```python
In [1]:  import pandas as pd
         import numpy as np
         import seaborn as sns
         import matplotlib.pyplot as plt
```

```python
In [2]:  data=pd.read_csv(r'C:/Users/jayan/Desktop/A.csv')
```

```python
In [3]:  data.head()
```

Out[3]:

	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

```python
In [4]:  #checking for missing values
         data.isnull().sum()
```

```
Out[4]:  Id               0
         SepalLengthCm    0
         SepalWidthCm     0
         PetalLengthCm    0
         PetalWidthCm     0
         Species          0
         dtype: int64
```

```python
In [5]:  data.drop(['Id'],axis=1,inplace=True)
```

```python
In [6]:  data['Species'].unique()
```

```
Out[6]:  array(['Iris-setosa', 'Iris-versicolor', 'Iris-virginica'], dtype=object)
```

```python
In [7]:  x=data.iloc[:, :-1].values
         y=data.iloc[:, 1].values
```

```
In [8]:  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()
```
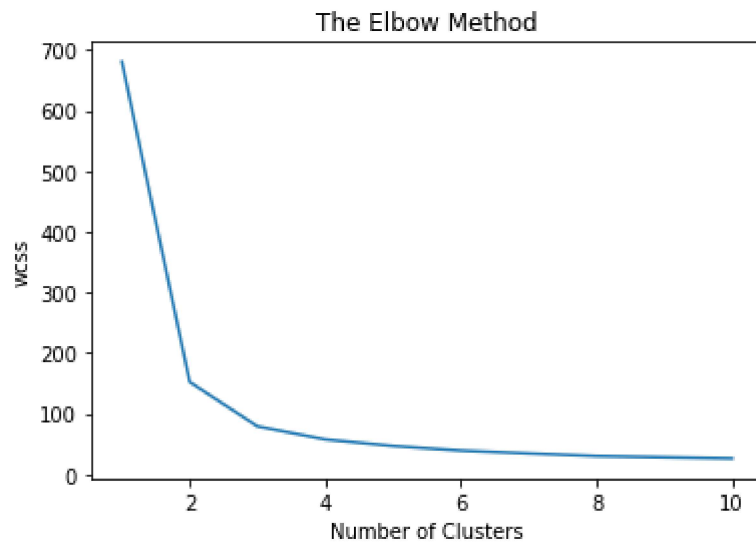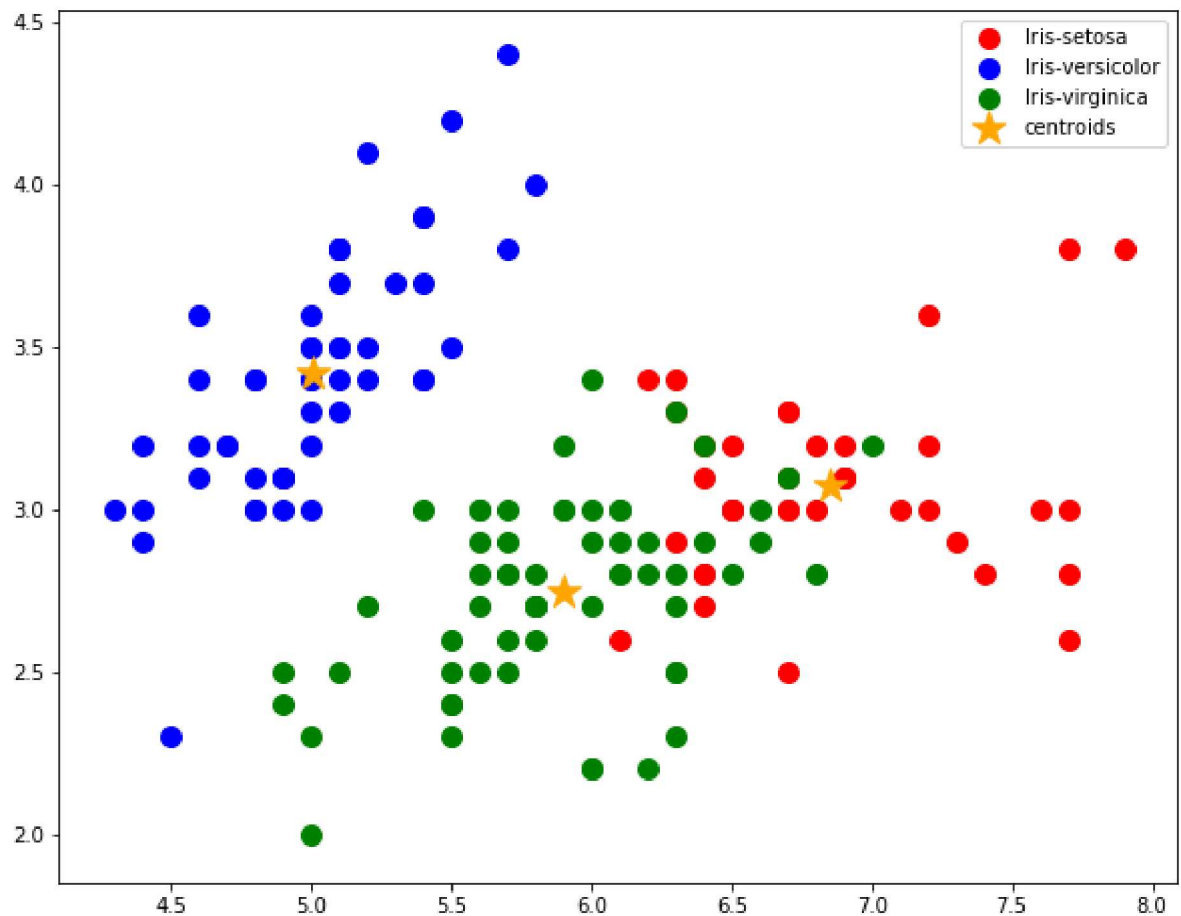


```
In [9]:  kmeans=KMeans(n_clusters=3,init='k-means++',random_state=0)
         y_kmeans=kmeans.fit_predict(x)
```

```
In [12]: plt.figure(figsize=(10,8))
         plt.scatter(x[y_kmeans==0,0],x[y_kmeans==0,1],s=100,c='red',label='Iris-setos
         a')
         plt.scatter(x[y_kmeans==1,0],x[y_kmeans==1,1],s=100,c='blue',label='Iris-versi
         color')
         plt.scatter(x[y_kmeans==2,0],x[y_kmeans==2,1],s=100,c='green',label='Iris-virg
         inica')

         #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 [ ]:
```