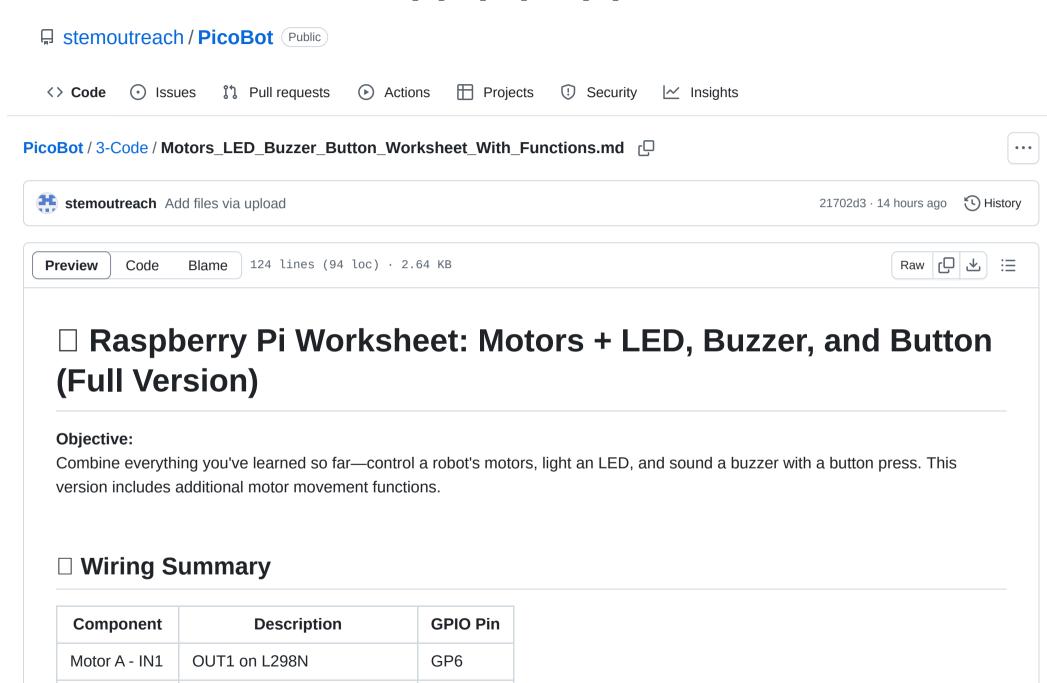
Motor A - IN2



GP7

OUT2 on L298N

Component	Description	GPIO Pin
Enable A	ENA	GP8
Motor B - IN3	OUT3 on L298N	GP4
Motor B - IN4	OUT4 on L298N	GP3
Enable B	ENB	GP2
LED	Long leg to GPIO via resistor	GP28
Buzzer	Positive to GPIO	GP10
Button	One leg to GPIO, one to GND	GP14

☐ Python Code with All Movement Functions

```
from machine import Pin
import time

# Motor setup
In1 = Pin(6, Pin.OUT)
In2 = Pin(7, Pin.OUT)
EN_A = Pin(8, Pin.OUT)

In3 = Pin(4, Pin.OUT)
In4 = Pin(3, Pin.OUT)
EN_B = Pin(2, Pin.OUT)

EN_A.high()
EN_B.high()
```

Q

```
# LED and buzzer setup
led = Pin(28, Pin.OUT)
buzzer = Pin(10, Pin.OUT)
# Button input
button = Pin(14, Pin.IN, Pin.PULL_UP) # Using internal pull-up, button connected to GND
# Movement functions
def move_forward():
   In1.high()
   In2.low()
   In3.high()
   In4.low()
def move_backward():
   In1.low()
   In2.high()
   In3.low()
   In4.high()
def turn_left():
   In1.low()
   In2.high()
   In3.high()
   In4.low()
def turn_right():
   In1.high()
   In2.low()
   In3.low()
   In4.high()
def stop_motors():
   In1.low()
   In2.low()
   In3.low()
```

```
In4.low()
# Alert functions
def alert on():
    led.high()
    buzzer.high()
    print("Alert ON")
def alert_off():
    led.low()
    buzzer.low()
    print("Alert OFF")
# Main loop
print("Press the button to move forward with lights and sound!")
while True:
    if button.value() == 0: # Button pressed (LOW)
        move_forward()
        alert_on()
        time.sleep(1)
        stop_motors()
        alert_off()
        time.sleep(0.5)
```

Additional Challenge Ideas

- 1. Use the new <code>move_backward()</code> function to drive in reverse when the button is held for 2 seconds.
- 2. Use turn_left() and turn_right() when using two buttons.
- 3. Flash the LED while the robot is moving.
- 4. Use timed sequences to navigate a mini maze using forward and turn movements.

⊘ Reflection Questions

- What happens when one motor spins forward and the other spins backward?
- How can you slow down one motor or both motors?
- Can you combine turn_left() and move_forward() to curve?

Have fun building and programming your robot! $\Box\Box\Box$