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*Abstract*—This manual shows how to program an ESP32 board and Raspberry Pi. The procedure is the same for any Linux machine.

### 1 COMPONENTS

The necessary components for this manual are listed in Table I.

Component	Quantity
ESP32	1
Raspberry Pi 4	1
LED	2
Breadboard	1
Male to Male Jumper Wires	3

TABLE I

### 2 SOFTWARE SETUP

Download the 32-bit arm version from the below link

<https://www.arduino.cc/en/main/software>

#### 2.1 Installing Arduino

Open a terminal and execute the following commands

```
cp ~/Downloads/arduino-x.x.x-tar.gz ~/
tar xf arduino-x.x.x-tar.gz
cd arduino-x.x.x
sudo ./install.sh
```

#### 2.2 Installation ESP32 instructions using Arduino IDE Boards Manager

Start Arduino and open Preferences window. Enter the below link into Additional Board Manager URLs field

```
https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json
```

```
#Open Boards Manager from Tools
#Install ESP32 platform
#Select ESP32 Dev kit from tools
```

### 3 HARDWARE SETUP

#### 3.1 LED Blinking Using Bluetooth

Connect the ESP32 and Raspberry Pi with USB cable. The hardware connections between ESP32 and leds are available in table II. See Fig 1 for pin configurations.

ESP32	led
GND	cathode
GPIO 32	anode

TABLE II: ESP32-Led connections

```
#Execute the following code
#Code for LED Blinking
svn co https://github.com/sridhar-07/ESP32/trunk/codes/Bluetooth
```

#### 3.2 LED Blinking with wifi

- 1) Make the connections according to the TABLE III Execute the following code.

```
svn co https://github.com/sridhar-07/ESP32/trunk/codes/Wi-Fi
```

- 2) Before executing, make two cathodes as common

ESP32	Pins
GPIO 26	Led1 +ve
GPIO 27	Led2 +ve
GND	Cathode

TABLE III

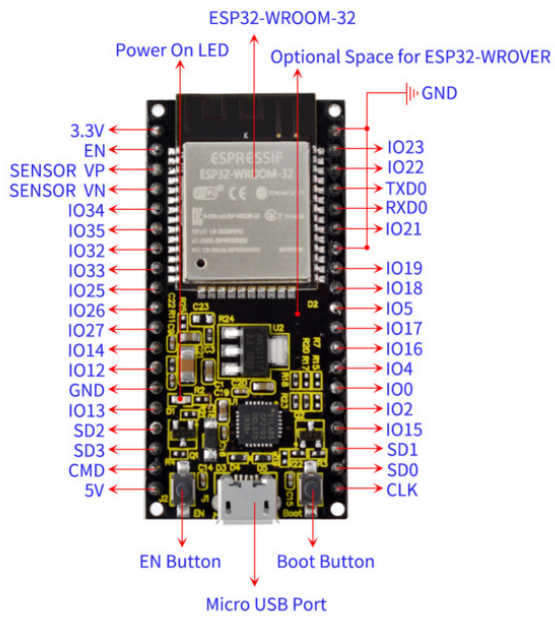


Fig. 1: ESP32 Pin Configuration