Nama :aditia rizki maulana

Nim :20220801431

Matkul :machine learning

SOAL 1

Bagaimana cara menggunakan model multiple linear regression untuk membuat prediksi tunggal R&D Spend = 160000, Administration Spend = 130000, Marketing Spend = 300000 and State = California?

```python
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

Python

import dataset

```python
dataset = pd.read_csv('"D:\perkuliahan\machine_lerning tugas 9-10\Dataset(1).csv"')
X = dataset.iloc[:, :-1].values
y = dataset.iloc[:, -1].values
```

Python

print dataset

```python
dataset.head()
```

Python

	R&D Spend	Administration	Marketing Spend	State	Profit
0	165349.20	136897.80	471784.10	New York	192261.83
1	162597.70	151377.59	443898.53	California	191792.06
2	153441.51	101145.55	407934.54	Florida	191050.39
3	144372.41	118671.85	383199.62	New York	182901.99
4	142107.34	91391.77	366168.42	Florida	166187.94

Encoding categorical data

```python
from sklearn.compose import ColumnTransformer
from sklearn.preprocessing import OneHotEncoder
ct = ColumnTransformer(transformers=[('encoder', OneHotEncoder(), [3])], remainder='passthrough')
X = np.array(ct.fit_transform(X))
```

Python

Splitting the dataset into the Training set and Test set

```python
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.2, random_state = 0)
```

Python

Training the Multiple Linear Regression model on the Training set

```python
from sklearn.linear_model import LinearRegression
regressor = LinearRegression()
regressor.fit(X_train, y_train)
```

Python

```
LinearRegression()
```

Predict Test Result

```python
y_pred = regressor.predict(X_test)
np.set_printoptions(precision=2)
print(np.concatenate((y_pred.reshape(len(y_pred),1), y_test.reshape(len(y_test),1)),1))
```

Python

```
[[103015.2  103282.38]
 [132582.28 144259.4 ]
 [132447.74 146121.95]
 [ 71976.1   77798.83]
 [178537.48 191050.39]
 [116161.24 105008.31]
 [ 67851.69  81229.06]
 [ 98791.73  97483.56]
 [113969.44 110352.25]
 [167921.07 166187.94]]
```

JAWABAN R&D Spend = 160000, Administration Spend = 130000, Marketing Spend = 300000 and State = 'California'

```python
print(regressor.predict([[1, 0, 0, 160000, 130000, 300000]]))
```

Pyth

```
[181566.92]
```

SOAL 2

Bagaimana cara mendapatkan persamaan regresi akhir y = b0 + b1 x1 + b2 x2 + ... dengan nilai akhir koefisien?

```python
print(regressor.coef_)
print(regressor.intercept_)
```

Pyth

```
[ 8.66e+01 -8.73e+02  7.86e+02  7.73e-01  3.29e-02  3.66e-02]
42467.52924856474
```