Name :- Abhinav Gudipati

Roll Number :- 2019227

Question 1 :-

a. We load the dataset, and then with respect to the classes we visualise 5 images from each class. Cifar-10 has 10 classes each having images of that particular class. With this task we are attempting to visualize the images in that particular class.
b. With LDA, we basically find a line such that between class separation is maximum, and in class separation is minimum. Using sklearn techniques we are attempting to reduce the dimensionality of the dataset while also trying to retain the best features. LDA explicitly attempts to model the difference between classes of data.
c. Accuracy for the entire model as well as the class wise accuracy have been appropriately mentioned.

Question 2 :-

a. Once again using sklearn techniques we apply PCA to the MNIST data, and appropriately mention towards how many components the number of features of the entire must be reduced to. According parameter must be applied.
b. We observe that the best accuracy is observed for the pca model having the maximum number of components, this might be because we might be eliminating a lot of useful features while also retaining some unwanted features, which can make the accuracy of transformed model with the least number of components the least accurate.

Question 3 :-

a. In this we are attempting to apply FDA, which we've previously used in LDA sklearn techniques through our implementation, but this time from scratch.

Question 4 :-

a. Once again using the appropriate techniques PCA is applied and thereafter we find that we can reduce the dimensionality of the entire dataset into 15 components using sklearn PCA. From our previous FDA implementation, we apply FDA and thereafter we also apply LDA on the transformed dataset, from which we derive the accuracies as well.