Security System using Raspberry Pi Pico

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Elevator pitch:

This project provides an easy solution for keeping a house safe, using basic and simple hardware and software components.

Hardware:

- Raspberry Pi Pico
- BT-06 Bluetooth Module
- HC-SR501 PIR Module
- 1 Led
- 1 Resistor
- Cables
- L7805CV Voltage Regulator
- 2 x 1uF Capacitors
- 9V battery + connector
- Old Android phone

Software:

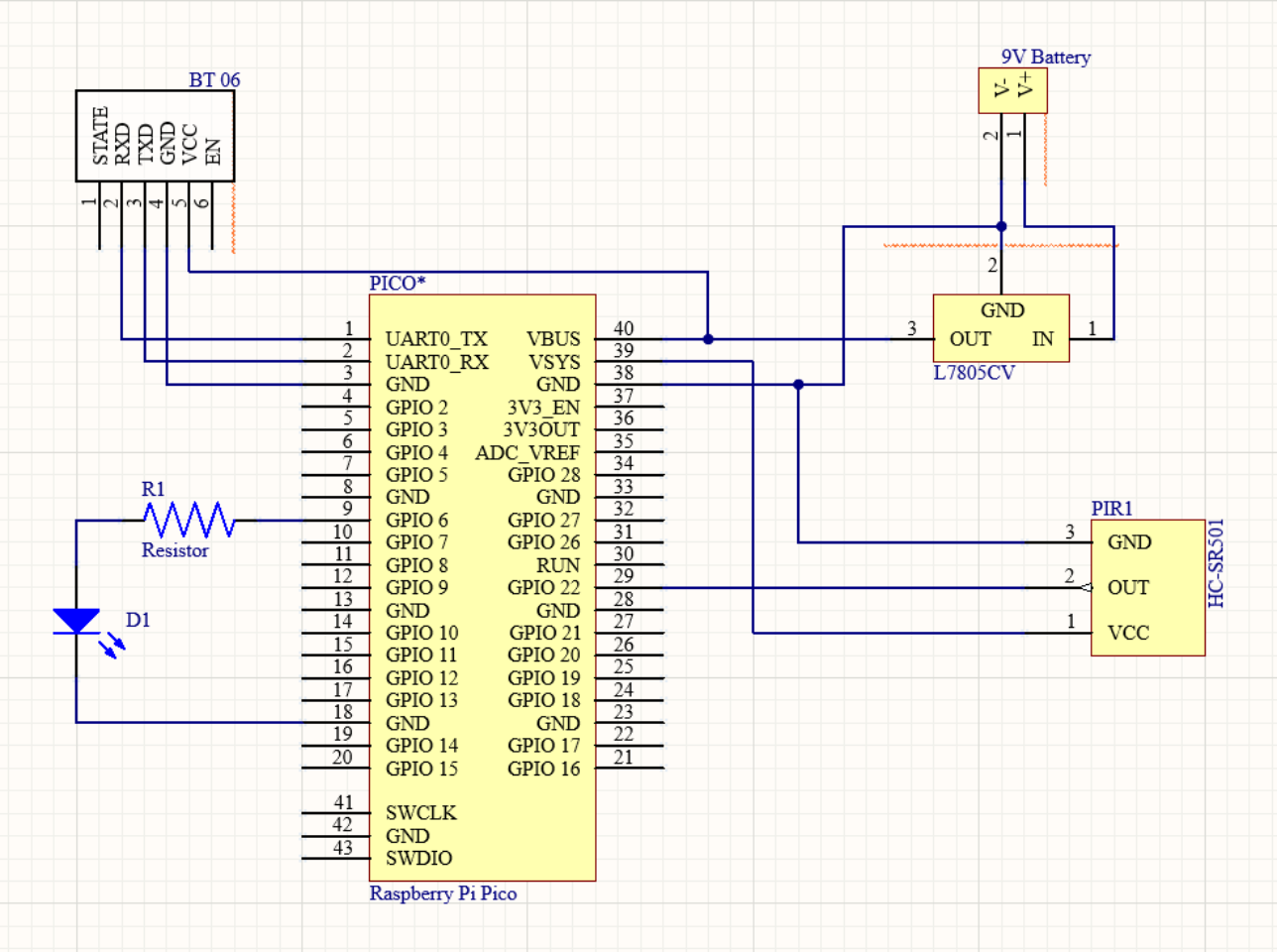
- Thonny
- Micropython
- Arduino SMS (Android App)

Summary:

The Pi Pico input voltage range is 1.8V – 5.5V, we are connecting the 9V battery to the L7805CV voltage regulator, which outputs ~5V and now we can power up the microcontroller and the other modules safe.

When the PIR sensor detects movement, the led flashes for a second and the BT-06 Bluetooth module sends a message to the old Android phone. The phone must be paired and connected to the module with the Arduino SMS app running in the background. This phone then sends an alert message to any phone number (specified in the source code running on the Pico).

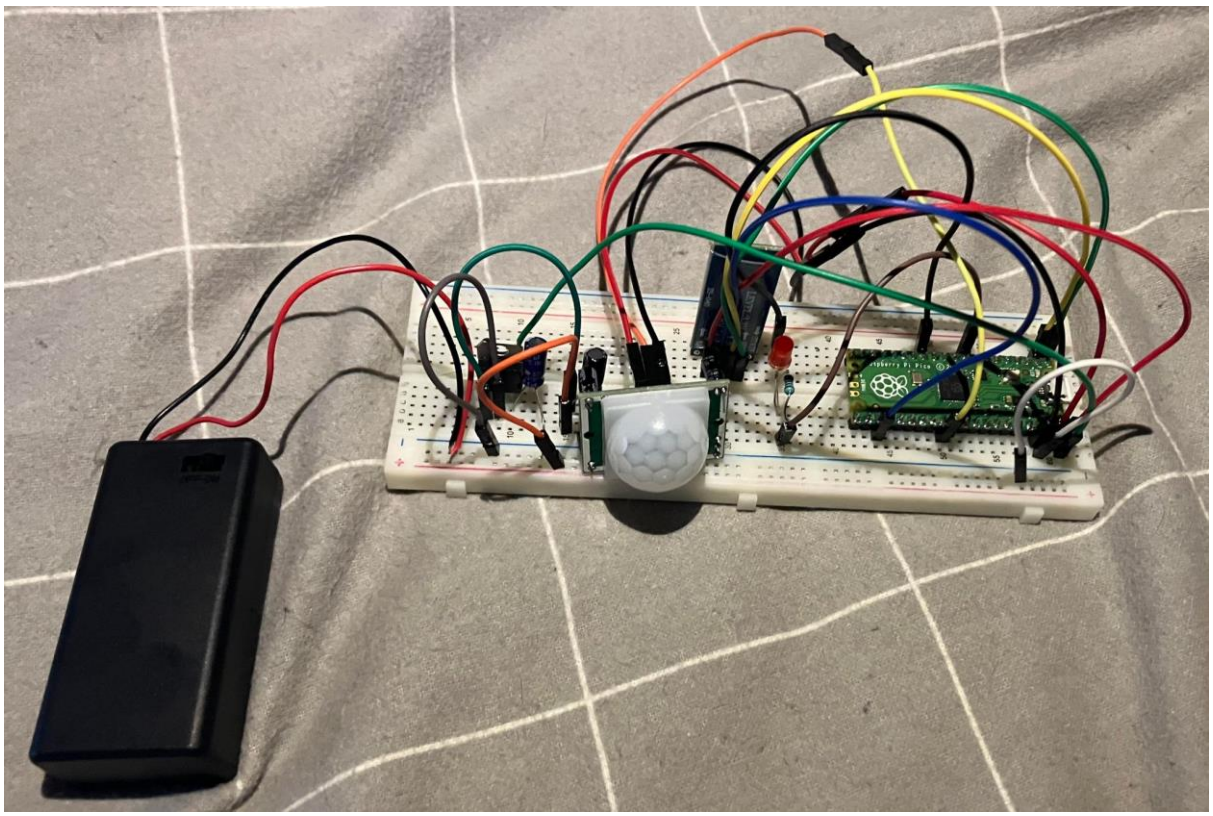
Circuit:

