ScoutMakes Robot Kit

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https://learn.adafruit.com/scoutmakes-robot-kit

Last updated on 2021-11-15 08:21:48 PM EST

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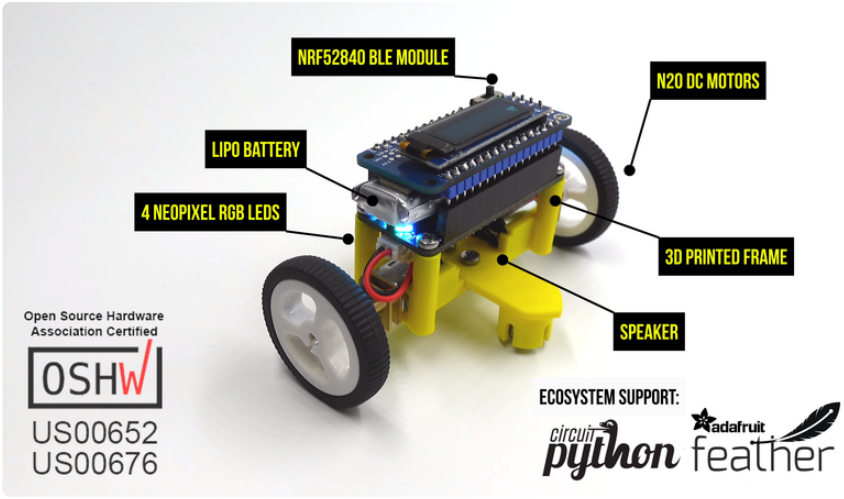
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Overview







Robotics and industrial automation are everywhere these days. Robots help build, package, and ship everything from your breakfast cereal to your car. With that in mind, we designed the ScoutMakes Robot kit to help those with an interest in robotics learn the basics. With it, you will create a simple, wheeled robot while developing a familiarity with concepts like mechanical assembly and motor control. This kit also includes a piezoelectric buzzer and NeoPixels that allow your robot to play sounds and glow while it's moving around.

And, thanks to the included Azul board, you'll be able to send instructions to your robot, over BLE, from an app on your iOS or Android device.

Open Source Hardware Association (OSHWA) certified (https://adafru.it/RE9)

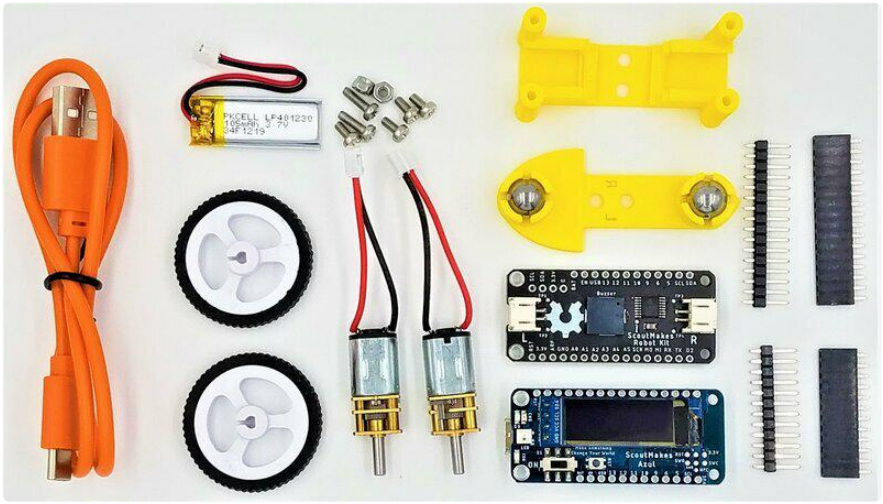
Robot Kit Features & Specifications

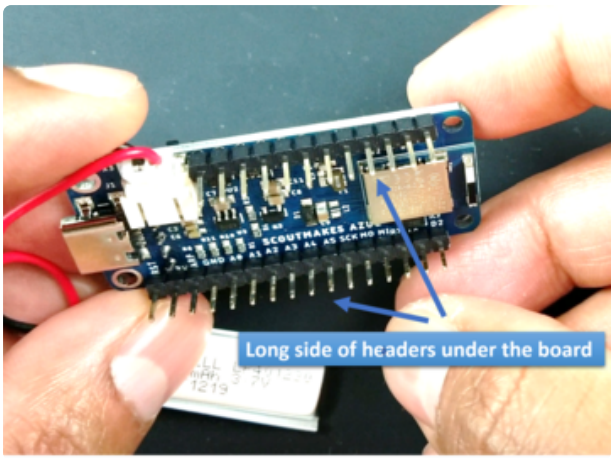
- Open hardware and open source software.

- Quick and easy assembly (all mechanical hardware is included in the kit).
- Controllable over BLE using an iOS or Android app.
- nRF52840 based ScoutMakes Azul control board (https://adafru.it/RE4)
- A piezoelectric speaker allows your robot to make sounds.
- Powered by a rechargeable, LiPo battery (105mAH).
- Four NeoPixels (RGB) on the robot board provide illumination.
- Modify the source files for the robot chassis and 3D print your own designs.
- Quality, N20 motors with metal gear boxes and rubber tires.
- DRV8833 Dual-H-Bridge to control the drive motors.

Assembly

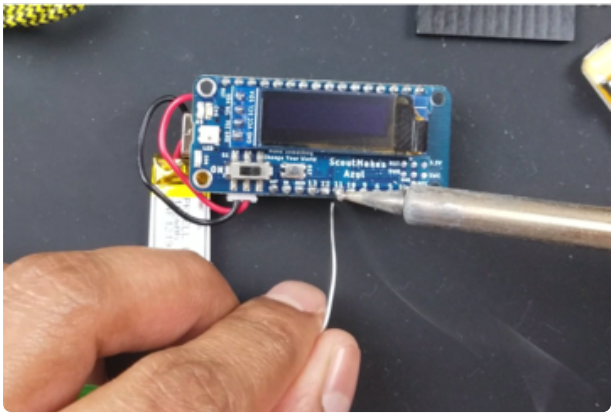
Unwrap the ball and lay out the various kit components. The provided USB cable will be used to program the Azul and can also be used to charge the Lithium Polymer battery. The Azul has the battery charging circuitry built in.

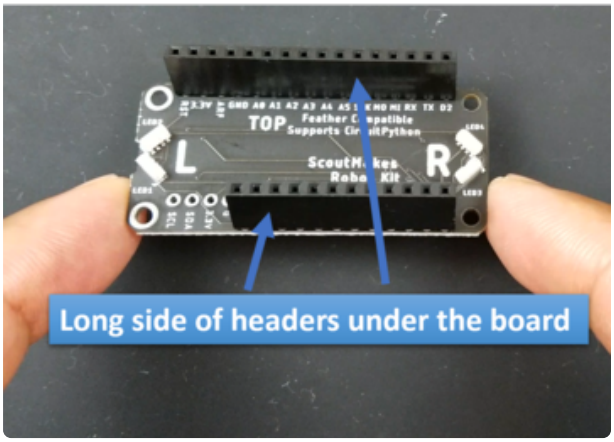




Place and solder the headers on the Azul bluetooth board.

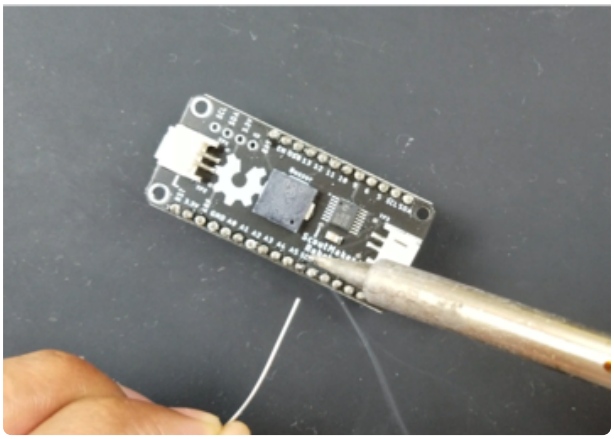
*** IT IS VERY IMPORTANT THAT YOU PAY ATTENTION TO THE ORIENTATION OF THE HEADERS ON THE AZUL BLUETOOTH BOARD. THE LONG SIDE OF THE HEADERS MUST BE UNDER THE BOARD ***

