

# THE REAL TIME TRACKING DEVICE

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# INTRODUCTION:

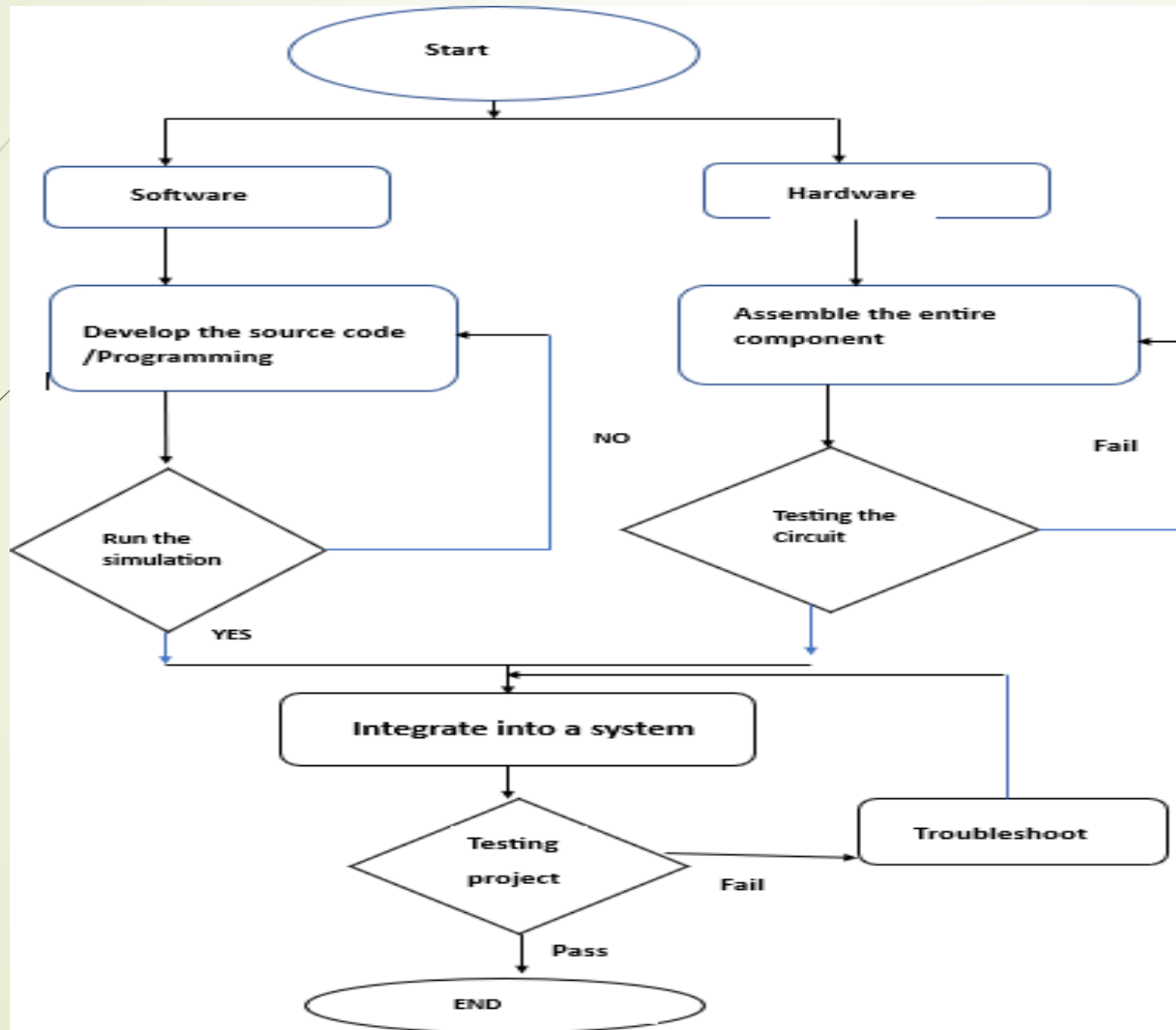
- In today's world, real-time tracking devices have become increasingly important in a variety of applications, including fitness tracking, healthcare monitoring, and logistics management.
- However, existing tracking devices are often expensive and complex to use, making them inaccessible to many users.
- Additionally, many existing devices are limited in the types of data they can collect, which can limit their usefulness in certain applications.
- Our project aims to address these issues by developing a low-cost, user-friendly real-time tracking device that can collect a wide range of data
- Additionally, by storing the collected data in the cloud and providing a user-friendly interface for data visualization, our device is easier to use and more accessible than many existing tracking devices.



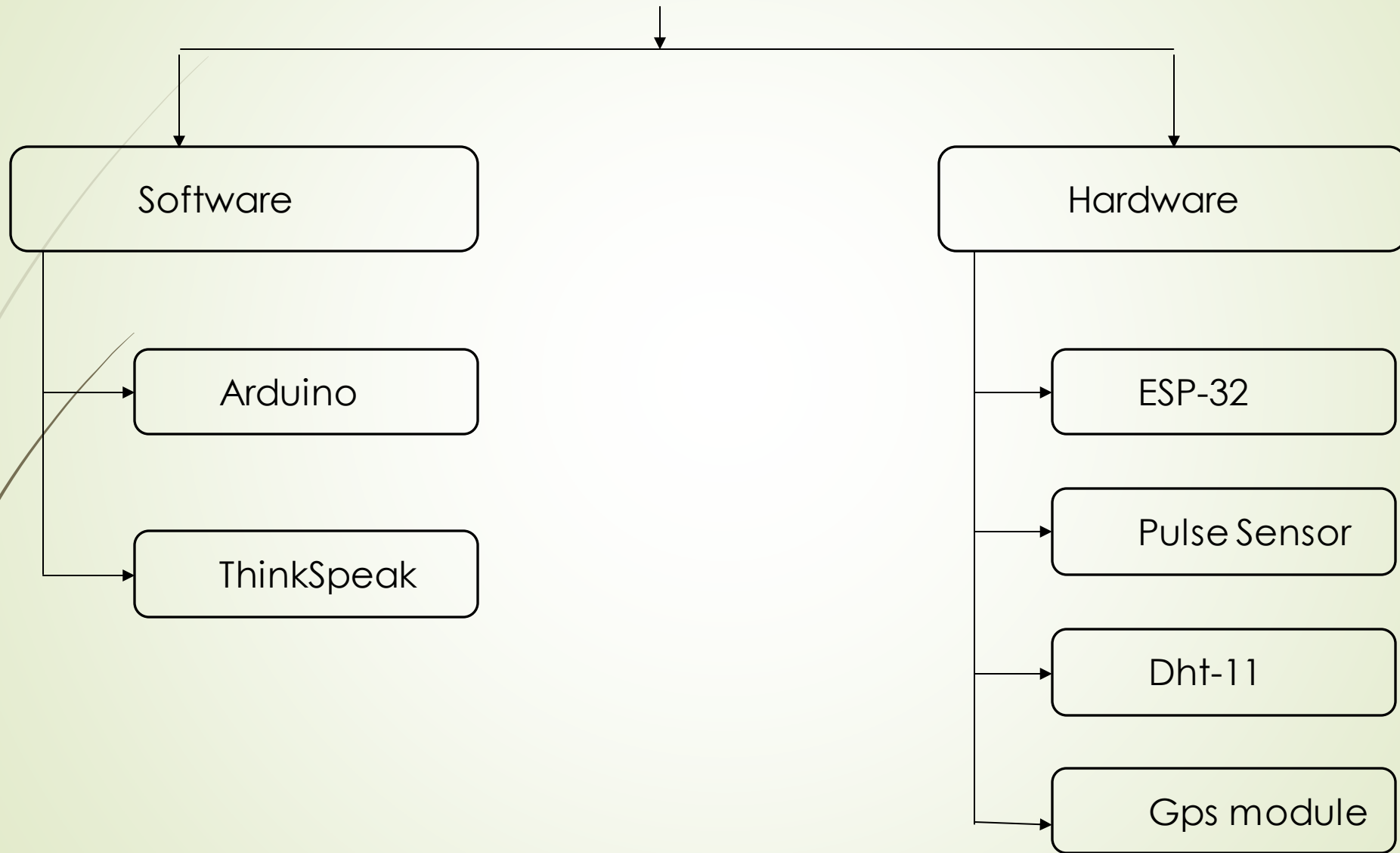
# CONTENTS:

- Introduction
- Flow chart
- Component used
- Block diagram
- Circuit diagram
- Working
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- Application

# FLOW CHART:



# COMPONENT USED:





# ARDUINO:

- Open-source software tool used to write, upload, and debug code for Arduino boards.
- Includes a code editor, compiler, and library of pre-written code examples to make coding easier.
- Supports a wide range of Arduino boards, from the popular Uno ,ESP8266,ESP-32 to newer boards like Due and Zero.
- Offers features like syntax highlighting, auto-complete, and error highlighting to make coding more efficient.
- Includes a serial monitor and uploader to help users communicate with and upload code to the Arduino board.

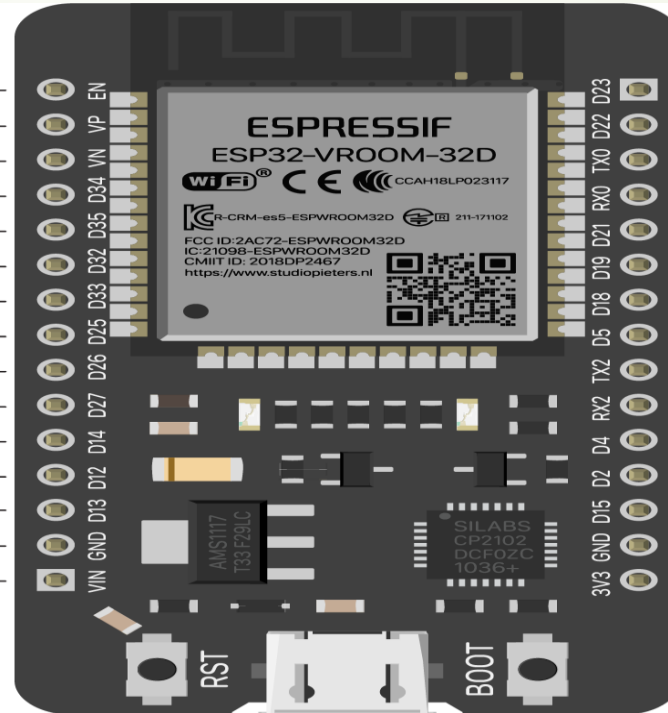
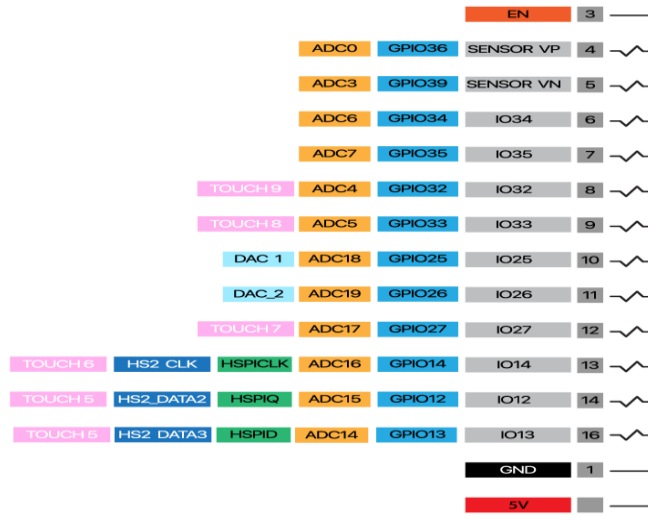


# THINKSPEAK:

- An IoT (Internet of Things) platform used to collect, analyze, and visualize data from sensors and devices.
- Provides an API (Application Programming Interface) for developers to create IoT applications.
- Offers features like data logging, charting, and alerts to help users monitor and analyze data.
- Integrates with a wide range of hardware platforms, including Arduino, Raspberry Pi, and Particle.
- Provides a free and paid version with different levels of storage, data transfer, and features.



