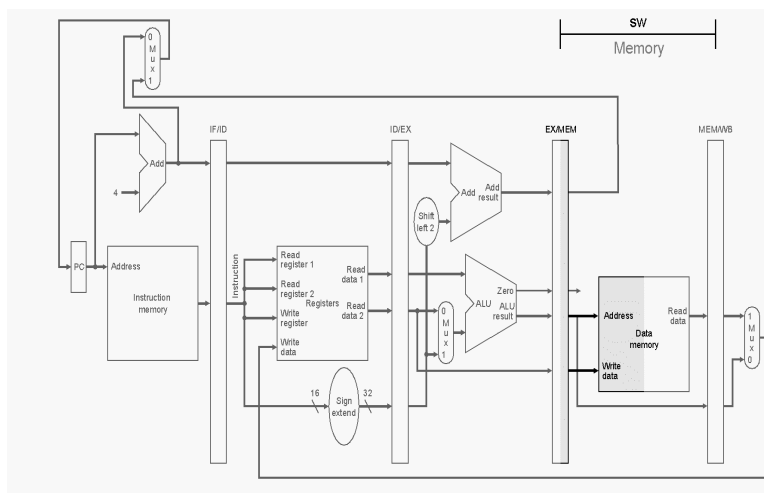


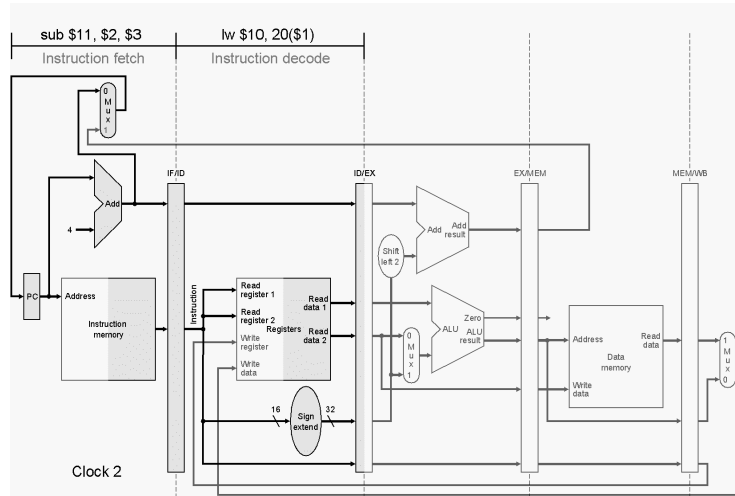
## Operation of a Pipeline

Each stage of a pipeline must be controlled independently of the other stages ... pipeline registers make this happen

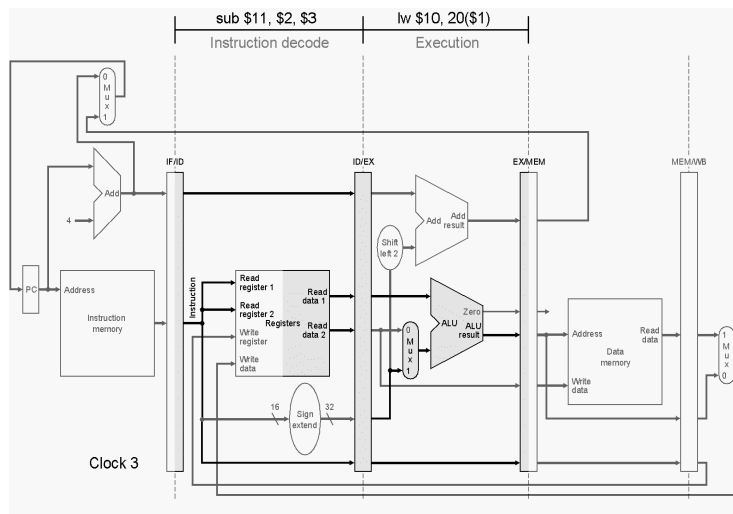
### Stage 4, SW



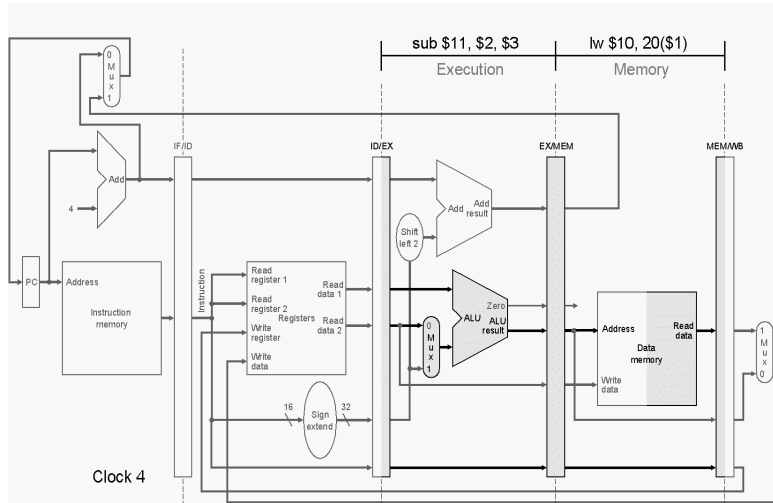
## Two Instructions In Pipe



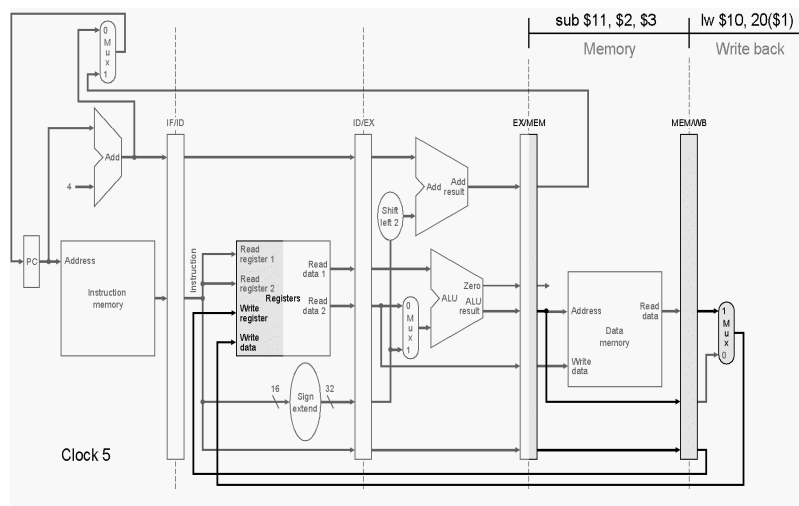
## Advance Instructions: 2,3



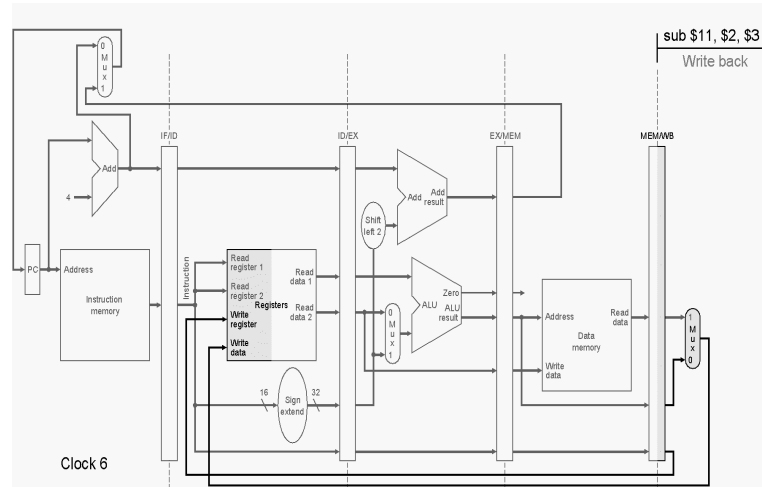
## Advance Clock: 3,4



## Advance Clock: 4,5

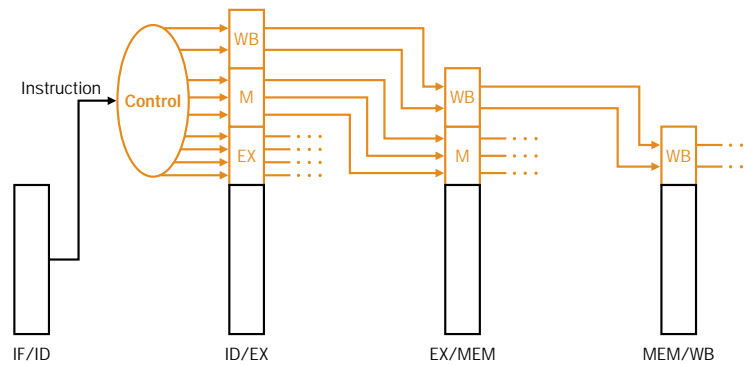


## Advance Clock: 5

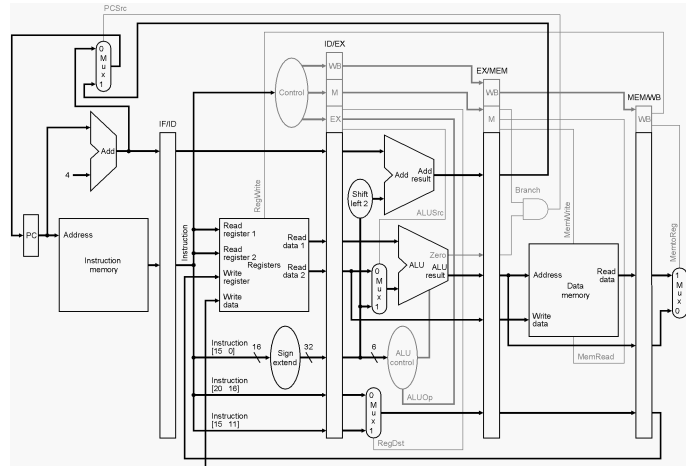


## Pipeline Control

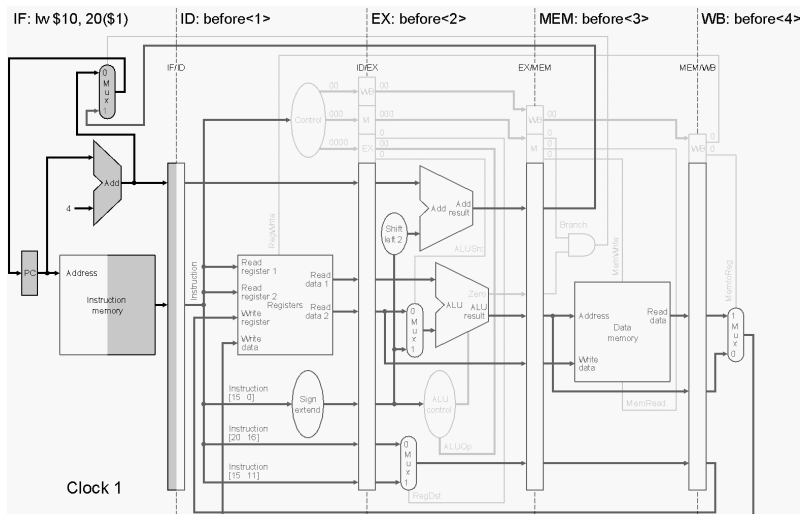
- Decode plans the control signals for each stage
- As stages advance, so do the control packets



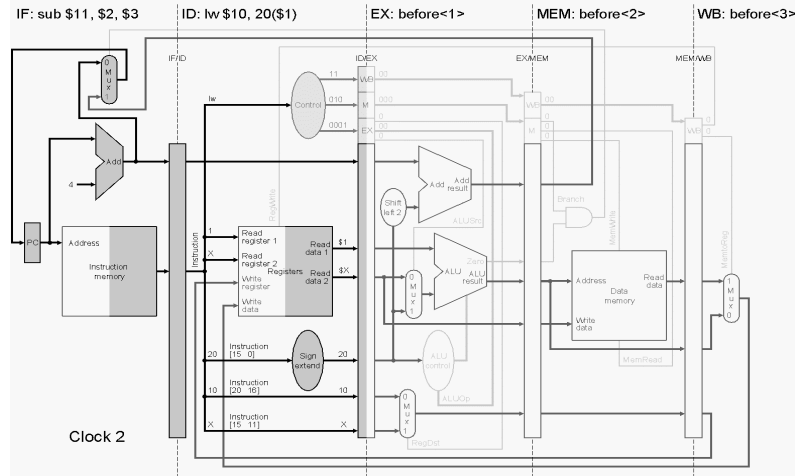
# Control Signals for Pipeline



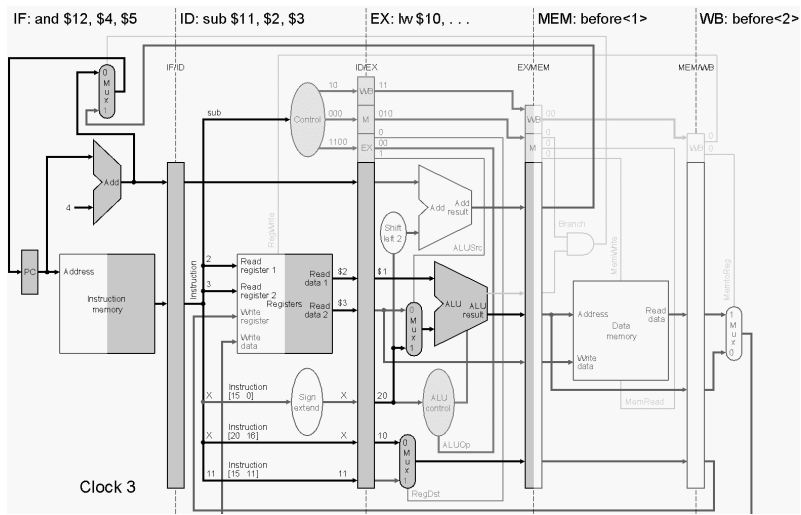
# lw, sub, and, or, add, ...



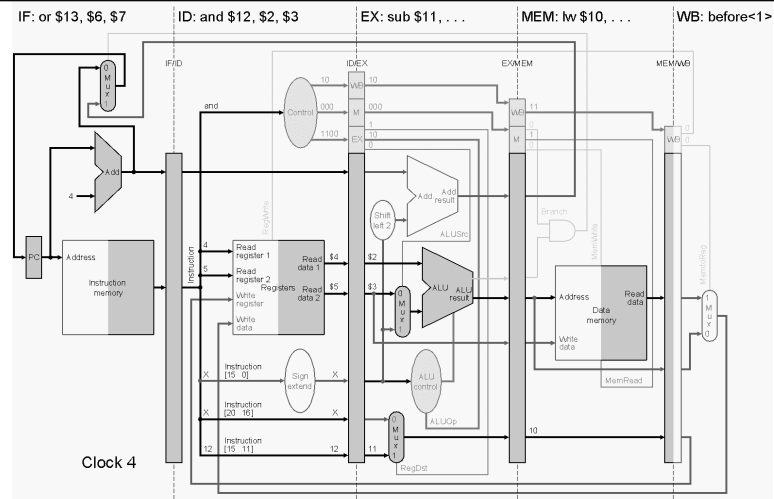
# lw, sub, and, or, add, ...



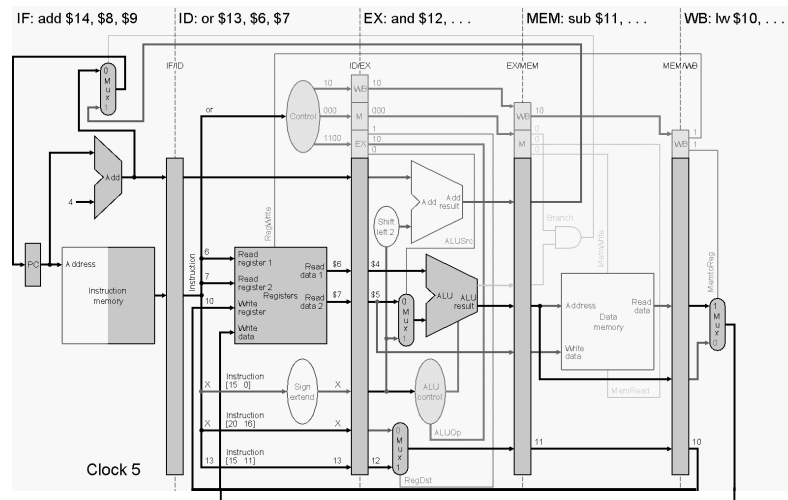
# lw, sub, and, or, add, ...



