No.

Date 06 · 11 · 17

Homework Three - Chapter 4

a=1 b=2 c=2

19 a) 1>1 False or 2=2 True ➡ True

19 b) (1+2) > 2 True and 2<2 False ➡ False

19c) Not (a=1). Not True ➡ False

19d) Not[(1=2) false or (2=2) True] Not True ➡ False

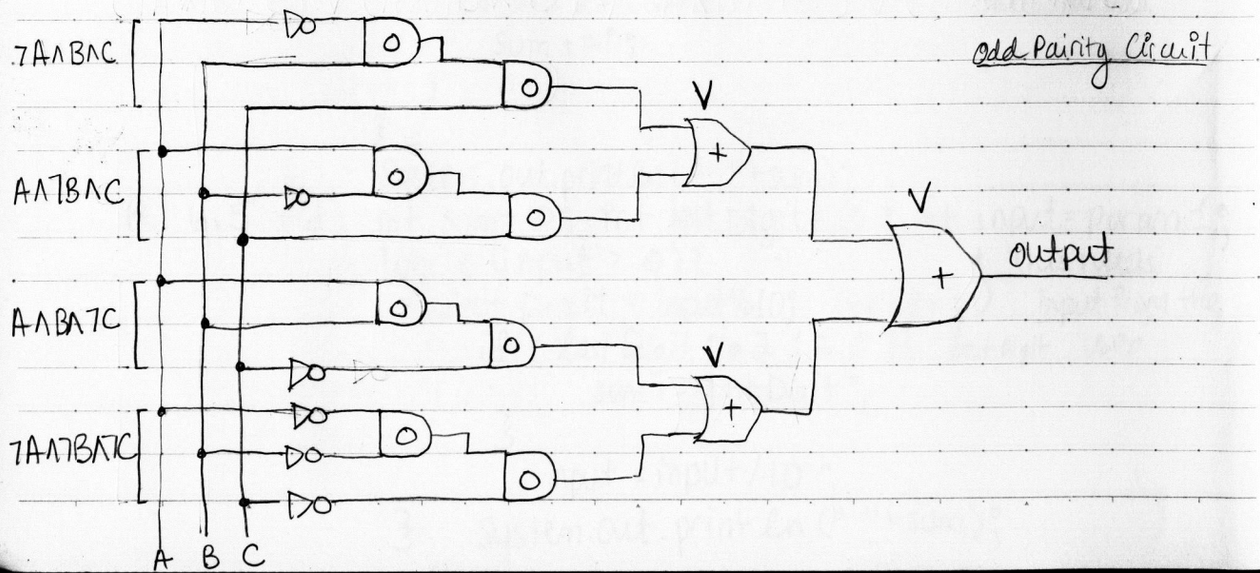
19e) (1=1) True & (2=1) False & (2=2) True ➡ False

25) Truth Table

A	B	C	odd pairity
1	1	1	0
0	1	1	1 ← case 1 (¬A∧B∧C)
1	0	1	1 ← case 2 (A∧¬B∧C)
0	0	1	0
1	1	0	1 ← case 3 (A∧B∧¬C)
0	1	0	0
1	0	0	0
0	0	0	1 ← case 4 (¬A∧¬B∧¬C)

(¬A∧B∧C)∨(A∧¬B∧C)∨(A∧B∧¬C)∨(¬A∧¬B∧¬C)

Odd Pairity Circuit



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26)

Binary Subtraction Rules:

0-0=0

1-0=1

1-1=0

0-1=1 (with a borrow of 1)

cout

1 (1 1) cin

1000 A

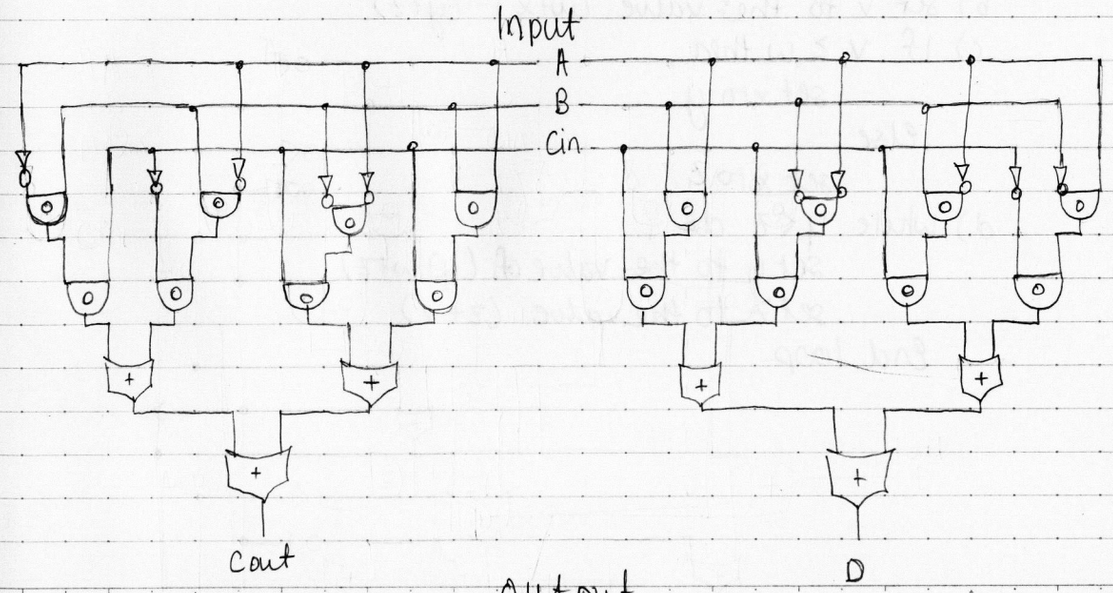
− 011 B

0101 D

Truth Table

A	B	Cin	Cout	D	Cout	D
0	0	0	0	0	(¬A∧B∧¬C)∨	(A∧¬B∧¬C)∨
1	0	0	0	1 ← D1	(¬A∧¬B∧C)∨	(¬A∧B∧¬C)∨
0	1	0	C1→1	1 ← D2	(¬A∧B∧C)∨	(¬A∧¬B∧C)∨
1	1	0	0	0	(A∧B∧C)	(A∧B∧C)
0	0	1	C2→1	1 ← D3		
1	0	1	0	0		
0	1	1	C3→1	0		
1	1	1	C4→1	1 ← D4		

Bit Subtraction Circuit



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Homework Three - Chapter 5

18).

56,000 bits / second 500,000,000 instructions / second

instructions per bit

no need for conversion both are per second

$$< \frac{500{,}000{,}000}{56{,}000} = 8{,}928.57 \rightarrow 8{,}929 \text{ instructions}$$

20)

Op code	Address - 1	Address - 2
8	18	18

← the size

$2^k \rightarrow 2^8 = 256$ op codes are possible

2^{18} memory location $= 2^{10} \cdot 2^8 = 256$ KB memory size

21)

v = 200 w = 201 x = 202 y = 203 z = 204

memory loc: 50

a) set v the value of / x-y+z (Assume the existence of the machine language command subtract x,y,z that computes con.z = con.x - con.y.

b.) set v to the value (w+x) - (y+z)

c) If v ≥ w then
    set x to y
  Else
    set x to z

d) While y ≤ z do
    set y to the value of (y+w+z)
    set z to the value (z+v)
  End loop

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21 a) SUBTRACT (202, 203, 50)
ADD (50, 204, 200)

21b) ADD (201, 202, 200)
ADD (203, 204, 50)
SUBTRACT (200, 50, 200)

21c) COMPARE (200, 201)
JUMPGT, JUMPEQ
MOVE (203, 202)
JUMPLT
MOVE (204, 202)

21[d) COMPARE (203, 204)
JUMPLT
ADD (203, 201, 50)
ADD (50, 204, 50)
MOVE (50, 203)
JUMPGT, JUMPEQ
HALT