data,
41       headers: {
42         'Content-Type': 'application/json'
43       }
44     })
45     .then(response => response.json())
46     .then(data => {
47       console.log('Success:', data);
48       const responseDiv = document.getElementById("response");
49       responseDiv.innerHTML = "Estimated Charges: " + data;
50     })
51     .catch(error => {
52       console.error('Error:', error);
53     });
54   }
55 </script>
56 </body>
57 </html>
58
```

HTML web page:

Age: 19

Sex: Female

BMI: 27.900

Number of Children: 0

Smoker: Yes

Submit

Estimated Charges: 26235.642888562954

Heroku deployment:

App name: insurancechange

insurancechange is available

Choose a region: Europe

Add to pipeline...

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Add Payment Method

Create app Cancel

