**TASK 2 : PREDICTION USING UNSUPERVISED ML**

**AUTHOR: Abarna**

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn import datasets
```

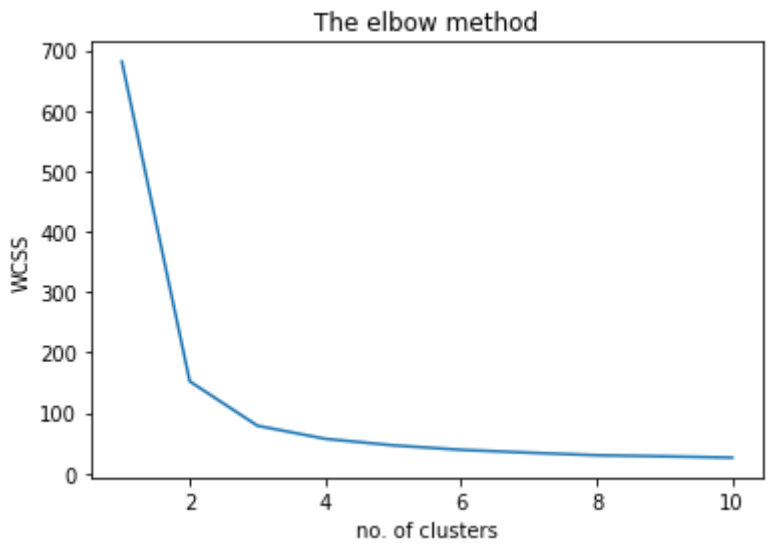
In [4]:
```
iris=datasets.load_iris()
iris_df=pd.DataFrame(iris.data,columns=iris.feature_names)
iris_df.head(10)
```

Out[4]:

| | 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 |
| 5 | 5.4 | 3.9 | 1.7 | 0.4 |
| 6 | 4.6 | 3.4 | 1.4 | 0.3 |
| 7 | 5.0 | 3.4 | 1.5 | 0.2 |
| 8 | 4.4 | 2.9 | 1.4 | 0.2 |
| 9 | 4.9 | 3.1 | 1.5 | 0.1 |

In [7]:
```
x=iris_df.iloc[:,[0,1,2,3]].values
from sklearn.cluster import KMeans
wcss=[]
for i in range(1,11):
    kmeans=KMeans(n_clusters=i,init='k-means++',max_iter=300,n_init=10,r
andom_state=0)
    kmeans.fit(x)
    wcss.append(kmeans.inertia_)

plt.plot(range(1,11),wcss)
plt.title('The elbow method')
plt.xlabel('no. of clusters')
plt.ylabel('WCSS')
plt.show()
```

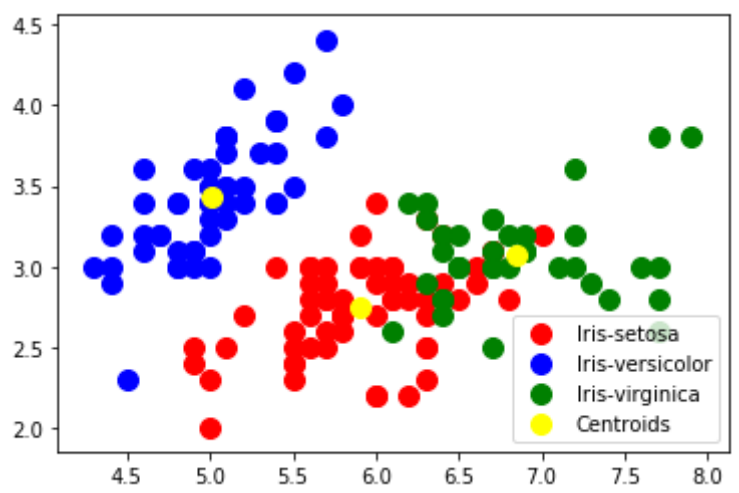



In [10]:
```
kmeans=KMeans(n_clusters=3,init='k-means++',max_iter=300,n_init=10,rando
m_state=0)
y_kmeans=kmeans.fit_predict(x)
```

In [11]:
```
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='Iri
s-virginica')


plt.scatter(kmeans.cluster_centers_[:,0],kmeans.cluster_centers_[:,1],s=
100,c='yellow',label='Centroids')
plt.legend()
```

Out[11]: <matplotlib.legend.Legend at 0x17a4b415948>




In [ ]: