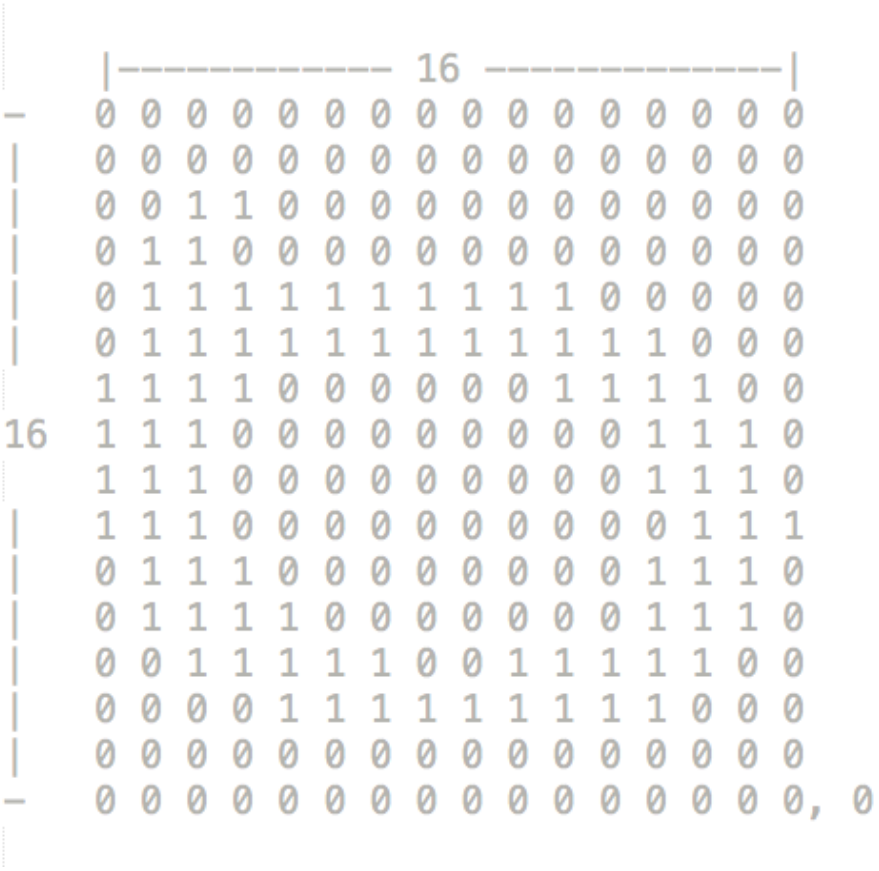
HW: K-Nearest-Neighbor Handwritten Number classification

In this homework you will use K-Nearest-Neighbor to classify handwritten numbers. The data has the following format:



The data is arranged into 16x16 blocks. The value after the comma is the block label, "zero" in the data above.

In your repository, the data is loaded as a string from the `"digits.js"` file.

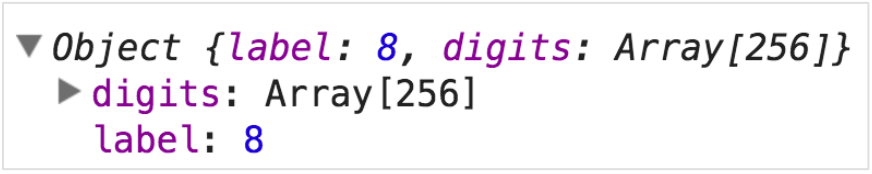
```
var input    = require('./digits.js');
```

Note: there are no tests for this homework. You can check your work by running:

```
node run.js
```

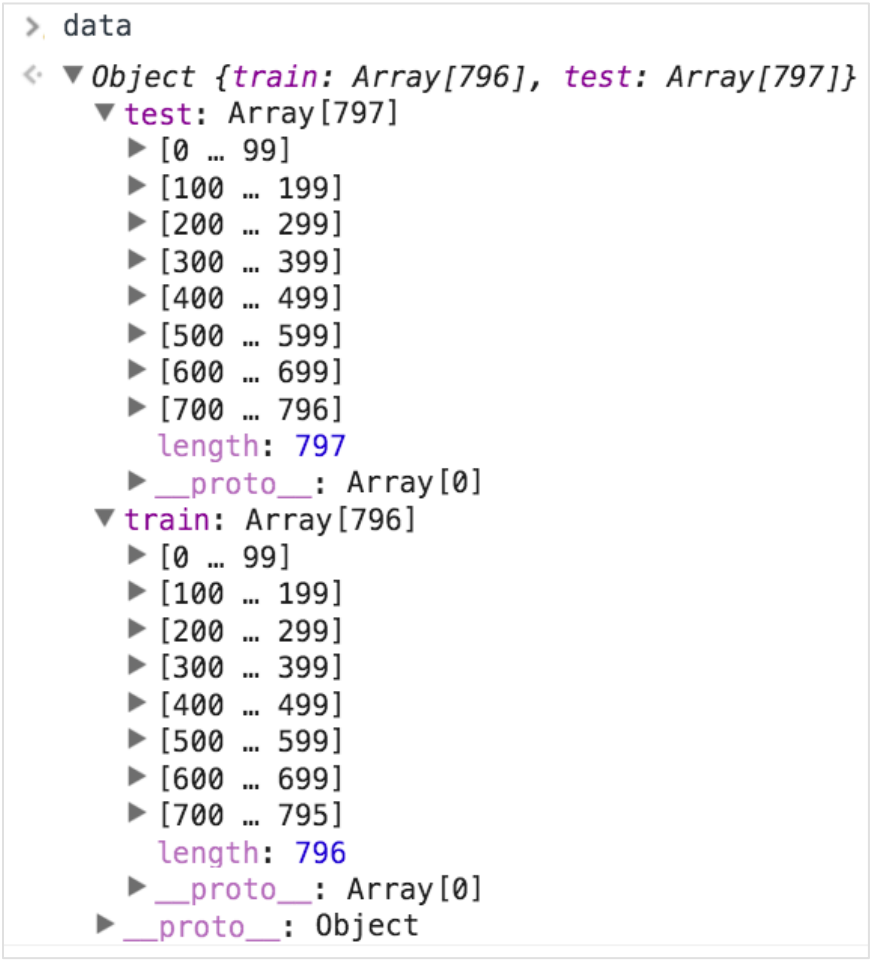
Question 1

Write a function to process the data from the "`digits.js`" file. Organize the data into an array of objects. Every object contains a block of digit data and the corresponding label.



Question 2

After reading and processing the data, randomly split the data set in half, into two arrays. You will train on one piece and test on the other.

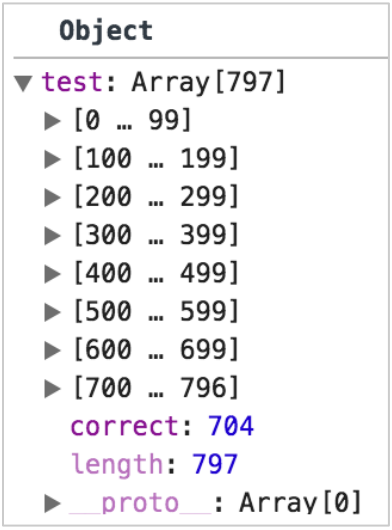


Question 3

Write a function to measure the distance between test and training data points.

Question 4
Classify your test digit data using nearest neighbors.

Question 5
Return the number of correct classifications



Note
You may write as many supporting functions as you like. For example:

```
exercise.one = function(){
    var split  = exercise.split();
    var trim   = exercise.trim(split);
    var digits = exercise.digits(trim);
    var labels = exercise.labels(digits);
    var data   = exercise.data(digits, labels);
    return data;
};
```