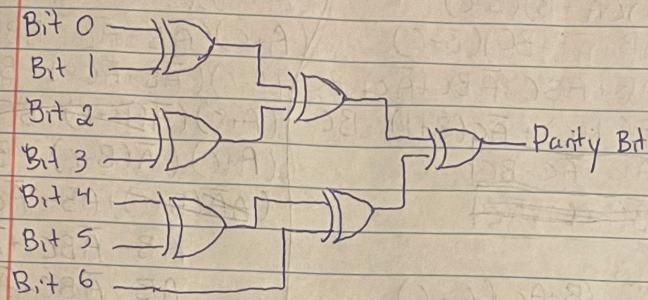


Homework II

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Problem 1



Problem 2

| | Analog | Binary |
|------|--------|--------|
| 2.7V | 000 | |
| 3.0V | 001 | |
| 3.3V | 011 | |
| 3.6V | 010 | |
| 3.9V | 110 | |
| 4.2V | 111 | |
| 4.5V | 101 | |

Problem 3

$$312 \quad 0011 \quad 0001 \quad 0010$$

$$641 \quad 0110 \quad 0100 \quad 0001$$

$$\underline{953 = 1001 \quad 0101 \quad 0011} = 953 \checkmark$$

$$4567 \quad 0100 \quad 0100 \quad 0110 \quad 0111$$

$$9374 \quad 1001 \quad 0011 \quad 0111 \quad 0100$$

$$\underline{13941 \quad 1101 \quad 1000 \quad 1101 \quad 1011} = 13941 \checkmark$$

$$\begin{array}{r} 0110 \\ 0011 \\ \hline 0001 \end{array}$$

$$739 \quad 0110 \quad 0101 \quad 1001$$

$$380 \quad 0011 \quad 1000 \quad 0000$$

$$\underline{379 \quad 0010 \quad 1101 \quad 1001} = 379 \checkmark$$

$$\begin{array}{r} 11 \\ 1101 \\ \hline 1001 \end{array}$$

BU
ALG
RULE

$$\begin{aligned}
 & (A+B)(A+C) \\
 & AA + AC + AB + BC \\
 & A + A(C + AB + BC) \\
 & A(1 + C + B) + BC \\
 & A + BC
 \end{aligned}$$

Problem IV

$(\bar{C} \cdot \bar{A})$

a) $(A+C)(\bar{A}+B)(B+C)$

$\text{O } (\bar{A}B + \bar{A}C + BC)(B+C)$

$\bar{A}B + ABC + \bar{A}BC + \bar{A}C + BC$

$AB(1+C) + \bar{A}C(B+1) + BC$

$\boxed{AB + \bar{A}C + BC}$

$\boxed{\bar{B}(A+C) + \bar{A}C}$

am I

1

What is missing?

$(B+A\bar{C})(A+C)$

$(BA + BC + A\bar{C} + \bar{A}CC)$

$(BA + BC + \bar{A}C(A+1))$

a) $\text{Red } \boxed{B + \bar{A}C}$

$(A+C)(\bar{A}B + \bar{A}C + BC)$

$(A+C)(\bar{A}B + \bar{A}C + BB + BC)$

$(A+C)(\bar{A}B + \bar{A}C + B + BC) \rightarrow B(\bar{A} + C)$

$(A+C)(\bar{A}(B+C) + BC)$

$(A+C)(\bar{A}(B+C) + B)$

$(\cancel{A}\bar{B}(B+C) + AB + \bar{A}C(B+C) + BC)$

$AB + \bar{A}BC + \bar{A}CC + BC$

$AB + \bar{A}BC + \bar{A}C + BC$

$AB + \bar{A}C(B+1) + BC$

$\boxed{AB + \bar{A}C + BC}$

b) $(A + \bar{B} + \bar{C})(\bar{A} + B + \bar{C})$

$\cancel{AA} + AB + \bar{A}C + \bar{A}\bar{B} + B\bar{B} + \cancel{BC} + \cancel{\bar{AC}} + B\bar{C} + \cancel{CC}$

$\text{O } + \cancel{AB} + A\bar{C} + \cancel{AB} + \text{O} + \cancel{BC} + \cancel{AC} + B\bar{C} + \cancel{C}$

$\cancel{C}(A + \bar{B} + \bar{A} + B + 1)$

$\cancel{C}(A + B + 1)$

$\cancel{C} \longrightarrow \boxed{C}$

c) $(A + \bar{B} + CD)(\bar{A} + \bar{B} + CD)$

$\cancel{AA} + \cancel{A}\bar{B} + \cancel{ACD} + \cancel{\bar{A}B} + \cancel{B} + \cancel{BCD} + \cancel{ACD} + \cancel{BCD} + CD$

$\cancel{B}(\cancel{A} + \cancel{A} + 1 + CD + CD) + ACD + \cancel{ACD} + CD$

$\cancel{B} + CD(\cancel{A} + \cancel{A} + 1)$

$\cancel{B} + CD \longrightarrow \cancel{B} \boxed{\bar{B} + CD}$

d) $((\cancel{\bar{A} + B})B)C + B$

$((\cancel{\bar{A} + B}) + \bar{B})C + B$

$(\cancel{A}\bar{B} + \bar{B})C + B$

$\cancel{B}C + B \longrightarrow \boxed{B + C}$