# ESP32:



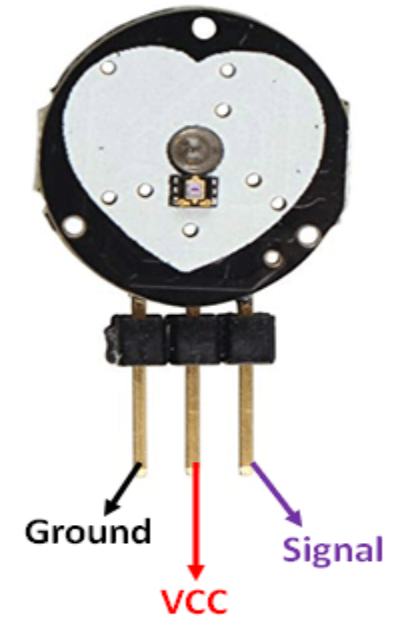
- Dual-core processor
- Wi-Fi and Bluetooth connectivity
- Low power consumption

- Rich peripheral set
- Open-source



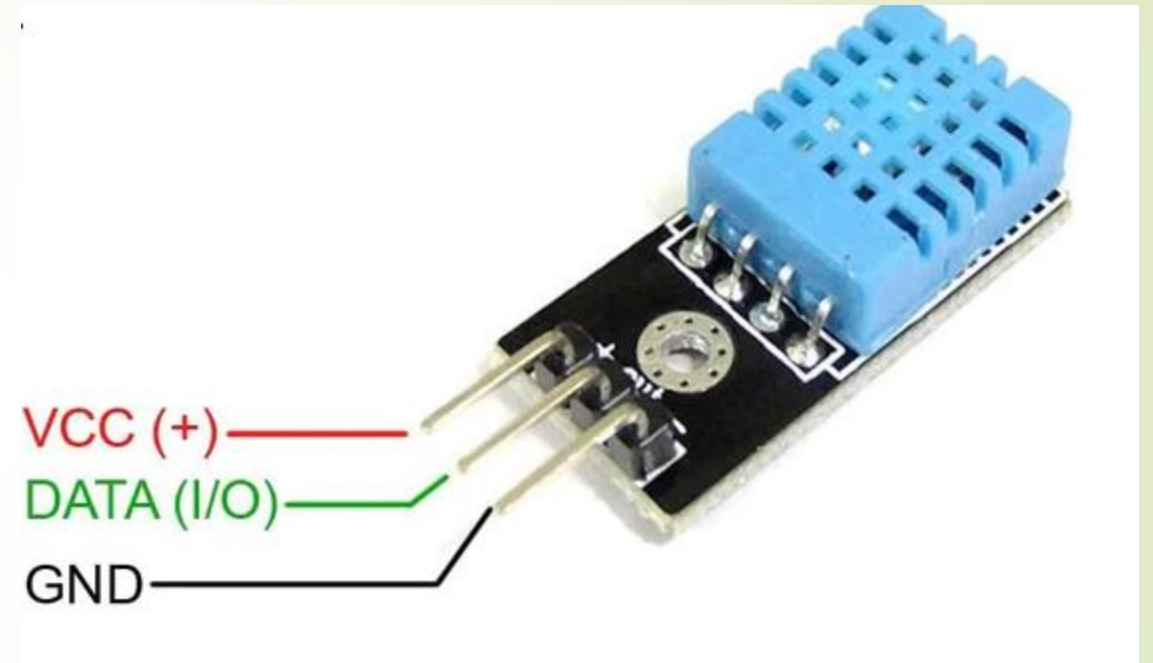
# PULSE SENSOR:

- Non-invasive heart rate monitoring
- Easy to use:
- Compatible with Arduino:
- Analog output
- LED indicator



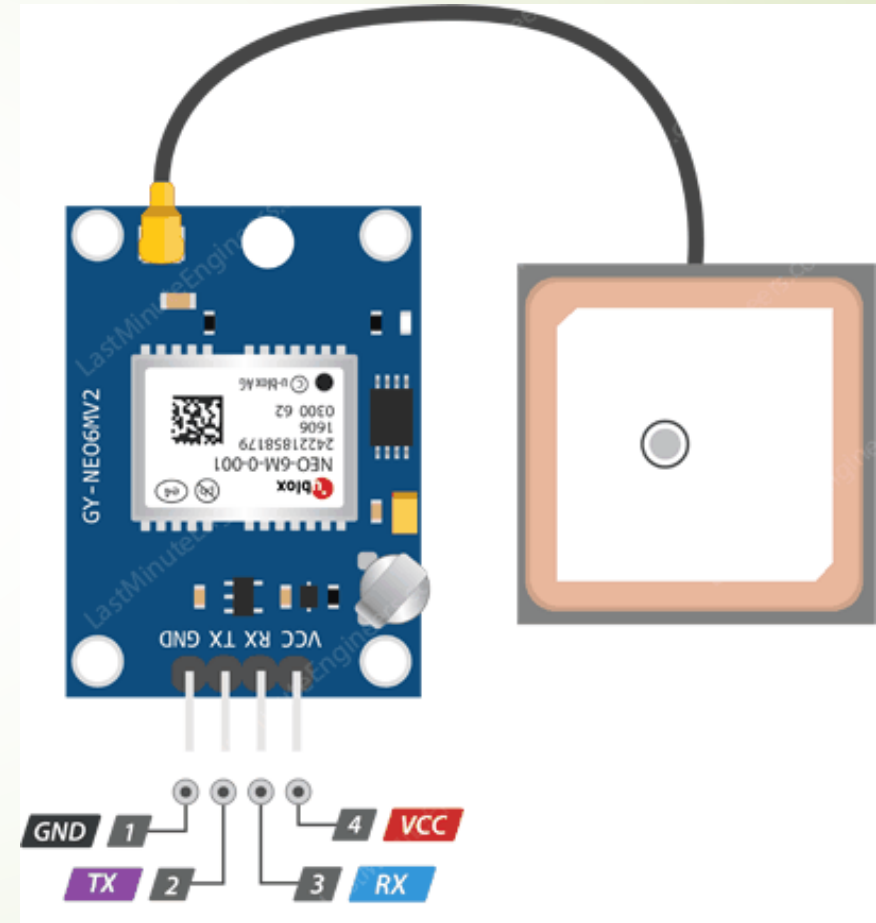
# DHT-11:

- Temperature and humidity monitoring
- Low cost
- Easy to use:
- Digital output
- Limited accuracy



# GPS-MODULE:

- GPS technology
- Connection to Microcontroller easily
- NMEA protocol
- Data interpretation
- Real-time tracking





# CONNECTION:

➤ Pulse sensor:

- VCC to ESP32 3.3V
- GND to ESP32 GND
- Signal to ESP32 GPIO

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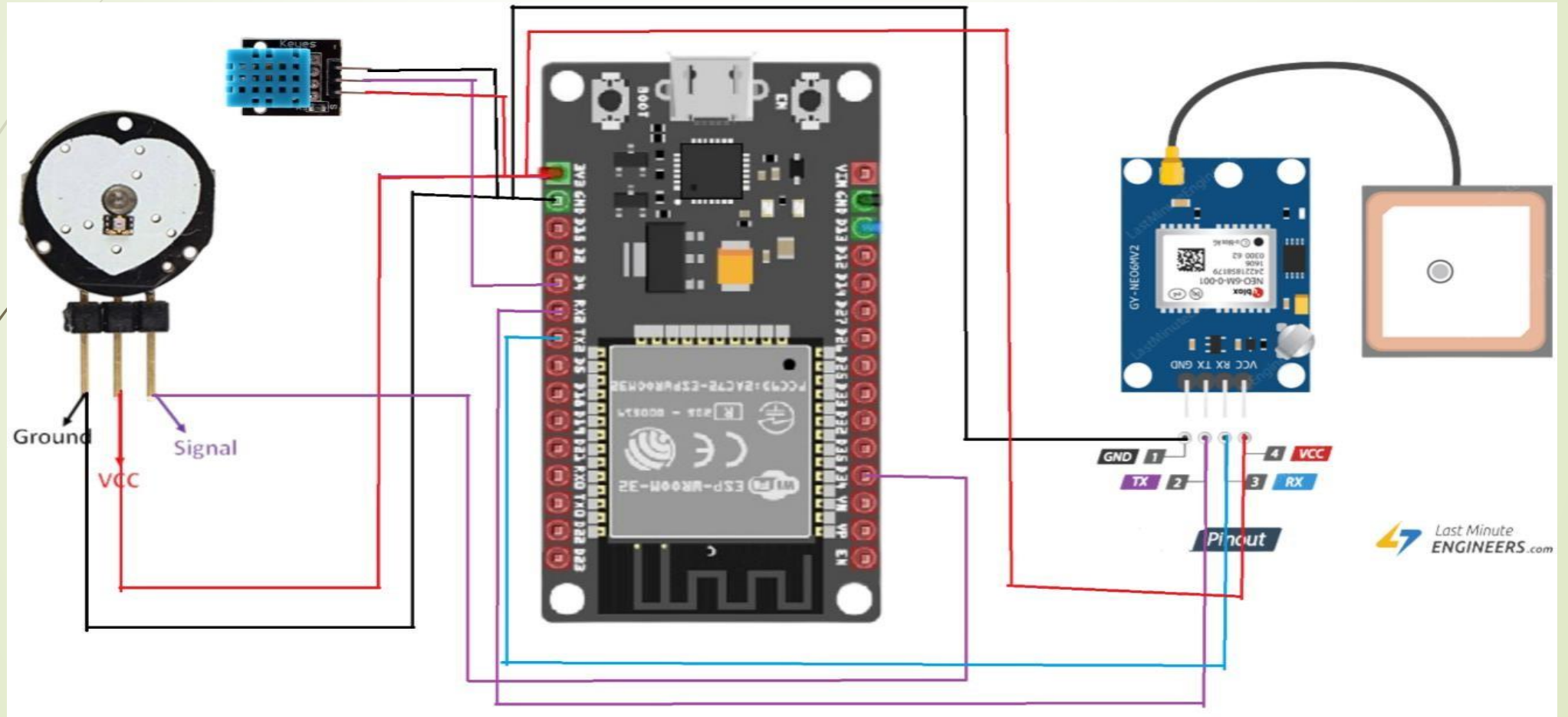
➤ DHT11:

- VCC to ESP32 3.3V
- GND to ESP32 GND
- Data to ESP32 GPIO 4

➤ GPS module:

- VCC to ESP32 3.3V
- GND to ESP32 GND
- Tx to ESP32 Rx
- Rx to ESP32 Tx

# CIRCUIT DESIGN:







# WORKING:

- ESP32 collects data from GPS, pulse sensor, and DHT11 sensor.
- Pulse sensor measures the pulse rate and provides analog output, DHT11 sensor measures temperature and humidity and provides digital output and GPS module receives signals from satellites and provides real-time location data
- ESP32 collects data from all sensors and sends it to the ThinkSpeak cloud.
- ThinkSpeak cloud stores and displays the received data
- The webpage shows real-time location data on a Google Map and displays the other collected data (pulse rate, temperature, and humidity).
- Users can access the cloud from anywhere with an internet connection and monitor the real-time location and other collected data.



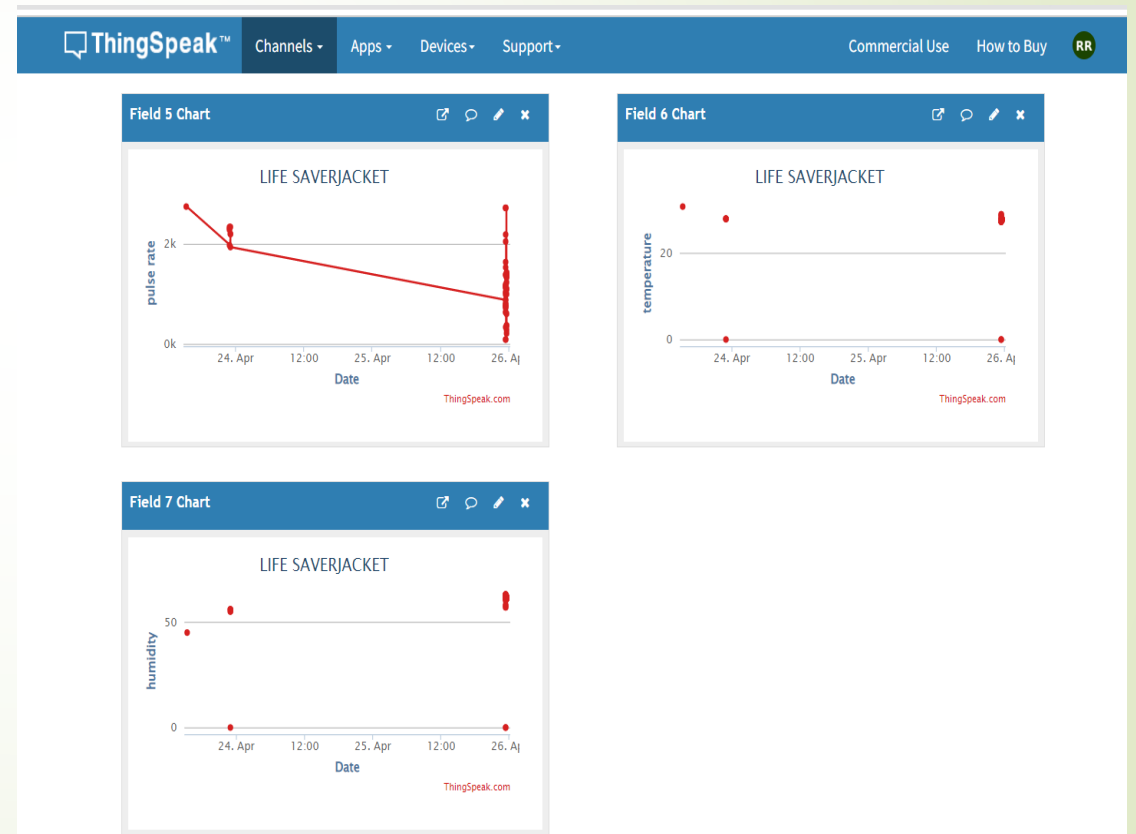
# **RESULT ANALYSIS:**

**Video Reference:**





# Result Analysis:





# APPLICATION:

- "Athletic Performance Tracker": This name emphasizes the sports and fitness applications of your project and suggests that it could be used to monitor and optimize athletic performance.
- "Vehicle Tracking System": This name emphasizes the GPS tracking capabilities of your project and suggests that it could be used to monitor the location and movement of vehicles.
- "Child Safety Monitor": This name focuses on the safety applications of your project and suggests that it could be used to monitor the location and movement of children in real-time.
- "Fitness Tracker": This name emphasizes the fitness applications of your project and suggests that it could be used to monitor various fitness metrics such as heart rate, location, and distance traveled.



# CONCLUSION:

- Real-time tracking devices are becoming increasingly important in a variety of applications, from fitness tracking to logistics management.
- Our project successfully developed a real-time tracking device using an ESP32 microcontroller, GPS module, pulse sensor, and DHT-11 sensor.
- We used ThingSpeak as the cloud platform to store and retrieve the data collected by the device.
- The project has several potential applications, including fitness tracking, healthcare monitoring, and asset tracking.



## REFERENCE:

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- S. P. Bingulac, "On the Compatibility of Adaptive Controllers", Proc. 4th International National Conf. Circuits and Systems Theory, New York, pp.8–16, 1994