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BATCH CODE: LISUM14
SUBMISSION DATE: DECEMBER 2022
SUBMITTED TO: DATA GLACIER

CAR PROPERTIES DATASET

```
import pandas as pd #type:ignore
import pickle
import numpy as np
from sklearn.linear_model import LinearRegression #type:ignore
from sklearn.model_selection import train_test_split #type:ignore
from sklearn import linear_model

df = pd.read_excel("DataCar.xlsx")
df.head()
```

	Car	MPG	Cylinders	Displacement	Horsepower	Weight	Acceleration	Model	Origin
0	Chevrolet Chevelle Malibu	18.0	8	307.0	130.0	3504.0	12.0	70	US
1	Buick Skylark 320	15.0	8	350.0	165.0	3693.0	11.5	70	US
2	Plymouth Satellite	18.0	8	318.0	150.0	3436.0	11.0	70	US
3	AMC Rebel SST	16.0	8	304.0	150.0	3433.0	12.0	70	US
4	Ford Torino	17.0	8	302.0	140.0	3449.0	10.5	70	US

```
df
```

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4	Ford Torino	17.0	8	302.0	140.0	3449.0	10.5	70	US
...
401	Ford Mustang GL	27.0	4	140.0	86.0	2790.0	15.6	82	US
402	Volkswagen Pickup	44.0	4	97.0	52.0	2130.0	24.6	82	Europe
403	Dodge Rampage	32.0	4	135.0	84.0	2295.0	11.6	82	US
404	Ford Ranger	28.0	4	120.0	79.0	2625.0	18.6	82	US
405	Chevy S-10	31.0	4	119.0	82.0	2720.0	19.4	82	US

406 rows x 9 columns

```
[93] df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 406 entries, 0 to 405
Data columns (total 9 columns):
#   Column          Non-Null Count  Dtype
---  ---
0   Car              406 non-null    object
1   MPG              406 non-null    float64
2   Cylinders        406 non-null    int64
3   Displacement     406 non-null    float64
4   Horsepower       406 non-null    float64
5   Weight           406 non-null    float64
6   Acceleration     406 non-null    float64
7   Model            406 non-null    int64
8   Origin           406 non-null    object
dtypes: float64(5), int64(2), object(2)
memory usage: 28.7+ KB
```

```
[94] df['Cylinders'].unique()

array([8, 4, 6, 3, 5])
```

```
df['Origin'].unique()

array(['US', 'Europe', 'Japan'], dtype=object)
```

```

✓ [96] df['Cylinders_int'] = df['Cylinders'].map({'8' : 1, '4' : 2, '6' : 3, '3' : 4, '5': 5})
      df['Origin_int'] = df['Origin'].map({'US' : 1, 'Europe' : 2, 'Japan' : 3})

✓ [97] X = df[['MPG', 'Cylinders', 'Horsepower', 'Weight', 'Acceleration', 'Model']]
      y = df['Displacement']
      X_train, X_test, y_train, y_test = train_test_split(X, y, test_size= 0.3, random_state= 101)

✓ [98] model = linear_model.LinearRegression()

✓ [99] model.fit(X_train, y_train)
      print(model.score(X_train, y_train))

0.9562997940025586

✓ prediction_test = model.predict(X_test)
  print(y_test, prediction_test)
  print("Predict = ", np.mean(prediction_test-y_test)**2)

195      318.0
43       250.0
98       400.0
204       90.0
295      318.0
...
16       340.0
31       360.0
36       140.0
41       225.0
24        97.0
Name: Displacement, Length: 122, dtype: float64 [347.886696  225.93577274 365.46735442  91.83822588 319.15906196
116.51162317 215.60248611 275.97382561  91.21097748 315.29158902
 73.14552449  95.16587383  77.81838705 166.34316899 114.81185313
228.40833769 353.22275783 128.78583984 133.25041684  73.442575
122.00508427 315.44359102 177.78436643 235.4199805  211.91201271
205.87581219 222.07420085 148.80237955  88.57860347  97.76523848
88.07811476 239.29938481 305.65901654 126.00117146 347.48073301
86.2224578  388.25493164 201.4754791  134.29794271  90.36566834
132.95818941  94.02478911 247.95912679 119.03939848  82.29766113
92.30146999  73.82025463 167.35996073 122.57829315 102.46146663
75.18128326 216.30993894 346.67131763 212.63509573  99.85382472
124.98106297 346.90463389 107.9556231  111.79833947  91.66537581
352.39414421 205.18701131 128.02292116 409.84285691 316.30270777
125.5592351  113.10132636 199.41804754  77.01584626 109.98463773
229.01701638 100.10239403 119.3375582  89.30879934  82.16113494
99.65771322 345.87116891 336.29625868 329.19220319 124.29057189
352.1261212  342.63182864 208.90879984 348.72836975 366.95101609
304.79842497 347.90970917 110.79607865  91.05230148 317.32805522
81.75908099  99.1544662  362.48344458 214.87259112 108.03810893

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352.51140741  76.75862885 338.7930017  98.10797049 209.9121741
241.04962585 310.91545265 332.7387107  385.47874379 115.42562729
235.35703673 109.91535644]
Predict =  1.225941524448503

✓ [106] pickle.dump(model, open('model.pkl', 'wb'))

✓ [107] model = pickle.load(open('model.pkl', 'rb'))

