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**Branch: CSE-IOT Section/Group: IOT -B**

**Subject Name:Digital Electronics lab**

**AIM**

* Design a Burglar alarm using AND gate such that the alarm should turn on whenever light falling on the LDR is disrupted.
* Design a voting system such that a valid vote will be considered when a person sitting at a desk presses both the buttons. IN case only one button is pressed during the casting of the vote the vote will be considered as invalid.

Also a valid casted vote will be represented by green light and invalid casted vote will be represented by a red light.

* Design an automatic heater controller using NOT gate such that at temperature below 10oC the heater should turn ON (the heater can be represented by using an LED).

**Task to be done**

The practical applications of logic gates {AND,OR,& NOT}

1. Burglar Alarm using AND gate.
2. **Single doorbell ringer for both front and back doors, using OR gate.**
3. **Design an automatic fan controller (NOT).**

**Requirements**

# Software-

Tinker cad

# Hardware-

7408 [AND] IC,

7404[NOT]IC,

7432 (OR) IC, 5V Power Supply, Breadboard, Connecting wires, Simulation software, Windows 10 PC

**Circuit diagram/ Block diagram-**

**Diagram, schematic

Description automatically generated**

**Diagram, schematic

Description automatically generated**

**Diagram, schematic

Description automatically generated**

**Simulation Results:**

1. Burglar Alarm using AND gate.

**Graphical user interface

Description automatically generated**

**2.Single doorbell ringer for both front and back doors, using OR gate.**

*Graphical user interface, application, Word

Description automatically generated*

**3.Design an automatic fan controller (NOT).**

Graphical user interface, application

Description automatically generated

**Concept used.**

#### Burglar Alarm using AND gate.

1. In burglar alarm AND gate used which have IC no. is 7408.
2. One is the person sensor and second one is the alarm switch and third one is burglar alarm.
3. An AND gate an output of logic [A.B]
4. When alarm switch is ON and the LDR sensor detects a light only the alarm will ring in any of the other cases.

|  |  |  |
| --- | --- | --- |
| Input A | Input B | Output |
| 0 | 0 | 0 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 0 |

#### ****Single doorbell ringer for both front and back doors, using OR gate.****

1. In doorbell ringer OR gate used which have IC no.is [7432]
2. One of the switches for front bell and other for back bell and third one is an output.
3. An OR gate an output of logic [A+B]
4. The logic OR gate is a type of whose output goes HIGH to a logic level 1 only when one or more of its input HIGH.
5. It required that the doorbell should ring when someone presses either the front door switch or the back door switch.
6. The output of the OR gate is attached to a buzzer which will ring when one of the switches is pressed.

|  |  |  |
| --- | --- | --- |
| Input A | Input B | output |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

#### ****Design an automatic fan controller (NOT).****

1. **In automatic fan controller NOT gate was used having IC number [7404]**
2. **Firstly, fix temperature at constant like 30 degree Celsius.**
3. **When we need the warm during the winter, we want to room temperature became constant as 30 or more than that, we need to give more high inputs to warms up the room.**
4. **That time fixed central heating work on the conditions.**
5. **The temperature sensor input needs to be given to the input terminal of any one of the NOT gate inside this IC, and the output actuator can be driven from the output terminal of the same gate.**

|  |  |  |
| --- | --- | --- |
| Input A | Input B | Output |
| 0 | **0** | **1** |
| 0 | **1** | **0** |
| 1 | **0** | **0** |
| 1 | **1** | **0** |

**Learning/ observation-**

1. Burglar Alarm using AND gate.
2. **Single doorbell ringer for both front and back doors, using OR gate.**
3. **Design an automatic fan controller (NOT).**

**All the above work on the basis of logic gate and truth table**

**Troubleshooting**

1. On thinker cad the LM35 is not available instead of the LM35 we used in the circuit diagram as temperature sensor is TMP36.
2. Should be all connection will be connected.
3. Most careful about input and output connections.

#### Result-

The integrated circuits and their connections on the breadboard were studied and implemented. The practical applications of logic gates (AND, OR & NOT) were studied and implemented.