Experiment 9

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Programming with GPIOZero /any other library

Q1. Turn LED on when object is at proximity, off otherwise:

```
from gpiozero import DistanceSensor, LED
from time import sleep
 led = LED(4)
sensor = DistanceSensor(4,17)
while True:
        if sensor.distance<5:
                led.on()
        else:
                led.off()
        sleep(1)
```

Q2. Turn LED on based on light intensity:

```
from gpiozero import LightSensor, PWMLED
from signal import pause

sensor = LightSensor(17)
led = PWMLED(4)

led.source=sensor
pause()
```

Q3. Create LED chaser:

```
from gpiozero import LED
from time import sleep
led1 = LED(2)
led2 = LED(3)
led3 = LED(4)
x = 0.2
while True:
   led1.on()
   sleep(x)
   led1.off()
   led2.on()
```

```
    sleep(x)
    led2.off()
    led3.on()
    sleep(x)
    led3.off()
```

Q4. When button is pressed open servo motor shaft:

```
from gpiozero import Servo, Button
servo = Servo(17)
btn = Button(4)
while True:
        servo.min()
        btn.wait_for_press()
        servo.max()
        btn.wait_for_press()
```

Q5. Traffic signal in RPi:

```
from gpiozero import TrafficLights
from time import sleep

lights = TrafficLights(2, 3, 4)

lights.green.on()

while True:
    sleep(10)
    lights.green.off()
    lights.amber.on()
    sleep(1)
    lights.amber.off()
    lights.red.on()
    sleep(10)
    lights.amber.on()
    sleep(1)
    lights.green.on()
    lights.amber.off()
    lights.red.off()
```

Q6. RGB LED controlled by three button, one for each color:

```
from gpiozero import RGBLED, Button
from time import sleep
led = RGBLED(red=9, green=10, blue=11)
red_button = Button(2)
blue_button = Button(3)
green_button = Button(4)
if red_button.is_pressed:
  led.red = 1
if green_button.is_pressed:
  led.green = 1
if blue_button.is_pressed:
  led.blue = 1
```

Q7. Turn LED on if motion is detected:

```
from gpiozero import LightSensor
from signal import pause

sensor = LightSensor(18)
led = LED(4)

sensor.when_light = led.off()
sensor.when_dark = led.on()
```

Q8. Make robot go in a square:

```
from gpiozero import Robot
robot = Robot(left=(1,2), right=(3,4))
while True:
        robot.forward()
        sleep(10)
        robot.backward()
        sleep(10)
```