Green University of Bangladesh
Department of Computer Science and Engineering (CSE)
Faculty of Sciences and Engineering
Semester: (Fall , Year:2021), B.Sc. in CSE (Day)

LAB PROJECT REPORT
Course Title: Digital Logic Design Lab
Course Code: CSE 204   **Section: DC**

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[For Teachers use only: **Don't Write Anything inside this box**]

Project Proposal Status	
Marks: …………………………………	**Signature:** ....
Comments:	**Date:** ....

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1. TITLE OF THE PROJECT PROPOSAL

Automatic night light control using Logic Gates

2. OBJECTIVES

In this project, we will build a night light circuit using a NAND gate chip.

3. EXICUTIVE SUMMARY

In this project, we will build a night light circuit using a NAND gate chip. A night light circuit is a circuit in which a light will turn on when the environment becomes dark. It is a popular commercial product that is used in many places such as for backyard lights for when it gets dark for automatic illumination.

4. PROJECT DESCRIPTION

The circuit is very basic. The component that will allow us to detect light is a photoresistor. We will use a photoresistor's light-sensing ability to detect whether the circuit is exposed to darkness or bright light. How this works is that a photoresistor's resistance changes in proportion to the amount of light it is exposed to. In darkness, it has very high resistance. In bright light, its resistance drops dramatically. If placed in a voltage divider circuit with a fixed resistor, we can exploit this resistance-altering behavior so that when connected to a NAND gate, we can produce a HIGH output when the photoresistor is exposed to bright light and a LOW output when the photoresistor is exposed to darkness .
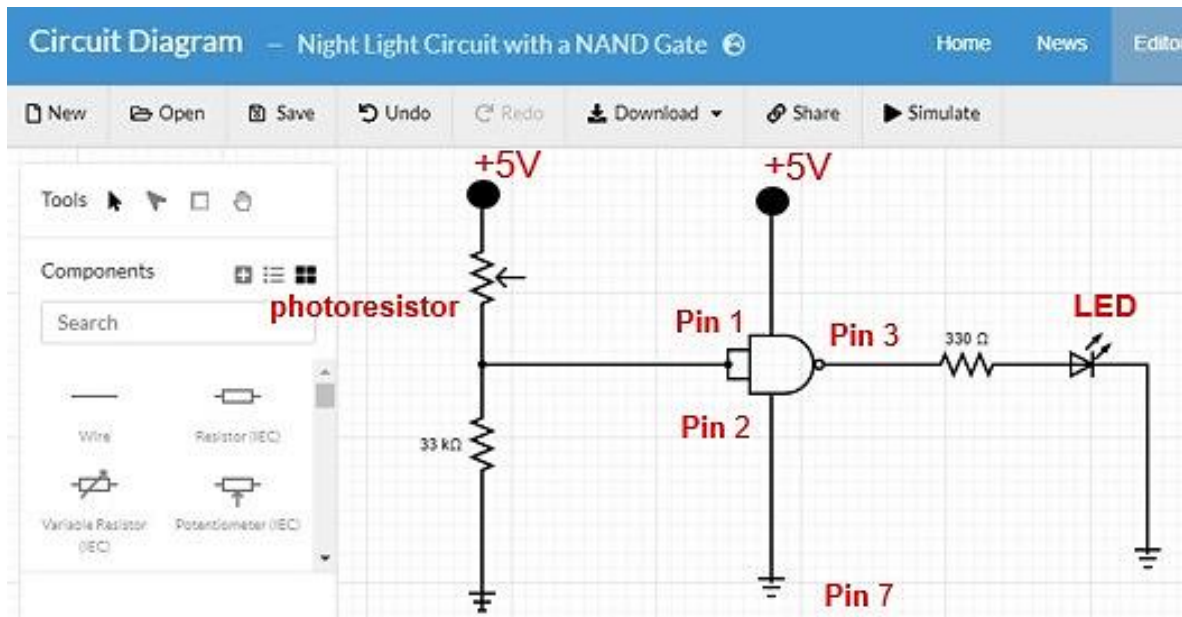
5. ADVANTAGE & DISADVANTAGE

ADVANTAGE
- This circuit save time.
- It save power.
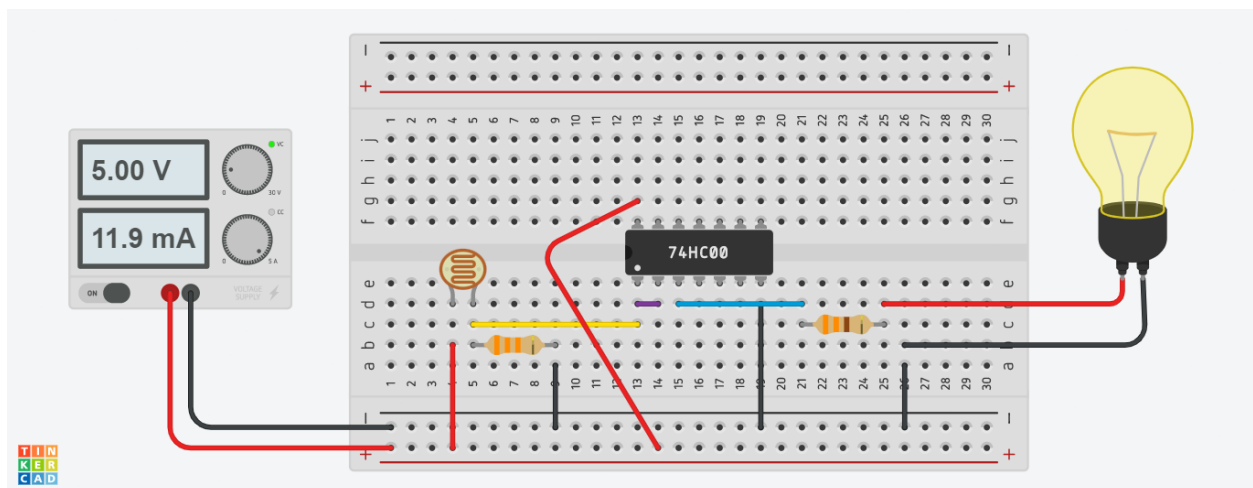- Help to smart life.
- Automatic control.

DISADVANTAGE
- Sometime it problem in could weather.

6. CIRCUIT DIAGRAM

The schematic diagram of the night light circuit using a 74hc00 NAND gate chip is shown below.

7. PROJETCS SIMULATION

8. PROJETCS BUDGET

- BREADBOARD ---------- 100 TK
- 74hc00n IC   ---------- 105 TK
- 9V Battery ---------- 53 TK
- GL5537 ---- 34 TK
- LED   ----------- 15 TK
- 330 Ohm Resistors ------------ 5 TK
- 6.8k Ohm Resistors ------------- 10 TK
- Wires --------------- 30 TK

Total   = 352 TK

9. ANALYSIS AND DISCUSSION

In this project, we will build a night light circuit using a NAND gate chip. A night light circuit is a circuit in which a light will turn on when the environment becomes dark. It is a popular commercial product that is used in many places such as for backyard lights for when it gets dark for automatic illumination.

Now I will explain our circuit diagram. Here we have used a photo resistor. A photoresistor's light-sensing ability to detect whether the circuit is exposed to darkness or bright light. In darkness, it has very high resistance. In bright light, its resistance drops dramatically.

Then we use NAND gate IC. This means that if one of the inputs are a 0, the NAND gate will output a logic HIGH at its output, which means the output will be drawn up to VCC and the load will be powered. If both inputs feeding into the NAND gate are a 1, only then will the NAND gate output a logic LOW at its output, which means the output will be drawn down to GND, and the load will not be powered. In our circuit, we will use both of these cases. The other components we need are the LED. It will help to understand our project works, good or not. The 330Ω resistor in series to limit current to the LED so that it doesn't burn out.

Now I will explain our working process. Here we can see like as our circuit diagram, This is our photo resistor, This is NAND gate IC and these two are resistors and this one is the LED. Tarpor circuit ar pin explain korte hobe Remember, NAND gate logic, two 1s gives a 0. This is the only time we get an output value of 0 in NAND gate logic. If a 0 is present anywhere in the inputs, including twice, the NAND gate will output a 1. So you can see how this voltage divider circuit allows us to get 2 different logic levels produced by the NAND gate chip in different lighting conditions.

10. CONCLUSION

All of this will be explained in detail above how exactly this works. But realize that a photoresistor's resistance-changing ability allows us to distinctly know whether it is exposed to darkness or bright light. Knowing this,

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