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#Data view
import matplotlib.pyplot as plt

x = [4, 5, 10, 4, 3, 11, 14 , 8, 10, 12]
y = [21, 19, 24, 17, 16, 25, 24, 22, 21, 21]
classes = [0, 0, 1, 0, 0, 1, 1, 0, 1, 1]
print('Data')
plt.scatter(x, y)
plt.show()
print('Classified Data')
plt.scatter(x, y, c=classes)
plt.show()

# KNN for k=1
from sklearn.neighbors import KNeighborsClassifier

data = list(zip(x, y))
knn = KNeighborsClassifier(n_neighbors=1)

knn.fit(data, classes)
# classify a new data point
new_x = int(input("Enter new x: "))
new_y = int(input("Enter new y: "))
new_point = [(new_x, new_y)]

prediction = knn.predict(new_point)
print('For k=1')
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()

#KNN for k=5

knn = KNeighborsClassifier(n_neighbors=5)

knn.fit(data, classes)

prediction = knn.predict(new_point)
print('For k=5')
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()
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