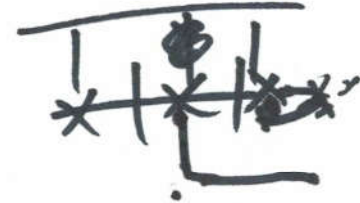
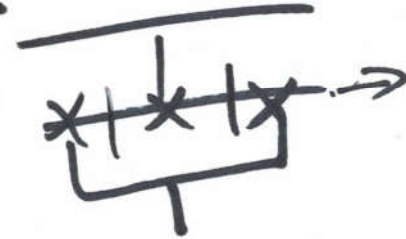
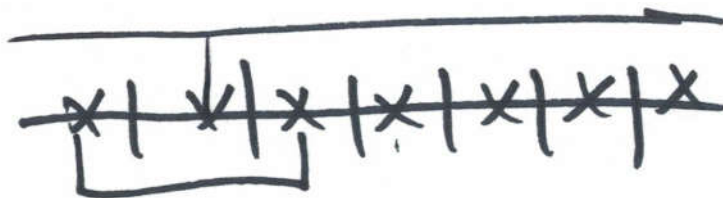
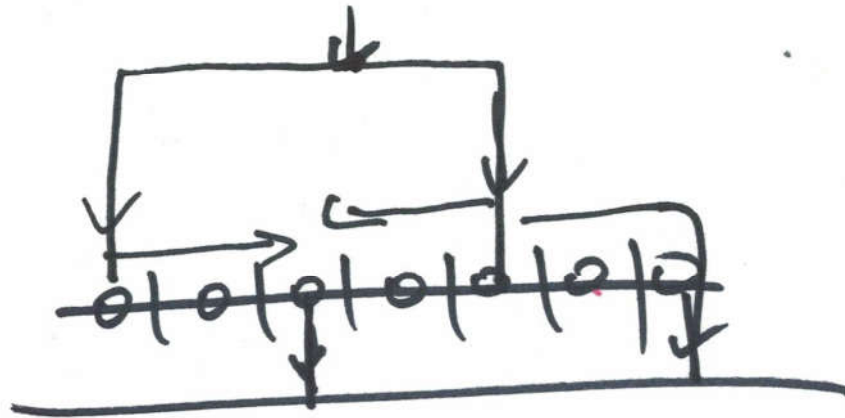
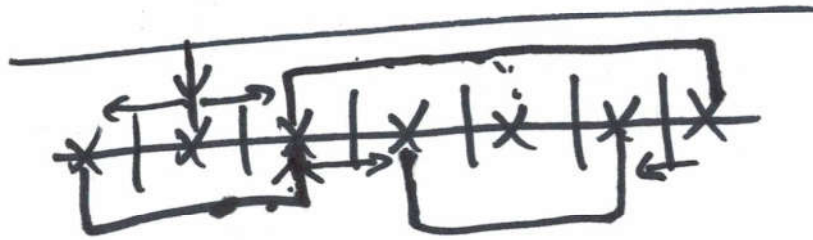
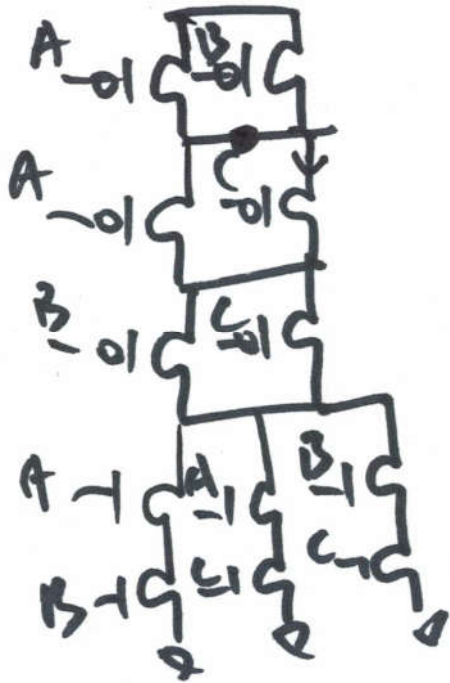
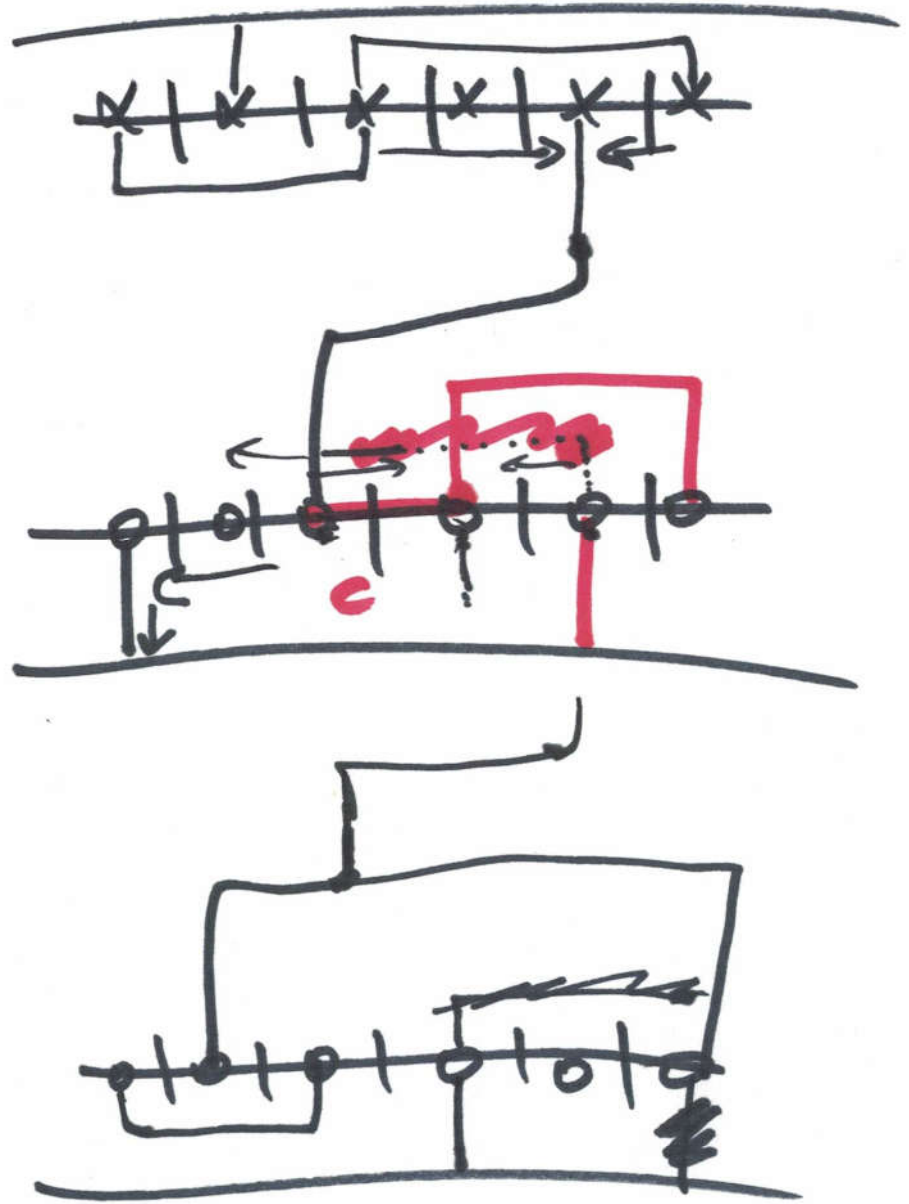
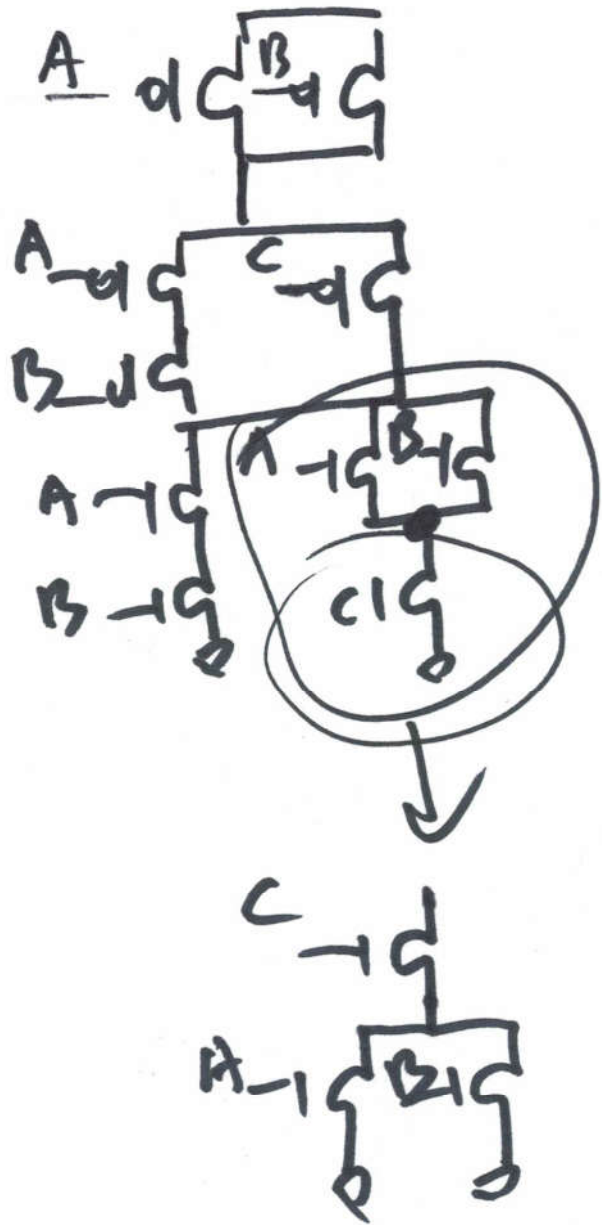


