

CSE 201, Fall 2016

Homework # 08

Due Thursday November 10<sup>th</sup> 2016 by 11:59pm

Deliverables:

Please type your answers using a text editor, **no hand written notes**, convert your text file to PDF prior to upload.

### Problem #1

ZIP Code:

Given the following ZIP code (4X122Y), which corresponds to an address in the fourth zone.

(a) What is the set of all possible values for the check digit Y? For more details about the zones defined in the US, you may refer to your lectures.

(b) Assume that the USPS office would like to add 4-digit extension to the ZIP code mentioned above. Give three possible sets of such 4-digit extension such that your answer for (a) will not change.

### Problem #2

Given a credit card number (55X8-3201-2345-6783),

(a) What is the suitable value for X?

(b) If we would like to make the check digit 1, what is the suitable value for X?

### Problem #3

The routing number of MSUFCU is (272479663) as shown on the bank website ([www.msufcu.org](http://www.msufcu.org)). MSUFCU was asked to:

(a) Eliminate the digit 7 from the routing number;

(b) Without changing the others digits in the routing number, what are the possible combinations of digits (rather than 7) that could be used in the routing number? List four possible combinations.

### Problem #4

Assume a publisher selects (ISBN 87 - 11 - 07559 – 7) as a new ISBN for a new book. The publisher wants each digit (0 to 9) to appear no more than 2 times in the ISBN. Therefore, the publisher decided to assign different edition number rather than (07559). It is obvious he needs to find some alternatives to replace (7) because (7) appears more three times in the current ISBN. What are the possible alternatives for 7 if the publisher would like keep the check digit, i.e. 7, as is?