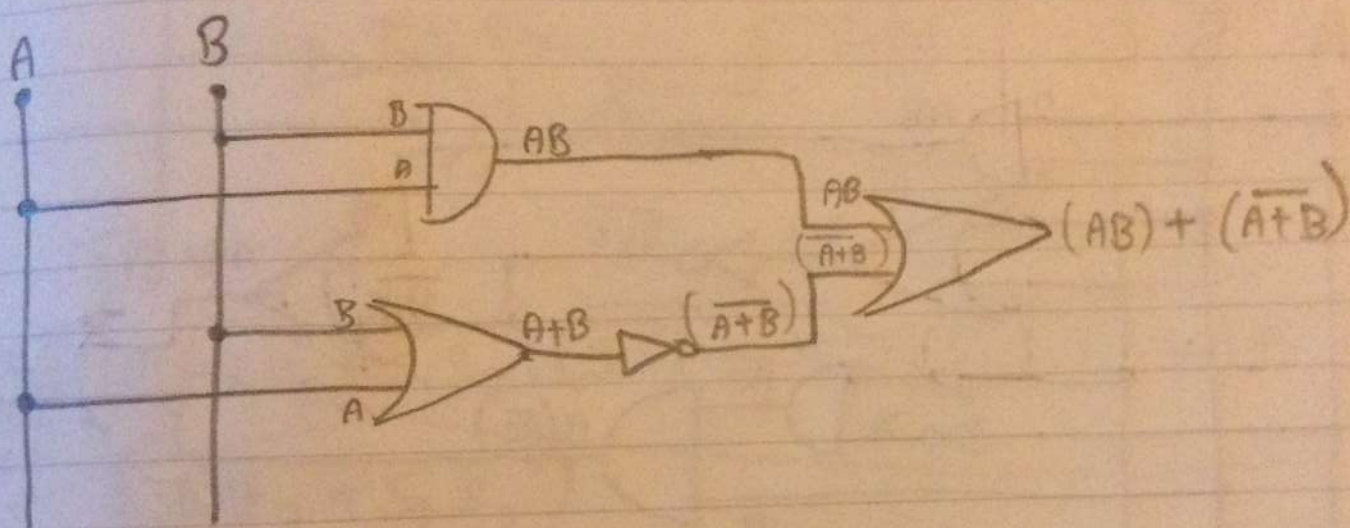


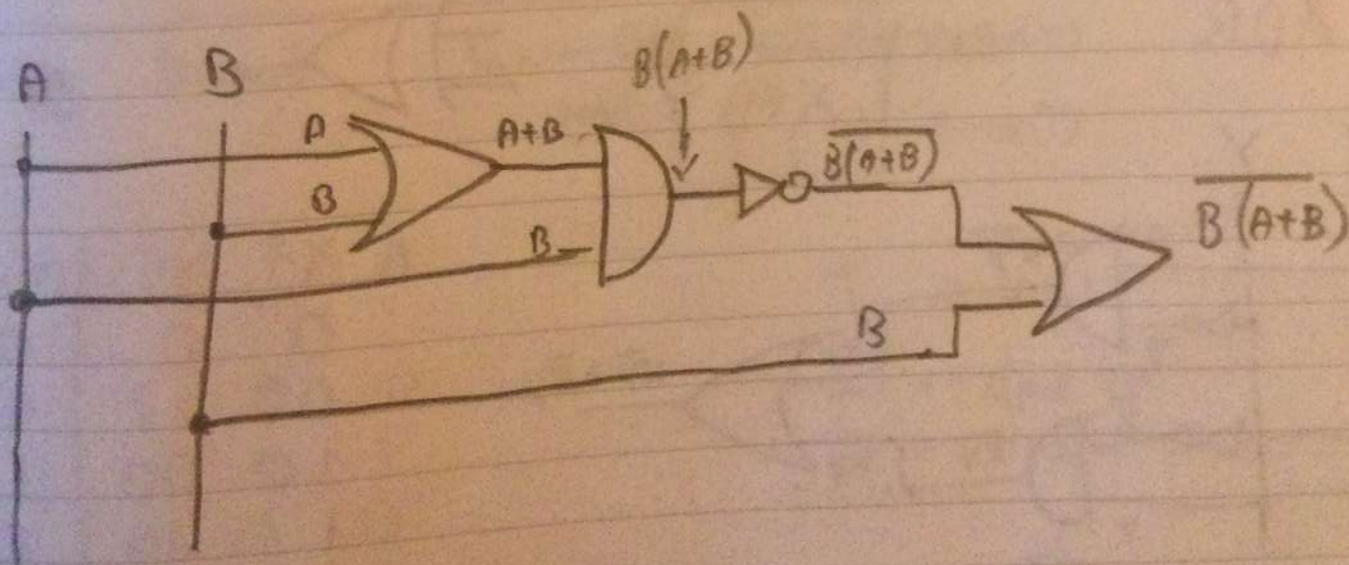
Task #1

Boolean logic

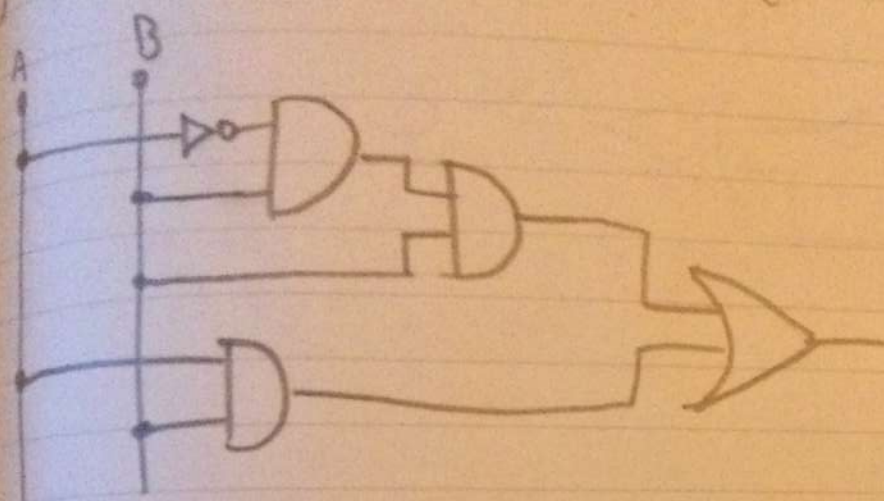
a) $AB + (\overline{A+B})$



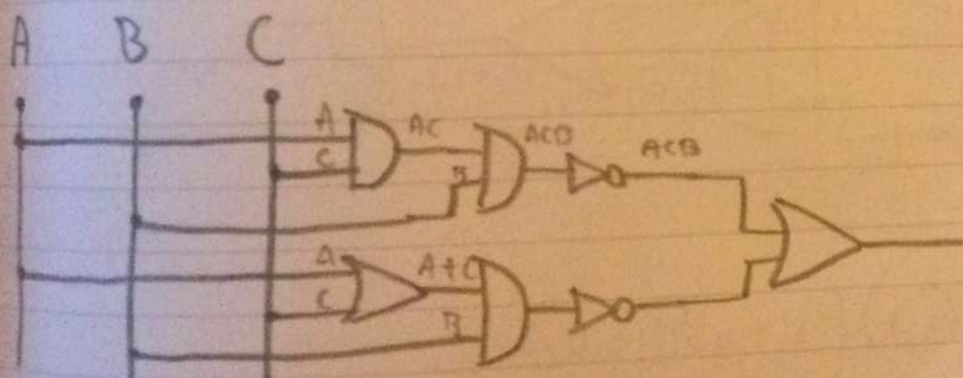
b) $\overline{A(A+B)} + B$



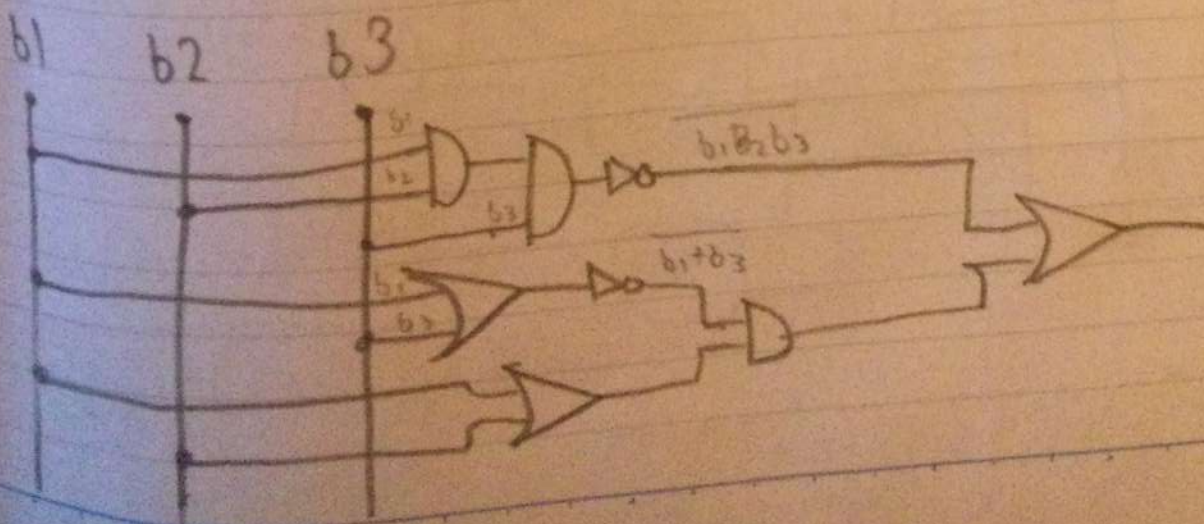
c) $((\text{not } A) \text{ and } B) \text{ or } (A \text{ and } B)$

