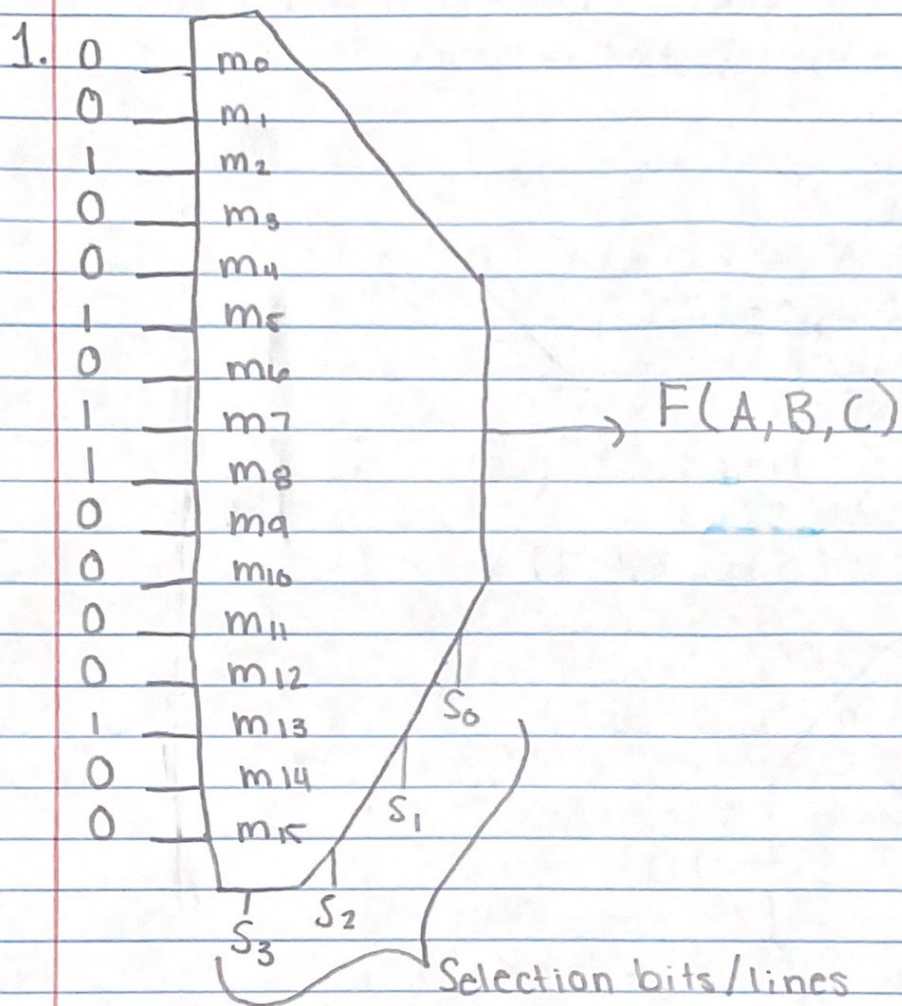


Jalen Powell  
Elec 2200

09/27/21

### Hw 13



2. The minimum selection lines for a MUX with 5 bits is given by...

$$n \geq \log_2 5$$
$$= \boxed{n=3}$$

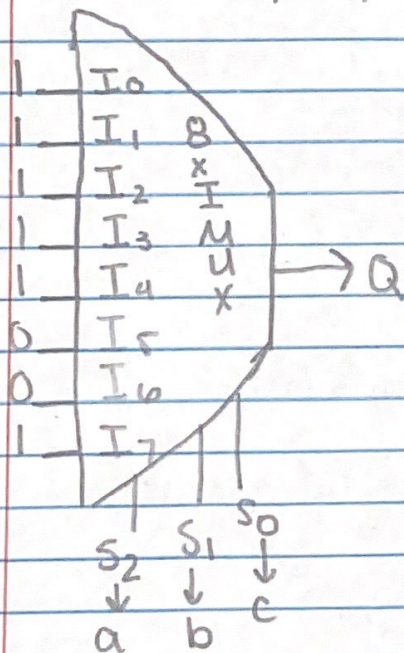


3. Demux are used in the Arithmetic Logic Unit to store the data in respective registers and they are used in ATM packets broadcasting.  
Ex. Audio, video, subtitle and then will send it to respective decoders.

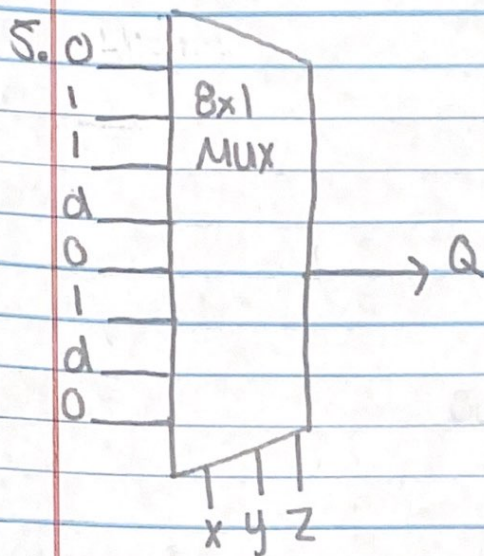
$$\begin{aligned}
 4.) \quad Q &= \overline{a} \overline{p} \\
 P &= b \oplus c = \overline{b}c + b\overline{c} \\
 Q &= \overline{a}(\overline{b}c + b\overline{c}) \\
 &= \overline{a}\overline{b}c + \overline{a}b\overline{c} \\
 &= (\overline{a}\overline{b}c)(\overline{a}b\overline{c}) \\
 &= (\overline{a} + b + \overline{c})(\overline{a} + \overline{b} + c)
 \end{aligned}$$

$$Q = \Pi M(5, 6)$$

$$Q = \Sigma m(0, 1, 2, 3, 4, 7)$$







Output of Mux is given by...

$$f = \bar{x}\bar{y}\bar{z}(0) + \bar{x}\bar{y}z(1) + \bar{x}y\bar{z}(1) + \bar{x}yz(d) + x\bar{y}\bar{z}(0) + x\bar{y}z(1) + xy\bar{z}(d) + xyz(0)$$

x \ yz	00	01	11	10
0	0	1	d	1
1	0	1	7	d

$$f = \bar{y}z + y\bar{z} = y \oplus z$$