



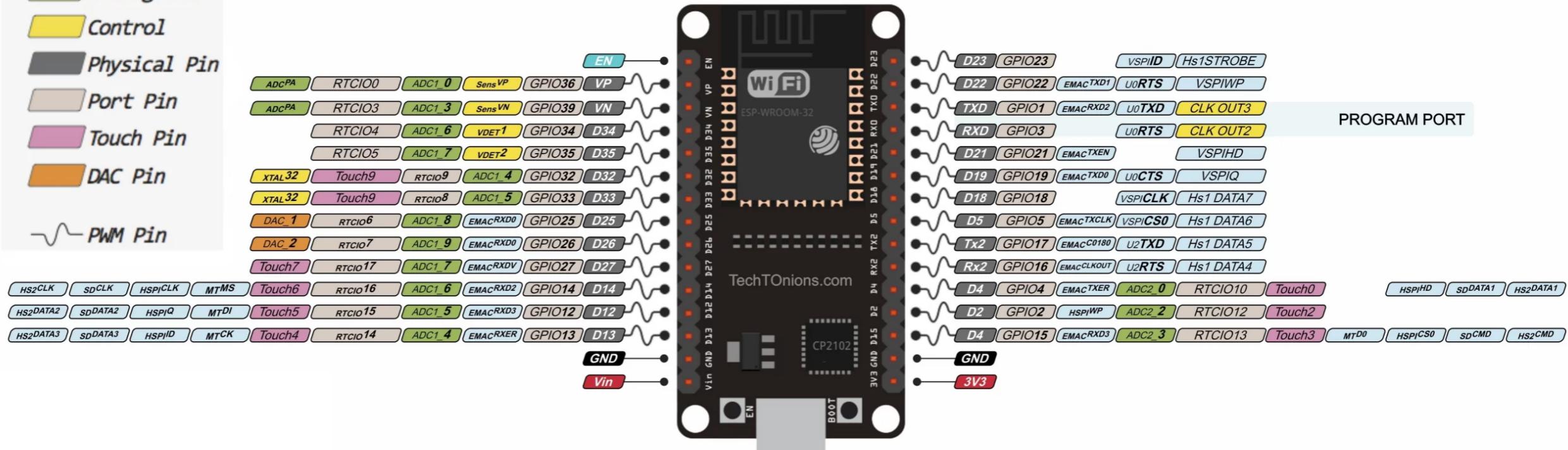
Buzzer / Speaker

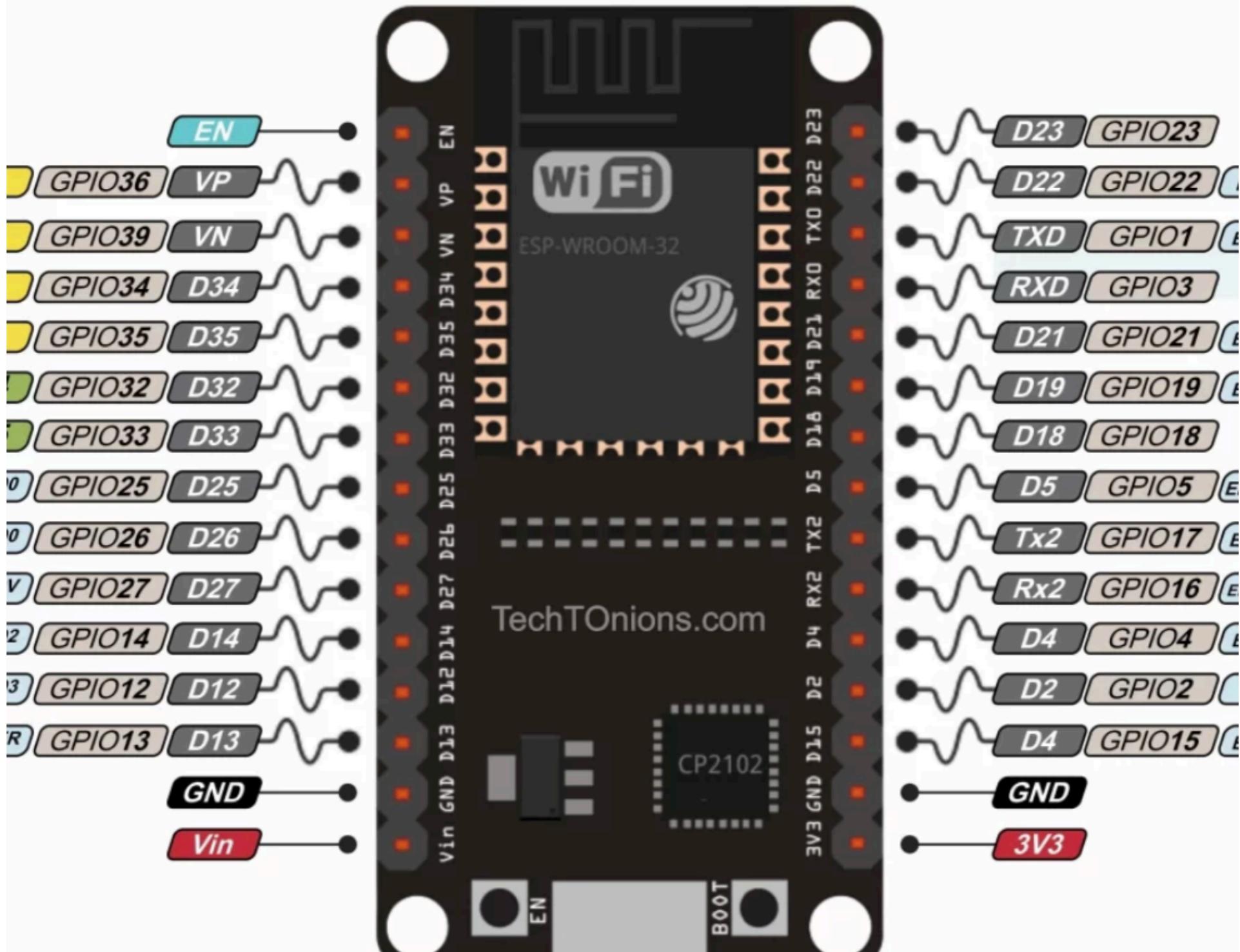
Micro-python - IoT

