



In []: #10

```
from google.colab import files
uploaded = files.upload()

import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline

df = pd.read_csv('Mall_Customers.csv')
print(df.info())
print(df.head())

sns.pairplot(df)
plt.show()

features = df.iloc[:, [3, 4]].values
from sklearn.cluster import KMeans
model = KMeans(n_clusters=5, random_state=42)
model.fit(features)

Final = df.iloc[:, [3, 4]].copy()
Final['label'] = model.predict(features)
print(Final)

sns.set_style("whitegrid")
plt.figure(figsize=(8,6))
sns.scatterplot(data=Final, x="Annual Income (k$)", y="Spending Score (1-100)")
plt.title("K-Means Clustering of Customers")
plt.show()

features_el = df.iloc[:, [2, 3, 4]].values
wcss = []
for i in range(1, 10):
    model = KMeans(n_clusters=i, random_state=42)
    model.fit(features_el)
    wcss.append(model.inertia_)

plt.figure(figsize=(8,5))
plt.plot(range(1, 10), wcss, marker='o', color='blue')
plt.title("Elbow Method for Optimal K")
plt.xlabel("Number of Clusters")
plt.ylabel("WCSS")
plt.show()
```

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