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## Tarea V (Secuencial)

Resolver el problema del [Lecture 5](#) equivalente a [circuitos secuenciales](#) utilizando Flip flops D, RS, JK y el T

En el PDF del diseño se debe incluir:

1. Tabla de Excitación (Tabla de Verdad)
2. [Mapas de Karnaugh](#) (Deben verse como hizo las agrupaciones)
3. Funciones Obtenidas a traves de los mapas
4. Diagrama Lógico

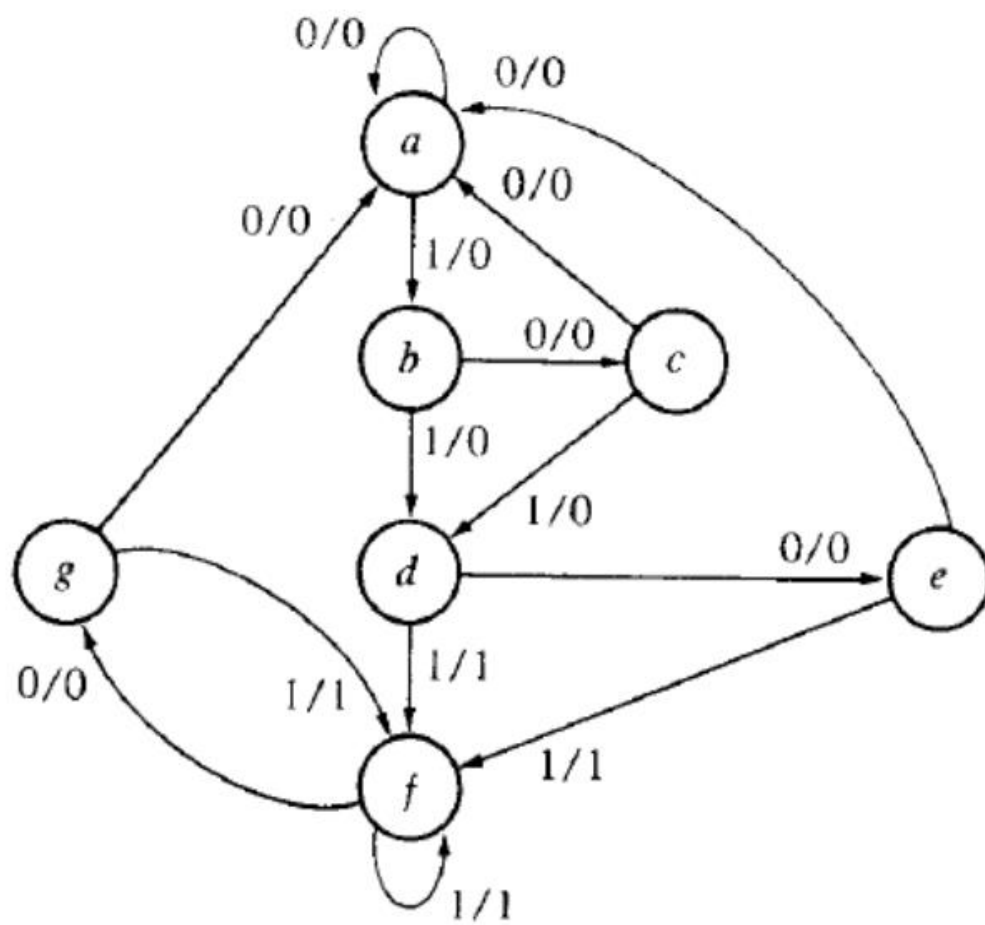


Tabla de verdad RC

Estado presente			X	Estado futuro			
A	B	C		A	B	C	
0	0	0	0	0	0	0	a
0	0	0	1	0	0	1	a
0	0	1	0	0	1	0	b
0	0	1	1	0	1	1	b
0	1	0	0	0	0	0	c
0	1	0	1	0	1	1	c
0	1	1	0	1	0	0	d
0	1	1	1	1	0	1	d
1	0	0	0	0	0	0	e
1	0	0	1	1	0	1	e
1	0	1	0	1	1	0	f
1	0	1	1	1	0	1	f
1	1	0	0	0	0	0	g
1	1	0	1	1	0	1	g

