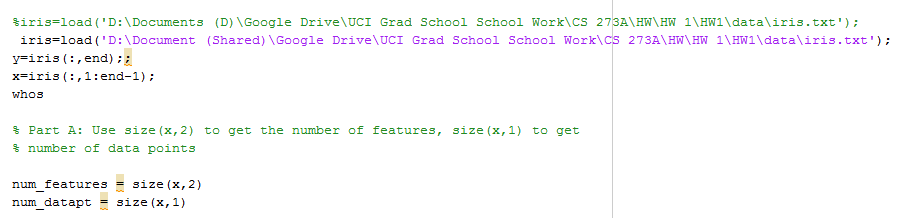
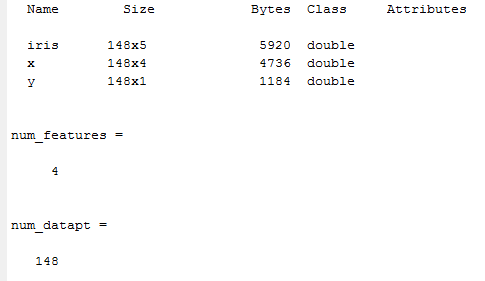
Problem 1

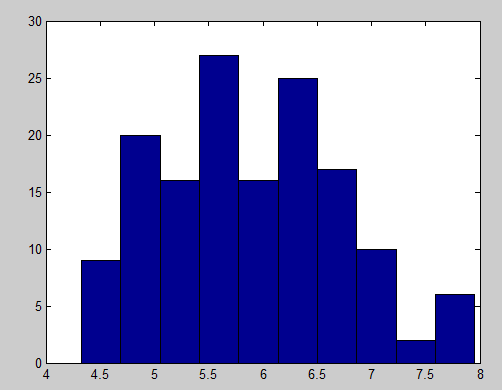
Part A: Code



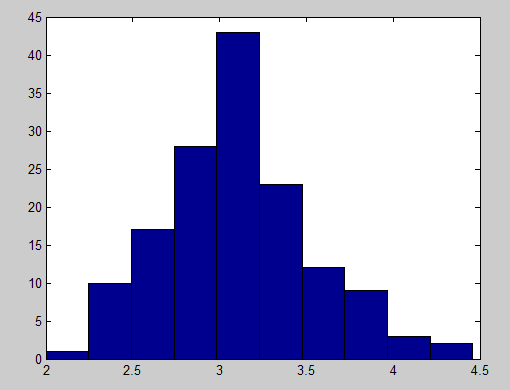
Result:



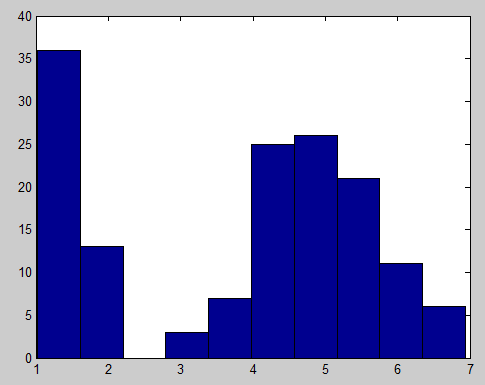
Part B (Histogram Plot for each features)



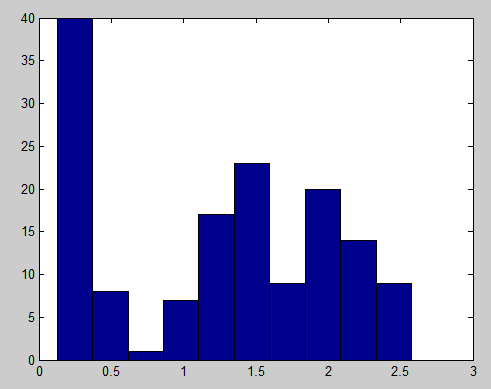
Histogram of Feature 1



Histogram of Feature 2



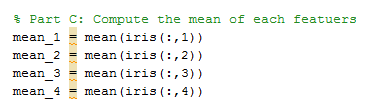
Histogram of Feature 3



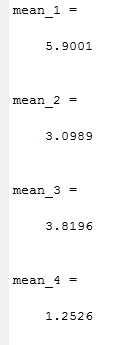
Histogram of Feature 4

Part C (mean of each features)

