Task 3

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

In [14]:
```
data=pd.read_csv(r'C:/Users/jayan/Desktop/A.csv')
```

In [15]:
```
data.head()
```

Out[15]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	1	5.1	3.5	1.4	0.2	Iris-setosa
1	2	4.9	3.0	1.4	0.2	Iris-setosa
2	3	4.7	3.2	1.3	0.2	Iris-setosa
3	4	4.6	3.1	1.5	0.2	Iris-setosa
4	5	5.0	3.6	1.4	0.2	Iris-setosa

In [16]:
```
#checking for missing values
data.isnull().sum()
```

Out[16]:
```
Id               0
SepalLengthCm    0
SepalWidthCm     0
PetalLengthCm    0
PetalWidthCm     0
Species          0
dtype: int64
```

In [17]:
```
data.drop(['Id'],axis=1,inplace=True)
```

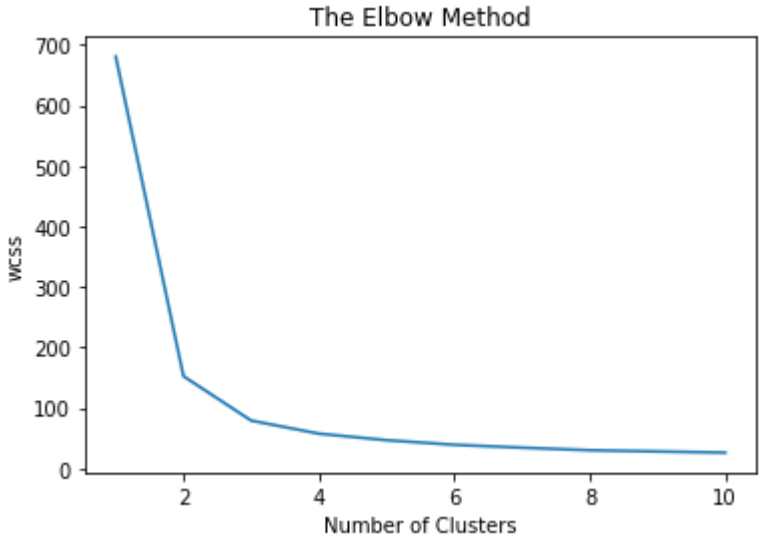
In [18]:
```
data['Species'].unique()
```

Out[18]:
```
array(['Iris-setosa', 'Iris-versicolor', 'Iris-virginica'], dtype=object)
```

In [19]:
```
x=data.iloc[:, :-1].values
y=data.iloc[:, 1].values
```

In [20]:
```
from sklearn.cluster import KMeans
arr=[]
for i in range(1,11):
    kmean=KMeans(n_clusters=i,init='k-means++',random_state=0)
    kmean.fit(x)
    arr.append(kmean.inertia_)

plt.plot(range(1,11),arr)
plt.title('The Elbow Method')
plt.xlabel('Number of Clusters')
plt.ylabel('wcss')
plt.show()
```

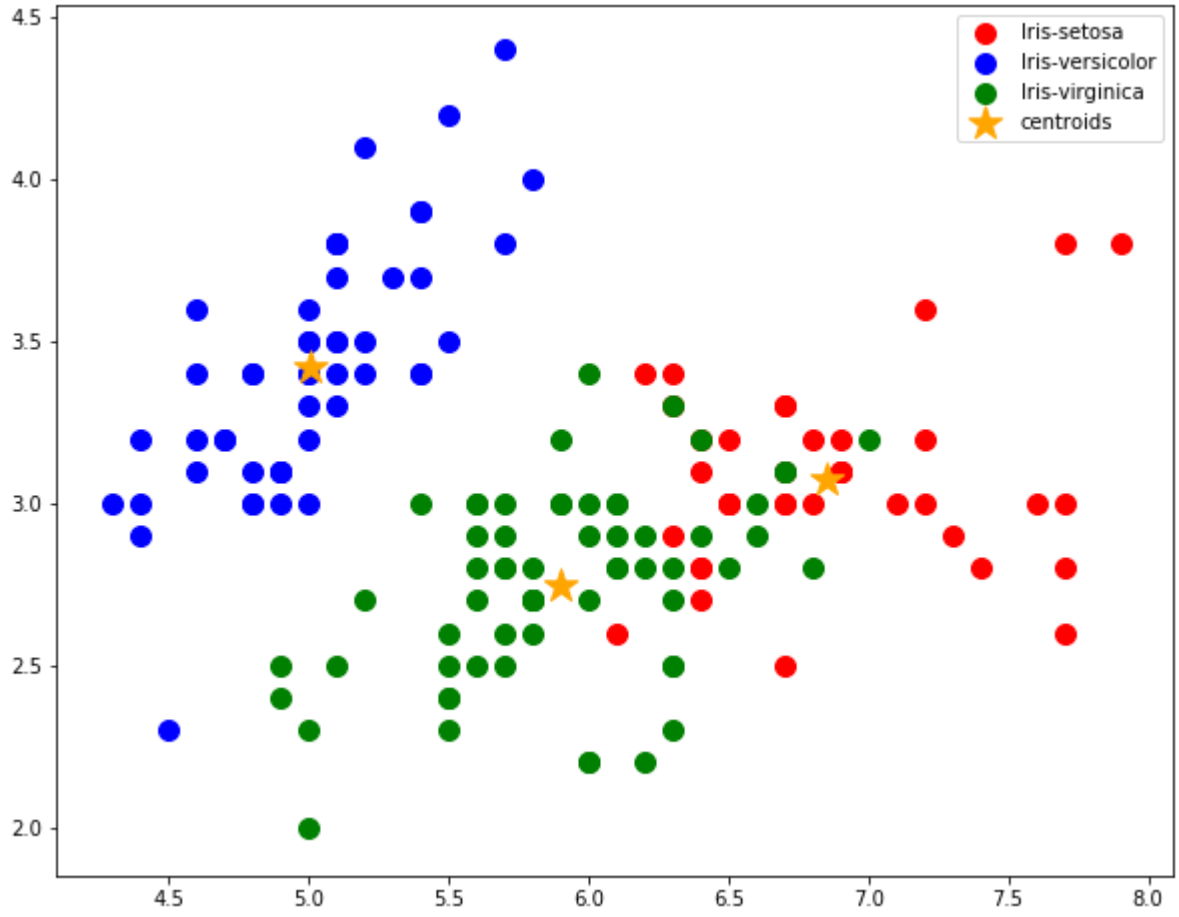


In [21]:
```
kmeans=KMeans(n_clusters=3,init='k-means++',random_state=0)
y_kmeans=kmeans.fit_predict(x)
```

In [22]:
```
plt.figure(figsize=(10,8))
plt.scatter(x[y_kmeans==0,0],x[y_kmeans==0,1],s=100,c='red',label='Iris-setosa')
plt.scatter(x[y_kmeans==1,0],x[y_kmeans==1,1],s=100,c='blue',label='Iris-versicolor')
plt.scatter(x[y_kmeans==2,0],x[y_kmeans==2,1],s=100,c='green',label='Iris-virginica')

#Plotting the centroids
plt.scatter(kmeans.cluster_centers_[:,0],kmeans.cluster_centers_[:,1],marker='*',s=300,c='orange',label='centroids')

plt.legend()
plt.show()
```



In [ ]: