

CS152 – Computer Architecture and Engineering

Lecture 7 – (Design Notebook+) Single Cycle Control

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Review

◦ 5 steps to design a processor

1. Analyze instruction set => datapath requirements
2. Select set of datapath components & establish clock methodology
3. Assemble datapath meeting the requirements
4. Analyze implementation of each instruction to determine setting of control points that effects the register transfer.
5. **Assemble the control logic (This Lecture)**

◦ MIPS makes it easier

- Instructions same size; Source registers, immediates always in same place
- Operations always on registers/immediates

◦ Single cycle datapath => CPI=1, CCT => long



Why should you keep a design notebook?

- Keep track of the design decisions and the reasons behind them
 - Otherwise, it will be hard to debug and/or refine the design
 - Write it down so that can remember in long project:
2 weeks ->2 yrs
 - Others can review notebook to see what happened
- Record insights you have on certain aspect of the design as they come up
- Record of the different design & debug experiments
 - Memory can fail when very tired
- Industry practice: learn from others mistakes