Salidas Flip flops RC					
SA	RA	SB	RB	SC	RC
0	X	0	X	0	X
0	X	0	X	1	0
0	X	1	0	0	1
0	X	1	0	X	0
0	X	0	1	0	X
0	X	X	0	1	0
1	0	0	1	0	1
1	0	0	1	X	0
0	1	0	X	0	X
X	0	0	X	1	0
X	0	1	0	0	1
X	0	0	X	X	0
0	1	0	1	0	X
X	0	0	1	1	0

SA				
AB\CX	00	01	11	10
00	0	0	0	0
01	0	0	1	1
11	0	X	0	0
10	0	X	X	X

A	B	C	D
0	1	1	1
0	1	1	0
A'	B	C	NADA



Por lo tanto, la función es:

$$F = A'BC$$

RA				
AB\CX	00	01	11	10
00	X	X	X	X
01	X	X	0	0
11	1	0	0	0
10	1	0	0	0

$$F = C'X'$$

SB				
AB\CX	00	01	11	10
00	0	0	1	1
01	0	X	0	0
11	0	0	0	0
10	0	0	0	1

$$F = A'B'C + B'CX'$$

RB				
AB\CX	00	01	11	10
00	X	X	0	0
01	1	0	1	1

11	1	1	0	0
10	X	X	X	0

$$F = C'X' + AC' + A'BC$$

SC				
AB\CX	00	01	11	10
00	0	1	X	0
01	0	1	X	0
11	0	1	0	0
10	0	1	X	0

$$F = C'X$$

RC				
AB\CX	00	01	11	10
00	X	0	0	1
01	X	0	0	1
11	X	0	0	0
10	X	0	0	1

$$F = A'X' + B'X'$$

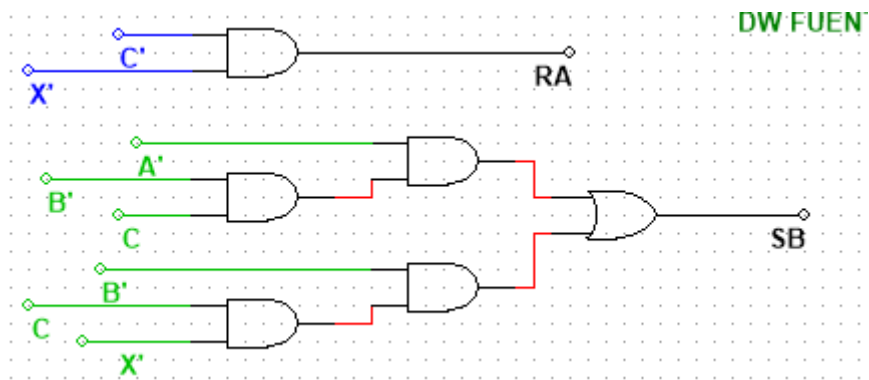
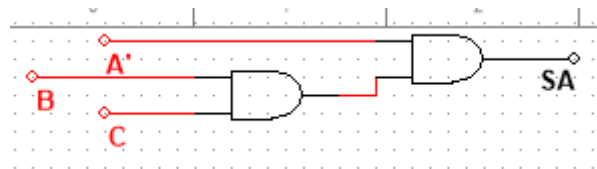
$S$	$R$	$Q(t + 1)$
0	0	$Q(t)$
0	1	0
1	0	1
1	1	?

