X shape: (1797, 64)

Y shape: (1797,)

X\_train shape: (1198, 64)

X\_test shape: (599, 64)

y\_train shape: (1198,)

y\_test shape: (599,)

X shape: (1797, 64) represents the dataset of input features (X) with 1797 instances and each instance having 64 features.

Y shape: (1797,) represents the corresponding target labels (Y) for the input features. It has 1797 elements, indicating the class labels for each instance.

X\_train shape: (1198, 64) represents the training set, which is a subset of the input features. It contains 1198 instances with 64 features.

X\_test shape: (599, 64) represents the test set, which is another subset of the input features. It contains 599 instances with 64 features.

y\_train shape: (1198,) represents the corresponding target labels for the training set. It has 1198 elements

y\_test shape: (599,) represents the corresponding target labels for the test set. It has 599 elements

Confusion Matrix:

[[64 0 0 0 1 1 2 0 1 0]

[ 0 40 4 5 0 1 1 2 5 4]

[ 0 2 58 2 0 2 1 1 0 3]

[ 0 0 4 45 0 2 0 2 1 3]

[ 0 2 0 0 59 0 0 0 2 0]

[ 1 1 0 1 0 43 0 2 0 4]

[ 2 3 0 0 0 0 44 0 0 0]

[ 0 0 0 1 0 1 0 50 1 3]

[ 3 8 2 6 0 2 3 0 39 1]

[ 3 2 0 3 0 0 0 0 4 46]]

confusion matrix is a 10x10 table that shows the performance of a classification model. Each row represents the true class labels, and each column represents the predicted class labels. The values in the matrix indicate the frequency of instances for each combination of true and predicted labels. The diagonal elements represent correct predictions, while the off-diagonal elements represent misclassifications. The confusion matrix provides insights into the model's accuracy for each class and helps identify areas for improvement