

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]])[0])

▼ 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]])[0])

▼ ... 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]])[0])

▼ ... 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

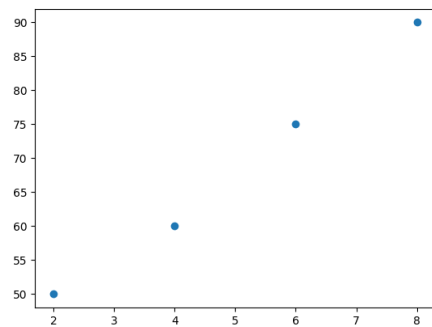
```
1  import pandas as pd
import matplotlib.pyplot as plt

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
City
Chennai    33.0
Delhi      36.0
Mumbai     30.0
Name: Temp, dtype: float64
City
City
Chennai     1.0
Delhi       1.0
Mumbai      1.0
Name: Temp, dtype: float64
```

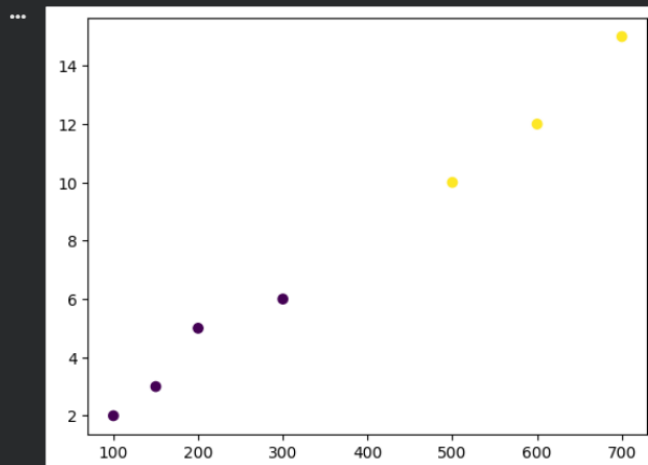
## EXP:39

### 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:

