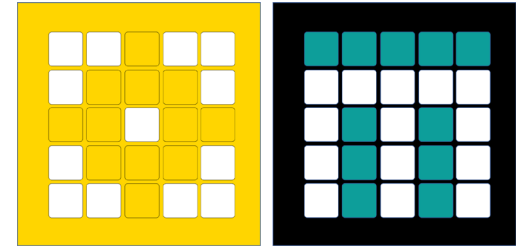


PRIME LESSONS

By the Makers of EV3Lessons

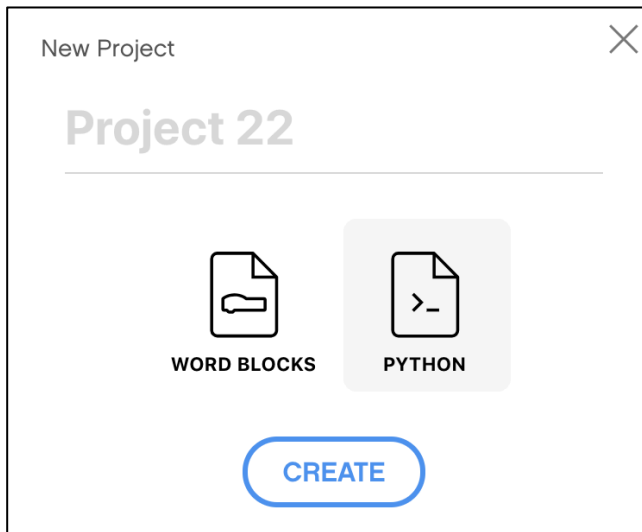


INTRODUCTION TO HUB & SOFTWARE (PYTHON)

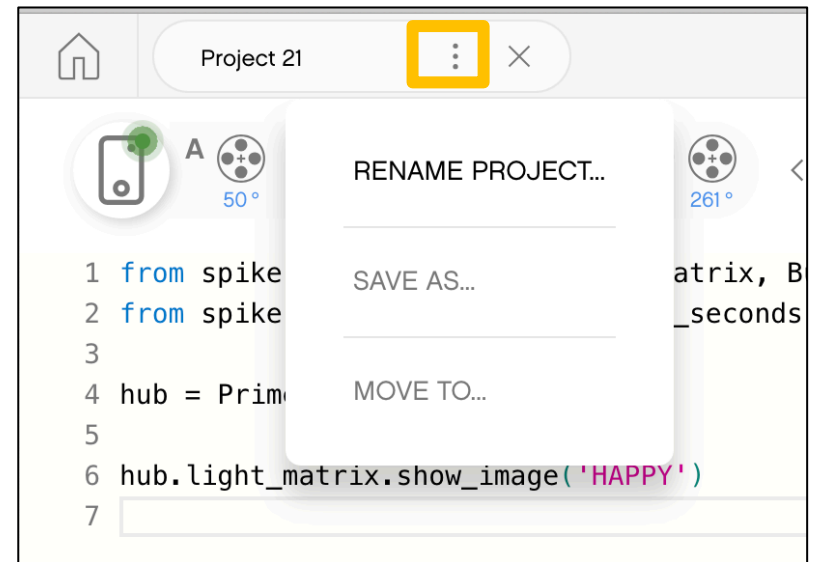
BY SANJAY AND ARVIND SESHAN

CREATING A PYTHON PROJECT

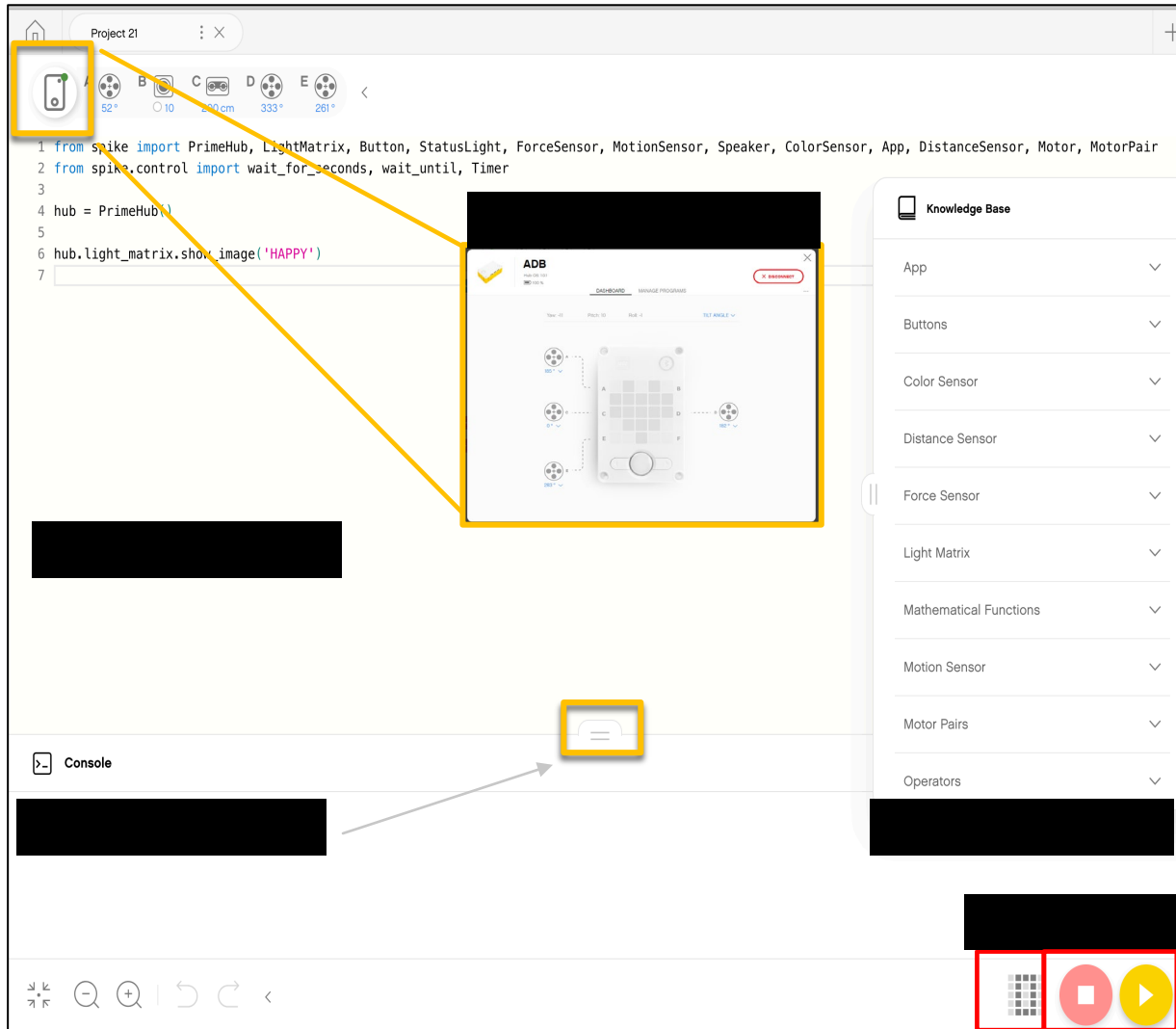
- Select Python from the pop-up



- Click on the three dots to change the file name



PROGRAMMING CANVAS

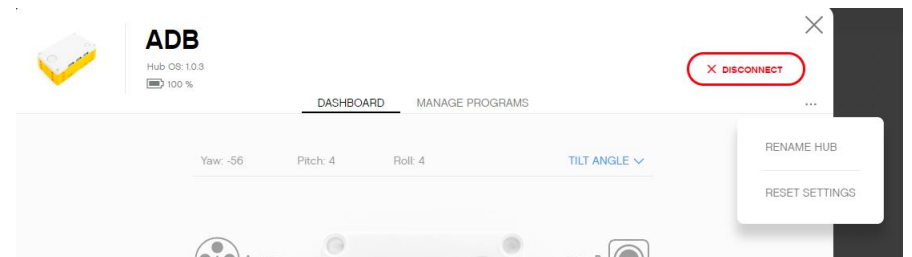
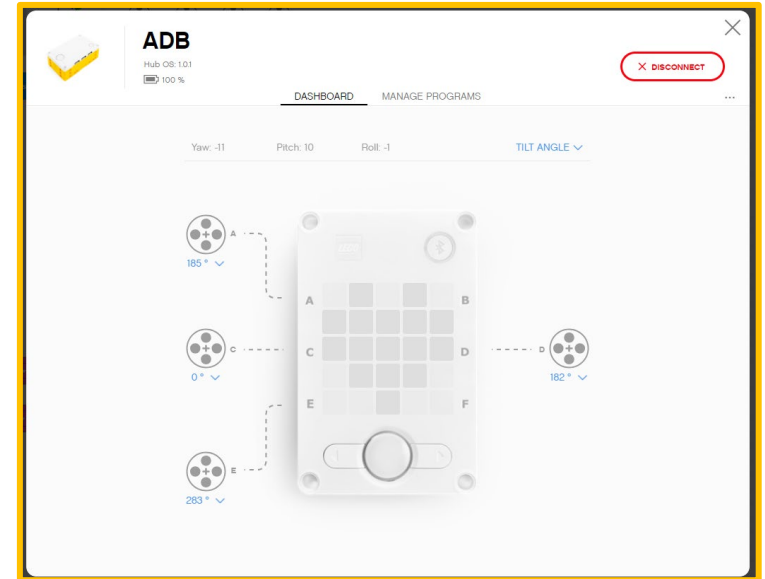


- Knowledge Base: MicroPython Tips
- Programming Canvas: The main programming canvas is where you will create each program (called 'Project')
- The Connect Icon lets you access the Hub Dashboard
- Stop/Play Icon lets you pick which slot to download the code to and run your code
- Console: Anything you print as well as errors will show up here

HUB DASHBOARD



- You must connect your Hub to access this section
- This section is very useful for:
 - Checking battery level
 - Hub OS version
 - Gyro Sensor Values
 - See which motors and sensors are connected
 - Get real time values from the motors and sensors
- You can also rename your Hub in this panel by clicking on the three dots (...)
- The Manage Programs has a list of all programs on the Hub (maximum of 20). Use this section to change the order of the programs.



CONNECTING TO BRICK

Project 21

```
1 from spike import PrimeHub, LightMatrix, Button, StatusLight, ForceSensor, MotionSensor, Speaker, ColorSensor, App, DistanceSensor, Motor, MotorPair
2 from spike.control import wait_for_seconds, wait_until, Timer
3
4 hub = PrimeHub()
5
6 hub.light_matrix.show_image('HAPPY')
7
```

Knowledge Base

- Getting Started
- App
- Buttons
- Color Sensor
- Distance Sensor
- Force Sensor
- Light Matrix
- Mathematical Functions
- Motion Sensor
- Motor Pair

Console

Connect Hub

CONNECT VIA CABLE

1. Turn on the Hub.
2. Activate Bluetooth.
3. Connect.

Choose your Hub

ACB

- The software will auto-connect to the brick if you are using USB
- To connect over Bluetooth, click the connect icon in the software.
- Enable Bluetooth by pressing the Bluetooth button on the brick.
- Your brick will show up in the list at the bottom. Click connect on your hub

DEFAULT PYTHON CODE

- All Python programs will begin with the following code by default
- Generally, keep lines 1-4 in all programs
- The imports will allow you to use the sensors/motors/etc. in your programs



```
1 from spike import PrimeHub, LightMatrix, Button, StatusLight, ForceSensor, MotionSensor, Speaker, ColorSensor, App, DistanceSensor, Motor, MotorPair
2 from spike.control import wait_for_seconds, wait_until, Timer
3
4 hub = PrimeHub()
5
6 hub.light_matrix.show_image('HAPPY')
7
```

CREDITS

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



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).