



INTRODUCTION TO COMPUTER SYSTEMS (IT1020)

Year 1, Semester 1

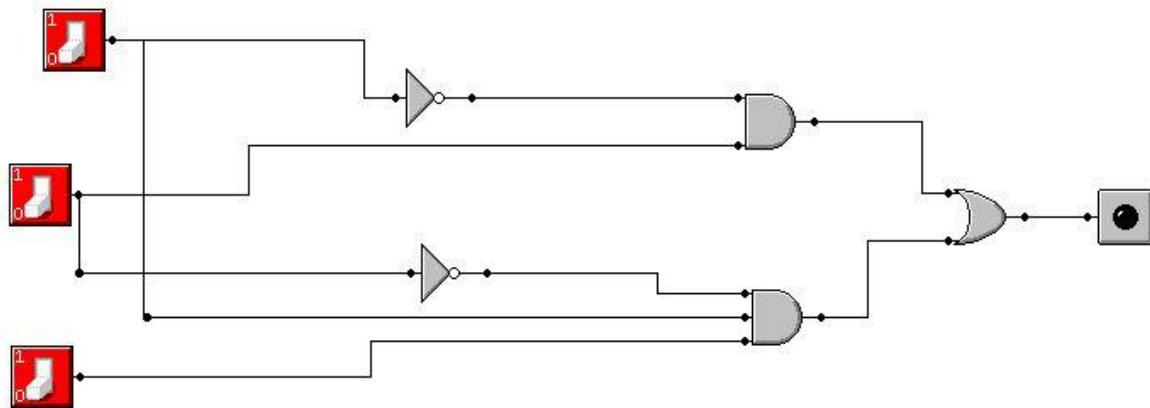
Worksheet 03 Submission

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Y1.S1.WD.IT.17

Activity (2)

a).

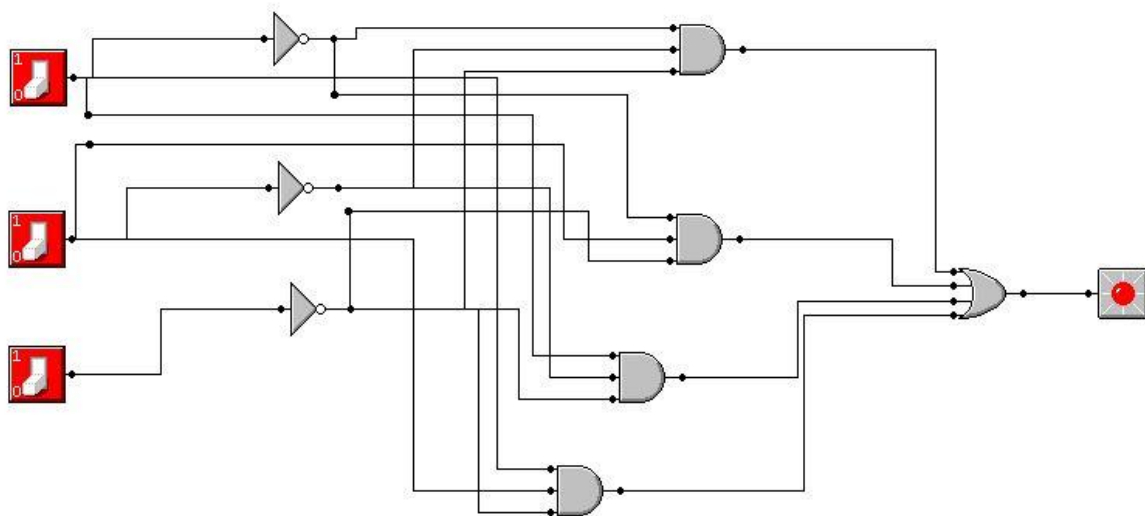


b).

X	Y	Z	Y'	Z'	Y'Z	XYZ'	$F = Y'Z + XYZ'$
0	0	0	1	1	0	0	0
0	0	1	1	0	1	0	1
0	1	0	0	1	0	0	0
0	1	1	0	0	0	0	0
1	0	0	1	1	0	0	0
1	0	1	1	0	1	0	1
1	1	0	0	1	0	1	1
1	1	1	0	0	0	0	0

Activity (3)

a).



b).

$$F = A'B'C' + A'BC' + AB'C' + ABC'$$

A	B	C	A'	B'	C'	$A'B'C'$	$A'BC'$	$AB'C'$	ABC'	F	SoP
0	0	0	1	1	1	1	0	0	0	1	$A'B'C'$
0	0	1	1	1	0	0	0	0	0	0	
0	1	0	1	0	1	0	1	0	0	1	$A'BC'$
0	1	1	1	0	0	0	0	0	0	0	
1	0	0	0	1	1	0	0	1	0	1	$AB'C'$
1	0	1	0	1	0	0	0	0	0	0	
1	1	0	0	0	1	0	0	0	1	1	ABC'
1	1	1	0	0	0	0	0	0	0	0	

c).

