

Bangladesh University of Engineering and Technology
Department of Computer Science and Engineering

Course: CSE 206 (Digital Logic Design Sessional)

Experiment No. 2

Topic: Truth tables and simplification using Boolean Algebra.

Implement the following problems:

1. Simplify the equation using Boolean algebra and implement it.

$$F(A, B, C, D) = A'B'C'D' + ABCD + ABC'D + A'B'CD' + A'BC'D + AB'C'D' + AB'CD' + A'BCD$$

2. Derive the equations for a 3 bit gray to binary converter from Truth table and implement those with the required gates.
3. Derive the truth table and corresponding output equations for the given condition and implement those with the required gates.

Condition: There are 3 inputs into a system. The system will glow LED1 and LED0 in such a way that the pattern represents the number of set bits in the input.

4. For the following logic function, find out the truth table, write down the logic expression. Simplify the logic expression as far as possible using Boolean algebra and then implement it.

$$F(A, B, C, D) = \Sigma(6, 9, 12, 15)$$

Report:

For each of the problems above, the report should cover the following items:

1. Problem specification.
2. Required instruments.
3. Truth table.
4. Required equation in minimized form with necessary steps.
5. Circuit diagram.
6. Observations (if any).

Submission Instruction:

1. Prepare separate circ file for each problem. Name each file as follows:
Group_<GroupID>_Problem_<ProblemNo>.circ
2. Prepare one report for all the problems. Name it Group_<GroupID>_Report.pdf. The report should be computer composed, not hand written.
3. Put all the above items in a folder that is named as Group_GroupID.
4. Zip the above folder, name it as Group_GroupID.zip
5. Submit the zip file.
6. The submission deadline is 11:55pm, 13 March, 2021.