Green University of Bangladesh

Department of Computer Science and Engineering

Lab report-03

Course Title: Digital Logic Design Lab

Course code: CSE-204

Date of Submission: 08.03.2021

Submitted to:	Submitted by :
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Title: Implementation of all individual gates with universal gates NAND & NOR.

Objectives: To learn how to implement all individual gates with universal gates NAND & NOR.

Apparatus Required: IC 7400 & 7402

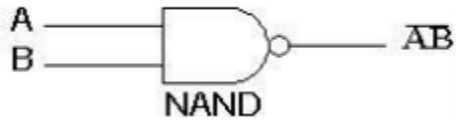
Equipment:

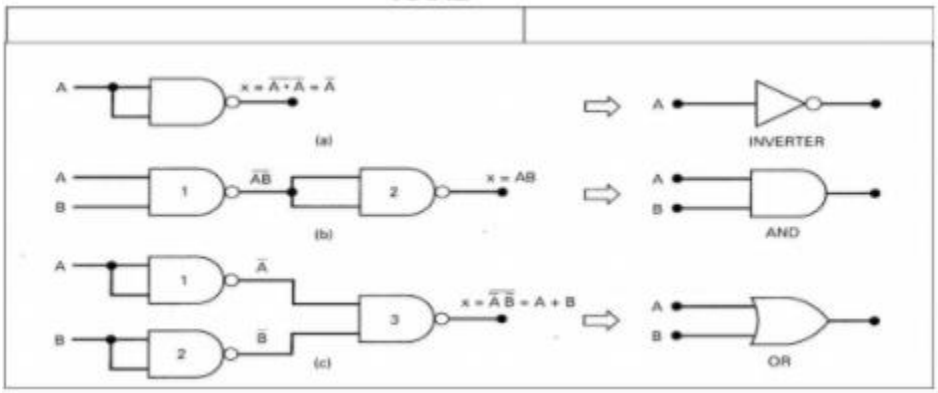
1. Power supply
2. Bread Board.

Theory:

To realize the Basic Logic Gates using NAND Gate:

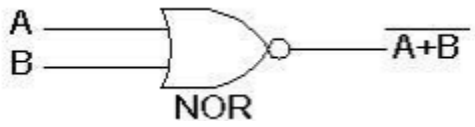
The NAND and NOR gates are called universal functions since with either one the AND and OR functions and NOT can be generated. A function in sum of products form can be implemented using NAND gates by replacing all AND and OR gates by NAND gates. The outputs of all NAND gates are high if any of the inputs are low. The logic symbol of NAND Gate is shown in Fig.

