

Programming the EV3 with Swift Playgrounds

Text and images by Ahmad Sahar

Hi, I'm Shah. I'm a professional trainer specialising in MacOS and iOS software and hardware, and I also conduct classes on iOS App Development and LEGO® Mindstorms.

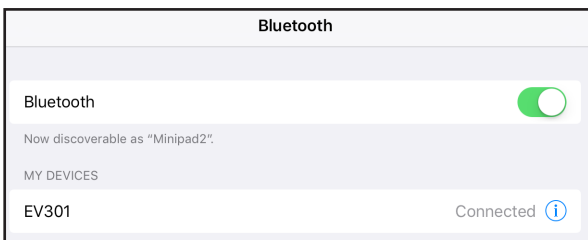
Today we're going to learn how to program LEGO® Mindstorms EV3 with Swift Playgrounds. You ready? Great! Let's go!

What you need:

- An iPad with Swift Playgrounds installed
- LEGO® Mindstorms EV3 Education (set no. 45544) or Home (set no. 31313)

Before you begin

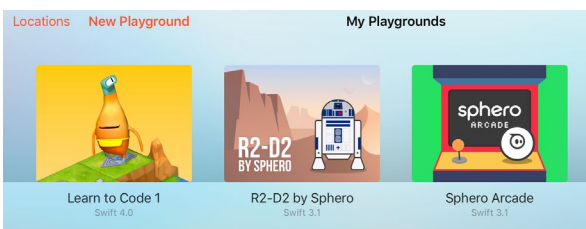
For this lesson you only need the EV3 Brain. Make sure you have fresh batteries in your robot and your iPad is fully charged. Pair your iPad to your EV3 Brain via Bluetooth.



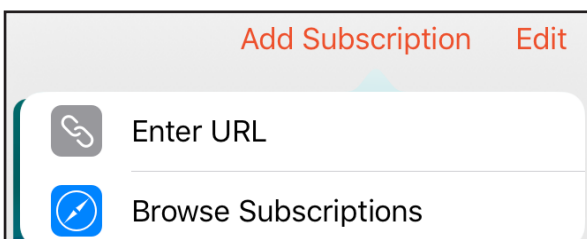
Hello World

Traditionally when learning a new programming language, the first program we write will display the words "Hello, World". Let's do that now.

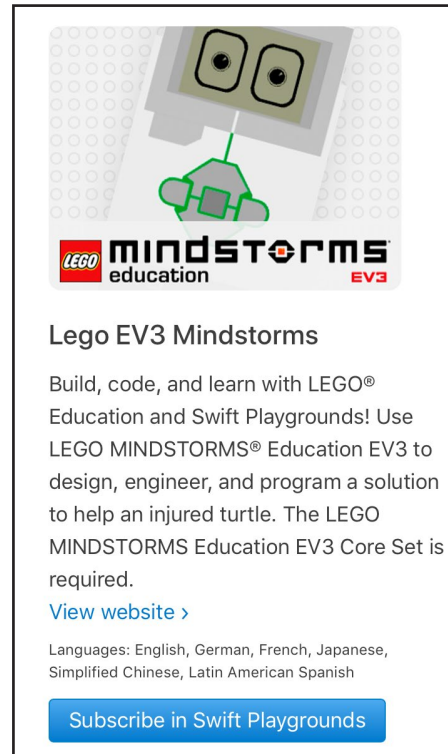
Launch Swift Playgrounds and choose New Playground.



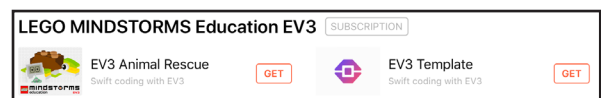
Then tap "Add Subscription" and "Browse Subscriptions".



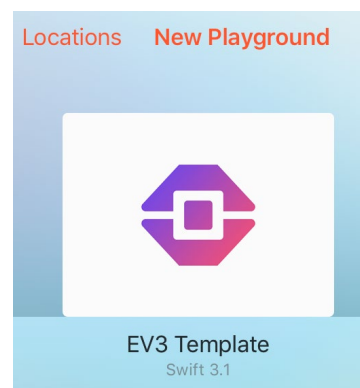
This will take you to a web page showing you the available subscriptions or platforms you can use with Swift. Find LEGO® Mindstorms and tap Subscribe in Swift Playgrounds.



