EV3 Micropython Lesson 3

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Review!

Last week, we learned about if statements and while loops, motor sensors, touch sensors, and brick buttons.

Ultrasonic Sensor

Ultrasonic Sensor

The ultrasonic sensor is used to detect the distance between the sensor and an object. It produces ultrasonic sound waves and waits for them to bounce back to it.

Distance Function

The distance function measures the distance between an object and a sensor and returns it. One of its parameter, silent, tells the sensor whether or not to stop produce sound `print(ultrasonic.distance())` after measurement. That reduces interference from other sensors but the sensor takes time to turn off. By default, silent is set to FALSE.

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Presence Function

The presence() function can detect if there are any other ultrasonic sensors. It scans for other ultrasonic sounds. However, if the other sensor is in silent mode, it can only be detected when it is taking a measurement.

print(ultrasonic.presence())

NOW Try it Yourself!

Create a programing using the Ultrasonic sensor to detect a wall and stop the robot before it hits it.

Color Sensor

Color Sensor

The Color sensor can be used to detect the color of objects, the light levels in a certain area and the amount of light certain objects reflect.

RGB

Rgb

Using red, blue, and green light the color sensor measures the reflection from each of them. It returns a set of 3 percentages ranging from 0(no reflection) to 100(high reflection). The rgb() function is not used very often.

```
print(colorsensor.rgb())
```

Ambient Light Intensity

Ambient Light Intensity (ALI)

Using the function ambient() and a color sensor, the robot can detect the light levels in its surroundings. This is not commonly used in EV3 but it can be used to follow a light source. The function will return a value between 0(dark) and 100(light).
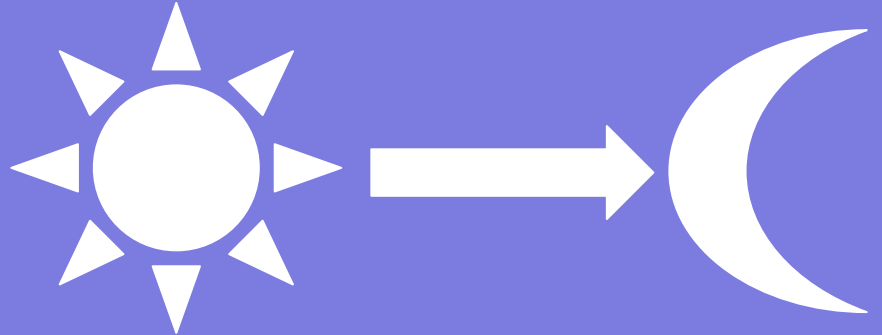

20 %

```
print(color.ambient())
```

Now Try it Yourself!

Create a program that has the robot travel around in a circle until it detects an ALI of above 50 and then travel towards that source for 1 rotation

Reflected Light Intensity

Reflected Light Intensity (RLI)

Using a color sensor and the reflection() function, the robot can detect the amount of light a surface reflects. Since darker surfaces absorb more light, they will have a lower RLI than lighter ones. The reflection() function returns a value between 0(very dark) and 100(very light).
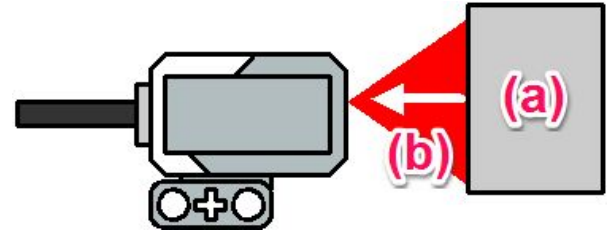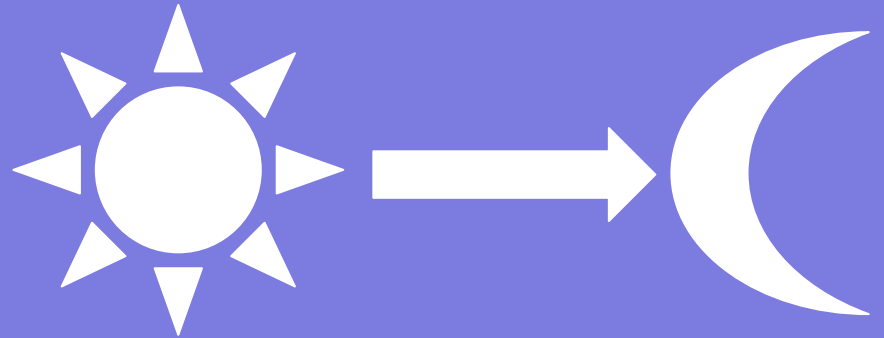

`print(color.reflection())`

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Now Try it Yourself!

Create a program that detects the RLI of different surfaces and try it out!

Color

Color

A color sensor can also detect color(never would have guessed). The color() function is what you need. It can detect Black, White, Red, Yellow, Blue, Green, Brown or no color. EV3 color sensors are known to mistake yellow and brown quite often.
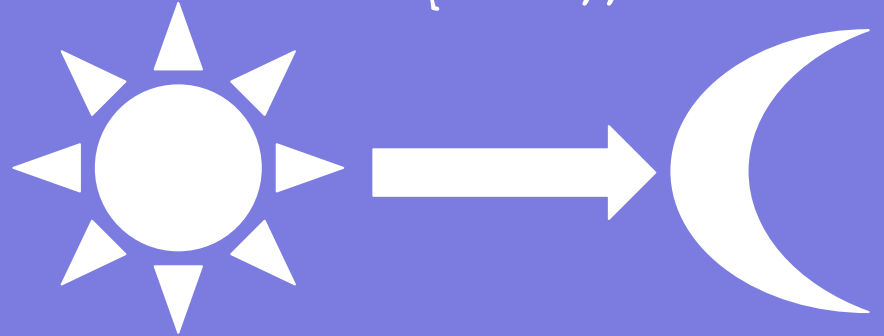

print(Color.color())

Now Try it Yourself!

Create a program that produces a different sound for each color it detects.
(hint: brick.sound.beep(whatever sound frequency))