Assignment 1

Wednesday, January 13, 2021 1:34 PM

2.8) a) $25_{10} = 11001_2 = 19_{16}$

b) $250_{10} = 11111010_2 = FA_{16}$

c) $2,500_{10} = 1001\,1100\,0100_2 = 9C4_{16}$

d) $25,000_{10} = 0110\,0001\,1010\,1000_2 = 61A8_{16}$

2.9) a) $11_2 = -1_{10}$

b) $1001_2 = -7_{10}$

c) $10001_2 = -15_{10}$

d) $1001\,1001_2 = -103_{10}$

2.10) a) $AB_{16} = 1010\ 1011_2 = 171_{10}$

b) $A0B_{16} = 1010\ 0000\ 1011_2 = 1547_{10}$

c) $10A01_{16} = 0001\ 0000\ 1010\ 0000\ 0001_2 =$

d) $FFAFF_{16} = 1111\ 1111\ 1010\ 1010\ 1111\ 1111_2 =$

2.11) a) $AC_{16} = 1010\ 1011_2$

b) $DF0B_{16} = 1100\ 1111\ 0000\ 1011_2$

c) $10B11_{16} = 0001\ 0000\ 1011\ 0001\ 0001_2$

d) $FDEAF1_{16} = 1111\ 1100\ 1110\ 1010\ 1111\ 0001_2$

2.12) a) $0.2_{10} = 0.0011_2$

b) $0.046875_{10} = 0.00011_2$

c) $0.1111_{10} = 0.0001\,1100\,0111_2$

d) $0.12340_{10} = 0.0000\,1111\,11_2$

2.13) a) $01101111 + 01011011 = 10010010_2$

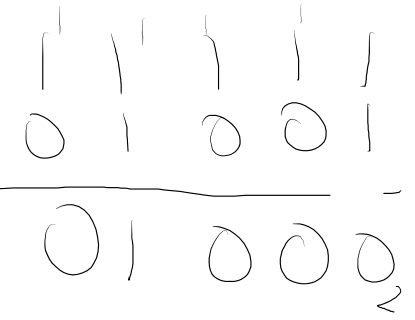
b)
$$\begin{array}{r} 0\ 0\ 1 \\ +\ 0\ 1\ 0 \\ \hline 1\ 0\ 0 \end{array}$$

c)
$$\begin{array}{r} 0\ 0\ 1\ 2\ 0\ 1\ 2\ 1 \\ +\ 0\ A\ 0\ 1\ 5\ 0\ 3\ 1 \\ \hline 0\ A\ 1\ 3\ 5\ 1\ 5\ 2_{16} \end{array}$$

d)
$$\begin{array}{r} 0\ 0 \\ 0\ F \\ \hline 0\ F \end{array}$$

2.16) $1234.125_{10} = 1.234125 \times 10^3_{10}$

$= 0,000000011,$


1 1 1 1
0 1 0 0 1
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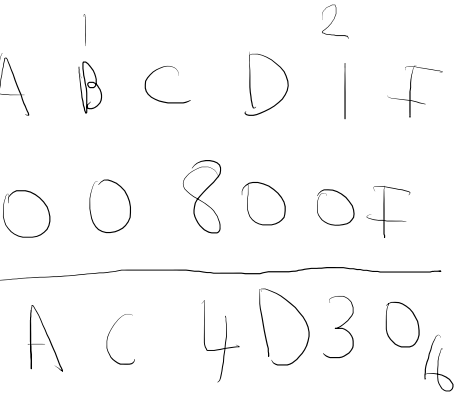
1 2
A B C D 1 F
0 0 8 0 0 F
A C 4 D 3 0 16

2.20)

a)
$$\begin{array}{r} 0000 \\ +\ 0001 \\ \hline 0001 \end{array}$$
$$\Rightarrow 1110 + 1 = 1111_2$$

b)
$$\begin{array}{r} 1010 \\ +\ 0101 \\ \hline 1111 \end{array}$$
$$\Rightarrow 0000 + 1 = 0001_2$$

c)
$$\begin{array}{r} 1101 \\ +\ 1011 \\ \hline 11000 \end{array}$$
$$\Rightarrow 0011 + 1 = 0111_2$$

2.34)

A	B	C	D	$X = A \cdot (B + \bar{C})$
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	0

d)

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  1111
+ 1111
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  1110
-> 00001
+      1
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  0001 1₂
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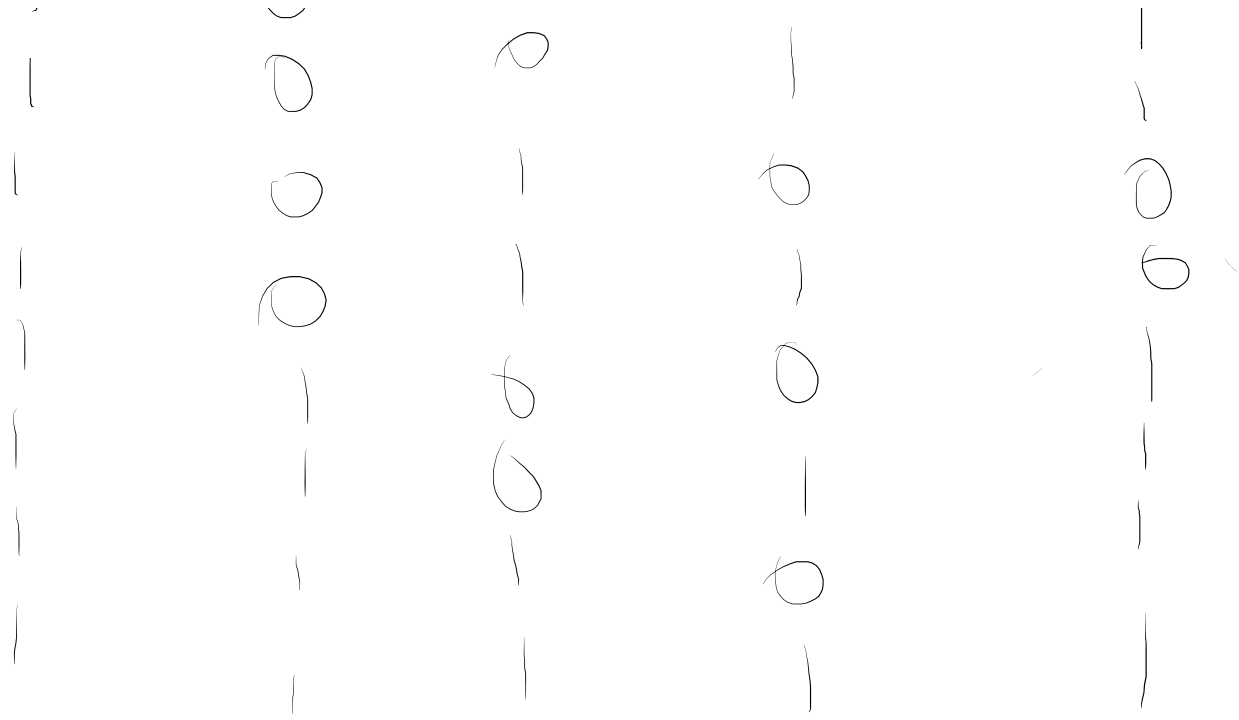
$Y = B \cdot (C + \bar{D})$ $Z = DB$ $X + Y + Z$

B	C	D	Y	Z	X+Y+Z
0	0	0	0	0	0
0	0	1	0	0	0
0	1	0	1	0	1
0	1	1	1	0	1
1	0	0	0	0	0
1	0	1	1	1	1
1	1	0	1	0	1
1	1	1	1	1	1



2.35) a set of circuitry that

2.36) in a flipflop, the reset

2.39) $x\bar{y}\bar{z} + \bar{x}y\bar{z} + \bar{x}\bar{y}z$

0 0 0 1 0

0 0 0 0 1

1 0 1 1 1

only uses NAND and NOR gat

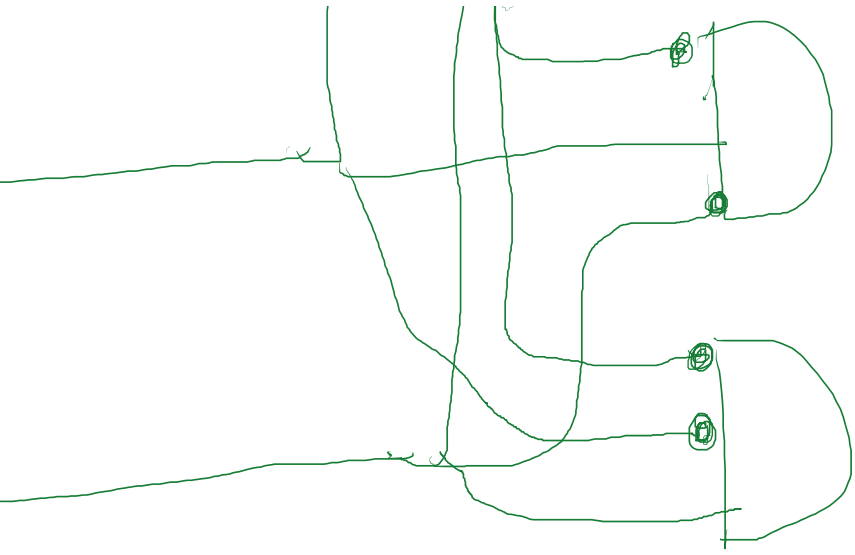
signal lets Q=0

Y —

Z —

2.40)

A	B	P	Q	R
1	1	0	1	
1	0	1	0	
0	1	1	1	0
0	0	1	1	



R C

1 0

1 1

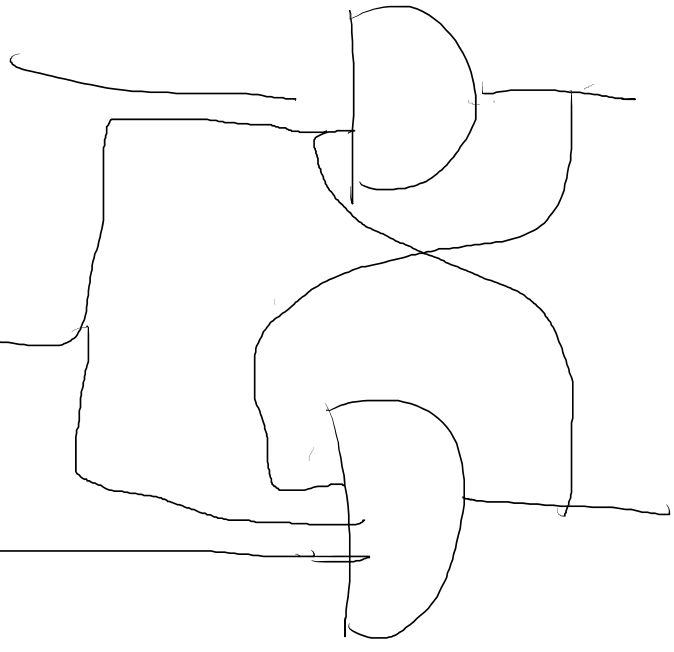
0 1

1 1

2.47) S

E

R



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