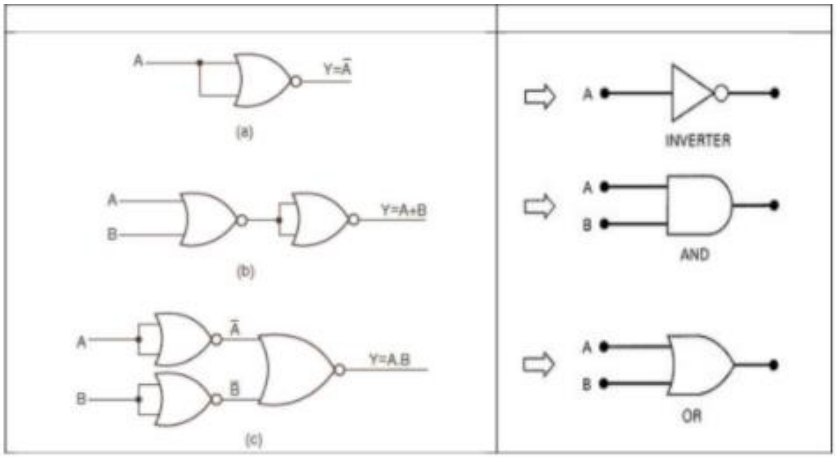




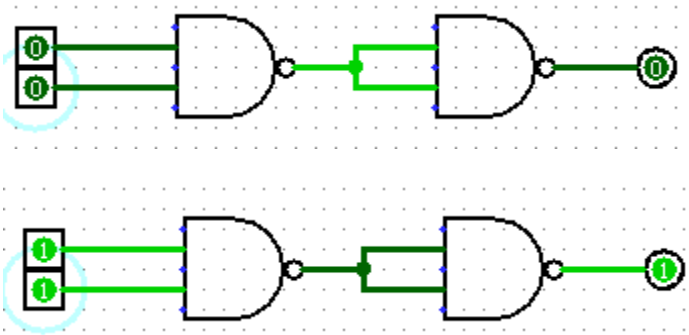
To realize the Basic Logic Gates using NOR Gate:

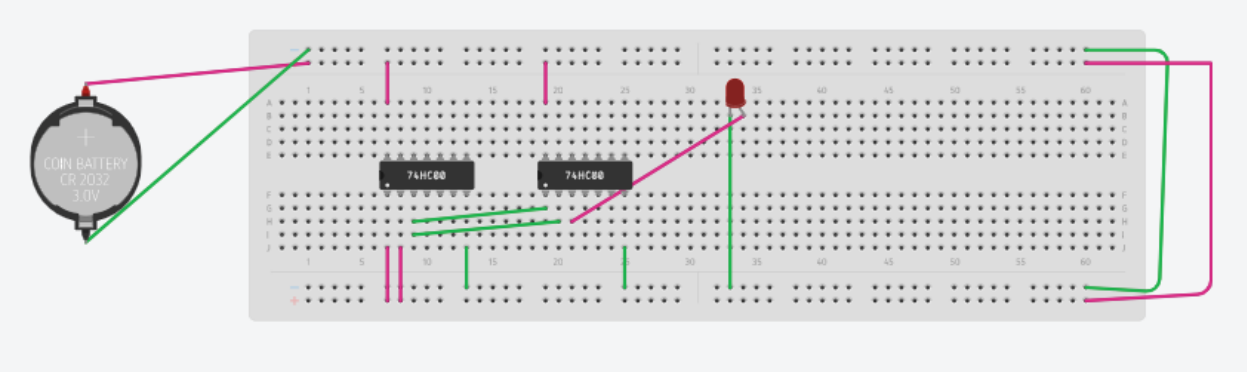
The NOR gate is called universal gate since with this gate AND, OR & NOT functions and can be generated. A function in product of sums form can be implemented using NOR gates by replacing all AND and OR gates by NOR gates. The outputs of all NOR gates are high if any of the inputs are HIGH. The logic symbol of NOR Gate is shown in Fig.

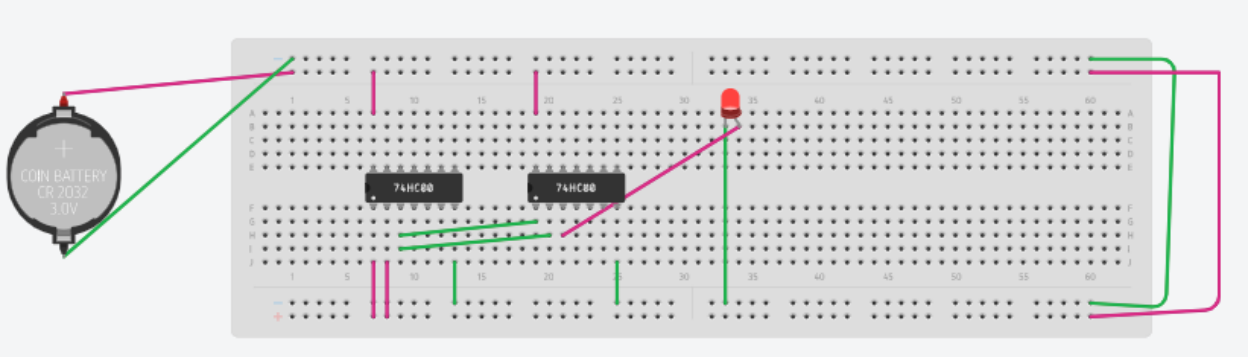




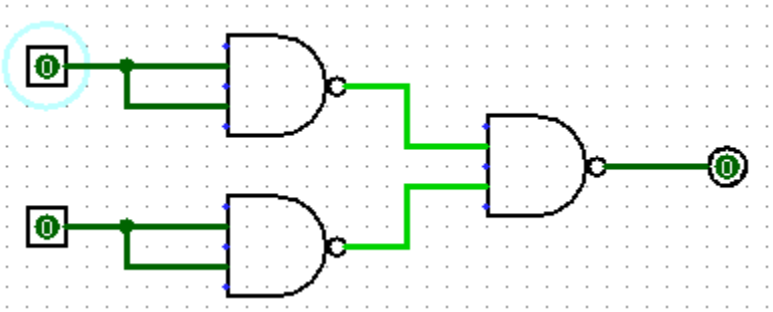
AND Gate Using NAND Gate:

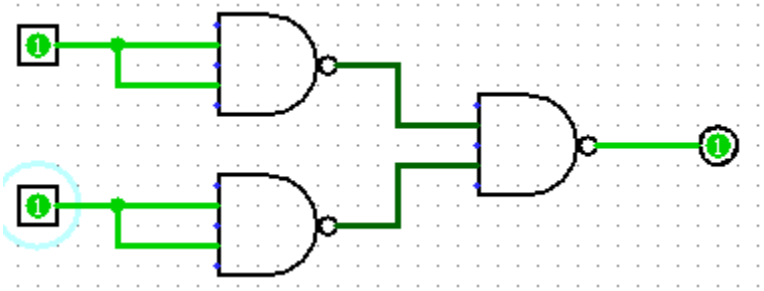


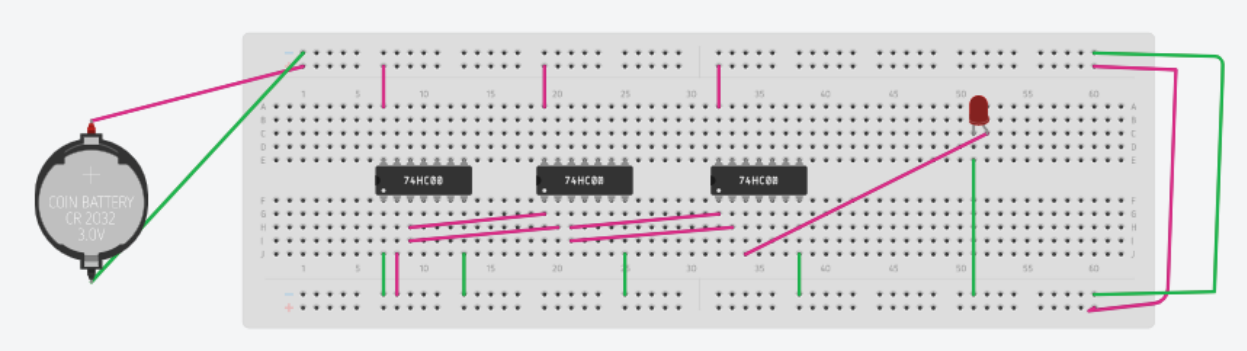


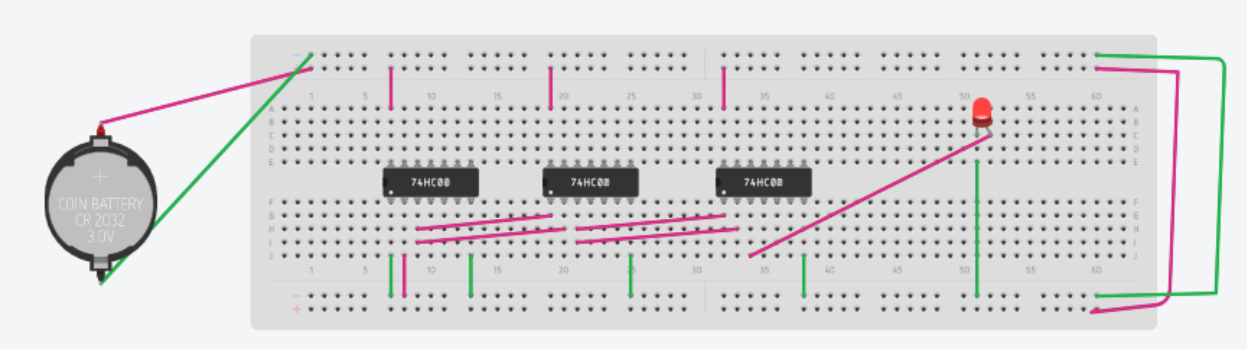


OR Gate Using NAND Gate:

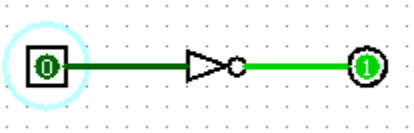


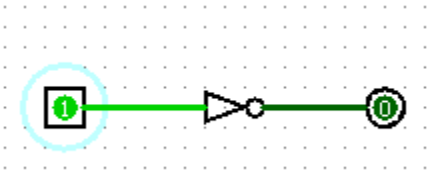


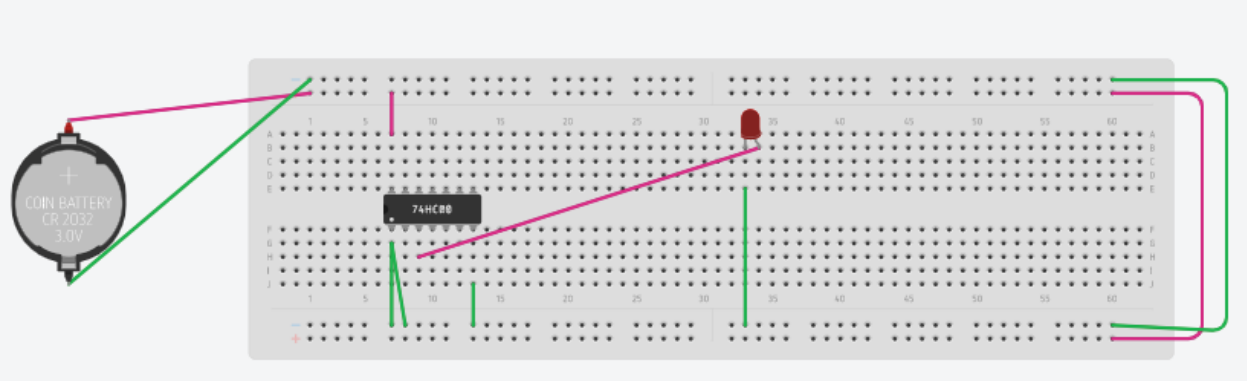


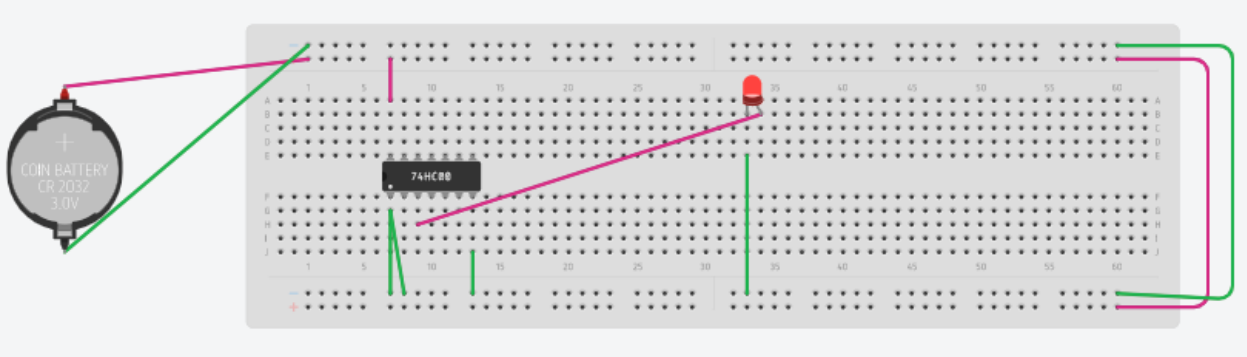


NOT Gate Using NAND Gate:

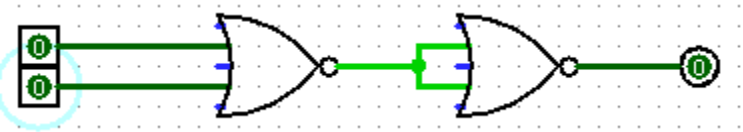


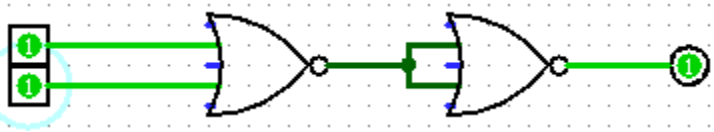


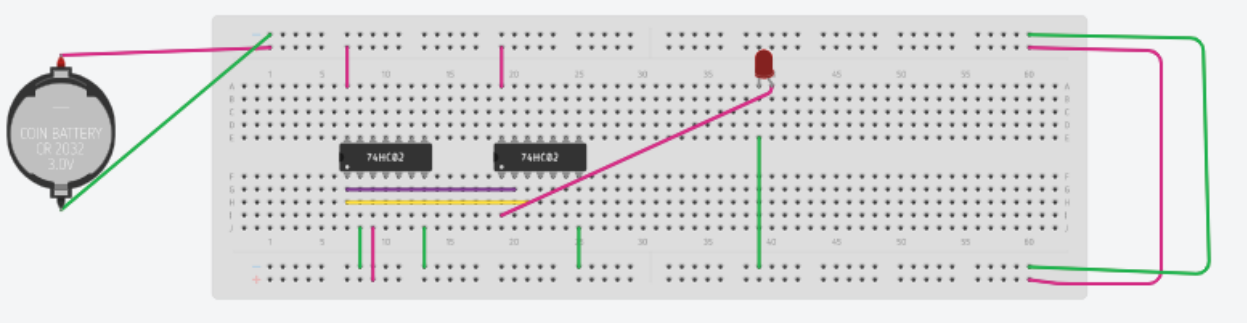


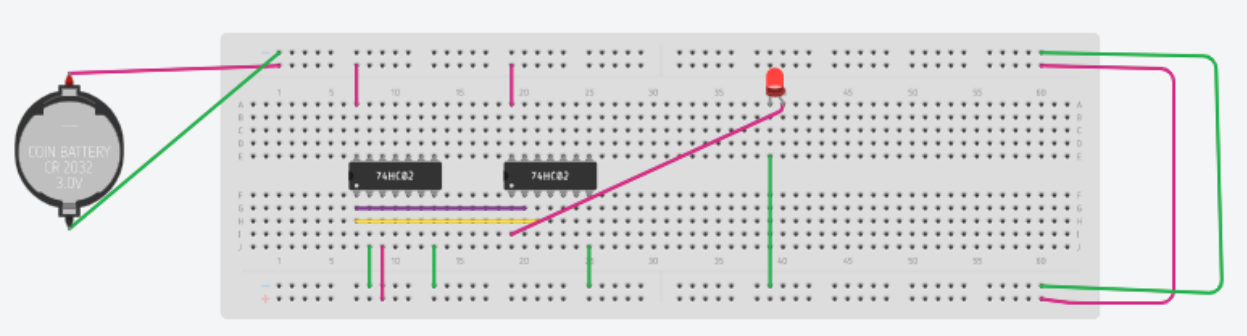


AND gate using NOR gate:

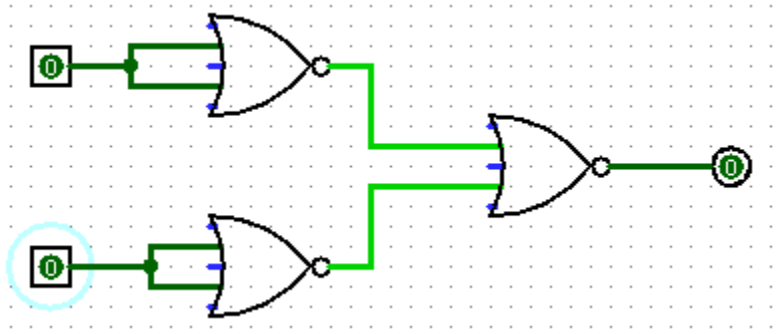


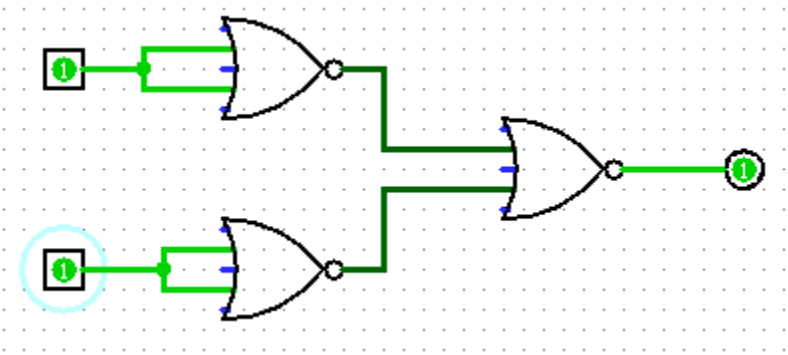


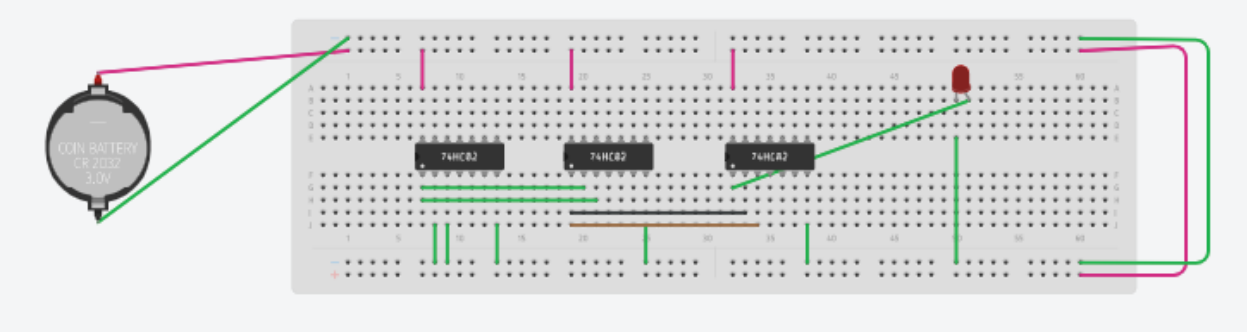


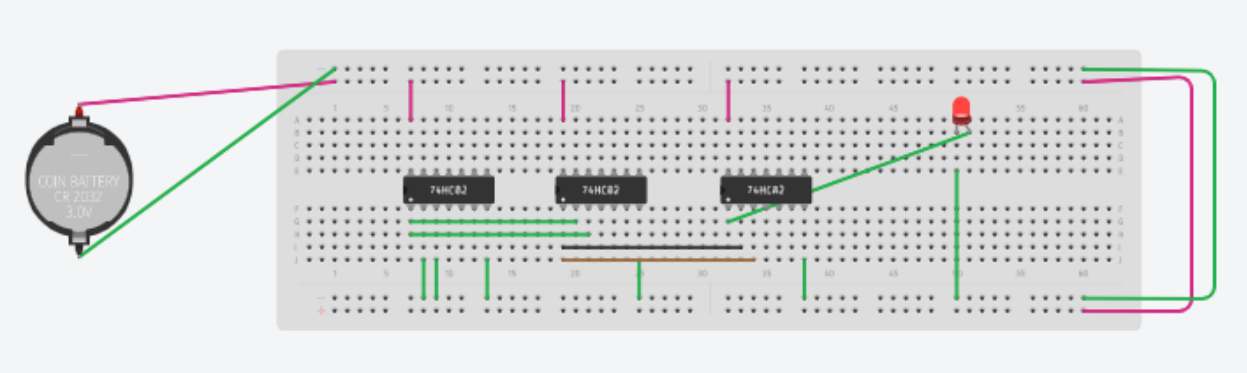


OR gate using NOR gate:

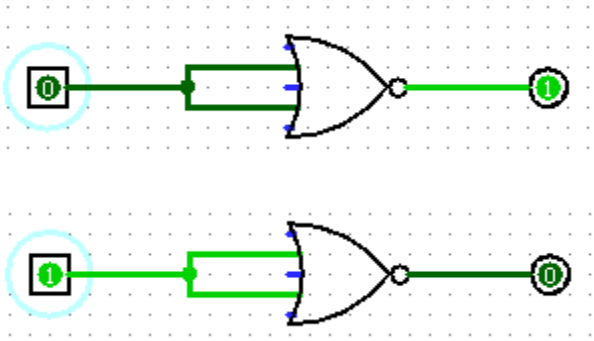


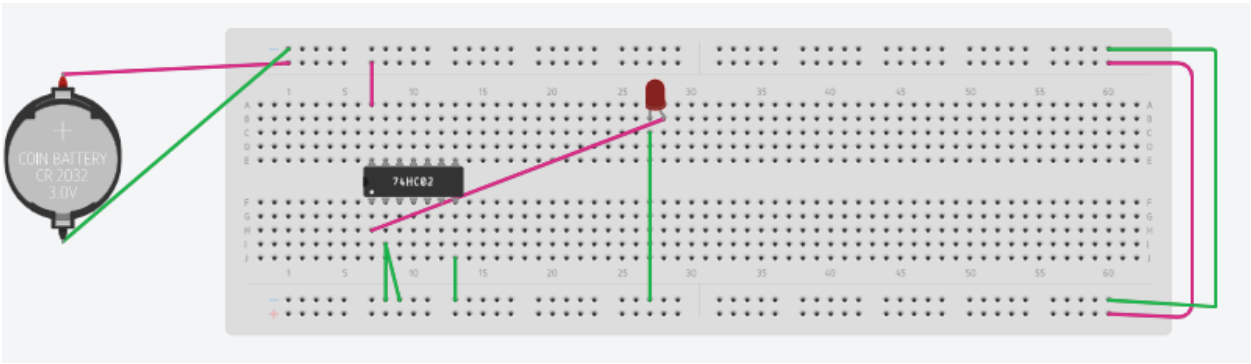


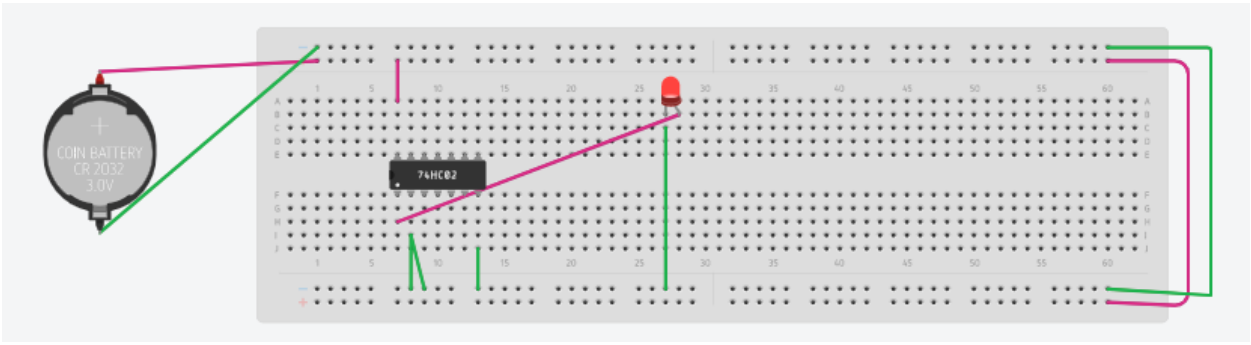




NOT gate using NOR gate:







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