

Microwave project

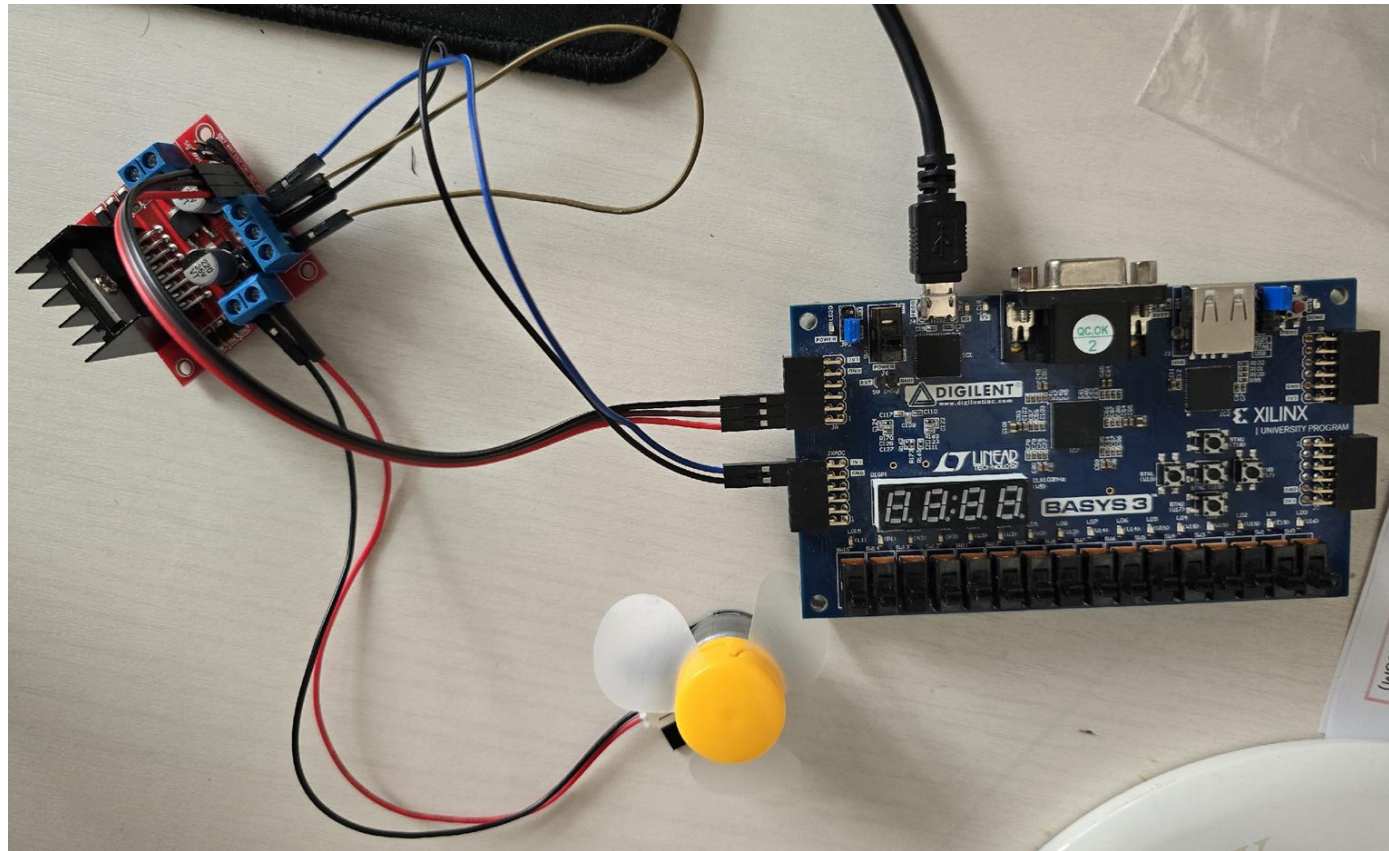
AI시스템반도체설계(2기)
엄찬하

개요

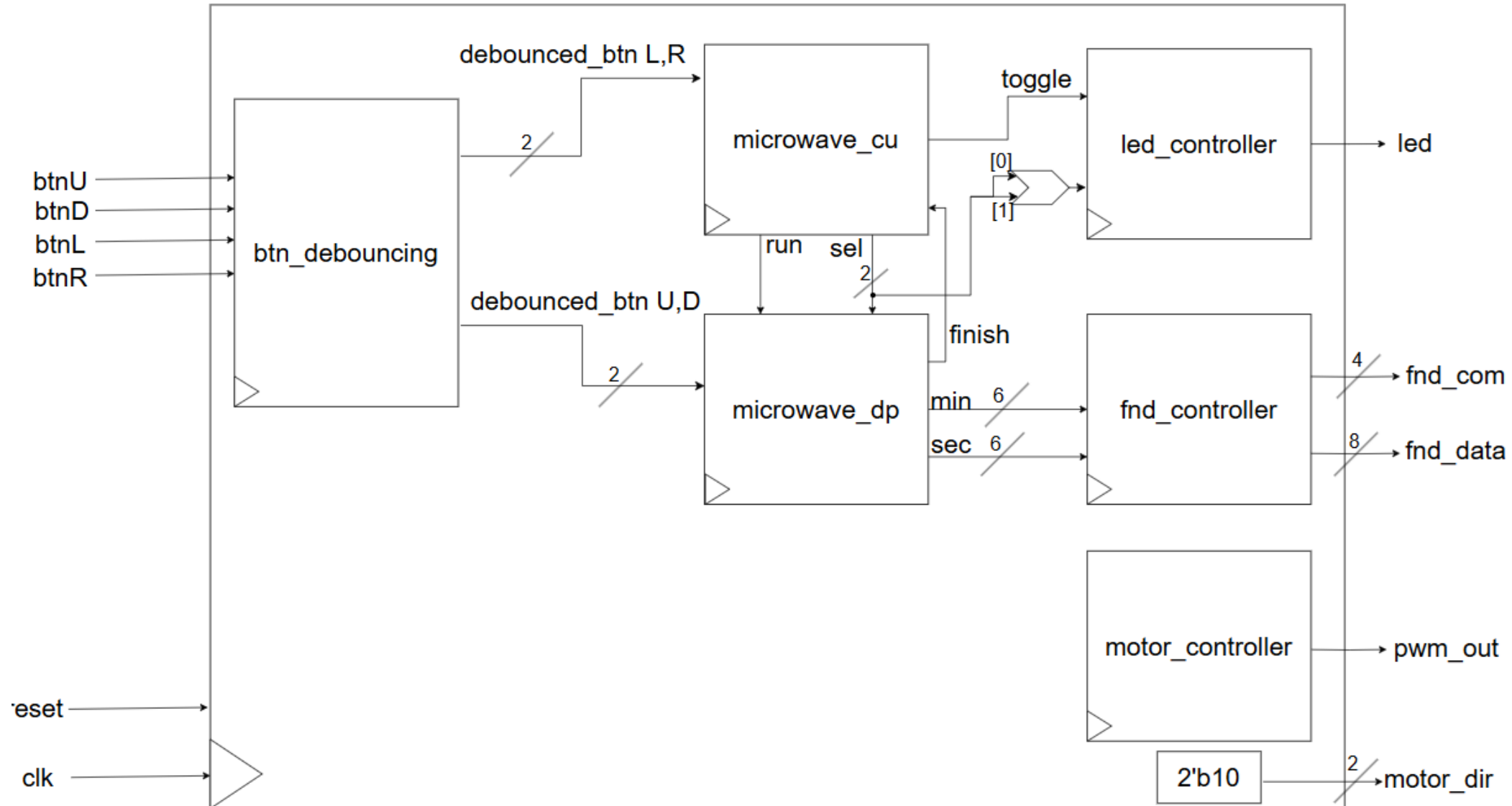
- Basys3 FPGA 보드와 DC 모터, L298N 모터 드라이버를 이용한 전자레인지 설계
- 사용한 부품: JA port, dip switch 0번, 버튼 5개, led 0번, L298N, DC motor
- 사용: Verilog, Vivado

개요

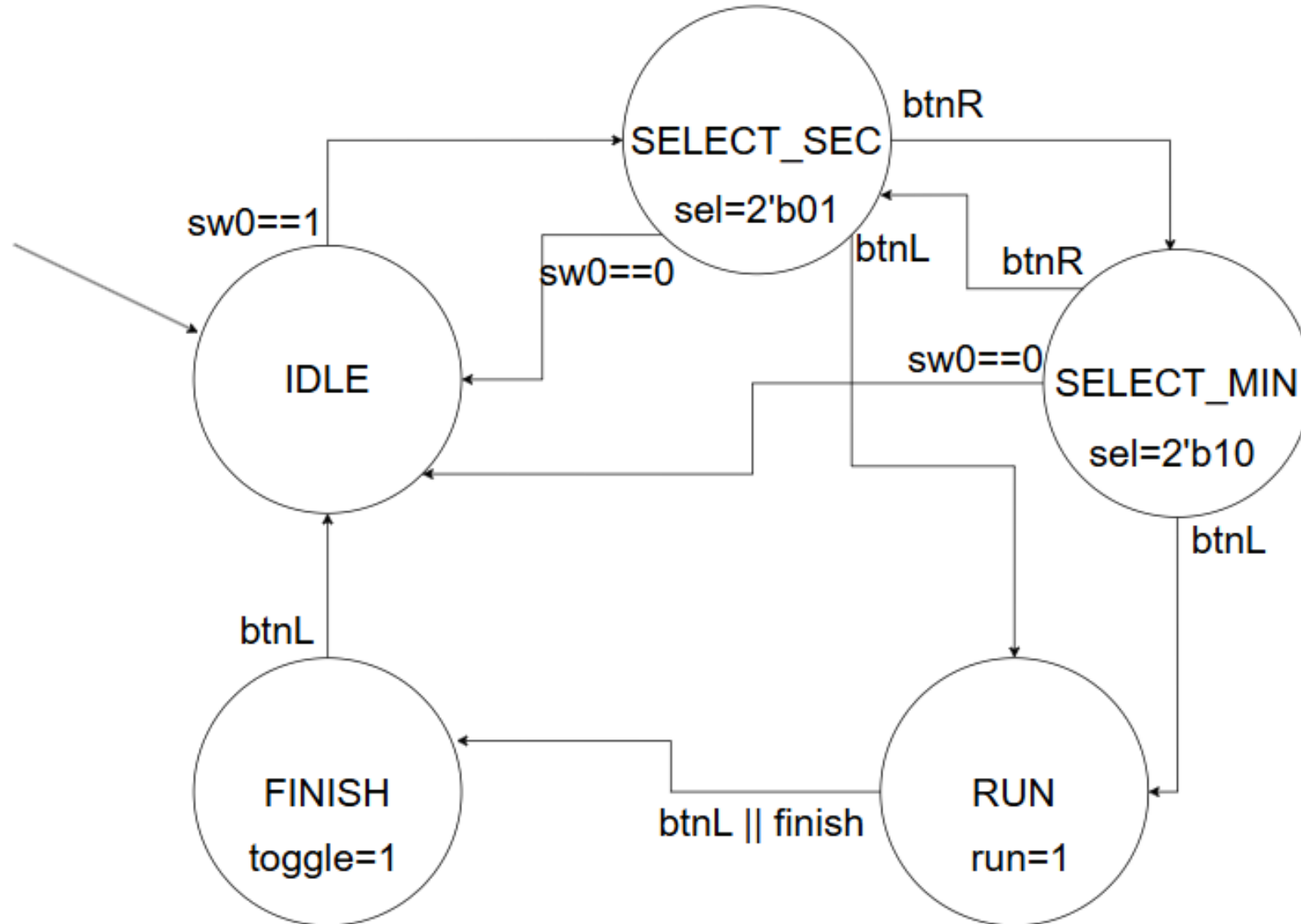
- 구성 사진



아키텍처



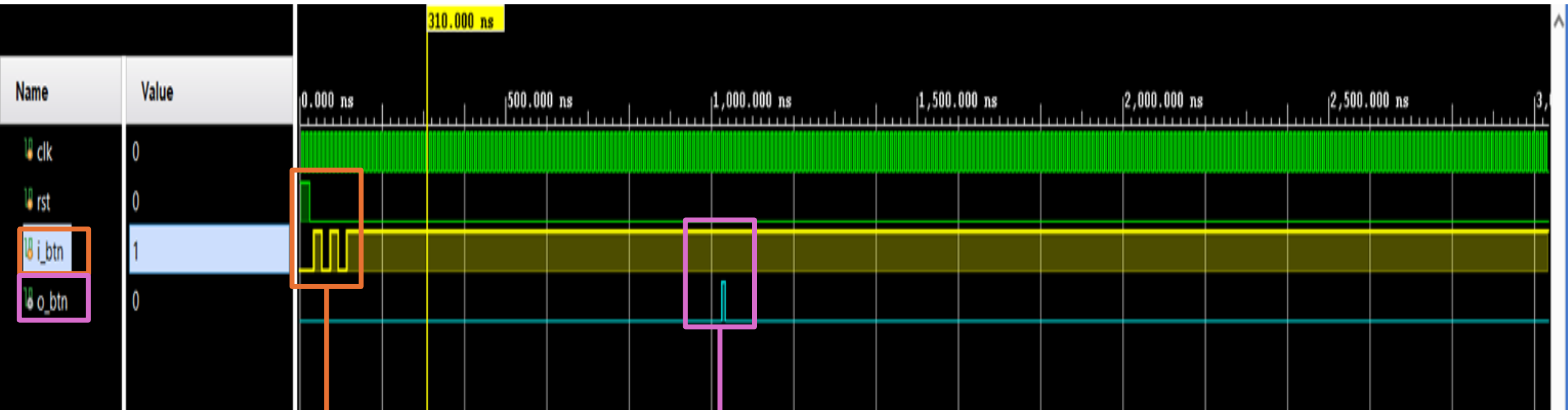
FSM(Microwave CU)



Simulation

- Btn debounce와 전체 code simulation
- 실제 시간과 다르게, count를 1000->10, 1000_000->100으로 낮춰 simulation

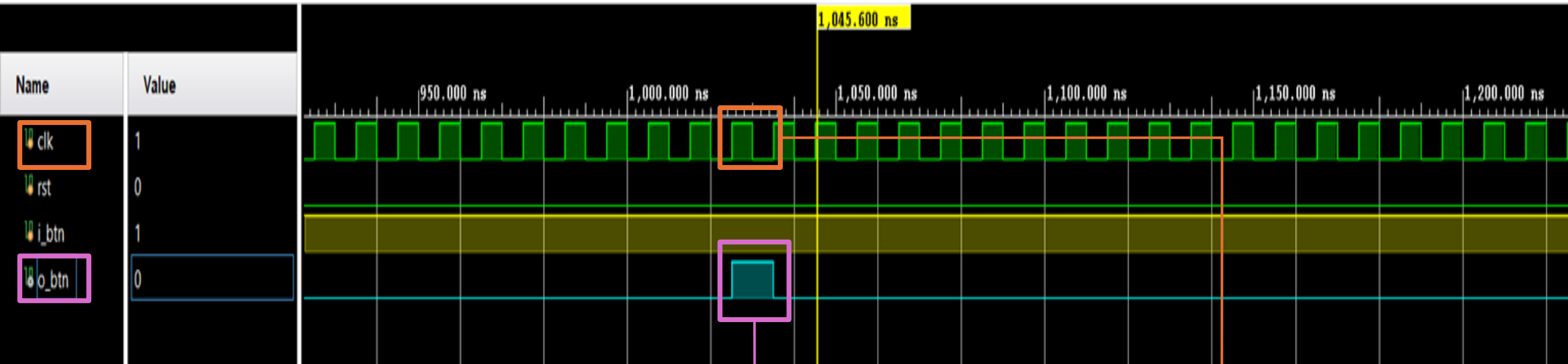
Simulation(btn debounce)



버튼을 눌렀을 때 chattering

10ms후 btn값을 읽어 노이즈 값을 읽는 것을 방지

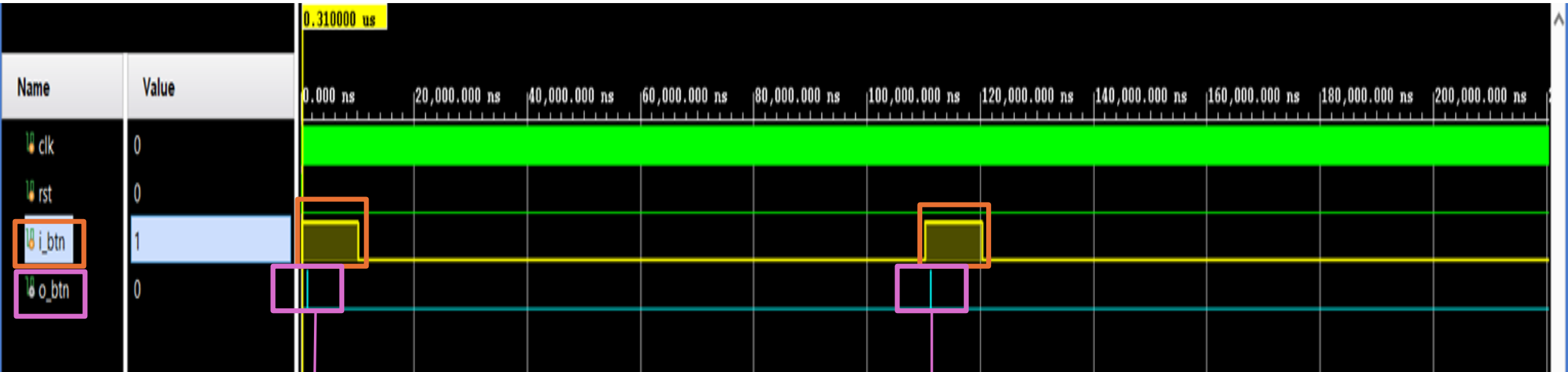
Simulation(btn debounce)



1clk만 btn tick 생성(10ms 지난 시점)

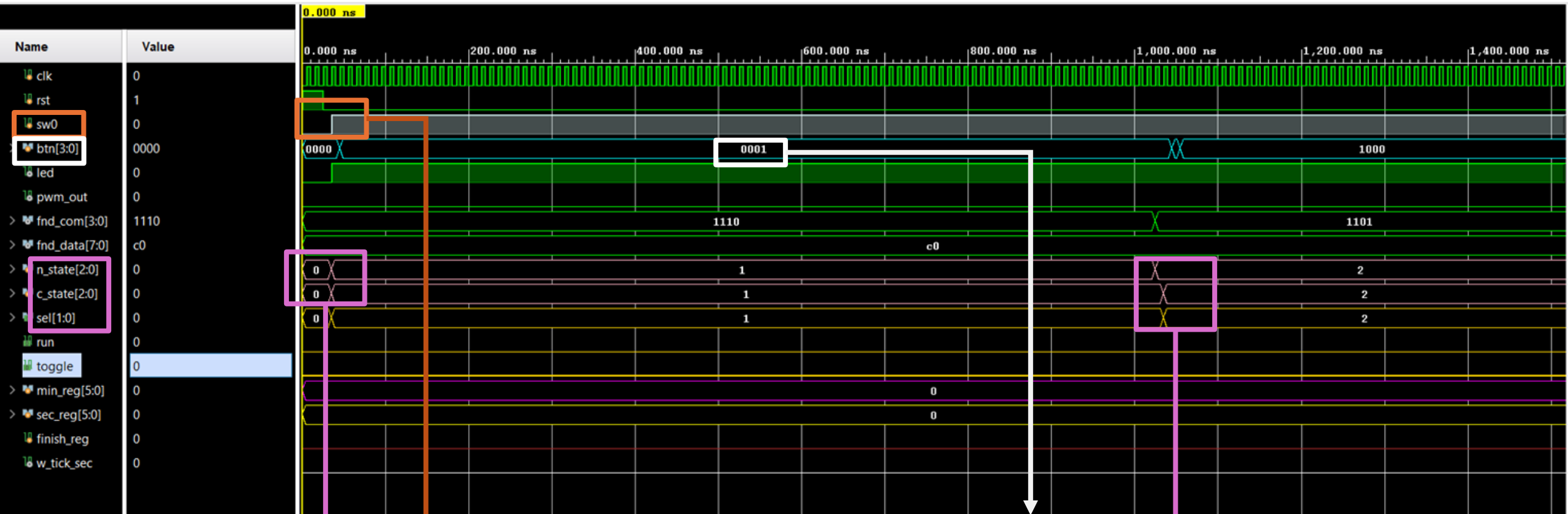
1clk

Simulation(btn debounce)



Btn tick 생성(떨 때 chattering은 무시)

Simulation(top)



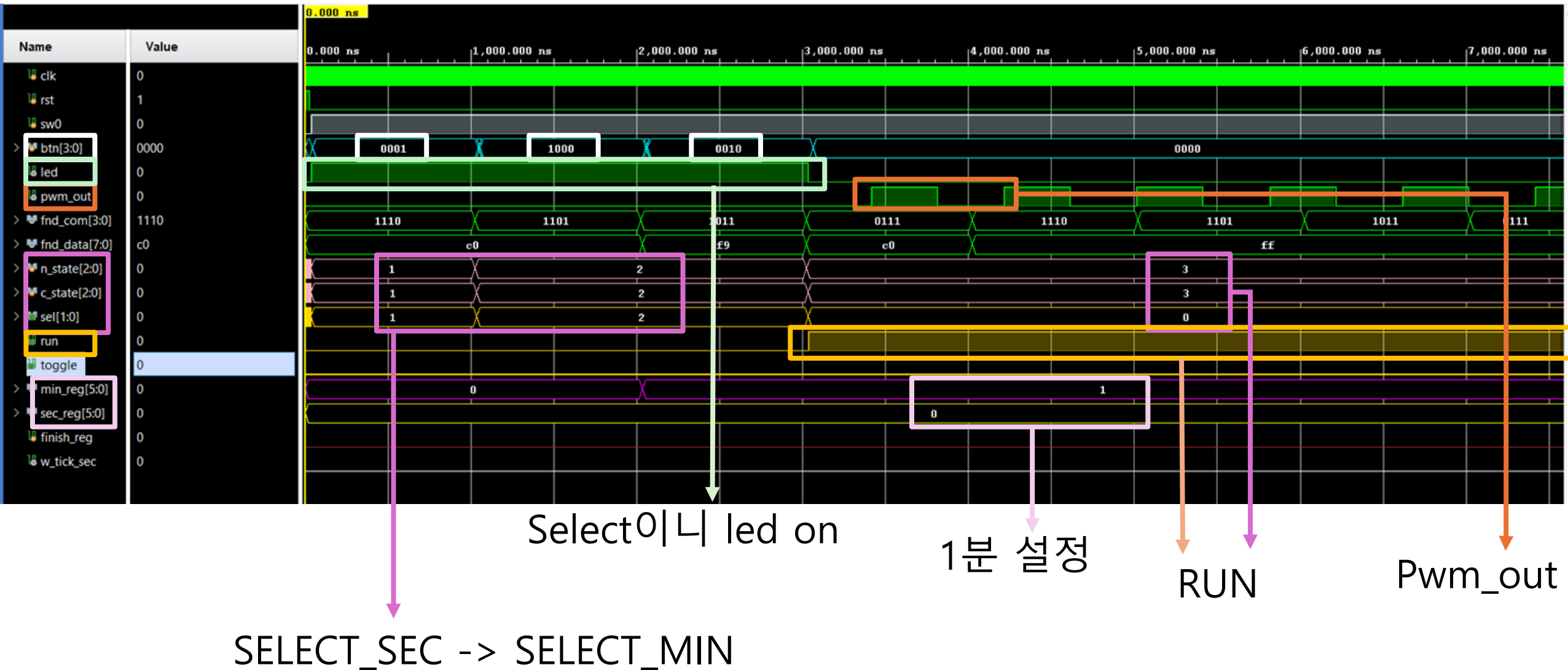
IDLE -> SELECT_SEC

Sw0=1

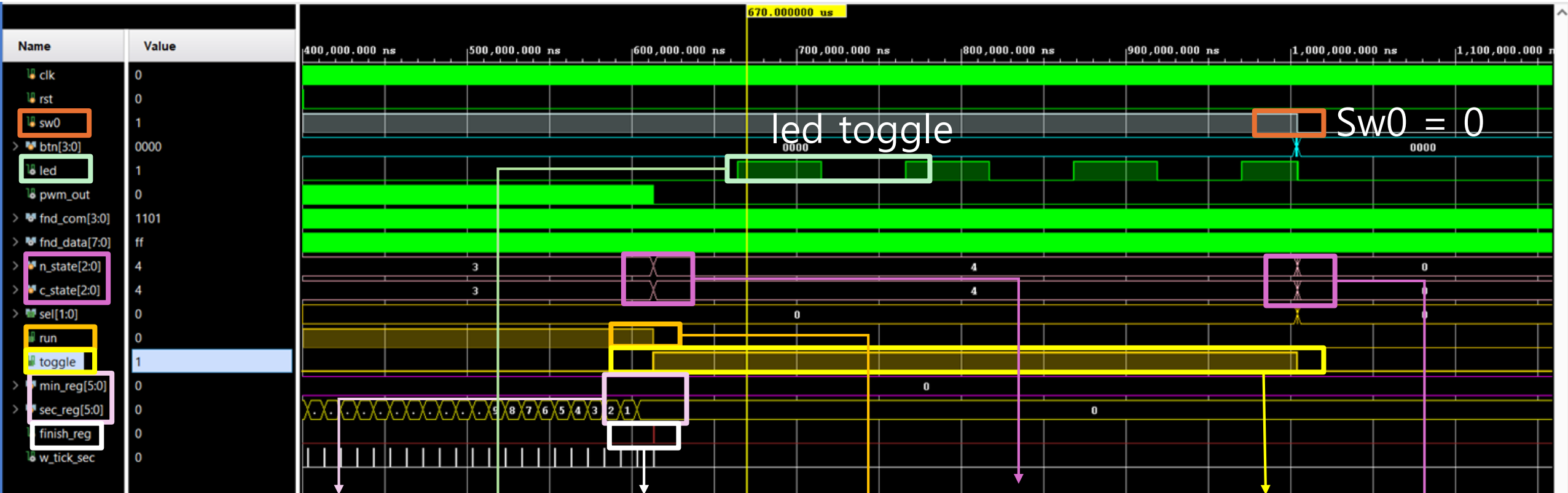
btnR입력

SELECT_MIN

Simulation(top)



Simulation(top)



남은 시간 = 0

Finish = 1

RUN -> FINISH

Toggle = 1

RUN state 종료되며 run=0

FINISH -> IDLE

감사합니다