A PYTHON PROGRAM TO IMPLEMENT KNN MODEL

Aim:

To implement a python program using a KNN Algorithm in a model.

Algorithm:

1. Import Necessary Libraries

● Import necessary libraries: pandas, numpy, train_test_split from sklearn.model_selection, StandardScaler from sklearn.preprocessing, KNeighborsClassifier from sklearn.neighbors, and classification_report and confusion_matrix from sklearn.metrics.

2. Load and Explore the Dataset

● Load the dataset using pandas.

● Display the first few rows of the dataset using df.head().

● Display the dimensions of the dataset using df.shape().

● Display the descriptive statistics of the dataset using df.describe().

3. Preprocess the Data

● Separate the features (X) and the target variable (y).

● Split the data into training and testing sets using train_test_split.

● Standardize the features using StandardScaler.

4. Train the KNN Model

● Create an instance of KNeighborsClassifier with a specified number of neighbors (k).

● For each data point, calculate the Euclidean distance to all other data points.

● Select the K nearest neighbors based on the calculated Euclidean distances.

● Among the K nearest neighbors, count the number of data points in each category.

● Assign the new data point to the category for which the number of neighbors is maximum.

5. Make Predictions

● Use the trained model to make predictions on the test data.

● Evaluate the Model

● Generate the confusion matrix and classification report using the actual and predicted values.

● Print the confusion matrix and classification report.