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**AMERICAN INTERNATIONAL UNIVERSITY–BANGLADESH (AIUB)**

**FACULTY OF SCIENCE & TECHNOLOGY**

**DIGITAL LOGIC AND CIRCUITS LAB**

**Summer 2022-2023**

Section: F

Group Number: 02

**NAME OF THE EXPERIMENT**

*Open-Ended Laboratory Experiment*

**Supervised By**

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Faculty of Engineering, AIUB

**Submitted By**:

|  |  |
| --- | --- |
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**Purpose:**

The purpose of the experiment to build a LED flashlight / Blinking light using 555 timer. Here are some common uses of LED flashlights:

1. **Signaling and Communication:** Blinking LED lights are used for signaling purposes. They transmit messages or indicate specific conditions, like a warning light on a vehicle.
2. **Decoration and Attention:** Blinking lights can draw attention to specific areas or objects, making them useful for displays, holiday decorations, or shop promotions.
3. **Navigation and Safety:** Blinking lights are often used in aviation and maritime contexts as navigational aids, guiding pilots and sailors during nighttime or low-visibility conditions.

**Equipment:**

1. 555 Timer (1pc)
2. Led light Red and Green (2pc)
3. 10uF Capacitor
4. Resistors: 100K, 1K, 220R
5. Breadboard

**Procedures:**

1. Place the 555 timer IC on the breadboard.
2. Connect the power supply's positive terminal (+5V) to pin 8 (VCC) of the 555 timer.
3. Connect the power supply's ground terminal (GND) to pin 1 (GND) of the 555 timer.
4. Connect pin 4 (Reset) to VCC (pin 8) to disable the reset function.
5. Connect a resistor (RA) between pin 7 (Discharge) and pin 8 (VCC).
6. Connect a resistor (RB) between pin 7 (Discharge) and pin 6 (Threshold).
7. Connect a capacitor (C) between pin 6 (Threshold) and ground (pin 1).
8. Connect a Red LED (C) between pin 3 (Output) and VCC (pin 8).
9. Connect a Green LED (C) between pin 3 (Output) and ground (pin 1).
10. Masure Tgreen, Tred Using RA, RB and C.

**Results and Data analysis:**

RA = 1 KΩ = Ω

RB = 100Ω

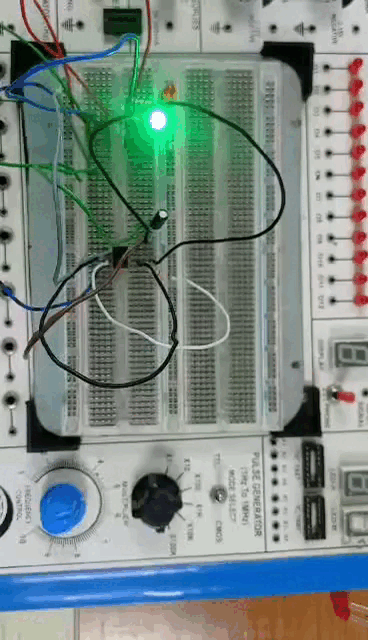
C1 = 10 µF = F

Tgreen= 0.7 \* (RA + RB) \* C = 0.7 \* (Ω + ) \* F = 7.7 mS

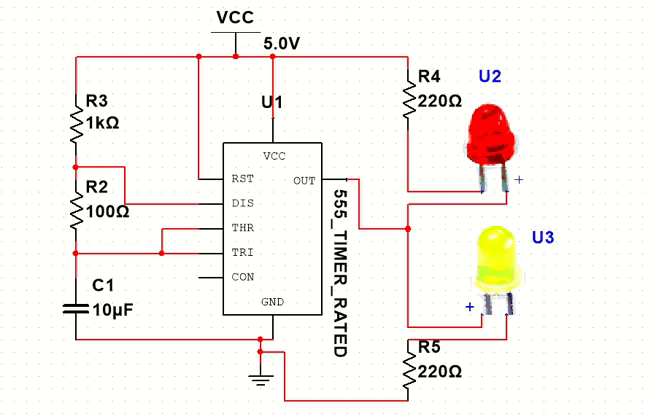
TRed = 0.7 \* RB \* C = 0.7 \* \* 10F = 0.7 mS

|  |  |  |
| --- | --- | --- |
|  | Tgreen | TL |
| Calculated value | 7.7 mS | 0.7 mS |
| Exp. value | 6.6 mS | 0.6 mS |

**Hardware Implementation:**

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**Simulation:**

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**Discussions and Conclusions:**

We have successfully verified the result from the hardware simulation. After implementing the logic circuit, we have taken all the inputs in the circuit to verify the output and solution. We have found that our established circuit perfectly gives us our desired result.

**Reference:**

1. [1] Thomas L. Floyd, “Digital Fundamentals,” available Edition, Prentice Hall

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