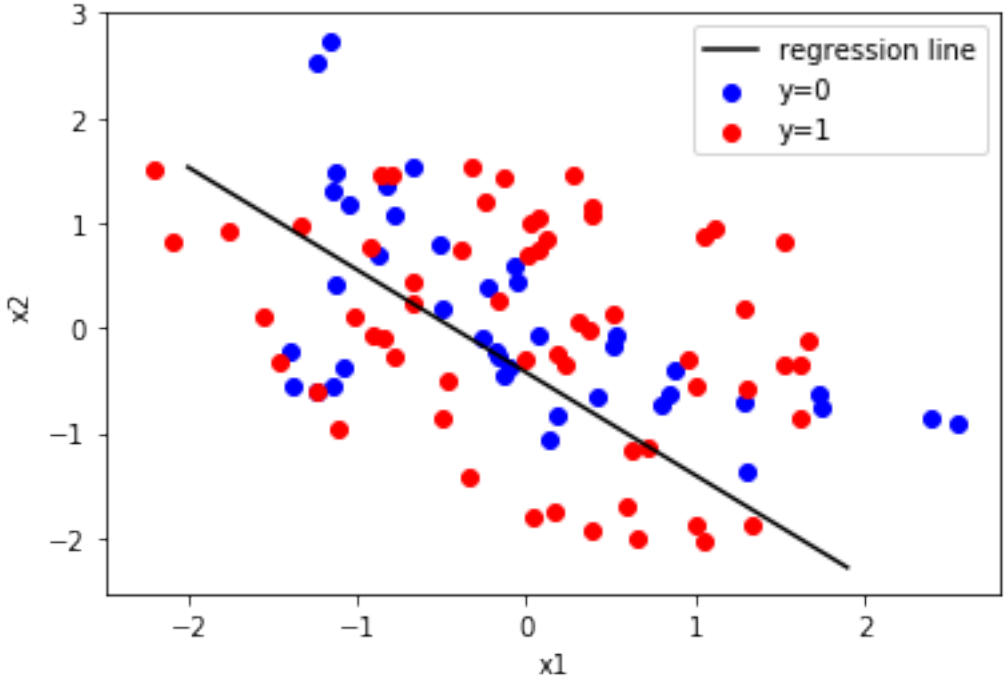
Analysis Report

1 Performance of predictor using logistic regression with delta learning rule using newton's method for predicting whether a student can get an admission in the institution(Exam dataset used)

Ans. Using delta learning rule with newton's method for logistic regression with 10 epochs we found that 26 out of 30 predictions were found to be correct with accuracy of 86.67 percent for classifying wether a student will get admission in the institution or not. The value of parameter after gradient descent were = [[1.08410171, 2.49106338, 2.54997065]]



Due to mean normalization some points are overlapping, but without mean normalization st. line was not being scaled properly.

2 Performance of predictor using logistic regression with delta learning rule using newton's method in comparision to logistic regression with gradient descent

Ans. From the accuracy measure we can clearly see that logistic regression with delta learning rule using newton's method give better prediction than logstic regression with gradient descent. But since the data is small and we are not using regularization newton's method may have overfitting issues, because of this accuracy may have been so good. Other important point that has been observed is that because of quadratic convergence only 10 epochs were sufficient in comparision to gradient descent were 1000 epochs were required. So we can say that logistic regression with delta learing rule is much faster than LOG with gradient descent.