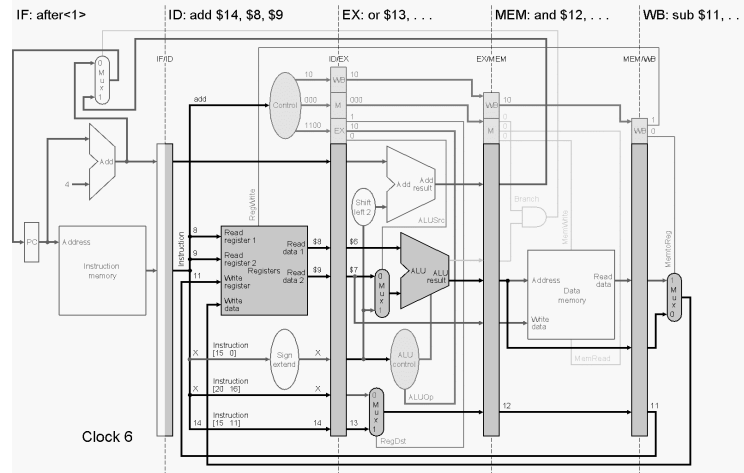
## lw, sub, and, or, add, ...



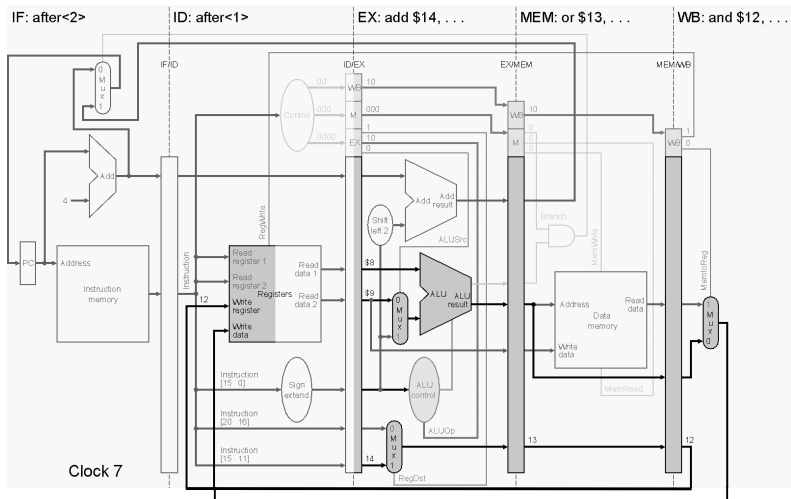
## lw, sub, and, or, add, ...



# lw, sub, and, or, add, ...

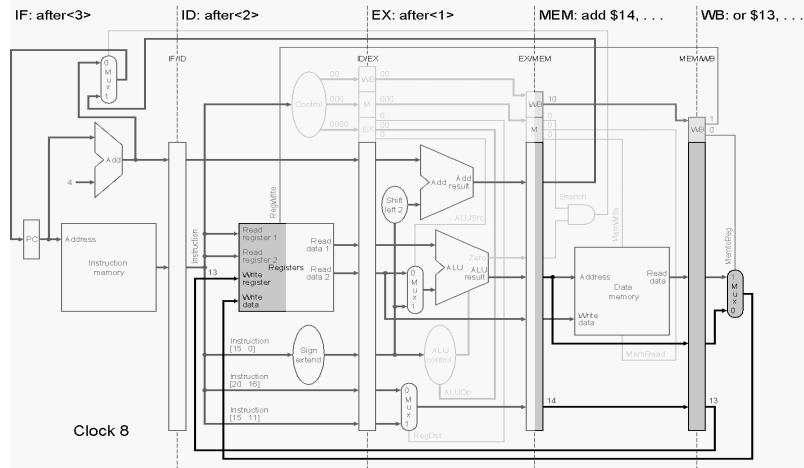


# lw, sub, and, or, add, ...





# lw, sub, and, or, add, ...



# lw, sub, and, or, add, ...

