Experiment-10

November 2, 2025

[34]:
```
import pandas as pd
df=pd.read_csv('Mall_Customers.csv')
```

[35]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

[36]:
```
feature=df.iloc[:,[3,4]].values
```

[37]:
```
feature
```

[37]:
```
array([[ 15,  39],
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       [ 16,   6],
       [ 16,  77],
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       [ 25,   5],
       [ 25,  73],
       [ 28,  14],
```

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```

```
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       [113,  91],
       [120,  16],
       [120,  79],
       [126,  28],
       [126,  74],
       [137,  18],
       [137,  83]])
```

[38]:
```
import os
os.environ["OMP_NUM_THREADS"] = "1"
```

[39]:
```
from sklearn.cluster import KMeans
model=KMeans(n_clusters=5)
model.fit(feature)
KMeans(n_clusters=5)
```

```
D:\Ashvanthan\anaconda3\python\Lib\site-
packages\sklearn\cluster\_kmeans.py:1419: UserWarning: KMeans is known to have a
memory leak on Windows with MKL, when there are less chunks than available
threads. You can avoid it by setting the environment variable OMP_NUM_THREADS=1.
  warnings.warn(
```

[39]:
```
KMeans(n_clusters=5)
```

[40]:
```
Final=df.iloc[:,[3,4]]
Final['label']=model.predict(feature)
Final
```

```
C:\Users\Lenovo\AppData\Local\Temp\ipykernel_9408\551092936.py:2:
SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

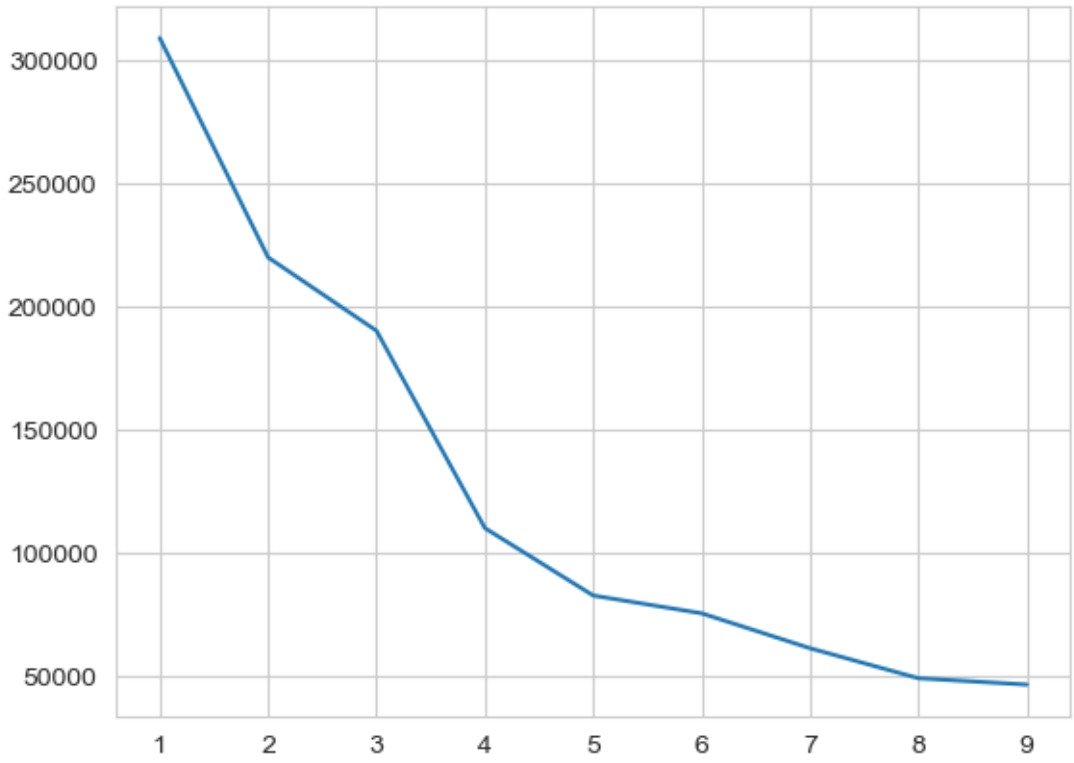
See the caveats in the documentation: https://pandas.pydata.org/pandas-
docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy
  Final['label']=model.predict(feature)
```

