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1  # 10 Mesurador de Distància amb PIR, LED i Multiprocessing
2  # Utilitzar tres processos paral·lels per activar LEDs segons la distància detectada
   per l'HC
3  # SR04 i el moviment detectat pel PIR, on cada procés controla una resposta
   específica.
4  # Solució en codi:
5  # Solució en codi Python
6  import RPi.GPIO as GPIO
7  import time
8  from multiprocessing import Process
9
10 GPIO.setmode(GPIO.BCM)
11
12 PIR_PIN = 4
13 TRIG = 23
14 ECHO = 24
15 LED_PINS = [17, 27, 22]
16
17 GPIO.setup(TRIG, GPIO.OUT)
18 GPIO.setup(ECHO, GPIO.IN)
19 GPIO.setup(PIR_PIN, GPIO.IN)
20
21 for pin in LED_PINS:
22     GPIO.setup(pin, GPIO.OUT)
23
24 def distance():
25     GPIO.output(TRIG, True)
26     time.sleep(0.00001)
27     GPIO.output(TRIG, False)
28     start, stop = time.time(), time.time()
29     while GPIO.input(ECHO) == 0:
30         start = time.time()
31
32     while GPIO.input(ECHO) == 1:
33         stop = time.time()
34     return (stop - start) * 34300 / 2
35
36 def control_leds_by_distance(led_pin, min_dist, max_dist):
37     while True:
38         dist = distance()
39         GPIO.output(led_pin, min_dist <= dist < max_dist)
40         time.sleep(0.5)
41
42 def control_leds_by_pir():
43     while True:
44         if GPIO.input(PIR_PIN):
45             for pin in LED_PINS:
46                 GPIO.output(pin, True)
47             time.sleep(1)
48             for pin in LED_PINS:
49                 GPIO.output(pin, False)
50             time.sleep(1)
51
52 if __name__ == '__main__':
53     processes = [
54         Process(target=control_leds_by_distance, args=(LED_PINS[0], 0, 10)),
55         Process(target=control_leds_by_distance, args=(LED_PINS[1], 10, 20)),
56         Process(target=control_leds_by_distance, args=(LED_PINS[2], 20, 100)),
57         Process(target=control_leds_by_pir)
58     ]
59
60 for p in processes:
61     p.start()
62
63 for p in processes:
64     p.join()

```