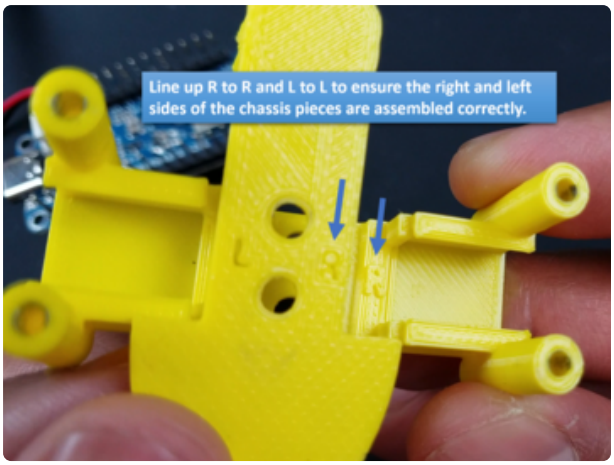




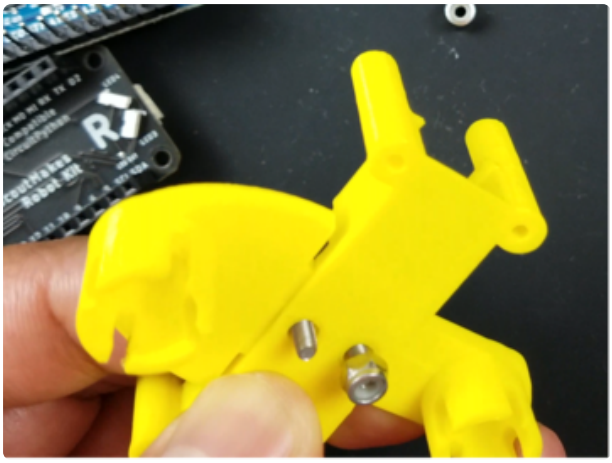
Place and solder the headers on the Robot board.

*** IT IS VERY IMPORTANT THAT YOU PAY ATTENTION TO THE ORIENTATION OF THE HEADERS ON THE ROBOT BOARD.
THE LONG SIDE OF THE HEADERS MUST BE ON TOP OF THE BOARD ***

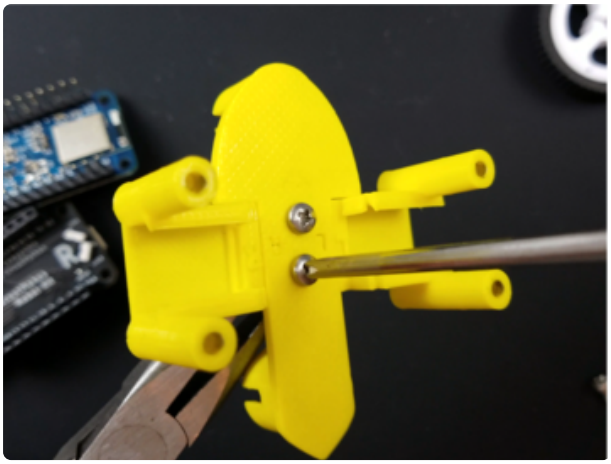




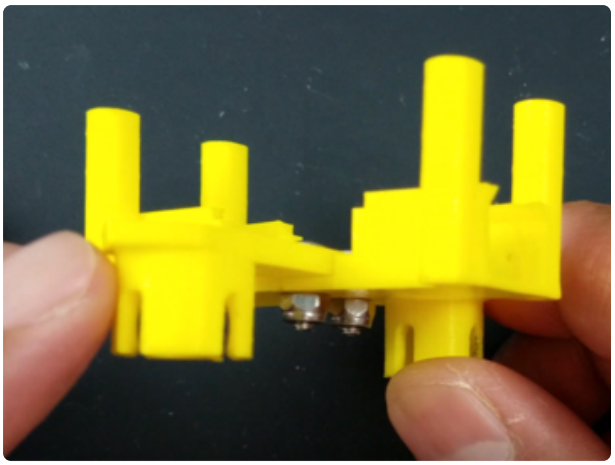
Assemble the robot chassis by bringing together the 2 plastic pieces. Ensure the sides line up as in the image below.

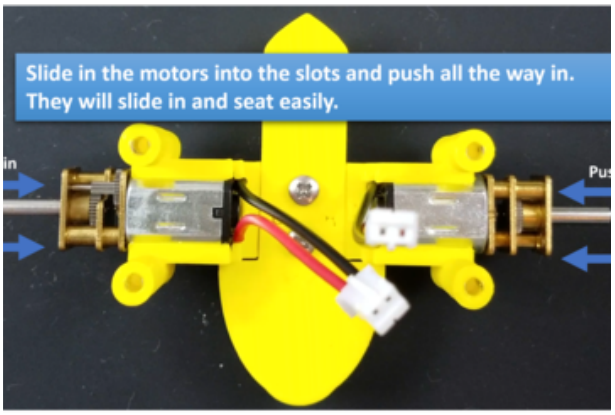


Insert the provided 2 screws (long) into the holes and tighten the nuts on the underside of the chassis. You will need a phillips head screw driver and a pair of pliers to hold the nut while its tightened.

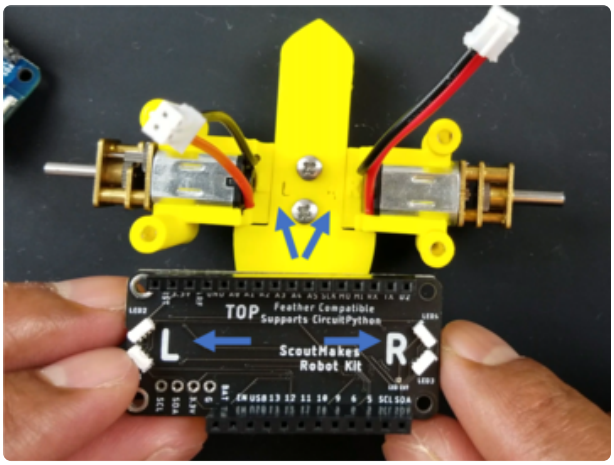


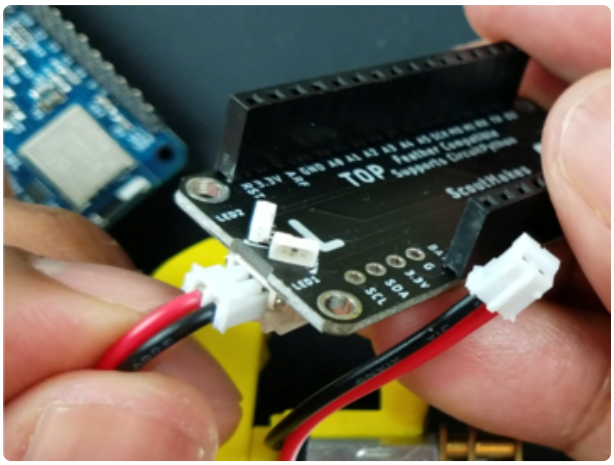






Slide in the 2 motors into the motor slots. They will slide in easily. There is no specific orientation for the motors.



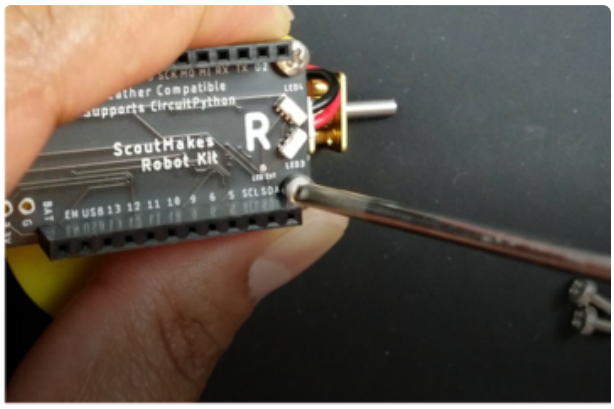


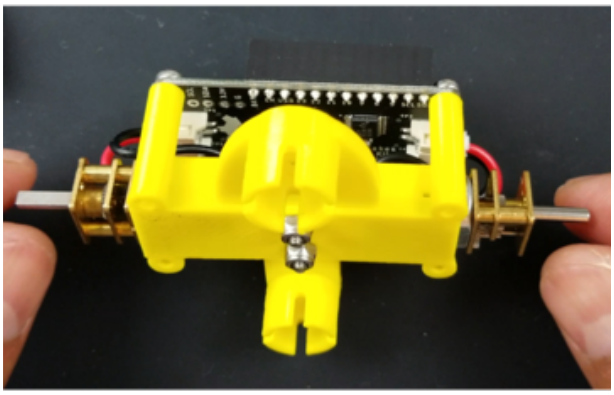
Connect the motor wires to the robot board. Notice the orientation of the root board with the TOP facing up.
Ensure the R to R and L to L are lined up with the robot chassis and robot board.

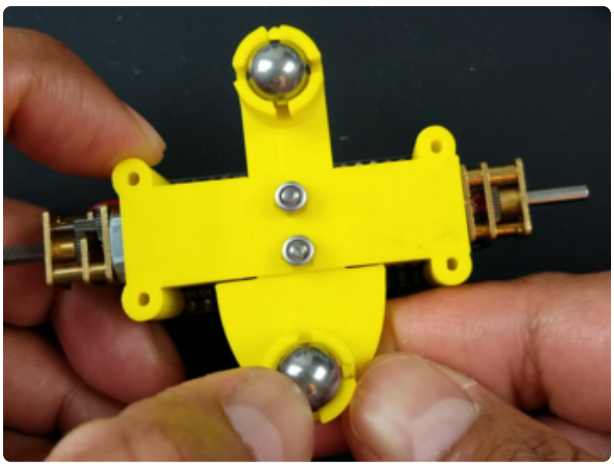
Push in the motor connectors to the board. They can only be inserted in one direction, so don't worry about reversing the connection.



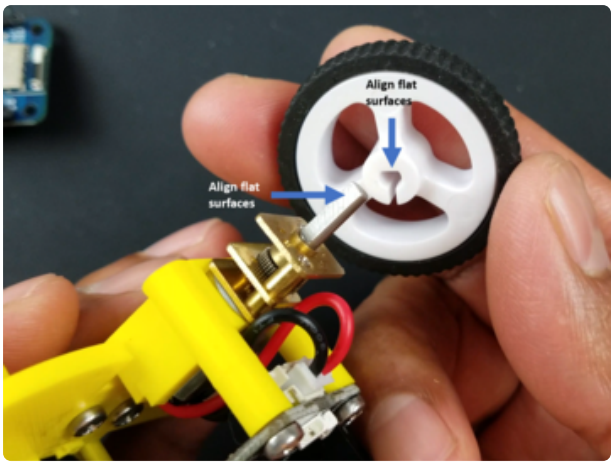
Screw in the robot board to the chassis using the 4 short screws provided. Ensure that the L and R orientation of the board is correct prior to screwing in.

