jupyter exp13 Last Checkpoint: 07/10/2025 (autosaved)

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Not Trusted | Python 3 (ipykernel)

Run Code

In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
df=pd.read_csv("C:/Users/REC/Mall_Customers.csv")
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 200 entries, 0 to 199
Data columns (total 5 columns):
 #   Column                  Non-Null Count  Dtype
---  ------                  --------------  -----
 0   CustomerID              200 non-null    int64
 1   Gender                  200 non-null    object
 2   Age                     200 non-null    int64
 3   Annual Income (k$)      200 non-null    int64
 4   Spending Score (1-100)  200 non-null    int64
dtypes: int64(4), object(1)
memory usage: 7.1+ KB
```

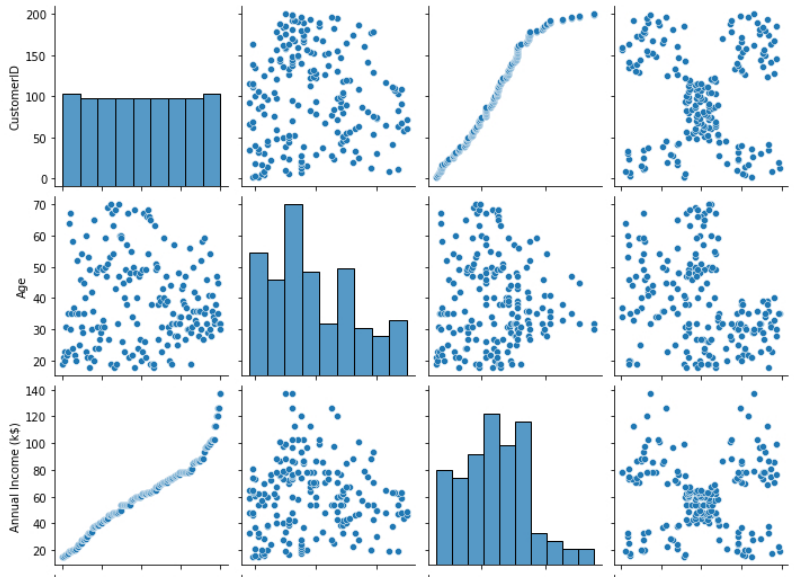
In [2]:
```
df.head()
```

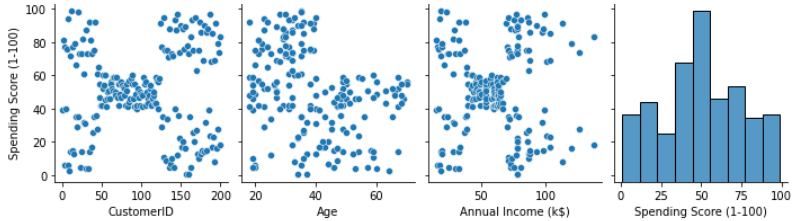
Out[2]:

	CustomerID	Gender	Age	Annual Income (k$)	Spending Score (1-100)
0	1	Male	19	15	39
1	2	Male	21	15	81
2	3	Female	20	16	6
3	4	Female	23	16	77
4	5	Female	31	17	40

In [3]:
```
sns.pairplot(df)
```

Out[3]:
```
<seaborn.axisgrid.PairGrid at 0xb87e748>
```





In [4]:
```
features=df.iloc[:,[3,4]].values
from sklearn.cluster import KMeans
model=KMeans(n_clusters=5)
model.fit(features)
KMeans(n_clusters=5)
```

Out[4]:
```
KMeans(n_clusters=5)
```

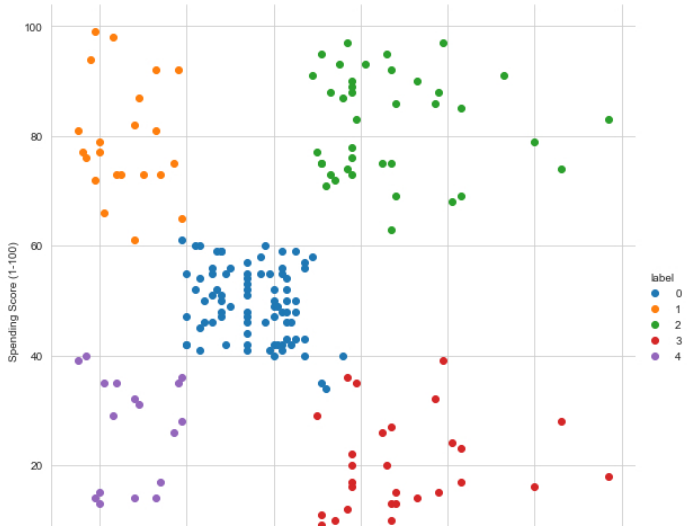
In [5]:
```
Final=df.iloc[:,[3,4]]
Final['label']=model.predict(features)
Final.head()
```

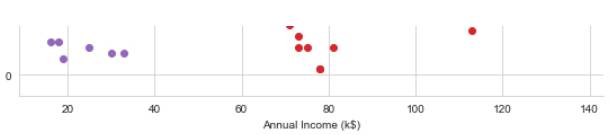
```
C:\Users\REC\AppData\Local\Temp\ipykernel_4736\470183701.py:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

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(features)
```

Out[5]:

	Annual Income (k$)	Spending Score (1-100)	label
0	15	39	4
1	15	81	1
2	16	6	4
3	16	77	1
4	17	40	4

In [6]:
```
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()
```

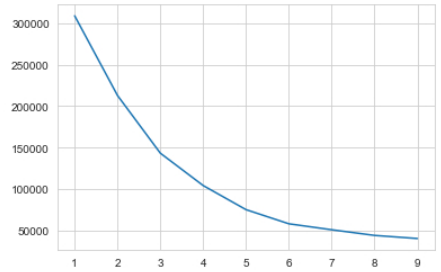




In [8]:
```
features_el=df.iloc[:,[2,3,4]].values
from sklearn.cluster import KMeans
wcss=[]
for i in range(1,10):
    model=KMeans(n_clusters=i)
    model.fit(features_el)
    wcss.append(model.inertia_)
plt.plot(range(1,10),wcss)
```

```
C:\Users\REC\anaconda3\lib\site-packages\sklearn\cluster\_kmeans.py:1036: 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_N
UM_THREADS=1.
  warnings.warn(
```

Out[8]: [<matplotlib.lines.Line2D at 0x1256628>]



In [ ]: