Brief Overview:

This algorithm is a two-class classification model (can be expanded to multiple classes). The algorithm assumes known prior distributions (can also been assumed equal prior). Model uses a Gaussian (Normal) Distribution. The model uses the training data to construct the covariances matrices of each class and the shared covariance. The program then calculates the probability that each instance of the test data belongs to each class based on a quadradic normal logarithmic discriminate function. The class with the highest probability is assigned the data. The error rate is calculated for accuracy of assignment based the assumption of a shared covariance matrix and independent covariance matrices. Based on the error rate it can be concluded that the data is drawn from a shared covariance matrix and are not independent.