

## Development of Virtual lab :Round 3 -Lab Manual - Template (Worksheet)

**Name of Faculty:** Dr. Siddhartha Arjaria

**Institute:** Rajkiya Engineering College Banda

**Email ID** (as submitted in the registration form): arjarias@gmail.com

**Discipline to which the Lab belongs:** Electronics Engineering

**Name of the Lab:** Basic Electronics VLab

**Name of experiment:** Logic Gates

(only one Experiment per worksheet):

**Kindly Refer these documents before filling the worksheet**

1. Coursework (MOOC ) on Pedagogy , Storyboard , Lab Manual : <http://bit.ly/Vlabs-MOOC>
2. Additional Documentation booklet for reference. <http://vlabs.iitb.ac.in/vlabs-dev/document.php>
3. Sample Git Repository. : <https://github.com/Web-planner/Electronic-Simulator.git>

### Round 2

#### **1. Aim and Objective**

Find out the output of Basic Logic gates by using Basic Electronics simulator.

#### **2. Theory**

**Logic gates** are the basic building blocks of any digital system. It is an electronic circuit having one or more than one input and only one output. The relationship between the input and the output is based on a certain logic. Based on this, logic gates are named as AND gate, OR gate, NOT gate etc.

#### **4. Procedure** *(Protocol for navigating through the simulator with screenshots)*

In the logic gate if we want to insert two inputs ( $a=0$ ,  $b=0$ ) in logic gates then the result is (output  $=0$ ) in simulator .

#### **4.Pre test Assessments** *(Highlight the correct option with bold text)*

1. Question 1: $a=0, b=1$  find the output of logic gate USING AND GATE
  - a. Option 1:1
  - b. Option 2:-1
  - c. Option 3:2
  - d. **Option 4: 0 this is the correct answer in AND GATE in simulator**

## Logic Gate Simulator

**\*\*NOTE: ALL inputs MUST be 0 or 1. If the inputs are something else, the output will display empty or display a wrong output.\*\***

### AND Gate (FINISHED):

In a:

0

In b:

1

Output

Input a: 0

Input b: 1

AND output: 0

### 5. Post test Assessments *(Write least one question for each learning objective from round 1)*

For Learning Objective 1 NAND GATE

1. Question 1: find the output of the given logic gate using NAND GATE

A=1,B=0

- e. Option 1:0
- f. Option 2:2
- g. Option 3:-1
- h. Option 4:1

Analysis the answer using NAND gate simulator the correct answer is 1  
option 4 is correct

## Logic Gate Simulator

**\*\*NOTE: ALL inputs MUST be 0 or 1. If the inputs are something else, the output will display empty or display a wrong output.\*\***

### AND Gate (FINISHED):

In a:

0

In b:

1

Output

Input a: 0

Input b: 1

AND output: 0

2. For Learning Objective 2: OR GATE

3. Question 2: find the output of the given logic gate using OR GATE

A=1,B=0

- a. Option 1:0
- b. Option 2:-1
- c. Option 3:2
- d. Option 4:1

1. Analysis the answer using OR gate simulator the correct answer is 1  
option 4 is correct

The image shows a screenshot of a web-based OR Gate simulator. The title is "OR Gate (COMPLETED):". Below the title, there are two input fields labeled "In a:" and "In b:". The "In a:" field contains the value "1" and the "In b:" field contains the value "0". Below these fields is a blue button labeled "Output". Under the button, the text "Input a: 1" and "Input a: 0" are displayed. At the bottom, the text "OR output: 1" is shown, indicating the result of the OR operation.

## 5. References:

- 1. [https://www.tutorialspoint.com/computer\\_logical\\_organization/logic\\_gates.htm](https://www.tutorialspoint.com/computer_logical_organization/logic_gates.htm)
- 2. [https://www.youtube.com/watch?v=AT\\_GjUjNFpo](https://www.youtube.com/watch?v=AT_GjUjNFpo)
- 3. <https://www.w3schools.com/html/>

