

# Sensor

Presented By:

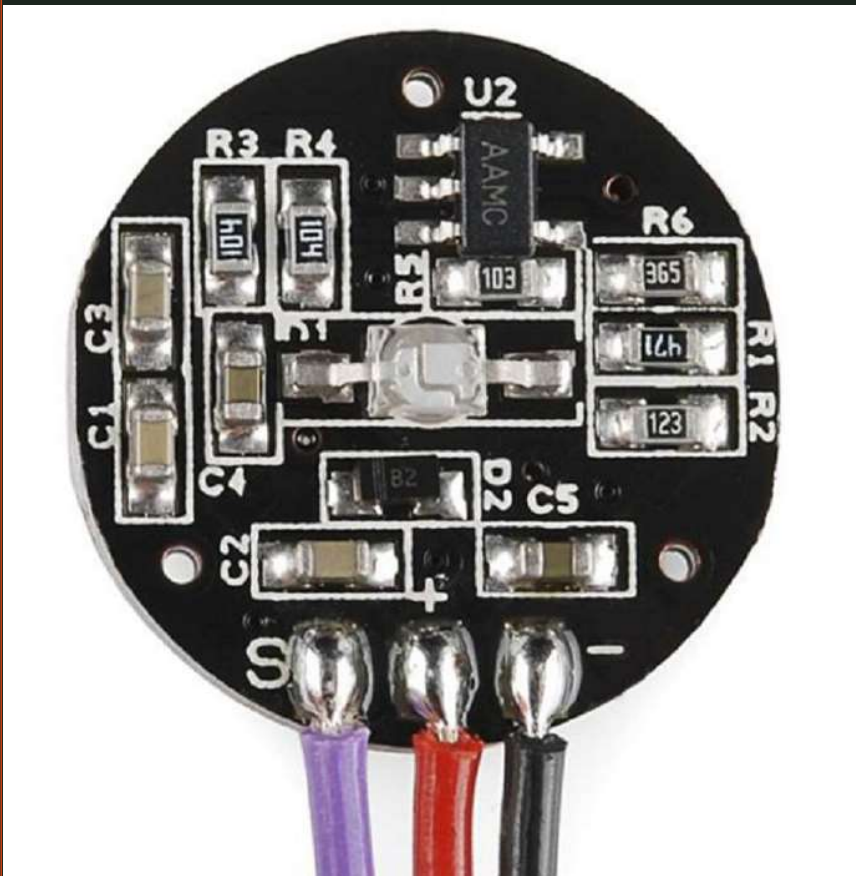
# Md.Shihab Hossain



# point

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# Introduction

## What Is Pulse Rate Sensor?

A pulse sensor is a device that measures the heartbeat rate by detecting the pulsations of blood flow in a person's body. It is commonly used in medical settings, fitness trackers, and wearable devices to monitor heart rate and provide information about a person's cardiovascular health.

# Need Of Pulse Rate Sensor

1. HEALTH MONITORING
2. FITNESS TRACKING
3. STRESS MANAGEMENT
4. PERFORMANCE OPTIMIZATION
5. SLEEP ANALYSIS
6. BIOFEEDBACK AND MEDITATION

# Objective And Component





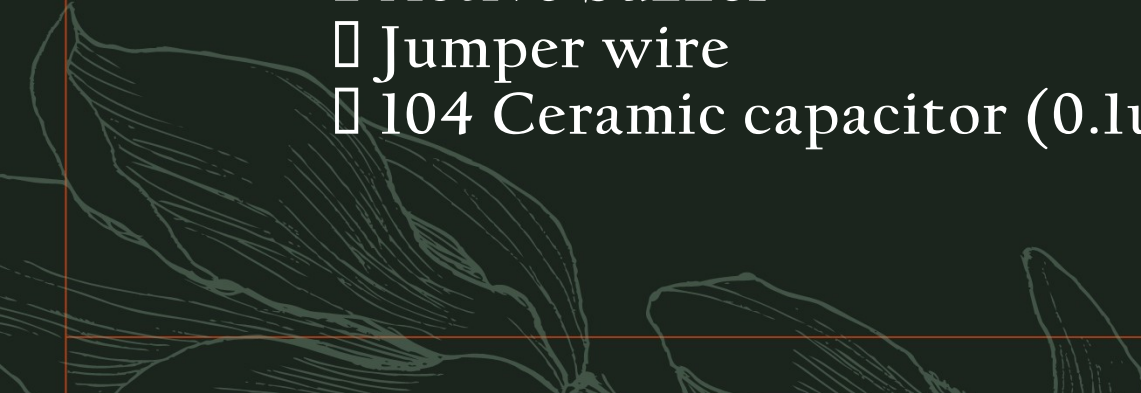
# Objectives

**The following objectives are likely to be focused and achieved at the end of the project.**

- 1. Accuracy: Developing a sensor that provides precise and reliable measurements of the pulse rate, ensuring that the readings are as close to the actual heart rate as possible.**
- 2. Real-time monitoring: Enabling continuous or on-demand monitoring of the pulse rate, allowing individuals to track their heart rate throughout various activities, such as exercise, rest, or sleep.**



## □ Component

- Red LED, Capacitor 4.7uF
  - Resistor 47k,6.8k,680k,330ohm
  - IC LM358
  - Bread Board
  - 3.7 volt Lithium Battery & 2 pin header pins
  - Pulse Sensor module
  - Active buzzer
  - Jumper wire
  - 104 Ceramic capacitor (0.1uF)
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## ➤ Details Of Component

Resistors

Bread Board

Buzzer

Red color LEDs

Capacitor

Pulse rate module







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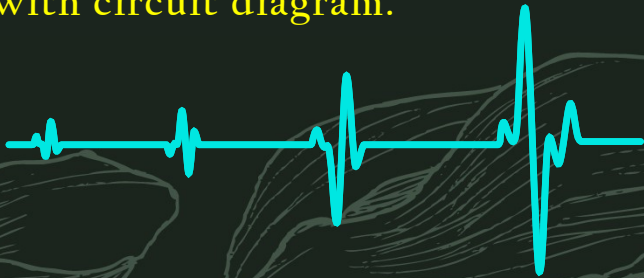
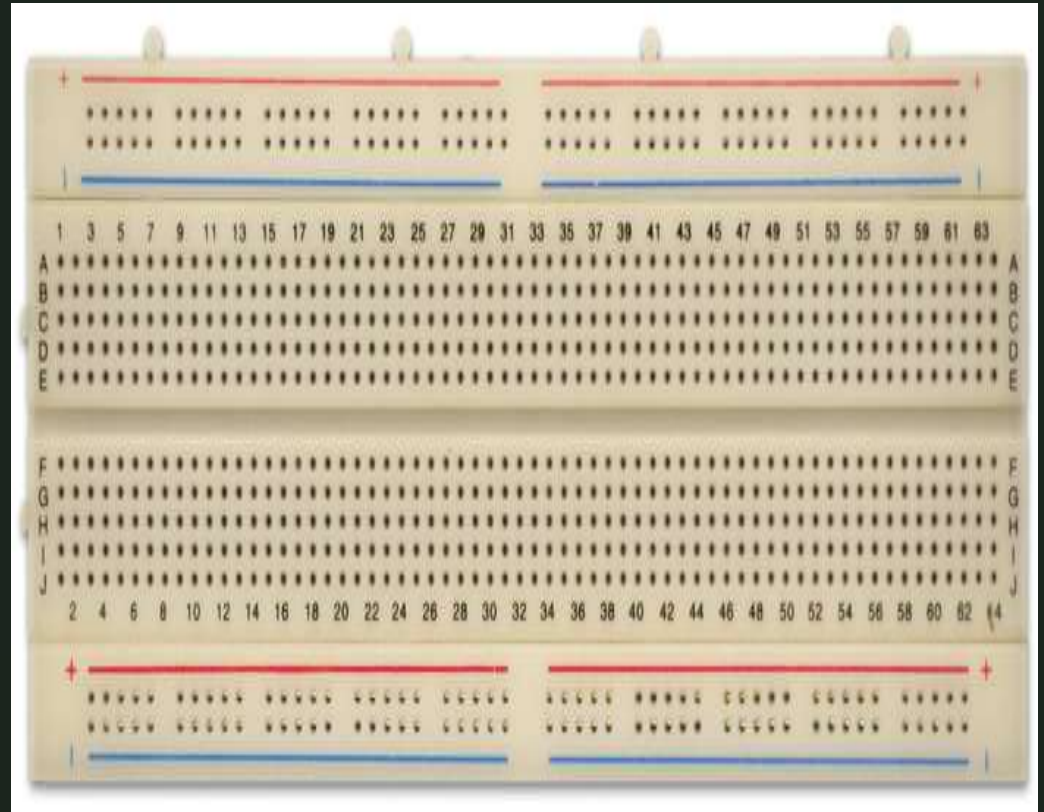
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# Meet our team

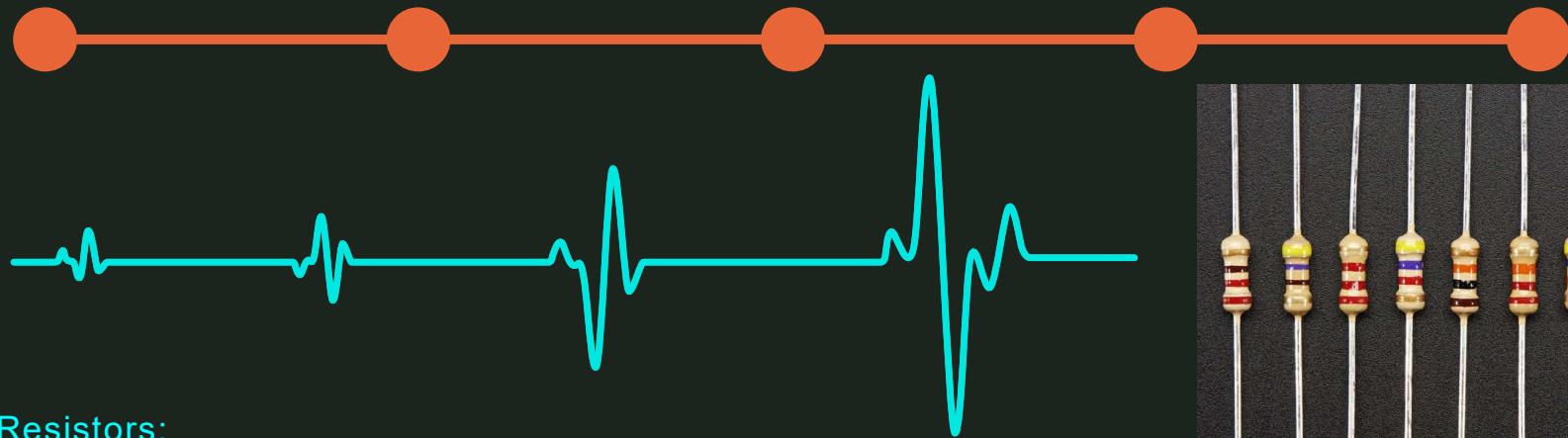
# Details of Componets

## Bread-Board:

A bread-board is a construction base for prototyping of electronics. It is used for temporary prototyping and experimenting with circuit diagram.



# Details of Components



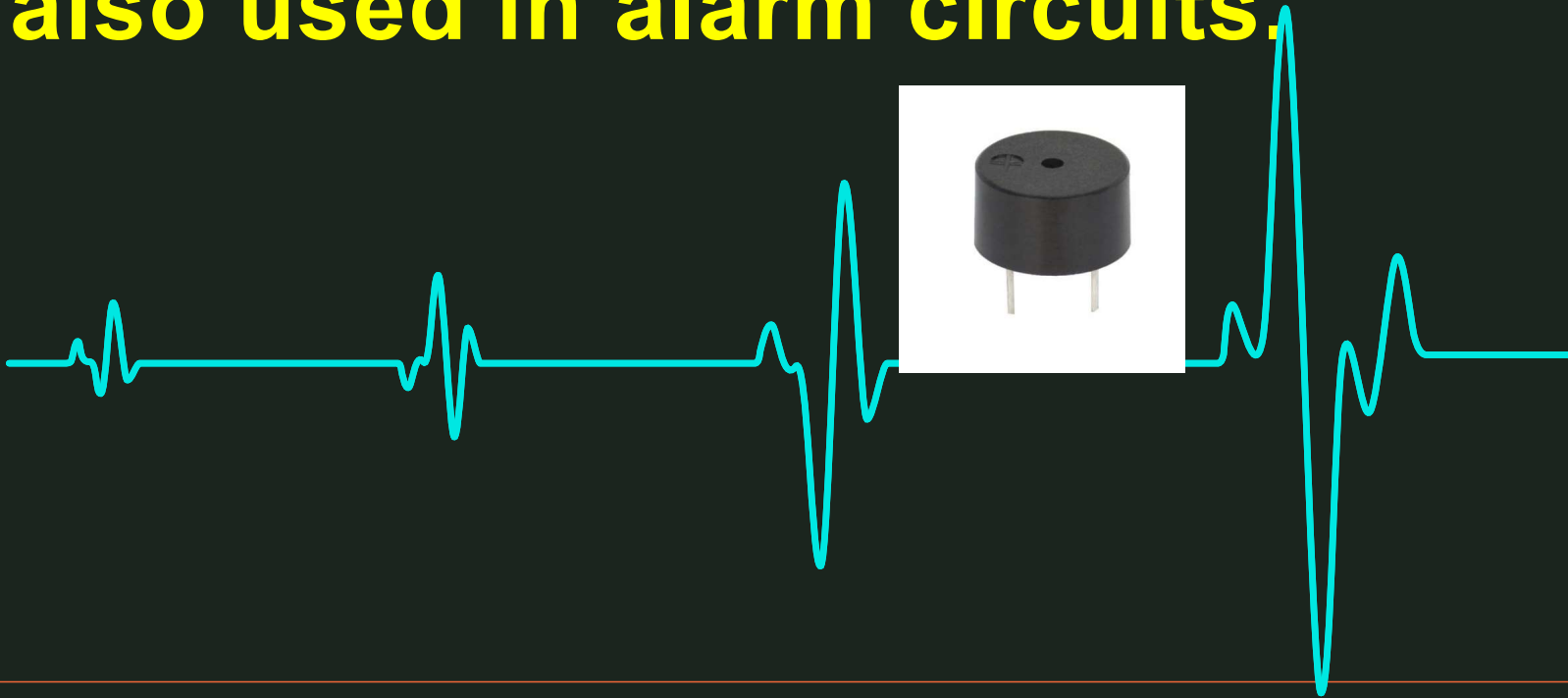
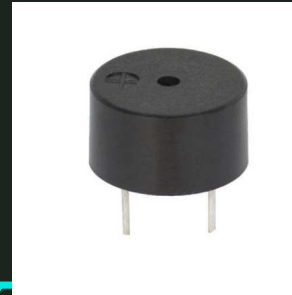
## Resistors:

Resistor is a passive component used to control current in a circuit. Its resistance is given by the ratio of the voltage applied across its terminals to the current passing through it.

# Details of Components

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**Buzzer:** The buzzer produces sound. It is also used in alarm circuits.



# Details of Components

## Capacitor:

A capacitor is an electronic component that stores and releases electrical energy. It consists of two conductive plates separated by an insulating material called a dielectric. The conductive plates can be made of metal, and the dielectric can be materials like ceramic, plastic, or electrolytic fluids.

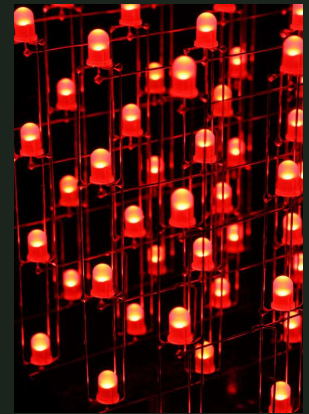
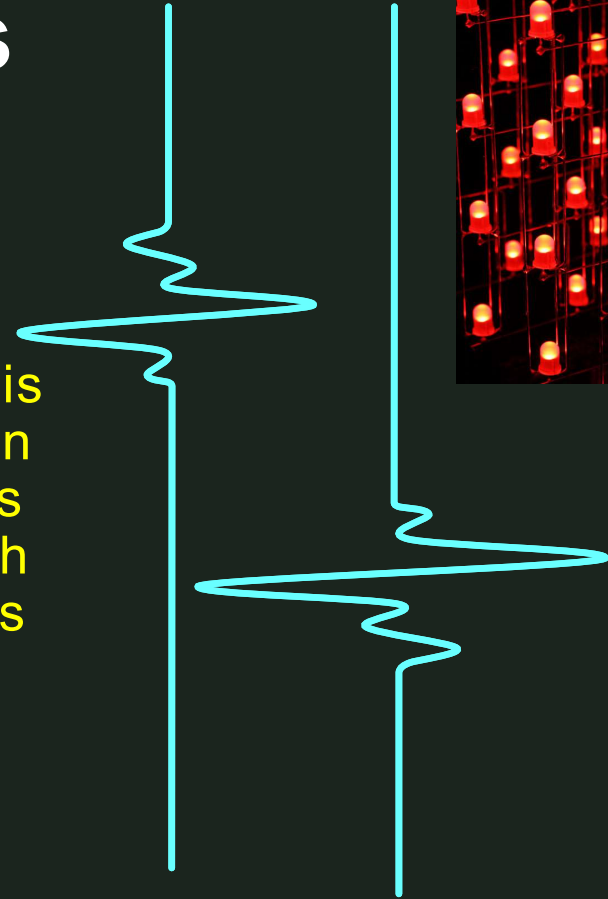




# Details of Components

## LED

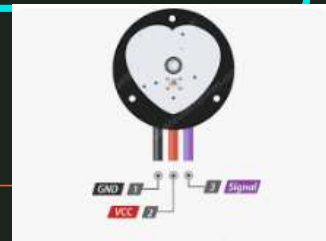
LED means "Light-Emitting Diode." An LED is an electronic device that emits light when an electrical current is passed through it. LEDs are commonly used for indicator lights (such as power on/off lights) on electronic devices



# Details of Components

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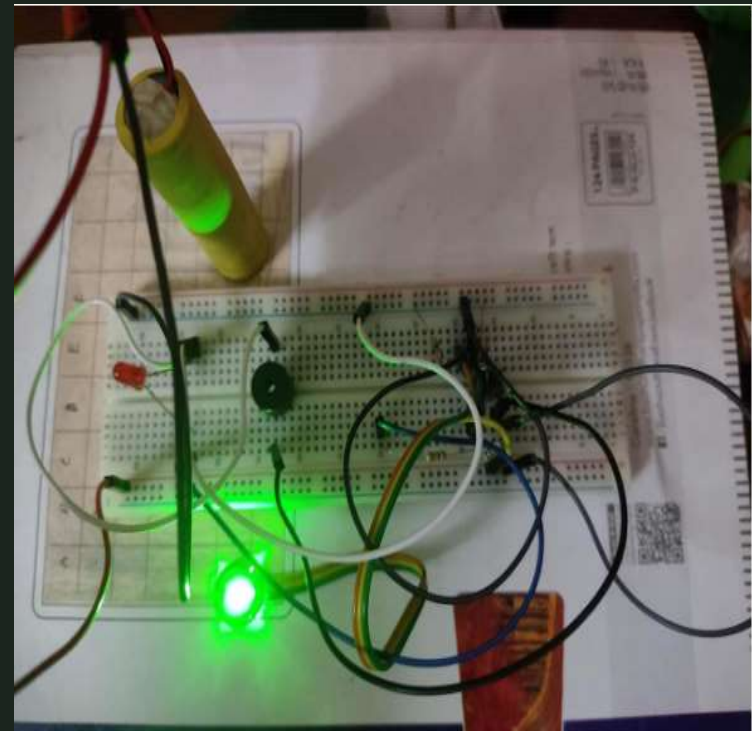
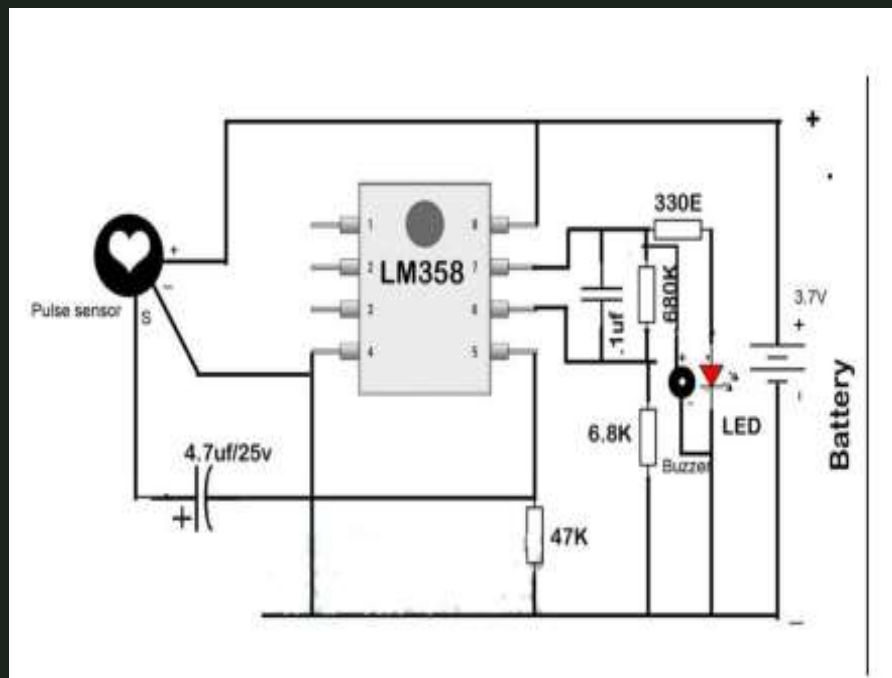
**Pulse Rate Module:** The pulse module working principle is very simple. This sensor has two surfaces, on the first surface, the light-emitting diode & ambient light sensor is connected. Similarly, on the second surface, the circuit is connected which is accountable for the noise cancellation & amplification. The LED is located above a vein in a human body like ear tip or fingertip, however, it must be located on top of a layer directly. Once the LED is located on the vein, then the LED starts emitting light. Once the heart is pumping, then there will be a flow of blood within the veins. So if we check the blood flow, then we can check the heart rates also. If the blood flow is sensed then the ambient light sensor will receive more light as they will be reproduced by the flow of blood. This small change within obtained light can be examined over time to decide our pulse rates.



## Process Of Manufacture

We have right here a capacitor (4.7uF) and resistor (47k) that are connected together in series and we took from it the output to the amplifier so that the signal comes from the pulse sensor pin-3 and we get filtered signal using RC filter and after that the signal goes to the amplifier. We have an amplifier LM358. R=6.8k is connected from the negative terminal of the operational amplifier to the ground and the ground is connected to the negative terminal of the battery and this capacitor (0.1uF) is for filtering the signal that comes out from op amplifier. we have the LED that is connected to the output of the amplifier and we have connected a 330 ohms resistors to lower the voltage that comes from the amplifier because the maximum voltage comes out from the amplifier is 3.7 volts as we connect this amplifier with a supply of 3.7 volts. So, we must lower the voltage using this resistance to allow the current or to give the LED a 2.2v approximately across the pins of the LED.

# Diagramme



# Summary

a pulse rate sensor project aims to measure the heart rate or pulse of an individual using a photoplethysmography (PPG) sensor. The project involves placing the sensor on a part of the body with good blood flow, such as a fingertip or earlobe. The sensor emits light into the tissue, which gets absorbed and scattered by the blood vessels. The photodetector detects the light that has passed through or been reflected by the tissue and converts it into an electrical signal



# Thank you