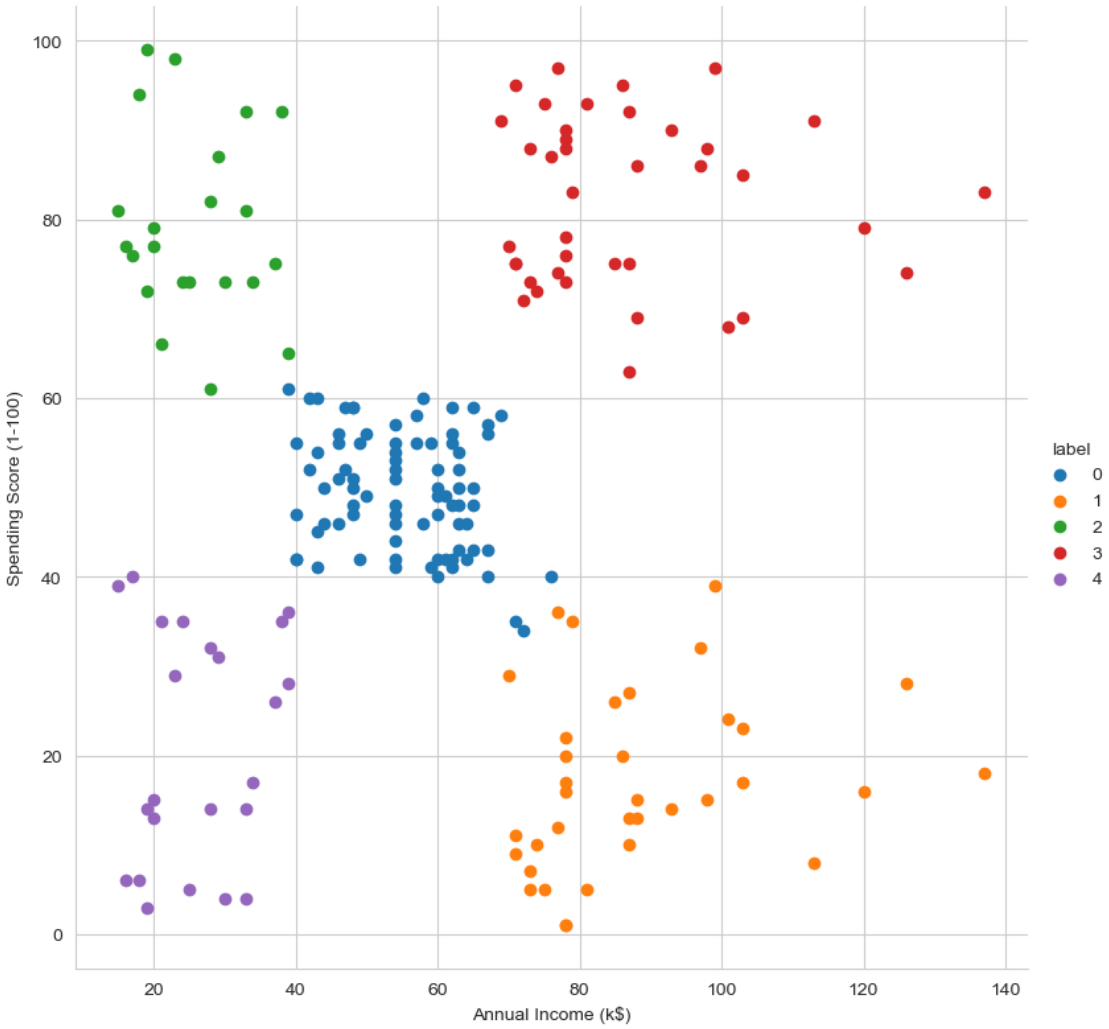
[40]:

	Annual Income (k$)	Spending Score (1-100)	label
0	15	39	4
1	15	81	2
2	16	6	4
3	16	77	2
4	17	40	4
..	…	…	…
195	120	79	3
196	126	28	1
197	126	74	3
198	137	18	1
199	137	83	3

[200 rows x 3 columns]

[41]:
```
sns.set_style("whitegrid")
sns.FacetGrid(Final,hue="label",height=8).map(plt.scatter,"Annual Income (k$)",␣
  ↪"Spending Score (1-100)").add_legend();
plt.show()
```


300000
250000
200000
150000
100000
50000
1
2
3
4
5
6
7
8
9


Spending Score (1-100)
Annual Income (k$)
label
0
1
2
3
4