NEUB CSE 222 LAB 6: Combinational Circuit (2)

North East University Bangladesh
Department of CSE
Course no: CSE 222
Experiment no: 06
Experiment Name: Combinational Circuit (2)

CAUTIONS:
1. **Don't switch on the supply of the circuit until you have verified the circuit carefully**
2. **Take readings of apparatus carefully**
3. **Take care of any bare circuit elements in energized condition**
4. **Never try to touch bare live wires**

Objective

The objective of this experiment is to design and implement binary adder Subtractor.

Theory

Any logic table (Truth Table) can easily implemented using logic gates. This can be either implemented using all the available gates or by using one type of universal gates (NOR and NAND gates). In this lab combinational circuit has to be designed using either sum of minterms or product of max terms.

Apparatus Needed

- Trainer Board (Bread board)
- Logic Gate ICs (You decide what you need)
- Connecting wires
- LEDs
- Push Buttons / DIP switch

Procedure

1. Create a logic function from the block diagram
2. Place the IC in the in the breadboard
3. Connect VCC and Ground to the respective pins of IC
4. Connect the inputs switches provided in the IC trainer kit
5. Connect all the internal connections
6. Connect the output of the ICs to LEDs
7. Design an appropriate mathematical tests to create truth table of your choice.
8. Apply various combinations of inputs according to the tables of result section
9. Observe and write the output of the LED in the corresponding table in result section.
10. Repeat for all the circuits
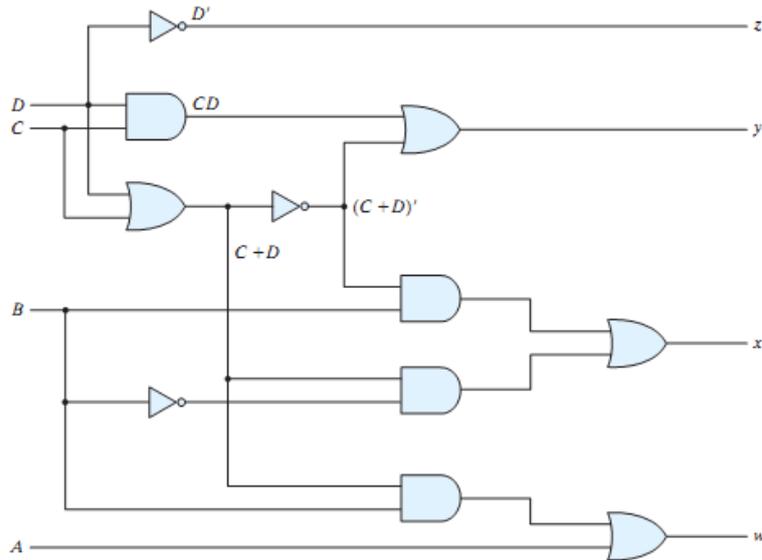
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Circuits

1. 4 bit binary adder Subtractor
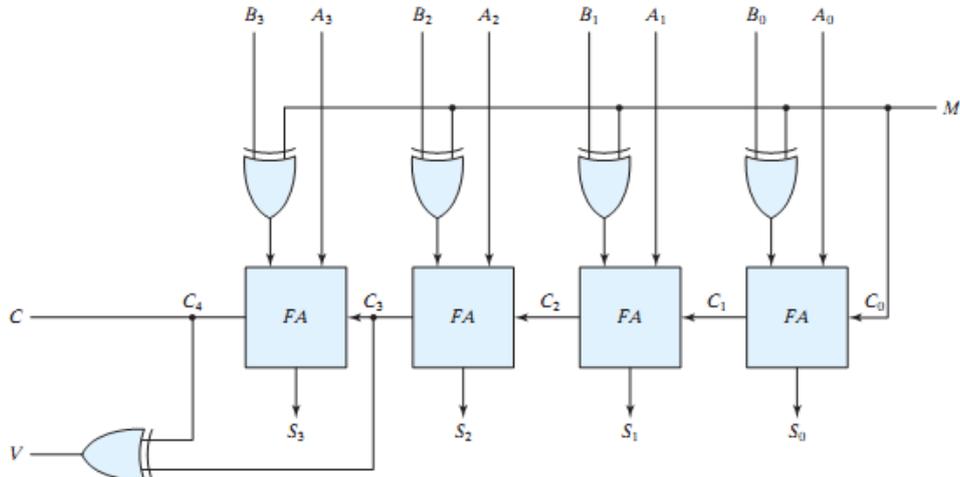
2. BCD to excess 3 converter

Input BCD				Output Excess-3 Code			
A	B	C	D	w	x	y	z
0	0	0	0	0	0	1	1
0	0	0	1	0	1	0	0
0	0	1	0	0	1	0	1
0	0	1	1	0	1	1	0
0	1	0	0	0	1	1	1
0	1	0	1	1	0	0	0
0	1	1	0	1	0	0	1
0	1	1	1	1	0	1	0
1	0	0	0	1	0	1	1
1	0	0	1	1	1	0	0

Report

1. For the parts where full schematic is not provided, design a circuit from block diagram provided.
2. Mention the tests and results for checking the circuits.
3. Comment on the learning from this LAB