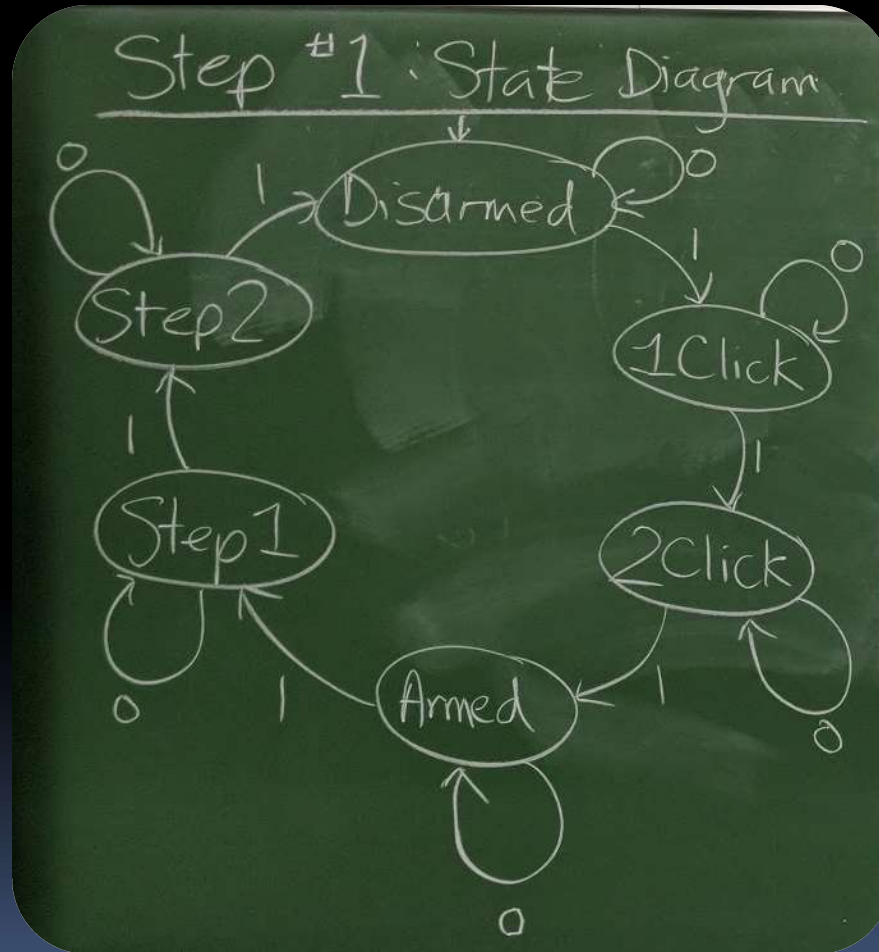


[illegible]

FSM task

- Exploding pen from Goldeneye (James Bond)
 - Three clicks to arm,
 - Three clicks to disarm.
- Note how the design differs as a result of choosing different flip-flop assignments!

Step 1: State Diagram



Step 2: State Table

Step #2: State Table

Prev. State	Click	Next State
Disarmed	0	Disarmed
Disarmed	1	1Click
1Click	0	1Click
1Click	1	2Click
2Click	0	2Click
2Click	1	Armed
Armed	0	Armed
Armed	1	Step1
Step1	0	Step1
Step1	1	Step2
Step2	0	Step2
Step2	1	Disarmed

Step 3: Flip Flop Assignments

Step #3 Flip-Flop Assignments

State	F_2	F_1	F_0
Disarmed	0	0	0
1 Click	0	0	1
2 Click	0	1	1
Armed	1	1	1
Step 1	1	1	0
Step 2	1	0	0

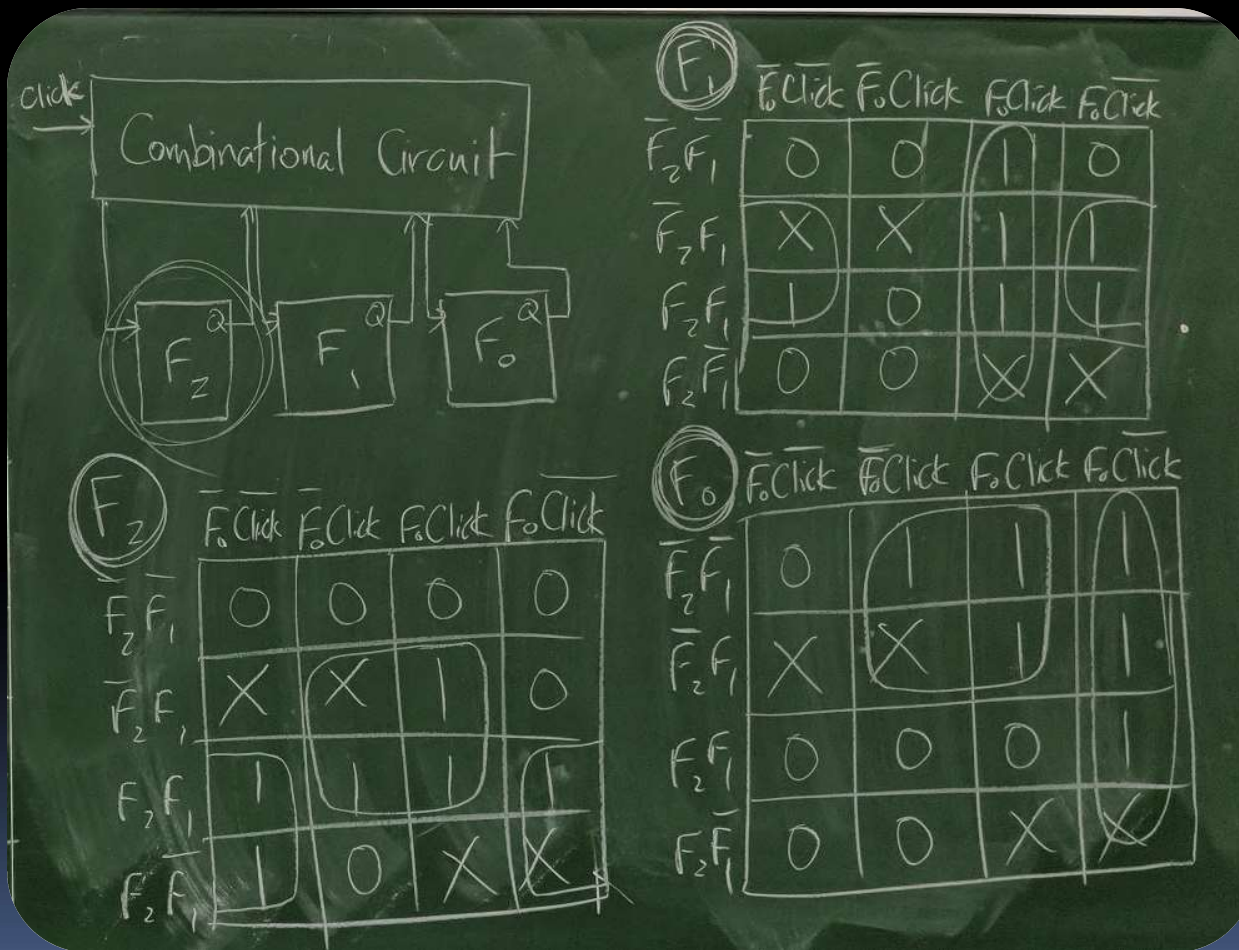
F_2	F_1	F_0
0	0	0
0	0	1
0	1	0
0	1	1
1	0	0
1	0	1

DANGER

Step 4: State Table, updated

F_2	F_1	F_0	Click	F_2	F_1	F_0
0	0	0	0	0	0	0
0	0	0	1	0	0	1
0	0	1	0	0	0	1
0	0	1	1	0	1	1
0	1	1	0	0	1	1
0	1	1	1	1	1	1
1	1	1	0	1	1	1
1	1	1	1	1	1	0
1	1	0	0	1	1	0
1	1	0	1	1	0	0
1	0	0	0	1	0	0
1	0	0	1	0	0	0

Step 5: Circuit Design



Step 5: Circuit Design

$$F_2 = F_2 \overline{\text{Click}} + F_1 \text{Click}$$

$$F_1 = F_1 \overline{\text{Click}} + F_0 \text{Click}$$

$$F_0 = F_0 \overline{\text{Click}} + \overline{F_2} \text{Click}$$

$$Y = F_2 \leftarrow \text{Output}$$

Step 5: Circuit Design

