Aravinth R - 19MIC0053

Lab Experiment - 5

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

In [ ]:
```
dataset = pd.read_csv('/Users/aravinth/Desktop/Data Warehousing/Assignment
dataset.head(20)
```

Out[ ]:

	Name	Gender	Weight	BMI	Condition	Strict_Diet
0	Pranauv	Male	60	19.3	Healthy	No
1	Purusothaman	Male	63	18.0	Underweight	Yes
2	Shyam	Male	55	17.0	Underweight	Yes
3	Nithin	Male	80	28.0	Oveweight	Yes
4	Rohit	Male	70	22.0	Healthy	No
5	Aravinth	Male	50	17.5	Underweight	Yes
6	Barani	Male	60	20.0	Healthy	No
7	Niketha	Female	60	21.0	Healthy	No
8	Krithiik	Male	60	26.0	Oveweight	Yes
9	Kumaaravel	Male	80	27.0	Oveweight	Yes
10	Abishek	Male	85	26.5	Overweight	Yes
11	Aneesh	Male	90	32.0	Obese	Yes
12	Ajay	Male	70	23.0	Healthy	No
13	Babu	Male	53	19.2	Healthy	No
14	Dhiyanesh	Male	54	16.0	Underweight	Yes
15	Praveen	Male	65	22.0	Healthy	No
16	Vishnu	Male	60	24.0	Healthy	No
17	Bala	Male	45	17.0	Underweight	Yes
18	Naveen	Male	70	24.0	Healthy	No
19	Siva	Male	60	20.0	Healthy	No

In [ ]:
```
dataset.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 25 entries, 0 to 24
Data columns (total 6 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   Name         25 non-null     object 
 1   Gender       25 non-null     object 
 2   Weight       25 non-null     int64  
 3   BMI          25 non-null     float64
 4   Condition    25 non-null     object 
 5   Strict_Diet  25 non-null     object 
dtypes: float64(1), int64(1), object(4)
memory usage: 1.3+ KB
```

In [ ]:
```
dataset.describe()
```

Out[ ]:

	Weight	BMI
count	25.000000	25.000000
mean	63.800000	21.860000
std	10.816654	4.108629
min	45.000000	16.000000
25%	60.000000	19.200000
50%	60.000000	22.000000
75%	70.000000	24.000000
max	90.000000	32.000000

In [ ]:
```
dataset.isnull().sum()
```

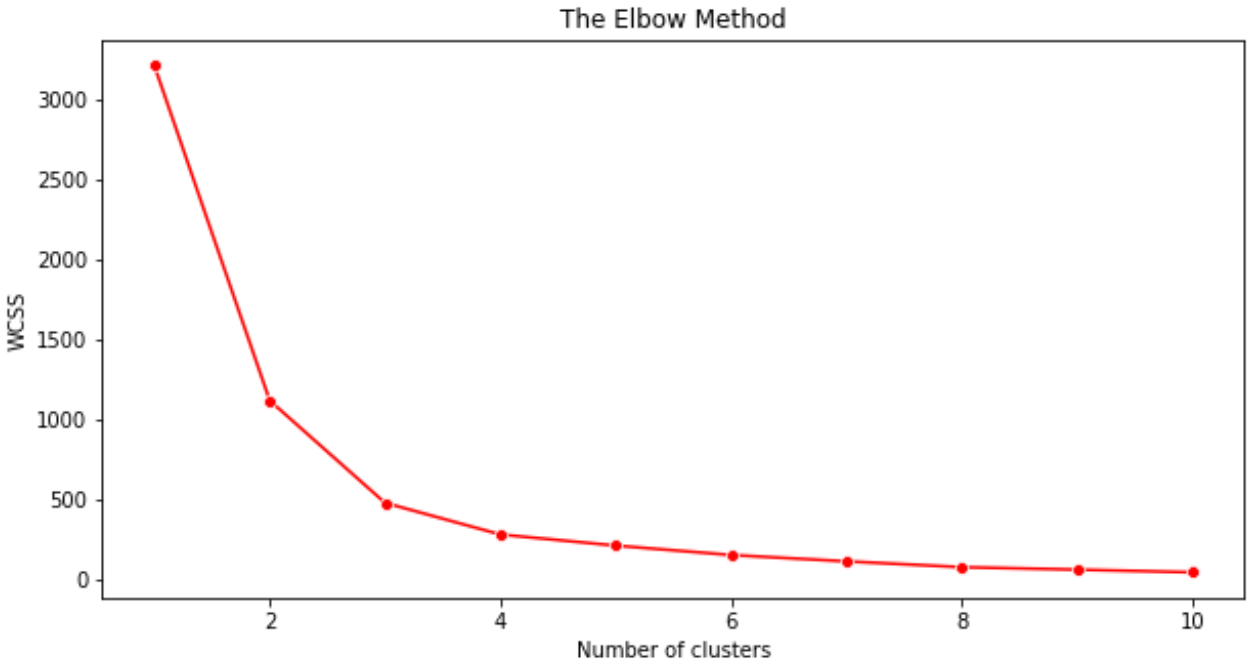
Out[ ]:
```
Name           0
Gender         0
Weight         0
BMI            0
Condition      0
Strict_Diet    0
dtype: int64
```

In [ ]:
```
dataset.drop_duplicates(inplace=True)
X = dataset.iloc[:, [2, 3]].values
```

In [ ]:
```
from sklearn.cluster import KMeans
wcss = []
for i in range(1, 11):
    kmeans = KMeans(n_clusters = i, init = 'k-means++', random_state = 42)
    kmeans.fit(X)
    wcss.append(kmeans.inertia_)
```

In [ ]:
```
plt.figure(figsize=(10,5))
sns.lineplot(range(1, 11), wcss,marker='o',color='red')
plt.title('The Elbow Method')
plt.xlabel('Number of clusters')
plt.ylabel('WCSS')
plt.show()
```

```
/Library/Frameworks/Python.framework/Versions/3.9/lib/python3.9/site-packag
es/seaborn/_decorators.py:36: FutureWarning: Pass the following variables a
s keyword args: x, y. From version 0.12, the only valid positional argument
will be `data`, and passing other arguments without an explicit keyword wil
l result in an error or misinterpretation.
  warnings.warn(
```



In [ ]:
```
kmeans = KMeans(n_clusters = 3, init = 'k-means++', random_state = 42)
y_kmeans = kmeans.fit_predict(X)
```

In [ ]:

```
plt.figure(figsize=(15,7))
sns.scatterplot(X[y_kmeans == 0, 0], X[y_kmeans == 0, 1], color = 'yellow',
sns.scatterplot(X[y_kmeans == 1, 0], X[y_kmeans == 1, 1], color = 'blue', l
sns.scatterplot(X[y_kmeans == 2, 0], X[y_kmeans == 2, 1], color = 'green',
sns.scatterplot(kmeans.cluster_centers_[:, 0], kmeans.cluster_centers_[:, 1
plt.grid(False)
plt.title('Clusters Of Patients')
plt.xlabel('Weight ( in KGs )')
plt.ylabel('BMI')
plt.legend()
plt.show()
```

```
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