

## Program no:4

Aim : Program to implement K-NN classification using random dataset without using inbuilt packages

### PROGRAM

```
from math import sqrt

# calculate eucliden distance

def euclidean_distance(row1, row2):
    distance = 0.0
    for i in range(len(row1) - 1):
        distance += (row1[i] - row2[i]) ** 2
    return sqrt(distance)

# locate the most similar neighbors

def get_neighbors(train, test_row, num_neighbors):
    distances = list()
    for train_row in train:
        dist = euclidean_distance(test_row, train_row)
        distances.append((train_row, dist))
    distances.sort(key=lambda tup: tup[1])
    neighbors = list()
    for i in range(num_neighbors):
        neighbors.append(distances[i][0])
    return neighbors

def predict_classification(train, test_row, num_neighbors):
    neighbors = get_neighbors(train, test_row, num_neighbors)
    output_values = [row[-1] for row in neighbors]
    prediction = max(set(output_values), key=output_values.count)
    return prediction

dataset = [[2.4578965, 2.5893671352, 0],
            [2.58758965236, 2.04587952, 0],
            [5.368975521, 2.3654702584, 0],
            [6.2587569, 6.2013554785, 0],
            [2.352468754, 3.012458795, 1],
            [1.0245630121, 2.01245362, 1],
            [4.2054363265, 3.01245968756, 1],
            [5.254263212, 5.367520, 1],
            [3.2402578, 1.024589652, 1]]
```

```
prediction =predict_classification(dataset,dataset[0],3)
print('Expected  %d,Got %d.' % (dataset[0][-1],prediction))
```

## OUTPUT

A screenshot of a terminal window titled 'knn2dataset'. The command prompt shows the execution of a Python script: 'C:\Users\ajcemca\AppData\Local\Programs\Python\Python39\python.exe C:/Users/ajcemca/PycharmProjects/pythonProject/pythonProject1/knn2dataset.py'. The output of the script is 'Expected 0,Got 0.'. At the bottom, a status message reads 'Process finished with exit code 0'.

```
knn2dataset x
C:\Users\ajcemca\AppData\Local\Programs\Python\Python39\python.exe C:/Users/ajcemca/PycharmProjects/pythonProject/pythonProject1/knn2dataset.py
Expected 0,Got 0.
Process finished with exit code 0
```