|63472| → Number

Lamian Panakhova 16882

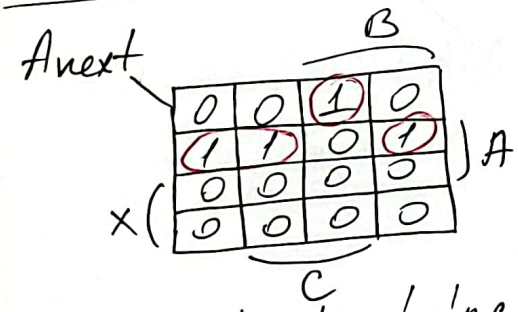
DLD / Assignment 2

Solution;

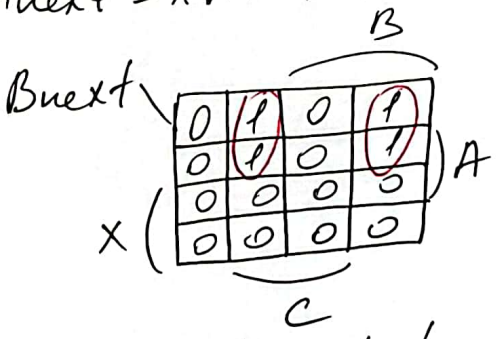
a)

For cnt (counter) circuit;

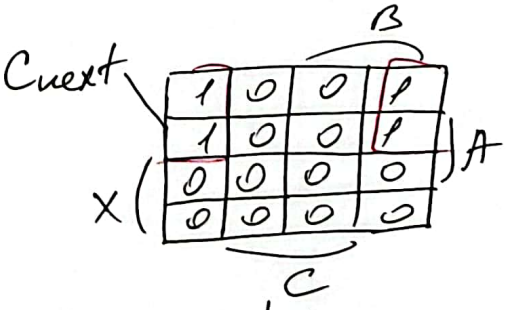
ABC	X=0	X=1
000	001	000
001	010	000
010	011	000
011	100	000
100	101	000
101	110	000
110	111	000
111	000	000



$Anext = x'AB' + x'A'BC + x'ABC'$



$Bnext = x'B'C + x'BC'$

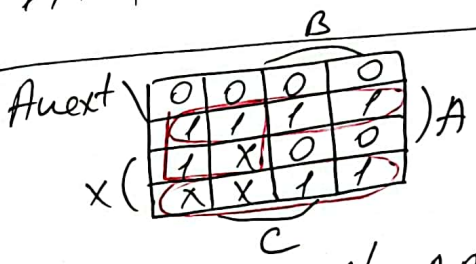


$Cnext = x'C'$

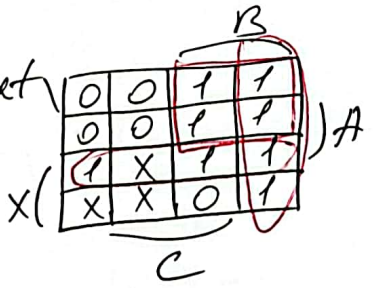
b)

For Display circuit;

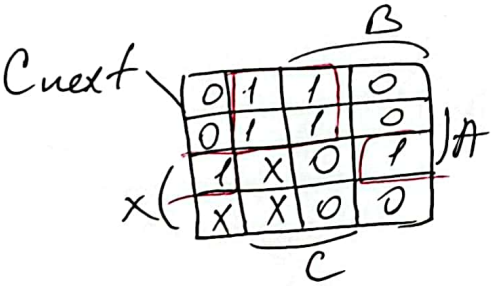
ABC	X=0	X=1
000	000	X
001	001	X
010	010	110
011	011	100
100	100	111
101	101	X
110	110	011
111	111	010



$Anext = x'A + xA' + AB'$

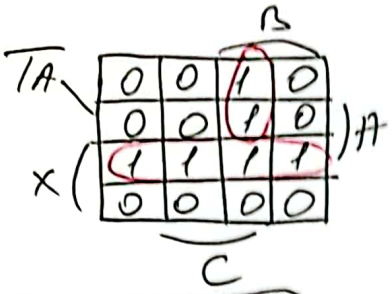


$Bnext = xA + x'B + BC'$



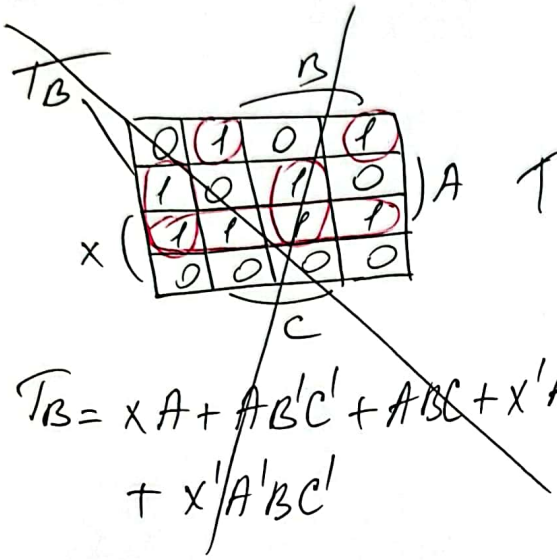
$Cnext = x'C + xAC'$

a)



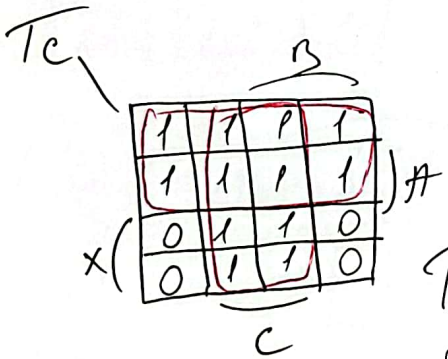
T-flip-flop

$T_A = xA + x'BC$



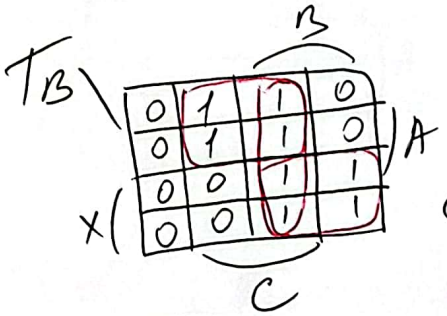
T

$T_B = xA + AB'C' + ABC + x'A'B'C + x'A'BC'$



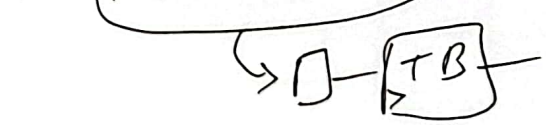
T-flip-flop

$T_C = C + x'$

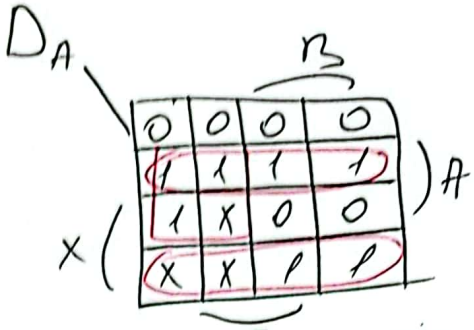


T-flip-flop

$T_B = x'C + BC + xB$

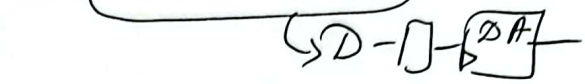


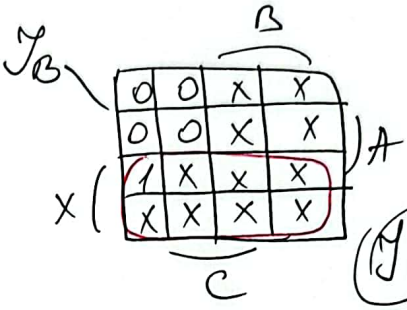
b)



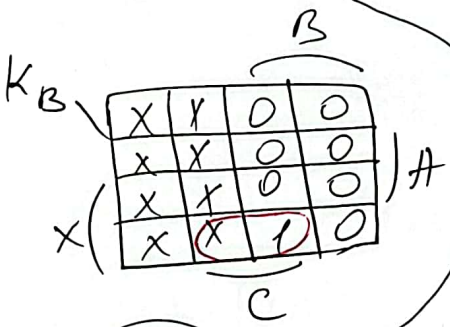
D-flip-flop

$D_A = x'A + xA' + AB'$



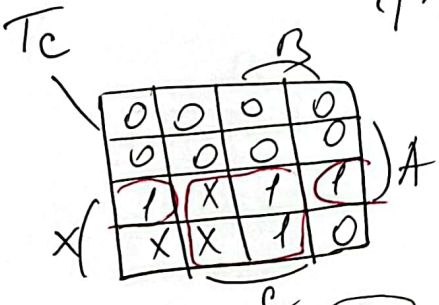


JK flip-flop



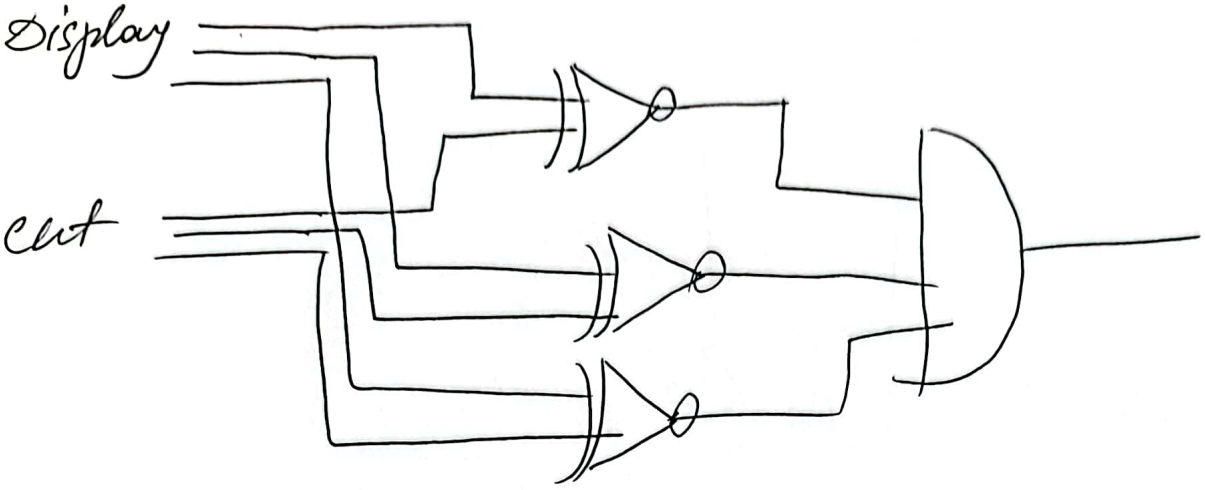
$K_B = xA'C$

T-flip flop



$T_C = xC + xAC'$

The combinational circuit should be;



Now we will combine all circuits; sequential + combinational in one final .circ file.