

Cpt S 260 Introduction to Computer Architecture

Homework 1 – Due Wed. Aug. 29th in class

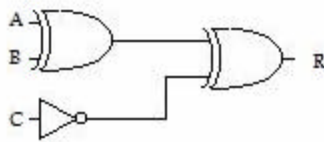
Represent the following boolean expressions in terms of logic gates and truth tables:

1. $((AB)' + (BC)')'$ – use only NAND gates
2. $A(BC + C')$ – use only NOR gates

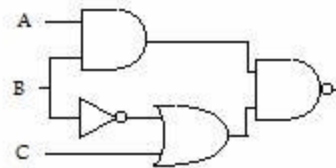
Note: X' means “not X ”

Convert the following logic circuits into truth tables and boolean expressions using AND, OR and NOT operations:

3.



4.



Explanation:

The XOR (exclusive-OR) gate acts in the same way as the logical "either/or." The output is "true" if either, but not both, of the inputs are "true." The output is "false" if both inputs are "false" or if both inputs are "true." Another way of looking at this circuit is to observe that the output is 1 if the inputs are different, but 0 if the inputs are the same.



XOR gate

<i>Input 1</i>	<i>Input 2</i>	<i>Output</i>
0	0	0
0	1	1
1	0	1
1	1	0