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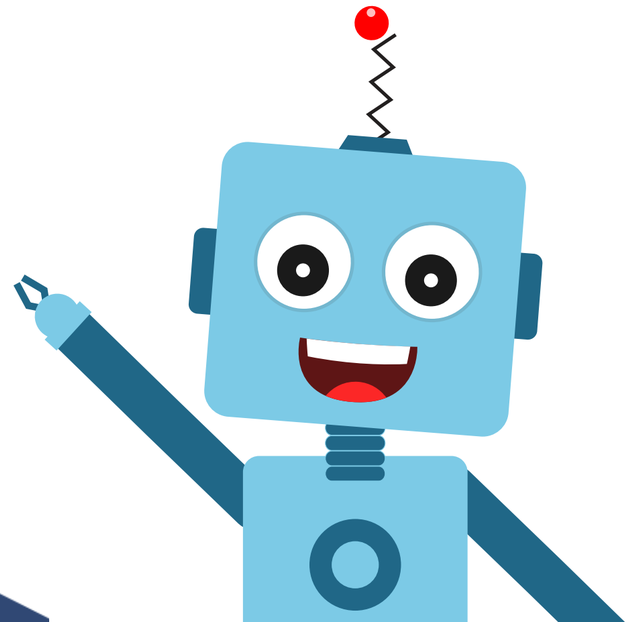
Wirelessly Controlled robot

Session 25



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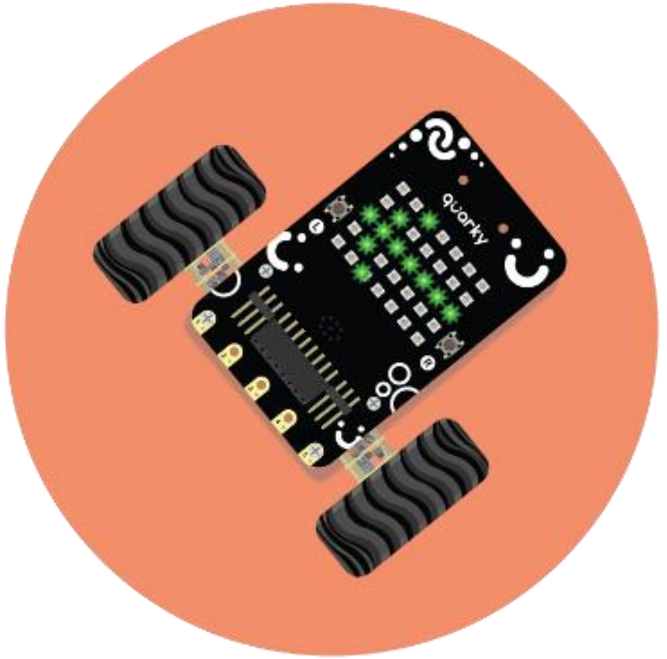

QUARKY: YOUR AI LEARNING BUDDY

Introduction to Hyperparameter

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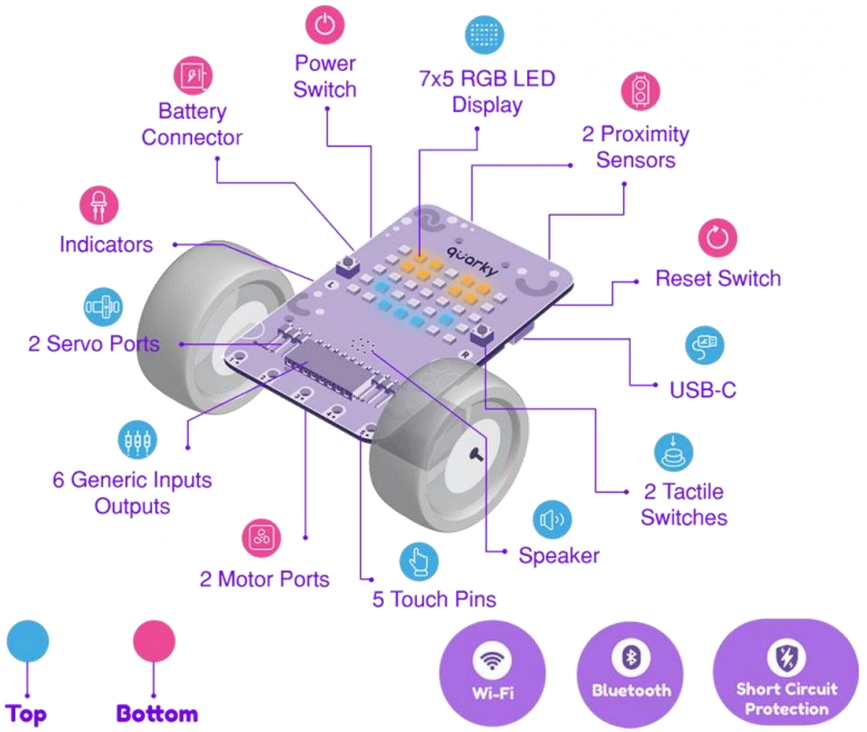
KNOWLEDGE BOX

