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Instructables

How to Use HC-05 Bluetooth With Raspberry Pi Pico Using Micropython

By SmartTronix in CircuitsRaspberry Pi

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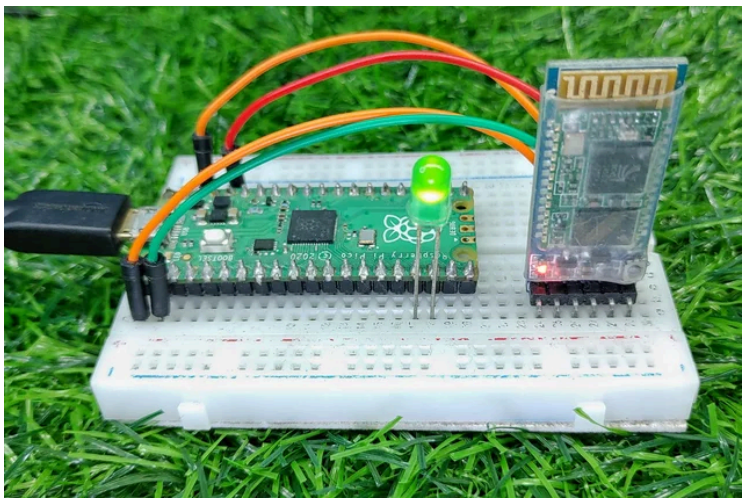
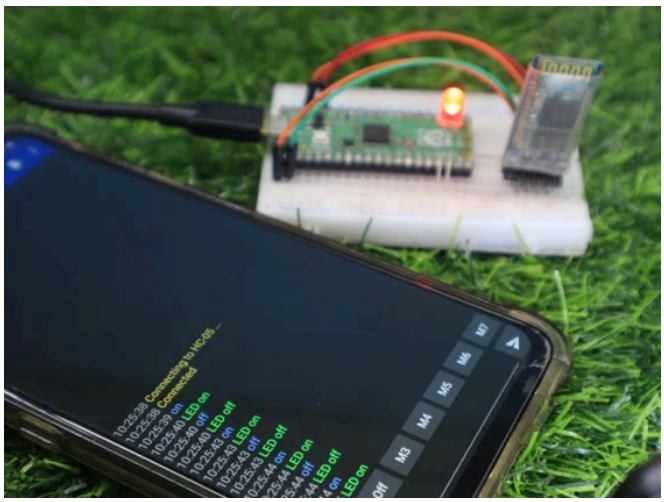
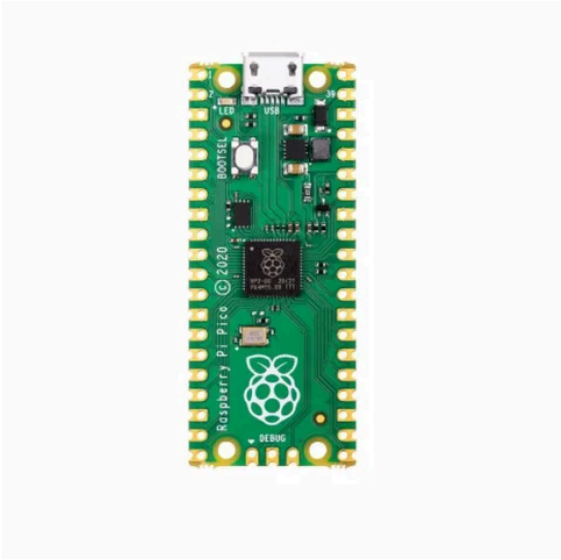
Introduction: How to Use HC-05 Bluetooth With Raspberry Pi Pico Using Micropython