Code:

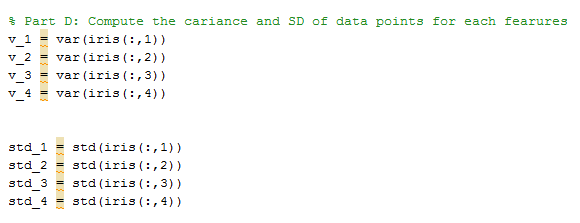


Result:

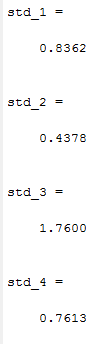
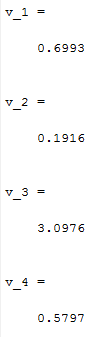


Part D: Variance and Standard Deviation of each features

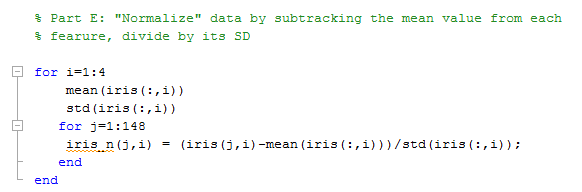
Code:



Result:

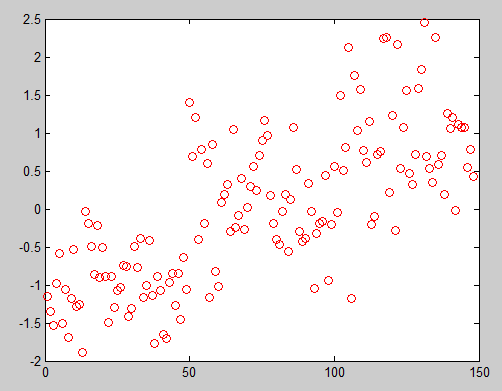
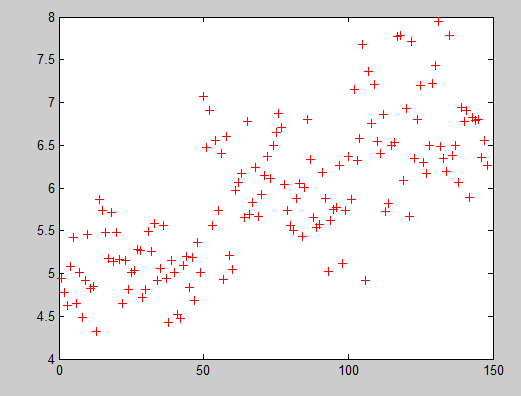


Part E: Normalize Data



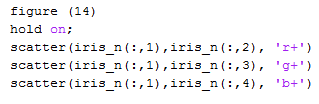
Normalized Data and pre-normalized data share the same distribution. For details, please see the distribution plot in MATLAB code (figure 6-13)

Example: Features 1 and Normalized Features 1

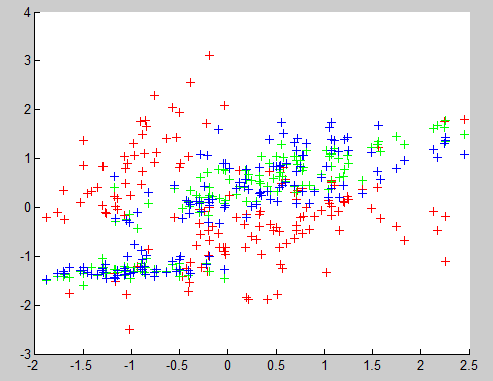


Part F: Plot Features (1,2) (1,3) and (1,4)

Code:



Features (1,2) is plotted in red; Features (1,3) is plotted in greed; Features (1,4) is plotted in blue



