Green University of Bangladesh

Department of Computer Science and Engineering

Lab report-02

Course Title: Digital Logic Design Lab

Course code: CSE-204

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Tittle: Verification of Universal Logic Gates (NAND, NOR, EX-OR)

Objectives:

1. To study the operations of Universal logic gates.

2. To implement the Universal logic gates (NAND, NOR & XOR)

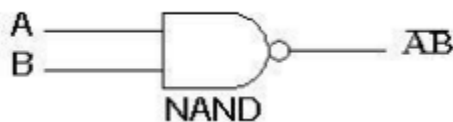## Apparatus Required: IC 7400 , 7402 , 7486

Equipment:

    1. Power supply

   2. Bread Board.

Theory:

NAND Gate:

The outputs of all NAND gates are high if any of the inputs are low. The logic symbol of NAND Gate is shown in Fig .The IC 74 LS00 is a two input NAND Gate IC. It consists 4 NAND gates built in.

NOR Gate:

The outputs of all NOR gates are low if any of the inputs are high. The logic symbol of NOR Gate is shown in Fig. The IC 74 LS02 is two in-put NOR Gate IC it consists of 4 NOR gates.
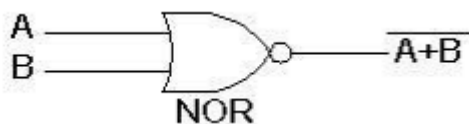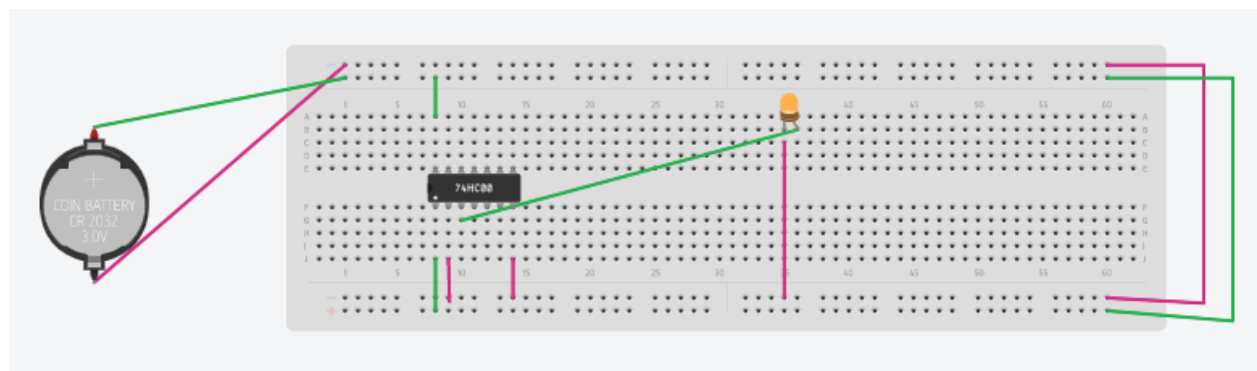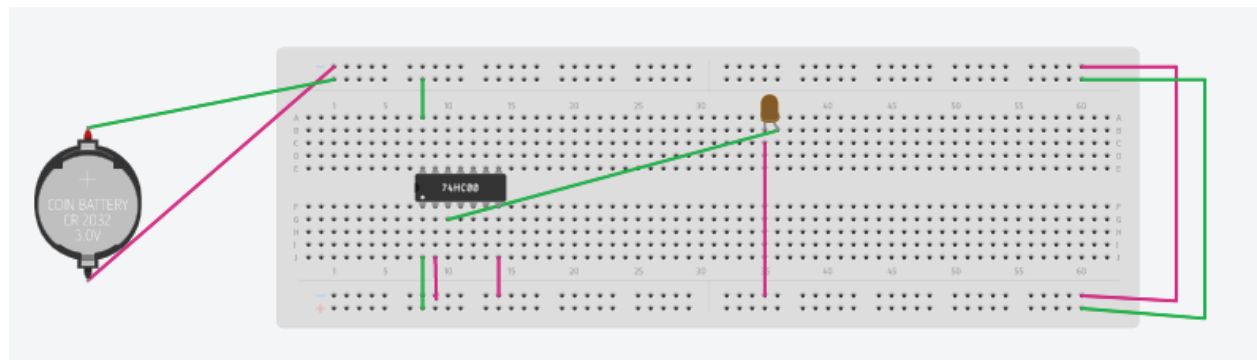
EX-OR Gate:
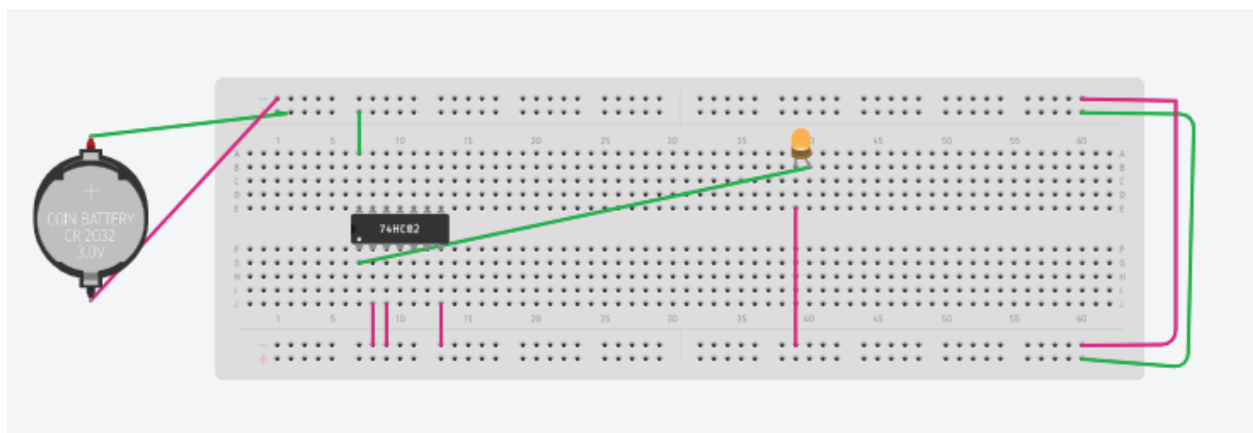
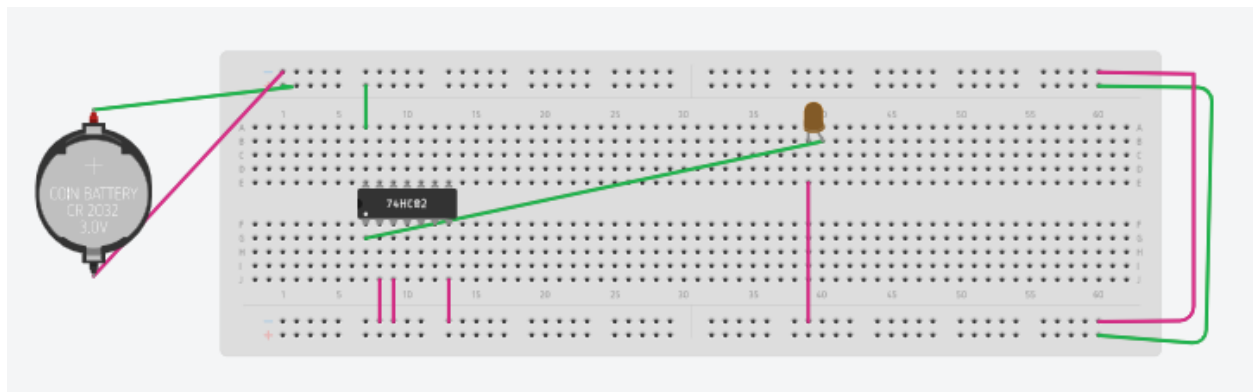## Realize the EX-OR gate using NAND Gate:

The 'Exclusive-OR' gate is a circuit which will give a high output if either, but not both, of its two inputs are high .The IC 74LS86 is a single input EXOR Gate IC and it consists of 4- EXOR gates. The logic symbol of EXOR Gate is shown in Fig.
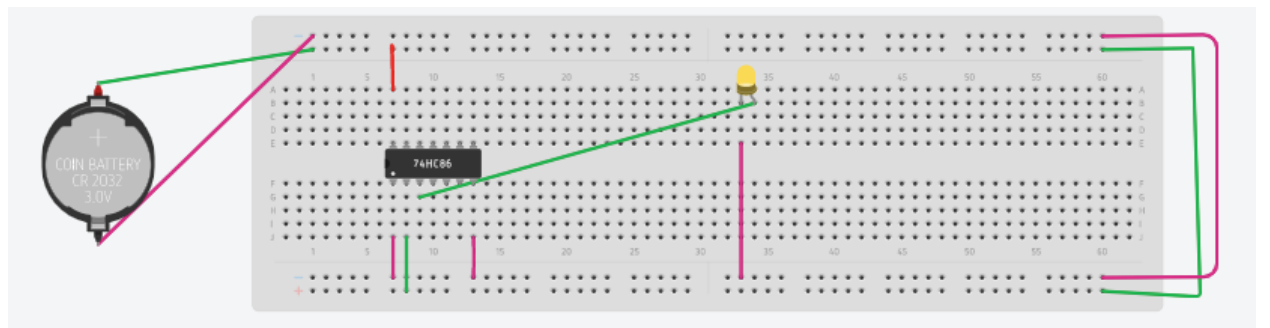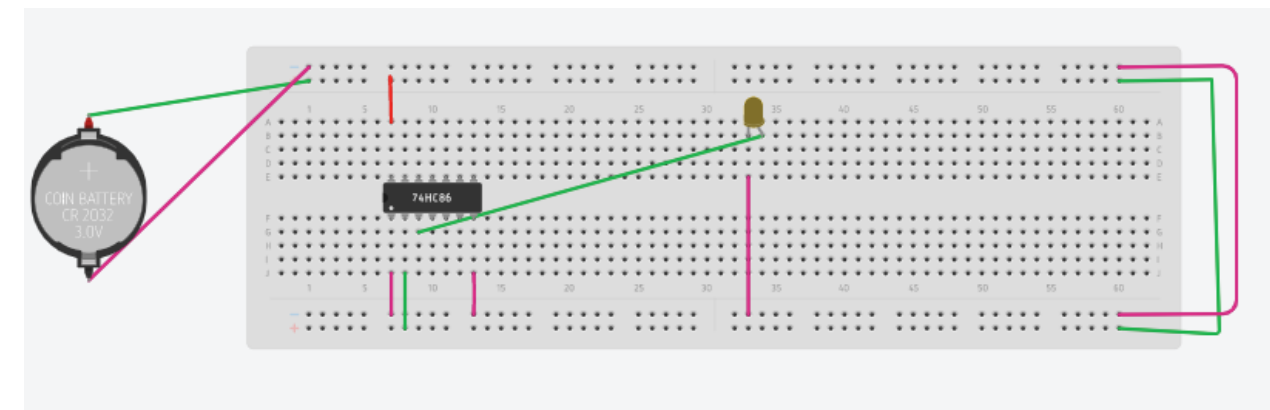

NAND Gate:

NOR Gate:

EX-OR Gate:

Discussion:

For logic gates we have applied proper grounding for IC's .We have used a straight lead probe to insert into the breadboard .We have inserted the components into the breadboard firmly .We didn't touch the pins of IC's while power on also didn't bend the pins of IC's