Rajshahi University of Engineering and Technology

Course Title: Sessional Based on CSE 2203

Course Code: CSE 2204

Lab Report - 03

Submitted to

Md. Zahirul Islam
Lecturer,
Computer Science and Engineering, RUET

Submitted by

Mrittika Roy
Roll: 1803175
Section: C
Computer Science and Engineering, RUET

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4.1

1. Name of the Experiment:
Implementation of Various Logic Functions (For Example F(a, b, c, d) = SOP (0, 2, 3, 4, 6, 10, 14, 15)).

2. Objectives:
- To know about SOP
- To know about minterms
- To know about the use of minterms
- To know the implementation of logic function using canonical form

3. Theory:
The full form of SOP is ‘Sum of Products’. Boolean functions expressed as a sum of minterms or product of maxterms are said to be in canonical form. A Boolean function can be expressed, canonically, as a sum of minterms, where each minterm corresponds to a row (of the function's truth table) whose output value is 1.

4. Experimental Result Analysis:

i. Circuit:

4.1.1: Implementation of Verious Logic Function (For example: F(a,b,c,d) = SOP(0,2,3,4,6,10,14,15)) using Drag and drop.

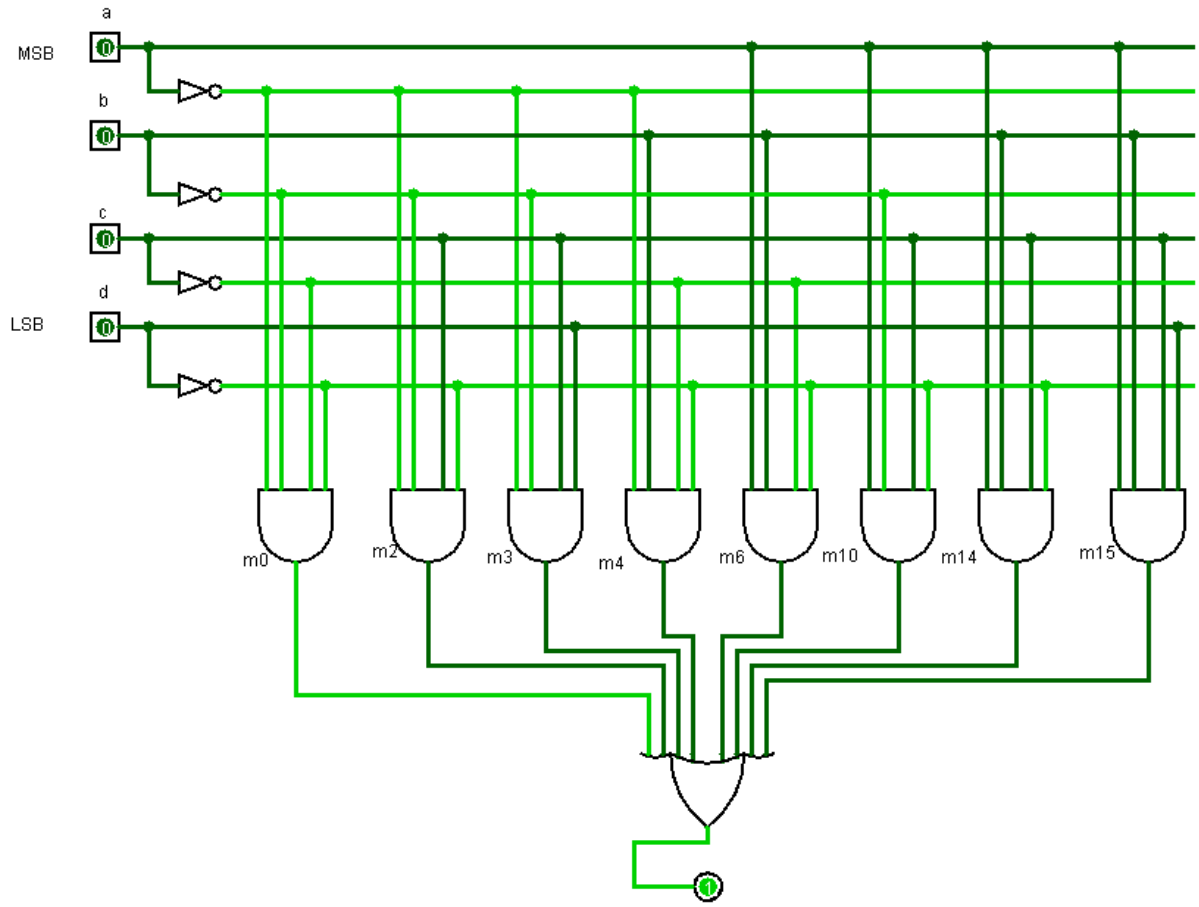


Figure: Circuit Diagram for the Given Function Using Drag and Drop

4.1.2 Implementation of Verious Logic Function (For example: F(a,b,c,d)= SOP(0,2,3,4,6,10,14,15)) Using Circuit Analysis

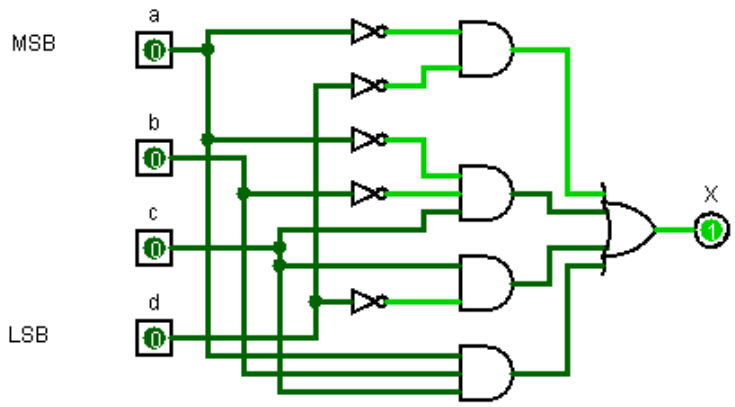


Figure: Circuit Diagram for the Given Function Using Circuit Analysis

ii. Truth Table:

a	b	c	d	x
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	1
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	1
1	1	0	1	0
1	1	1	0	1
1	1	1	1	1

5. Conclusion:

From the above experiment we can conclude that we can implement any logic function as the sum of minterms.