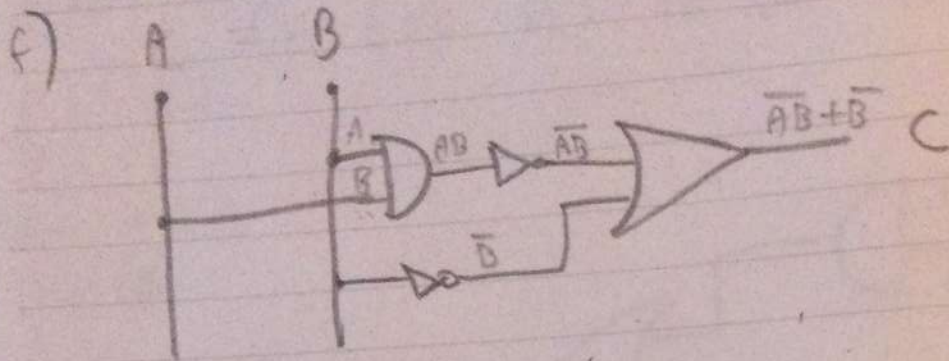


d) $\overline{ACB} + \overline{(A+C)B}$

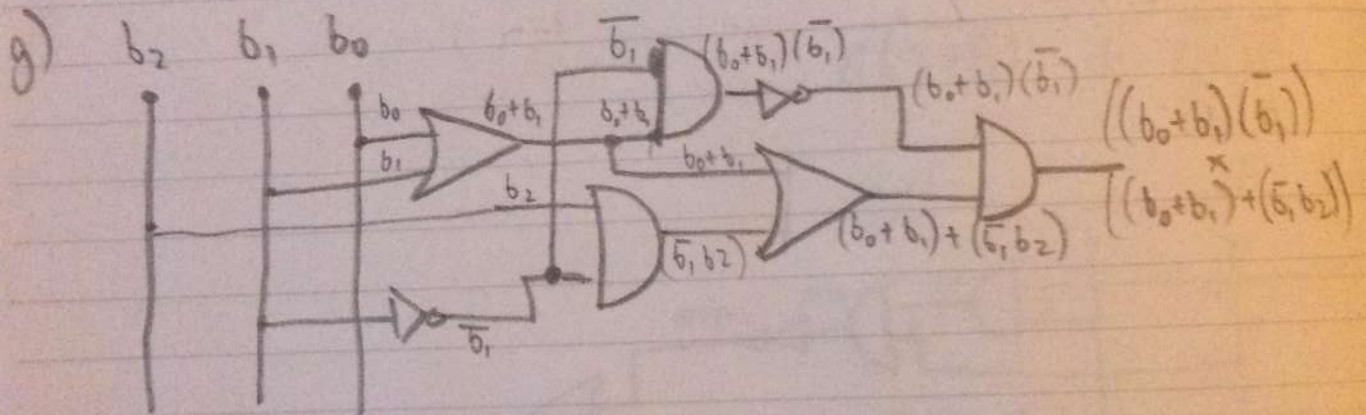


e) $\overline{b_1 b_2 b_3} + (\overline{b_1 + b_3})(b_1 + b_2)$

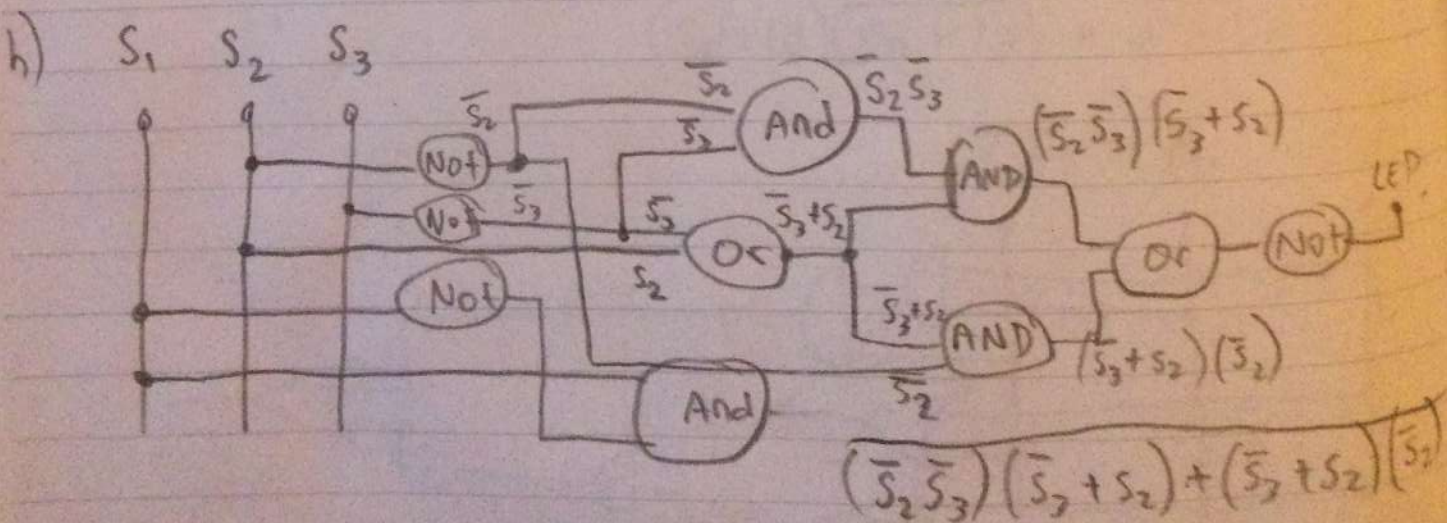




g) $C = \overline{AB} + \overline{B}$



Out = $((b_0+b_1)(\overline{b_1}))((b_0+b_1)+(\overline{b_1}b_2))$



LED = $(\overline{S_2}\overline{S_3})(\overline{S_3}+S_2) + (\overline{S_3}+S_2)(\overline{S_2})$

Truth Tables

boolean equation \rightarrow truth table

$$X = A \text{ and } B$$

A	B	A B
0	0	0
0	1	0
1	0	0
1	1	1

$$\text{Out} = \text{input 1 or input 2}$$

