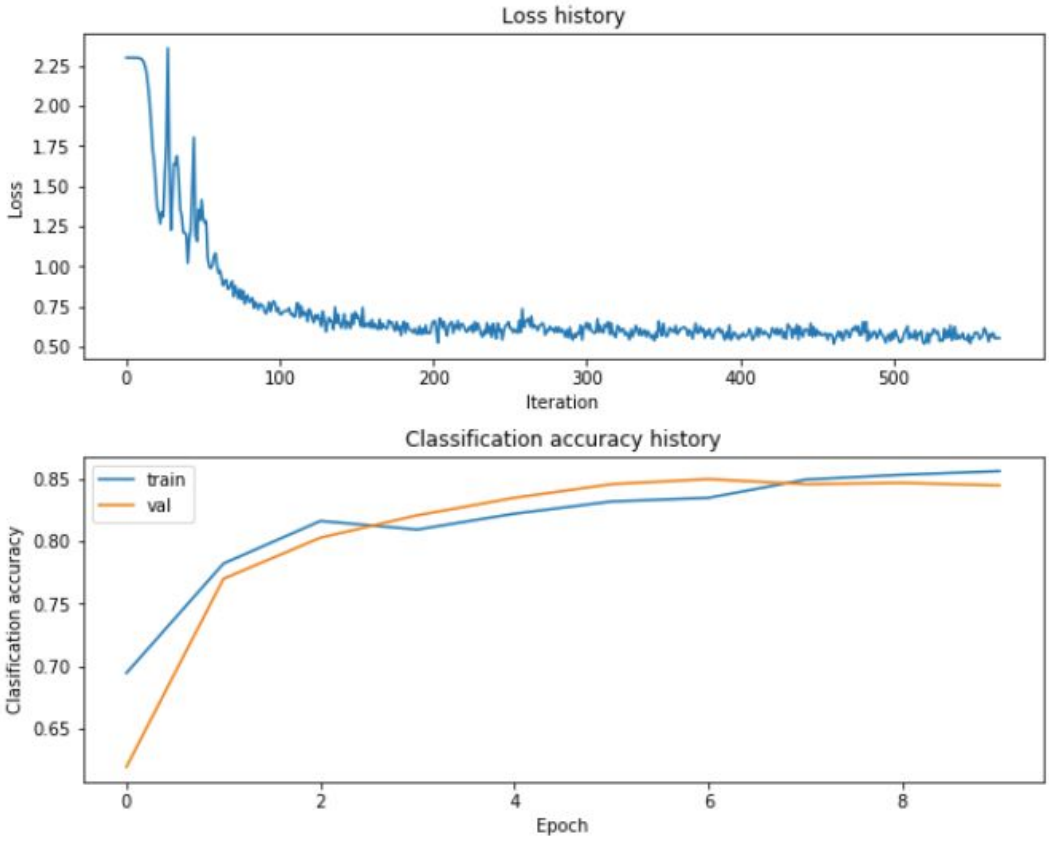
SMAI ASSIGNMENT 6

Question 1

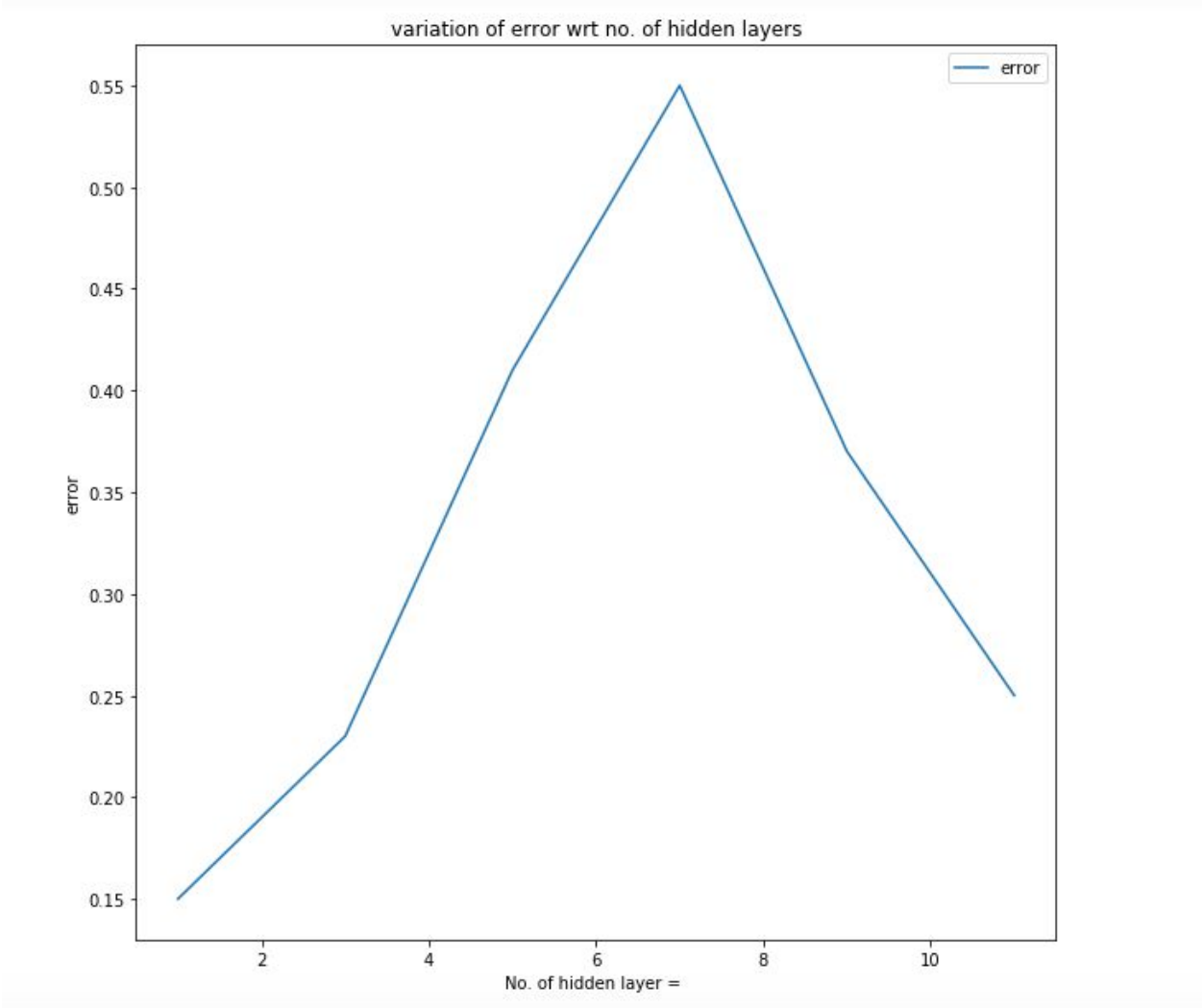
Activation Function:

RELU activation function gave the highest accuracy for the validation set followed by sigmoid function then TanH in the hidden layers

The graph shown below depicts the the loss versus the number of iterations. The higher the number of iterations the lesser the loss reported.



The graph shown below the error variation with respect to the number of hidden layers. Surprisingly I got the least error when I have used just one hidden layer and the error increases as the number of hidden layer increases upto a point and then it decreases.



Loss Function:

Used Cross Entropy Loss function.

Cross-entropy loss, or log loss, measures the performance of a classification model whose output is a probability value between 0 and 1.

Used SoftMax function. It is used for multi-classification model it returns the probabilities of each class and the target class will have the high probability.

Question 2

1. To modify the neural network from above question first I will set the number of hidden layers to 3.
2. The given dataset is the regression problem. Whereas the dataset in Question 1 was classification problem
3. We don't need to use softmax function at the output layer.
4. We need to use linear activation problem mostly RELU at the output layer. Other activation functions may not work well.
5. Loss function has to be changed. L2 loss would have to be used instead of Cross Entropy Loss function. We have to minimize this loss.
6. Regularized parameters and the learning parameters would get tweaked a little bit.