

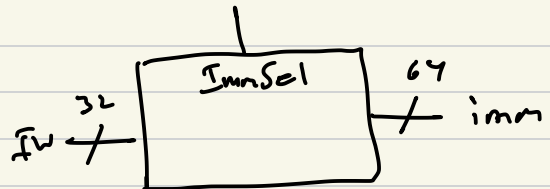
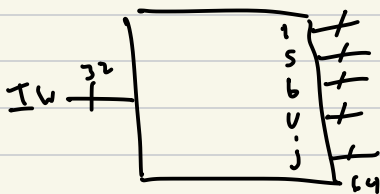
CS315-01 Processor Instruction Decoding 2025-11-04

RegDecoder - $IW \rightarrow rs1, rs2, rd$

ImmDecoder - $IW \rightarrow$ all immediate types

Option #1

option #2



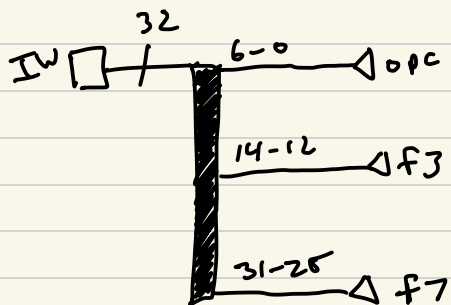
Instruction Decoding

$IW \rightarrow$ Control Signals

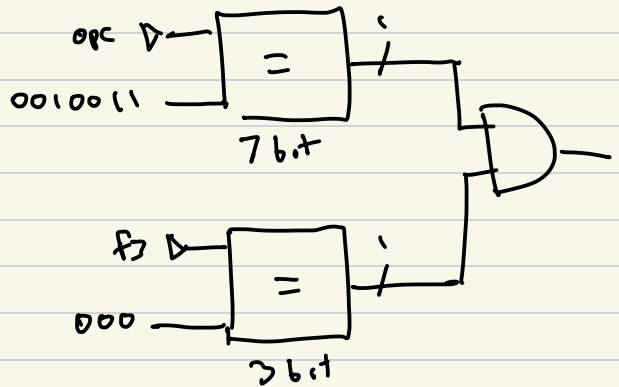
To add new instructions:

- 1) Add new components if needed or modify existing components
- 2) Add or modify the datapath using wires/buses
- 3) Often this will require new or modified muxes.
- 4) Update InstDecoder possibly with new control line outputs

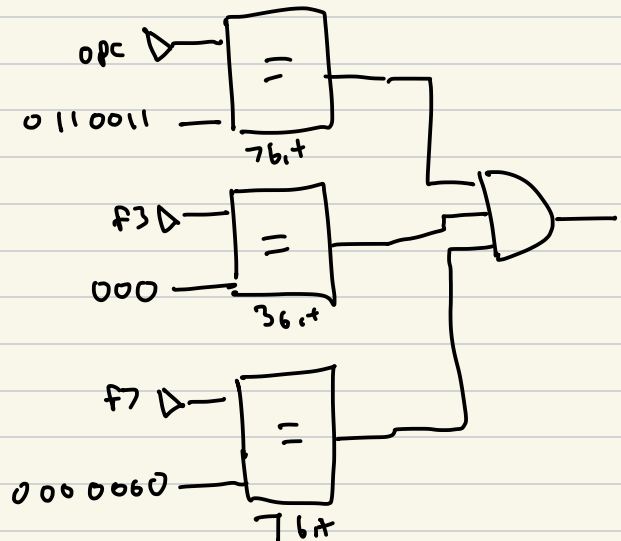
Inst Decoder

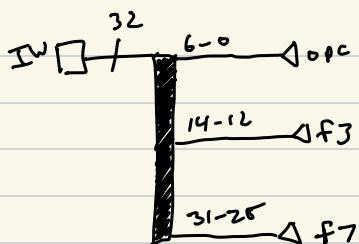


ADDI

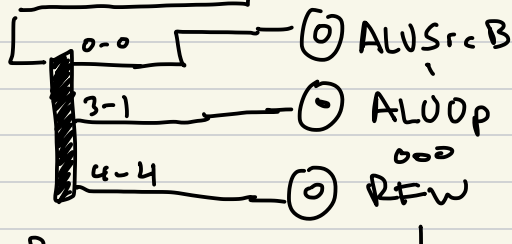
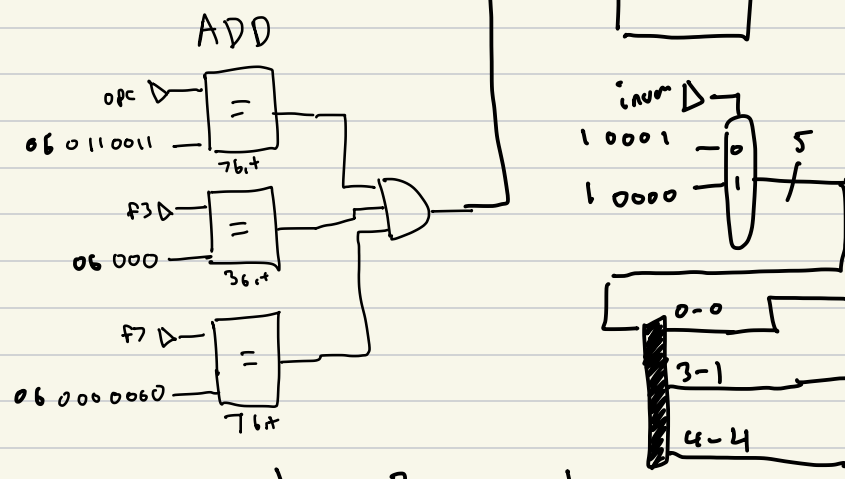
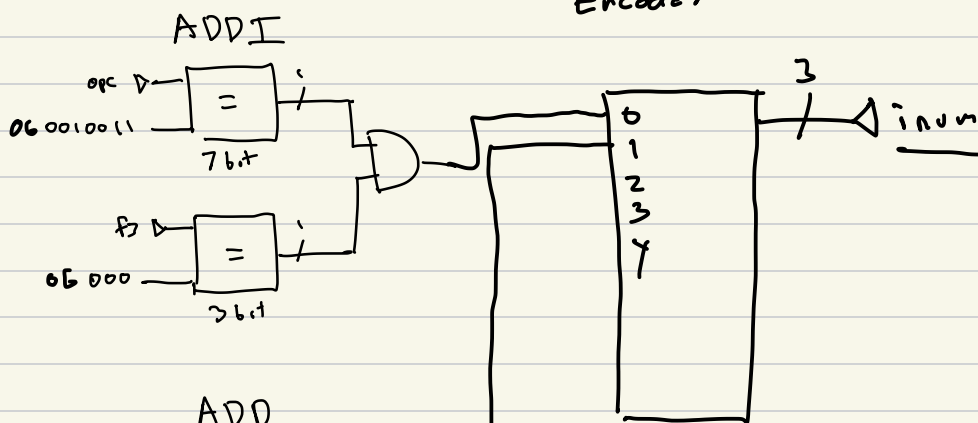


ADD



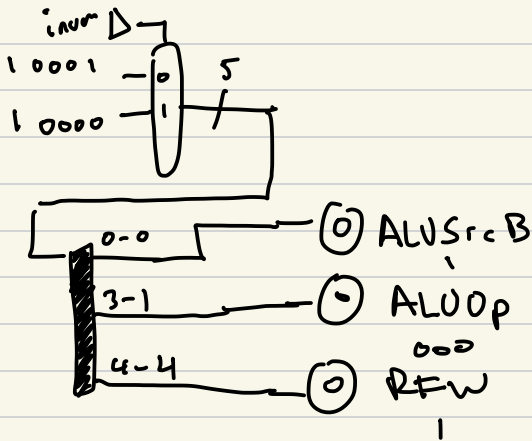


Priority Encoder



inst	inum	RFW	ALUOp	ALUSrcB
addi	0	1	000	1
add	1	1	000	0
		idx4		idx0

add: to, ao, al
↑
rd



$\Rightarrow$