Input 1	Input 2	Input 1 + Input 2
0	0	0
0	1	1
1	0	1
1	1	1

$$\text{light} = \bar{S}_1 + (\overline{S_2 + S_3}) + S_1 S_2 \bar{S}_3$$

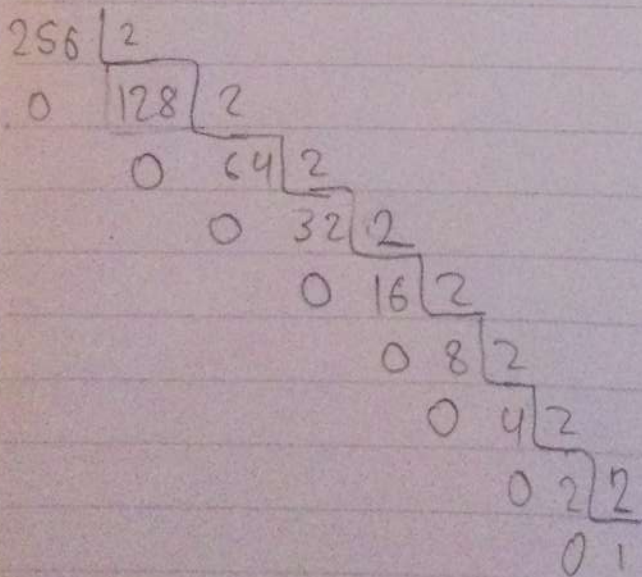
S_1	S_2	S_3	\bar{S}_1	$S_2 + S_3$	$\overline{S_2 + S_3}$	\bar{S}_3	$\bar{S}_3 S_2$	$\bar{S}_3 S_2 S_1$	$\bar{S}_1 + (\overline{S_2 + S_3}) + S_1 S_2 \bar{S}_3$	Light
0	0	0	1	0	1	1	0	0	1	1
0	0	1	1	1	0	0	0	0	1	1
0	1	0	1	1	0	1	1	0	1	1
0	1	1	1	1	0	0	0	0	1	1
1	0	0	0	0	1	1	0	0	0	0
1	0	1	0	1	0	0	0	0	0	1
1	1	0	0	1	0	1	1	1	0	1
1	1	1	0	1	0	0	0	0	0	0

$$\text{login} = \overline{P_1 P_2 P_3} + (\overline{P_3 P_2 P_1}) + \overline{P_1 + P_3}$$

