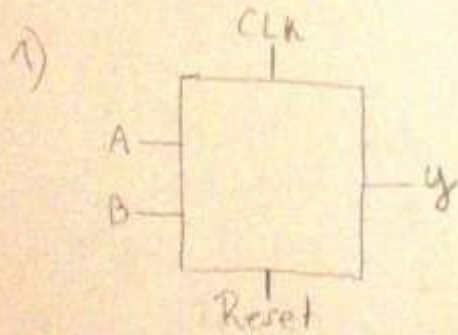
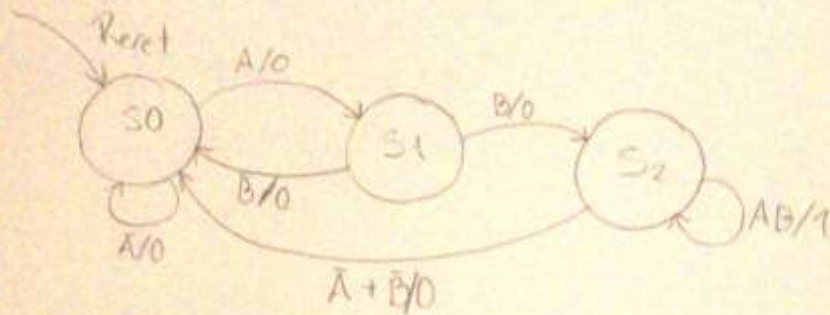


# Hoja de trabajo # 6

## Ejercicio 1



2)

S	A	B	S'	Y
S0	1	x	S1	0
S0	0	x	S0	0
S1	x	1	S2	0
S1	x	0	S0	0
S2	0	0	S0	0
S2	1	1	S2	1

Codificación

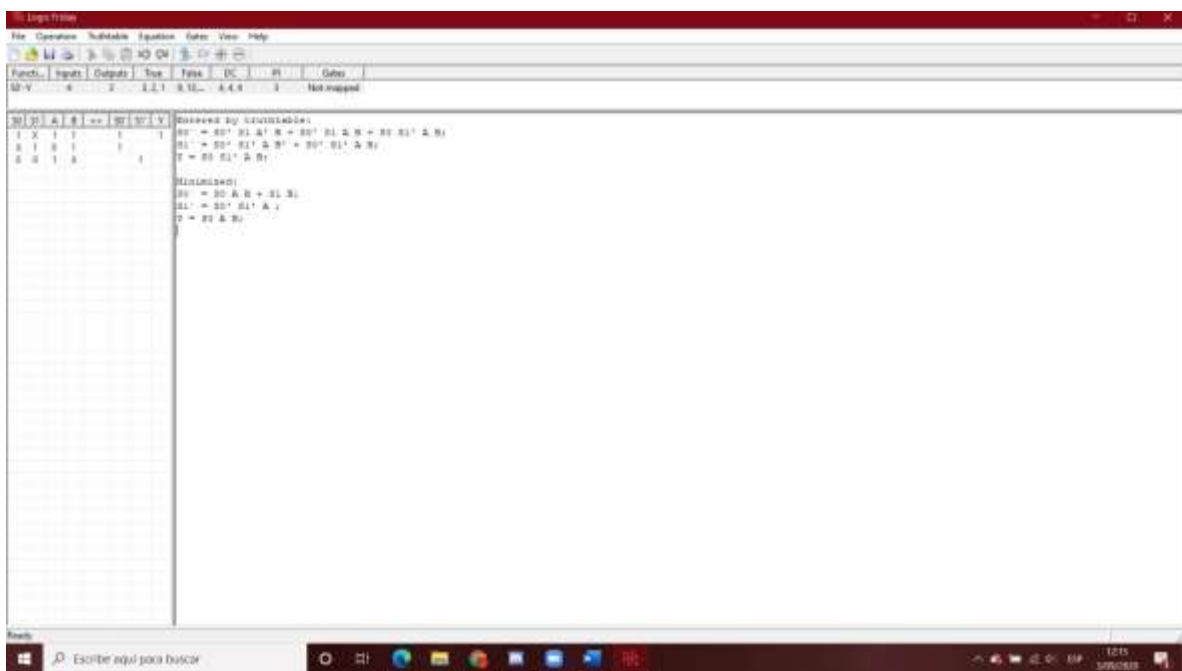
00 = S0

01 = S1

10 = S2

3)

