Lab 4

Introduction:
In this lab, you will implement Linear Discriminant Analysis (LDA) and Quadratic Discriminant Analysis (QDA) using only NumPy. You should NOT use any machine learning library (e.g. Scikit-learn) for this lab. Perform classifications on the same Iris dataset as Lab 3.

Exercises:

1. Break the sample into 80% for training, and 20% for test datasets. You can choose the first 80% instances from each class for training and the rest for testing. Feel free to use your code from the previous lab.
2. Build an LDA classifier based on the training data. Report the training and test accuracy for your classifier.
3. Build a QDA classifier based on the training data. Report the training and test accuracy for your classifier.
4. **Answer the following in a cell at the end of your notebook:** Is there any class linearly separable from other classes? Explain your answer based on your experiments.
5. Assume the features are independent, i.e., $\sum$ is a diagonal matrix. Repeat Question 3, and report your results. Also, please report the training time of this method and the original QDA that you implemented in Question 3.