Homework 1

CS51A Fall 2018 - due date (October 12)
Must be turned in at the beginning of the discussions
No exceptions, no late submission.

October 4, 2018

1. Perform the indicated conversions.
   (a) Convert 9740.53_{10} to binary and octal
   (b) Convert 3095.6_{10} to binary and hexadecimal
2. Simplify the following expressions using Boolean algebra.
   (a) $AB + A(CD + C\overline{D})$
   (b) $(B\overline{C} + \overline{A}D)(A\overline{B} + C\overline{D})$
3. Using identities from Switching Algebra, convert the following truth table to a switching expression and simplify the expression as much as possible.

x	y	z	F
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

Table 1: Truth Table

4. You are given decimal numbers 5 and 8 in BCD format of 0101 and 1000. Explain how you will add them in BCD format and represent the result in BCD format.
5. Obtain the truth table and express function $(x + yz)(z + xz)$ as a sum-of-minterms and a product-of-maxterms.