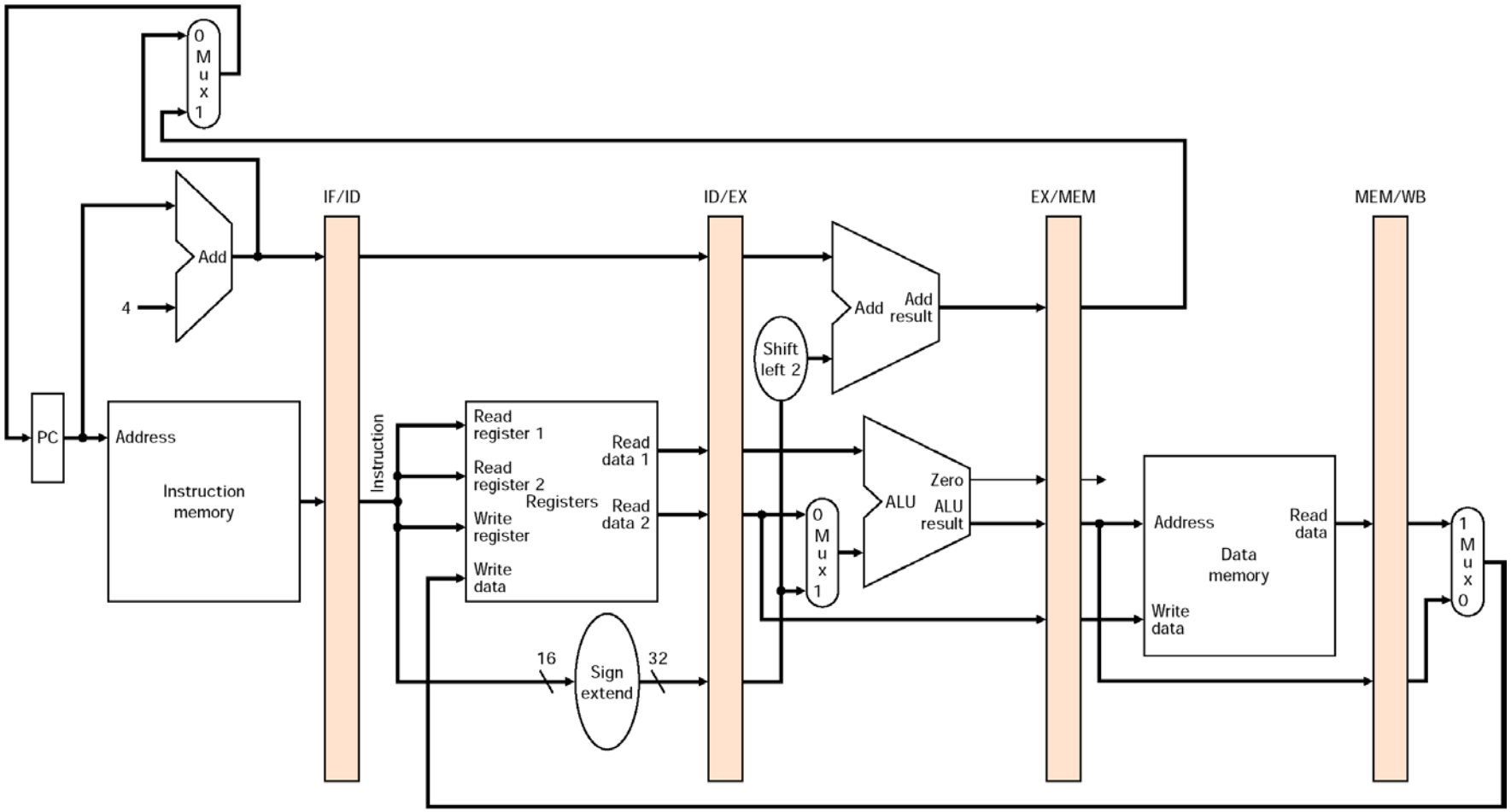
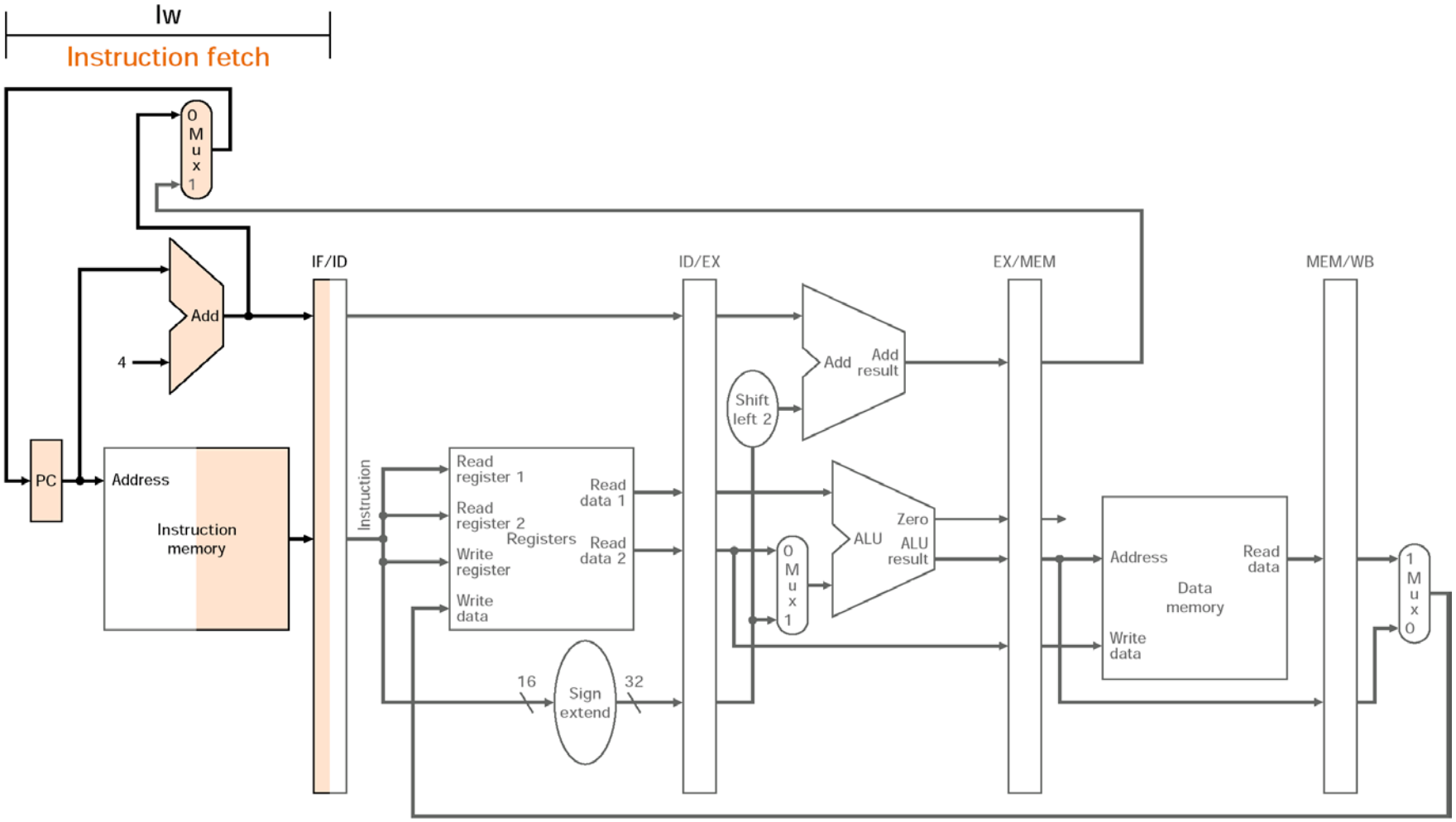
Computer Architecture

Pipelined Datapath and Control

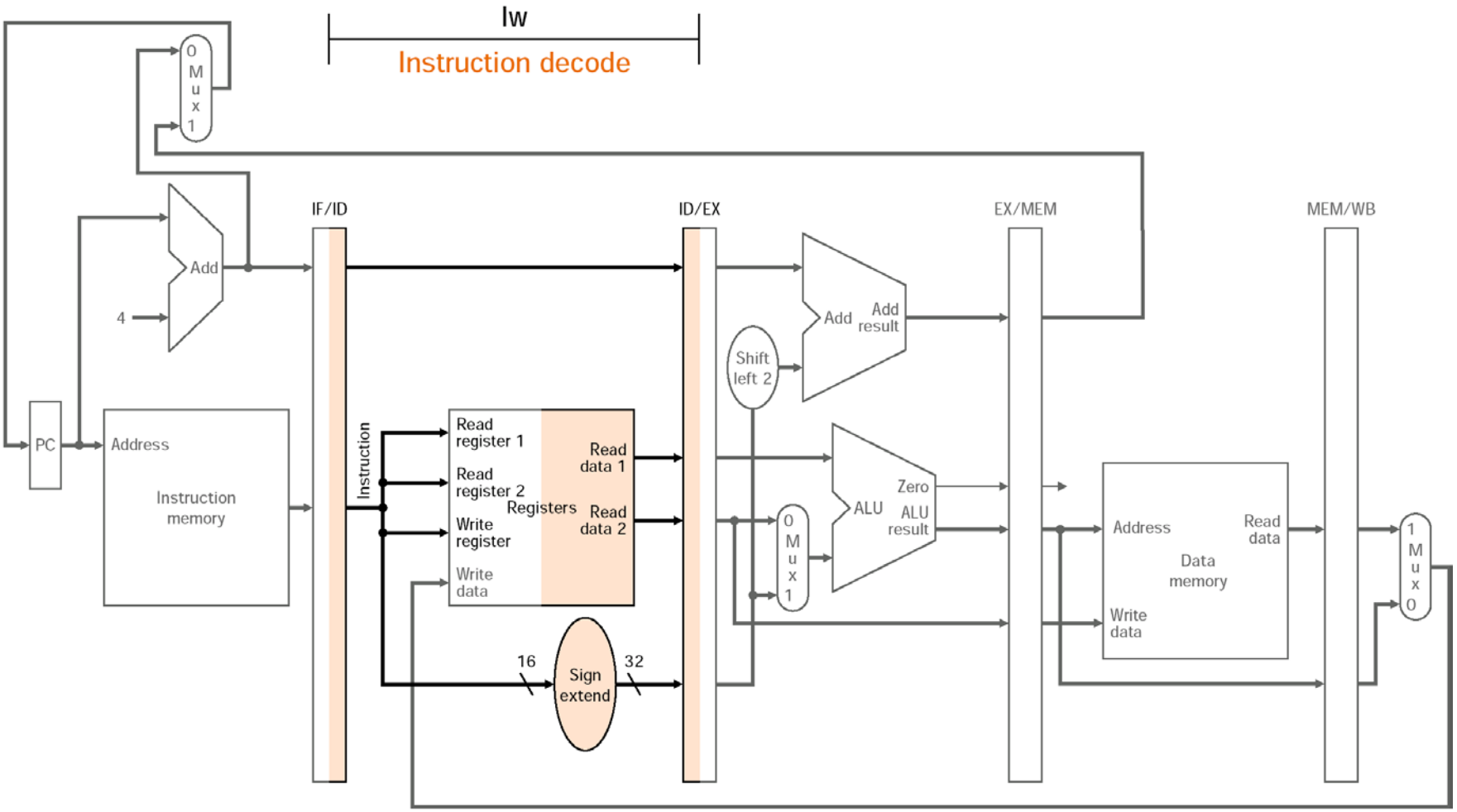
Pipelined Datapath



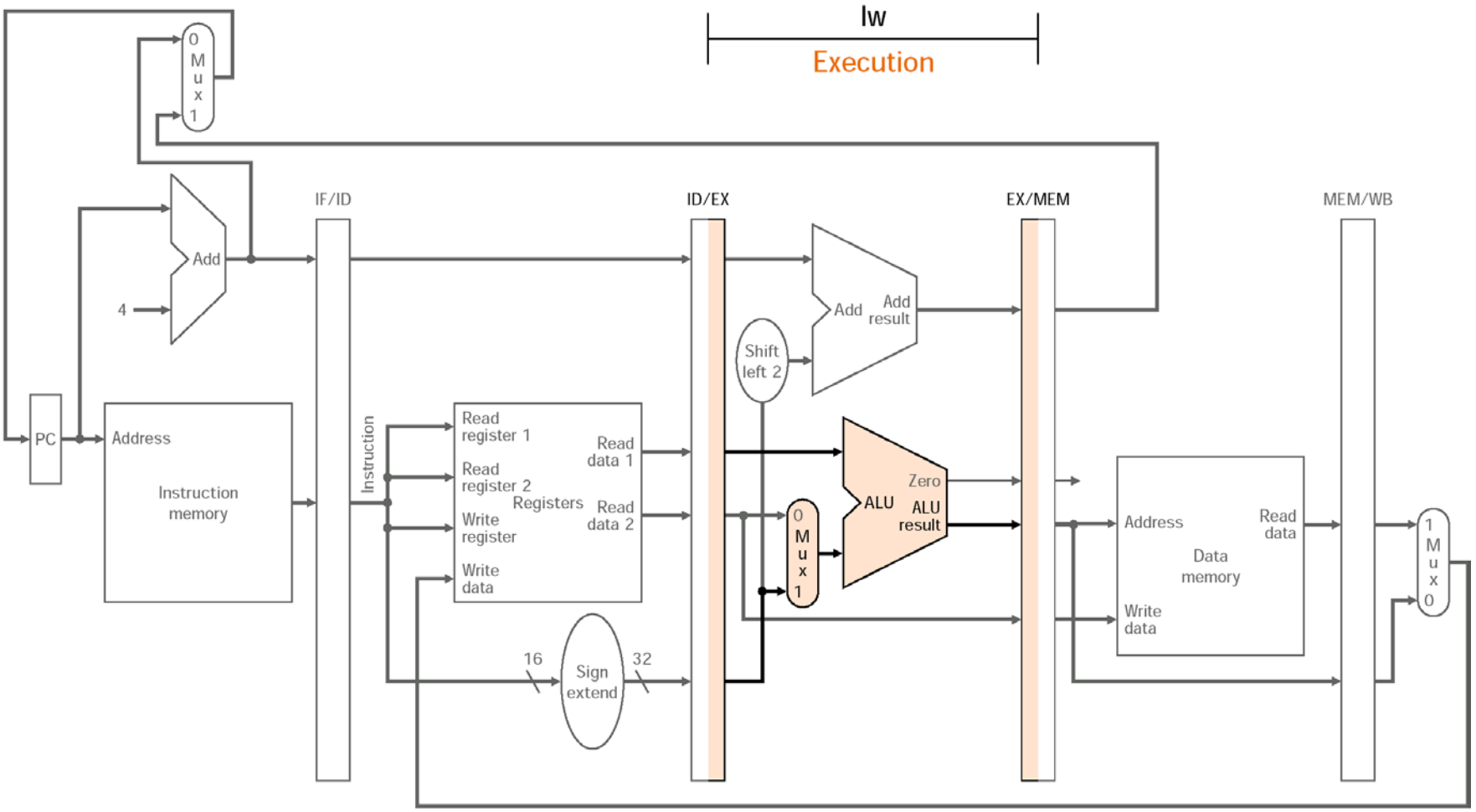
Pipeline Flow (lw example)



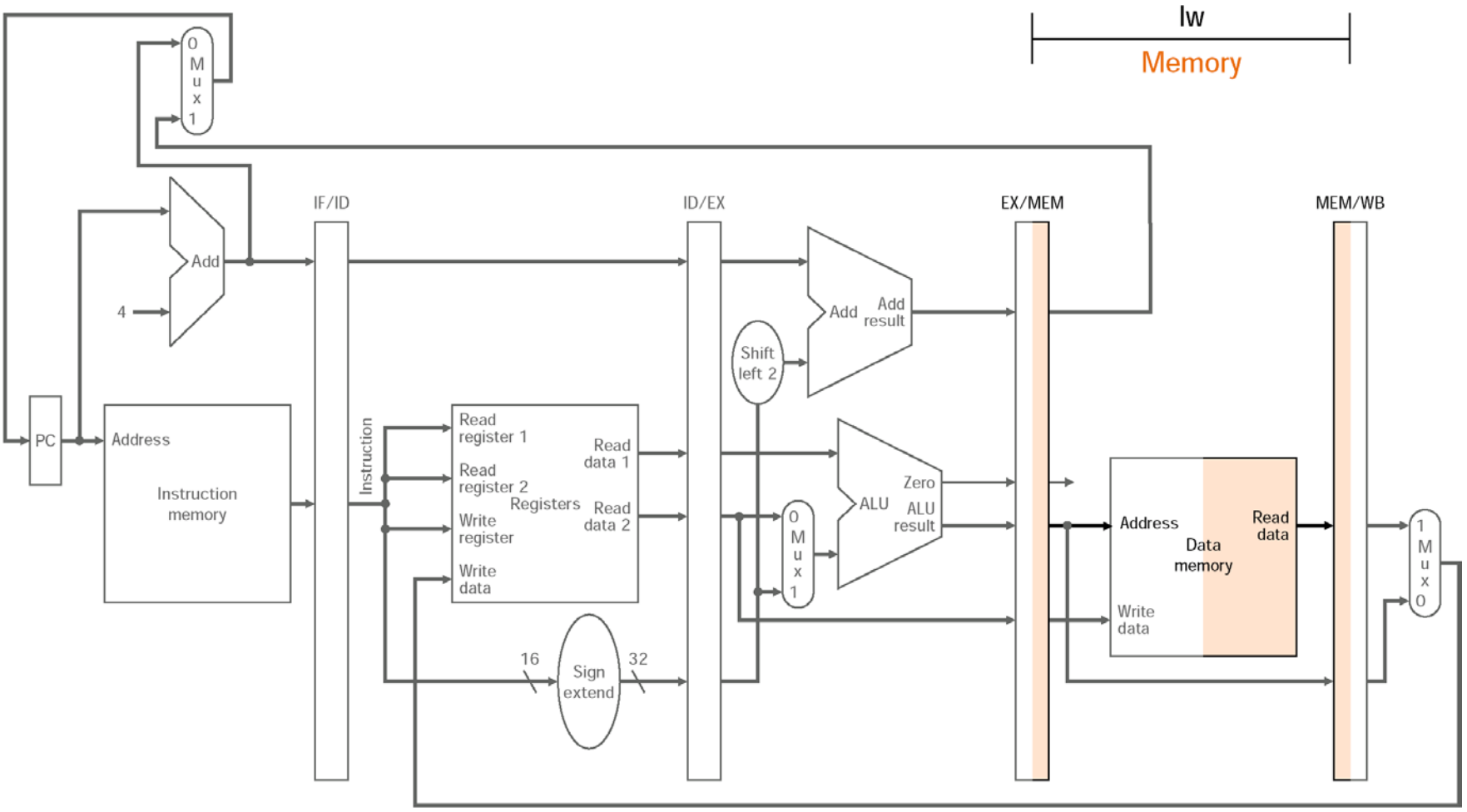
Pipeline Flow (lw example)



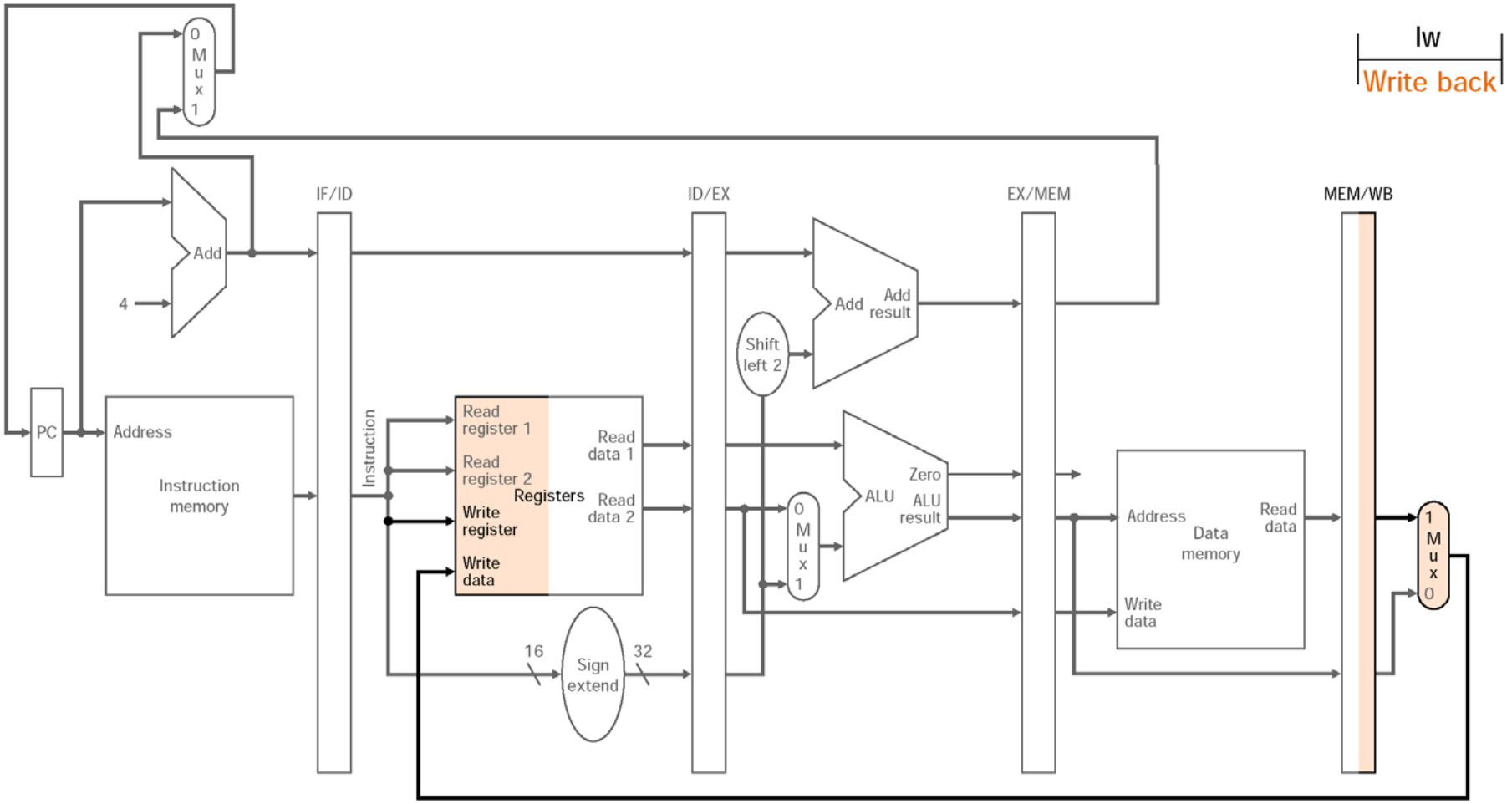
Pipeline Flow (lw example)



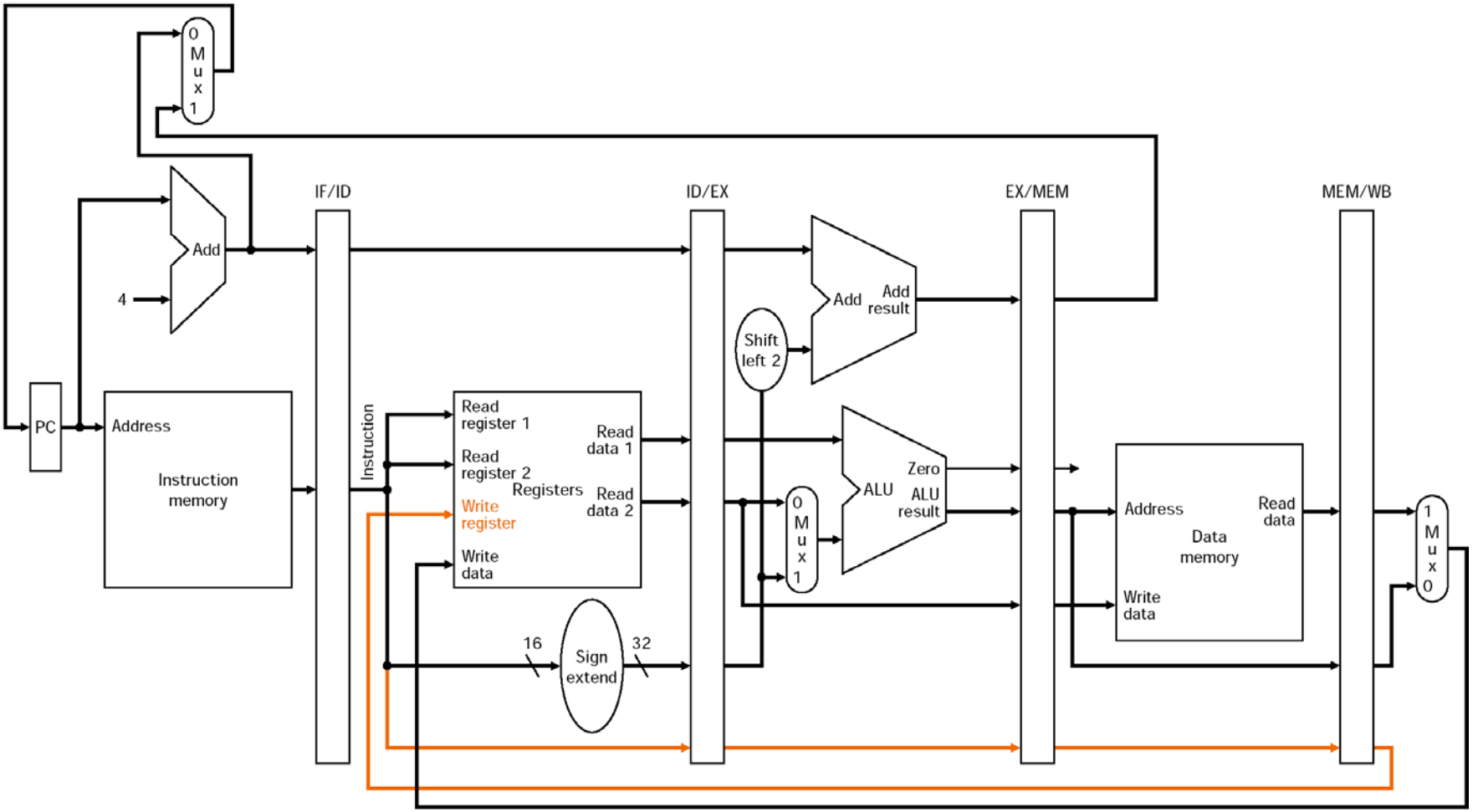
Pipeline Flow (lw example)



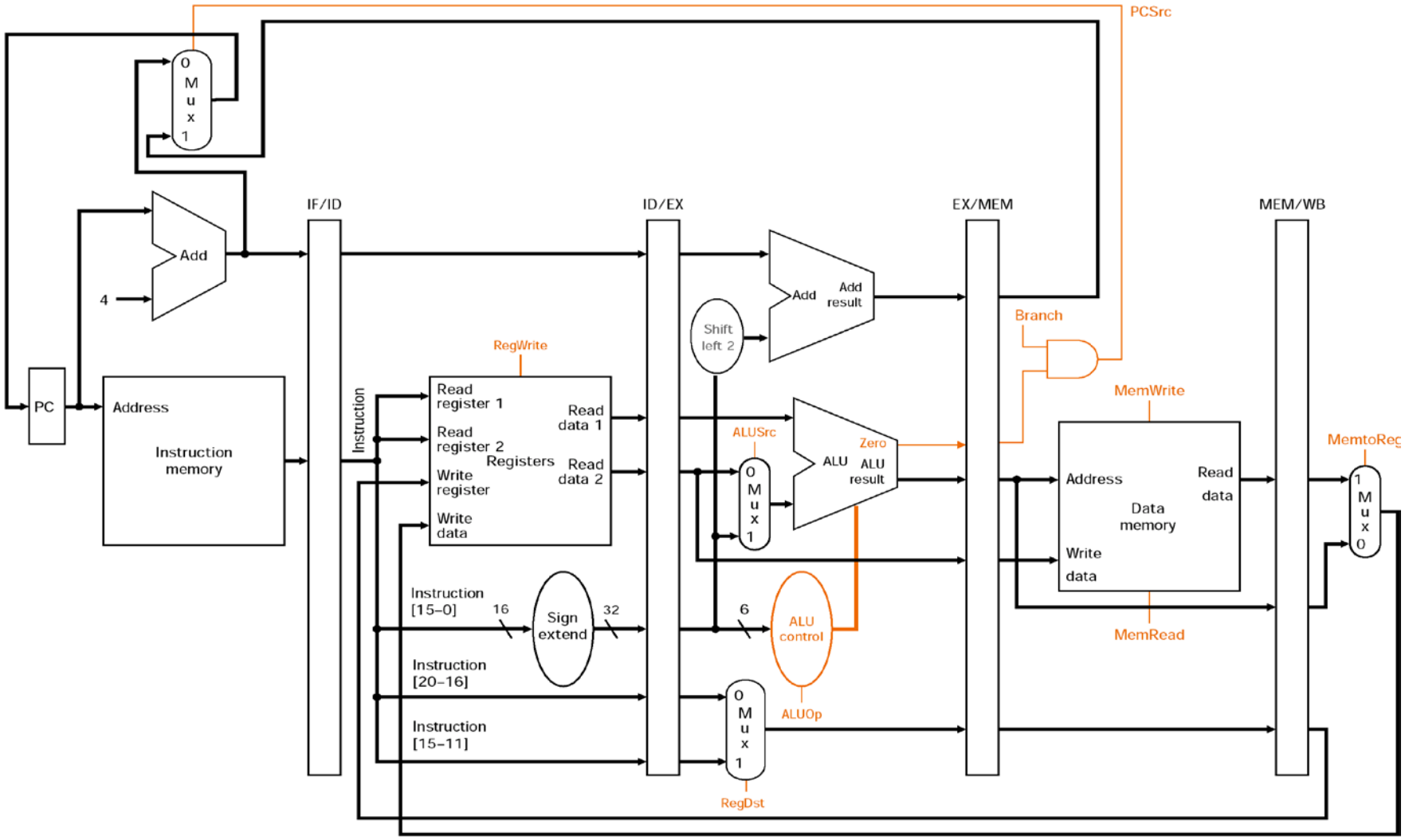
Pipeline Flow (lw example)



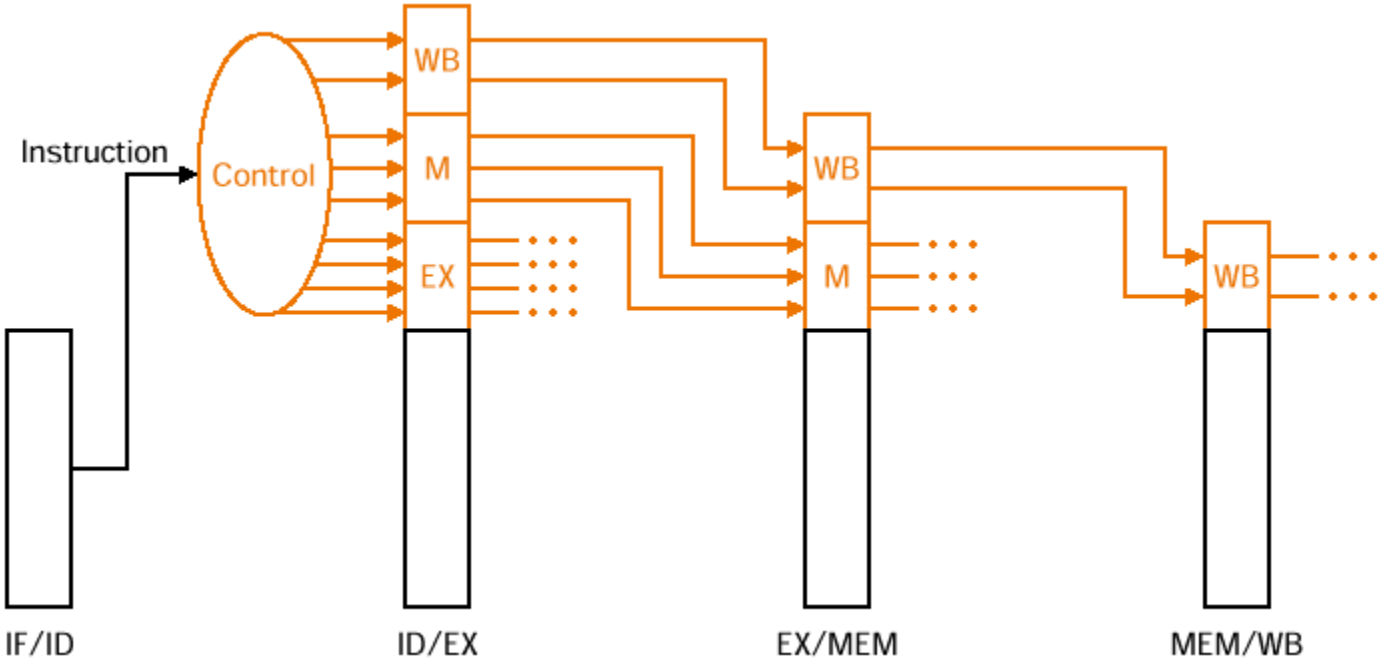
Corrected Pipelined Datapath



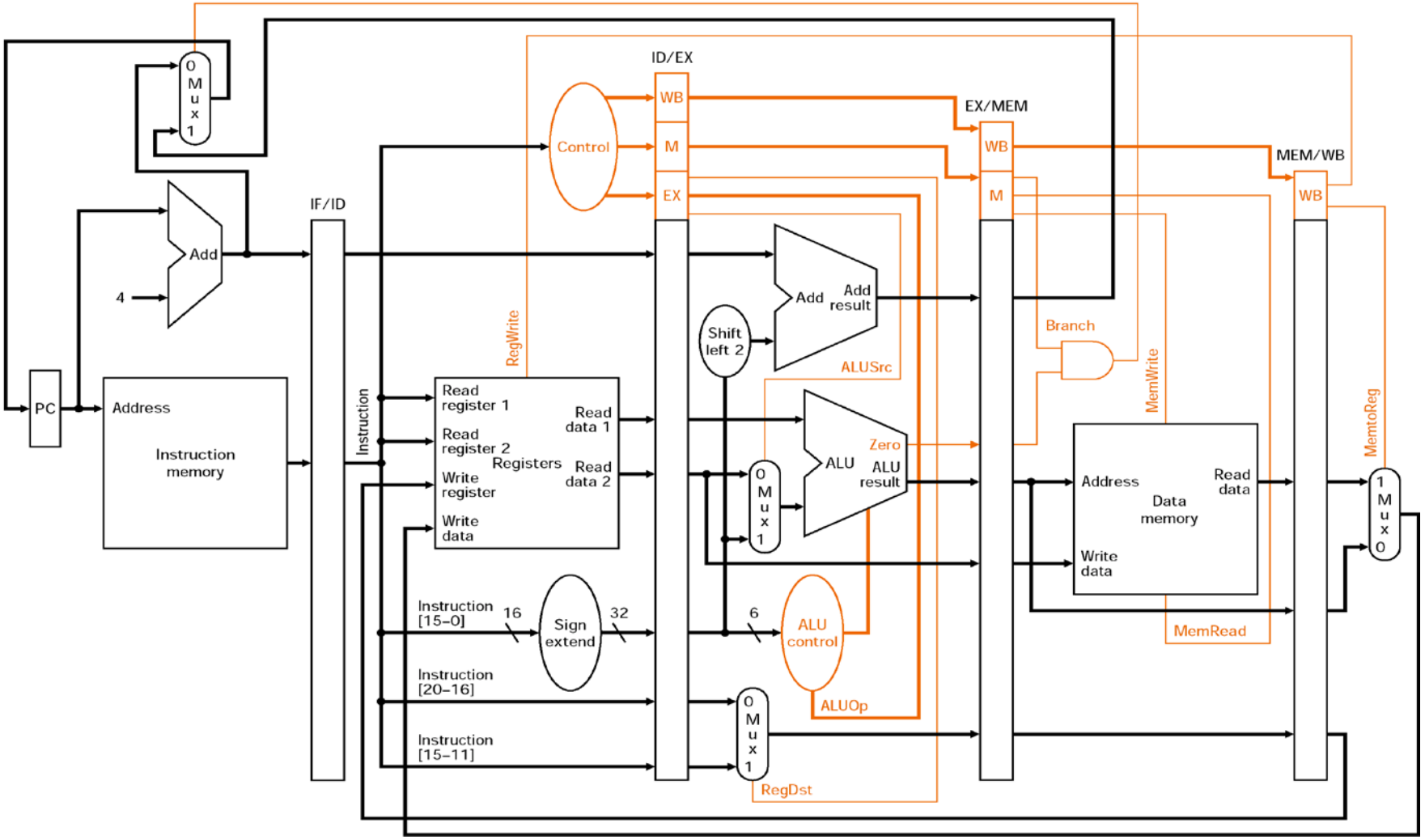
Pipelined Datapath with Control Signals



Control Signals Generation



Pipelined Datapath with Control Signals Connected

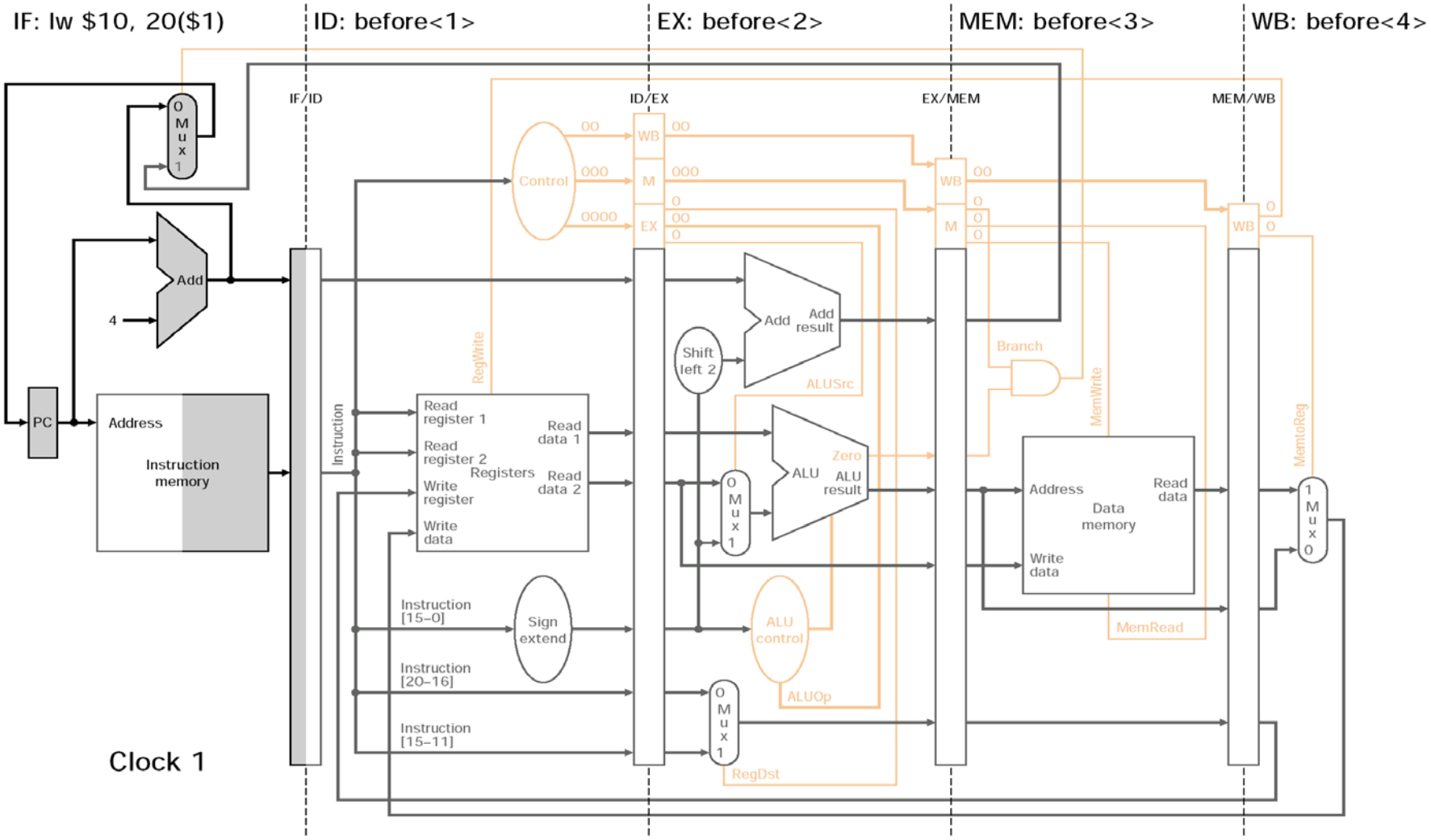


The Grand Example

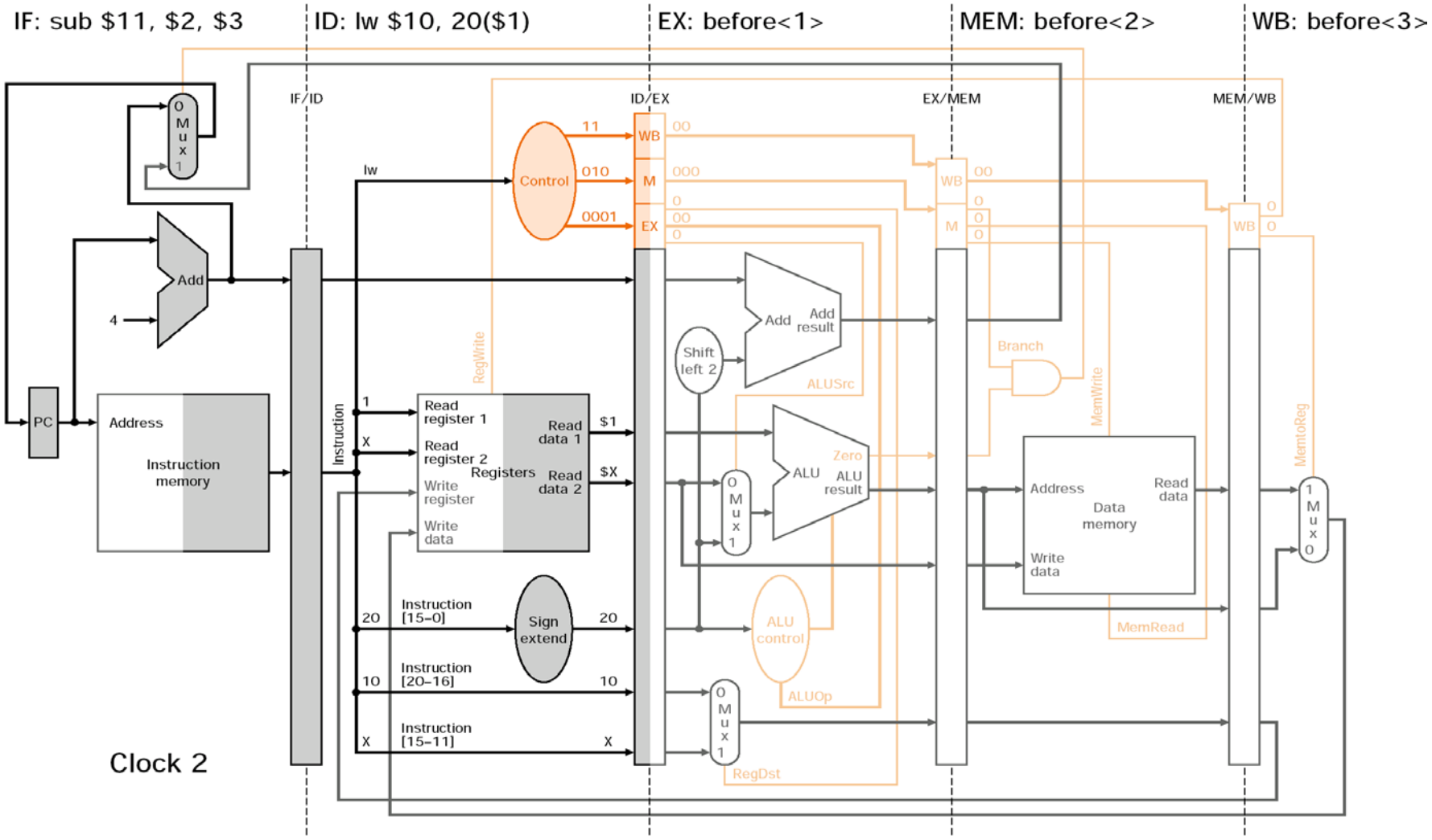
```
lw    $10, 20($1)
sub   $11, $2, $3
and   $12, $4, $5
or    $13, $6, $7
add   $14, $8, $9
```

Assumptions:
- No data hazards
- No control hazards

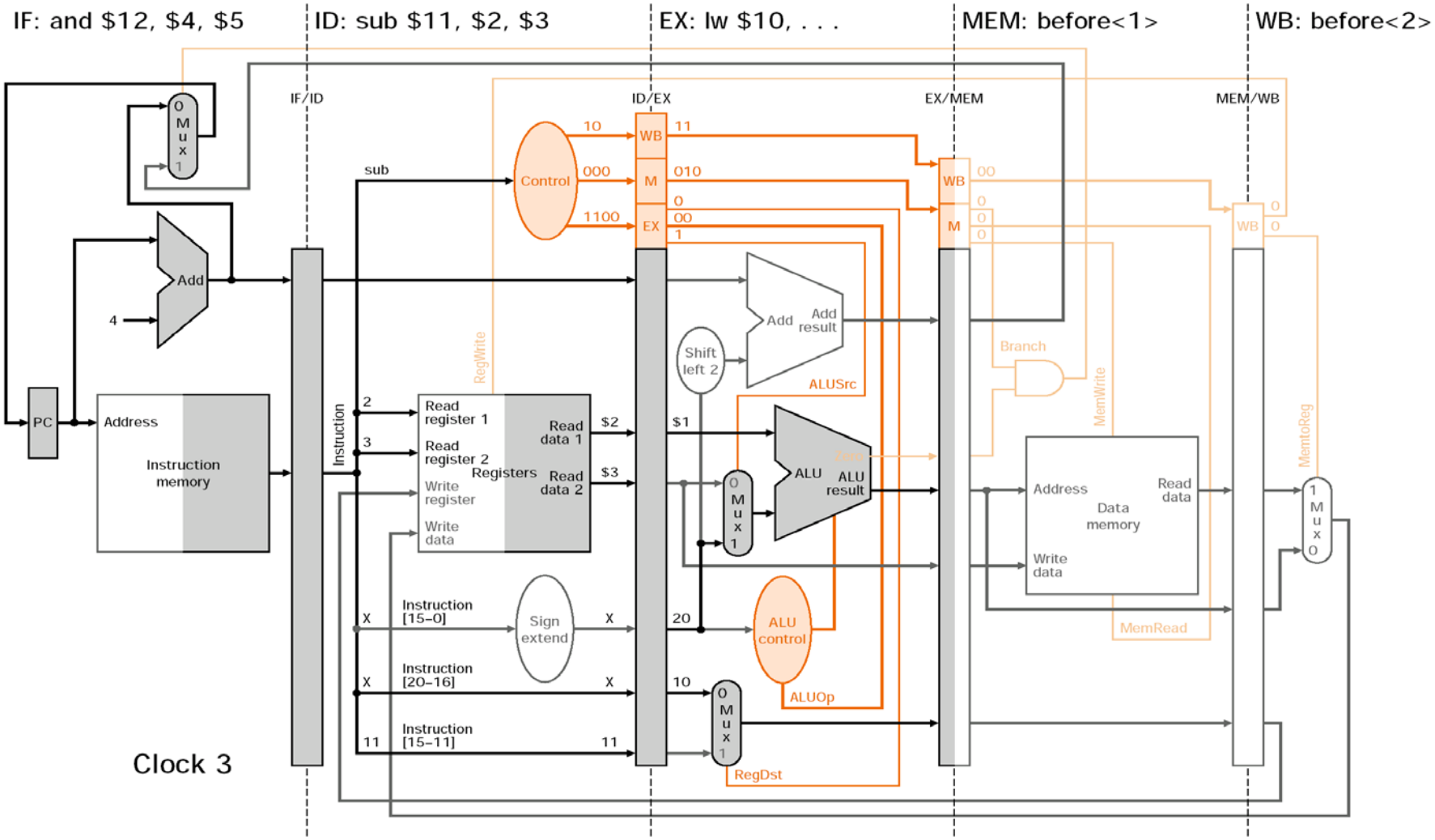
The Grand Example



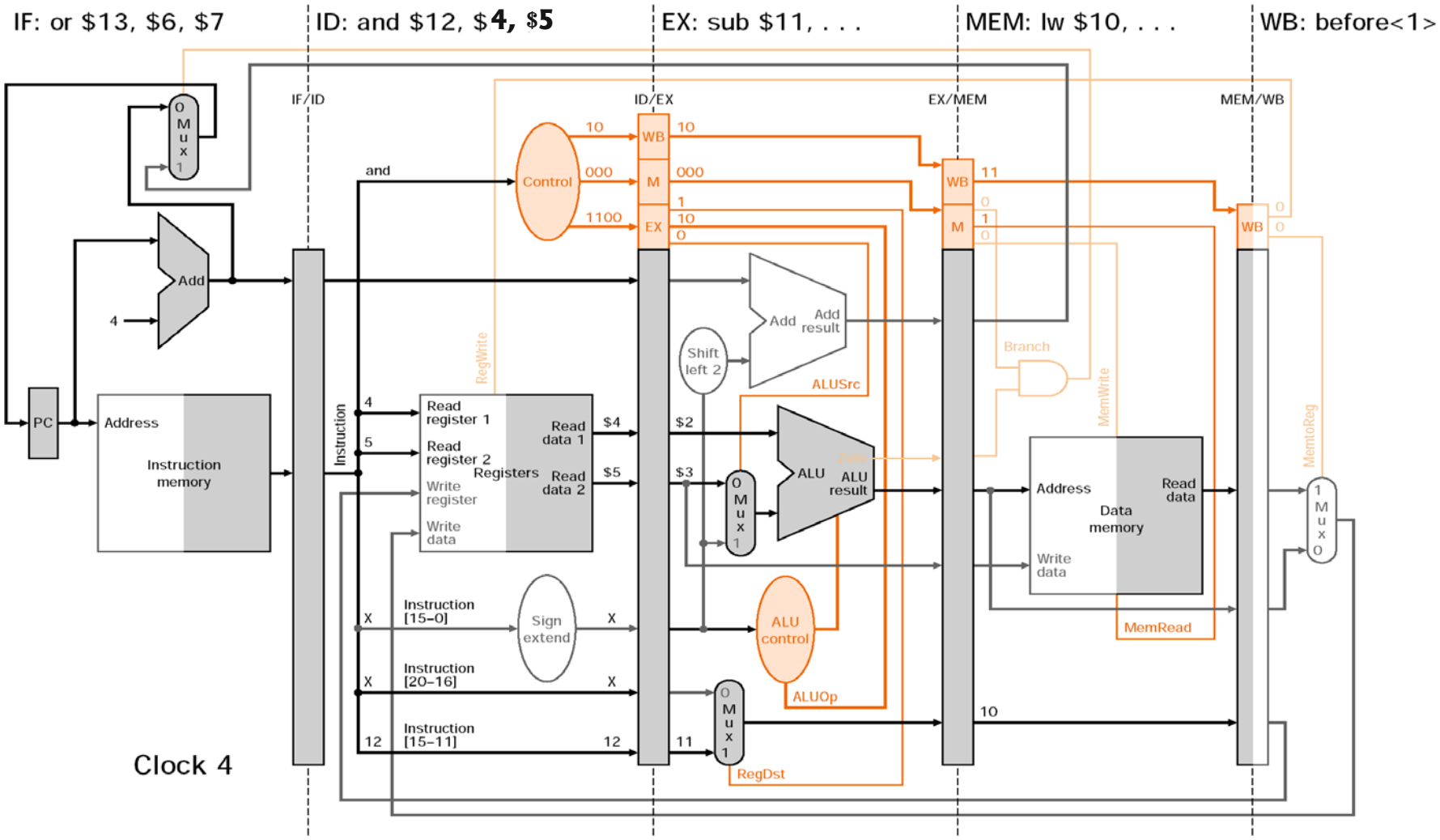
The Grand Example



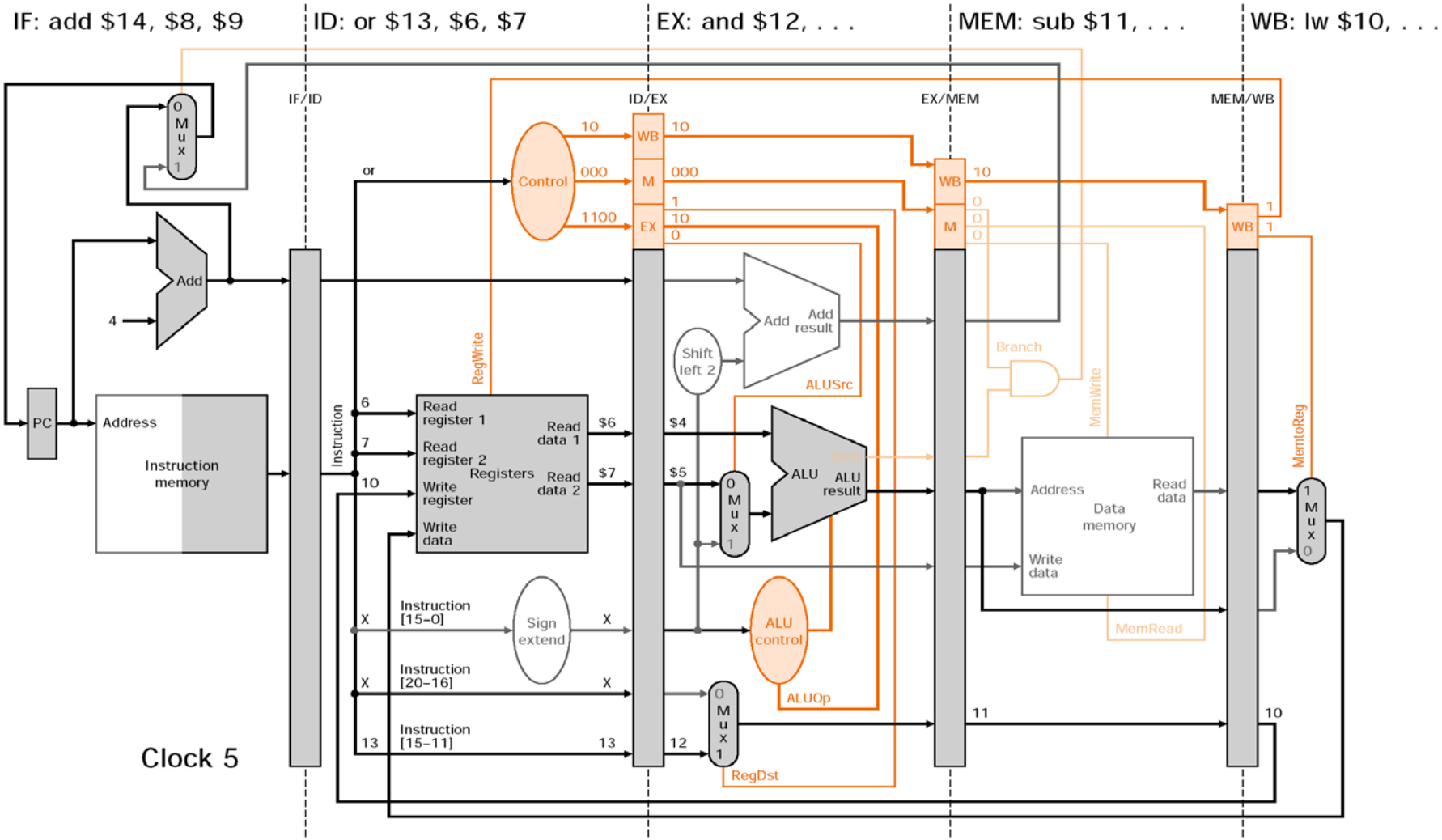
The Grand Example



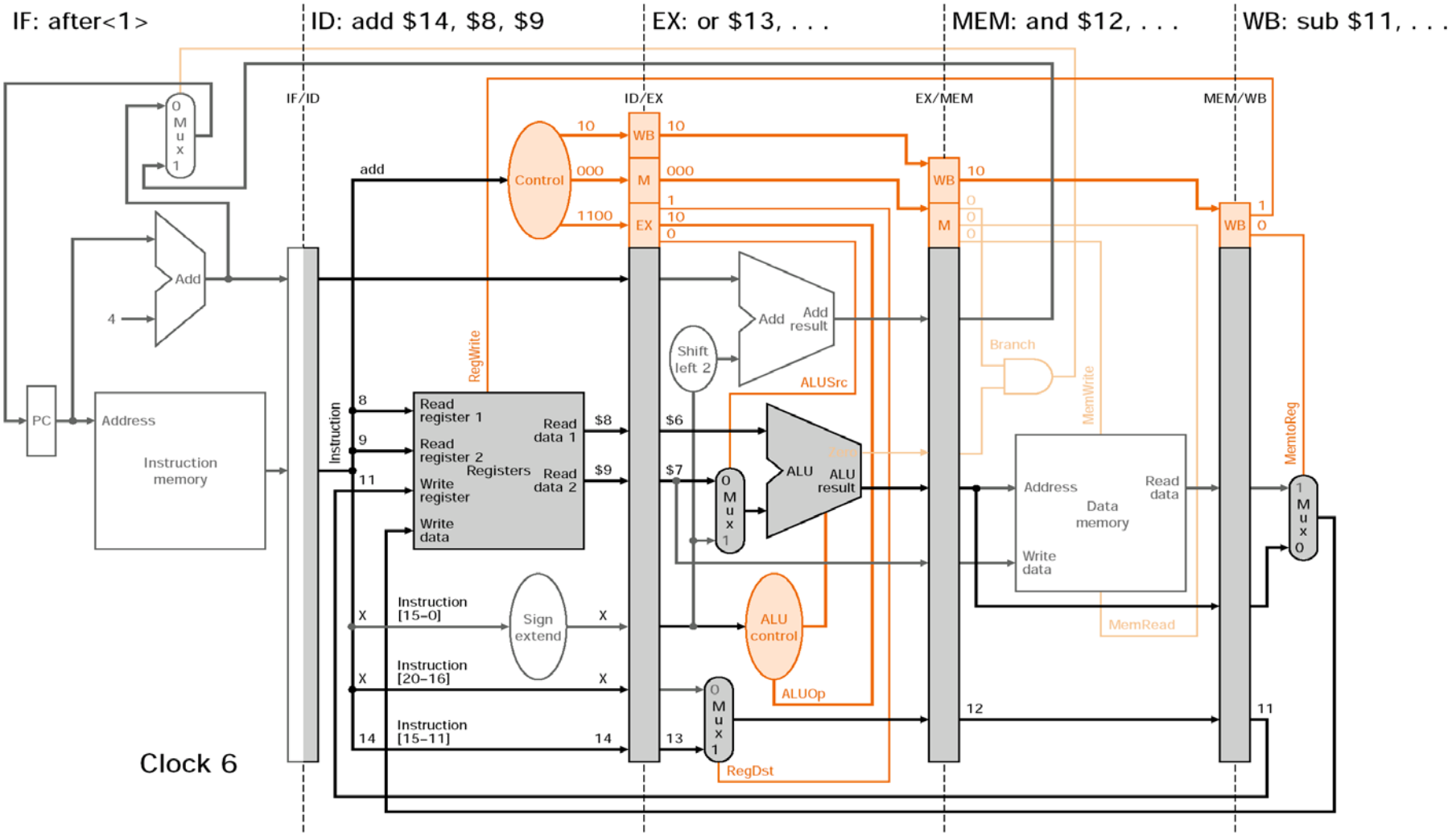
The Grand Example



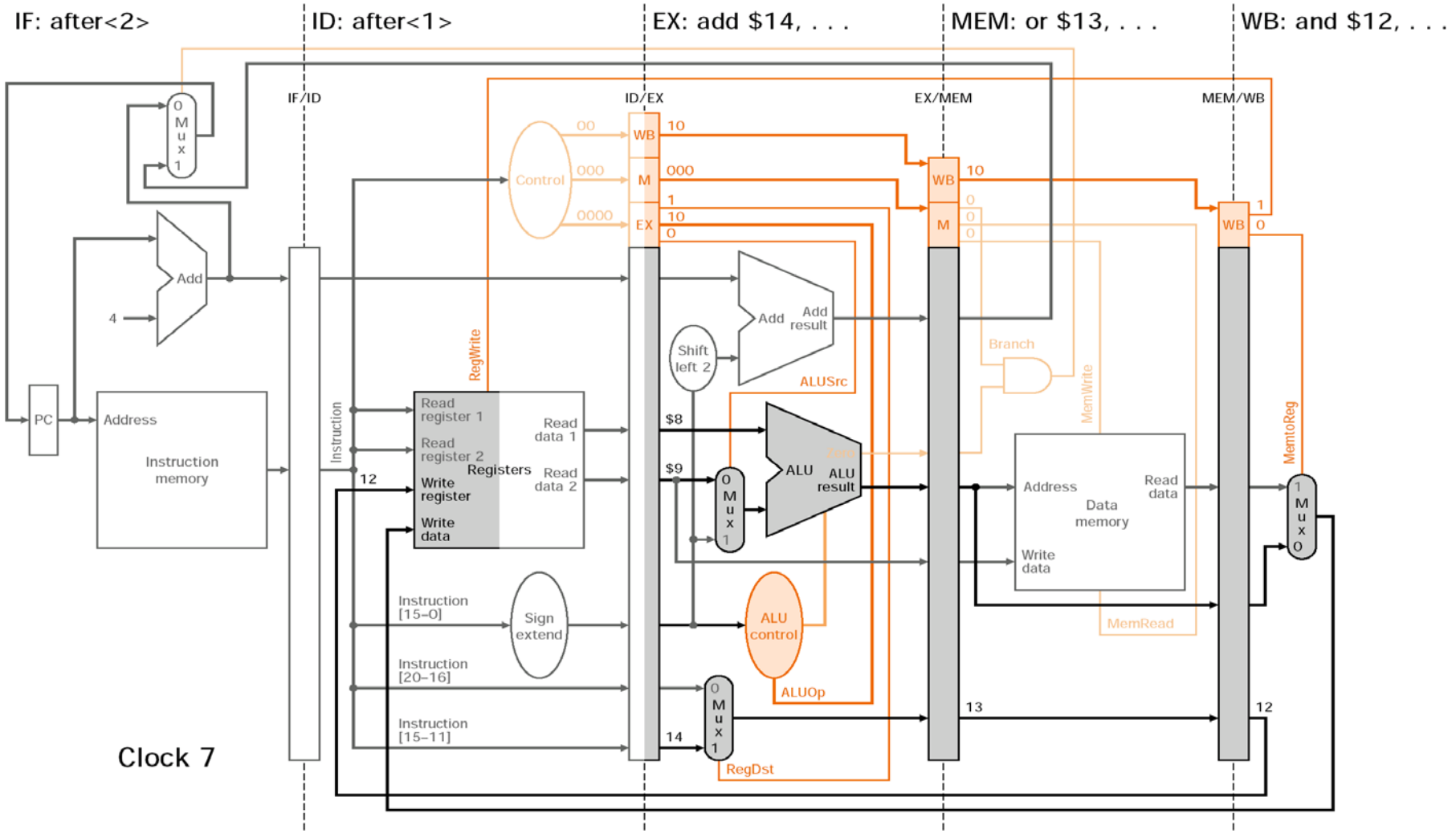
The Grand Example



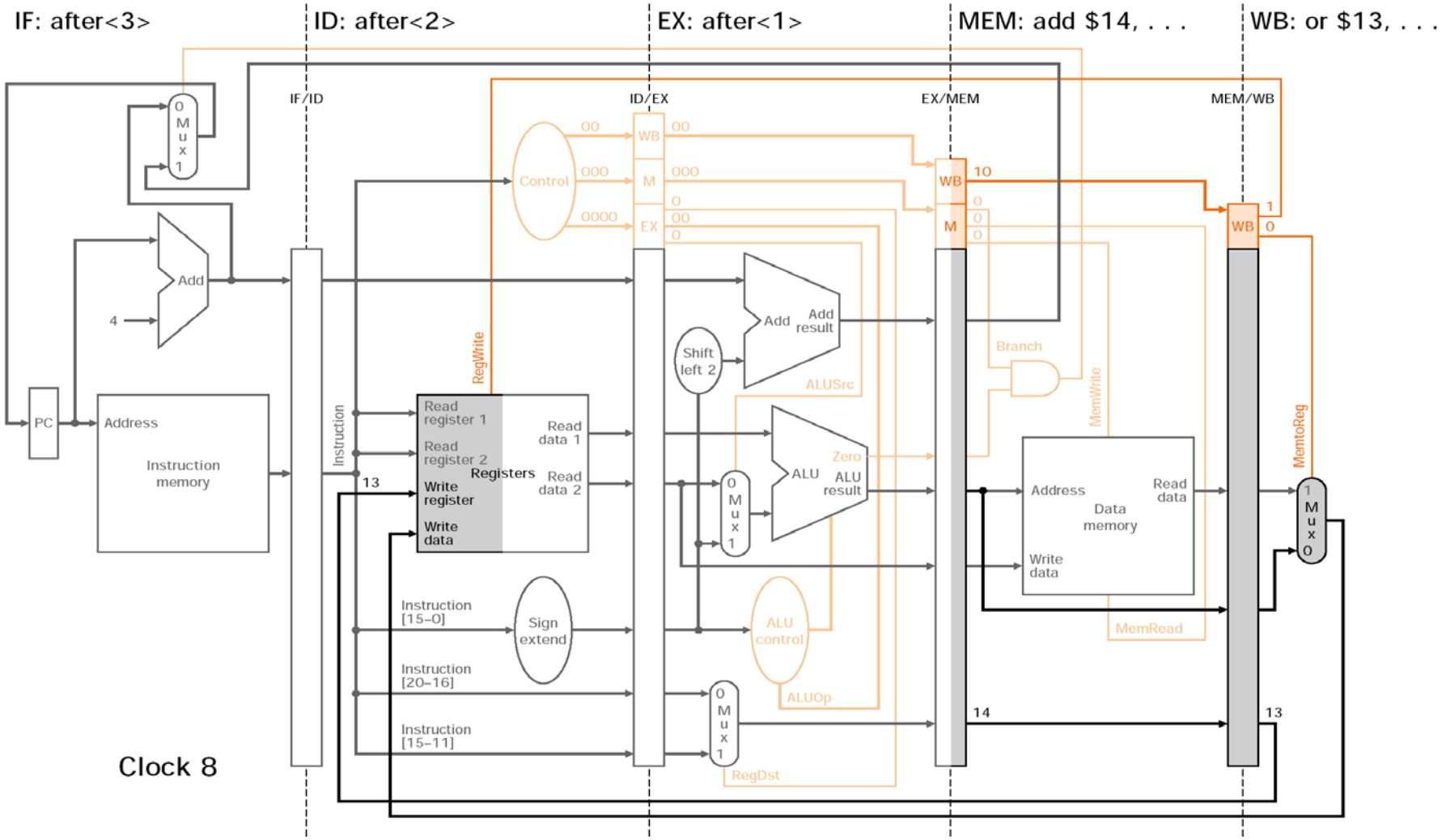
The Grand Example



The Grand Example



The Grand Example



The Grand Example