

# 🎮 Hub Reference Guide

Learn how to use the Spike Hub display and buttons!

## 📘 Import the Library

```
from spike import PrimeHub
```

## 💻 Hub Display Basics

Connect to Hub

```
hub = PrimeHub()
```

Show Images

```
# Show a built-in image
hub.light_matrix.show_image('HAPPY')

# Other images you can use:
# 'HAPPY', 'SAD', 'ANGRY', 'SMILE', 'HEART'
# 'YES', 'NO', 'ARROW_N', 'ARROW_E', 'ARROW_S', 'ARROW_W'
```

Show Text

```
# Show a single character
hub.light_matrix.write('A')

# Scroll text across the display
hub.light_matrix.write('HELLO')
```

Custom Patterns

```
# Create your own 5x5 pattern (0=off, 9=brightest)
pattern = [
    [0, 0, 9, 0, 0],
    [0, 9, 0, 9, 0],
    [9, 0, 0, 0, 9],
```

```
[0, 9, 0, 9, 0],  
[0, 0, 9, 0, 0]  
]  
hub.light_matrix.show(pattern)
```

## Turn Off Display

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

# O Hub Buttons

## Check Left Button

```
# Is left button pressed?  
if hub.left_button.is_pressed():  
    print("Left button pressed!")  
  
# Wait for left button  
hub.left_button.wait_until_pressed()  
print("Left button was pressed!")
```

## Check Right Button

```
# Is right button pressed?  
if hub.right_button.is_pressed():  
    print("Right button pressed!")  
  
# Wait for right button  
hub.right_button.wait_until_pressed()  
print("Right button was pressed!")
```

## Button Release

```
# Wait until button is released  
hub.left_button.wait_until_released()  
print("Button released!")
```

# 🔊 Hub Speaker

## Play Beep

```
# Simple beep
hub.speaker.beep(60, 0.5) # Note 60, for 0.5 seconds

# Higher pitch
hub.speaker.beep(72, 0.5)
```

## Change Volume

```
# Set volume (0-100)
hub.speaker.set_volume(80)
```

## 💡 Status Light

The light around the center button!

### Change Color

```
# Turn on status light
hub.status_light.on('green')

# Other colors: 'red', 'blue', 'yellow', 'cyan', 'magenta', 'white'
```

### Turn Off

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

## 🔗 Quick Examples

### Example 1: Button Counter

```
from spike import PrimeHub

hub = PrimeHub()
count = 0

while count < 5:
    hub.left_button.wait_until_pressed()
    count = count + 1
    hub.light_matrix.write(str(count))
    hub.left_button.wait_until_released()
```

```
hub.light_matrix.show_image('HAPPY')
```

## Example 2: Emoji Faces

```
from spike import PrimeHub

hub = PrimeHub()

while True:
    if hub.left_button.is_pressed():
        hub.light_matrix.show_image('HAPPY')
    elif hub.right_button.is_pressed():
        hub.light_matrix.show_image('SAD')
    else:
        hub.light_matrix.show_image('SMILE')
```

## Example 3: Countdown Timer

```
from spike import PrimeHub
import time

hub = PrimeHub()

for i in range(5, 0, -1):
    hub.light_matrix.write(str(i))
    hub.speaker.beep(60, 0.2)
    time.sleep(1)

hub.light_matrix.show_image('YES')
hub.speaker.beep(72, 1)
```

## Example 4: Animation Loop

```
from spike import PrimeHub
import time

hub = PrimeHub()

images = ['ARROW_N', 'ARROW_E', 'ARROW_S', 'ARROW_W']

for i in range(8): # Loop twice
    for image in images:
        hub.light_matrix.show_image(image)
        time.sleep(0.3)
```

## Example 5: Traffic Light

```
from spike import PrimeHub
import time

hub = PrimeHub()

# Red light
hub.status_light.on('red')
hub.light_matrix.write('STOP')
time.sleep(2)

# Yellow light
hub.status_light.on('yellow')
hub.light_matrix.write('WAIT')
time.sleep(1)

# Green light
hub.status_light.on('green')
hub.light_matrix.write('GO')
time.sleep(2)
```

---

## ⌚ Common Display Patterns

### Smiley Face

```
smiley = [
    [0, 9, 0, 9, 0],
    [0, 9, 0, 9, 0],
    [0, 0, 0, 0, 0],
    [9, 0, 0, 0, 9],
    [0, 9, 9, 9, 0]
]
hub.light_matrix.show(smiley)
```

### Heart

```
heart = [
    [0, 9, 9, 0, 0],
    [9, 9, 9, 9, 0],
    [9, 9, 9, 9, 9],
    [0, 9, 9, 9, 0],
    [0, 0, 9, 0, 0]
]
hub.light_matrix.show(heart)
```

## X Pattern

```
x_pattern = [
    [9, 0, 0, 0, 9],
    [0, 9, 0, 9, 0],
    [0, 0, 9, 0, 0],
    [0, 9, 0, 9, 0],
    [9, 0, 0, 0, 9]
]
hub.light_matrix.show(x_pattern)
```

---

Happy Coding! 🎉