# CSC411 - Project #2

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Part 1

Question Describe the dataset of digits. In your report, include 10 images of each of the digits. You may find matplotlibs subplot useful.

Answer Please see the images of each digits below. For the same digit, some images have thicker lines (like "8" in the second column) and some have thiner lines (like "8" in the third column). Some digit images are straight (like "1" in the first column) and some digits are rotated (like "1" in the ninth column). Most digits are clear to be identified manually but some digits are not clear (like the "6" in the seventh column).
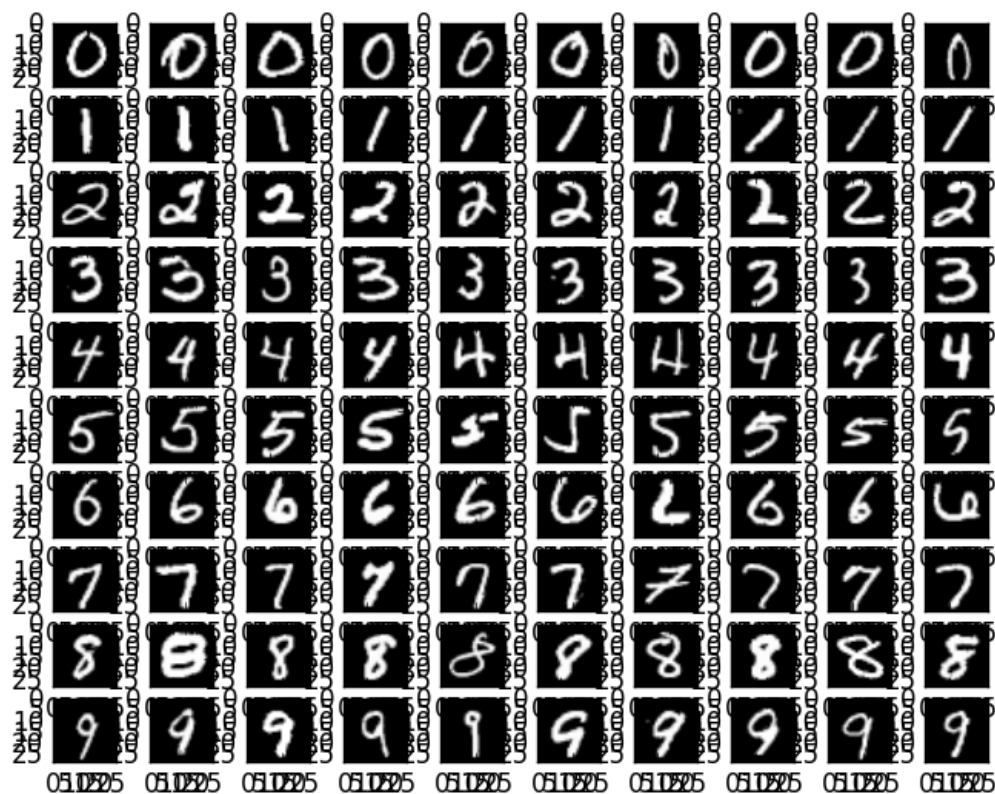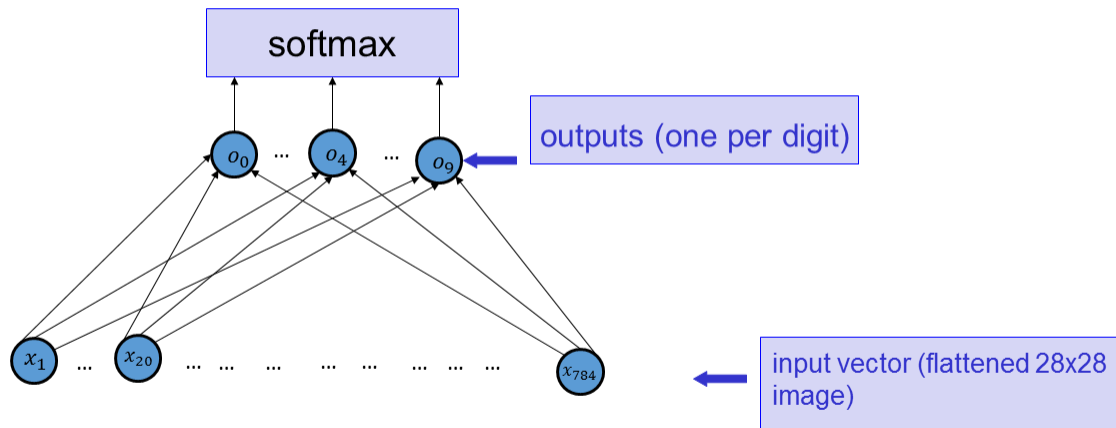

10 images of digits from 0 to 9

Part 2

Part 1

Question Implement a function that computes the network below. The o's here should simply be

linear combinations of the x's (that is, the activation function in the output layer is the identity). Supecifically, use $o_i = \sum_j w_{ji} x_j + b_i$. Include the listing of your implementation in your report for this Part.

Answer Please see the source code of the function below:

```
def lin_combin_double_layer(W0, W1, b0, b1, x):
    h = lin_combin_single_layer(W0, b0, x)
    return (lin_combin_single_layer(W1, b1, h))


def lin_combin_single_layer(W0, b0, x):
    return (dot(W0.T, x) + b0)
```