

K MEANS CLUSTERING

CODE:

```
import pandas as pd

import matplotlib.pyplot as plt

from sklearn.cluster import KMeans

data = {

    'Sales':[30,55,95,30,35,60,77,46,81,70],

    'Score':[89,66,54,52,99,65,86,50,89,78]

}

df = pd.DataFrame(data)

kmeans = KMeans(n_clusters=3, random_state=42)

kmeans.fit(df)

df['Cluster'] = kmeans.labels_

print("Cluster Centers:\n", kmeans.cluster_centers_)

print("\nData with Cluster Labels:\n", df)

plt.figure(figsize=(8,6))

plt.scatter(df['Sales'], df['Score'],c=df['Cluster'], cmap='cool', s=100, label='Sales')

centroids = kmeans.cluster_centers_

plt.scatter(centroids[:, 0], centroids[:, 1],c='red', s=200, marker='X', label='Centroids')

plt.title('K-Means Clustering: Sales vs score')

plt.xlabel(' Sales')

plt.ylabel('score')

plt.legend()

plt.show()
```

OUTPUT:

```
PS E:\DATA SCIENCE> & E:/Python/python.exe "e:/DATA SCIENCE/week4/kmeans.py"
Cluster Centers:
[[38.  51. ]
 [73.  73. ]
 [32.5 94. ]]

Data with Cluster Labels:
  Sales  Score  Cluster
0     30     89        2
1     55     66        1
2     95     54        1
3     30     52        0
4     35     99        2
5     60     65        1
6     77     86        1
7     46     50        0
8     81     89        1
9     70     78        1

4     35     99        2
5     60     65        1
6     77     86        1
7     46     50        0
8     81     89        1
9     70     78        1
```

```
4     35     99        2
5     60     65        1
6     77     86        1
7     46     50        0
8     81     89        1
4     35     99        2
5     60     65        1
4     35     99        2
4     35     99        2
4     35     99        2
5     60     65        1
6     77     86        1
7     46     50        0
8     81     89        1
4     35     99        2
5     60     65        1
6     77     86        1
7     46     50        0
```

PROBLEMS	OUTPUT	DEBUG CONSOLE	TERMINAL	PORTS
5	60	65	1	
6	77	86	1	
7	46	50	0	
8	81	89	1	
9	70	78	1	
4	35	99	2	
5	60	65	1	
6	77	86	1	
7	46	50	0	
8	81	89	1	
9	70	78	1	
4	35	99	2	
5	60	65	1	
6	77	86	1	
7	46	50	0	

