CHARACTER RECOGNITION USING BACK PROPAGATION

The dataset contains handwritten numerical digits from 0 to 9 from MNIST

Number of training samples - 23390
Number of testing samples - 1010

The images are of dimension 28 X 28.
These images are converted to matrix using MATLAB
Each value in the matrix is divided by 255 (highest value in the matrix)

Accuracy : 88.31%

Input layer : 784 neurons
Hidden layer : 185 neurons
Output layer : 10 neurons (10 digits)

Steps to run the program:
• Run training.c to generate weights (inputWeight.txt and hiddenWeight.txt)
• Run testing.c to get the accuracy of the network

Output

```
975          9              9
976          9              9
977          9              9
978          9              9
979          9              9
980          9              9
981          9              9
982          9              4
983          9              9
984          9              5
985          9              9
986          9              4
987          9              9
988          9              0
989          9              9
990          9              9
991          9              9
992          9              9
993          9              9
994          9              9
995          9              9
996          9              0
997          9              9
998          9              9
999          9              9
1000         9              9
1001         9              9
1002         9              9
1003         9              9
1004         9              9
1005         9              9
1006         9              9
1007         9              7
1008         9              9
1009         9              9
------------------------------------------------------
Hits : 892, Misses : 118, Accuracy : 88.316833%
karthik@Karthiks-MacBook-Pro ~/Documents/DTU/Semester 2/AI/Neural network/Project $
```