

**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

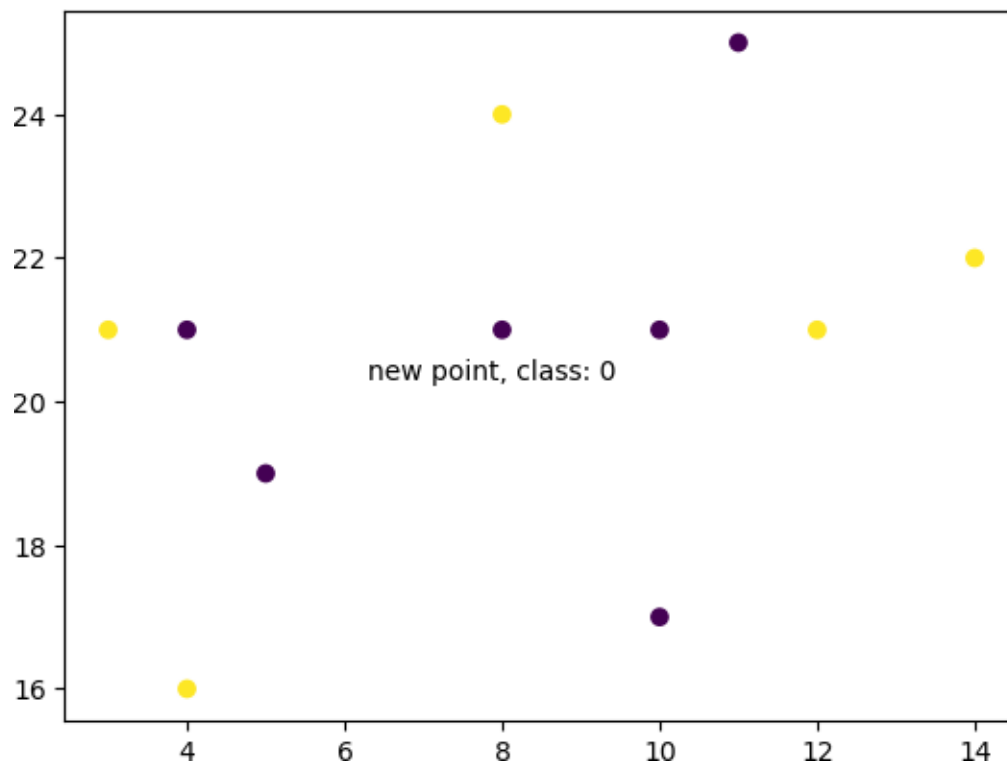
Program:

```
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