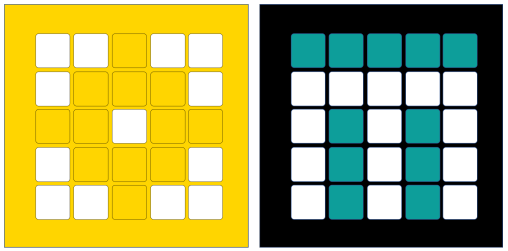
PRIME LESSONS

By the Makers of EV3Lessons



USING THE LIGHT FUNCTIONS

BY ARVIND SESHAN

LESSON OBJECTIVES

- Learn how program the LED lights on the Hub
- Learn how to turn on the lights of the Distance Sensor
- Learn how to display sensor values to the LED Matrix

CONTROLLING THE LIGHT MATRIX

- You can display a predefined image to the Light Matrix

```
hub.light_matrix.show_image(image, brightness=100)
```

- The list of images you can display can be found in the Knowledge Base under this command.
- You can also set the brightness of specific pixels

```
hub.light_matrix.set_pixel(x, y, brightness=100)
```

- You can write text to the Light Matrix (the letters will scroll by)

```
hub.light_matrix.write(text)
```

- Finally, you can turn off all the pixels

```
hub.light_matrix.off()
```

CONTROLLING THE DISTANCE SENSOR LIGHTS

- To use the Distance Sensor, it must first be initialized

```
distance = DistanceSensor('C')
```

- You can light up all of the Distance Sensor lights (there are 4 separate lights)

```
light_up_all(brightness=100)
```

- You can also set the brightness of each of the four lights separately

```
light_up(right_top, left_top, right_bottom, left_bottom)
```

CONTROLLING THE STATUS LIGHT (CENTER BUTTON)

- You can turn the status light on and choose a color

```
hub.status_light.on(color='white')
```

- White is the default color. The possible inputs are

"azure","black","blue","cyan","green","orange","pink","red","violet","yellow","white"

- You can turn the light off completely as well

```
hub.status_light.off()
```

CHALLENGE: LIGHT UP THE WORLD

- Write "Hello World" using the light matrix
- Then display a Happy Face for 4 seconds
- Light up all the lights around the left "eye" of the Distance Sensor
- Change the Center Button Light to a color of your choice

```
distance = DistanceSensor('C') Initialize the Distance Sensor
hub.light_matrix.write('Hello World') Hello World will scroll through the Light Matrix
hub.light_matrix.show_image('HAPPY') Display a happy face
distance.light_up(0, 100, 0, 100) Light up the Distance Sensor's left "eyes"
hub.status_light.on('violet') Make the center button violet
```

CHALLENGE: DISPLAYING SENSOR VALUES

- How hard am I pushing the Force Sensor?
- Create a program in a loop that lets you view the force applied to the Force Sensor on the LED Matrix
- Display the results in Newtons (0-10)

```
hub.light_matrix.write('Hello')
force.get_force_newton()
```

This program displays the value of the Force Sensor to the LED Matrix

```
force = ForceSensor('F')
while True:
    hub.light_matrix.write(force.get_force_newton())
```

Initialize the Force Sensor

Repeat using a while loop

The value of the Force sensor is written to the screen

CREDITS

- This lesson was created by Arvind Seshan for SPIKE Prime Lessons
- More lessons are available at www.primelessons.org