$$SoP = A'B'C' + A'BC' + AB'C' + ABC'$$

$$F = A'B'C' + A'BC' + AB'C' + ABC'$$

$$= A' (B'C' + BC') + AB'C' + ABC' \text{ (By distributive law)}$$

$$= A' (B'C' + BC') + C' (AB' + AB) \text{ (By distributive law)}$$

$$= A'C' (B' + B) + C' (AB' + AB) \text{ (By distributive law)}$$

$$= A'C' \cdot 1 + C' (AB' + AB) \text{ (By inverse law)}$$

$$= A'C' + C' (AB' + AB) \text{ (By identity law)}$$

$$= A'C' + AC' (B' + B) \text{ (By distributive law)}$$

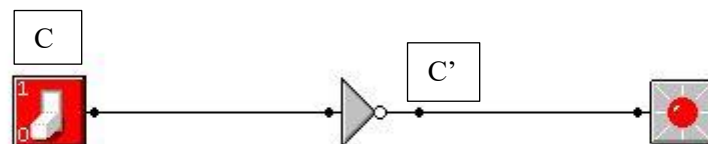
$$= A'C' + AC' \cdot 1 \text{ (By inverse law)}$$

$$= A'C' + AC' \text{ (By identity law)}$$

$$= C' (A' + A) \text{ (By distributive law)}$$

$$= \underline{C'} \text{ (By inverse law)}$$

d).



Activity (4)

a).

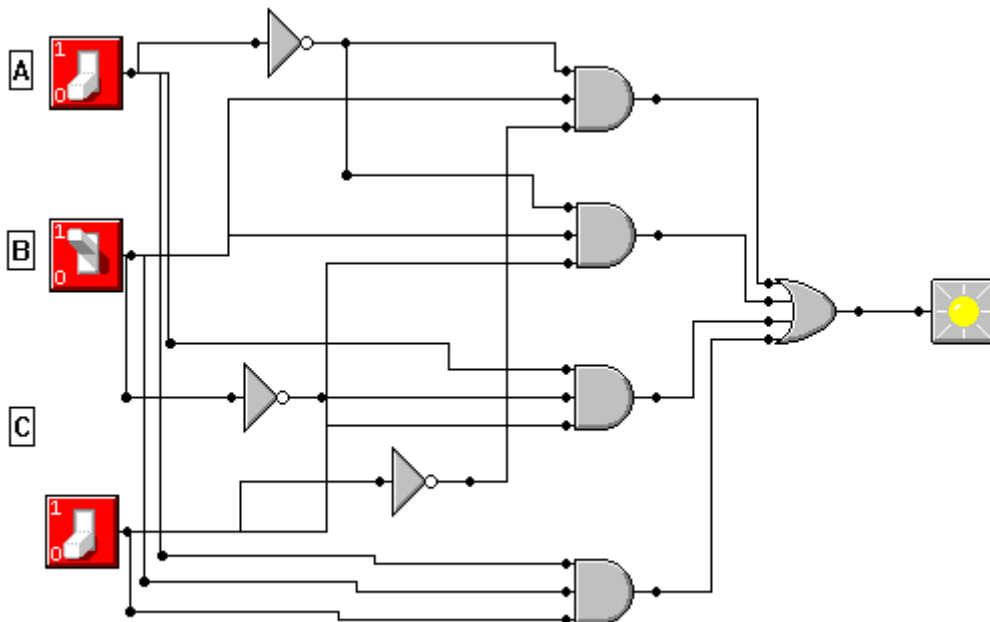
In Dec	A	B	C	Output $F = (A+B+C)$
0	0	0	0	0
1	0	0	1	0
2	0	1	0	1
3	0	1	1	1
4	1	0	0	0
5	1	0	1	1
6	1	1	0	0
7	1	1	1	1

- SoP = $A'BC' + A'BC + AB'C + ABC = F$

b).

$$F = A'BC' + A'BC + AB'C + ABC$$

c).



d).

$$F = A'BC' + A'BC + AB'C + ABC$$

$$= A'(BC' + BC) + AB'C + ABC \text{ (By distributive law)}$$

$$= A'B(C' + C) + AB'C + ABC \text{ (By distributive law)}$$

$$= A'B \cdot 1 + AB'C + ABC \text{ (By inverse law)}$$

$$= AB' + AB'C + ABC \text{ (By identity law)}$$

$$= AB' + A(B'C + BC) \text{ (By distributive law)}$$

$$= AB' + AC(B' + B) \text{ (By distributive law)}$$

$$= AB' + AC \cdot 1 \text{ (By inverse law)}$$

$$= AB' + AC \text{ (By identity law)}$$

$$\underline{\underline{= A(B' + C) \text{ (By distributive law)}}}$$

e)/ f).

