

CS 315-01 ROM Decoder Encoder

Today:

ROM - Instruction Memory

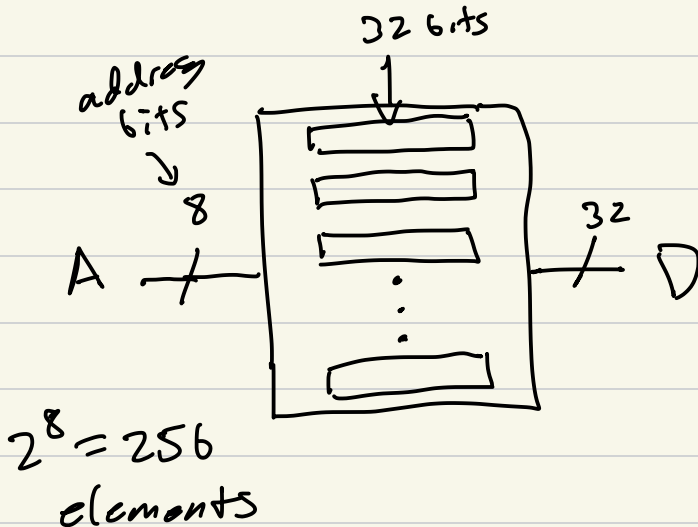
Decoder

Priority Encoder

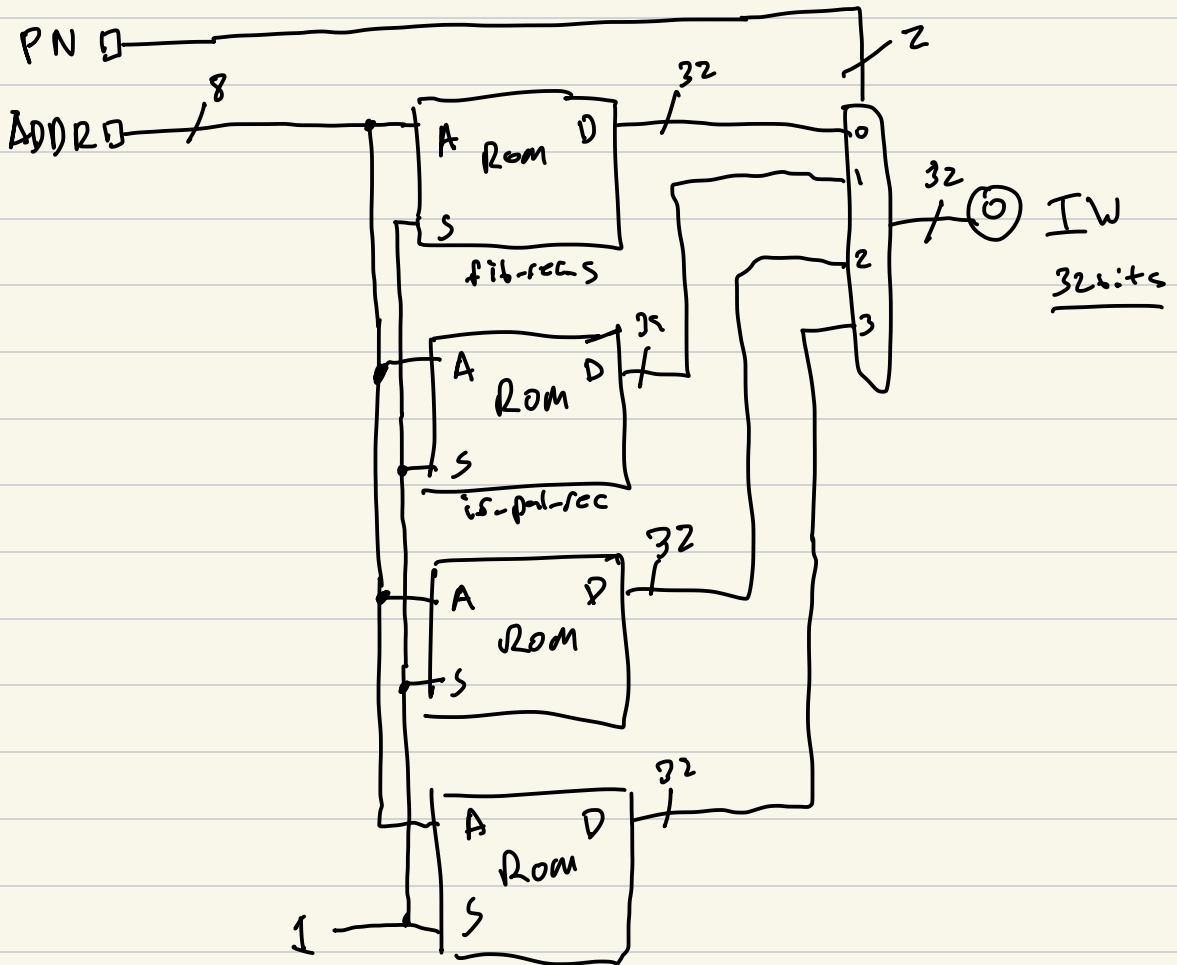
Instruction decoding

ROM Read Only Memory

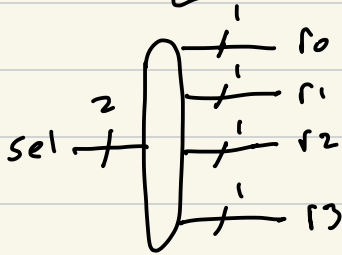
In contrast to RAM



Instruction Memory

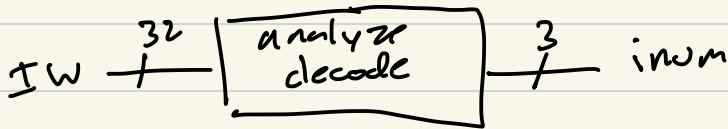


Decoder 2 to 4 Decoder 3 to 8
4 to 16



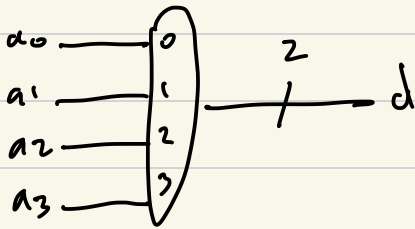
s_1	s_0	r_3	r_2	r_1	r_0	
0	0	0	0	0	1	$r_0 = (\bar{s}_1 \cdot \bar{s}_0)$
0	1	0	0	1	0	$r_1 = (\bar{s}_1 \cdot s_0)$
1	0	0	1	0	0	$r_2 = (s_1 \cdot \bar{s}_0)$
1	1	1	0	0	0	$r_3 = (s_1 \cdot s_0)$

Instruction Decoder (analyze_decode)



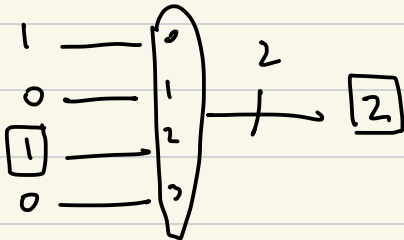
- | | | | | |
|---|-------|---|-------|---|
| 0 | itype | 4 | btype |] |
| 1 | rtype | 5 | jal | |
| 2 | load | 6 | j | |
| 3 | stype | 7 | jalr | |

Encoder



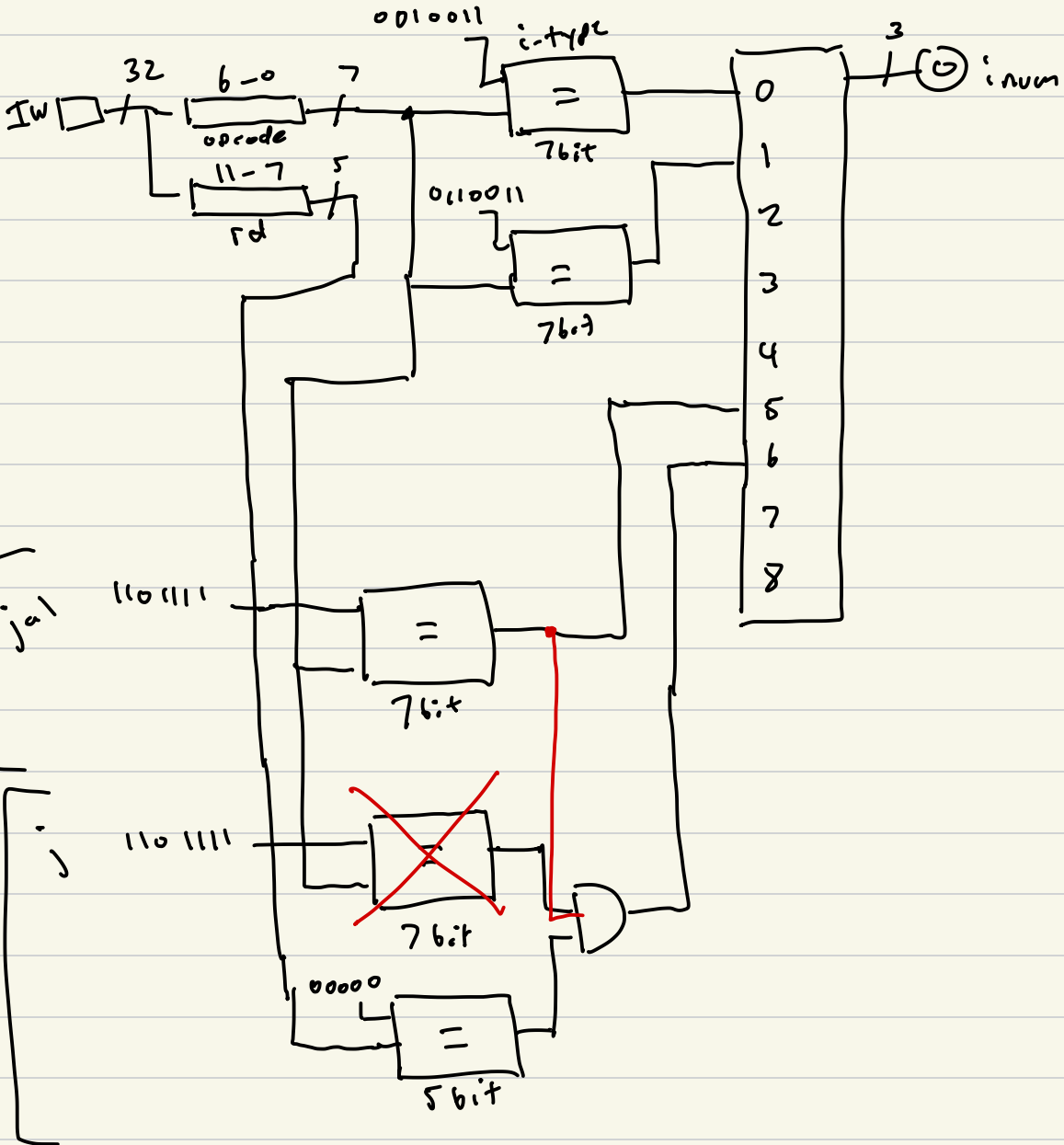
a_3	a_2	a_1	a_0	d_1	d_0
0	0	0	1	0	0
0	0	1	0	0	1
0	1	0	0	1	0
1	0	0	0	1	1

Priority Encoder

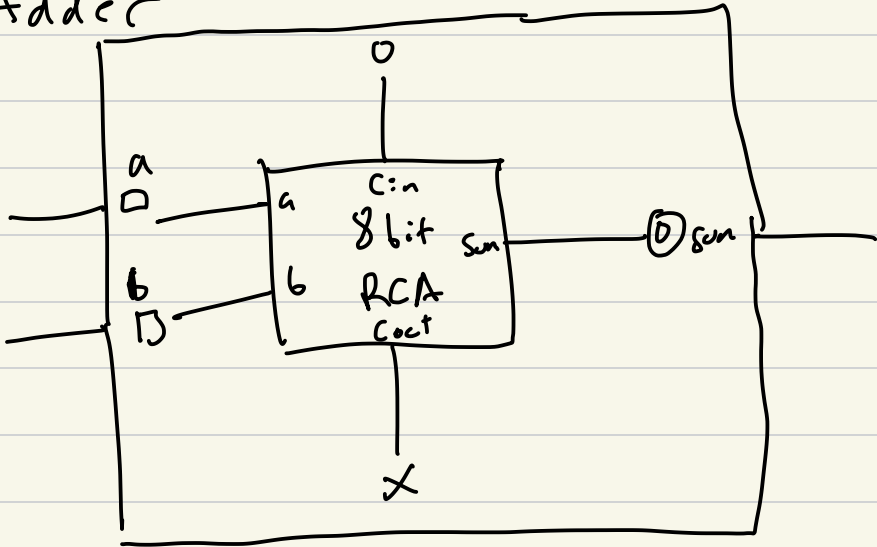


analyze_decode

Priority Encoder



Adder



Detecting End of Code