**IRIS FLOWER CLASSIFICATION**

**Dataset : Iris.csv**

**CODE:**

# Import Packages

import numpy as np

import matplotlib.pyplot as plt

import seaborn as sns

import pandas as pd

%matplotlib inline

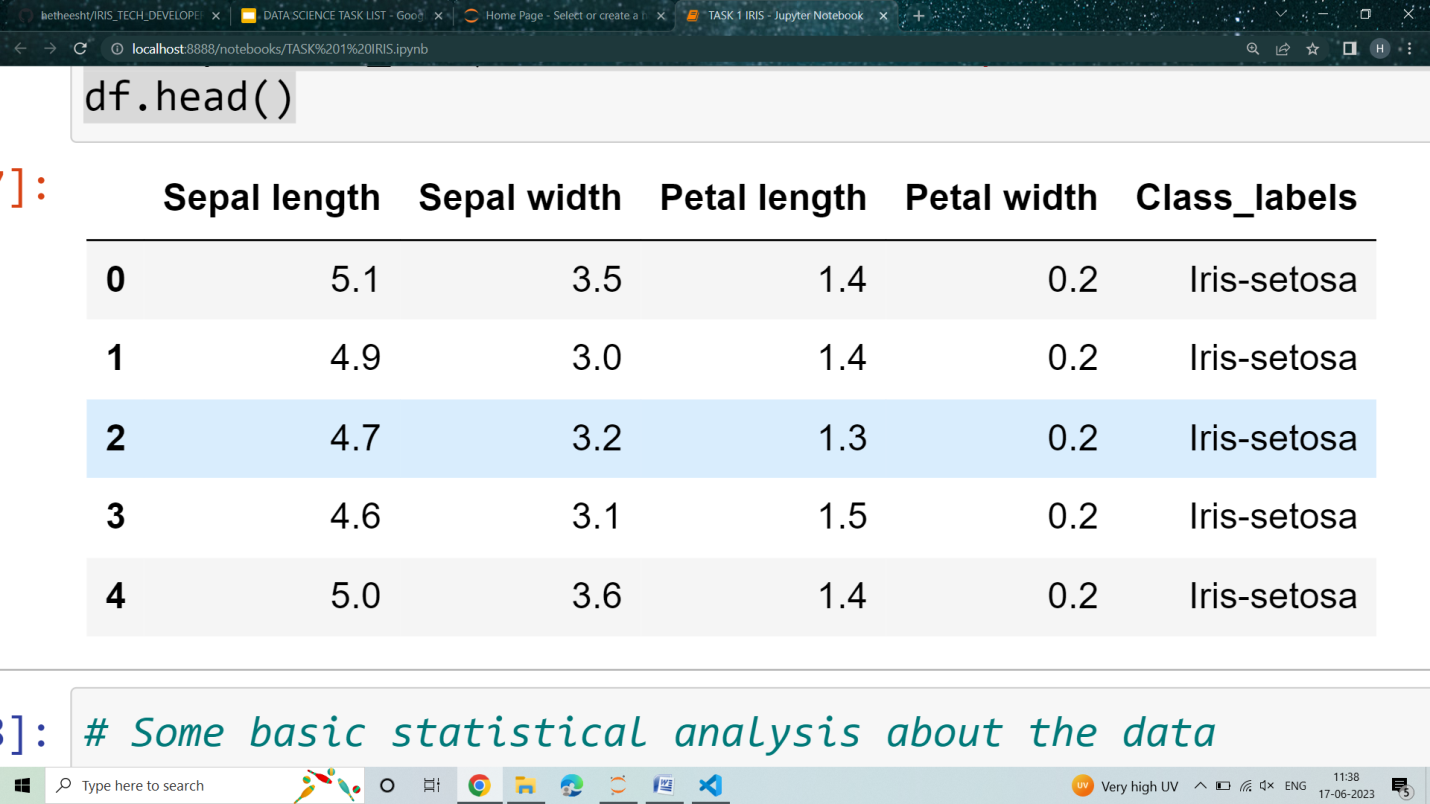
columns = ['Sepal length', 'Sepal width', 'Petal length', 'Petal width', 'Class\_labels']

# Load the data

df = pd.read\_csv('C:/Users/User/Desktop/IRIS/iris.data', names=columns)

df.head()

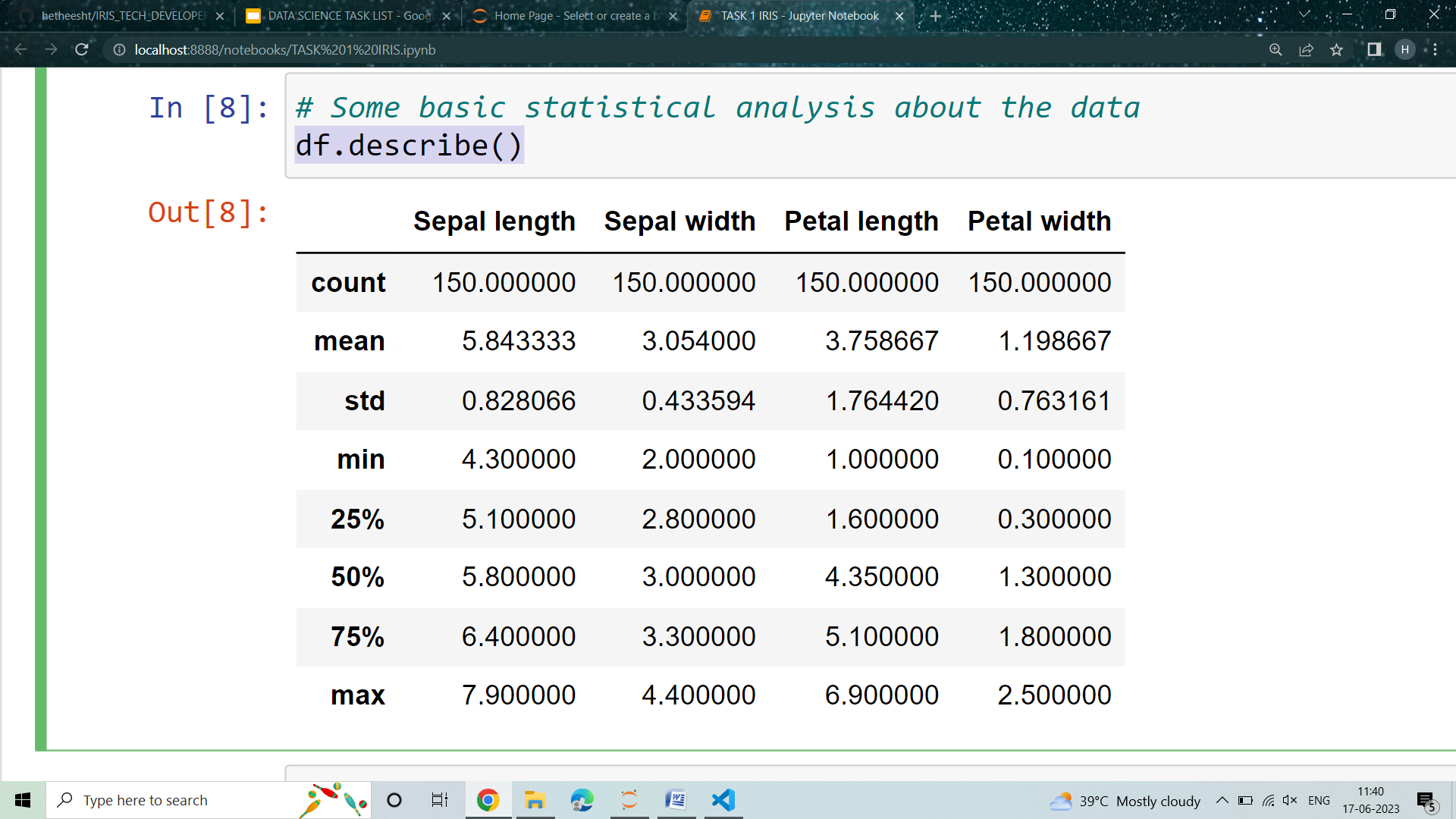
Result:



#Continue

df.describe()

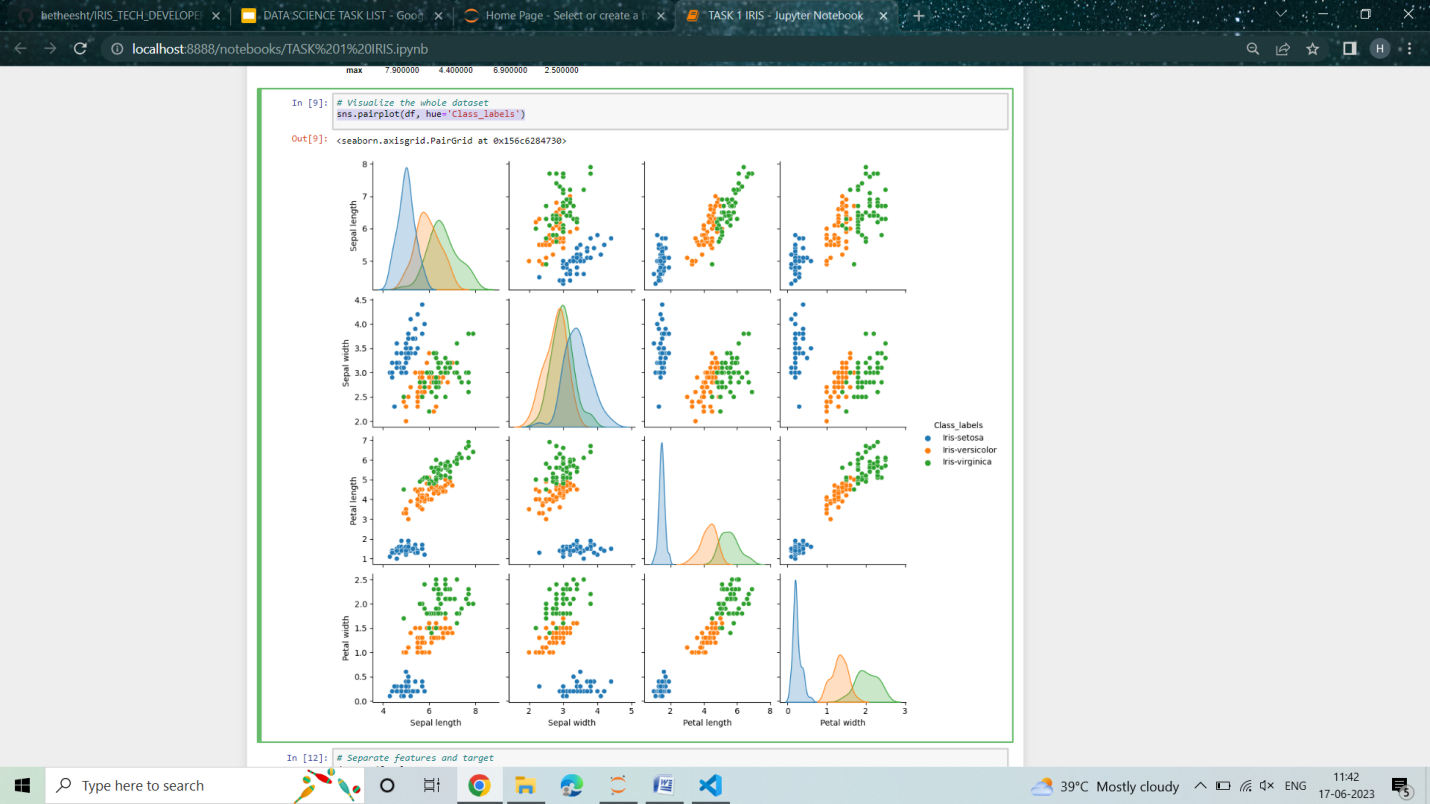
Result:



#Continue

sns.pairplot(df, hue='Class\_labels')

Result:



# Continue

data = df.values

X = data[:,0:4]

Y = data[:,4]

# average of each features for all classes

Y\_Data = np.array([np.average(X[:, i][Y==j].astype('float32')) for i in range (X.shape[1])

 for j in (np.unique(Y))])

Y\_Data\_reshaped = Y\_Data.reshape(4, 3)

Y\_Data\_reshaped = np.swapaxes(Y\_Data\_reshaped, 0, 1)

X\_axis = np.arange(len(columns)-1)

width = 0.25

# Plot

plt.bar(X\_axis, Y\_Data\_reshaped[0], width, label = 'Setosa')

plt.bar(X\_axis+width, Y\_Data\_reshaped[1], width, label = 'Versicolour')

plt.bar(X\_axis+width\*2, Y\_Data\_reshaped[2], width, label = 'Virginica')

plt.xticks(X\_axis, columns[:4])

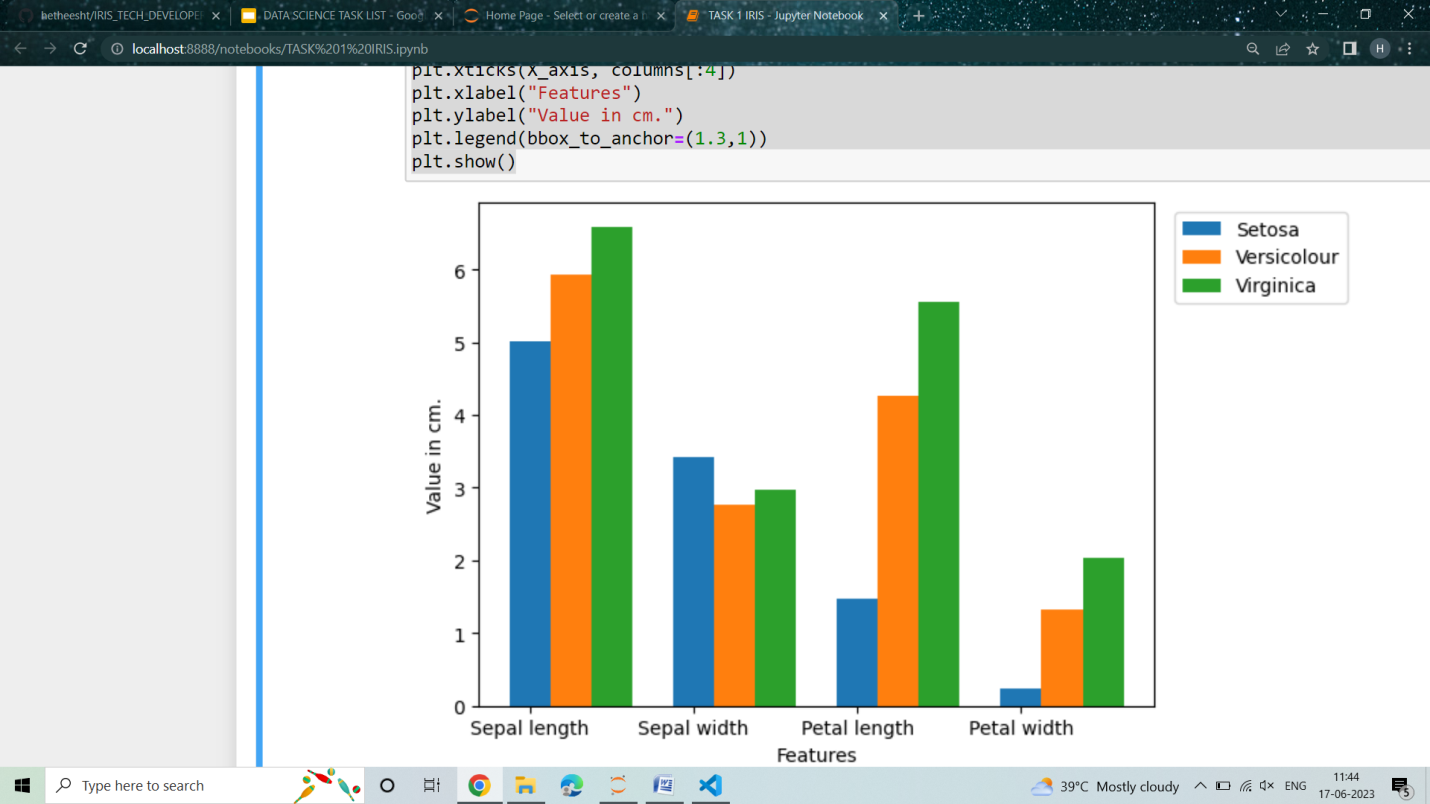
plt.xlabel("Features")

plt.ylabel("Value in cm.")

plt.legend(bbox\_to\_anchor=(1.3,1))

plt.show()

Result:



# Continue

from sklearn.model\_selection import train\_test\_split

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, Y, test\_size=0.2)

# Support vector machine algorithm

from sklearn.svm import SVC

svn = SVC()

svn.fit(X\_train, y\_train)

# Predict from the test dataset

predictions = svn.predict(X\_test)

# Calculate the accuracy

from sklearn.metrics import accuracy\_score

accuracy\_score(y\_test, predictions)

Result: **0.9333333333333333**

X\_new = np.array([[3, 2, 1, 0.2], [  4.9, 2.2, 3.8, 1.1 ], [  5.3, 2.5, 4.6, 1.9 ]])

#Prediction of the species from the input vector

prediction = svn.predict(X\_new)

print("Prediction of Species: {}".format(prediction))

OUTPUT:

**Prediction of Species: ['Iris-setosa' 'Iris-versicolor' 'Iris-virginica']**