

# CS 631-02 Static Analysis Circuit

ROM - Instruction Memory

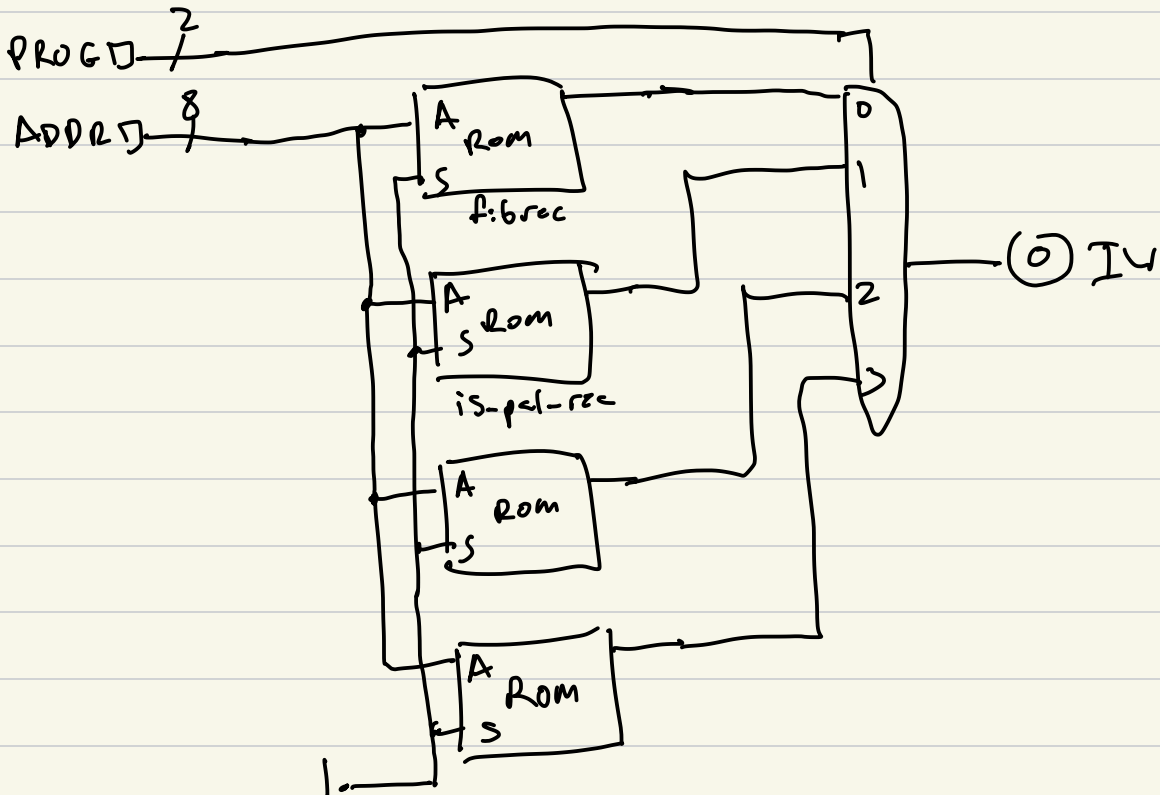
Comparators

Decoder

Encoder (Priority Encoder)