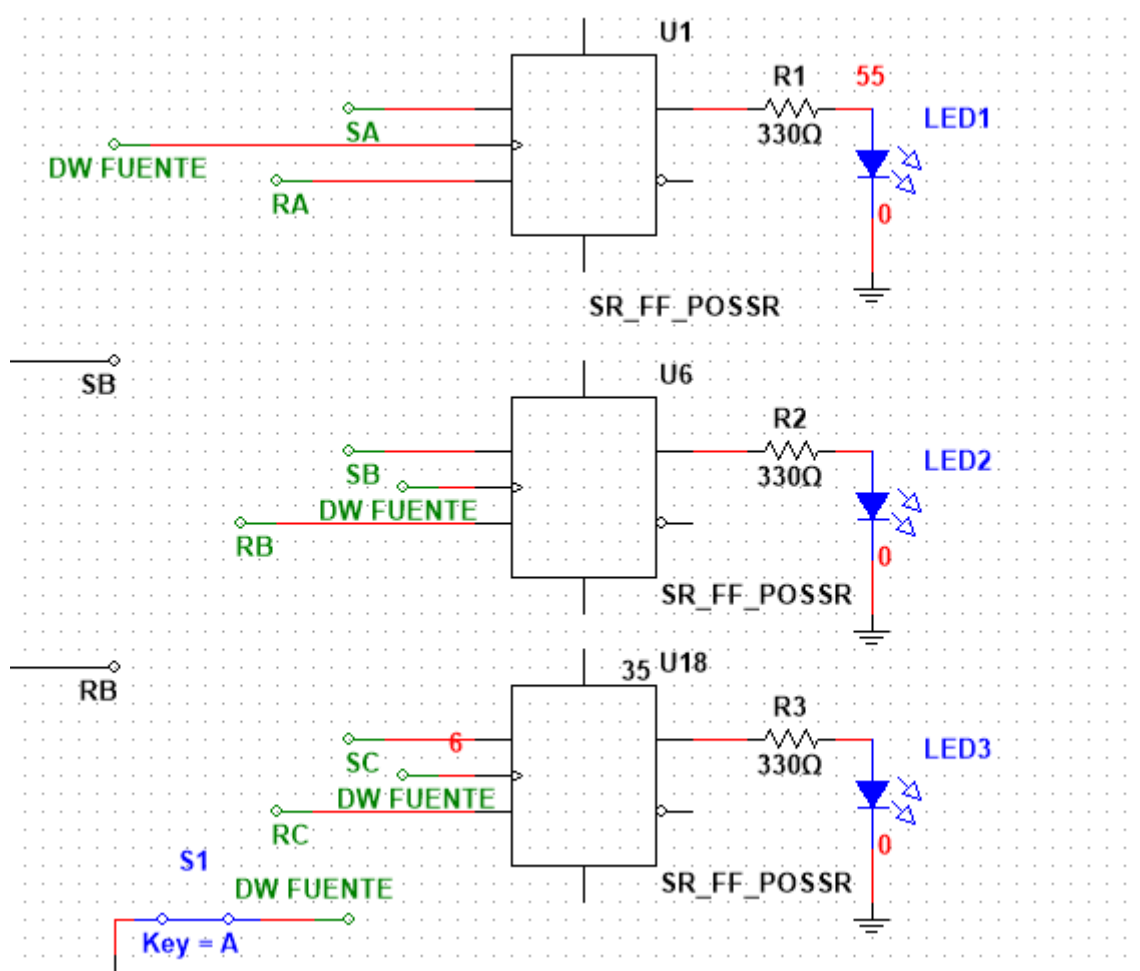
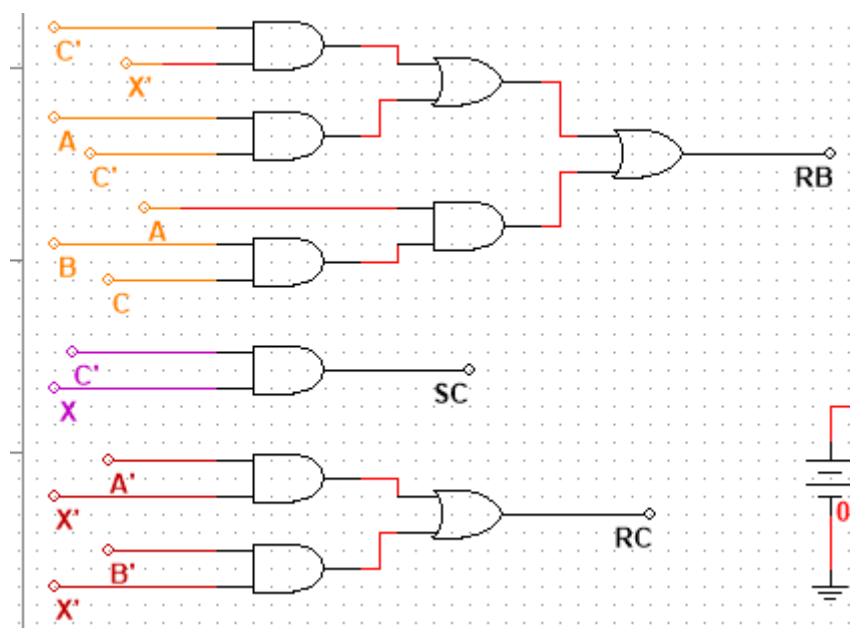
(a)  $RS$

