

# CS250: DISCUSSION #7

Brian Zimmer

10/13/2011

# OVERVIEW

- Logistics
- Lab 3
- IC Compiler
- Exploring Technology Kits
- Real world issues

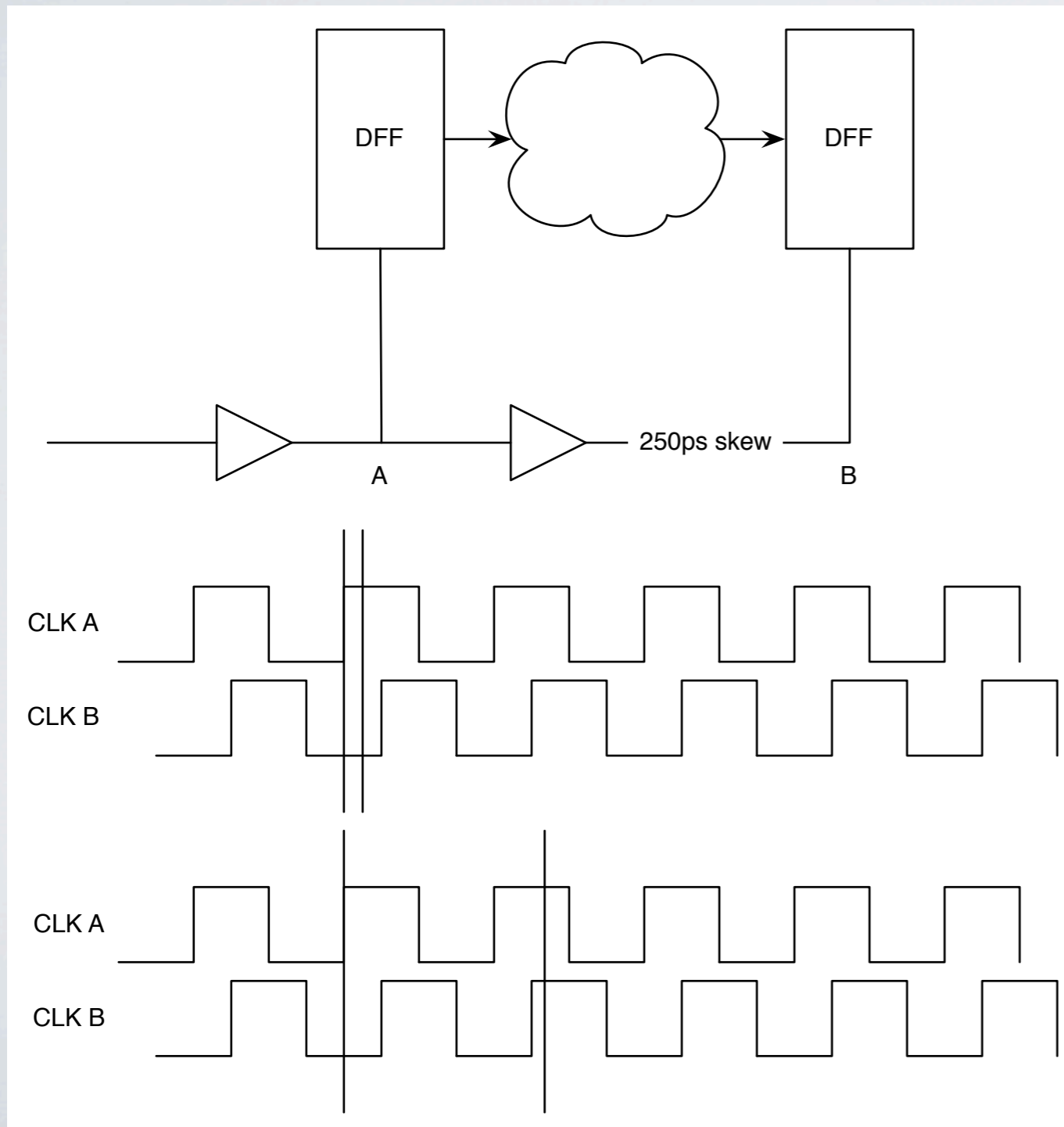
# LOGISTICS

- Lab #3 Due in 10 Days
- Meetings next week. Schedule on Piazza.
- First presentation on Oct. 31st

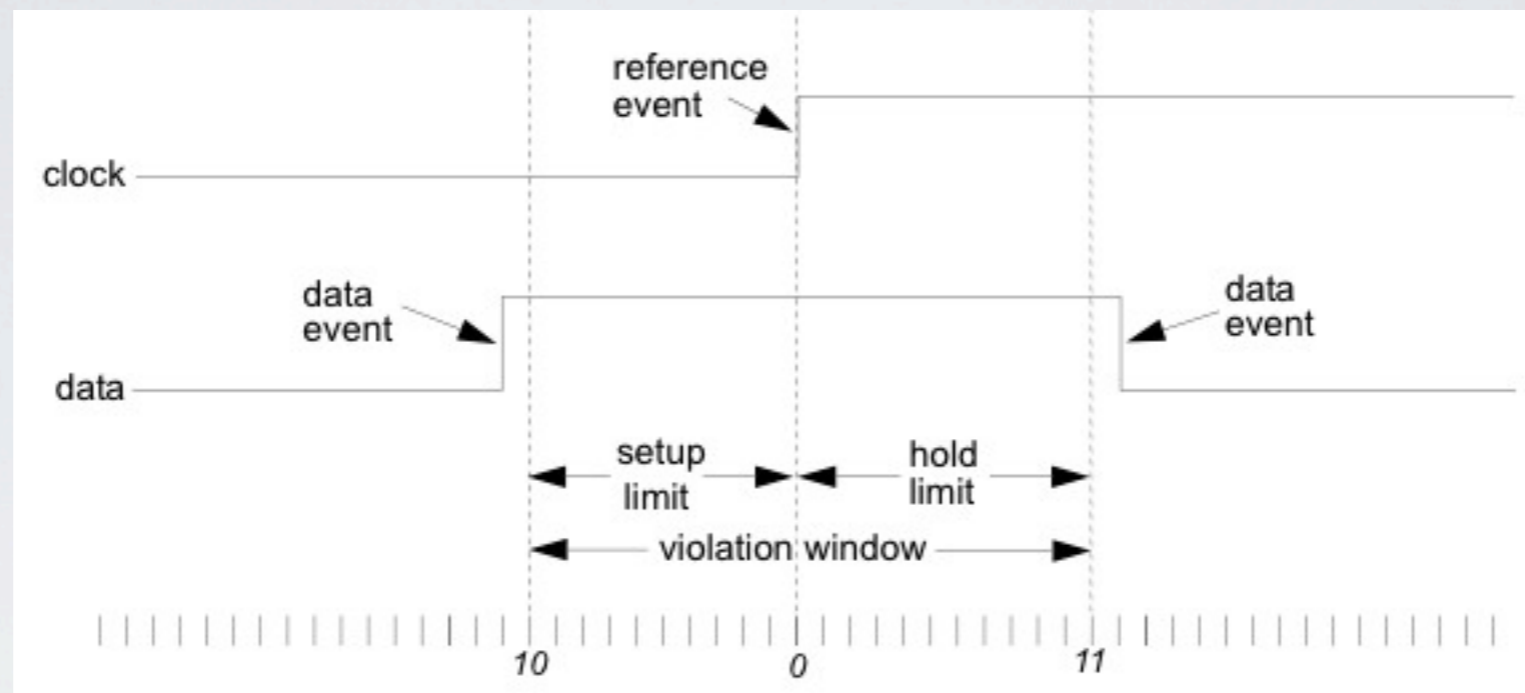
# NEGATIVE ENERGY/ INSTRUCTION

- It's likely that your energy or instruction counts are wrong.
  - Notice that we only record the toggling for the region we are interested in.
  - This region is between mtpcr 1, \$scr10 and mtpcr 0, \$scr10.
  - You should only count cycles and instructions during this region.
    - pt-pwr gives you a power number, so you need to multiply this with the running time.
    - $\text{energy} = \text{power} * \text{cycle count} * \text{clock period}$
  - Make sure stats=1 in build/vcs-sim-gl-par/Makefile
- MATLAB sequence:
  - `A = csvread('A.csv'); b = csvread('b.csv');`
  - `x = regress(b, A);`
- Make sure the number of rows match. You can check out `size(A),size(b)`.

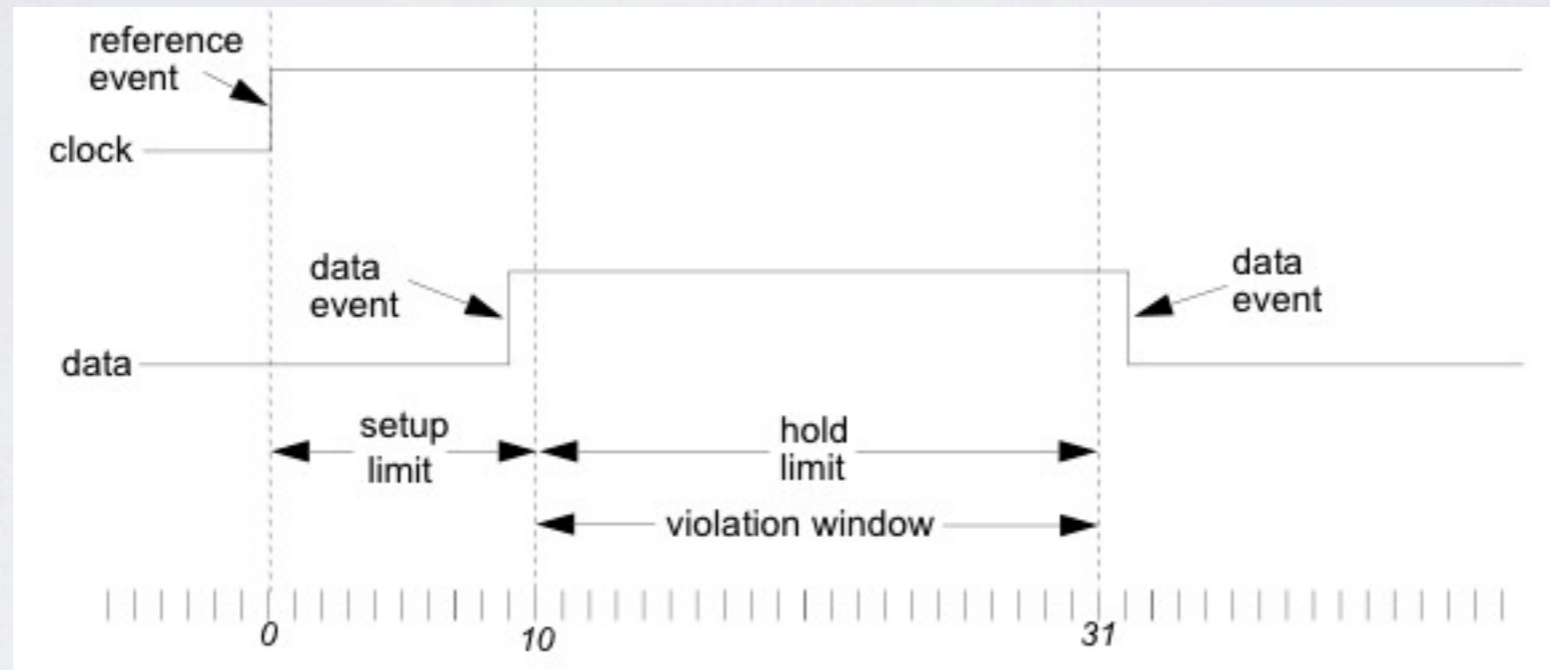
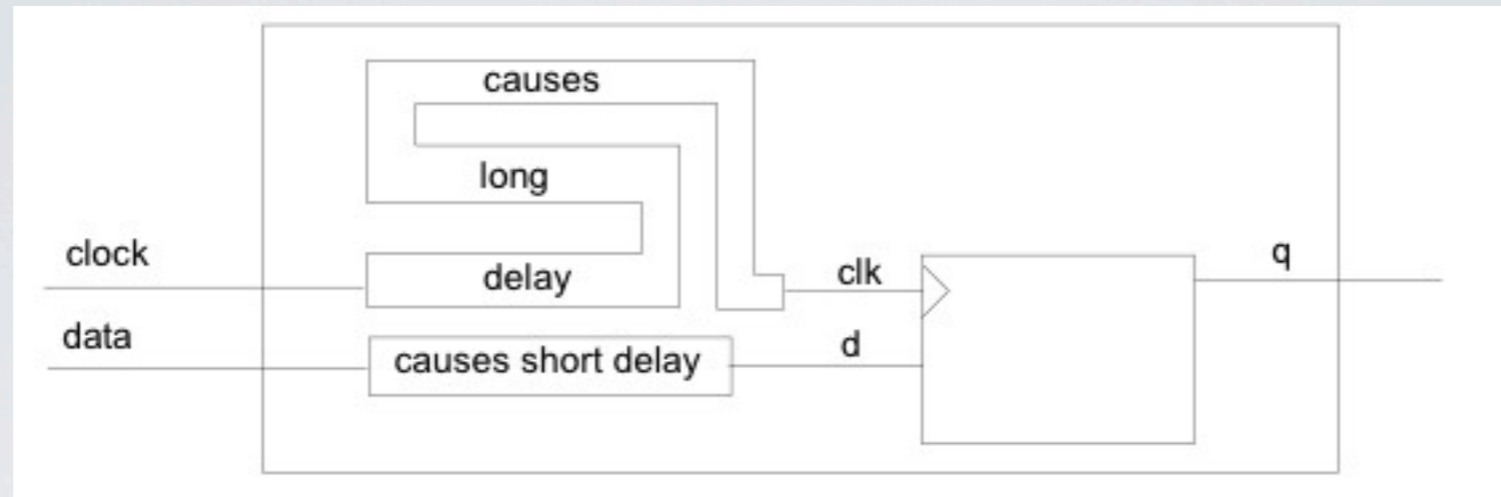
# SETUP AND HOLD TIMES



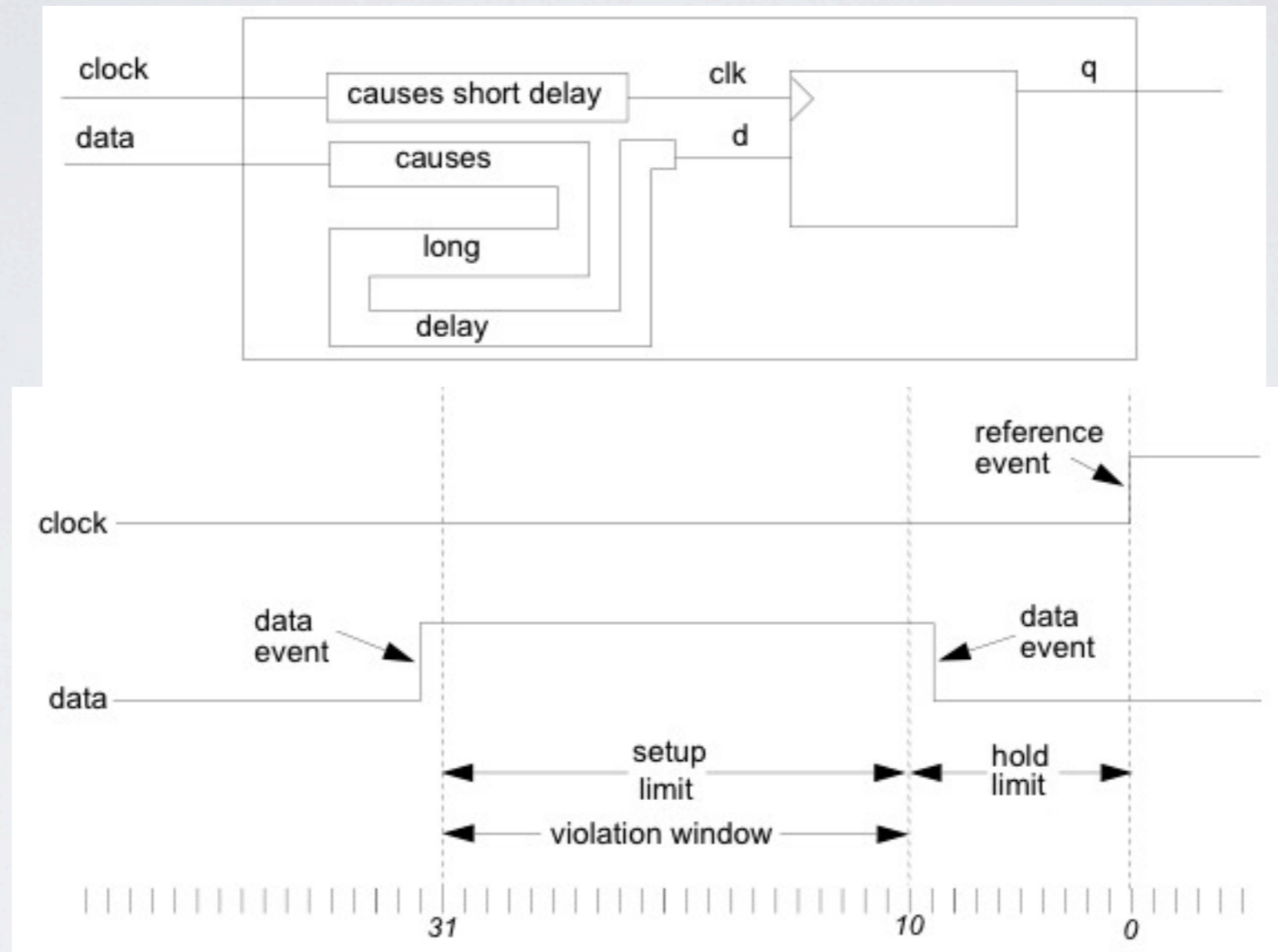
- How can you detect you have a setup time violation?
- How can you detect you have a hold time violation?
- How can you fix setup time?
- How can you fix hold time?



- This is how we do setup-hold time checks in the tool
- We have a setup limit and a hold limit
- We encode this case as (10,11)
  - \$setuphold (posedge clock, data, 10, 11, notify)
- What about negative setup limits?
- What about negative setup limits?



- We encode this case as (-10,31)
  - \$setuphold (posedge clock, data, -10, 31, notify)

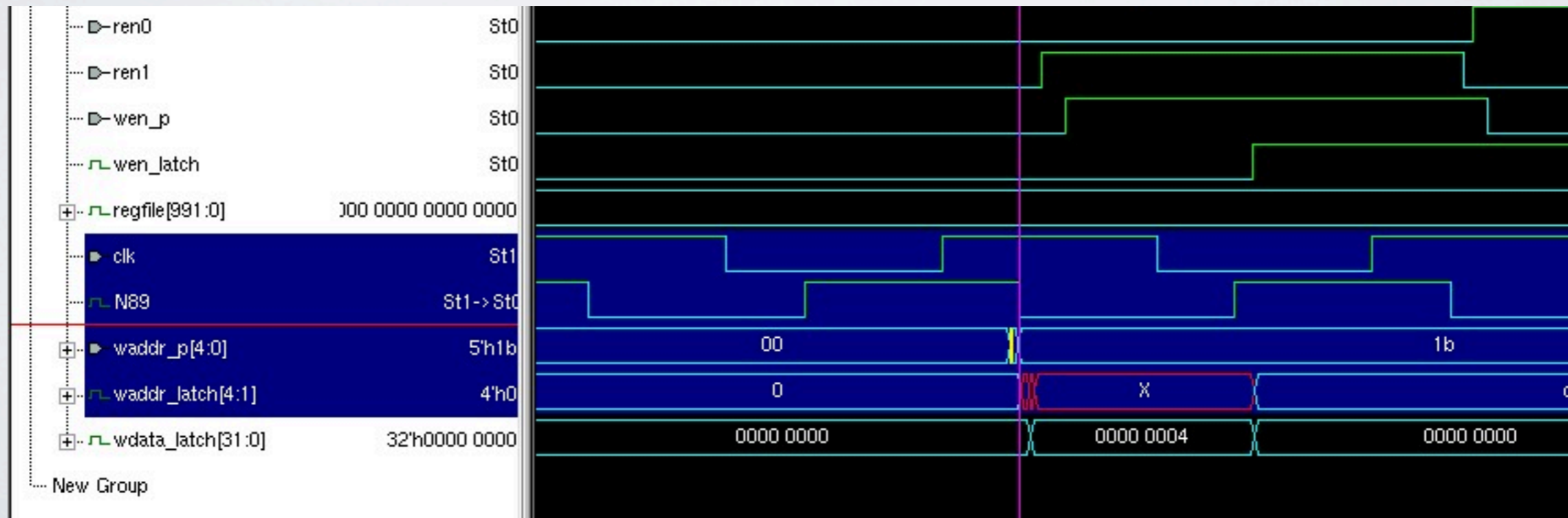


- We encode this case as (31, -10)
  - \$setuphold (posedge clock, data, 31, -10, notify)



# WHAT IT LOOKS LIKE

- `"/scratch/cad/stdcells/synopsys-90nm/default/verilog/cells.v", 11774: Timing violation in riscvTestHarness.proc.dpath.rfile.waddr_latch_reg_3_`
- `$setuphold( negedge CLK:44213, posedge D:44162, limits: (58,-43) );`
- You can see  $44213 - 44162 = 51$  is between  $58 > 51 > 43$ . That's why it's a setuphold violation.
- Now let's look into the wave form. Change your time to 44213



# REAL WORLD ISSUES

- ICC DRC/LVS
- Final DRC/LVS
- Pad frames
- Power routing
- IP

# READ PIAZZA...

- Everyone caught up?