CSC411 Assignment 2 print out

Figure 1: scatter plot of data

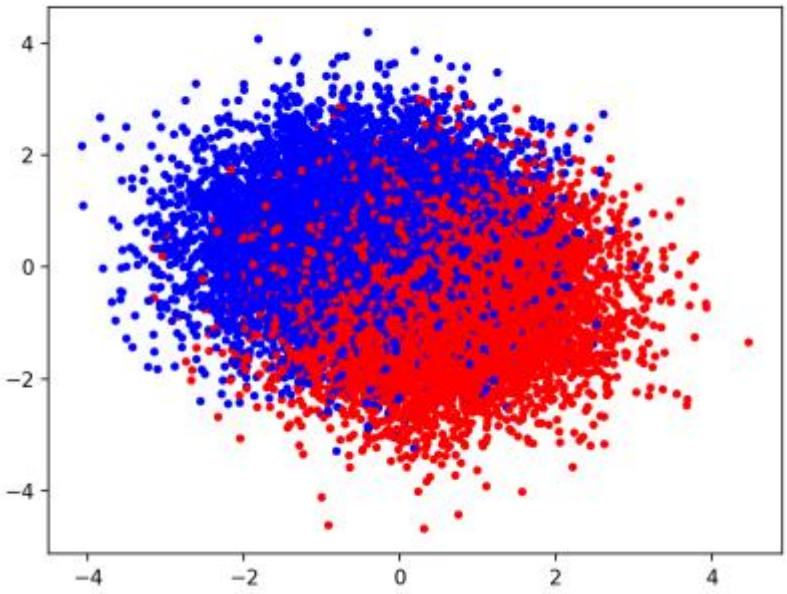


Figure 2: contour plots of logistic decision functions

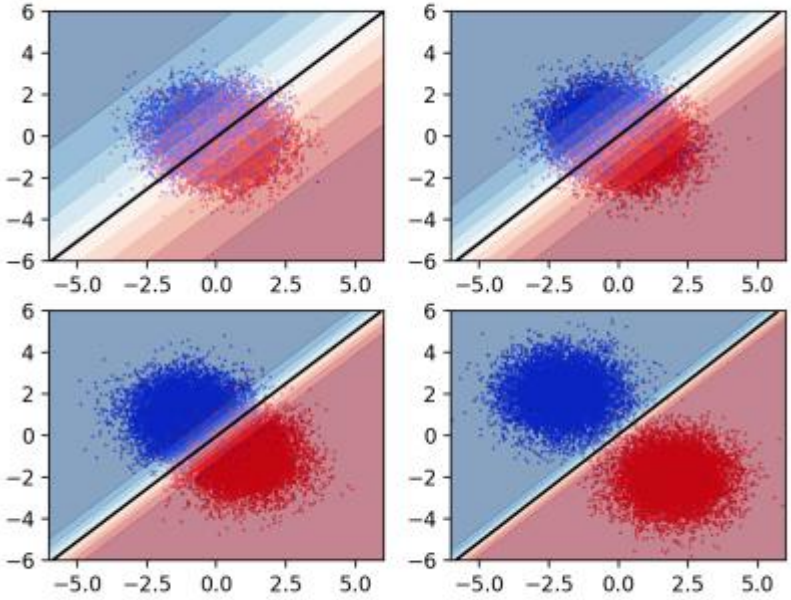
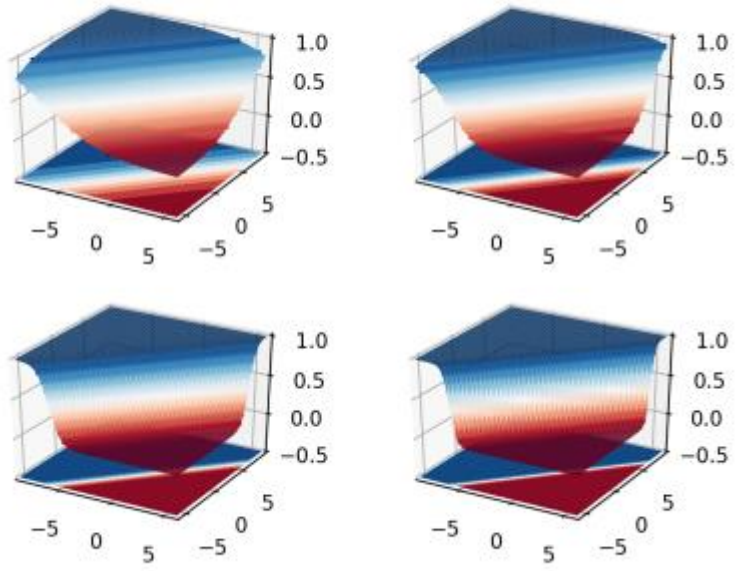