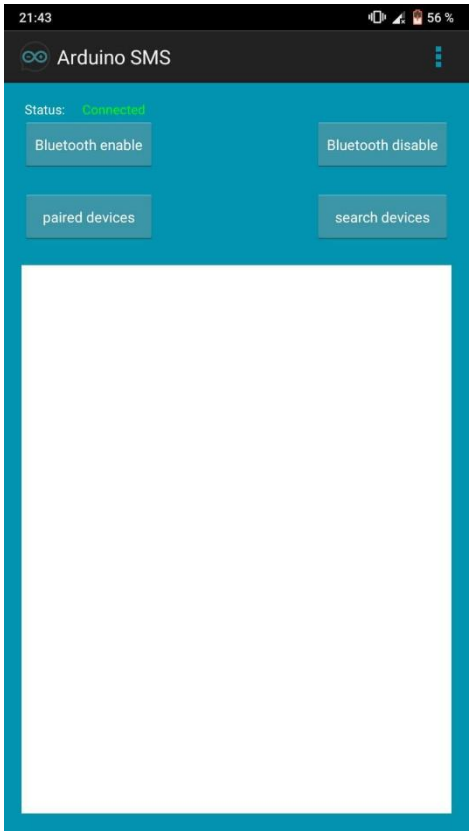


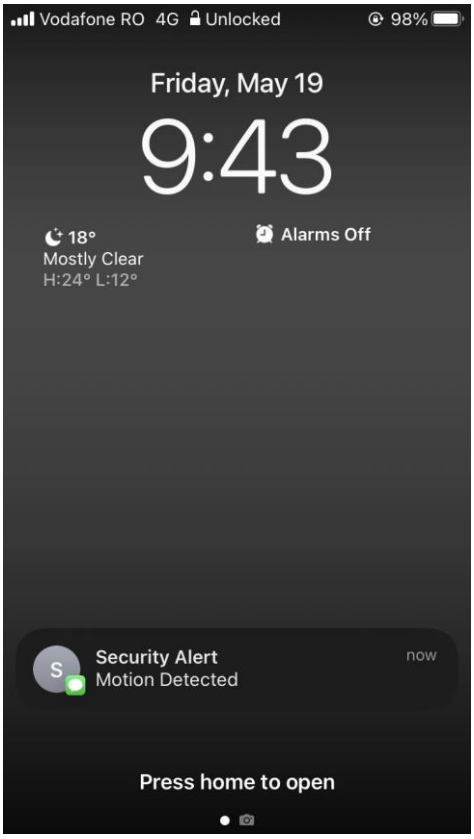
Source Code:

```
from machine import Pin, UART
import time
pir = Pin(22, Pin.IN, Pin.PULL_DOWN)
ser = UART(0, 9600)
n = 0
red = Pin(6, Pin.OUT)
red.low()
print('Starting up the PIR Module')
time.sleep(1)
print('Ready')
ser.write('device ready\n')
while True:
    if pir.value() == 1:
        red.high()
        n = n+1
        ser.write('PhoneNumber/Motion Detected \n')
    time.sleep(1)
 red.low()
```

Overview:







Android Phone (sender)

Any phone (receiver)

Mentions:

- The Android Phone with the “Arduino SMS” app are currently substitutes for a GSM module;

- The project is not yet in it’s final state, a SD card module and a Camera module will be added. The camera module will take a picture at the moment of the movement detection and will store it to the SD card;

- A proper case for the device will be designed;