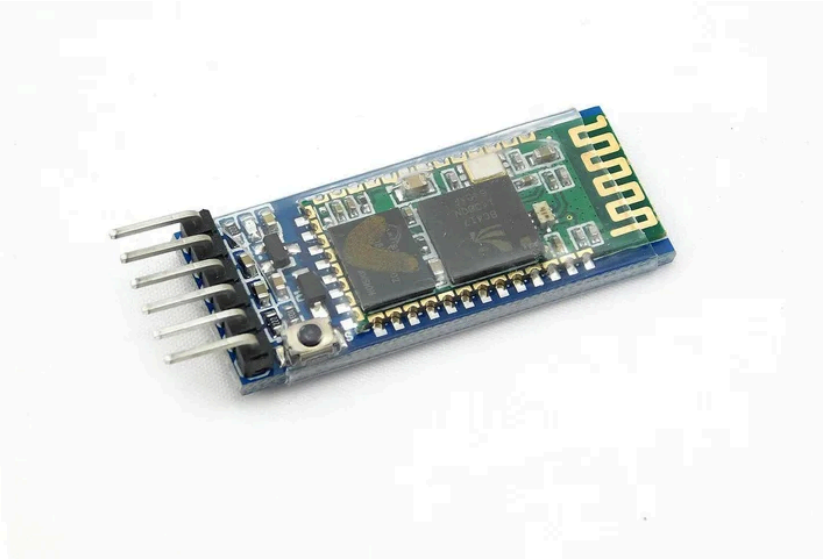




This guide covers how to use the HC-05 Bluetooth module with a Raspberry Pi Pico board using MicroPython. The HC-05 is a Bluetooth module that can be used to wirelessly communicate with other Bluetooth devices, such as smartphones, laptops, and other microcontrollers. We'll go over how to set up the HC-05 and how to use it with a Raspberry Pi Pico.

Step 1: Components Required

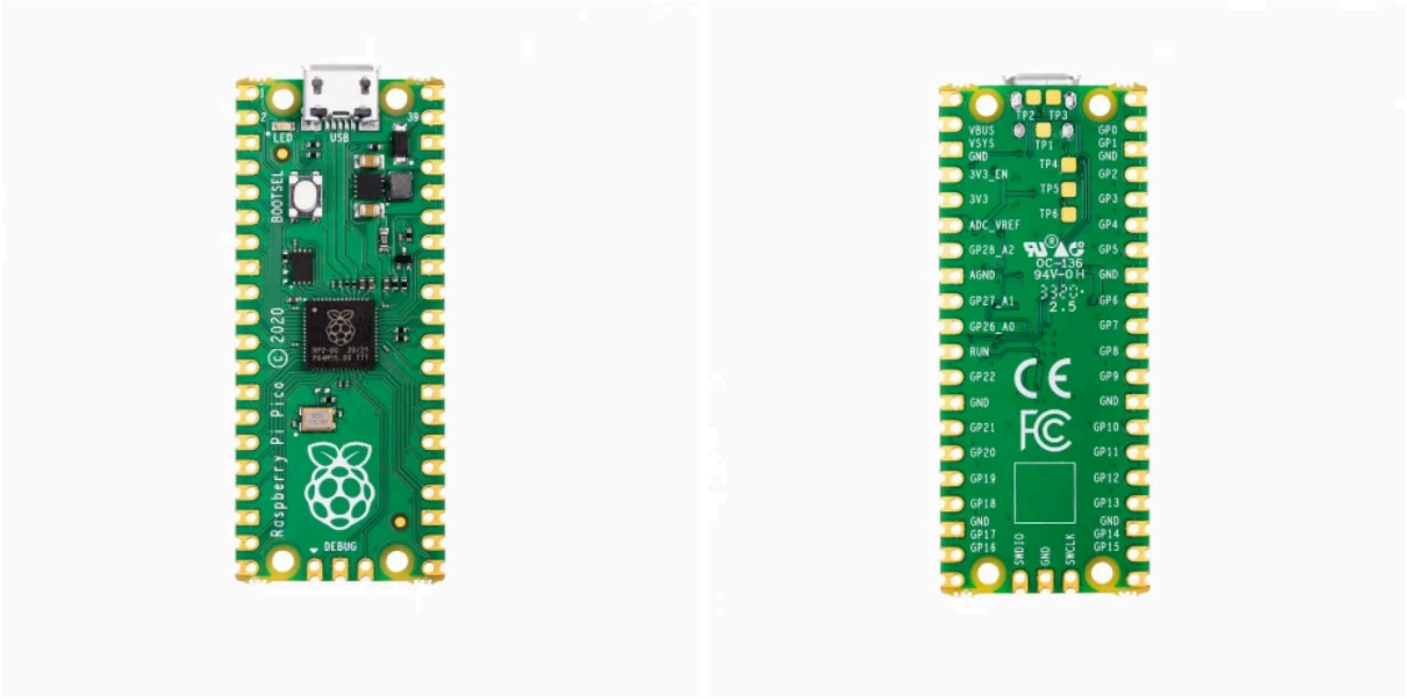




You need to ensure that you have the following components below before going through t his tutorial.

1. Raspberry Pi Pico
2. HC05 Bluetooth Module
3. Jumper Wire
4. Breadboard

Step 2: Raspberry Pi Pico



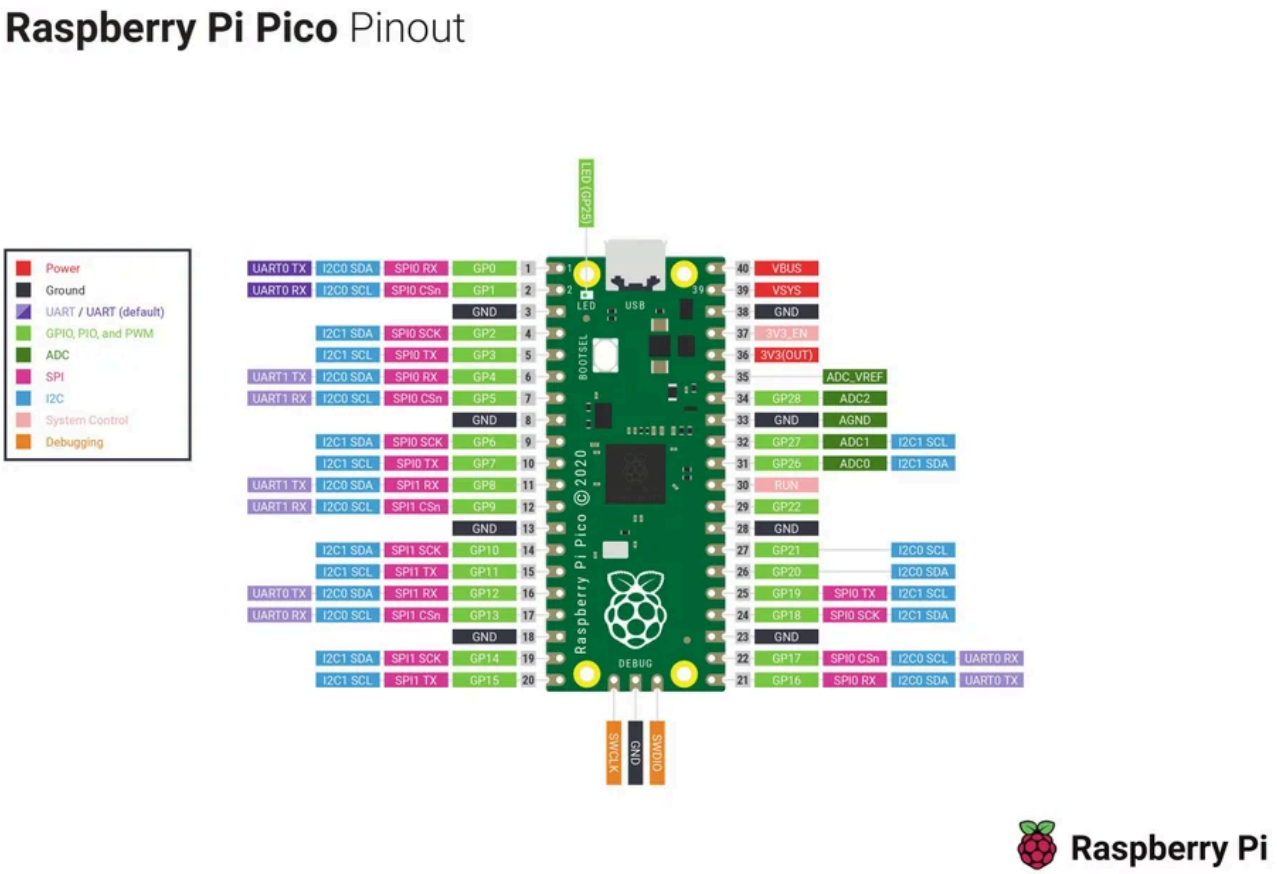
Raspberry Pi Pico is a newly launched microcontroller by Rasberry Pi. Its tiny, fast, and ve rsatile microcontroller board is based on an **RP2040** chip designed by Raspberry Pi. Pico is a low-cost and flexible development platform with the below specifications.