ESP32-WROOM-DA

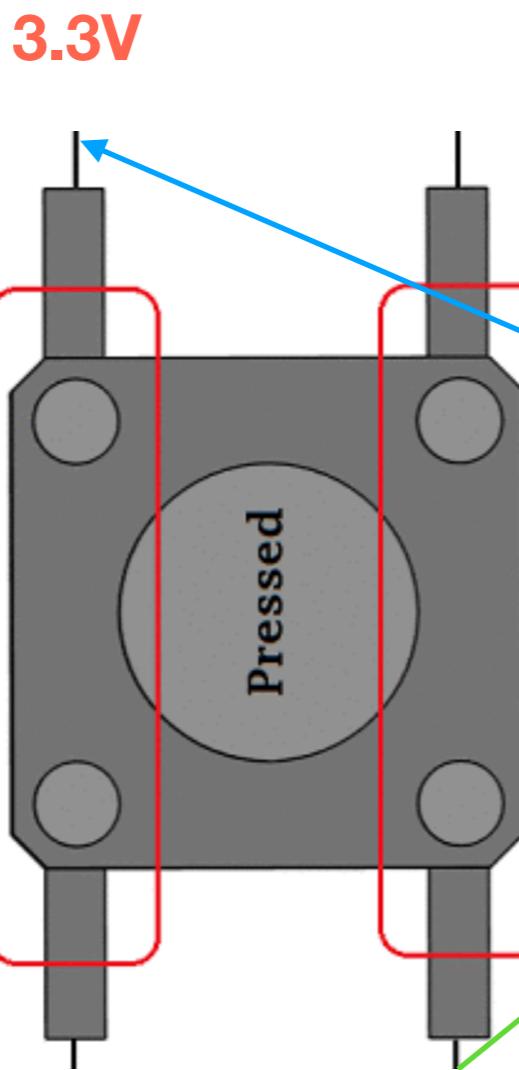
DEVELOPMENT BOARD

PINOUT

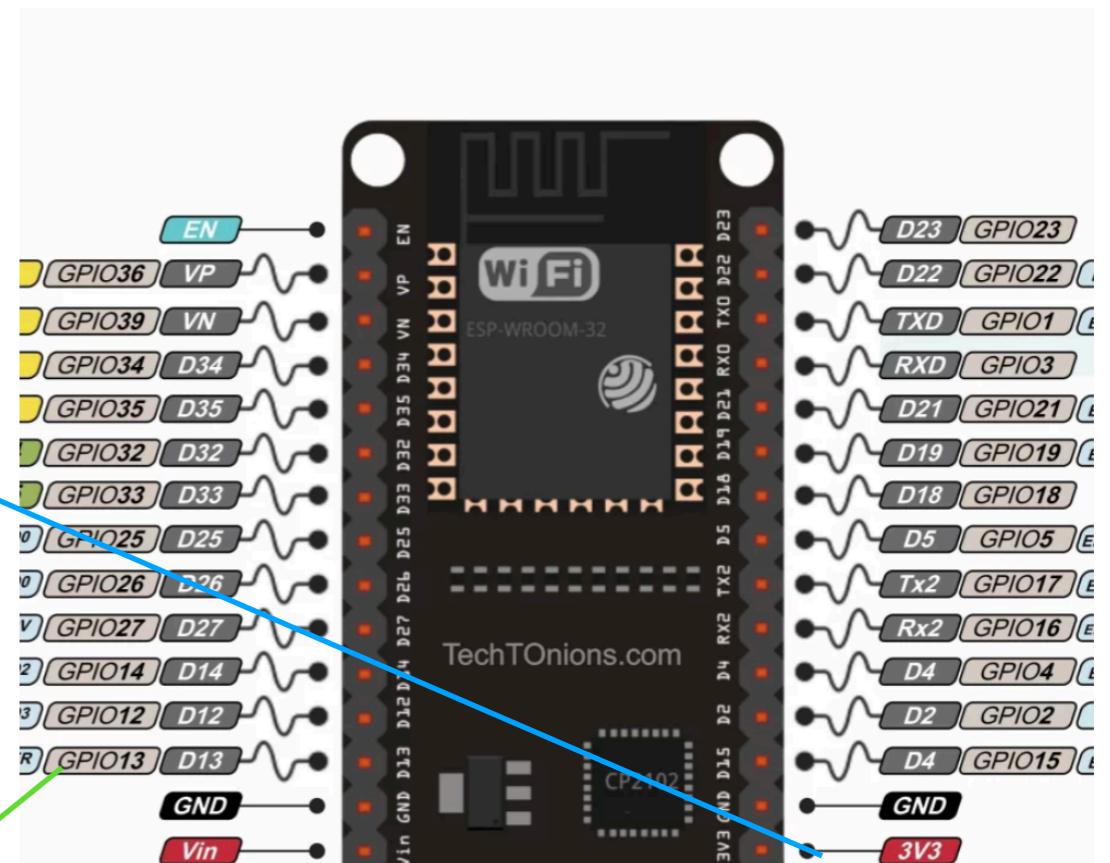




