MACHINE LEARNING

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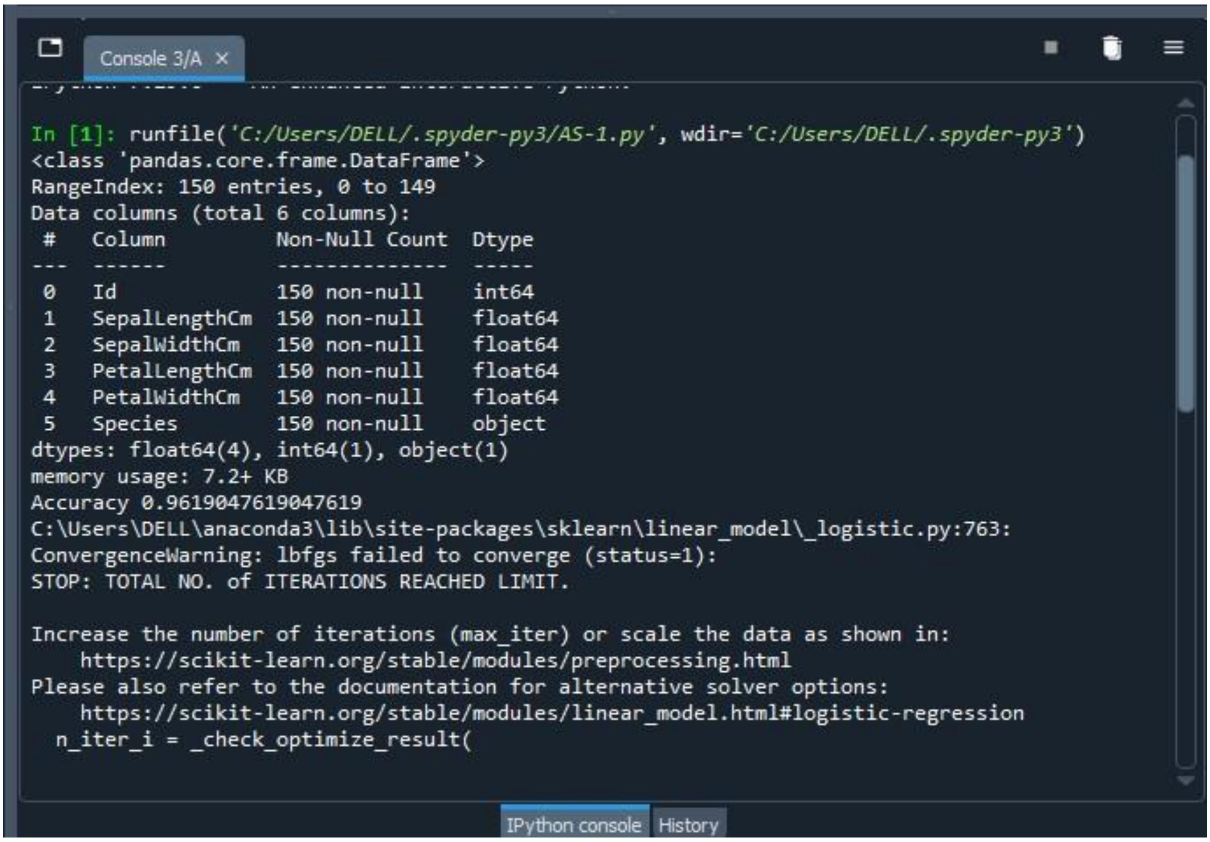
CSE-3 / 6th sem

Source Code

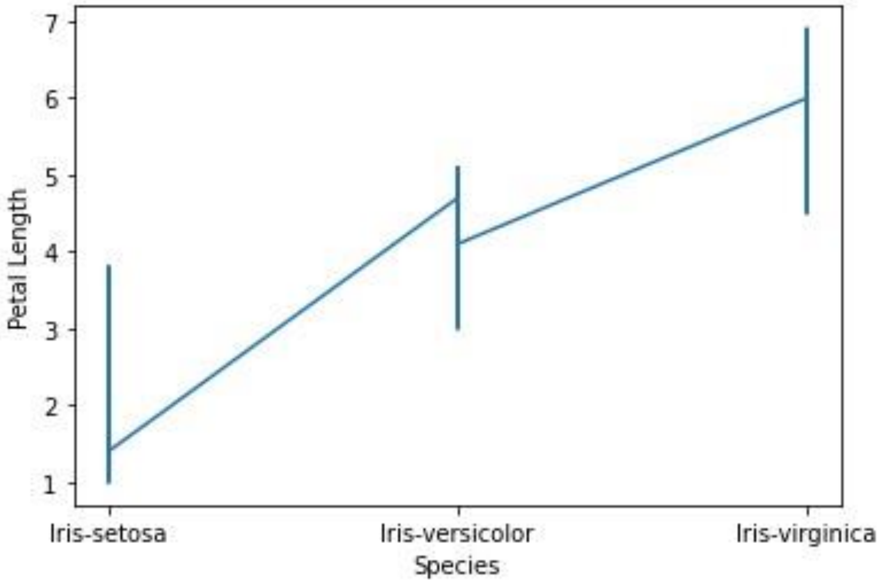
```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score from
matplotlib import pyplot as plt

data = pd.read_csv('Iris.csv') data["SepalLengthCm"]
=
data["SepalLengthCm"].fillna(data["SepalLengthCm"].mean())
data["SepalWidthCm"] =
data["SepalWidthCm"].fillna(data["SepalWidthCm"].mean())
data["PetalLengthCm"] =
data["PetalLengthCm"].fillna(data["PetalLengthCm"].mean())
data.info() data.isnull().sum() data.describe() x = data.iloc[:,:-
1]
y = data.iloc[:,-1]
x_train,x_test,y_train,y_test = train_test_split(x,y,train_size=0.3)
model = LogisticRegression() model.fit(x_train,y_train) a =
model.predict(x_test) b = accuracy_score(y_test,a)
print("Accuracy",b)
X = data['Species']
Y1 = data['SepalLengthCm']
Y2 = data['SepalWidthCm']
Y3 = data['PetalLengthCm']
Y4 = data['PetalWidthCm']
graph1 = plt.plot(X,Y1)
plt.xlabel("Species")
plt.ylabel("Sepal Length")
plt.show() graph2 =
plt.plot(X,Y2)
plt.xlabel("Species")
plt.ylabel("Sepal Width")
plt.show() graph3 =
plt.plot(X,Y3)
plt.xlabel("Species")
plt.ylabel("Petal Length")
plt.show() graph4 =
plt.plot(X,Y4)
plt.xlabel("Species")
plt.ylabel("Petal Width")
plt.show()
```

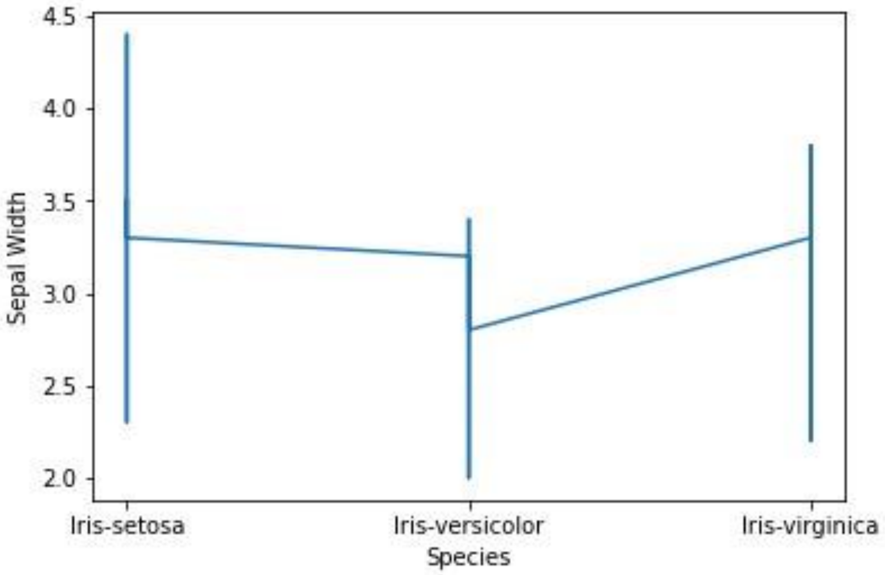
Output



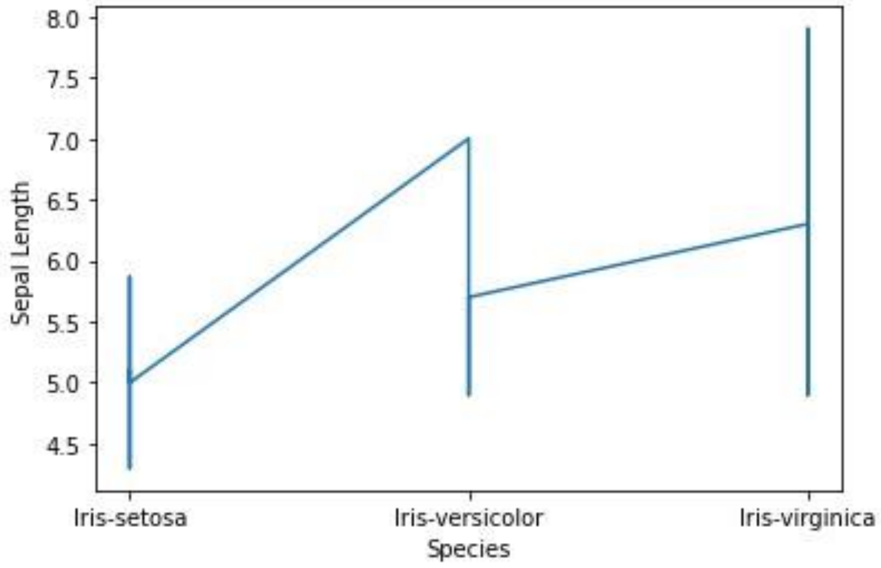
```
In [1]: runfile('C:/Users/DELL/.spyder-py3/AS-1.py', wdir='C:/Users/DELL/.spyder-py3')
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 6 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Id             150 non-null    int64
 1   SepalLengthCm  150 non-null    float64
 2   SepalWidthCm   150 non-null    float64
 3   PetalLengthCm  150 non-null    float64
 4   PetalWidthCm   150 non-null    float64
 5   Species        150 non-null    object
dtypes: float64(4), int64(1), object(1)
memory usage: 7.2+ KB
Accuracy 0.9619047619047619
C:\Users\DELL\anaconda3\lib\site-packages\sklearn\linear_model\_logistic.py:763:
ConvergenceWarning: lbfgs failed to converge (status=1):
STOP: TOTAL NO. of ITERATIONS REACHED LIMIT.

Increase the number of iterations (max_iter) or scale the data as shown in:
    https://scikit-learn.org/stable/modules/preprocessing.html
Please also refer to the documentation for alternative solver options:
    https://scikit-learn.org/stable/modules/linear_model.html#logistic-regression
  n_iter_i = _check_optimize_result(
```

Graphs

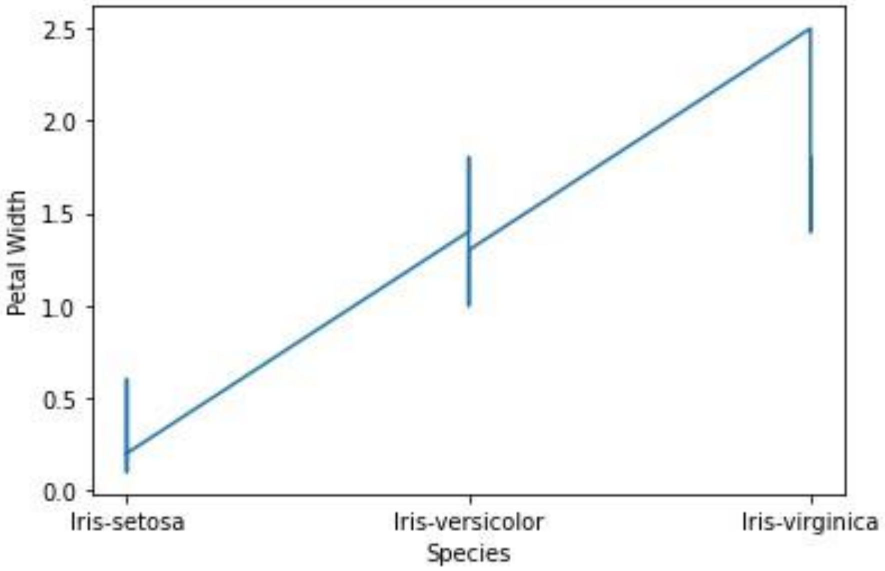




4.5
4.0
3.5
3.0
2.5
2.0
Sepal Width
Iris-setosa
Iris-versicolor
Iris-virginica
Species



8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
Sepal Length
Iris-setosa
Iris-versicolor
Iris-virginica
Species



2.5
2.0
1.5
1.0
0.5
0.0
Petal Width
Iris-setosa
Iris-versicolor
Iris-virginica
Species