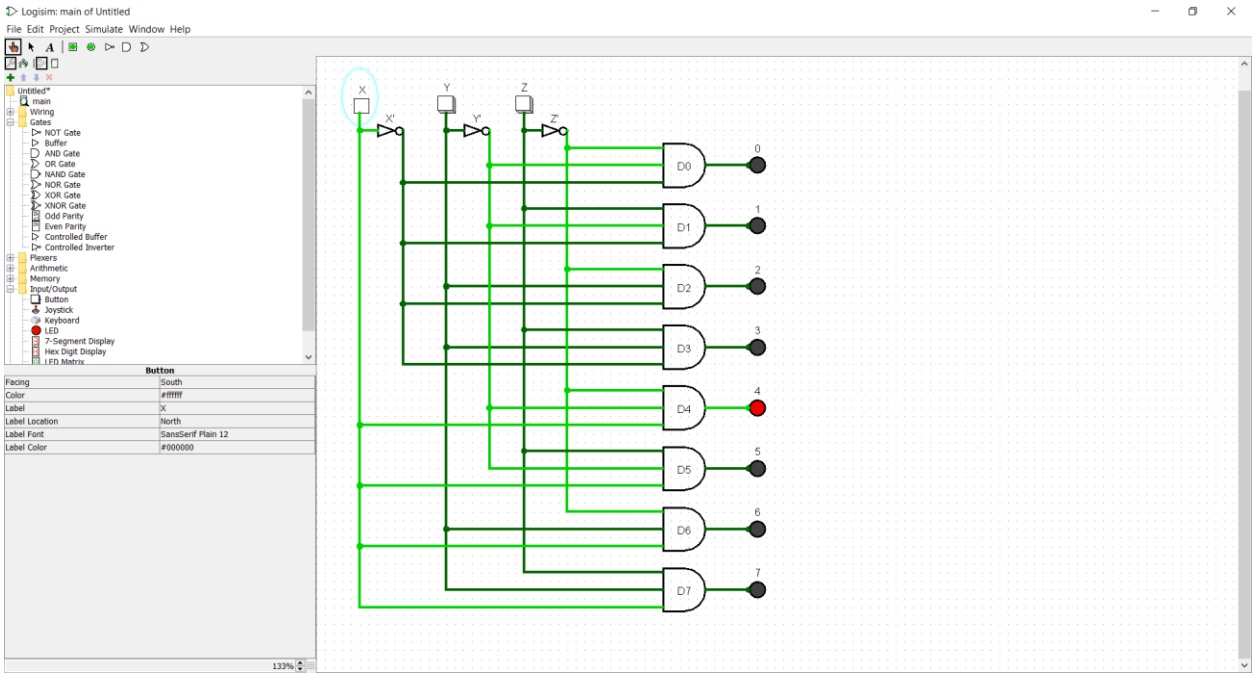
KINGDOM OF SAUDI ARABIA | JAZAN UNIVERSITY

COLLEGE OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

LAB Exam 2022-2023, Second Semester

Academic Year	2022 -2023	Total Marks	20
Course with code	ITEC-252- Digital Design & Computer Architecture, LEVEL-4	Section	**2051**
Date of EXAM	7-2-2023	Duration	24 hrs.
STUDENT NAME:		**STUDENT ID:**	

1. Use Logisim to draw the circuit diagram and write the truth table of the 3-to-8 Line Decoder using AND gate.



Here's the truth table for a 3-to-8 line decoder:

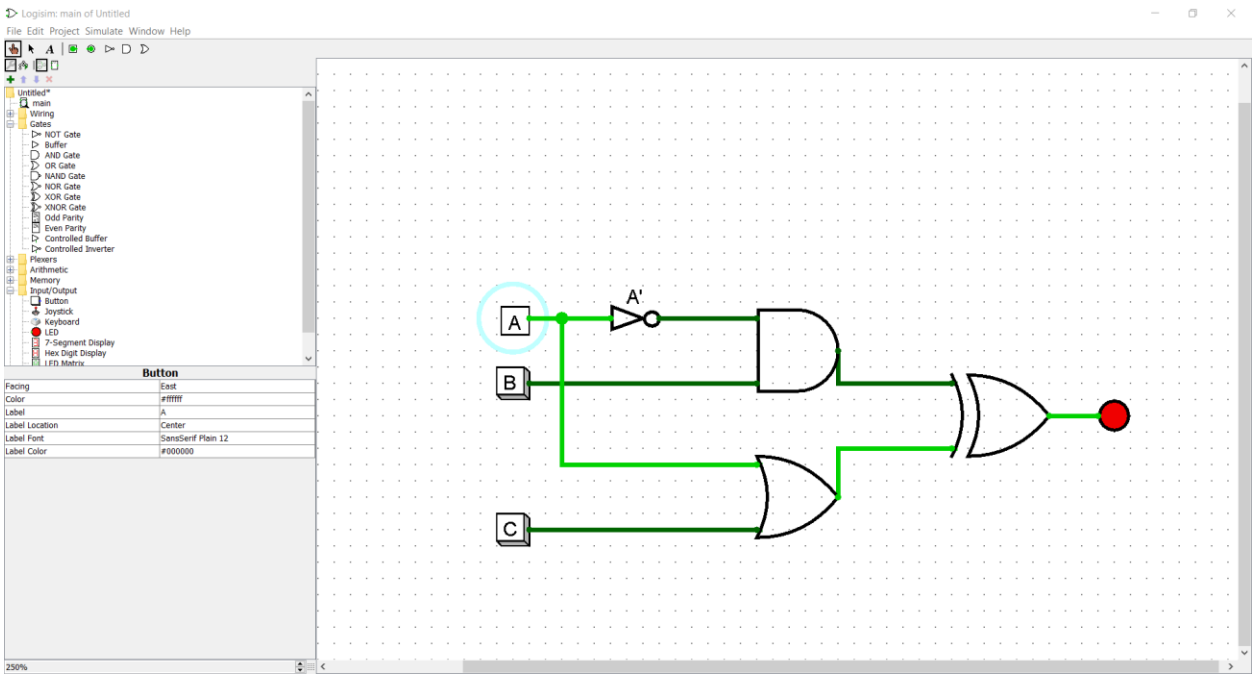
Input X	Input Y	Input Z	**Output D0**	**Output D1**	**Output D2**	**Output D3**	**Output D4**	**Output D5**	**Output D6**	**Output D7**
0	0	0	1	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0	0

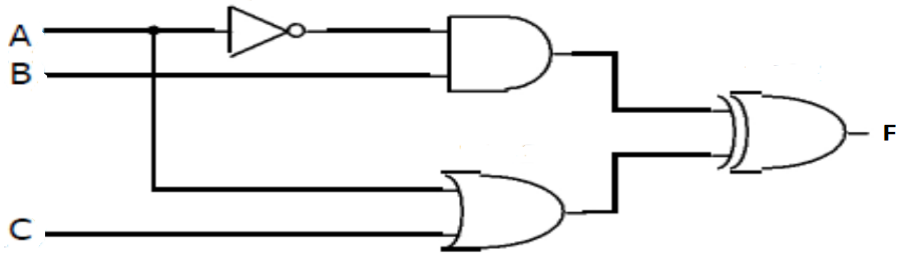
0	1	1	0	0	0	1	0	0	0	0
1	0	0	0	0	0	0	1	0	0	0
1	0	1	0	0	0	0	0	1	0	0
1	1	0	0	0	0	0	0	0	1	0
1	1	1	0	0	0	0	0	0	0	1

2. Use Logisim to simulate the figure below and write the expression for the Boolean Function. Verify the circuit operation and fill in its truth table.

