```python
"""AI&ML Lab-8
Write a program to implement K-Nearest neighbor algorithm to classify the iris data set.
 Print both correct and wrong predictions.
 Java/Python ML library classes can be used for this problem. """

from sklearn.datasets import load_iris
iris=load_iris()

x=iris.data
y=iris.target
print(x[:5],y[:5])

from sklearn.model_selection import train_test_split
xtrain,xtest,ytrain,ytest=train_test_split(x,y,test_size=0.4,random_state=1)
print(iris.data.shape)
print(len(xtrain))
print(len(ytest))

from sklearn.neighbors import KNeighborsClassifier
knn=KNeighborsClassifier(n_neighbors=1)
knn.fit(xtrain,ytrain)
pred=knn.predict(xtest)

from sklearn import metrics
print("Accuracy",metrics.accuracy_score(ytest,pred))
print(iris.target_names[2])

ytestn=[iris.target_names[i] for i in ytest]
predn=[iris.target_names[i] for i in pred]
print("predicted actual")
for i in range(len(pred)):
    print(i," ",predn[i]," ",ytestn[i])
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34
35 """Output:
36 [[5.1 3.5 1.4 0.2]
37  [4.9 3.  1.4 0.2]
38  [4.7 3.2 1.3 0.2]
39  [4.6 3.1 1.5 0.2]
40  [5.  3.6 1.4 0.2]] [0 0 0 0 0]
41 (150, 4)
42 90
43 60
44 Accuracy 0.9666666666666667
45 virginica
46 predicted actual
47 0    setosa    setosa
48 1    versicolor    versicolor
49 2    versicolor    versicolor
50 3    setosa    setosa
51 4    virginica    virginica
52 5    virginica    versicolor
53 6    virginica    virginica
54 7    setosa    setosa
55 8    setosa    setosa
56 9    virginica    virginica
57 10    versicolor    versicolor
58 11    setosa    setosa
59 12    virginica    virginica
60 13    versicolor    versicolor
61 14    versicolor    versicolor
62 15    setosa    setosa
63 16    versicolor    versicolor
64 17    versicolor    versicolor
65 18    setosa    setosa
66 19    setosa    setosa
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67 20    versicolor    versicolor
68 21    versicolor    versicolor
69 22    versicolor    versicolor
70 23    setosa    setosa
71 24    virginica    virginica
72 25    versicolor    versicolor
73 26    setosa    setosa
74 27    setosa    setosa
75 28    versicolor    versicolor
76 29    virginica    virginica
77 30    versicolor    versicolor
78 31    virginica    virginica
79 32    versicolor    versicolor
80 33    virginica    virginica
81 34    virginica    virginica
82 35    setosa    setosa
83 36    versicolor    versicolor
84 37    setosa    setosa
85 38    versicolor    versicolor
86 39    virginica    virginica
87 40    virginica    virginica
88 41    setosa    setosa
89 42    versicolor    virginica
90 43    virginica    virginica
91 44    versicolor    versicolor
92 45    virginica    virginica
93 46    setosa    setosa
94 47    setosa    setosa
95 48    setosa    setosa
96 49    versicolor    versicolor
97 50    setosa    setosa
98 51    setosa    setosa
99 52    virginica    virginica
```

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100 53    virginica    virginica
101 54    virginica    virginica
102 55    virginica    virginica
103 56    virginica    virginica
104 57    versicolor    versicolor
105 58    virginica    virginica
106 59    versicolor    versicolor
107 """
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109
```