Quarky is going to be your friend throughout this adventurous journey. So you should get to know about it. In this lesson, we will do exactly that!

QUARKY: YOUR AI LEARNING BUDDY

Quarky is an electronic board with a lot of features using which you can make numerous exciting projects. You can program Quarky to make expressions, play sounds, detect touch, and much more. Let's look at its various features.



QUARKY MEETS PICTOBLOX

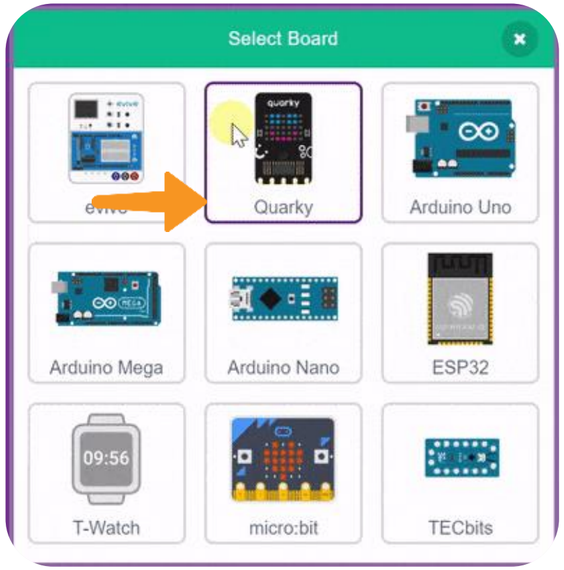
You can control Quarky using PictoBlox, by connecting both of them together. Let's begin by first connecting Quarky to PictoBlox.

First, choose the type of device you want to use for running PictoBlox. You can use a desktop, laptop, or smartphone. Now, follow the below-given instructions -:

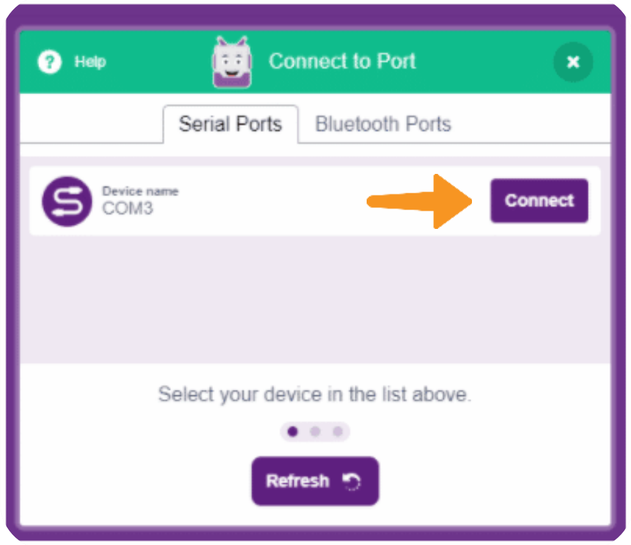
DESKTOP/LAPTOP:

Follow the steps below for connecting Quarky to PictoBlox:

1. First, connect **Quarky** to your laptop using **USB** cable/Bluetooth.
2. Next, open **PictoBlox** on your desktop.
3. After that, select Block Coding as your coding environment.
4. Then, click the Board button from the toolbar, and select board: **Quarky**.



