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Relatório de atividade MIC009-Aula 02

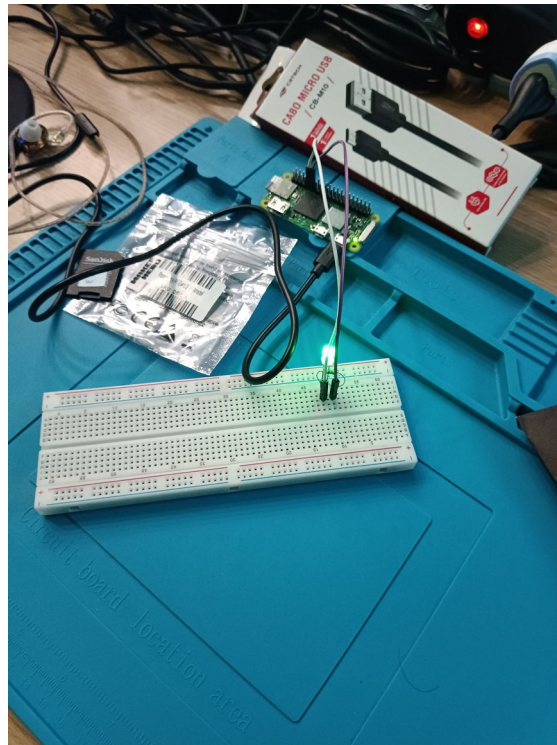
Código Python para Ligar um LED no Raspberry Pi:

```
Setting up bluetooth (5.66-1-rpt1-deb12u2) ...
Setting up libbluetooth-dev:armhf (5.66-1-rpt1-deb12u2) ...
Processing triggers for man-db (2.11.2-2) ...
Processing triggers for dbus (1.14.10-1-deb12u1) ...
Processing triggers for libc-bin (2.36-9-rpt2-deb12u7) ...
pi4@pi14:~$ sudo apt install python3-bluez
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libboost-python1.74.0 python3-gattlib
The following NEW packages will be installed:
  libboost-python1.74.0 python3-bluez python3-gattlib
0 upgraded, 3 newly installed, 0 to remove and 61 not upgraded.
Need to get 448 kB of archives.
After this operation, 3,103 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://raspbrian.raspberrypi.com/raspbian bookworm/main armhf libboost-python1.74.0_0-20210616-1b1 [275 kB]
Get:2 http://raspbrian.raspberrypi.com/raspbian bookworm/main armhf python3-gattlib armhf 0-20210616-1b1 [108 kB]
Get:3 http://raspbrian.raspberrypi.com/raspbian bookworm/main armhf python3-bluez armhf 0.23-5.1+b2 [56.7 kB]
Fetched 448 kB in 3s (167 kB/s)
Selecting previously unselected package libboost-python1.74.0.
(Reading database ... 63463 files and directories currently installed.)
Preparing to unpack .../libboost-python1.74.0_0-20210616-1b1_armhf.deb ...
Unpacking libboost-python1.74.0_0-20210616-1b1 ...
Selecting previously unselected package python3-gattlib.
Preparing to unpack .../python3-gattlib_0-20210616-1b1_armhf.deb ...
Unpacking python3-gattlib (0-20210616-1b1) ...
Selecting previously unselected package python3-bluez.
Preparing to unpack .../python3-bluez_0.23-5.1+b2_armhf.deb ...
Unpacking python3-bluez (0.23-5.1+b2) ...
Setting up libboost-python1.74.0_0-20210616-1b1 ...
Setting up python3-gattlib (0-20210616-1b1) ...
Setting up python3-bluez (0.23-5.1+b2) ...
Processing triggers for libc-bin (2.36-9-rpt2-deb12u7) ...
pi4@pi14:~$ sudo nano /etc/bluetooth/main.conf
pi4@pi14:~$ sudo systemctl restart bluetooth
pi4@pi14:~$ nano blue.py
pi4@pi14:~$ python3 blue.py
Dispositivo Bluetooth configurado como visível e emparelhável.
RFCOMM bind configurado com o MAC: B8:27:EB:98:C9:60
Aguardando conexão Bluetooth...
```

Aqui está o código Python que deve ser rodado no Raspberry Pi para permitir a comunicação Bluetooth e o controle do LED:

[illegible]

Circuito LED



Módulo Leitor RFID com PN532 no ESP32

```
sketch_sep07a
client.setserver(mqtt_server, 1883); // Define o endereço do broker MQTT e a porta

// Inicializa o leitor NFC
nfc.begin(); // Inicia a comunicação com o módulo PN532

// Verifica se o leitor NFC foi encontrado
uint32_t versiondata = nfc.getFirmwareVersion();
if (!versiondata) { // Se o valor retornado for 0, o dispositivo não foi encontrado
  Serial.println("Não foi possível encontrar o leitor NFC.");
  while (1); // Trava o código se o dispositivo não for encontrado
}

nfc.SAMConfig(); // Configura o leitor NFC para modo passivo
Serial.println("Esperando por uma tag NFC..."); // Pronto para leitura

void loop() {
  // Garante que o ESP32 esteja conectado ao broker MQTT
  if (!client.connected()) {
    reconnect(); // Se desconectado, tenta reconectar
  }
  client.loop(); // Mantém a comunicação MQTT ativa

  uint8_t success;
  uint8_t uid[] = { 0, 0, 0, 0, 0, 0, 0 }; // Buffer para armazenar o UID da tag NFC
  uint8_t uidLength;

  // Verifica se uma tag NFC foi detectada
  success = nfc.readPassiveTargetID(PN532_MIFARE_ISO14443A, uid, &uidLength); // Lê a tag NFC

  if (success) { // Se uma tag foi detectada
    Carregado;
    Writing at 0x00000000... (76 %)
    Writing at 0x00000001... (78 %)
    Writing at 0x00000002... (81 %)
    Writing at 0x00000003... (84 %)
    Writing at 0x00000004... (86 %)
    Writing at 0x00000005... (89 %)
    Writing at 0x00000006... (92 %)
    Writing at 0x00000007... (94 %)
    Writing at 0x00000008... (97 %)
    Writing at 0x00000009... (100 %)
    Wrote 943128 bytes (618149 compressed) at 0x00010000 in 8.3 seconds (effective 919.4 kbit/s)...
    Hash of data verified.
    Leaving...
    Hard resetting via RTS pin...
  }
}
```



Circuito NFC

