

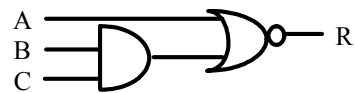
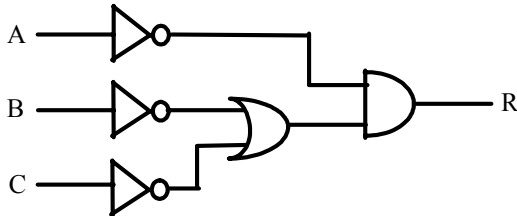
DOC Course 112: Hardware: Tutorial 3 Solution

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
00	1	1	1	1
01		1		
11		1		
10	1	1	0	1

NB The four corners are adjacent

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

3

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

$$R = A + B.D$$

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