```
1  # led
2
3  import time
4  import RPi.GPIO as GPIO
5
6  # set up GPIO pins
7  GPIO.setmode(GPIO.BCM)
8
9  # motor rotation set up (first motor controller)
10 GPIO.setup(5,GPIO.OUT)
11 GPIO.setup(6,GPIO.OUT)
12 GPIO.setup(13,GPIO.OUT) # PWM A
13
14 # track motor set up (first motor controller)
15 GPIO.setup(20,GPIO.OUT)
16 GPIO.setup(21,GPIO.OUT)
17 GPIO.setup(16,GPIO.OUT) # PWM B
18
19 # LED
20 GPIO.setup(25,GPIO.OUT)
21 GPIO.setup(23,GPIO.OUT)
22 GPIO.setup(24,GPIO.OUT) # PWM A
23
24 # Rotational motor
25 GPIO.setup(22,GPIO.OUT)
26 GPIO.setup(4,GPIO.OUT)
27 GPIO.setup(27,GPIO.OUT) # PWM B
28
29 p1=GPIO.PWM(13,50)
30 p2=GPIO.PWM(16,50)
31 p_led=GPIO.PWM(24,50)
32 p_rot=GPIO.PWM(27,100)
33
34 # led direction
35 GPIO.output(23,GPIO.LOW)
36 GPIO.output(25,GPIO.HIGH)
37
38 p1.start(0)
39 p2.start(0)
40 p_rot.start(0)
41 p_led.start(0)
42 time.sleep(2)
43
44 p_led.ChangeDutyCycle(100)
45
```

```
46  def basket1():
47      # motor rotate
48      print("rotate")
49      GPIO.output(4,GPIO.LOW)
50      GPIO.output(22,GPIO.HIGH)
51      p_rot.ChangeDutyCycle(80)
52      time.sleep(0.25)
53      p_rot.ChangeDutyCycle(0)
54
55      # motor forward
56      print("forward")
57      GPIO.output(6,GPIO.HIGH)
58      GPIO.output(5,GPIO.LOW)
59      GPIO.output(20,GPIO.HIGH)
60      GPIO.output(21,GPIO.LOW)
61      p1.ChangeDutyCycle(100)
62      p2.ChangeDutyCycle(100)
63      time.sleep(0.7)
64
65      # motor pause
66      p1.ChangeDutyCycle(0)
67      p2.ChangeDutyCycle(0)
68      time.sleep(0.2)
69
70      # motor back
71      print("back")
72      GPIO.output(5,GPIO.HIGH)
73      GPIO.output(6,GPIO.LOW)
74      GPIO.output(21,GPIO.HIGH)
75      GPIO.output(20,GPIO.LOW)
76      p1.ChangeDutyCycle(85)
77      p2.ChangeDutyCycle(85)
78      time.sleep(1.1)
79      p1.ChangeDutyCycle(0)
80      p2.ChangeDutyCycle(0)
81      time.sleep(0.2)
82
83      # motor rotate
84      print("rotate back")
85      GPIO.output(22,GPIO.LOW)
86      GPIO.output(4,GPIO.HIGH)
87      p_rot.ChangeDutyCycle(80)
88      time.sleep(0.25)
89      p_rot.ChangeDutyCycle(0)
90
```

```
 91  def basket2():
 92      # motor forward
 93      print("forward")
 94      GPIO.output(6,GPIO.HIGH)
 95      GPIO.output(5,GPIO.LOW)
 96      GPIO.output(20,GPIO.HIGH)
 97      GPIO.output(21,GPIO.LOW)
 98      p1.ChangeDutyCycle(100)
 99      p2.ChangeDutyCycle(100)
100      time.sleep(0.75)
101
102      # motor pause
103      p1.ChangeDutyCycle(0)
104      p2.ChangeDutyCycle(0)
105      time.sleep(0.2)
106
107      # motor back
108      print("back")
109      GPIO.output(5,GPIO.HIGH)
110      GPIO.output(6,GPIO.LOW)
111      GPIO.output(21,GPIO.HIGH)
112      GPIO.output(20,GPIO.LOW)
113      p1.ChangeDutyCycle(85)
114      p2.ChangeDutyCycle(85)
115      time.sleep(1.1)
116      p1.ChangeDutyCycle(0)
117      p2.ChangeDutyCycle(0)
118      time.sleep(0.2)
119
120  def basket3():
121
122      # motor rotate
123      print("rotate")
124      GPIO.output(22,GPIO.LOW)
125      GPIO.output(4,GPIO.HIGH)
126      p_rot.ChangeDutyCycle(80)
127      time.sleep(0.25)
128      p_rot.ChangeDutyCycle(0)
129
130      # motor forward
131      print("forward")
132      GPIO.output(6,GPIO.HIGH)
133      GPIO.output(5,GPIO.LOW)
134      GPIO.output(20,GPIO.HIGH)
135      GPIO.output(21,GPIO.LOW)
```

```
136         p1.ChangeDutyCycle(100)
137         p2.ChangeDutyCycle(100)
138         time.sleep(0.75)
139
140         # motor pause
141         p1.ChangeDutyCycle(0)
142         p2.ChangeDutyCycle(0)
143         time.sleep(0.2)
144
145         # motor back
146         print("back")
147         GPIO.output(5,GPIO.HIGH)
148         GPIO.output(6,GPIO.LOW)
149         GPIO.output(21,GPIO.HIGH)
150         GPIO.output(20,GPIO.LOW)
151         p1.ChangeDutyCycle(85)
152         p2.ChangeDutyCycle(85)
153         time.sleep(1.1)
154         p1.ChangeDutyCycle(0)
155         p2.ChangeDutyCycle(0)
156         time.sleep(0.2)
157
158         # motor rotate
159         print("rotate back")
160         GPIO.output(4,GPIO.LOW)
161         GPIO.output(22,GPIO.HIGH)
162         p_rot.ChangeDutyCycle(80)
163         time.sleep(0.25)
164         p_rot.ChangeDutyCycle(0)
165
166
167     basket3()
168
169     GPIO.cleanup()
170
171
172
173
174
175
```