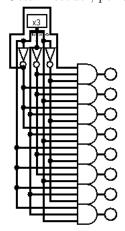
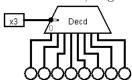
Lab 3

\bullet Decoders

- Octal Decoder, per textbook.

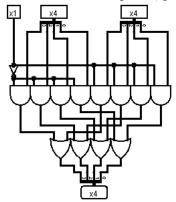


- Octal Decoder, Logisim component.

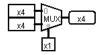


\bullet Multiplexers

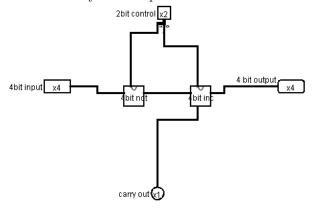
 $-\,$ 2:1 4-bit wide Multiplexer, per textbook.



- 2:1 4-bit wide Multiplexer, Logisim component.



- Tiny Alu Circuit
 - 4-bit wide Tiny Alu component.



- Function table for Tiny Alu component

A	Op	Out
\overline{k}	00	k
k	01	$if \ k \ge 0, k+1; else \ k-1$
k	10	$if \ k \ge 0, k-7, else \ k+8$
k	11	if k = -1, -1; if k > 0, k - 9; if k < -1, k + 9