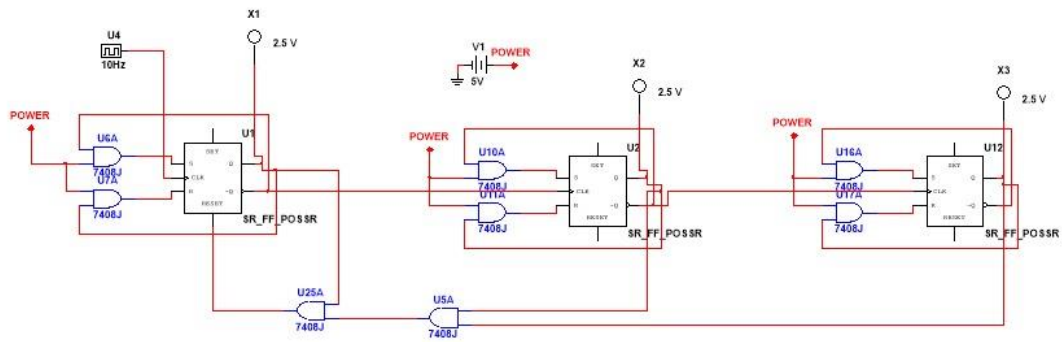
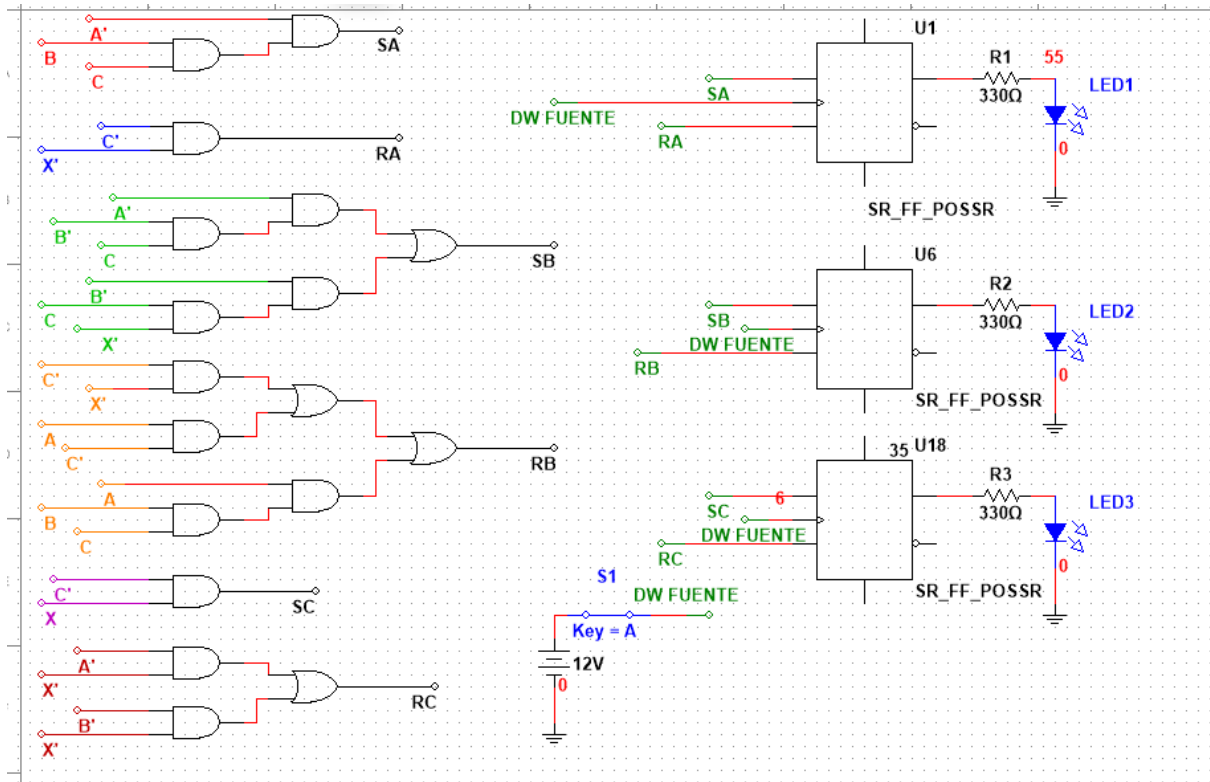
$Q(t)$	$Q(t + 1)$	$S$	$R$
0	0	0	X
0	1	1	0
1	0	0	1
1	1	X	0