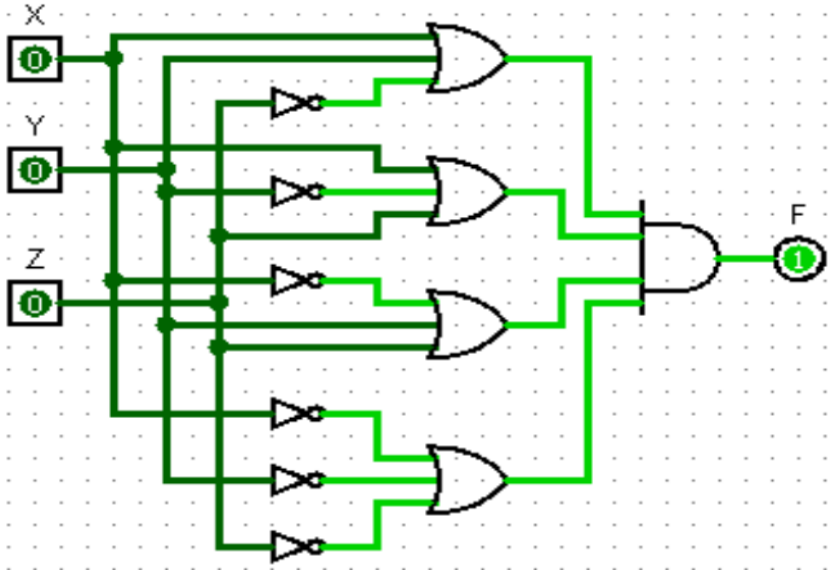
   (-A&B) xor (A | C)

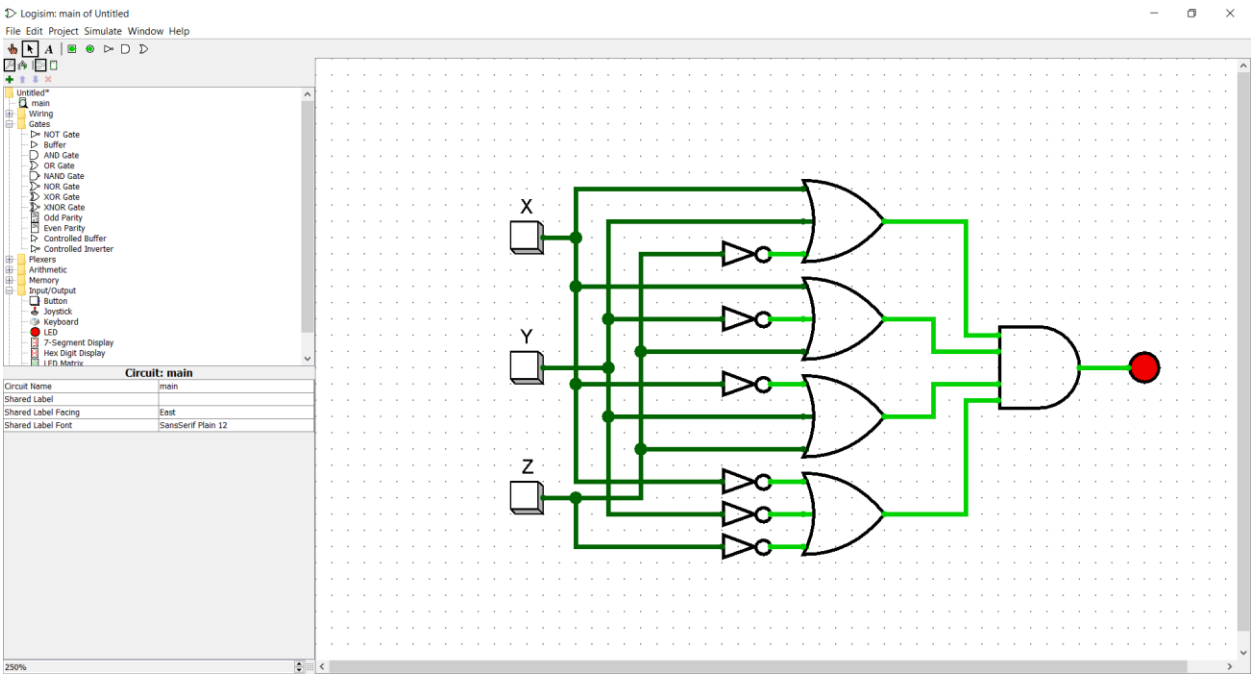
A	B	C	(-A & B)	(A | C)	Output
0	0	0	0	0	0
0	0	1	0	1	1
0	1	0	1	0	1
0	1	1	1	1	0
1	0	0	0	1	1
1	0	1	0	1	1
1	1	0	0	1	1
1	1	1	0	1	1

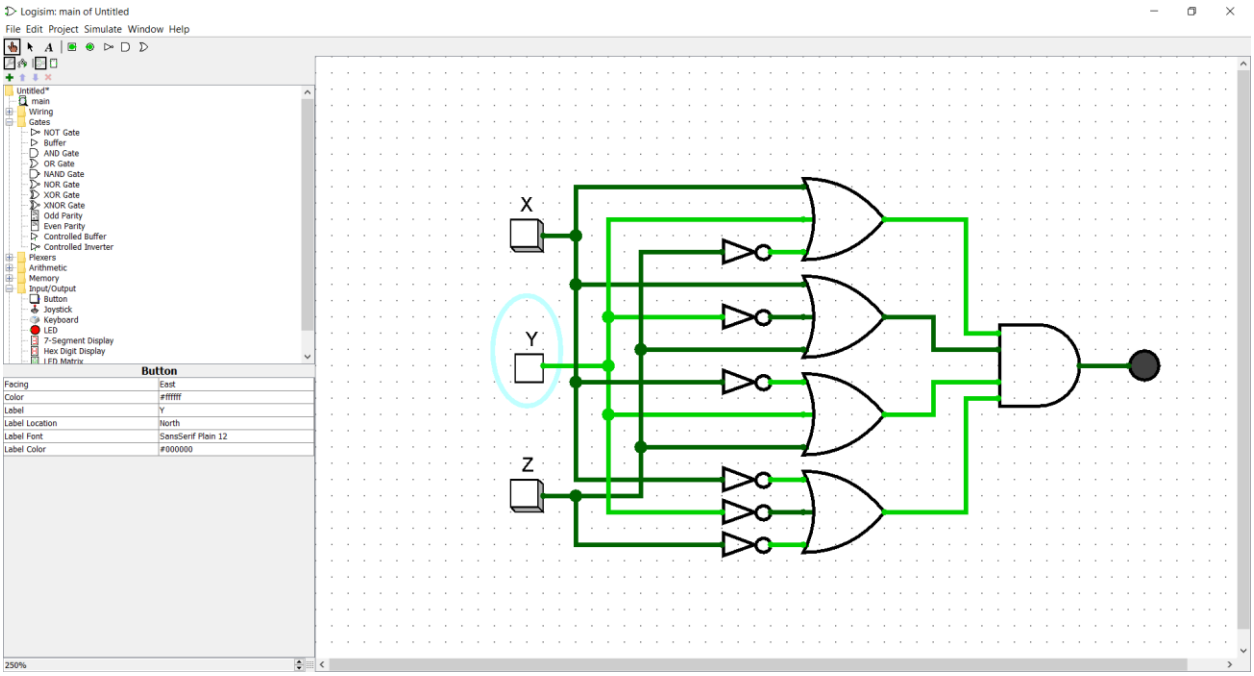




3. Use Logisim software to simulate the figure below.

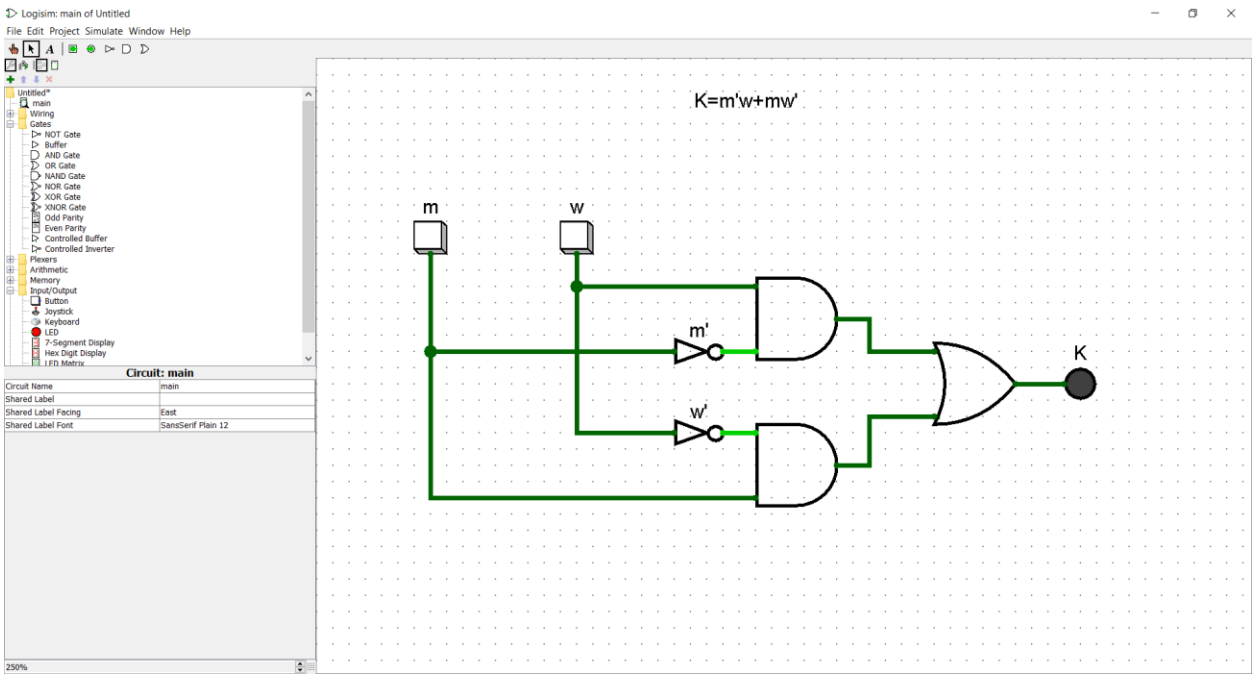


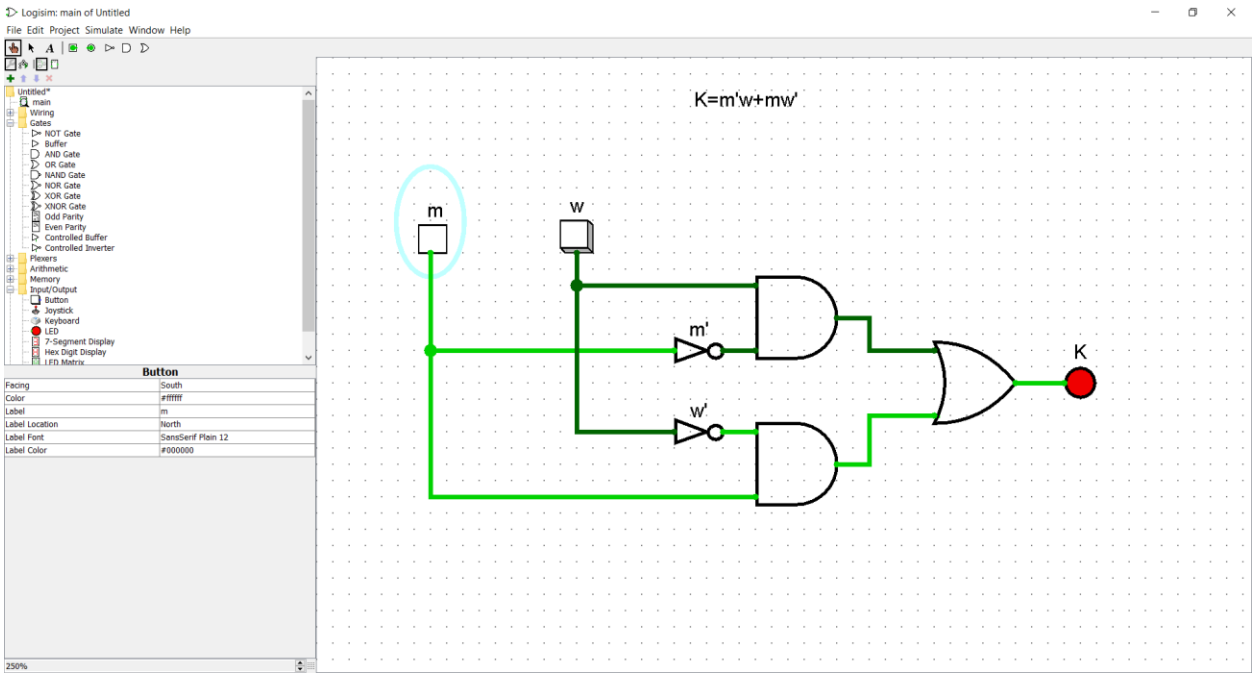




4. Using Logisim software to the draw circuit diagram for the following equation:

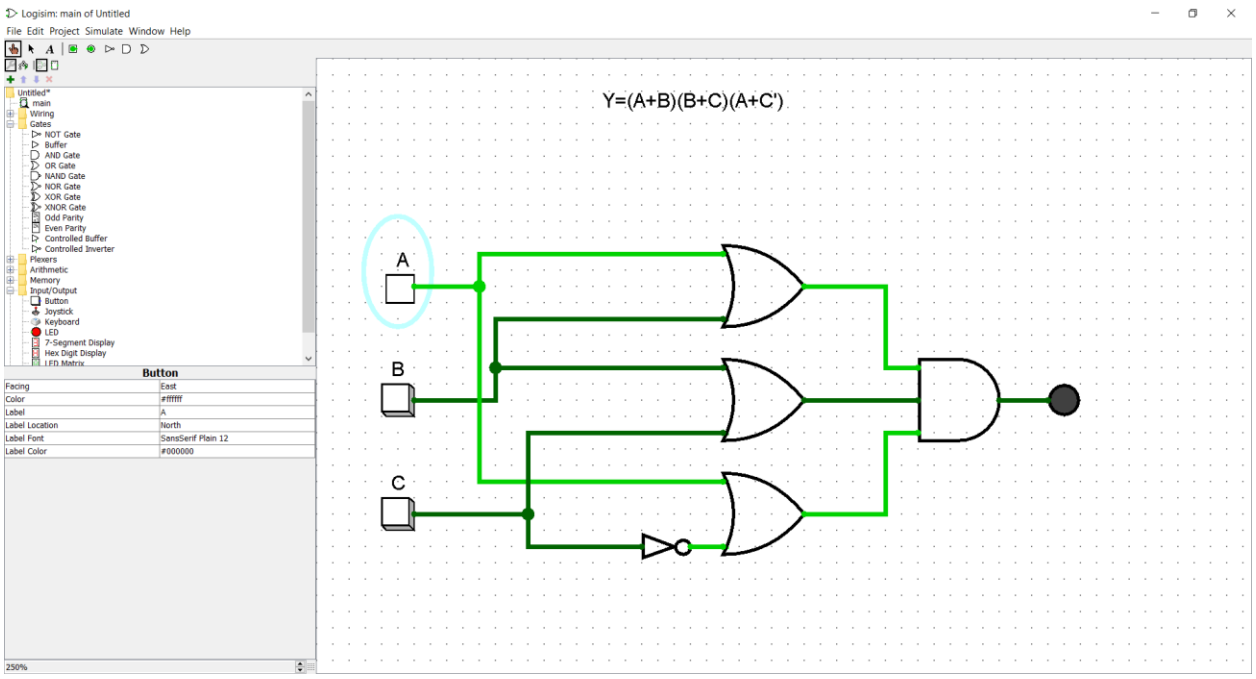
$K=m'w + mw'$



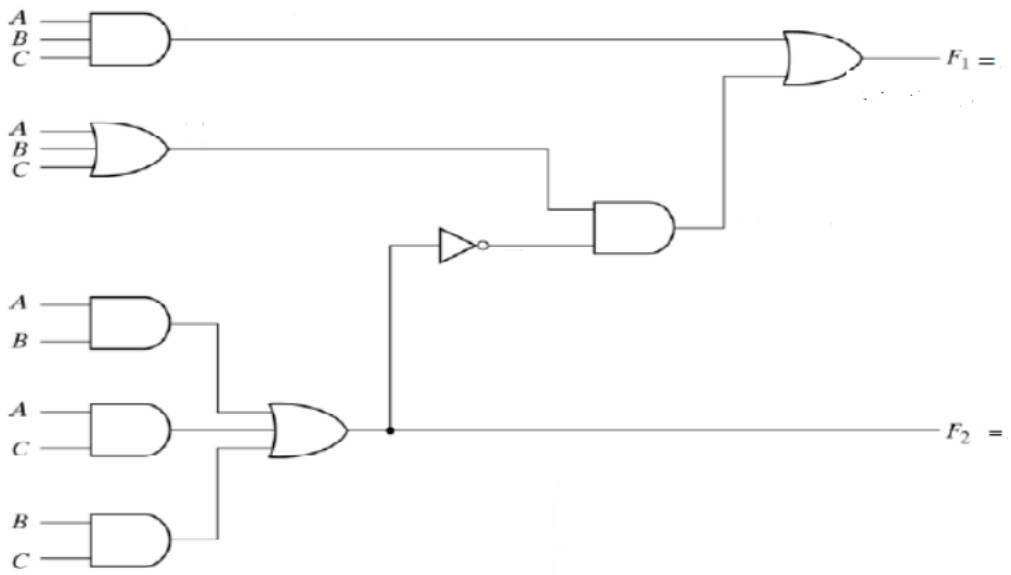


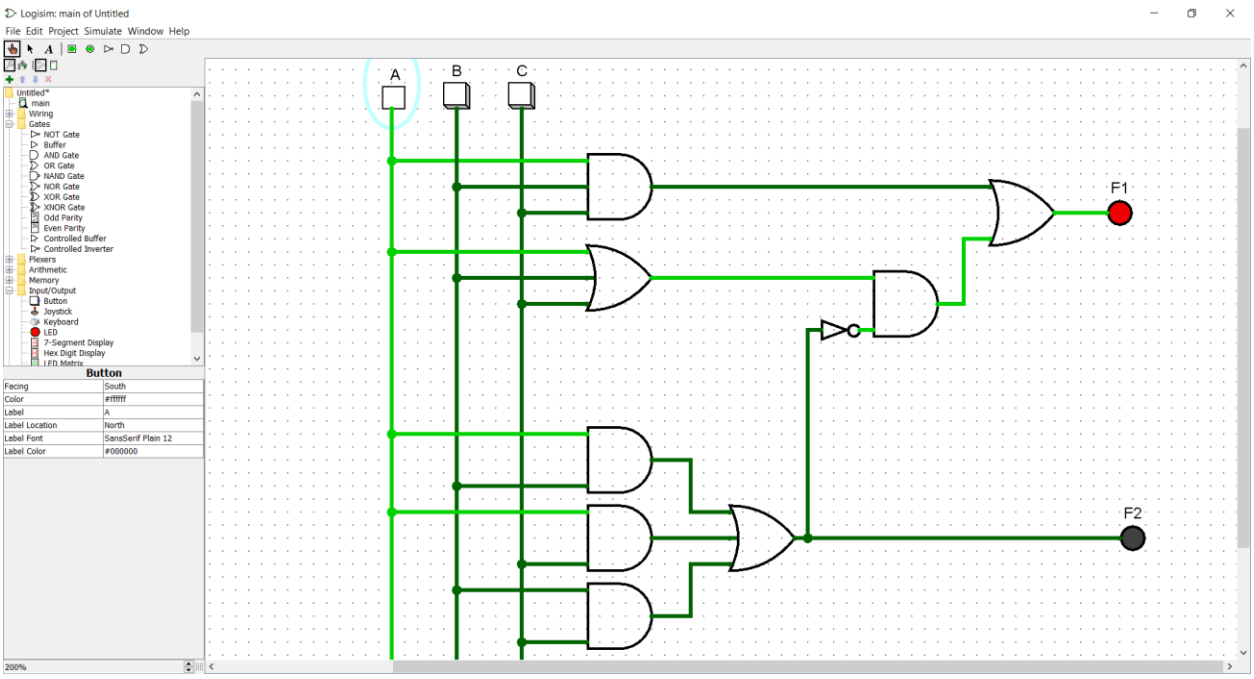
5. Using Logisim software to the draw circuit diagram for the following equation:

   $Y=(A+B)(B+C)(A+C')$



6. Use Logisim software to simulate the figure below and write the expression for the Boolean Function for both F1 and F2.





Goodluck

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Instructions:

- Upload the implementation file from Logisim for each question *(by the name of the question)*.
- The screenshots of all the simulations must be included.
- Complete the tasks and submit the task (implementation files) on Blackboard in time.
- Include snapshots from your simulations in your answer sheet for each question.
- Do not submit via email or WhatsApp.
- Cheating will be detected by Plagiarism software and will cause a deduction in marks.