

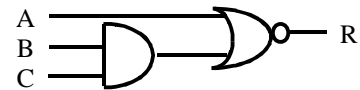
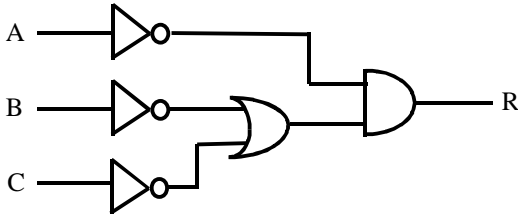
DOC Course 112: Hardware: Tutorial 3 Solution

A B C	S1	S2	S3	S4	S5	R
0 0 0						1
0 0 1						1
0 1 0	1	1	0	1	1	1
0 1 1	1	1	0	0	0	0
1 0 0						0
1 0 1						0
1 1 0						0
1 1 1						0

1

	BC			
	00	01	11	10
A	0	1	1	0
	1	0	0	0

$$R = A'.B' + A'.C' = A'.(B'+C')$$



Simplification using de Morgan

	BC			
	00	01	11	10
A	0	1	1	X
	1	0	0	0

$$R = A'$$

2

	CD			
	00	01	11	10
AB	00	1	1	1
	01		1	
	11		1	
	10	1	1	0

NB The four corners are adjacent

$$R = A'.B + C'.D + B'.D'$$

3

	CD			
	00	01	11	10
AB	00			
	01		X	1
	11	X	1	X
	10	X	X	1

$$R = A + B.D$$

NB Other configurations of the don't cares can be used.