Specifications :

- RP2040 microcontroller chip designed by Raspberry Pi
- Dual-core Arm Cortex-M0+ processor, flexible clock running up to 133 MHz
- 264KB on-chip SRAM
- 2MB on-board QSPI Flash
- 26 multifunction GPIO pins, including 3 analogue inputs
- 2 × UART, 2 × SPI controllers, 2 × I2C controllers, 16 × PWM channels
- 1 × USB 1.1 controller and PHY, with host and device support
- 8 × Programmable I/O (PIO) state machines for custom peripheral support
- Supported input power 1.8–5.5V DC
- Operating temperature -20°C to +85°C
- The castellated module allows soldering directly to carrier boards
- Drag-and-drop programming using mass storage over USB
- Low-power sleep and dormant modes
- Accurate on-chip clock
- Temperature sensor
- Accelerated integer and floating-point libraries on-chip

Getting Started Raspberry Pi Pico – Pinout, Specs – Beginner Guide

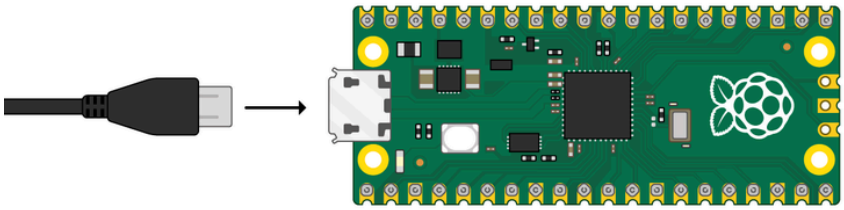
Step 3: Raspberry Pi Pico Pinout



The Raspberry Pi Pico pinout shows that it has a total of 40 pins including GND and Vcc p ins. as Power, ground, UART, GPIO, PWM, ADC, SPI, I2C, system control, and Debuggin g pins.