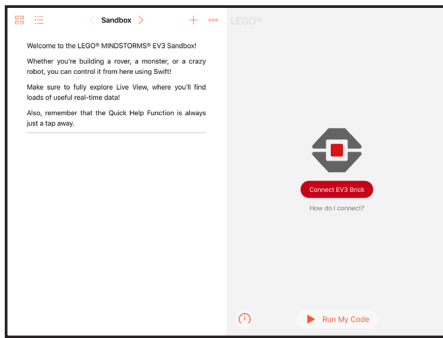
After you subscribe, you should see the LEGO® Mindstorms Education EV3 category in the Swift app. In that category you should see EV3 Animal Rescue and EV3 Template. For this tutorial we will use EV3 Template, so tap the Get button next to the EV3 template. This will be automatically downloaded into your iPad.



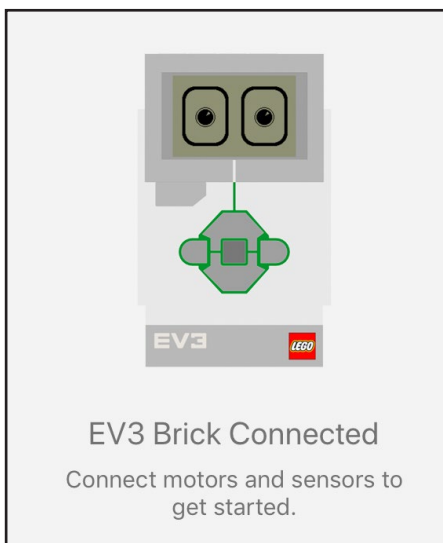
Once it has downloaded, tap it to open it.



The screen now looks as follows. On the left side of the screen, you can see a place where you can type in code. On the right you can see the Mindstorms logo and the Connect EV3 Brick button.

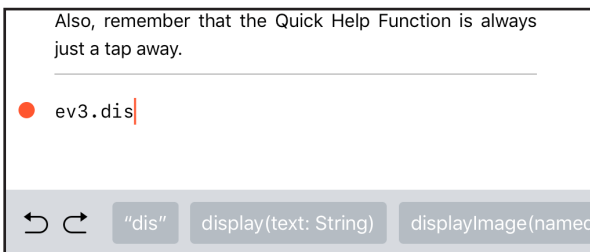


The first thing we will do is connect to the EV3 brick from within the Swift app. To do so, Tap the button, then tap "EV3 Brick". The iPad should connect to the EV3 brick and display EV3 Brick Connected.



We will start typing code in the left side of the screen. Swift has an autocomplete function, which means you do not need to remember the complete command to be able use it correctly.

Type in `ev3.dis` and from the list of suggestions choose `display(text: String)`



Note that String is highlighted.



Tap it and type in "Hello, World."

The completed command should be as follows:

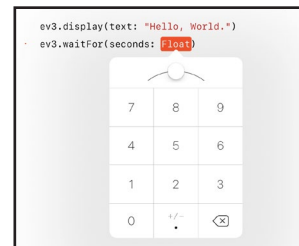
```
ev3.display(text: "Hello, World.")
```



Now we need to make the EV3 pause briefly so we can read the message. Type `ev3.wa` and at the bottom of the screen, choose the following suggestion: `waitFor(seconds: Float)`

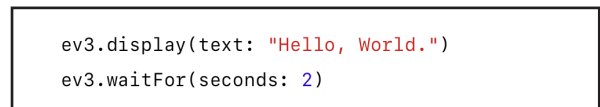


Tap Float and enter 2 in the number picker.

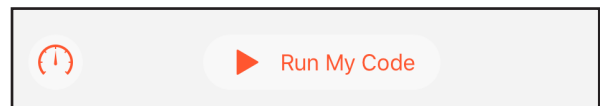


The completed command should be as follows:

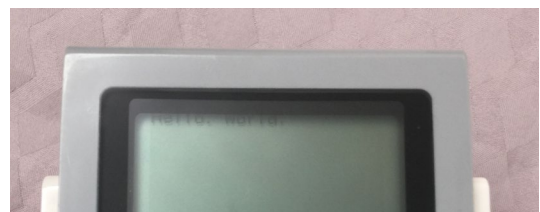
```
ev3.waitFor(seconds: 2)
```



Tap Run My Code.



Success! The Programmable Brick displays the words *Hello, World.*



You have just written a Swift program for LEGO® Mindstorms EV3. Yay!

Now experiment by putting in more lines, and by changing the words to display.

In the next lesson, we'll see how you can make your robot move.

See you then!

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