Administrivia

- Reminder: Homework 5 due Friday. Next homework (on chapter 4) coming soon. Possibly one more after that.

Slide 1

Multi-Cycle Implementations — Review/Recap

- Single-cycle implementations aren't used much because too slow. Instead, break up processing of instruction into multiple phases and use as basis for multi-cycle implementation (simple or pipelined).

- (Review revised slides from last time.)

Slide 2

Pipelining — Implementation Overview

- First might observe that the five phases into which we've divided instruction processing seem map onto the picture of our datapath — what we're doing is breaking up the flow of information through it into steps(!).

- So the idea will be to somehow partition the datapath so we can have each piece working on a different instruction. But for that to work, we have to add groups of registers between pieces, so we save the results of one step for the next step.

- Ignoring data and control hazards, this gives what's sketched in Figures 4.33 and 4.35. (Details of how to deal with data and control hazards are interesting but beyond what we can do in this course. Skim in textbook, read more carefully if interested.)

Slide 3

Minute Essay

- None — quiz.

Slide 4