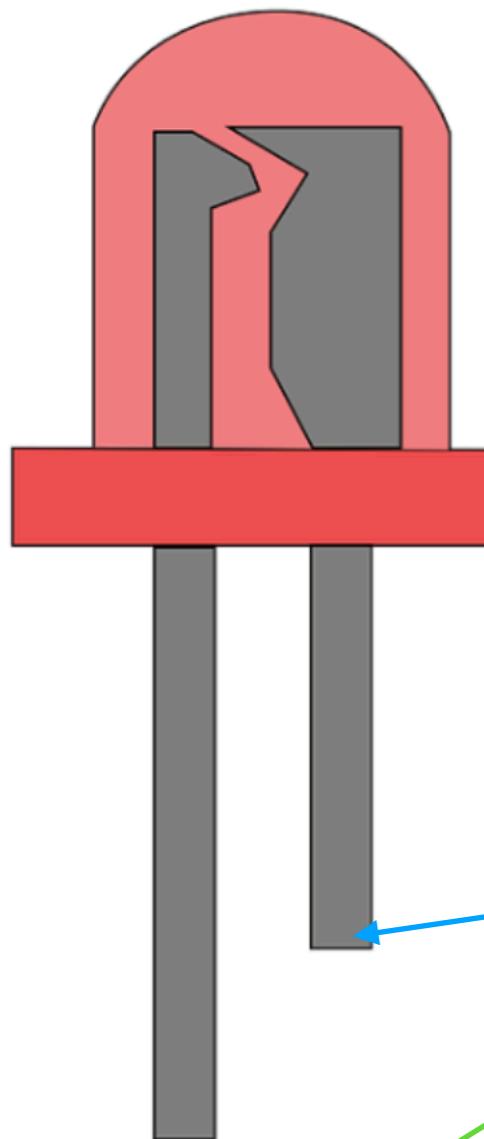
Circuit Diagram



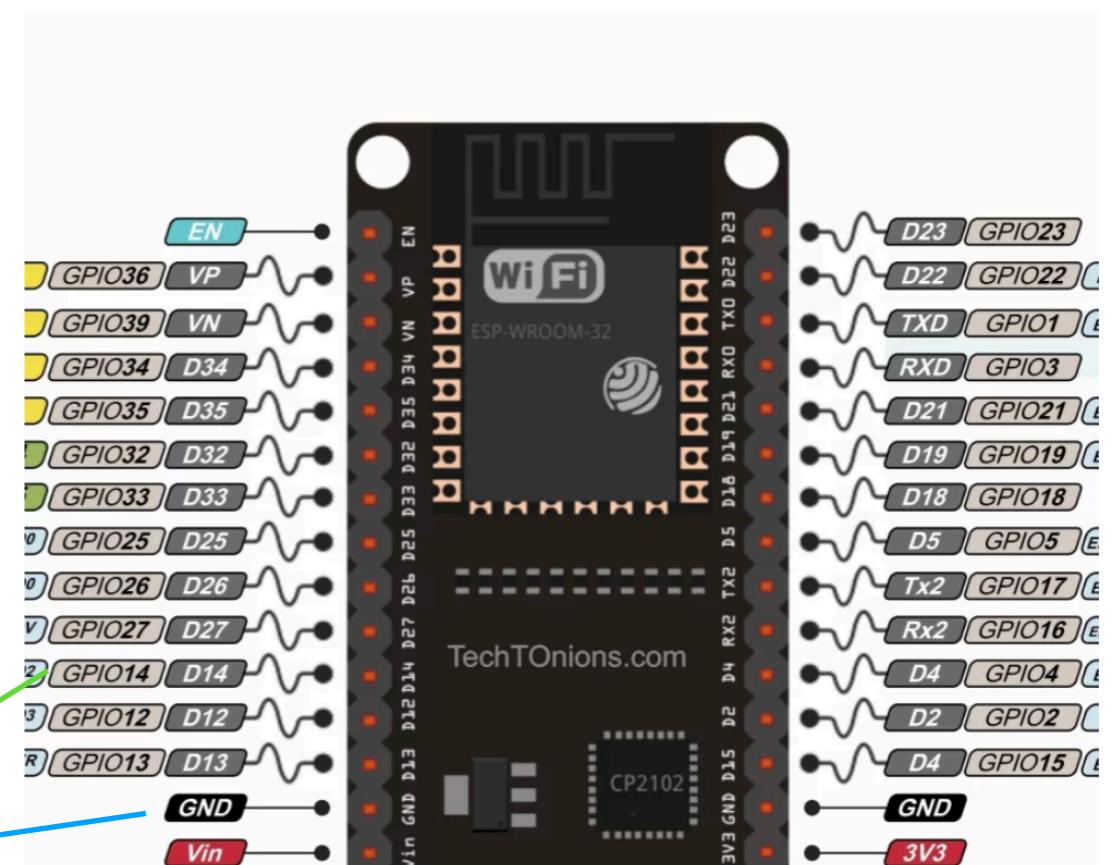
