



Propagation Delays

CS150 – Fall 2001 Randy K. Huang

- Observe propagation delays in this lab through transmission lines
- Propagation delays will exist in actual hardware.
- Build ring oscillator with the 74F04PC Chip. Observe results.

out



Transmission Lines

- Models internal wires
- Lot of nasty realities occur in transmission lines
- "Parasitic" resistance, capacitance, and inductance occur in lines
- Observe transmission lines with a ribbon cable











Why we care... (cont'd)

- Capacitive loading exists: deal with it
- Designing a digital system: power and timing are crucial
- In CS150, logic design is important

 however designing a chip is
 more than just logic



Approaching the Project

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- Project starts after Lab 6
- Several checkpoints will be given
- Start early do NOT wait for the last minute
- Allocate enough time for each checkpoint – never know the problems encountered with hardware



- Design the data paths and high level schematic – understand it!
- Design the modules logic inside them
- Design the FSMs start with a diagram – really understand it!
- FSM move to a transition table

Approaching the Project (cont'd)

- FSM develop Next State and Output logic
- FSM begin to implement design
- Simulate all designs with software
- Debug designs on hardware with the board and oscilloscope
- NEVER be afraid to scrap your design and start over!