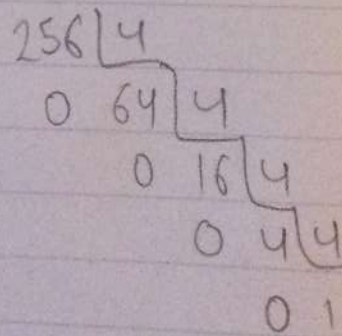
P_1	P_2	P_3	$P_1 P_2$	$P_1 P_2 P_3$	$\overline{P_1 P_2 P_3}$	$\overline{P_1 P_2}$	$\overline{P_1 P_2 P_3}$	$\overline{P_1 P_2 P_3}$	$P_1 + P_3$	$\overline{P_1 + P_3}$	$(\overline{P_1 P_2 P_3} + \overline{P_3 P_2 P_1})$
0	0	0	0	0	1	1	0	1	0	1	1
0	0	1	0	0	1	1	1	0	1	0	1
0	1	0	0	0	1	1	0	1	0	1	1
0	1	1	0	0	1	1	1	0	1	0	1
1	0	0	0	0	1	1	0	1	1	0	1
1	0	1	0	0	1	1	1	0	1	0	1
1	1	0	1	0	1	0	0	1	1	0	1
1	1	1	1	1	0	0	0	1	1	0	1

Data Conversion

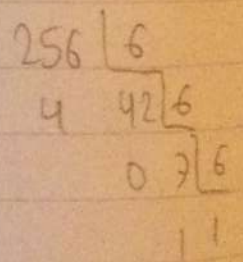
256



= 100000000



= 10000



= 1104

$$* 433_5 \rightarrow X_{10}$$

$$\begin{array}{ccc} 4 & 3 & 3 \\ 5^2 & 5^1 & 5^0 \end{array}$$

$$\begin{aligned} & (4 \times 25) + (3 \times 5) + (3 \times 1) \\ & = 100 + 15 + 3 \\ & = 118 \end{aligned}$$

$$* 433_5 \rightarrow X_8$$

$$= 118_{10} \rightarrow X_8$$

$$\begin{array}{r} 118 \overline{) 8} \\ 6 \quad 14 \overline{) 8} \\ \quad 6 \quad 1 \end{array}$$

$$= 166_8$$

$$* 433_5 \rightarrow X_{16}$$

$$= 118_{10} \rightarrow X_{16}$$

$$\begin{array}{r} 118 \overline{) 16} \\ 6 \quad 7 \end{array}$$

$$= 76_{16}$$

No.

Date

Date

$$* FA32_{16} \rightarrow X_{10}$$

log

$$F A 3 2 = \begin{matrix} 15 & 10 & 3 & 2 \\ 16^3 & 16^2 & 16^1 & 16^0 \end{matrix}$$

$$(15 \times 16^3) + (10 \times 16^2) + (3 \times 16) + (2 \times 1)$$

$$= 64050$$

$$* FA32_{16} \rightarrow X_2$$

$$= 64050_{10} \rightarrow X_2$$

$$\begin{array}{r} 64050 \div 2 \\ 0 \quad 32025 \div 2 \\ 0 \quad 16012 \div 2 \\ 0 \quad 8006 \div 2 \\ 0 \quad 4003 \div 2 \\ 1 \quad 2001 \div 2 \\ 1 \quad 1000 \div 2 \\ 0 \quad 500 \div 2 \\ 0 \quad 250 \div 2 \\ 0 \quad 125 \end{array}$$

$$\begin{array}{r}
 0 \ 125 \overline{) 2} \\
 \underline{1} 62 \overline{) 2} \\
 0 \ 31 \overline{) 2} \\
 1 \ 15 \overline{) 2} \\
 1 \ 7 \overline{) 2} \\
 1 \ 3 \overline{) 2} \\
 1 \ 1
 \end{array}$$

$$= 111101000110000$$

$$* FA32_{16} \rightarrow x_8$$

$$= 64050_{10} \rightarrow x_8$$

$$\begin{array}{r}
 64050 \overline{) 8} \\
 \underline{2} 8006 \overline{) 8} \\
 6 1007 \overline{) 8} \\
 0 \ 125 \overline{) 8} \\
 5 \ 15 \overline{) 8} \\
 7 \ 1
 \end{array}$$

$$= 175062$$