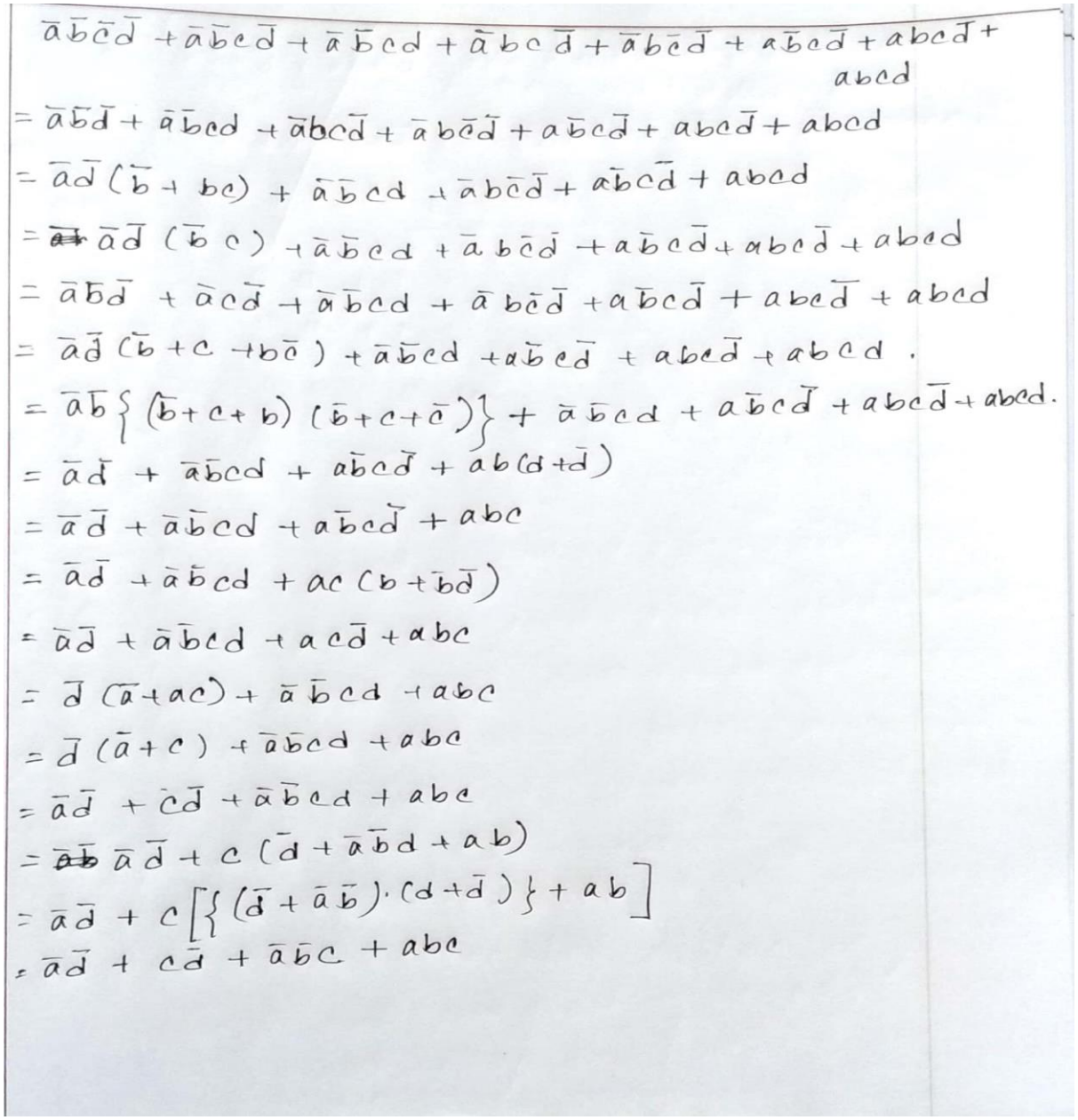
4.2

1. Name of the Experiment:
Verifying the result of the simplified version of F in 4.2.1

2. Objectives:

- To know about the simplification of a logic function
- To know about the various rules used in simplification of a logic function

3. Theory:
Simplification is a method using which the Boolean expressions are converted into another form with less number of logic gates and operations than the original function. The simplification of the function F of 4.1 is given below:



4. Experimental Result Analysis:

i. Circuit:

4.2.1: Verifying the result of the simplefied version of the F in 4.1

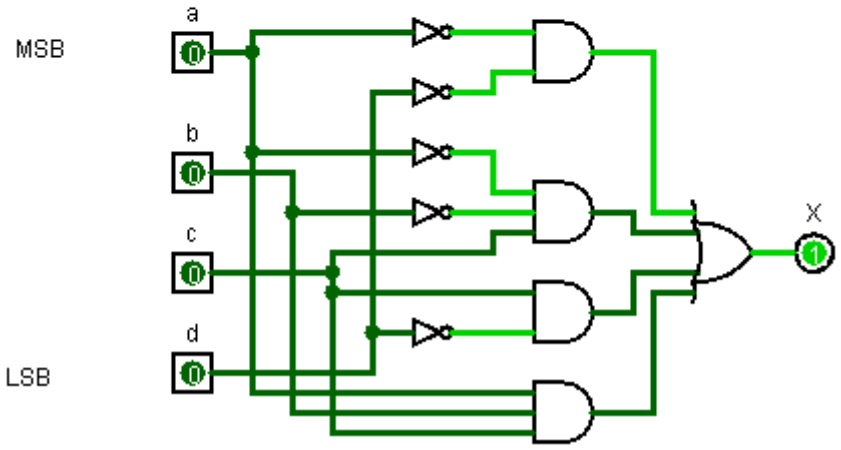


Figure: Circuit Diagram of the simplified version of F in 4.1

ii. Truth Table:

a	b	c	d	X
0	0	0	0	1
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	1
0	1	0	1	0
0	1	1	0	1
0	1	1	1	0
1	0	0	0	0
1	0	0	1	0
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	1
1	1	1	1	1

5. Conclusion:

From the above experiment, we can conclude that the simplified version of the function F in 4.1 gives the same output as the original function. So the simplified version is verified.