Ex.No-10 **K Nearest Neighbours**

Aim:

To implement K-Nearest Neighbors machine learning algorithm.

Description:

1. Import KNeighbors Classifier through sklearn

2. Provide the necessary dataset through DataFrames

3. Finally we can obtain the KNN output through matplotlib as graph

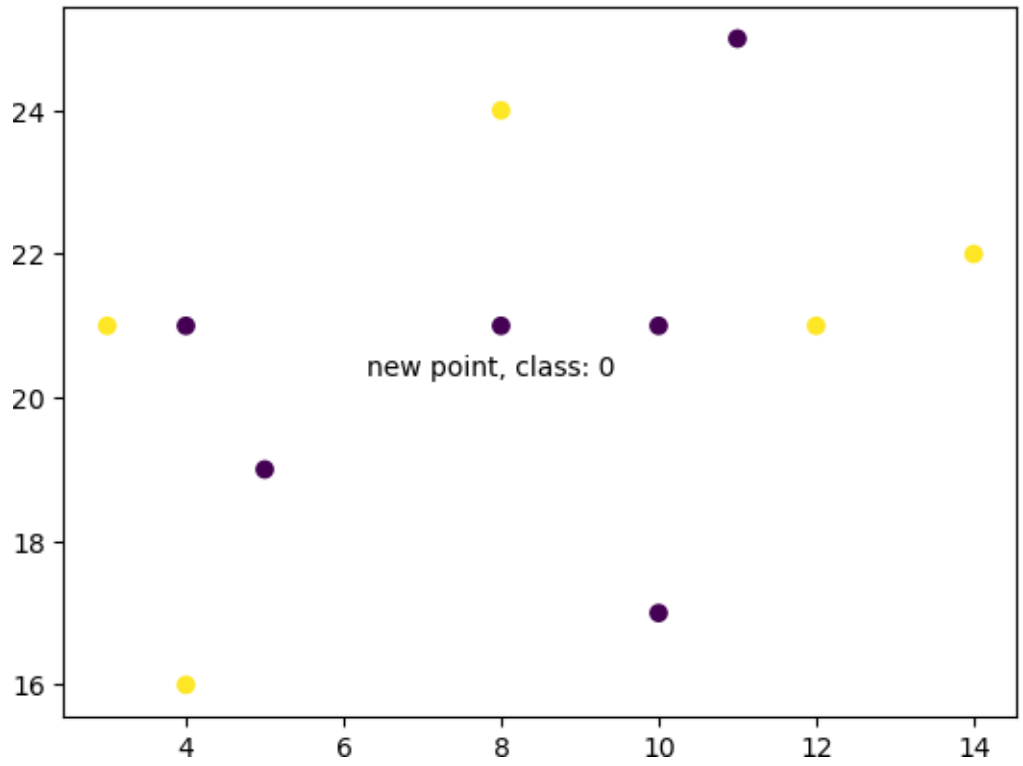
Program:

```
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.neighbors import KNeighborsClassifier
file_path ="Book 8.csv"
df = pd.read_csv(file_path)
print("Original DataFrame:\n",df)
x = df['x'].tolist()
y = df['y'].tolist()
classes = df['classes'].tolist()
data = list(zip(x, y))
knn = KNeighborsClassifier(n_neighbors=1)
knn.fit(data, classes)
new_x = 8
new_y = 21
new_point = [(new_x, new_y)]
prediction = knn.predict(new_point)
plt.scatter(x + [new_x], y + [new_y], c=classes + [prediction[0]])
plt.text(x=new_x-1.7, y=new_y-0.7, s=f"new point, class: {prediction[0]}")
plt.show()
```

Output:

OriginalDataFrame

	x	y	classes
0	4	21	0
1	5	19	0
2	10	17	0
3	3	21	1
4	11	25	0
5	4	16	1
6	14	22	1
7	10	21	0
8	12	21	1
9	8	24	1



Result:

The programs were run successfully