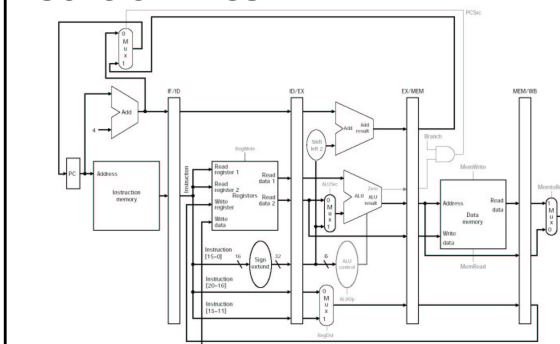# Pipelined Control

4-2-2003

Opening Discussion

- What did we talk about last class?
- Have you seen anything interesting in the news?
- How can pipelining maintain a high clock speed and a low CPI? People got the second one, but didn't really explain the first one.

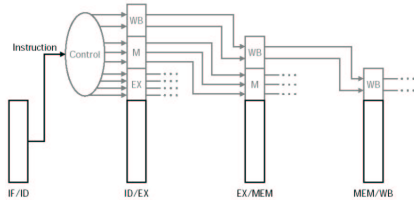# A Pipelined Datapath with Control Lines

Function of Control Lines

▌ The datapath we are using is nearly identical to the one used in our single cycle implementation. As you might expect, the control lines are also identical at this point.

▌ Let's go back through each of them and see what role they play in our datapath and what the control does with them for different instructions.

The Control System

▌ Our control is against based on the construction, but it has to send different signals to different steps in the pipeline.

Pipelined Datapath with Control
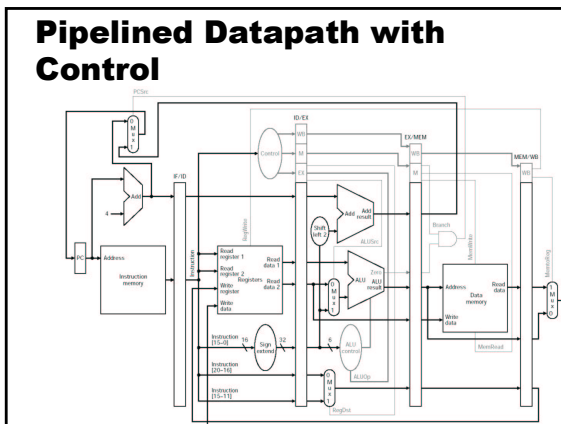
Too Ideal

▌ The datapath we have discussed is too ideal. It ignores all the hazards that we mentioned last class.

▌ At this point the pipelined implementation is actually simpler than the multicycle implementation because our controller logic doesn't need an FSA or microprograms in order for it to work. The pipeline does that automatically and all instructions take the same number of steps.

Minute Essay

▌ So far pipelining looks really simple. Think of the hazards that we mentioned last time and tell me why you think this is going to change. What funcamental modification are we going to have to make to the way control works for our pipeline?

▌ Remember to turn in assignment #5 to me today.