

# 임베디드응용및실습

-Github 8주차

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```

1  import threading
2  import serial
3  import time
4  import RPi.GPIO as GPIO
5  PWMA = 18
6  PWMB = 23
7  AIN1 = 22
8  AIN2 = 27
9  BIN1 = 25
10 BIN2 = 24
11 GPIO.setwarnings(False)
12 GPIO.setmode(GPIO.BCM)
13 GPIO.setup(PWMA, GPIO.OUT)
14 GPIO.setup(AIN1, GPIO.OUT)
15 GPIO.setup(AIN2, GPIO.OUT)
16 GPIO.setup(PWMB, GPIO.OUT)
17 GPIO.setup(BIN1, GPIO.OUT)
18 GPIO.setup(BIN2, GPIO.OUT)
19 L1_Motor = GPIO.PWM(PWMA, 500)
20 L2_Motor = GPIO.PWM(PWMB, 500)
21 L1_Motor.start(0)
22 L2_Motor.start(0)
23 GPIO.output(AIN1, 0)
24 GPIO.output(AIN2, 1)
25 GPIO.output(BIN1, 0)
26 GPIO.output(BIN2, 1)
27 bleSerial = serial.Serial("/dev/ttyS0", baudrate=9600, timeout=1.0)
28 gData = ""
29 def serial_thread():
30     global gData
31     while True:
32         try:
33             data = bleSerial.readline()
34             if data: # 데이터가 있으면 처리
35                 data = data.decode(errors='ignore') # 디코딩 오류를 무시
36                 gData = data
37         except serial.SerialException as e:
38             print(f"Serial error: {e}")
39             break # 오류가 발생하면 스레드를 종료
40 def main():
41     global gData
42     try:
43         while True:
44             if gData.find("go") >= 0:
45                 gData = ""
46                 GPIO.output(AIN1, 0)
47                 GPIO.output(AIN2, 1)
48                 GPIO.output(BIN1, 0)
49                 GPIO.output(BIN2, 1)

```

```
50     L1_Motor.ChangeDutyCycle(0)
51     L2_Motor.ChangeDutyCycle(0)
52     L1_Motor.ChangeDutyCycle(100)
53     L2_Motor.ChangeDutyCycle(100)
54     print("앞")
55     elif gData.find("left") >= 0:
56         gData = ""
57         GPIO.output(AIN1, 0)
58         GPIO.output(AIN2, 1)
59         GPIO.output(BIN1, 0)
60         GPIO.output(BIN2, 1)
61         L1_Motor.ChangeDutyCycle(0)
62         L2_Motor.ChangeDutyCycle(0)
63         L2_Motor.ChangeDutyCycle(100)
64         print("왼")
65     elif gData.find("right") >= 0:
66         gData = ""
67         GPIO.output(AIN1, 0)
68         GPIO.output(AIN2, 1)
69         GPIO.output(BIN1, 0)
70         GPIO.output(BIN2, 1)
71         L1_Motor.ChangeDutyCycle(0)
72         L2_Motor.ChangeDutyCycle(0)
73         L1_Motor.ChangeDutyCycle(100)
74         print("오")
75     elif gData.find("stop") >= 0:
76         gData = ""
77         GPIO.output(AIN1, 0)
78         GPIO.output(AIN2, 1)
79         GPIO.output(BIN1, 0)
80         GPIO.output(BIN2, 1)
81         L1_Motor.ChangeDutyCycle(0)
82         L2_Motor.ChangeDutyCycle(0)
83         print("정지")
84     elif gData.find("back") >= 0:
85         gData = ""
86         GPIO.output(AIN1, 1)
87         GPIO.output(AIN2, 0)
88         GPIO.output(BIN1, 1)
89         GPIO.output(BIN2, 0)
90         L1_Motor.ChangeDutyCycle(0)
91         L2_Motor.ChangeDutyCycle(0)
92         L1_Motor.ChangeDutyCycle(100)
93         L2_Motor.ChangeDutyCycle(100)
```

```
94         print("뒤")
95     except KeyboardInterrupt:
96         pass
97     GPIO.cleanup()
98     if __name__ == '__main__':
99         try:
100             task1 = threading.Thread(target=serial_thread)
101             task1.start()
102             main()
103         finally:
104             bleSerial.close() # 통신 종료 후 포트를 닫음
```