GPIO 13



LED Diagram

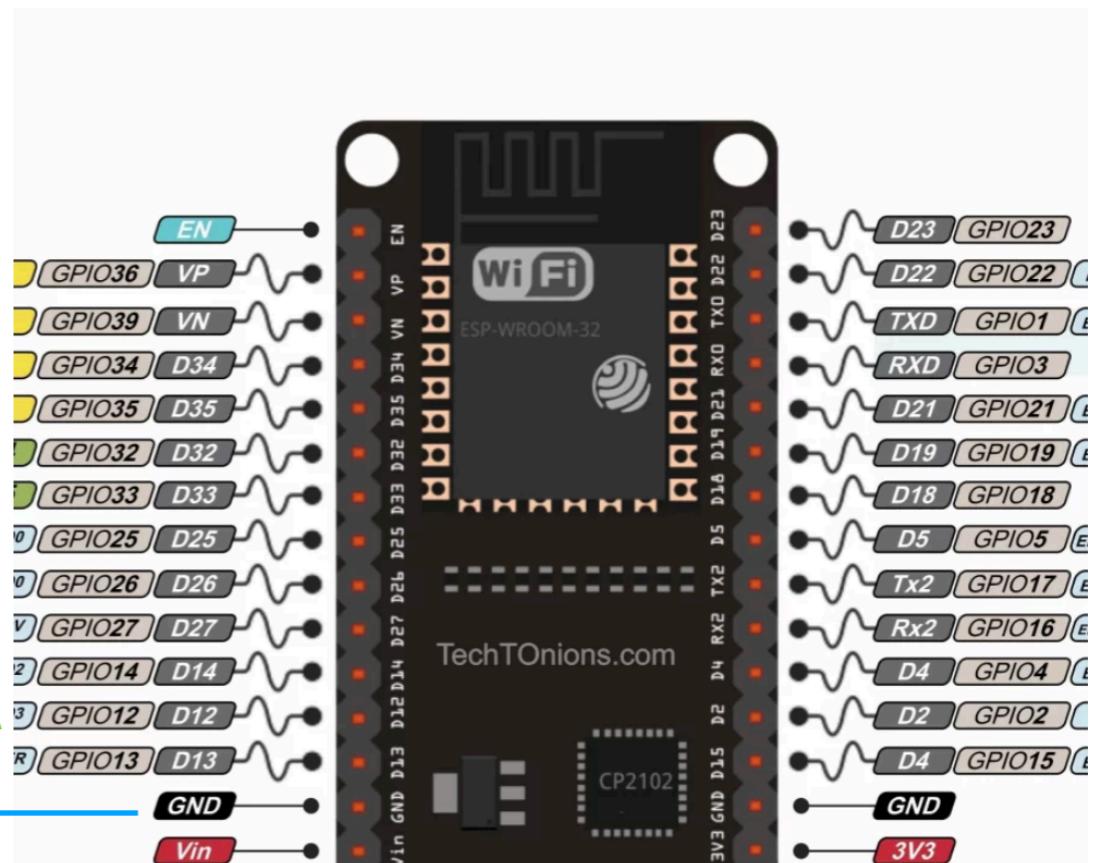
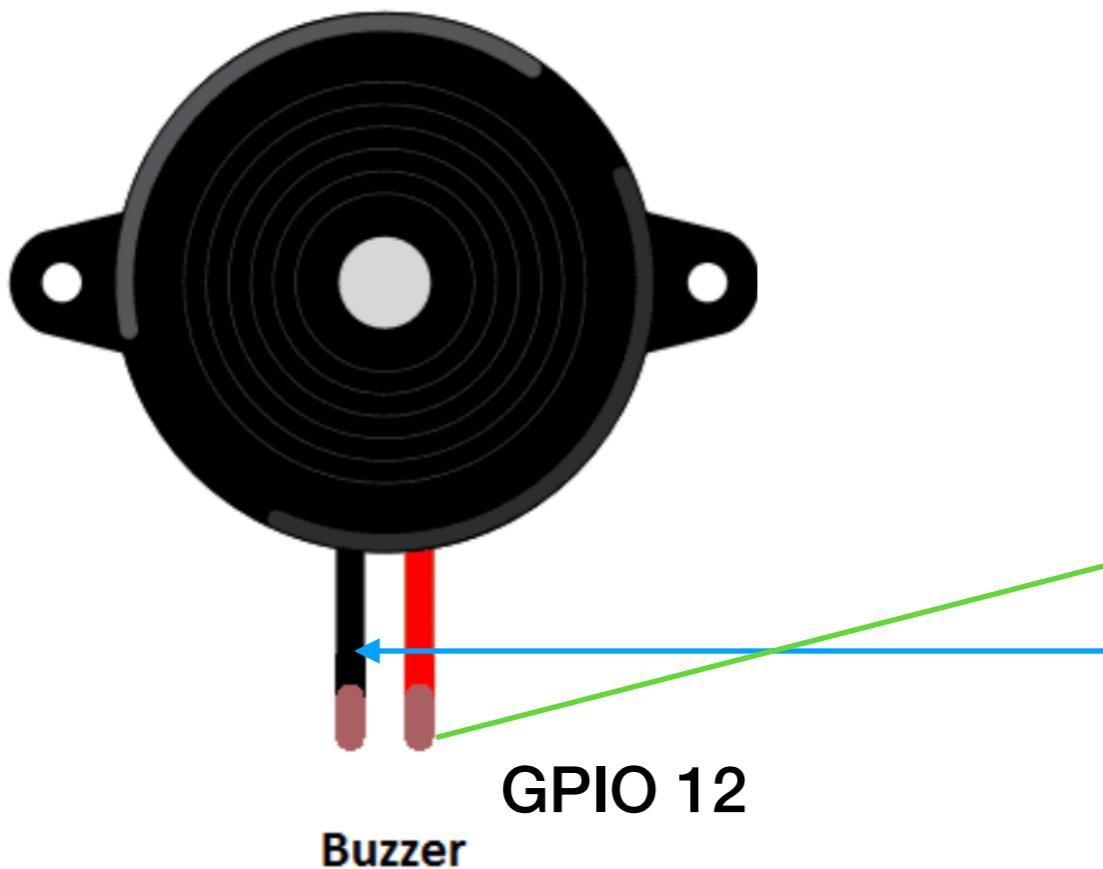


GND (Ground)

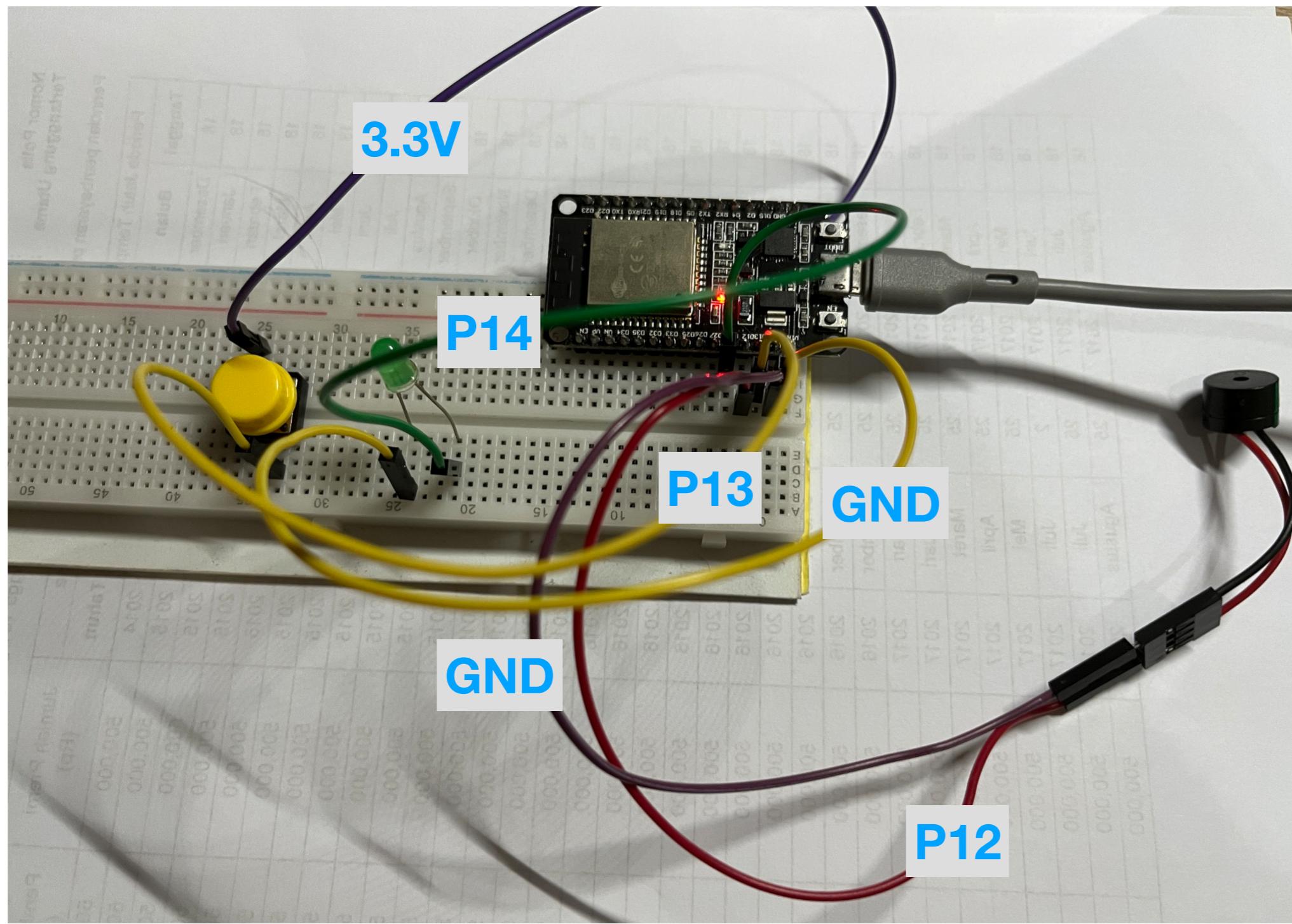


GPIO 14

Circuit Diagram



Complete Circuit



Buzzer Code

- Press the button will switch on the LED and sound
- Release will switch off the LED and sound

```
from machine import Pin, PWM
```

```
buzzerPin = Pin(12, Pin.OUT)
```

```
buz = PWM(buzzerPin)
```

```
# Note C6 = 1047 (Frequency)
```

```
C6 = 1047
```

```
buz.freq(C6) # Play Note C6
```

```
# Duty cycle - Volume (0-100)
```

```
# 50 max volume
```

```
buz.duty(10)
```

Code

- Press the button to switch on the LED and sound

```
from machine import Pin, PWM
```

```
led = Pin(14, Pin.OUT)
button = Pin(13, Pin.IN)
buzzerPin = Pin(12, Pin.OUT)
buz = PWM(buzzerPin)
# Note C6 = 1047 (Frequency)
C6 = 1047
```

```
while True:
    is_pressed = button.value()
    if (is_pressed == True):
        led.value(1)
        buz.freq(C6)
        buz.duty(10)
    else:
        buz.duty(0)
        led.value(0)
```

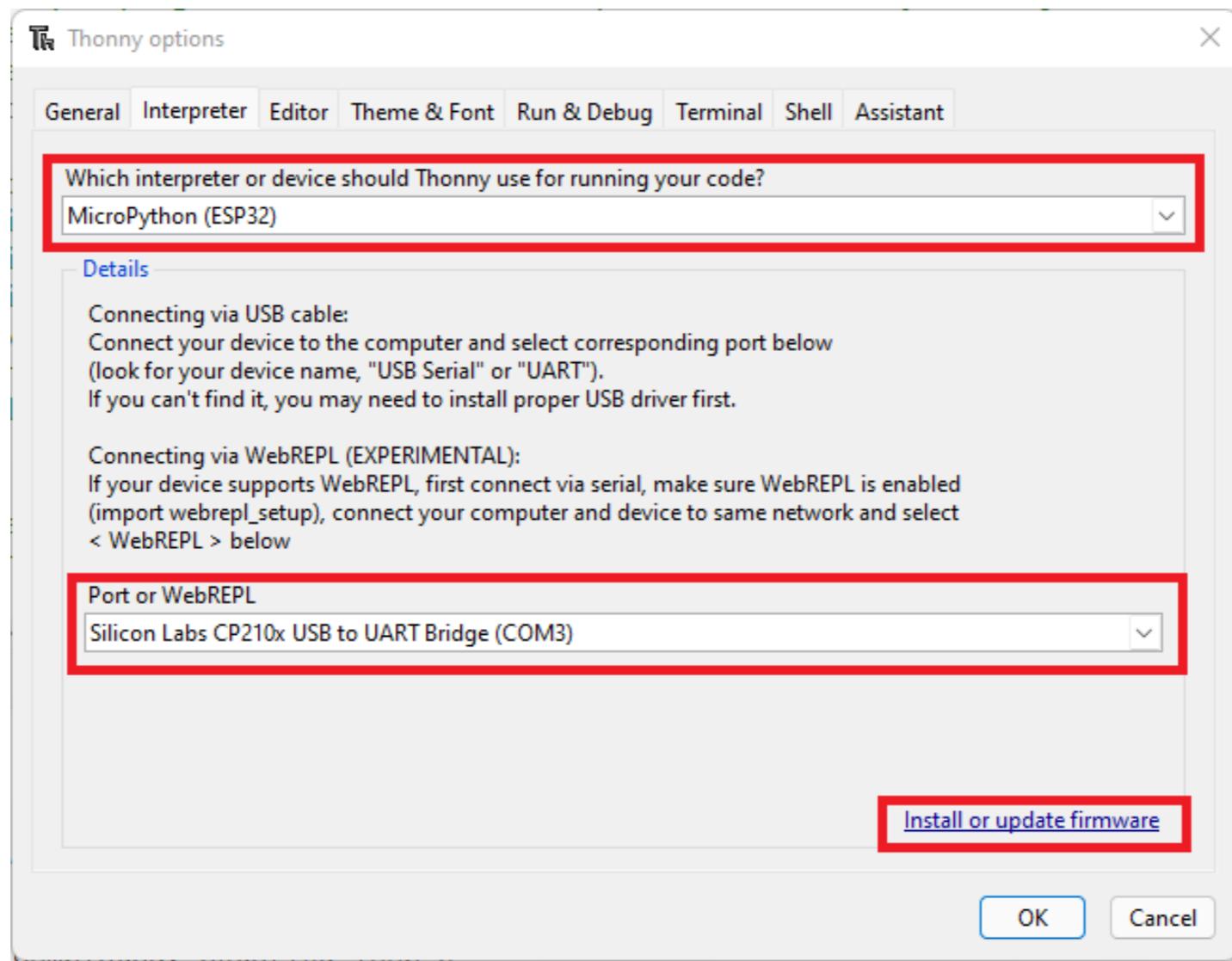
Mario Bro Sound

- Define Each note frequency (**See: references slide**)
 - e.g. C6 = 1047
- Define The song array (**See: references slide**)

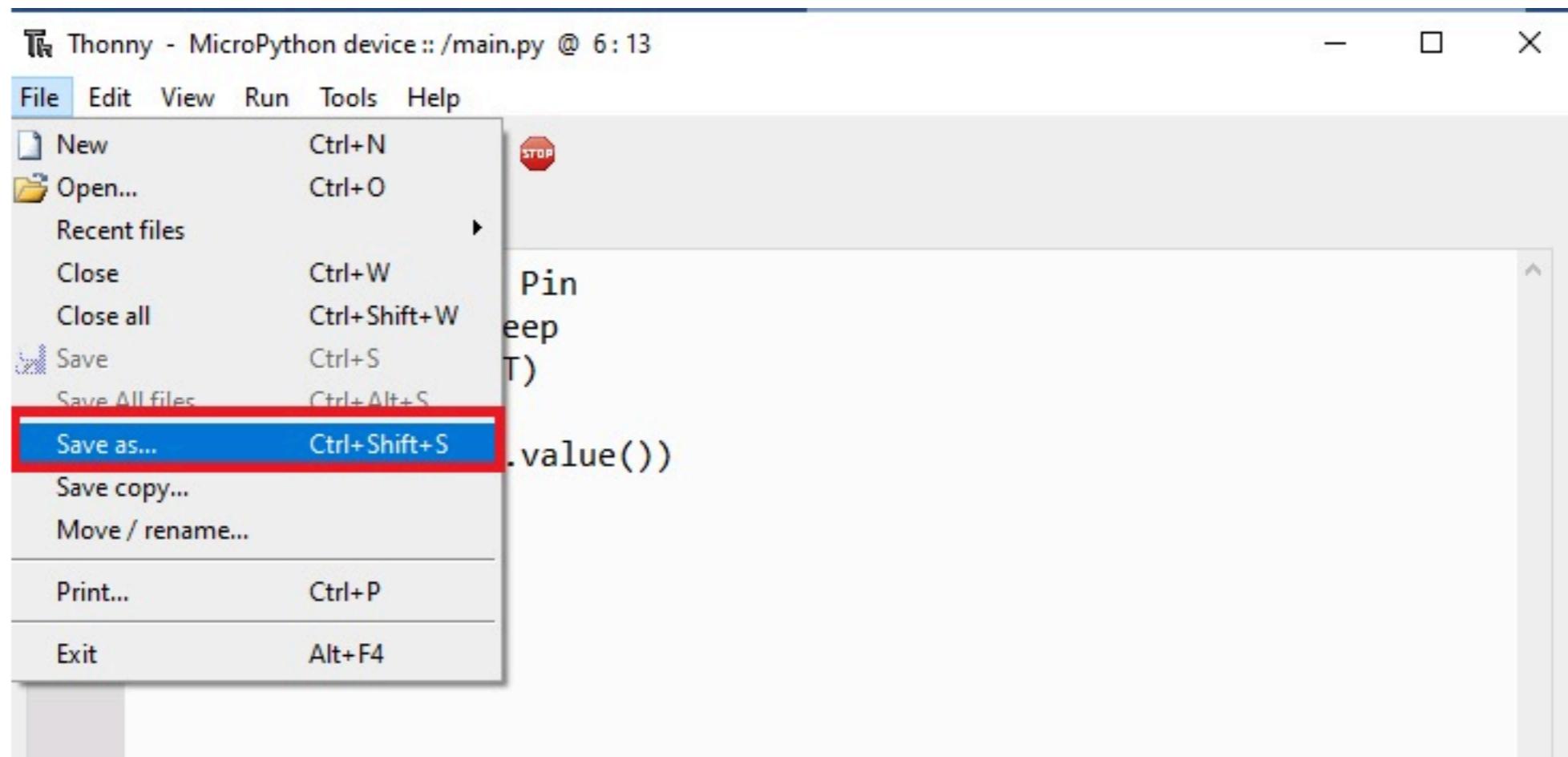
```
for note in song:  
    if note == 0: # Special case for silence  
        buz.duty(0)  
    else:  
        buz.freq(note)  
        buz.duty(25)  
        sleep(0.15)  
    buz.duty(0)
```

