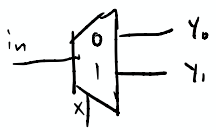
D- MULTIPLEXER

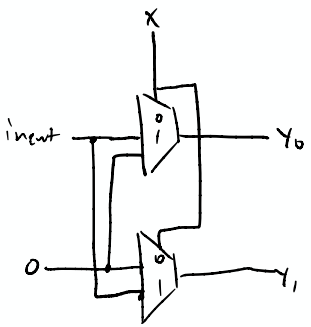
1:2

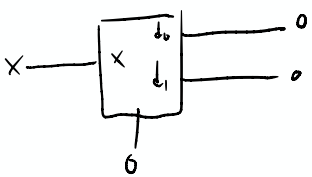


if $x = 0$
Y_0 = input
$Y_1 = 0$

else
$Y_0 = 0$
Y_1 = input

- Comparing TVs, either one or other.
- if input = 0, output always 0





ENCODERS

2:1 encoder

d_0	d_1	X
1	0	0
0	1	1

4:2 encoder

d_0	d_1	d_2	d_3	X_0	X_1
1	0	0	0	0	0
0	1	0	0	0	1
0	0	1	0	1	0
0	0	0	1	1	1
0	0	0	0	0	0

PRIORITY ENCODER

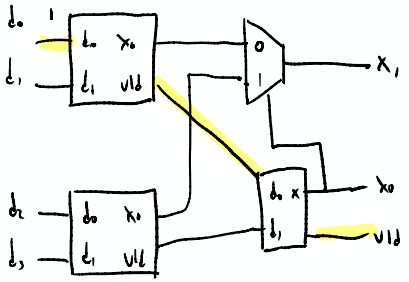
d_0	d_1	d_2	d_3	X_0	X_1
1	0	0	0	0	0
X	1	0	0	0	1
X	X	1	0	1	0
X	X	X	1	1	1
0	0	0	0	0	0

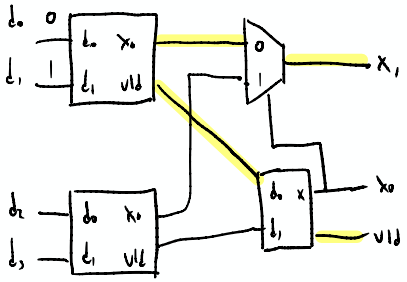
⇒

↳ overriding factor is rightmost 1.

what if multiple inputs are on?

- robot w/ sensors
  - scent → #4 priority (d_0)
  - sound → #3 priority (d_1)
  - bump → #2 priority (d_2)
  - fire → #1 priority (d_3)


d_0 1
d_1
d_2
d_3
x_0
vld
0
1
X_1
X_0
vld


d_0 0
d_1 1
d_2
d_3
x_0
vld
0
1
X_1
X_0
vld