Dept. of Computer Science &Engineering

Course Code: CSE-2324

Course Title : Digital Logic Design Lab

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Semester: 3rd

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SUBMISSION: 29-08-21

Experiment No: 02

Experiment Name: Implementation of Universal gates: NOR, NAND for 3 inputs.
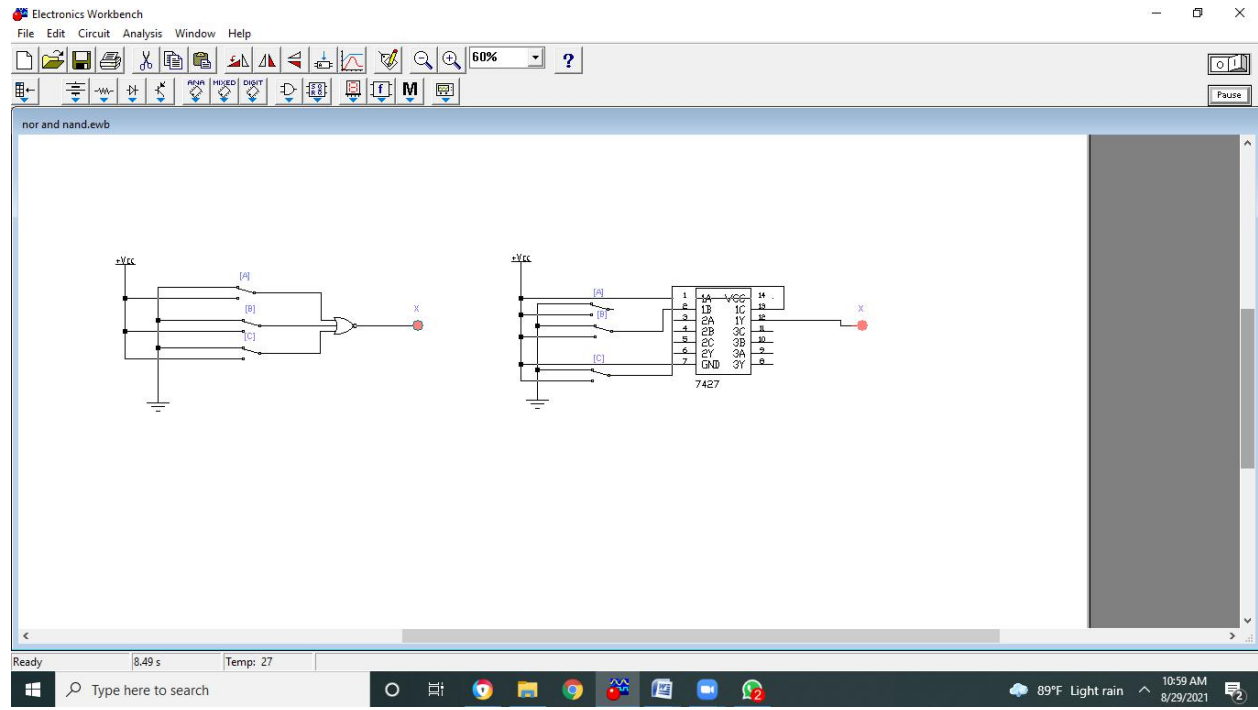
Required tools:

➤ NOR 7427, NAND
➤ Wires
➤ LED
➤ Electronic Workbench Software

NOR Turth Table:

A(Input)	B(Input)	C(Input)	X(Output)
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

Logic Circuit: IC level diagram:

NAND Turth Table:

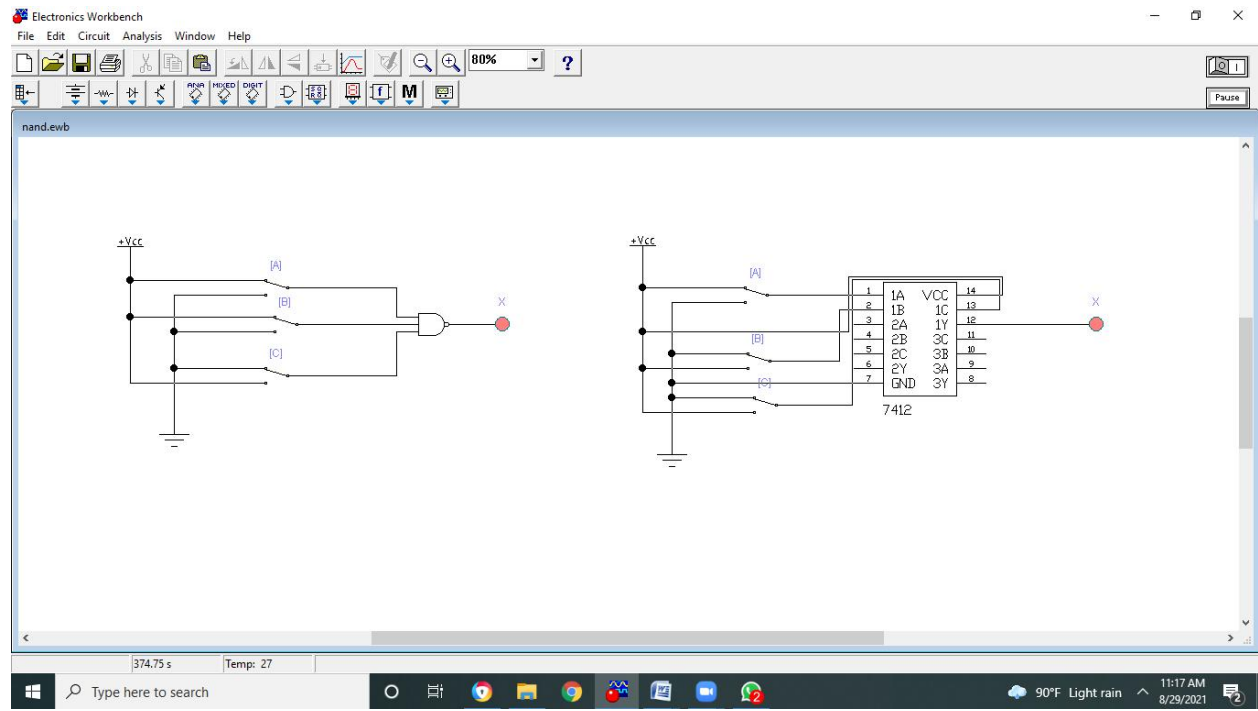| A(Input)	B(Input)	C(Input)	X(Output)
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

Logic Circuit: IC level diagram:

Result Discussion:

NOR Gate:

NOR gate is a digital logic gate that implements logical NOR - it behaves according to the truth table to the right. A HIGH output (1) results if both the inputs to the gate are LOW (0); if one or both input is HIGH (1), a LOW output (0) results. NOR is the result of the negation of the OR operator. It can also in some senses be seen as the inverse of an AND gate. NOR is a functionally complete operation—NOR gates can be combined to generate any other logical function. It shares this property with the NAND gate. By contrast, the OR operator is monotonic as it can only change LOW to HIGH but not vice versa.

NAND Gate:

NAND gate (NOT-AND) is a logic gate which produces an output which is false only if all its inputs are true; thus its

output is complement to that of an AND gate. A LOW (0) output results only if all the inputs to the gate are HIGH (1); if any input is LOW (0), a HIGH (1) output results. A NAND gate is made using transistors and junction diodes

Any problem arises:

No.