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:

```python
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
```
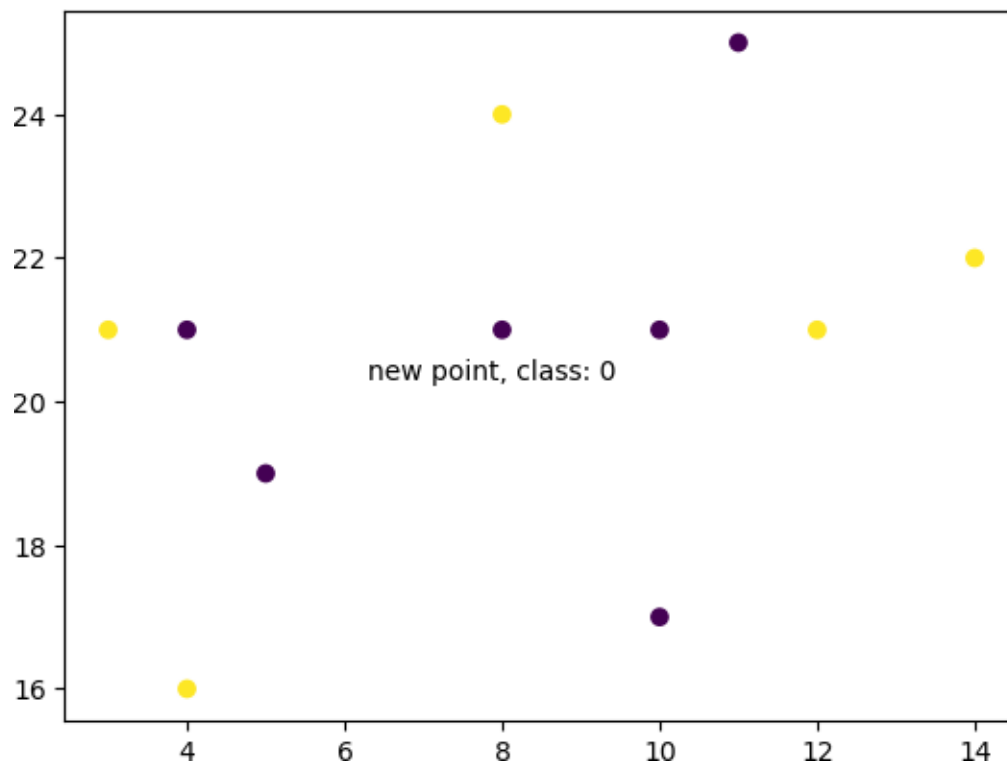

Result:

The programs were run successfully