Introduction to Machine Learning, Fall 2014 - Exercise session III

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Problem 1 (3 points)

Problem 2 (3 points)

Problem 3 (3 points)

Problem 4 (9 points)

(a)

Download the MNIST data from the course web page. In addition to the actual data, the package contains some functions for easily loading the data into Python/Matlab/Octave/R and for displaying digits. See the README files for details. Load the first $N = 5,000$ images using the provided function.
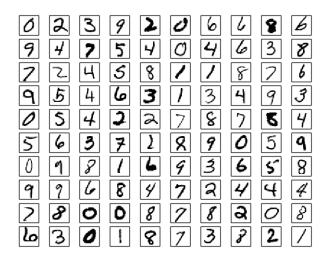
Solution to (a)

Check!

(b)

Use the provided functions to plot a random sample of 100 handwritten digits, and show the associated labels. Verify that the labels match the digit images. (This is a sanity check that you have the data [is] in the right format.)

Solution to (b)

The labels are:

```
0 2 3 9 2 0 6 6 8 6
9 4 7 5 4 0 4 6 3 8
7 2 4 5 8 1 1 8 7 6
9 5 4 6 3 1 3 4 9 3
0 5 4 2 2 7 8 7 8 4
5 6 3 7 2 8 9 0 5 9
0 9 8 1 6 9 3 6 5 8
9 9 6 8 4 7 2 4 4 4
7 8 0 0 8 7 8 2 0 8
6 3 0 1 8 7 3 8 2 1
```