More on Stick Diagrams

$$F = \overline{AB + AC + BC} = \overline{\overline{AB} + (A+B).C}$$

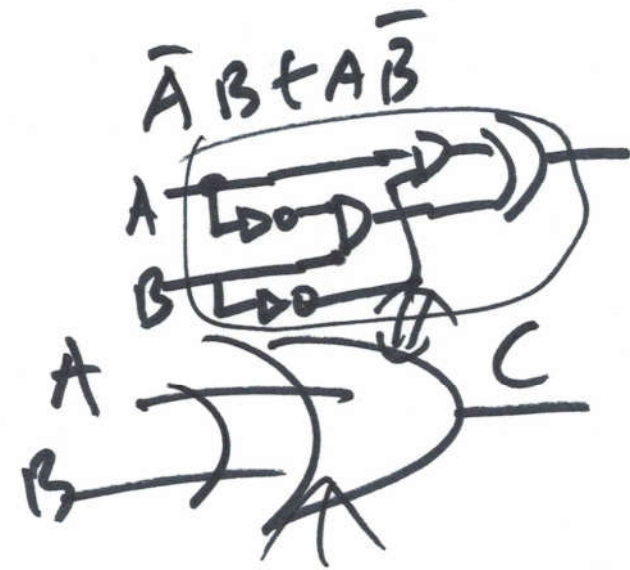
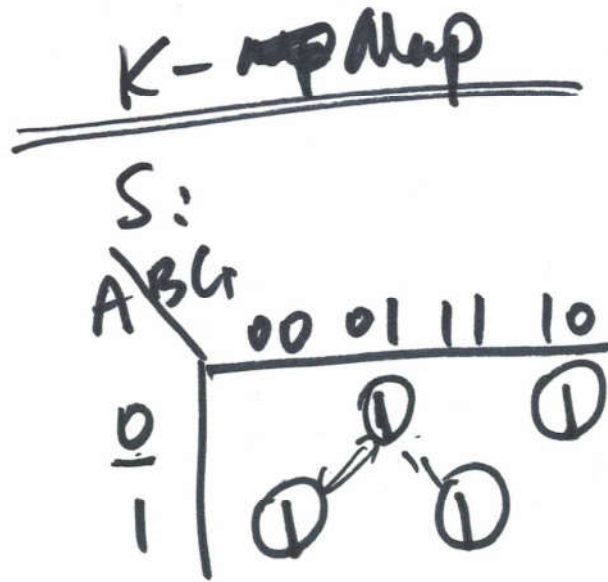




adders

△ Ripple Carry Adder (RCA)

| A | B | C _i | S | C _o |
|---|---|----------------|---|----------------|
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 0 |
| 0 | 1 | 0 | 1 | 0 |
| 0 | 1 | 1 | 0 | 1 |
| 1 | 0 | 0 | 1 | 0 |
| 1 | 0 | 1 | 0 | 1 |
| 1 | 1 | 0 | 0 | 1 |
| 1 | 1 | 1 | 1 | 1 |



$$\begin{aligned}
 S &= \bar{A}\bar{B}C_i + \bar{A}B\bar{C}_i + A\bar{B}\bar{C}_i + ABC_i \\
 &= (\bar{A}\bar{B} + AB)C_i + (\bar{A}B + A\bar{B})\bar{C}_i \\
 &= (\bar{A}\bar{B} + AB)C_i + (\bar{A}B + A\bar{B})\bar{C}_i \\
 &\Rightarrow \underline{A \oplus B} \oplus C_i \\
 &= \underline{A \oplus B \oplus C_i}
 \end{aligned}$$

C_0 :

| | | | | |
|----------------------|----|----|----|----|
| $A \backslash B C_i$ | 00 | 01 | 11 | 10 |
| 0 | | | 1 | |
| 1 | | 1 | 1 | 1 |

$$C_0 = AC_i + AB + BC_i$$
$$= (A+B)C_i + AB$$

$$S = (\bar{A}B + A\bar{B}) \oplus C_i = \underline{(\bar{A}B + A\bar{B})\bar{C}_i} + \underline{\overline{\bar{A}B + A\bar{B}} C_i}$$