Figure 3: Surface plot of logistic decision function



Print out accuracy for Beta array:

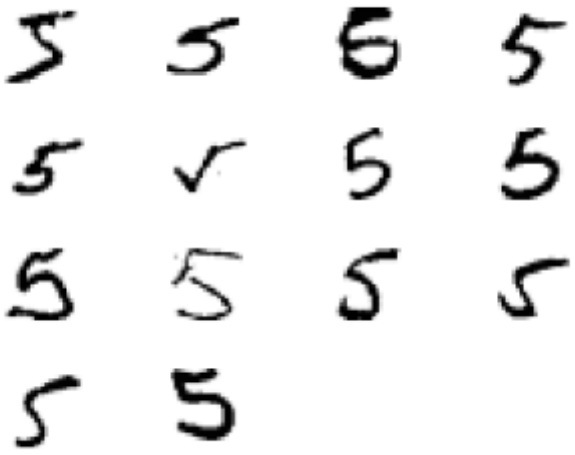
B = 1 with accuracy 0.609500
B = 2 with accuracy 0.714600
B = 3 with accuracy 0.919250
B = 4 with accuracy 0.996950

Question 2c:

As we can see, that when value of Beta is increasing, the accuracy of the classification is more accurate. By following reasons: since Beta increased, two centers of clusters would move further away from each other (because m0 and m1' x and y values have opposite sign). Then there is less overlap points occurred. That will significantly improve the accuracy.

Question 3:

Figure 4: random MNIST images of the digit 5



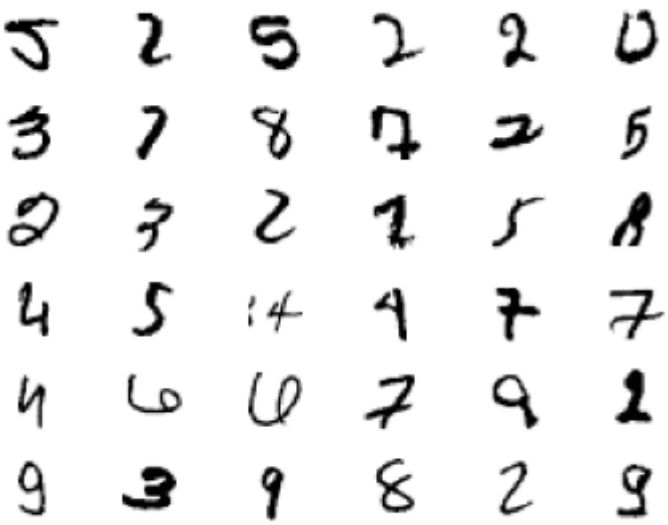
Question 3 D):

The training accuracy is0.934067

The testing accuracy is0.925200

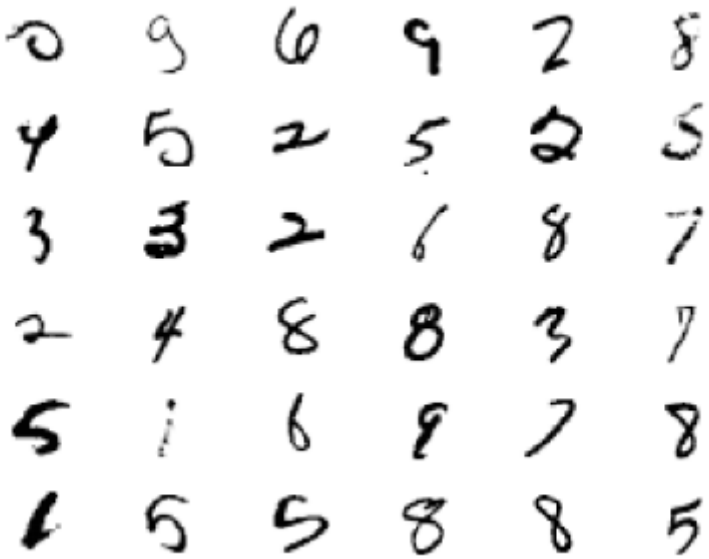
Question 3 E):

Figure 6: some missclassified images.



Question 3 F):

Figure 7: images with the least confident predictions.



Question 4D:
The training accuracy score for 2s and 3s is 0.984449
The testing accuracy score for 2s and 3s is 0.969638