Problem 2

Part A: Visualize the classification boundary for varying values of K

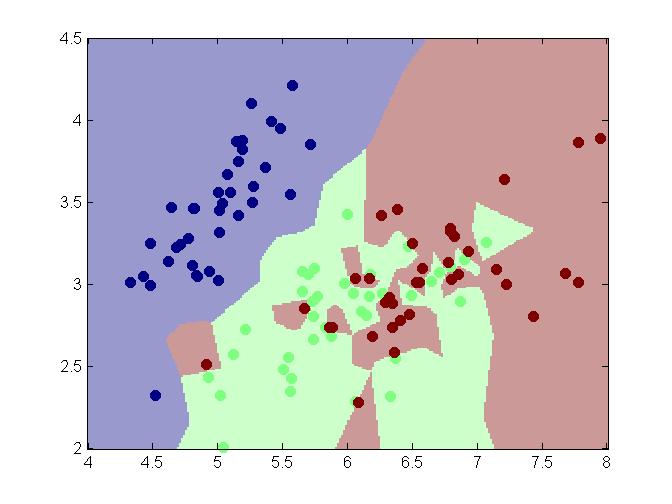


Figure 1 (K = 1)

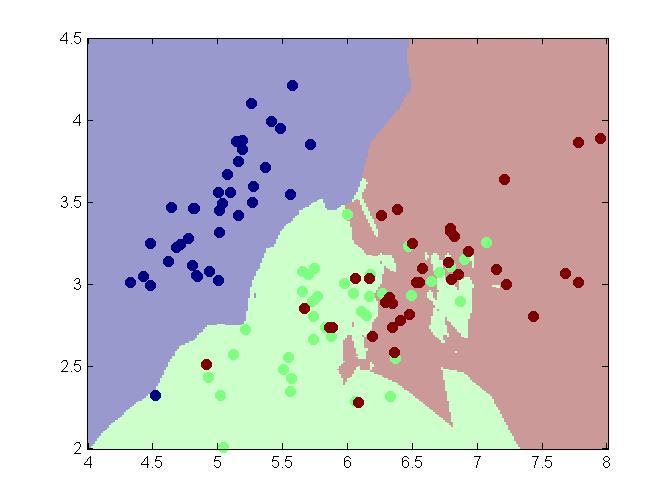


Figure 2 (K = 5)

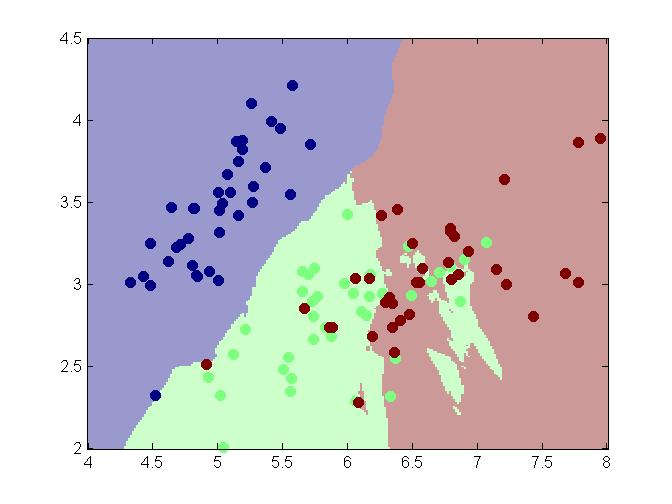


Figure 3 (K = 10)

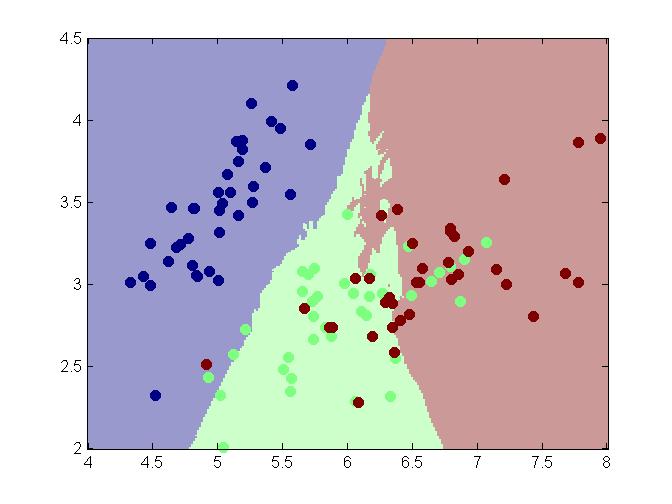
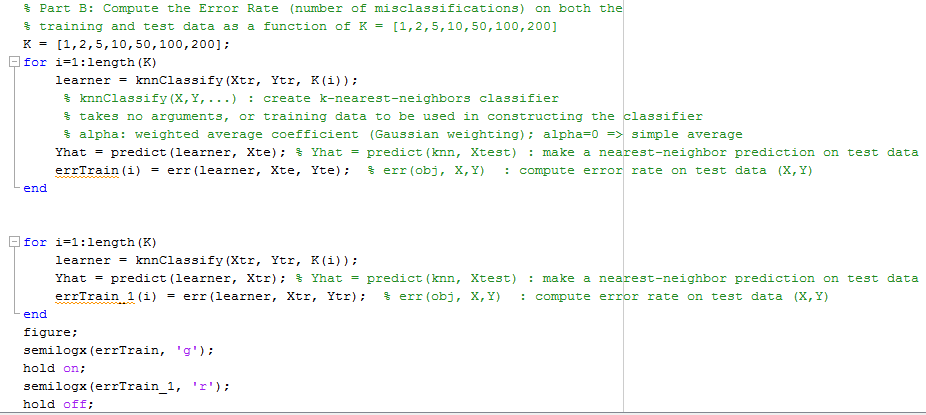
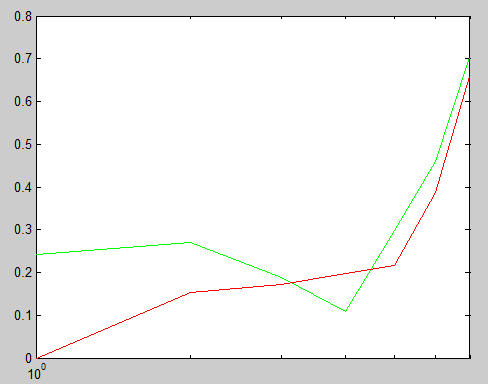


Figure 4 (K = 50)

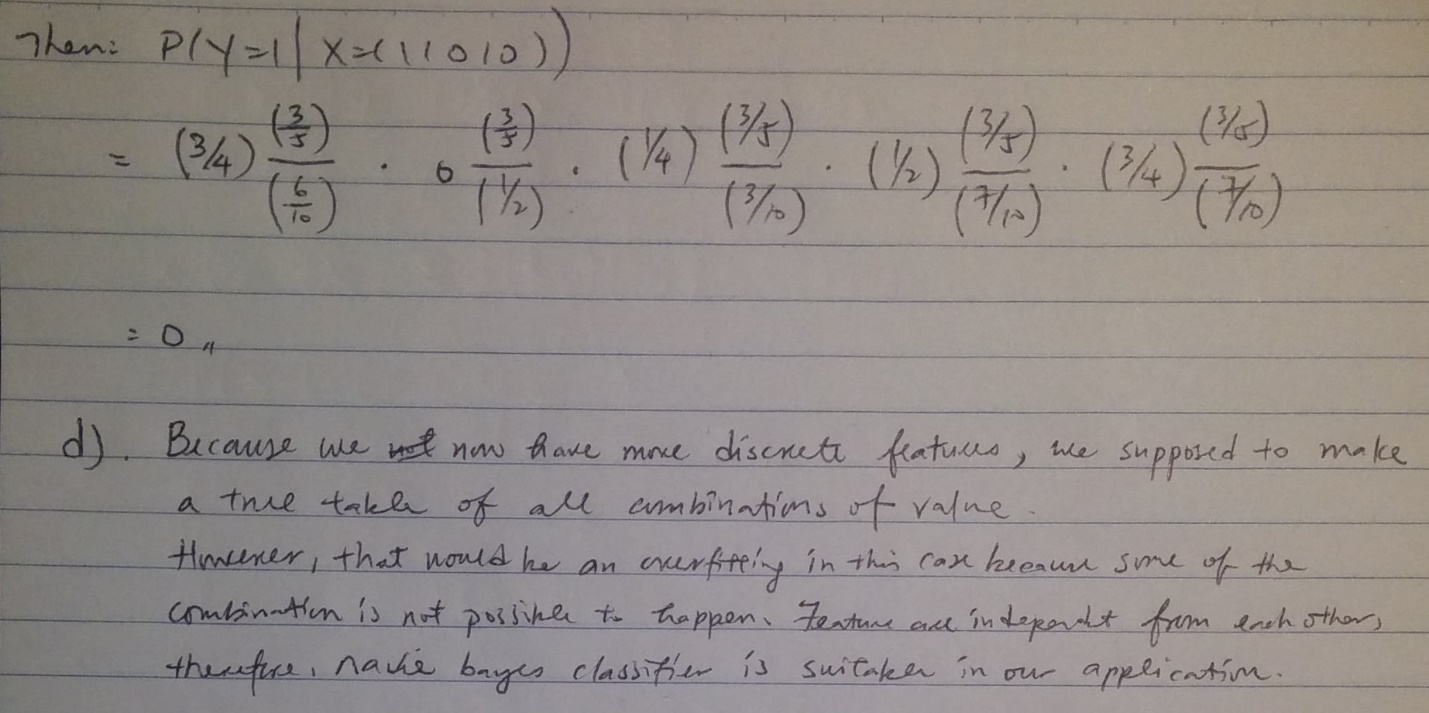
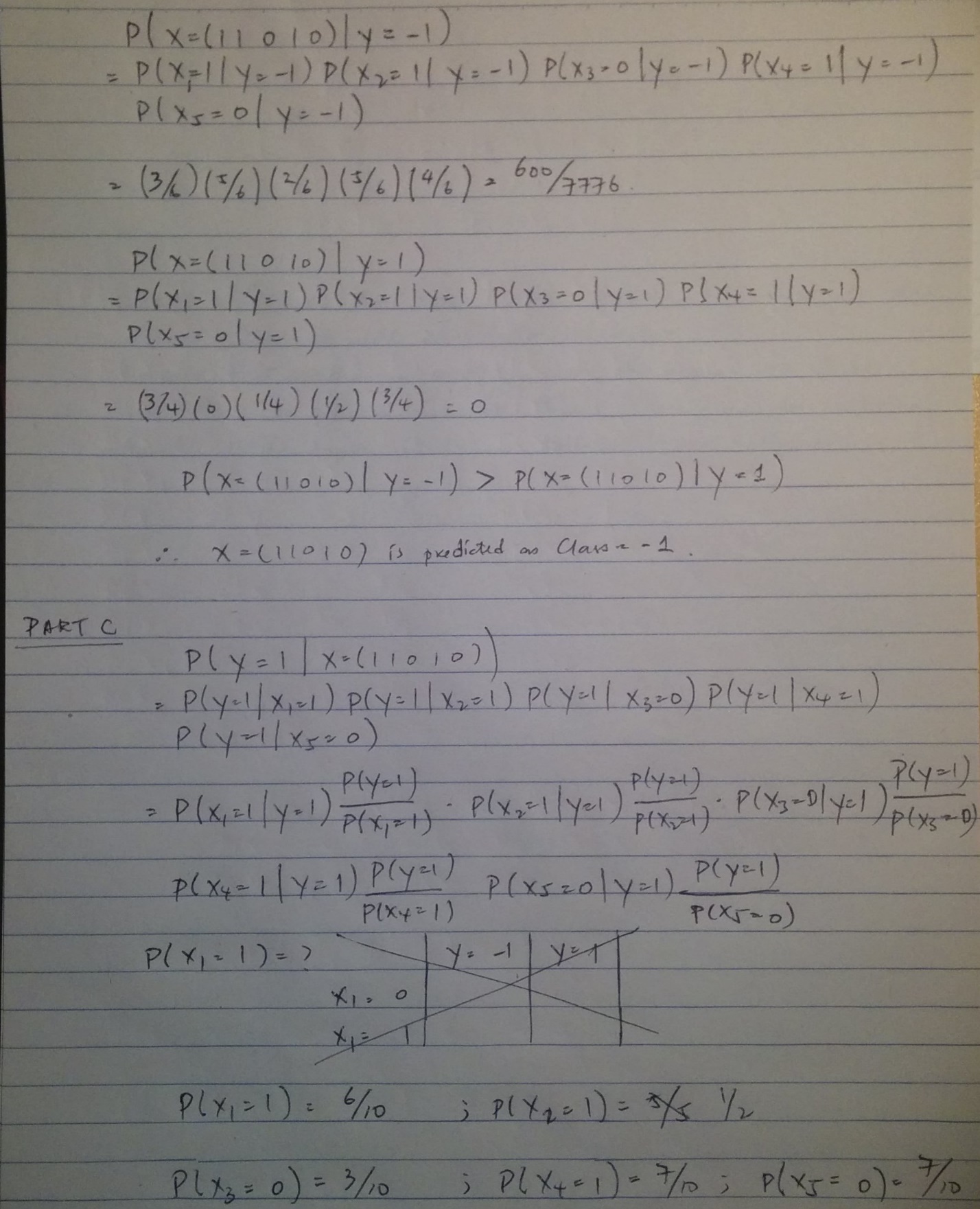
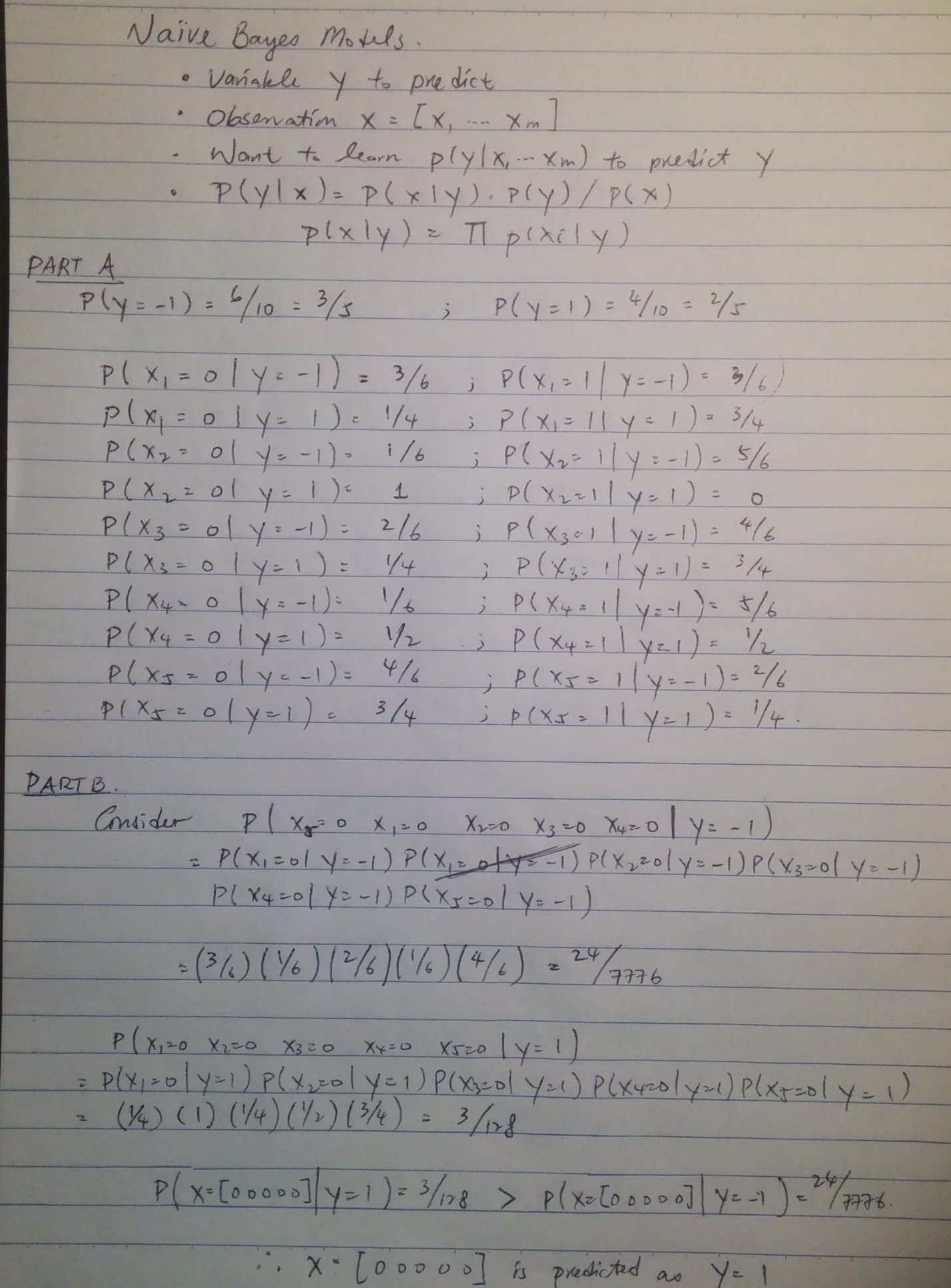
Part B: Visualize the classification boundary for varying values of K

Code:





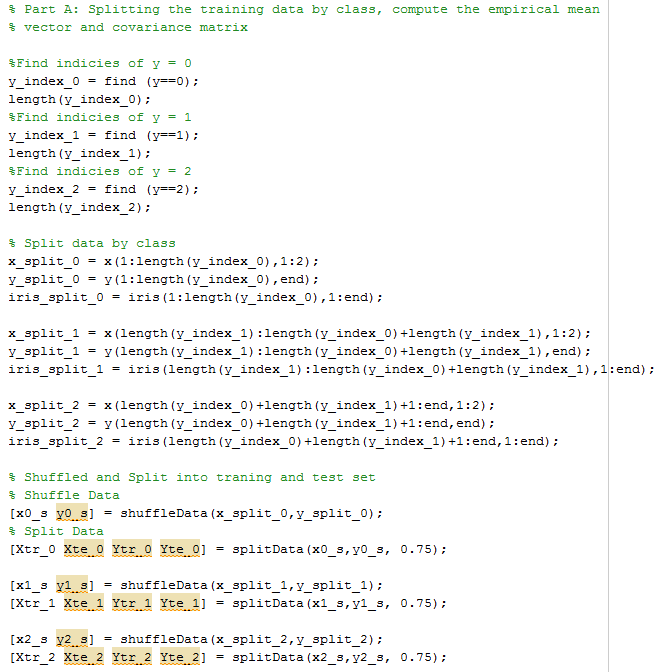
Problem 3: Please see the picture attached below

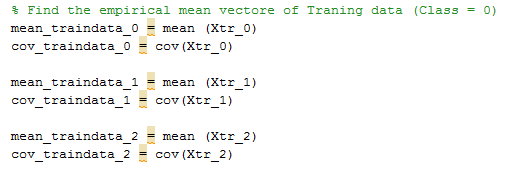


Problem 4

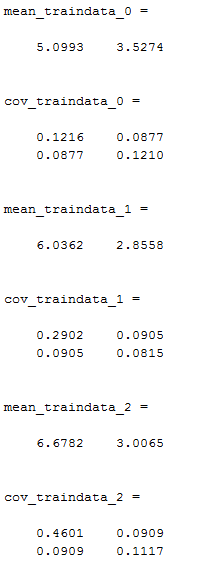
Part A: Splitting and find mean and cov

Code:

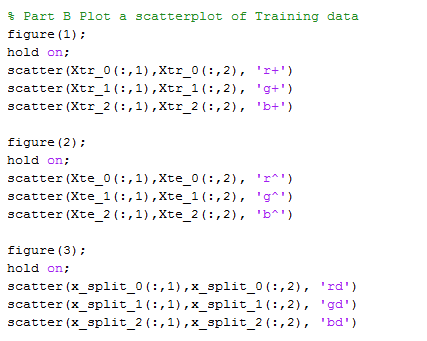




Result:



Part B: Code



Plot:

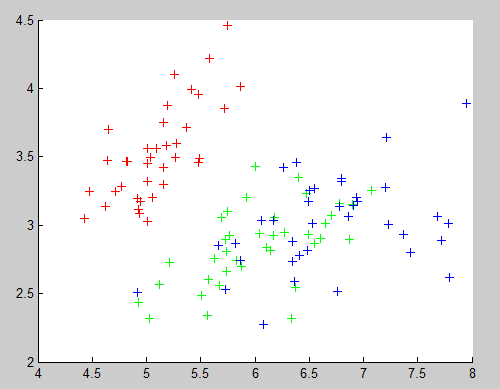


Figure of Train Data for each class

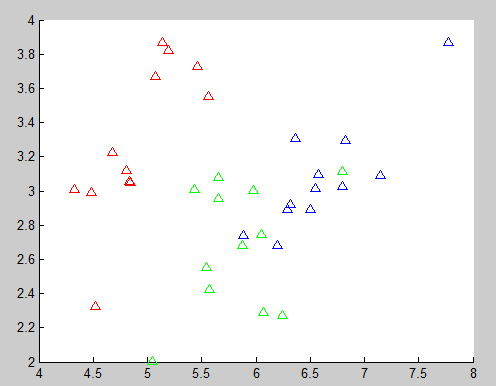


Figure of Test Data Plot

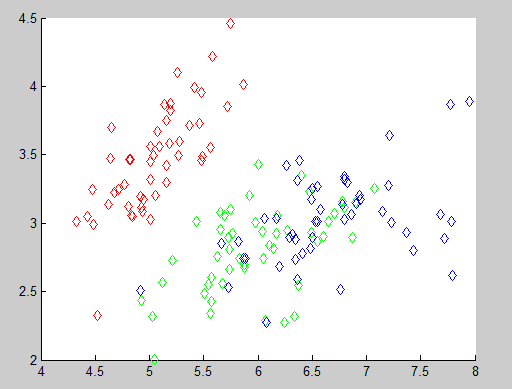
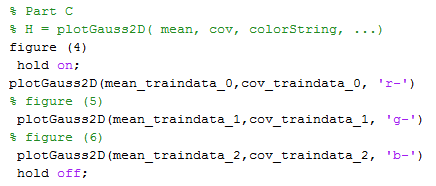
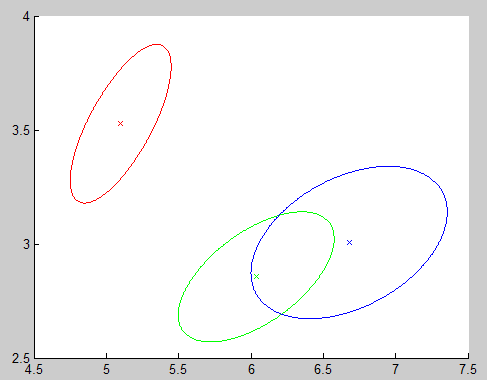


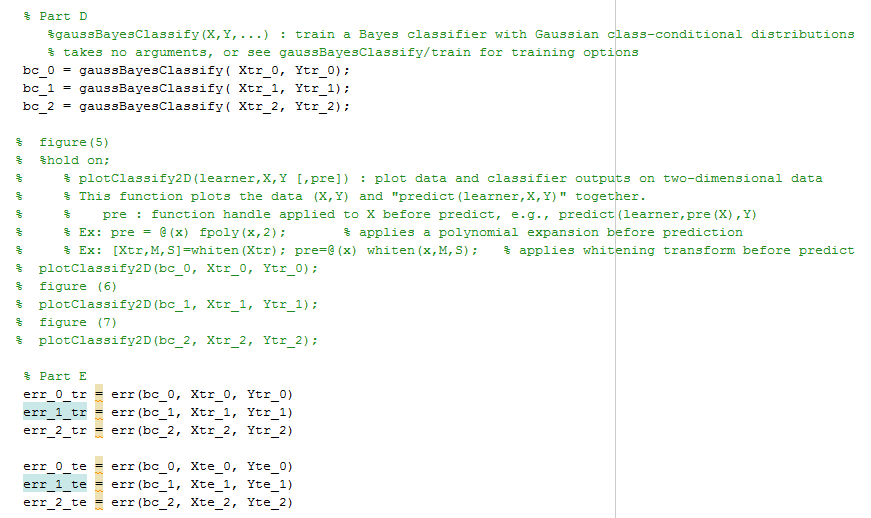
Figure of all data point for each class (Train and Test)

Part C





Part D and E



Result:

