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, $cr10 and mtpcr 0, $cr10.
  - 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.
    - energy = power * cycle count * 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)
  • $\text{setuphold (posedge clock, data, 10, 11, notify)}$
• What about negative setup limits?
• What about negative setup limits?
• We encode this case as (-10,31)
  • $\text{setup\_hold (posedge clock, data, -10, 31, notify)}$
• We encode this case as (31, -10)
  • $\text{setuphold (posedge clock, data, 31, -10, notify)}$
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

Wednesday, October 19, 2011
READ PIAZZA...

• Everyone caught up?