Name : Akanksha Umak

Task 2 :Predicting using Unsupervised ML

Language : Python

Dataset:https://bit.ly/3kXTdox

In [1]:
```
#importing all the required libraries
import pandas as pd
import numpy as np
import matplotlib.pyplot as mt
from sklearn import datasets
%matplotlib inline
```

In [2]:
```
iris=datasets.load_iris()
df=pd.DataFrame(iris.data, columns=iris.feature_names)
df.head(150)
```

Out[2]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2
...	...	...	...	...
145	6.7	3.0	5.2	2.3
146	6.3	2.5	5.0	1.9
147	6.5	3.0	5.2	2.0
148	6.2	3.4	5.4	2.3
149	5.9	3.0	5.1	1.8

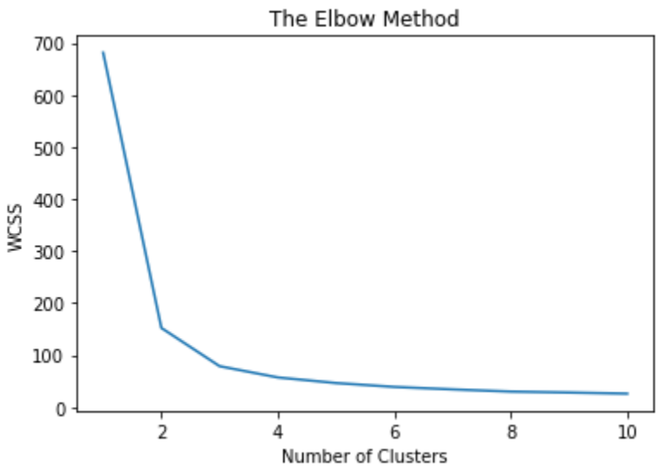
150 rows × 4 columns

In [3]:
```
x=df.iloc[:,[0,1,2,3]].values
from sklearn.cluster import KMeans
list=[]

for i in range(1,11):
    kmeans=KMeans(n_clusters=i, init='k-means++', max_iter=300, n_init=10, random_state=0)
    kmeans.fit(x)
    list.append(kmeans.inertia_)

mt.plot(range(1,11),list)
mt.title("The Elbow Method")
mt.xlabel("Number of Clusters")
mt.ylabel("WCSS")
mt.show()
```

```
E:\Anaconda\lib\site-packages\sklearn\cluster\_kmeans.py:881: 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(
```

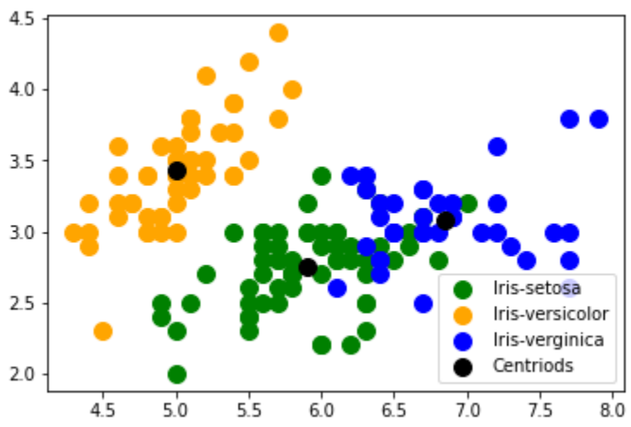


In [4]:
```
#creating the kmeans classifier
kmeans=KMeans(n_clusters=3, init='k-means++', max_iter=300, n_init=10, random_state=0)
y_kmeans=kmeans.fit_predict(x)
```

In [5]:
```
#visualising th clusters
mt.scatter(x[y_kmeans==0,0], x[y_kmeans==0,1], s=100, c='green', label='Iris-setosa')
mt.scatter(x[y_kmeans==1,0], x[y_kmeans==1,1], s=100, c='orange', label='Iris-versicolor')
mt.scatter(x[y_kmeans==2,0], x[y_kmeans==2,1], s=100, c='blue', label='Iris-verginica')

#plotting centriods of clusters
mt.scatter(kmeans.cluster_centers_[:,0], kmeans.cluster_centers_[:,1], s=100, c='black', label='Centriods')
mt.legend()
```

Out[5]: <matplotlib.legend.Legend at 0x1ab88c74580>



In [ ]: