8) To implementation of K-nearest neighbour in python

Program

import numpy as np

import pandas as pd

dataset = pd.read\_csv("/content/breastcancer.csv")

"""

The breast cancer dataset has the following features: Sample code number, Clump Thickness, Uniformity of Cell Size,

Uniformity of Cell Shape, Marginal Adhesion, Single Epithelial Cell Size, Bare Nuclei, Bland Chromatin,

 Normal Nucleoli, Mitosis, Class.

"""

X = dataset.iloc[:, :-2].values

y = dataset.iloc[:, -2].values

dataset.shape

#splitting the dataset into the Training set and Test set

from sklearn.model\_selection import train\_test\_split

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size = 0.20, random\_state = 51)

#Feature Scaling

"""

Feature scaling is the process of converting the data into a given range.

In this case, the standard scalar technique is used.

"""

from sklearn.preprocessing import StandardScaler

sc = StandardScaler()

X\_train = sc.fit\_transform(X\_train)

X\_test = sc.transform(X\_test)

#Training the K-Nearest Neighbors (K-NN) Classification model on the Training set

"""

Once the dataset is scaled, next, the K-Nearest Neighbors (K-NN) classifier algorithm is used to create a model.

The hyperparameters such as n\_neighbors, metric, and p are set to 5, Minkowski, and 2 respectively.

 The remaining hyperparameters are set to default values.

"""

from sklearn.neighbors import KNeighborsClassifier

classifier = KNeighborsClassifier(n\_neighbors = 5, metric = 'minkowski', p = 2)

classifier.fit(X\_train, y\_train)

"""

Display the results (confusion matrix and accuracy)

Here evaluation metrics such as confusion matrix and accuracy are used to evaluate the performance of the model built using a decision tree classifier.

"""

from sklearn.metrics import confusion\_matrix, accuracy\_score

y\_pred = classifier.predict(X\_test)

cm = confusion\_matrix(y\_test, y\_pred)

print(cm)

accuracy\_score(y\_test, y\_pred)

**Result:**

[[106 1 2 0 0 0 2 0 1]

[ 6 1 0 0 0 0 0 0 0]

[ 6 0 0 1 0 0 0 0 0]

[ 4 0 0 0 0 0 0 0 0]

[ 1 1 0 0 0 0 0 0 0]

[ 1 0 0 0 0 0 0 0 0]

[ 0 0 0 0 0 0 0 0 1]

[ 3 0 0 0 0 0 0 0 0]

[ 0 0 0 0 0 0 0 0 0]]

0.781021897810219