```

DEPLOY THE MODEL ON FLASK

```
app.py > ...
1 |
2 | import numpy as np
3 | from flask import Flask, request, render_template #type:ignore
4 | import pickle
5 |
6 | app = Flask(__name__)
7 |
8 | model = pickle.load(open('models/model.pkl', 'rb'))
9 |
10 | @app.route('/')
11 | def home():
12 |     return render_template('index.html')
13 |
14 | @app.route('/predict',methods=['POST'])
15 | def predict():
16 |
17 |     int_features = [float(x) for x in request.form.values()]
18 |     features = [np.array(int_features)]
19 |     prediction = model.predict(features)
20 |
21 |     output = round(prediction[0], 2)
22 |
23 |     return render_template('index.html', prediction_text='Prediction Horsepower {}'.format(output))
24 |
25 | if __name__ == "__main__":
26 |     app.run()
```

(base) Aise-MacBook-Pro:downloads bulut\$ python model.py

<class 'pandas.core.frame.DataFrame'>

RangeIndex: 406 entries, 0 to 405

Data columns (total 9 columns):

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4	Horsepower	406 non-null	float64
5	Weight	406 non-null	float64
6	Acceleration	406 non-null	float64
7	Model	406 non-null	int64
8	Origin	406 non-null	object

dtypes: float64(5), int64(2), object(2)

memory usage: 28.7+ KB

0.9562997940025587

195 318.0

43 250.0

98 400.0

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88.07811476 239.29938481 305.65901654 126.00117146 347.48073301

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352.51140741 76.75862885 338.7930017 98.10797049 209.9121741

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235.35703673 109.91535644]

Predict = 1.2259415244493959

```
SORUNLAR  ÇIKIŞ  HATA AYIKLAMA KONSOLU  TERMİNAL

bash: export: `Code.app/Contents/Resources/app/bin:/Applications/Visual': not a valid identifier
bash: export: `Code.app/Contents/Resources/app/bin': not a valid identifier


The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh -s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
(base) Aise-MacBook-Pro:Week4-Data-Glacier bulut$ 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: off
* Restarting with stat
* Debugger not active (PYTHONDEBUG=0)
* PID: 1437
```



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 **CengARY** Add files via upload ... now  1

 DataCar.xlsx	Add files via upload	now
 app.py	Add files via upload	now
 index.html	Add files via upload	now
 model.pkl	Add files via upload	now
 model.py	Add files via upload	now

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 GitLab


+ Connect account


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 Connect GitLab

 GitHub

+ Connect account

 GitLab

+ Connect account

You are deploying from a `render.yaml` file for [CengARY/Week5-Cloud-and-API-deployment](#).

Service Group Name



A unique name for your service group.

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The repository branch with the `render.yaml` file.

main

Please review the changes to apply below. All future updates to `render.yaml` will be synced automatically. You can learn more about Render's infrastructure-as-code [here](#).

-  Create database `blitzapp-db`
-  Create web service `blitzapp`

Apply

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Service Group Name

A unique name for your service group.

car-properties

Branch

The repository branch with the render.yaml file.

main

Please review the changes to apply below. All future updates to render.yaml will be synced automatically. You can learn more about Render's infrastructure-as-code here.

Create database blitzapp-db

Create web service blitzapp