(a)  $RS$

Multisim Funciones:









# Flip flops T

Tabla:

Estado presente			X	Estado futuro			
A	B	C		A	B	C	
0	0	0	0	0	0	0	a
0	0	0	1	0	0	1	
0	0	1	0	0	1	0	b
0	0	1	1	0	1	1	
0	1	0	0	0	0	0	c
0	1	0	1	0	1	1	
0	1	1	0	1	0	0	d
0	1	1	1	1	0	1	
1	0	0	0	0	0	0	e
1	0	0	1	1	0	1	
1	0	1	0	1	1	0	f
1	0	1	1	1	0	1	
1	1	0	0	0	0	0	g
1	1	0	1	1	0	1	

Salidas:

TA	TB	TC
0	0	0
0	0	1
0	1	1
0	1	0
0	1	0
0	0	1
1	1	1
1	1	0
1	0	0
0	0	1
0	1	1
0	0	0
1	1	0

0	1	1
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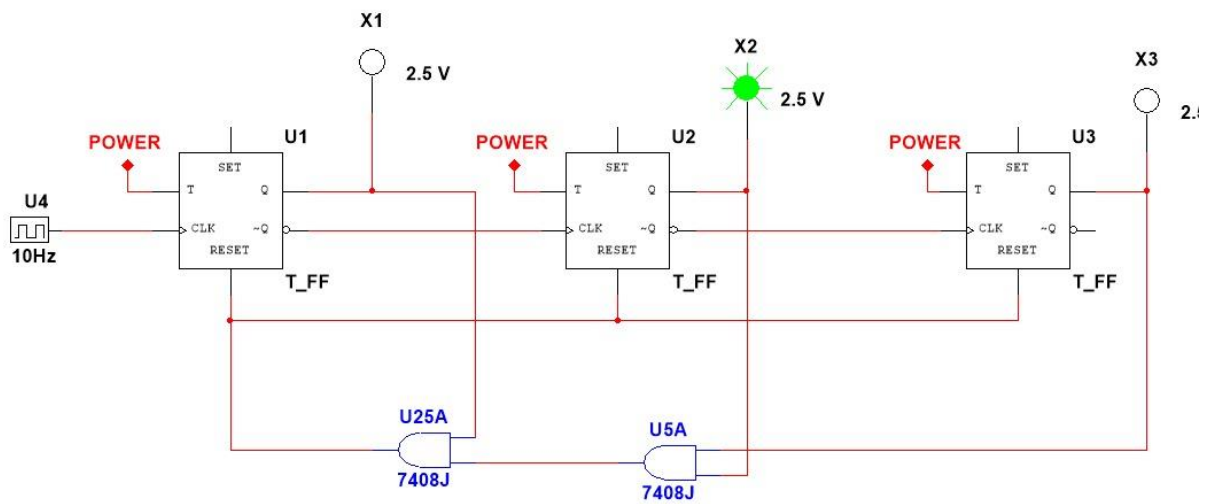
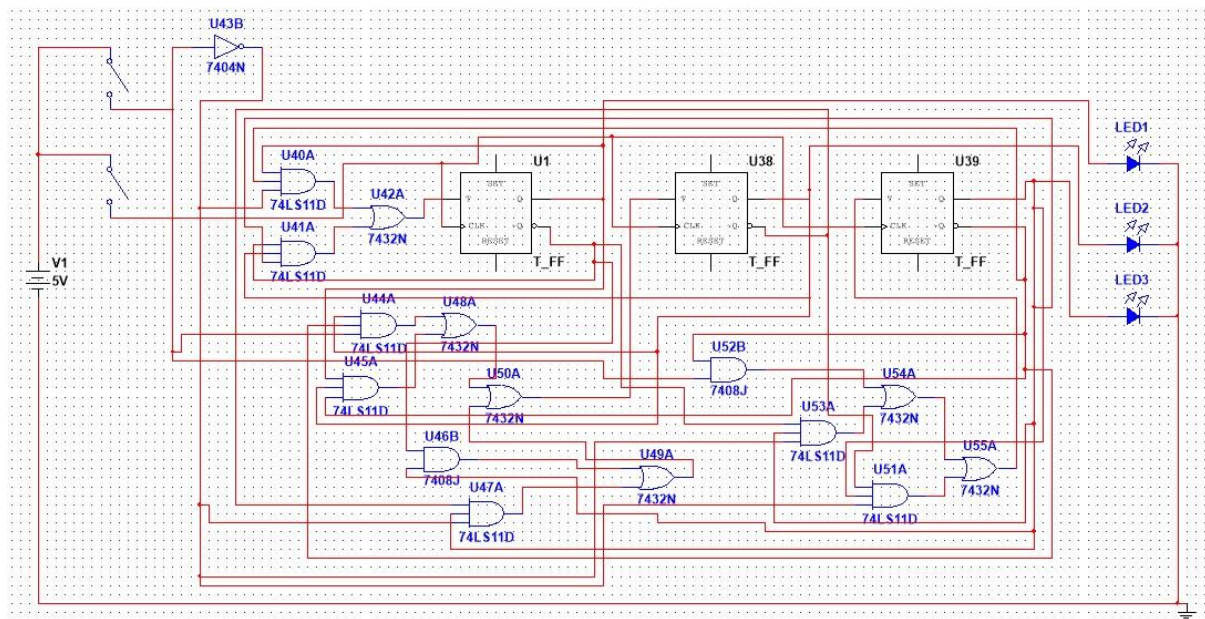
KMaps y ecuaciones:

TA				
AB\CX	00	01	11	10
00	0	0	0	0
01	0	0	1	1
11	1	0	0	0
10	1	0	0	0
<b><math>F = AC'X' + A'BC</math></b>				

TB				
AB\CX	00	01	11	10
00	0	0	1	1
01	1		1	1
11	1	1	0	0
10	0	0	0	1
<b><math>F = BC'X + ABC' + A'C + B'CX'</math></b>				

TC				
AB\CX	00	01	11	10
00	0	1	0	1
01	0	1	0	1
11	0	1	0	0
10	0	1	0	1
<b><math>F = C'X + A'CX' + B'CX'</math></b>				

Multisim:



## Flip flops D

$Q(t)$	$Q(t + 1)$	$D$
0	0	0
0	1	1
1	0	0
1	1	1

(c)  $D$

Tabla:

Estado presente			X	Estado futuro			
A	B	C		A	B	C	
0	0	0	0	0	0	0	a
0	0	0	1	0	0	1	
0	0	1	0	0	1	0	b
0	0	1	1	0	1	1	
0	1	0	0	0	0	0	c
0	1	0	1	0	1	1	
0	1	1	0	1	0	0	d
0	1	1	1	1	0	1	
1	0	0	0	0	0	0	e
1	0	0	1	1	0	1	
1	0	1	0	1	1	0	f
1	0	1	1	1	0	1	
1	1	0	0	0	0	0	g

SALIDAS

DA	DB	DC
0	0	0
0	0	1
0	1	0
0	1	1
0	0	0

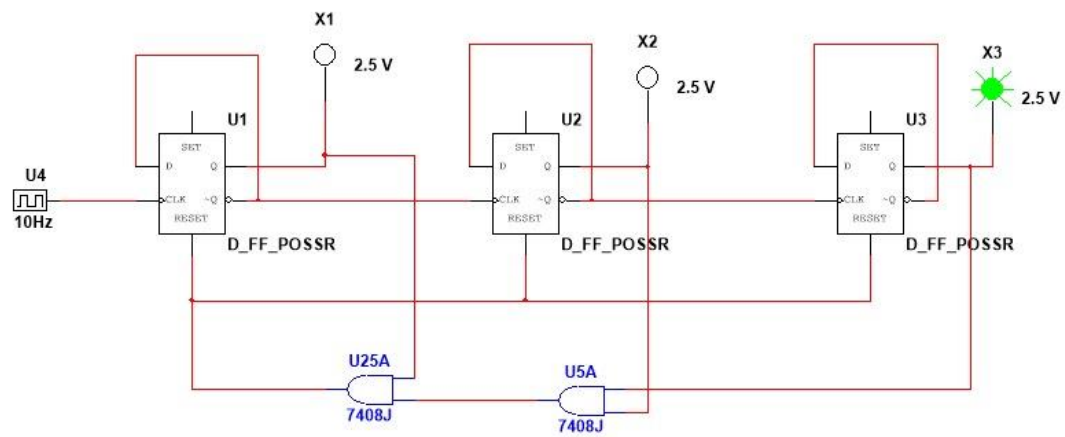
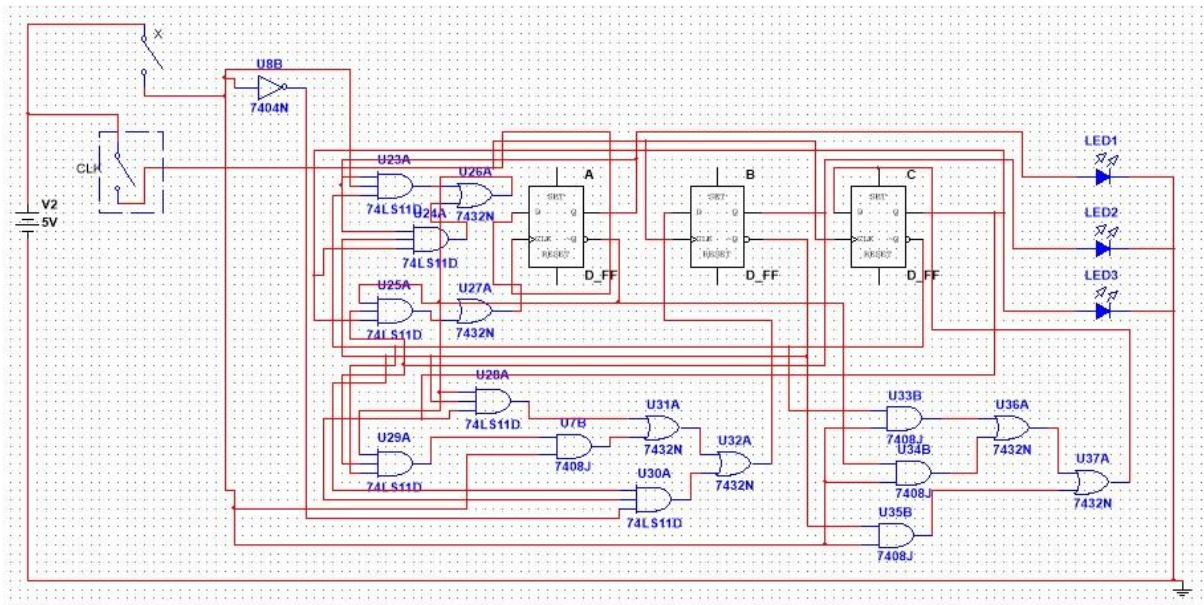
0	1	1
1	0	0
1	0	1
0	0	0
1	0	1
1	1	0
1	0	1
0	0	0
1	0	1