Attachments

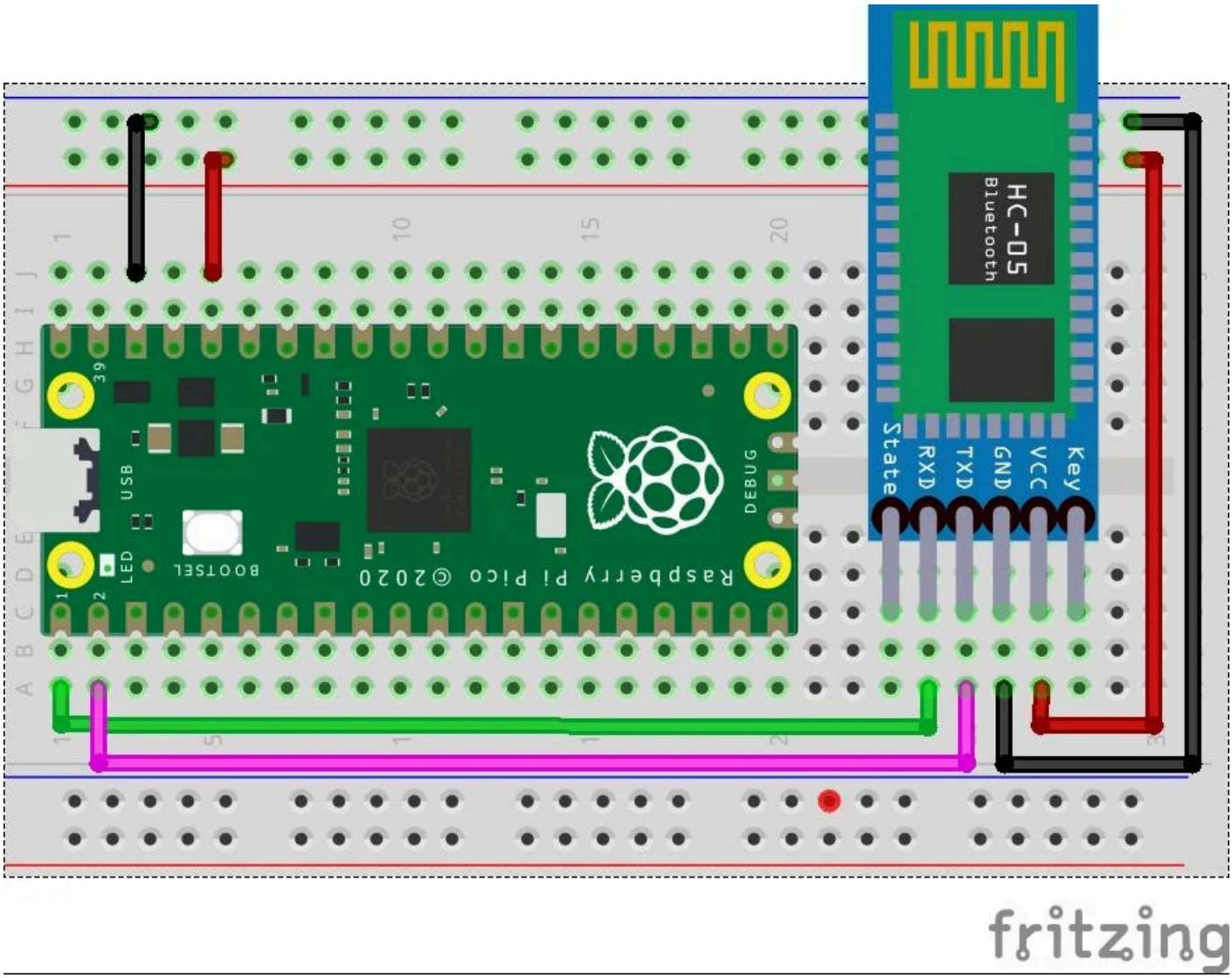
Step 4: Getting Started With Micropython :



- Press and hold the BOOTSEL pin then plug in the USB port to the PC.
- Download the Micropython UF2 file by clicking the below link.
- Release the BOOTSEL pin once connected pico is connected to the PC.
- It will mount as mass storage named "RPI-RP2"
- Drag and drop the downloaded micro python UF2 file on RPI-RP2 storage, it will reb oot automatically the pico board.
- your pico is now running micropython.

Download the UF2 file From Micropython Official Site

Step 5: Circuit Diagram



The circuit diagram of the Raspberry Pi Pico and Bluetooth module is very easy. VCC and GND pins of the HC05 Bluetooth module are connected with the Raspberry Pi Pico 3.3V a nd GND pins. TXD and RXD pins of the Bluetooth module are connected with the **GP0** an d **GP1** pins of the Raspberry Pi Pico.

Vcc -------> 3.3V or 5V

GND --------> GND

RX ----------> GPIO 0

TX ----------> GPIO 1

Step 6: Micropython Code - Bluetooth Module With Raspberry Pi Pico

Copy the following code and paste it into the IDE. Check Also Getting Started With Raspberry Pi Pico With Thonny IDE Check How to use thonny IDE with Raspberry Pi Pico

