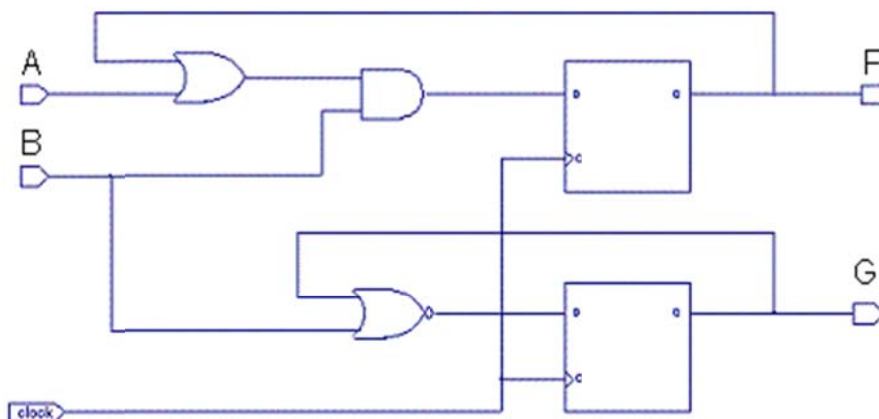


- Describe two ways to represent negative numbers in binary format. Give an example of each.
- Calculate the following using ten's complement arithmetic:
(a) $79_{10} - 32_{10}$ (b) $66_{10} - 89_{10}$
- Evaluate the binary subtraction $01100101 - 01001100$ by two methods one of which is 2's complement. Check your answer by performing the calculation using hexadecimal.
- Subtract 21BA from 7C88 (both hex) using hexadecimal notation only. Check your answer by converting to binary and using (a) straight 16 bit binary subtraction (b) 2s complement.
- How many bits of memory (decimal) are available from the hex addresses 00B0 to FFAE inclusive if each location is 16 bits wide?
- Show how a 64K byte wide memory could be formed using several 8K byte wide memories and a line decoder. Give details of how your addressing scheme works.
- Tabulate the truth table for an 8 x 4 ROM that implements the Boolean functions:
 $A(x,y,z) = \Sigma(1,2,4,6)$
 $B(x,y,z) = \Sigma(0,1,6,7)$
 $C(x,y,z) = \Pi(2,6)$
 $D(x,y,z) = \Pi(1,2,3,5,7)$
- Find the state equations and construct a state transition table for the circuit below.



- Show how a T-Type flip-flop can be formed from a D-Type flip-flop and logic gates.
- Show how a JK flip-flop can be formed from a D-Type flip-flop and logic gates.