Digital Systems

Binary functions and Boole algebra
proposed exercíces[1]

1. Consider the following sentence:
   `Tomorrow I will play computer and read a book, or else I will study Digital Systems.`
   Transform it into a logical function, identifying the logical variables and repsententing the truth table.

2. Simplify the following expressions, stating which properties were used in each step:

   (a) $F = BA + \overline{AB}C$

   (b) $G = AB + A\overline{B}$

   (c) $H = A\overline{B}C + A\overline{B}\ \overline{C} + \overline{A}\ \overline{B}\ \overline{C}$

   (d) $I = AB\overline{C} + A\overline{B}C + A\overline{B}\ \overline{C}$

   (e) $J = \overline{A + A\overline{B} + \overline{A}C}$

   (f) $K = \overline{\overline{A}(\overline{B} + C(D + A))}$

   (g) $L = (A + B + C)(A + \overline{B} + C)(\overline{C} + D)(A + D)$

   (h) $M = A(\overline{B} + C) + B\overline{C}$

   (i) $N = \overline{A}BC + \overline{B}CD + \overline{A}\ \overline{B}C\overline{D} + ABCD$