Main.py

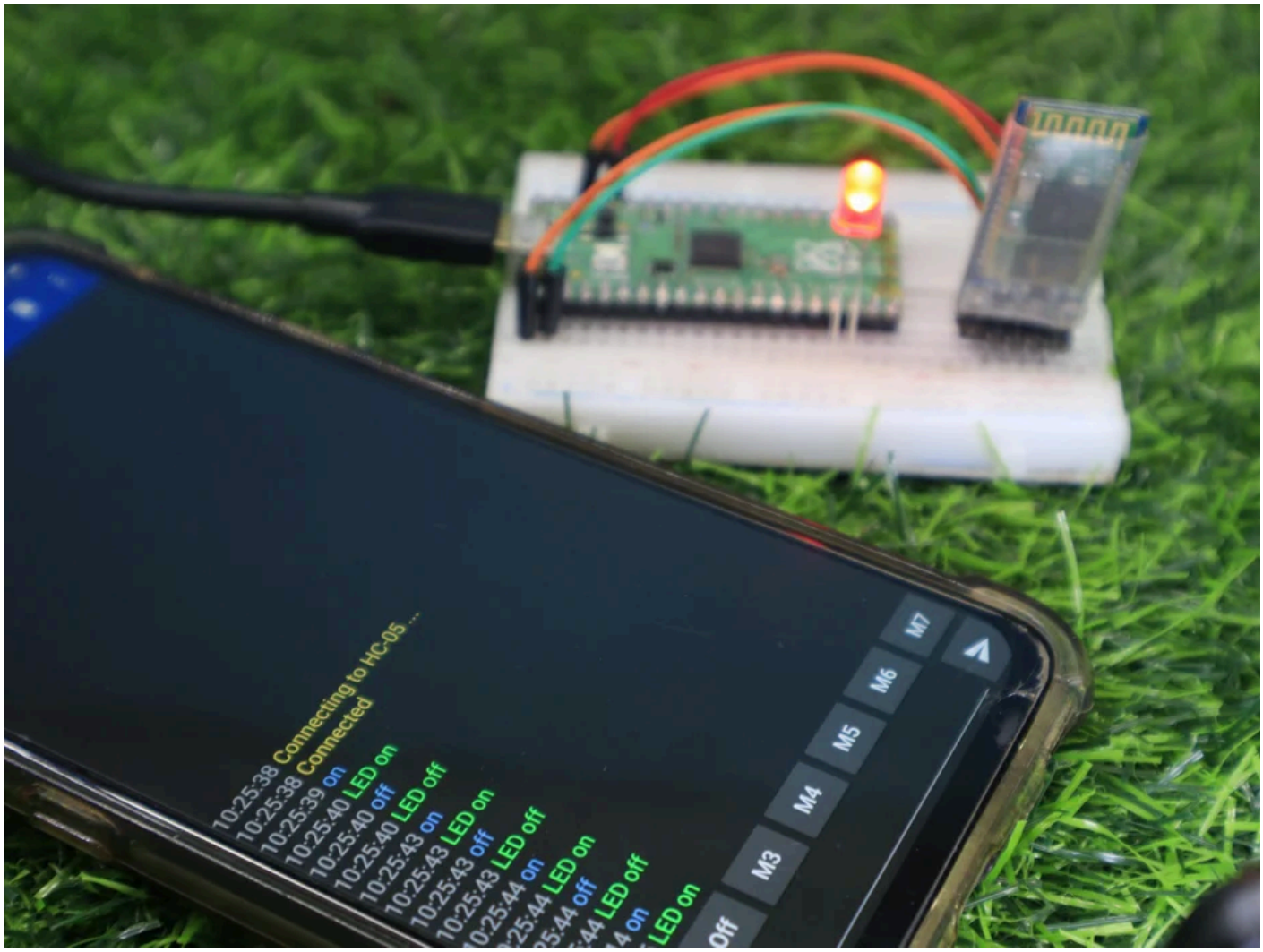
```
#Diyprojectslab.com

from machine import Pin, UART

uart = UART(0, 9600)
led = Pin(13, Pin.OUT)

while True:
  if uart.any() > 0:
    data = uart.read()
    print(data)
    if "on" in data:
      led.value(1)
      print('LED on \n')
      uart.write('LED on \n')
    elif "off" in data:
      led.value(0)
      print('LED off \n')
      uart.write('LED off \n')
```

Attachments

Step 7: Download & Install Bluetooth Terminal App

You need to download the Serial Bluetooth Terminal App from the Google Play store and install it in your smartphone.

Step 8: Conclusion



Finally, we check every command which is received from the Android phone and then acc ordingly turn ON and turn OFF the LED. It shows everything is working properly. now we are done here.

See Working Video

Thanks!