**Experiment no. 9**

**Implementation of K Mean Clustering and Unclustering on Jupyter Notebook using Python.**

import numpy as np

import matplotlib.pyplot as plt

import pandas as pd

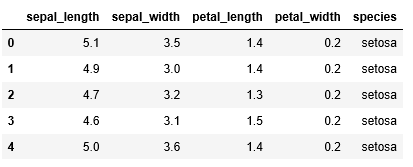
import seaborn as sns

iris = sns.load\_dataset('iris')

labels = iris.species.unique()

iris.head()

output:-

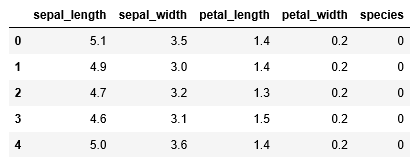


iris["species"] = pd.Categorical(iris["species"])

iris["species"] = iris["species"].cat.codes

iris.head()

output:-



X = iris[['sepal\_length','sepal\_width']].values

y = iris.species

from sklearn.cluster import KMeans

model = KMeans(n\_clusters= 3).fit(X)

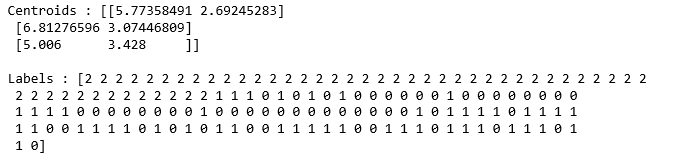
centers= model.cluster\_centers\_

new\_labels= model.labels\_

print('Centroids :',centers)

print('\nLabels :',new\_labels)

output:-



plt.figure(figsize=(12,8))

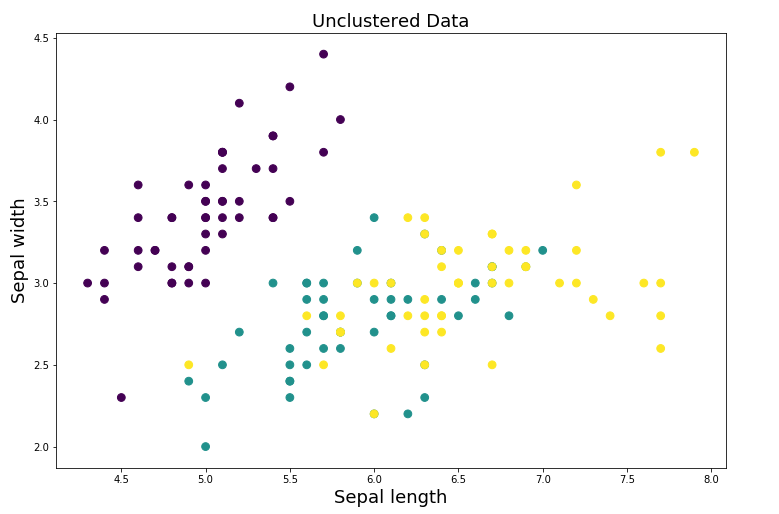
plt.scatter(X[:, 0], X[:, 1],c=y, s=60)

plt.xlabel('Sepal length', fontsize=18)

plt.ylabel('Sepal width', fontsize=18)

plt.title('Unclustered Data',fontsize=18)

output:-



plt.figure(figsize=(12,8))

plt.scatter(X[:, 0], X[:, 1], c=new\_labels,s=60)

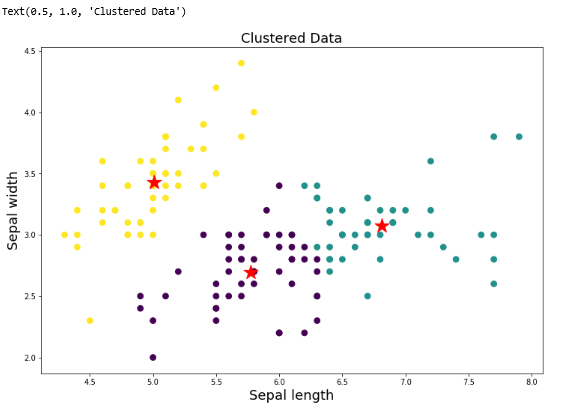
plt.scatter(centers[:, 0], centers[:, 1], c='r', s=400, marker = '\*', zorder=10);

plt.xlabel('Sepal length', fontsize=18)

plt.ylabel('Sepal width', fontsize=18)

plt.title('Clustered Data',fontsize=18)

output:-



y\_pred= model.predict([[2.3,5.6]])

print("Result :",labels[y\_pred[0]])

output:- Result : virginica