Step 4



Step 5

5. Next, select the appropriate serial port from **Serial Ports** if you want to connect Quarky via USB. If you want to connect Quarky via Bluetooth, you must download an app called **PictoBlox Link** on your computer, this is available freely. You need to activate this app every time you want to connect with your quarky (or any other board) via Bluetooth. Now you can click on **Bluetooth Ports** and press **Connect** on the appropriate Device name.

Quarky is now connected to PictoBlox.

Mobile

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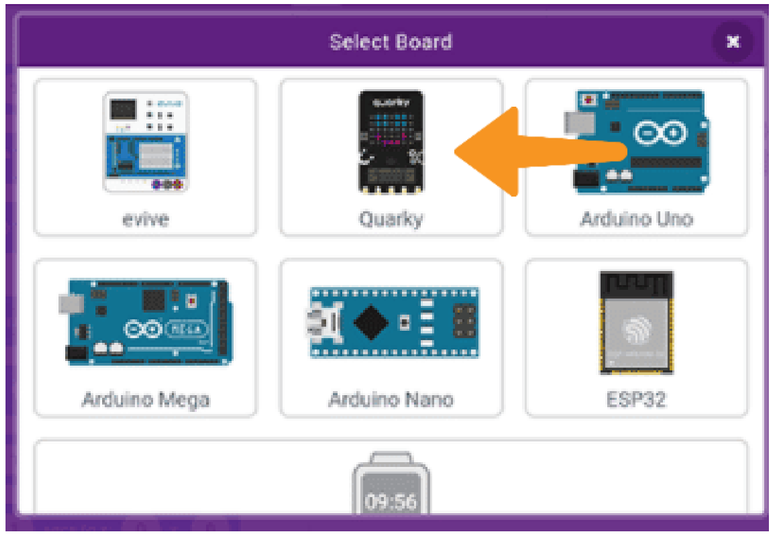
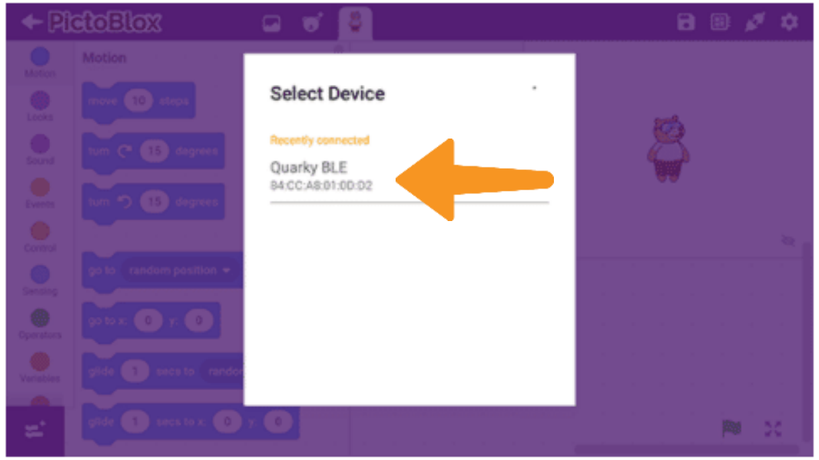
MOBILE

- Follow the steps below for connecting Quarky to PictoBlox:
- First, power ON Quarky .
- Open PictoBlox on your smartphone. Go to **My Space** and make a new project by clicking the
  ‘+'(plus) button in the bottom-right corner



Step 4



Step 5

- Then, tap the **Board** button from the top-right corner of the toolbar. Select board as **Quarky**.
- Next, tap the **Connect** button.
- Select your device from the list.

Mobile

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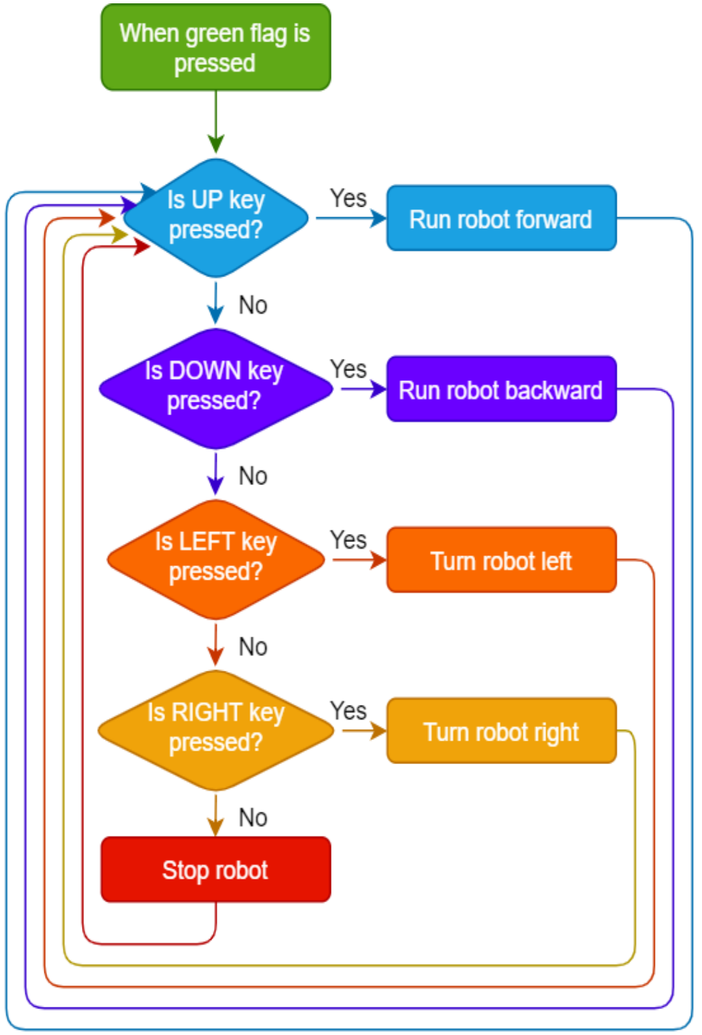
- We’re going to control Quarky wirelessly using the arrow keys of the keyboard of your desktop in the PictoBlox.
- We will make Quarky move forward by pressing the up-arrow key,
- Move backward by pressing the down arrow key,
- Move right by pressing the right arrow key, and
- Move left by pressing the left arrow key.
- Quarky should remain steady. When no arrow keys are pressed.

MATERIALS REQUIRED

- ☐ Computer/Laptop/Tab with installed
- ☐ Quarky



Wireless Robot Motion

ACTIVITY Wirelessly controlled robot

This exercise will involve controlling a robot ‘s movements using functions.

STEP-BY-STEP PROCEDURE

Follow the Step Below:

1. Let’s begin by first connecting Quarky to PictoBlox:

    1.1 First, connect **Quarky** to your laptop using the Bluetooth.

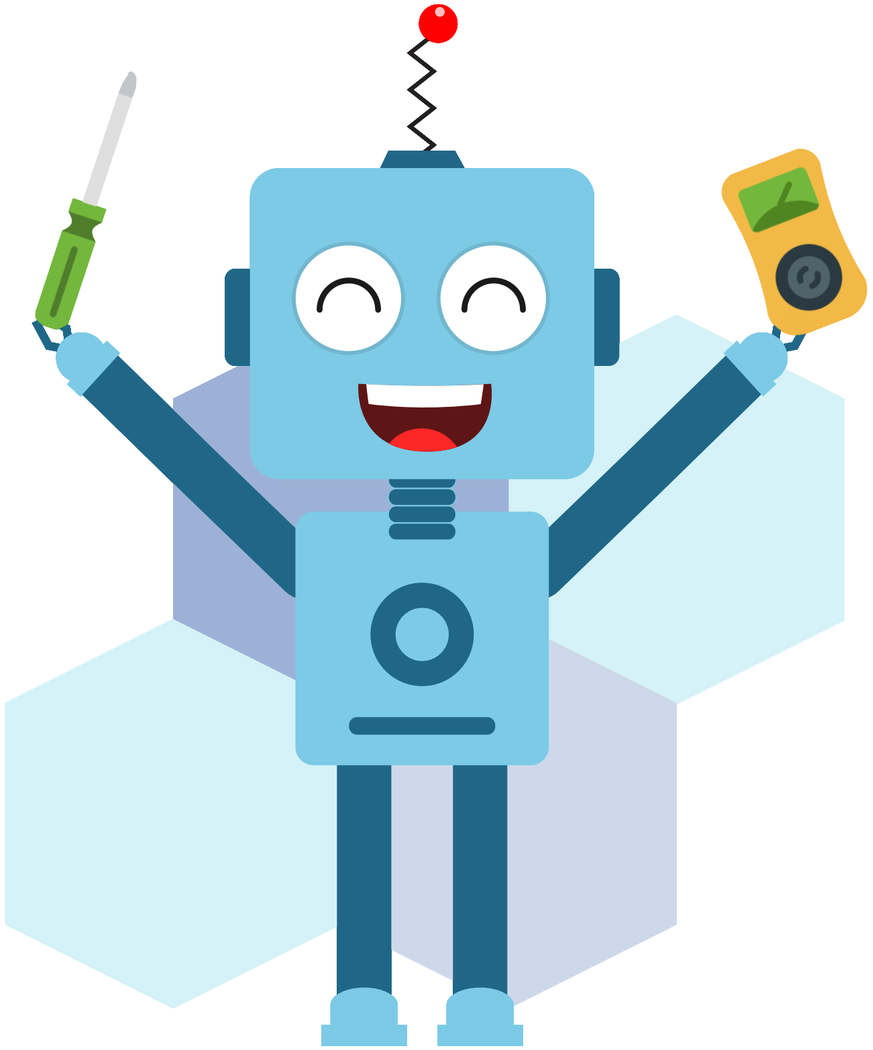
    1.2 Open **PictoBlox** and create a new file. Select the coding environment as **Python Coding**

    1.3 Select the Board as **Quarky**. Next, select the **Serial port** to connect Quarky and press **Connect**.

2. Now, select the Tobi.py file from the Project Files section and by default, the syntax will be written in sprite as an object.

3. We need to define an object for Quarky and write quarky-related functions.

Here we want to check if any of the keys – up, down, left or right is pressed.



ACTIVITY Wirelessly controlled robot

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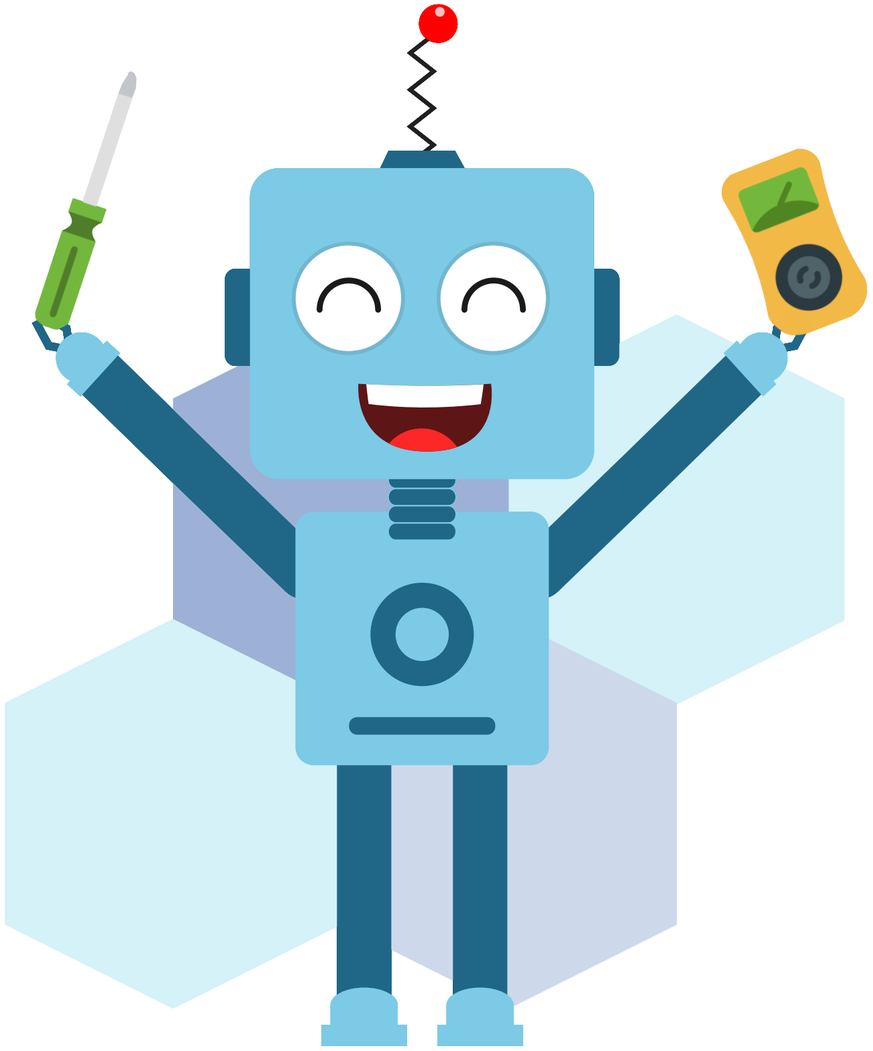
Case 1: We need to check whether the “up arrow” has been pressed.
If the condition is True, then Quarky will move in forward direction with 50 % speed for a duration of 0.5 seconds. The function **iskeypressed()** checks i f the specified key is pressed. If the key is pressed, the function returns “true” and the code block will be executed,

- if the key is not pressed, the function returns “false” and the code block will not be executed.
- The function runtimedrobot([1],[2],[3]) is used to make the robot move, [1], [2], and [3] are represent direction, speed, and time, respectively

```
if sprite.iskeypressed("up arrow"):
    quarky.runtimedrobot("F", 50, 0.5)
```

```
if sprite.iskeypressed("down arrow"):
    quarky.runtimedrobot("B", 50, 0.5)
```



ACTIVITY Wirelessly controlled robot

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Case 2: Check whether the “down arrow” has been pressed.
If the condition is True, then Quarky will move in a reverse direction at half speed for 0.5 seconds.

Case 3: We now check whether the “left arrow” has been pressed.

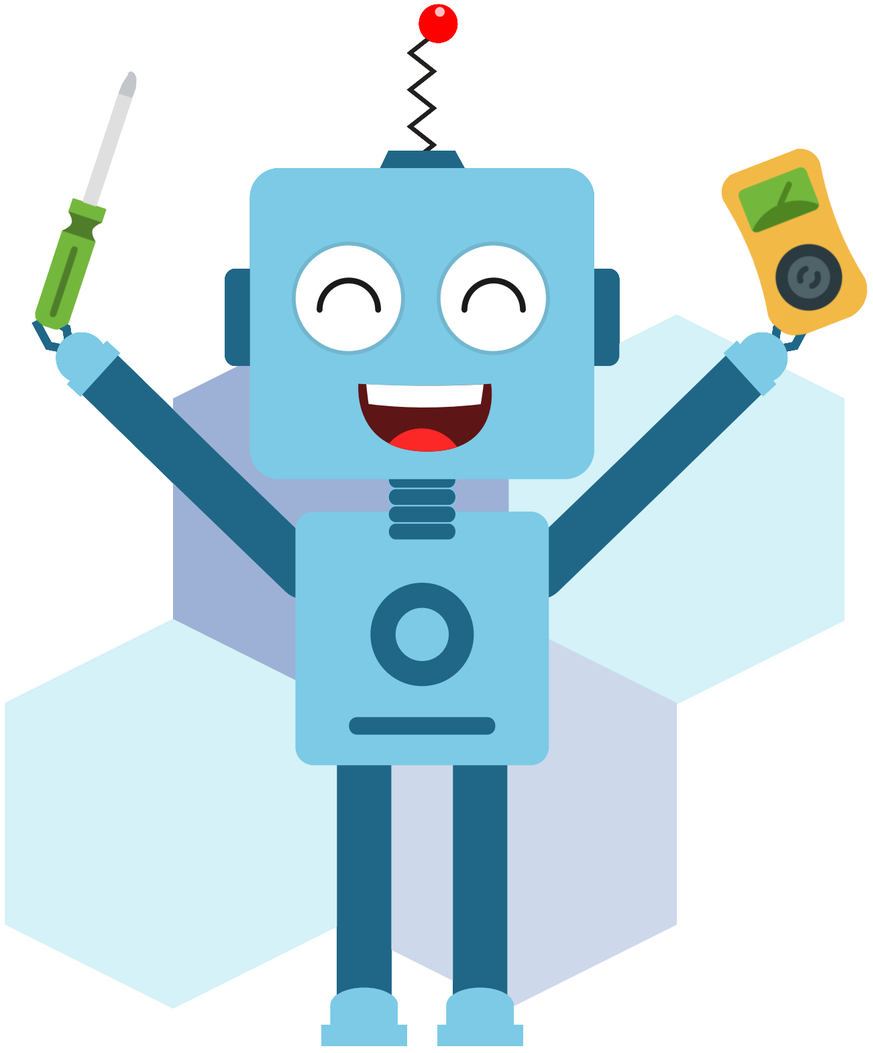
If the condition is True, Quarky will move to the left at 50% speed for 0.5 seconds.

Case 4: Check whether the “right arrow” has been pressed.
If the condition is True, Quarky will move to the right with a speed of 50% for 0.5 seconds.

Now we will write final code for “Wirelessely Control Robot” using keys.

```
if sprite.iskeypressed("left arrow"):
    quarky.runtimedrobot("L", 50, 0.5)
```

```
if sprite.iskeypressed("right arrow"):
    quarky.runtimedrobot("R", 50, 0.5)
```



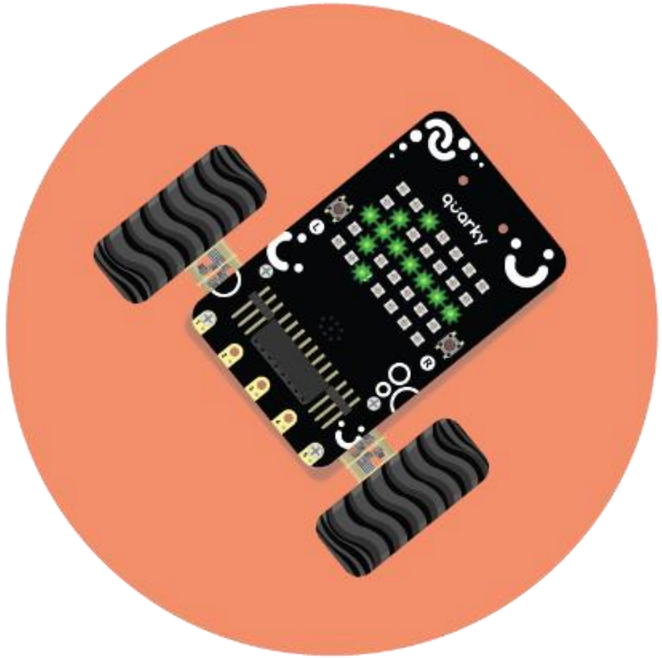
Lets Code

```
sprite = Sprite('Tobi')
quarky = Quarky()
while True:
  if sprite.iskeypressed("up arrow"):
    quarky.runtimedrobot("F", 50, 0.5)

  if sprite.iskeypressed("down arrow"):
    quarky.runtimedrobot("B", 50, 0.5)

  if sprite.iskeypressed("left arrow"):
    quarky.runtimedrobot("L", 50, 0.5)

  if sprite.iskeypressed("right arrow"):
    quarky.runtimedrobot("R", 50, 0.5)
```



Wirelessly Control Robot

SAVING THE PROGRAM

Save the project file as **Wirelessly Control Robot**.

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