DA				
AB\CX	00	01	11	10
00	1	1	0	0
01	1	1	0	0
11	1	0	0	0
10	1	1	0	0
$F = A'B'C + A'BC'X + B'CX'$				

DB				
AB\CX	00	01	11	10
00	0	0	1	1
01	0	1	0	0
11	0	0	0	0
10	0	0	0	1
$F = A'B'C + A'BC'X + B'CX'$				

DC				
AB\CX	00	01	11	10
00	0	1	1	0
01	0	1	1	0
11	0	1	0	0
10	0	1	1	0
$F = C'X + A'X + B'X$				

## Multisim:



## Flip flops JK

Tabla:

Estado presente			X	Estado futuro			
A	B	C		A	B	C	
0	0	0	0	0	0	0	a
0	0	0	1	0	0	1	
0	0	1	0	0	1	0	b
0	0	1	1	0	1	1	
0	1	0	0	0	0	0	c
0	1	0	1	0	1	1	
0	1	1	0	1	0	0	d
0	1	1	1	1	0	1	
1	0	0	0	0	0	0	e
1	0	0	1	1	0	1	
1	0	1	0	1	1	0	f
1	0	1	1	1	0	1	
1	1	0	0	0	0	0	g
1	1	0	1	1	0	1	

SALIDAS:

Salidas Flip flops RC					
JA	KA	JB	KB	JC	KC
0	X	0	X	0	X
0	X	0	X	1	X
0	X	1	X	X	1
0	X	1	X	X	0
0	X	X	1	0	X
0	X	X	0	1	X
1	X	X	1	X	1
1	X	X	1	X	0
X	1	0	X	0	X
X	0	0	X	1	X
X	0	1	X	X	1
X	0	0	X	X	0
X	1	X	1	0	X
X	0	X	1	1	X

Kmaps:

JA				
AB\CX	00	01	11	10
00	0	0	0	0
01	0	0	1	1
11	X	X	0	0
10	X	X	X	X
$F = A'BC$				

KA				
AB\CX	00	01	11	10
00	X	X	X	X
01	X	X	X	X
11	1	X	0	0
10	1	0	0	0
$F = C'X'$				

JB				
AB\CX	00	01	11	10
00	0	0	1	1
01	X	X	X	X
11	X	X	0	0
10	0	0	0	1
$F$ $= B'CX' + A'C$				

KB				
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AB\CX	00	01	11	10
00	X	X	X	X
01	1	0	1	1
11	1	1	X	X
10	X	X	X	X
<b>F</b> <b>=X'+C+A</b>				

JC				
AB\CX	00	01	11	10
00	0	1	X	X
01	0	1	X	X
11	0	1	0	0
10	0	1	X	X
<b>F = C'X</b>				

KB				
AB\CX	00	01	11	10
00	X	X	0	1
01	X	X	0	1
11	X	X	0	0
10	X	X	0	1
<b>F</b> <b>=A'X'+B'X'</b>				

Multisim:

