

SATHISH R(192324204)

DATE:13/02/2026

Experiment:31

EXP 31 – Customer Segmentation (KMeans)

```
[ ] import pandas as pd
from sklearn.cluster import KMeans

df = pd.read_csv("customer_data.csv")
m = KMeans(3,random_state=0).fit(df)

s = float(input("Spend: "))
v = int(input("Visits: "))
print("Cluster:", m.predict([[s,v]]))
```

▼ Spend: 600
Visits: 12
Cluster: 0
/usr/local/lib/python3.12/dist-packages/sklearn/utils/validation.py:2739: UserWarning: X does not have valid feature names
warnings.warn(

EXP:32

EXP 32 – Simple Linear Regression (Bivariate)

```
[ ] ⏎ import pandas as pd
from sklearn.linear_model import LinearRegression

df = pd.read_csv("housing_data.csv")
X,y = df[["Area"]], df["Price"]

m = LinearRegression().fit(X,y)
a = float(input("Area: "))
print("Predicted Price:", m.predict([[a]]))
```

▼ ... Area: 1600
Predicted Price: 86.19448698315468
/usr/local/lib/python3.12/dist-packages/sklearn/utils/validation.py:2739: UserWarning: X does not have valid feature names,
warnings.warn(

EXP:33

EXP 33 – Car Price Regression

```
[ ] ⏎ import pandas as pd
from sklearn.linear_model import LinearRegression

df = pd.read_csv("car_data.csv")
X,y = df[["Mileage", "Age"]], df["Price"]

m = LinearRegression().fit(X,y)
print("Price:", m.predict([[20000,3]]))
```

▼ ... Price: 803804.3478260869
/usr/local/lib/python3.12/dist-packages/sklearn/utils/validation.py:2739: UserWarning: X does not have valid feature names
warnings.warn(

EXP:34

EXP 34 – KNN Classification

```
[ ] ⏎ from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier

x,y = load_iris(return_X_y=True)
X1,X2,y1,y2 = train_test_split(x,y,test_size=0.3)

m = KNeighborsClassifier(3).fit(X1,y1)
print("Prediction:", m.predict([X2[0]]))

▼   ... Prediction: [0]
```

EXP:35

EXP 35 – Retail KMeans

```
[ ] ⏎ import pandas as pd
from sklearn.cluster import KMeans

df = pd.read_csv("retail.csv")
m = KMeans(2).fit(df)

print("Clusters:", m.labels_)

▼   Clusters: [1 0 1 0 1 0 1]
```

EXP:36

EXP 36 – Stock Variability

```
] ⏎ import pandas as pd

df = pd.read_csv("stock.csv")
print("Mean:", df["Close"].mean())
print("Std:", df["Close"].std())

▼   Mean: 107.42857142857143
    Std: 5.411627692821661
```

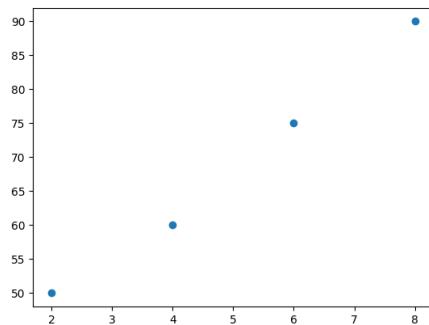
EXP:37

EXP 37 – Correlation

```
] ⏎ import pandas as pd  
import matplotlib.pyplot as plt  
  
df = pd.DataFrame({"Study":[2,4,6,8],"Score":[50,60,75,90]})  
print("Correlation:", df.corr())  
  
plt.scatter(df["Study"],df["Score"])  
plt.show()
```

```
... Correlation:  
          Study      Score  
Study  1.00000  0.99591  
Score  0.99591  1.00000
```

OUTPUT:



EXP:38

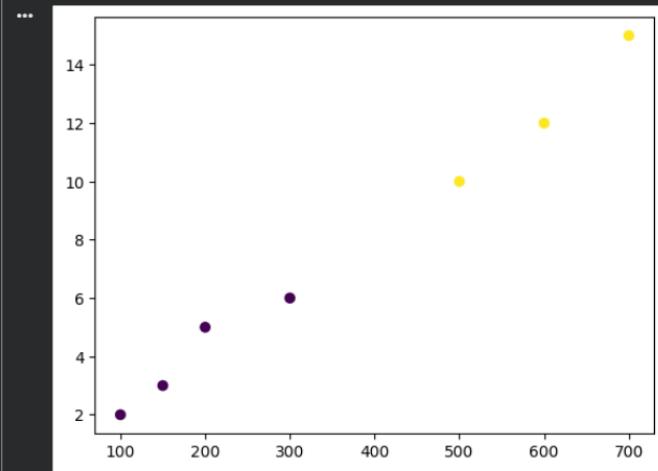
EXP 38 – Temperature Analysis

```
import pandas as pd  
  
df = pd.read_csv("temperature.csv")  
print(df.groupby("City")["Temp"].mean())  
print(df.groupby("City")["Temp"].std())  
  
...  
City  
Chennai    33.0  
Delhi      36.0  
Mumbai     30.0  
Name: Temp, dtype: float64  
City  
Chennai    1.0  
Delhi      1.0  
Mumbai     1.0  
Name: Temp, dtype: float64
```

EXP:39

EXP 39 – KMeans + Visualization

```
import pandas as pd  
import matplotlib.pyplot as plt  
from sklearn.cluster import KMeans  
  
df = pd.read_csv("customer_data.csv")  
m = KMeans(2).fit(df)  
  
plt.scatter(df.iloc[:,0],df.iloc[:,1],c=m.labels_)  
plt.show()
```



EXP:40

```
EXP 40 – Soccer Analysis

[ ] ⏪ import pandas as pd
    import matplotlib.pyplot as plt

    df = pd.read_csv("players.csv")

    print(df.sort_values("Goals", ascending=False).head())
    print(df.sort_values("Salary", ascending=False).head())
    print("Avg Age:", df["Age"].mean())

    df["Position"].value_counts().plot(kind="bar")
    plt.show()

...
   ...      Name  Age  Position  Goals  Salary
0    Messi   36    Forward    25 1000000
1  Ronaldo   38    Forward    20 950000
4  Player5   27    Forward    15 600000
2  Player3   29  Midfielder    10 500000
5  Player6   33  Midfielder     8 450000
   ...      Name  Age  Position  Goals  Salary
0    Messi   36    Forward    25 1000000
1  Ronaldo   38    Forward    20 950000
4  Player5   27    Forward    15 600000
2  Player3   29  Midfielder    10 500000
5  Player6   33  Midfielder     8 450000
Avg Age: 32.0
```

OP:

