

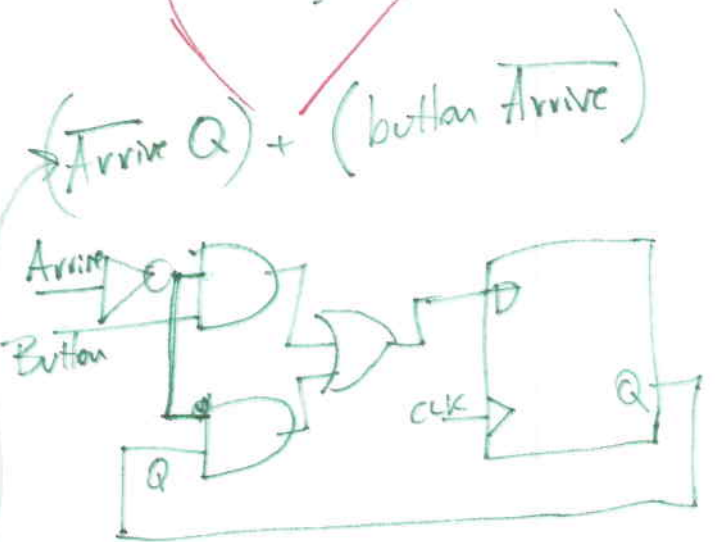
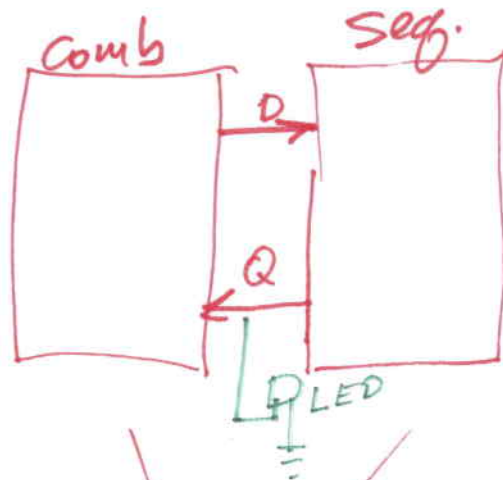
Light the elevator button that shows you want to go up, and turns off when the elevator arrives. ①

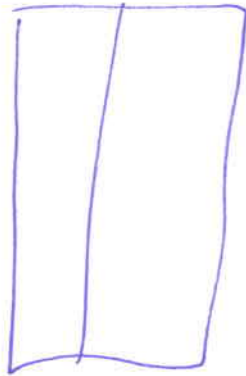
Inputs: button press
elevator arrives at floor
Output: "light the button"

Solution:

button	Arrive	Q	D
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

button	Arrive		Q	
	00	01	10	11
0		1		
1	1	1		





Light the two elevator buttons (up, down) ②

Inputs: press up button (UP)
 press down button (DN)
 Elevator arrive, going UP (TUP)
 Elevator arrive, going DN (TDN)
 (Q for UP) (QUP)
 (Q of DN) (QDN)

Outputs: Light for UP (QUP)
 Light for Down (QDN)

Design:

- Step #1: Truth table
- Step #2: Comb circuit
- Step #3: Draw.

Solution:

Observe → each button is really a separate situation → work on two problems

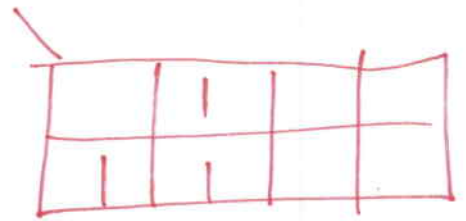
Digital Design

Up circuit & Down circuit

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(3)

DN	T DN	Q DN	D
UP	T UP	Q UP	
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0



$$(UP \overline{TUP}) + (QUPTUP) = D_{(UP)}$$

$$(DN \overline{T DN}) + (QDN T DN) = D_{(DN)}$$