$S_0 S_1$	A	B	$S_0' S_1'$	Y
00	1	x	01	0
00	0	x	00	0
01	x	1	10	0
01	x	0	00	0
10	0	0	00	0
10	1	1	10	1



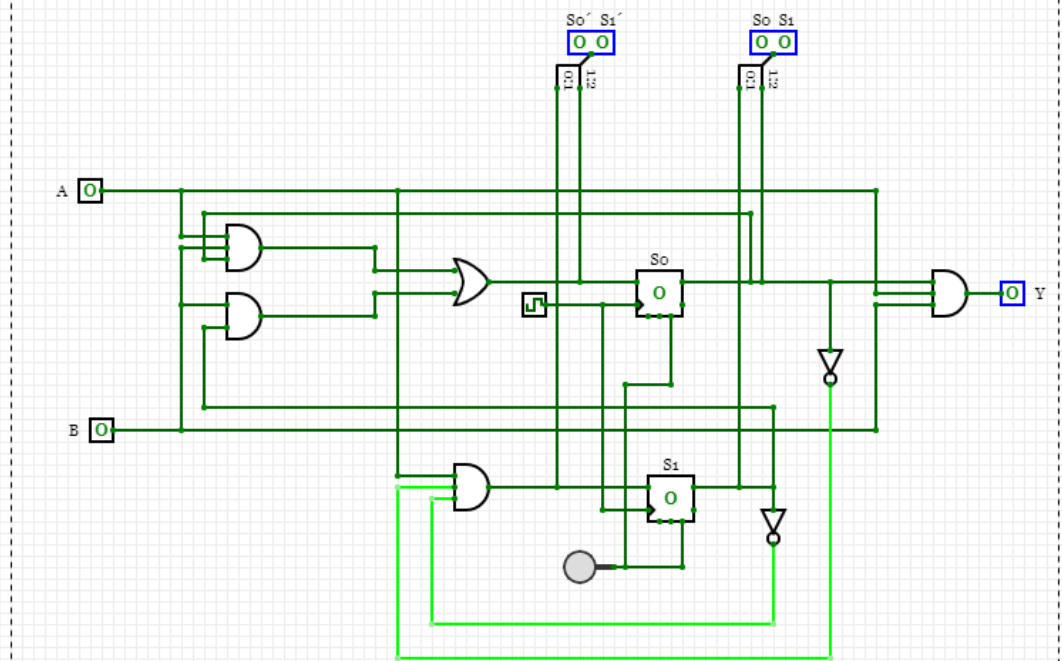
3)

$$S_0' = S_1 B + S_0 A B$$

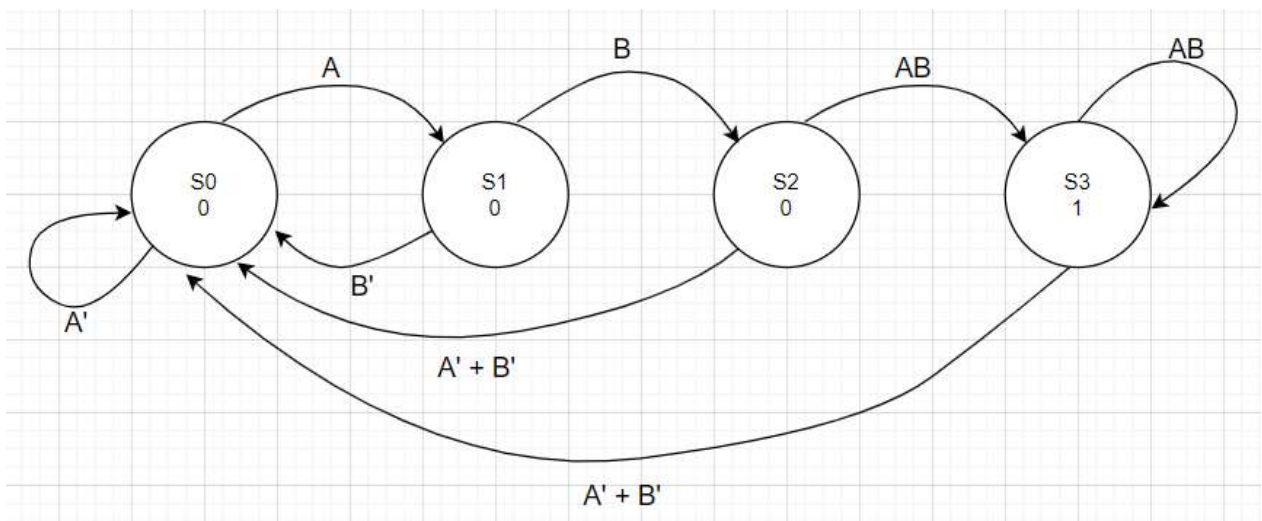
$$S_1' = S_0' S_1' A$$

$$Y = S_0 A B$$

### CIRCUITO DEL EJERCICIO 1

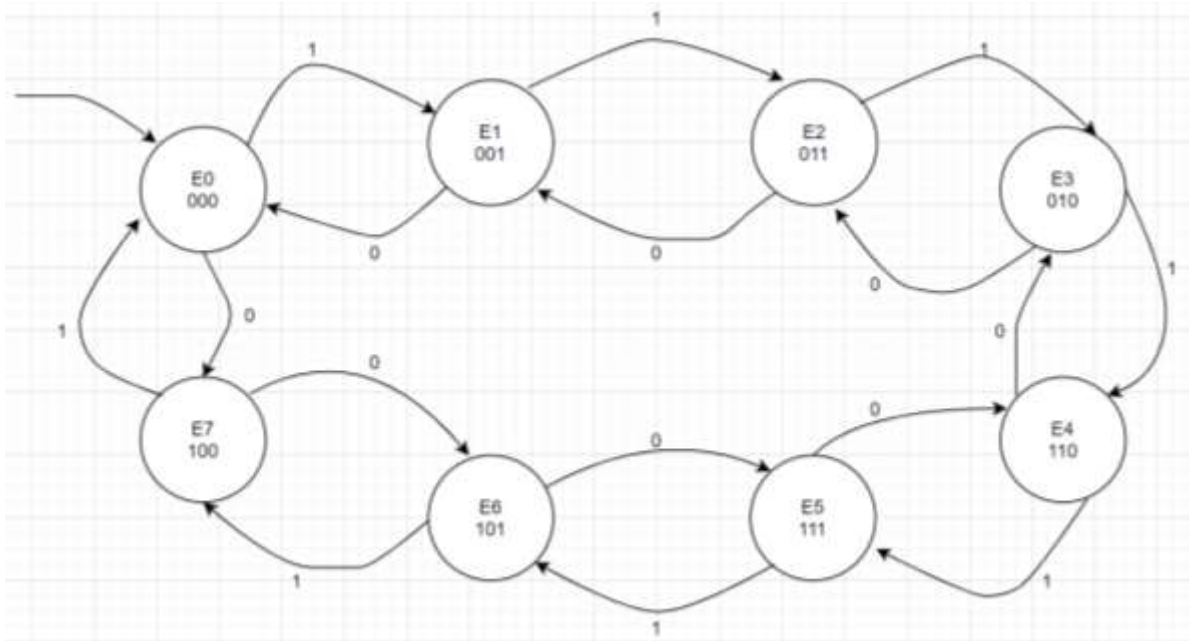


## EJERCICIO 2

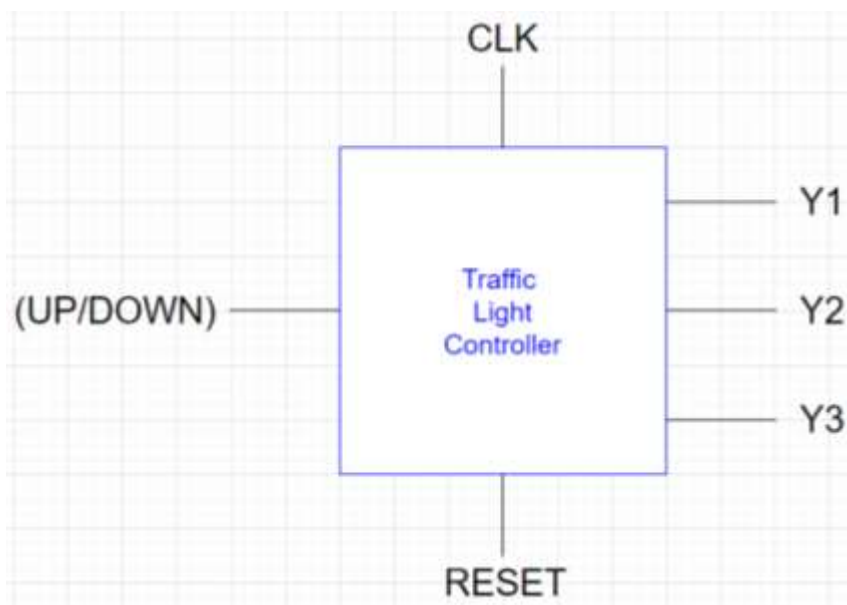


### EJERCICIO 3

a)



b)



# Ejercicio 3

Q

Current State	Input	Next State
E0	0	E7
E0	1	E1
E1	0	E0
E1	1	E2
E2	0	E1
E2	1	E3
E3	0	E2
E3	1	E4
E4	0	E3
E4	1	E5
E5	0	E4
E5	1	E6
E6	0	E5
E6	1	E7
E7	0	E6
E7	1	E0

State	Encoding
E0	000
E1	001
E2	010
E3	011
E4	100
E5	101
E6	110
E7	111



d)

Current State			Input	Next State		
$S_2$	$S_1$	$S_0$	(up/down)	$S_2'$	$S_1'$	$S_0'$
0	0	0	0	1	1	1
0	0	0	1	0	0	1
0	0	1	0	0	0	0
0	0	1	1	0	1	0
0	1	0	0	0	0	1
0	1	0	1	0	1	1
0	1	1	0	0	1	0
0	1	1	1	1	0	0
1	0	0	0	0	1	1
1	0	0	1	1	0	1
1	0	1	0	1	0	0
1	0	1	1	1	1	0
1	1	0	0	1	0	1
1	1	0	1	1	1	1
1	1	1	0	1	1	0
1	1	1	1	0	0	0

Current State			Out Puts		
$S_2$	$S_1$	$S_0$	$Y_1$	$Y_2$	$Y_3$
0	0	0	0	0	0
0	0	1	0	0	1
0	1	0	0	1	1
0	1	1	0	1	0
1	0	0	1	1	0
1	0	1	1	1	1
1	1	0	1	0	1
1	1	1	1	0	0

e)

File Operation TruthTable Equation Gates View Help

Func...	Inputs	Outputs	True	False	DC	Pi	Gates
S2-S0	4	3	0,0,0	0,0,0	0,0,0	0	Not mapped

Entered by truthtable:

$$S2' = S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN}$$

$$S1' = S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN}$$

$$S0' = S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN}$$

Minimized:

$$S2' = S2' S1' S0' \text{ UP/DOWN}' + S2' S1' S0' \text{ UP/DOWN} + S2' S0' \text{ UP/DOWN}' + S2' S1' \text{ UP/DOWN} + S2' S1' S0' ;$$

$$S1' = S1' S0' \text{ UP/DOWN}' + S1' S0' \text{ UP/DOWN} + S1' S0' \text{ UP/DOWN}' + S1' S0' \text{ UP/DOWN}$$

$$S0' = S0' ;$$

File Operation TruthTable Equation Gates View Help

Func...	Inputs	Outputs	True	False	DC	Pi	Gates
Y1-Y3	3	3	0,0,0	0,0,0	0,0,0	5	Not mapped

Entered by truthtable:

$$Y1 = S2' S1' S0' + S2' S1' S0 + S2' S1' S0' + S2' S1' S0;$$

$$Y2 = S2' S1' S0' + S2' S1' S0 + S2' S1' S0' + S2' S1' S0;$$

$$Y3 = S2' S1' S0 + S2' S1' S0' + S2' S1' S0 + S2' S1' S0';$$

Minimized:

$$Y1 = S2 ;$$

$$Y2 = S2' S1 + S2 S1' ;$$

$$Y3 = S1 S0' + S1' S0 ;$$

F) 
$$S2' = (S2' S1 S0 \text{ u/d}) + (S2' S1' S0' \text{ u/d}) + (S2 S0 \text{ u/d}) + (S2 S1' \text{ u/d}) + (S2 S1 S0)$$

$$S1' = (S1 S0 \text{ u/d}) + (S1' S0 \text{ u/d}) + (S1' S0' \text{ u/d}) + (S1 S0' \text{ u/d})$$

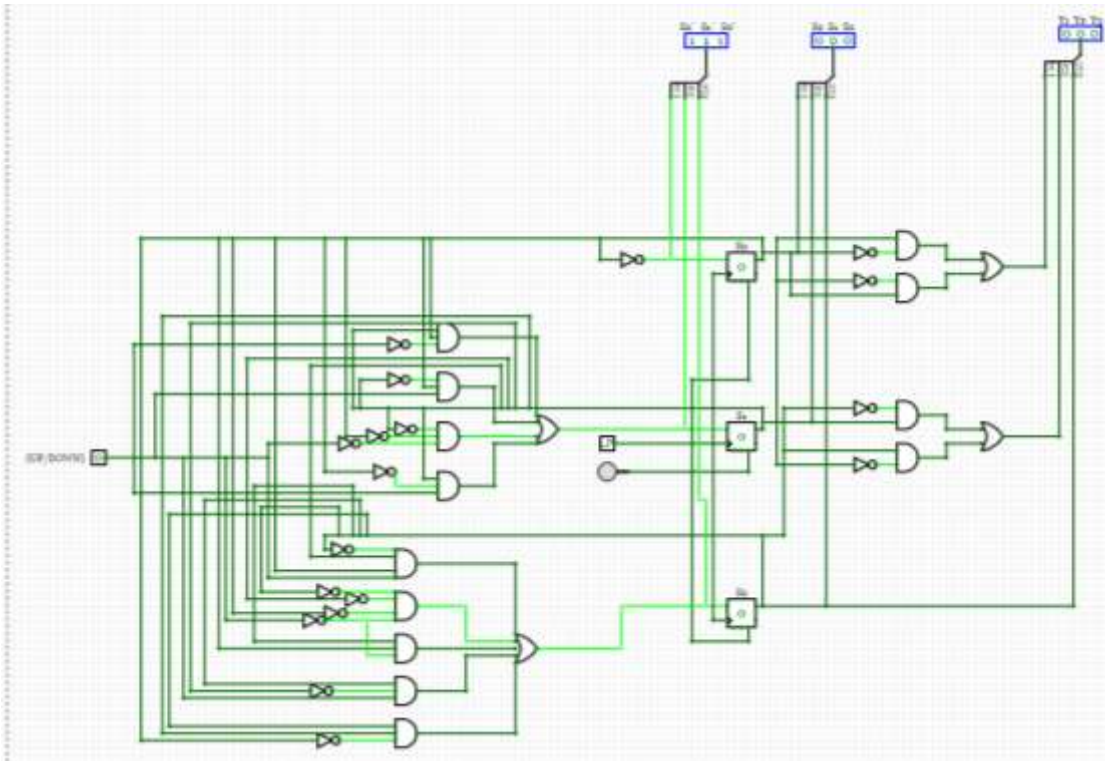
$$S0' = S0'$$

$$Y1 = S2$$

$$Y2 = (S2' S1) + (S2 S1')$$

$$Y3 = (S1 S0') + (S1' S0)$$

G)



#### EJERCICIO 4

##### Blocking Assignment

En este se evalúa y se determina en un solo paso.

##### Ejemplo

```
always @(posedge i_clock)
begin
    r_Test_1 = 1'b1;
    r_Test_2 = r_Test_1;
    r_Test_3 = r_Test_2;
end
```

##### Non-Blocking Assignment

Se evalúa y se asigna en dos pasos, en el primer paso el lado derecho se evalúa inmediatamente y en el segundo paso la asignación del lado izquierdo se pospone hasta que se completan otras evaluaciones en el período de tiempo actual.

##### Ejemplo

```
always @(posedge i_clock)
begin
    r_Test_1 <= 1'b1;
    r_Test_2 <= r_Test_1;
    r_Test_3 <= r_Test_2;
end
```