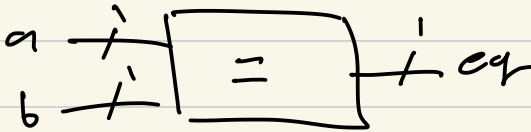
Instruction Decoding

## Instruction Memory



# Comparator

## 1 bit comparator

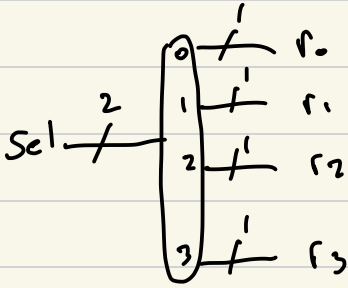


a	b	eq	XOR	XNOR
0	0	1	0	1
0	1	0	1	0
1	0	0	1	0
1	1	1	0	1

## 4 bit comparator

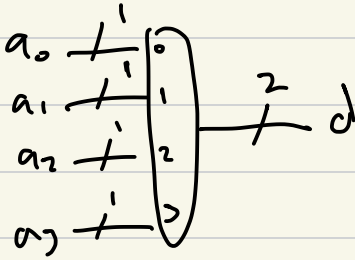


# Decoder



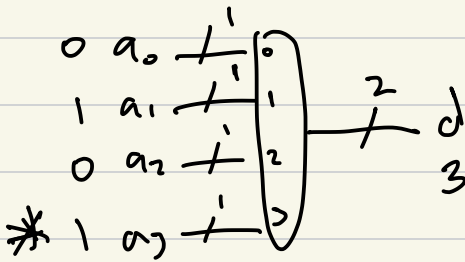
$S_1$	$S_0$	$f_3$	$f_2$	$f_1$	$f_0$	
0	0	0	0	0	1	$f_0 = (\overline{S_1} \cdot \overline{S_0})$
0	1	0	0	1	0	$f_1 = (\overline{S_1} \cdot S_0)$
1	0	0	1	0	0	$f_2 = (S_1 \cdot \overline{S_0})$
1	1	1	0	0	0	$f_3 = (S_1 \cdot S_0)$

# Encoder



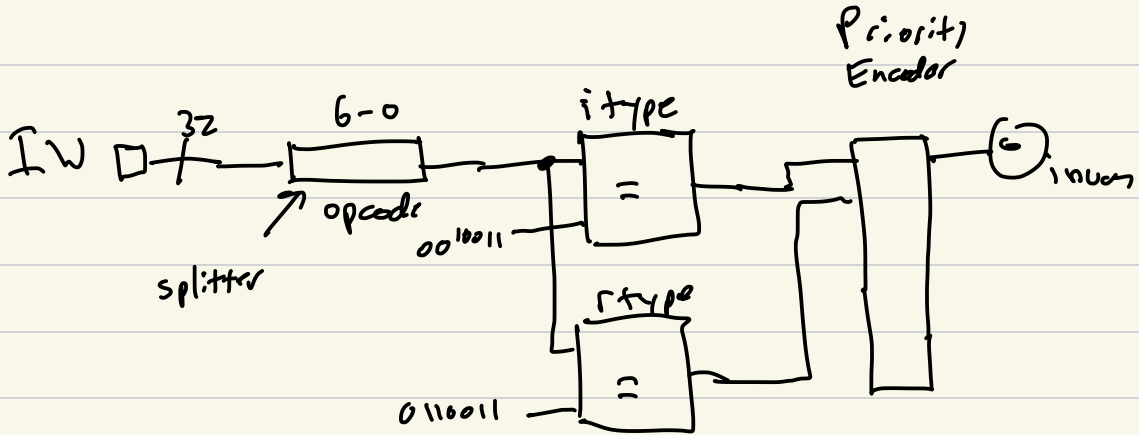
$a_3$	$a_2$	$a_1$	$a_0$	$d_1$	$d_0$
0	0	0	1	0	0
0	0	1	0	0	1
0	1	0	0	1	0
1	0	0	0	1	1

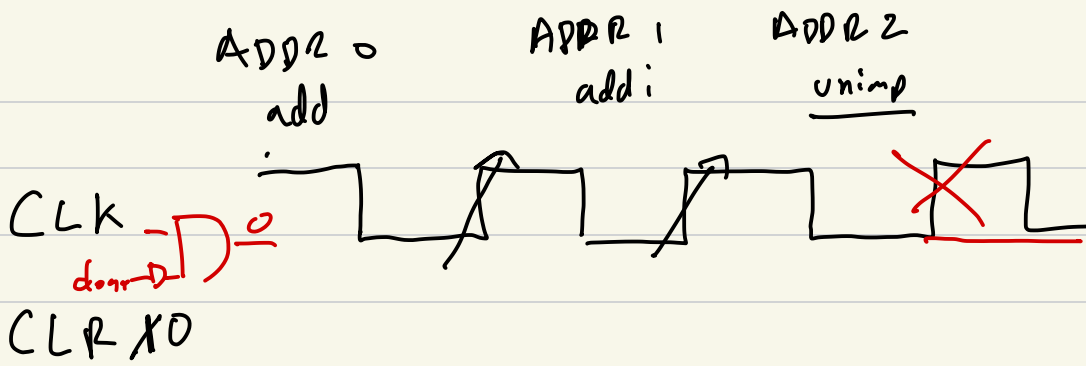
# Priority Encoder



# Analyze Decode

IW  $\rightarrow$  INUM





COUNT    0            1            2

ITYPE	0	0	1
RTYPE	0	1	1

→ add to, r1, r2  
 addi to, r1, 79  
 unimp