Department of Computer Science and Engineering
BRAC Univarsity
CSE260: Digital Logic Design

Group: 06

Group members:

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Experiment # 4: Design and Implementation of 4-bit Parallel Binary Adder
Experiment # 5: Implementation of 4-bit Magnitude Comparator
Experiment # 6: Design circuits using encoder & decoder.
Experiment # 7: Function Implementation Using MUX.

Required Components for Lab - 4:

1. IC 7408
2. IC 7432
3. IC 7486
4. IC 7483

Required Components for Lab - 5:

1. IC 7408
2. IC 7432
3. IC 7404
4. IC 4077

Required Components for Lab - 6:

1. IC 74138
2. IC 74148

Required Components for Lab - 7:

1. IC 74153
2. IC 7408
3. IC 7432
4. IC 7404

Experimental Setup:

Experimental Setup for Lab - 4:
Experimental Setup for Lab - 5:
Experimental Setup for Lab - 6:
Experimental Setup for Lab - 7:
Result:

Result for Lab - 4:
Result for Lab - 5:

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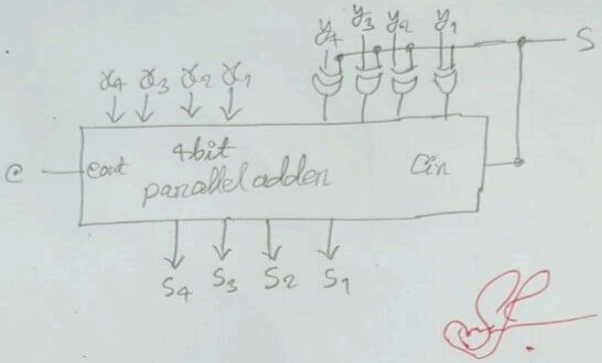
Result for Lab - 6:
Result for Lab - 7:

(Lab 4)



(i) 4bit Parallel Adder:

	A	B	Cin	C_4	S_4	S_3	S_2	S_1
a	0000	1000	0	0	1	0	0	0
b	1100	1101	0	1	1	0	0	1
c	1110	0011	0	1	0	0	0	1
d	1111	1111	0	1	1	1	1	0

(ii) 4bit Parallel Adder cum Substractor:

	A	B	Cin	C_4	S_4	S_3	S_2	S_1
a	1100	1000	1	0	0	1	0	0
b	1100	1101	0	1	1	0	0	1
c	1110	0011	1	0	1	0	1	1
d	1111	1111	0	1	1	1	1	0

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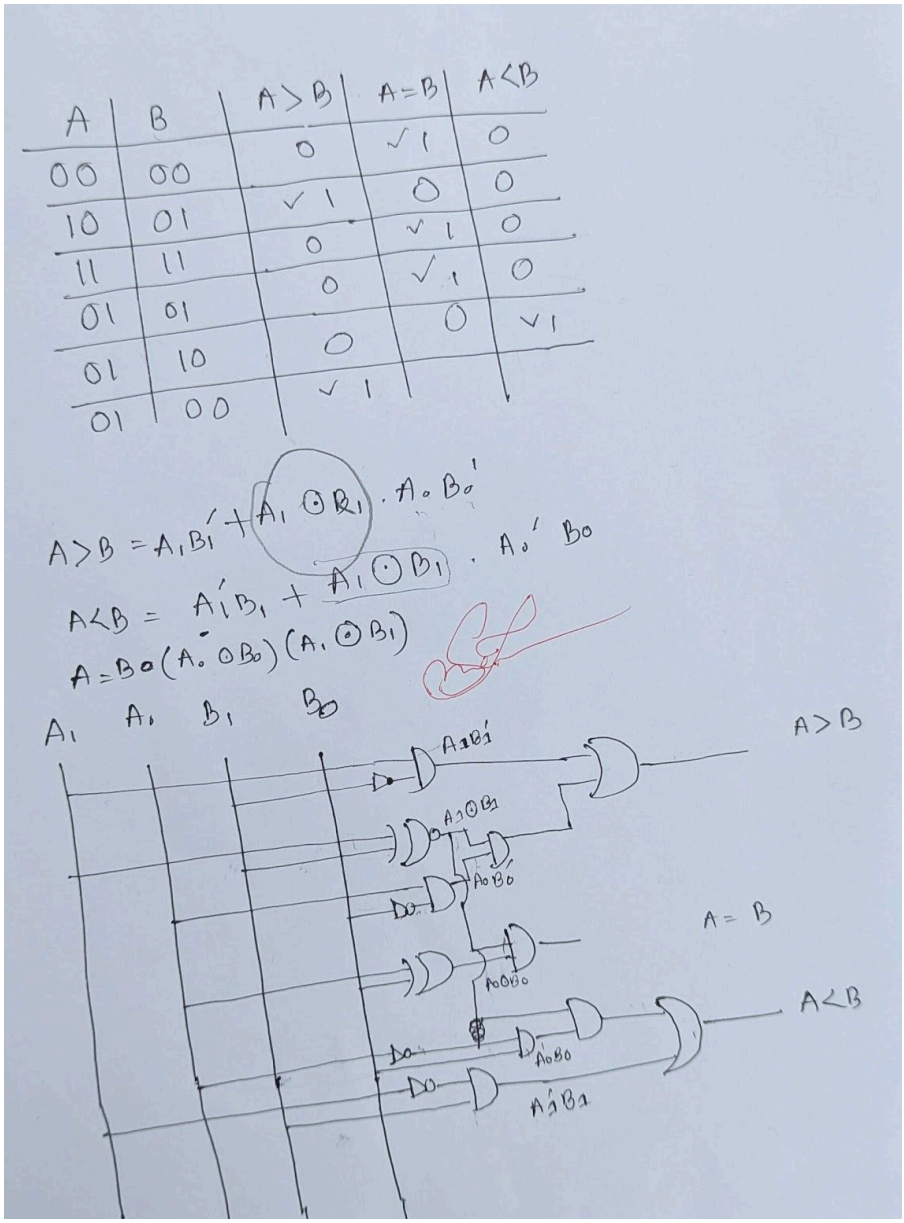

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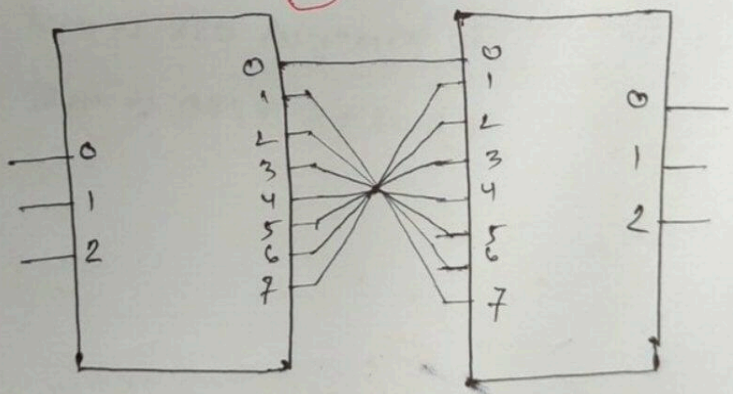
Inputs				Active Low outputs		
minterm	C	B	A	D2	D1	D0
0	0	0	0	1	1	1
1	0	0	1	0	0	0
2	0	1	0	0	0	1
3	0	1	1	0	1	0
4	1	0	0	0	1	1
5	1	0	1	1	0	0
6	1	1	0	1	0	1
7	1	1	1	1	1	0



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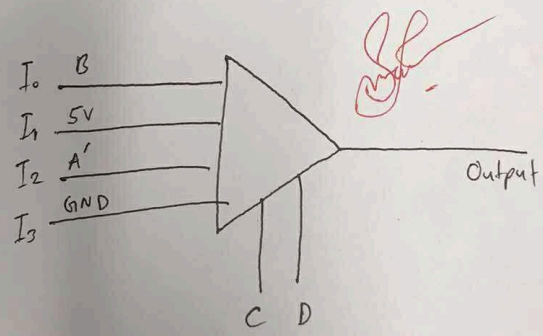
MUX input lines				Selectors		Output
I3	I2	I1	I0	S1	S0	Y
0	0	0	1	0	0	1
1	1	1	0	0	0	0
0	0	1	0	0	1	1
1	1	0	1	0	1	0
0	1	0	0	1	0	1
1	0	1	1	1	0	0
1	0	0	0	1	1	1
0	1	1	1	1	1	0



$I_0 = A'B + AB = B$

$I_1 = 1$

$I_2 = A'B' + A'B = A'$

$I_3 = 0$

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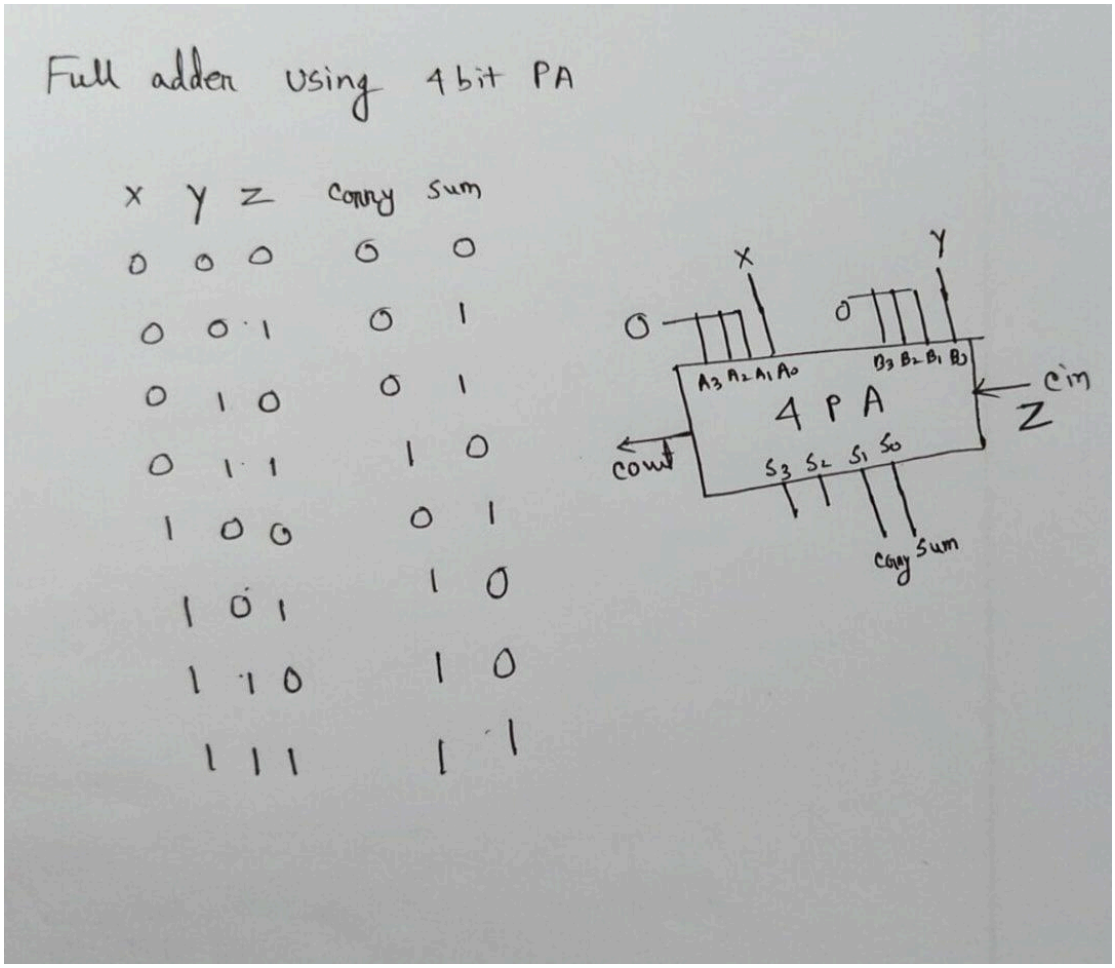
Discussion:

Answer the following questions also as part of discussion:

1. Design a Full adder using a 4-bit Parallel adder.
2. Design a 2-bit Parallel adder using exactly four 8:1 Mux(s)



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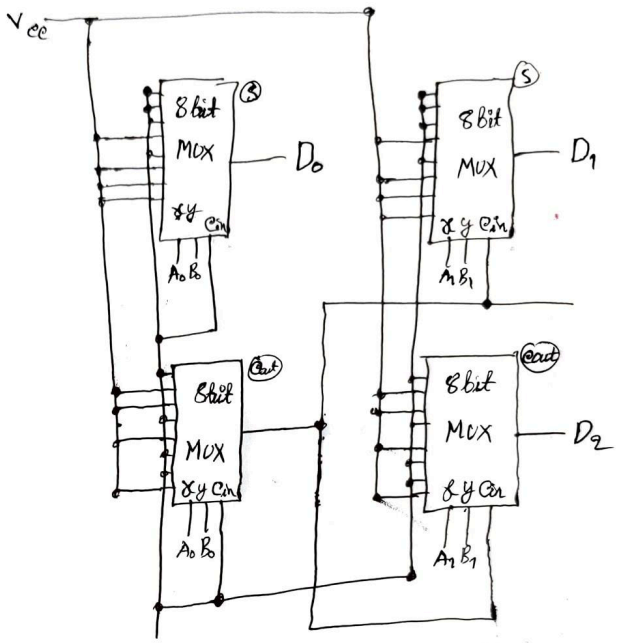
for full adder

x	y	C_{in}	C_{out}	S
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1



$A = A_1 A_0$

$B = B_1 B_0$

$$D = A + B$$
$$= A_1 A_0 + B_1 B_0$$
$$= D_2 D_1 D_0$$