Upload / Burn Firmware

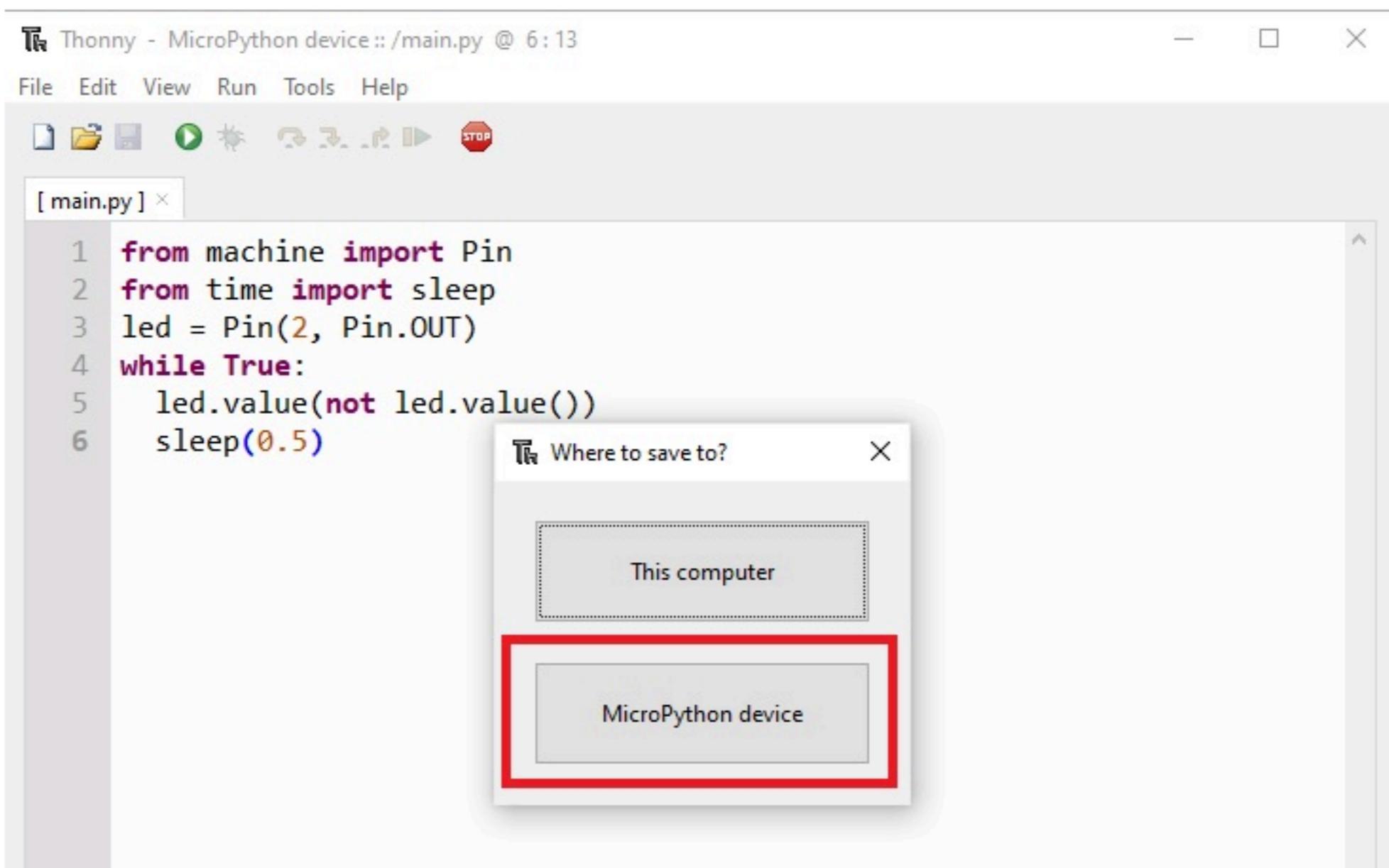
- Menu Tools -> Options



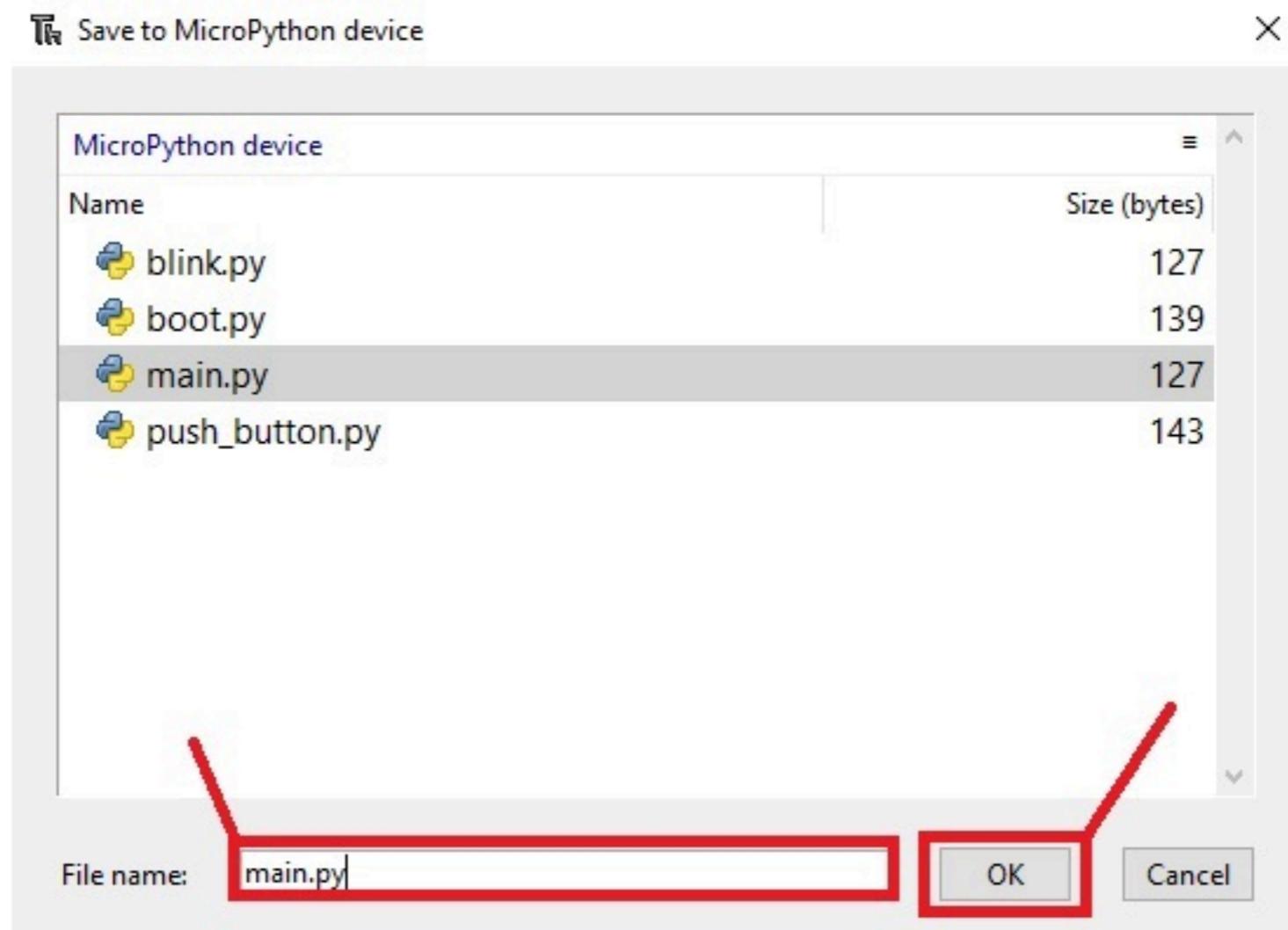
Upload Code



Upload Code



Upload Code



Upload Code

Press Enable/Reset
Button



Reference

- Note Frequency table
 - <https://pages.mtu.edu/~suits/notefreqs.html>

- Mario Bros Sound

```
song = [  
    E7, E7, 0, E7, 0, C7, E7, 0,  
    G7, 0, 0, 0, G6, 0, 0, 0,  
    C7, 0, 0, G6, 0, 0, E6, 0,  
    0, A6, 0, B6, 0, AS6, A6, 0,  
    G6, E7, 0, G7, A7, 0, F7, G7,  
    0, E7, 0, C7, D7, B6, 0, 0,  
    C7, 0, 0, G6, 0, 0, E6, 0,  
    0, A6, 0, B6, 0, AS6, A6, 0,  
    G6, E7, 0, G7, A7, 0, F7, G7,  
    0, E7, 0, C7, D7, B6, 0, 0,  
]
```

C6 = 1047
CS6 = 1109
D6 = 1175
DS6 = 1245
E6 = 1319
F6 = 1397
FS6 = 1480
G6 = 1568
GS6 = 1661
A6 = 1760
AS6 = 1865
B6 = 1976
C7 = 2093
CS7 = 2217
D7 = 2349
DS7 = 2489
E7 = 2637
F7 = 2794
FS7 = 2960
G7 = 3136
GS7 = 3322
A7 = 3520
AS7 = 3729
B7 = 3951