Excercise 1

1. Simplify following Boolean functions
   a. $Y = A\overline{B}\overline{C}\overline{D} + \overline{A}BD + \overline{B}C\overline{D} + \overline{A}\overline{B}\overline{D} + ABD$
   b. $W = D\overline{(A + \overline{B} + C)} + C\overline{(A + \overline{BD})} + AB\overline{C}D$
   c. $W = \overline{\overline{C}(\overline{A} + \overline{B})(C + B\overline{D}(A + \overline{B}))}$

2. Make the truth table for $Y = A\overline{B}\overline{C}\overline{D} + \overline{A}BD + \overline{B}C\overline{D} + \overline{A}\overline{B}\overline{D} + ABD$ and form the Carnough map. Simplify your map. Sketch a realization of the function Y.

3. Realize the function $Y = A + \overline{B}C$
   a. By using any type of gates
   b. By using 2 –input NANDs
   c. By using a multiplexer

4. Find the logic function of the circuit below.