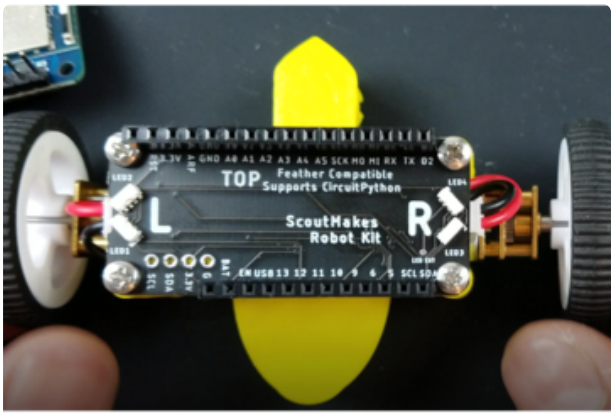




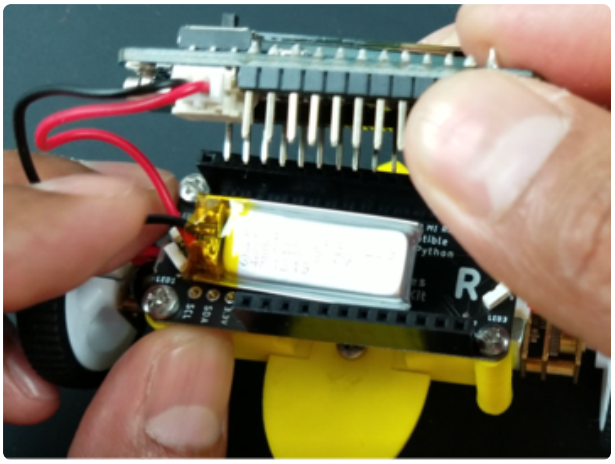


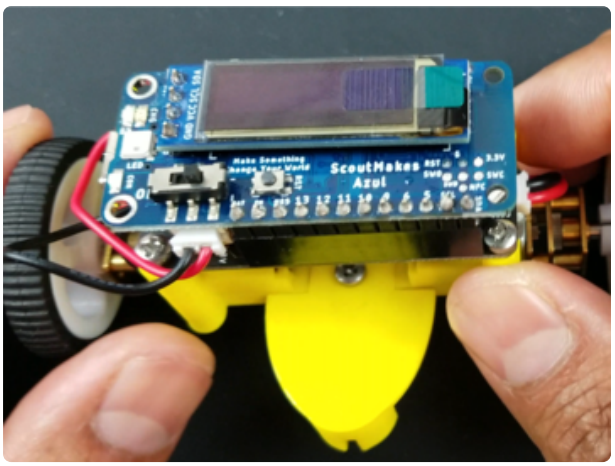
Press fit the 2 ball bearings onto the caster holders.





Install the wheels onto the motors. The wheels just press-fit onto the motor shaft. Ensure the flat surfaces on the motor and wheel line up and press.





Connect the Azul bluetooth board to the robot board. Ensure the headers line up correctly prior press fitting the 2 boards. The lithium polymer battery can be tucked between the 2 boards.

We can now turn on the robot!

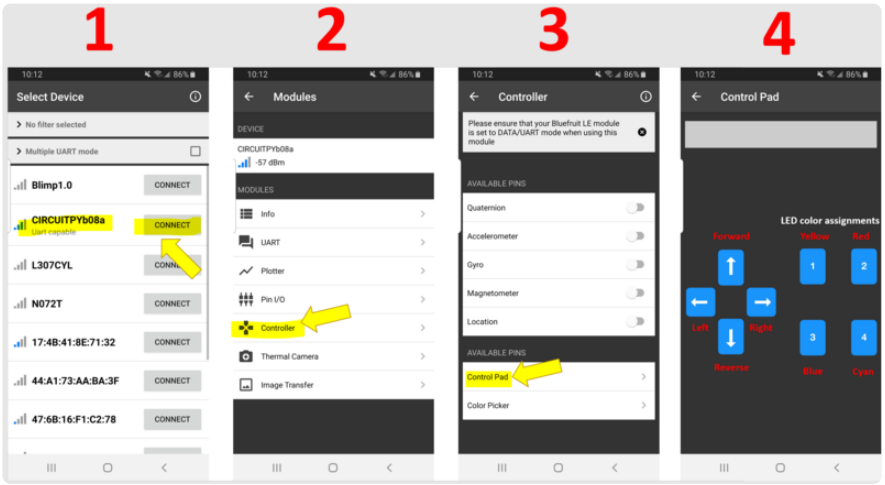
If the battery needs to be charged, connect a type-C USB cabled to teh Azul Bluetooth board which has built-in Li-Po battery charging circuitry.

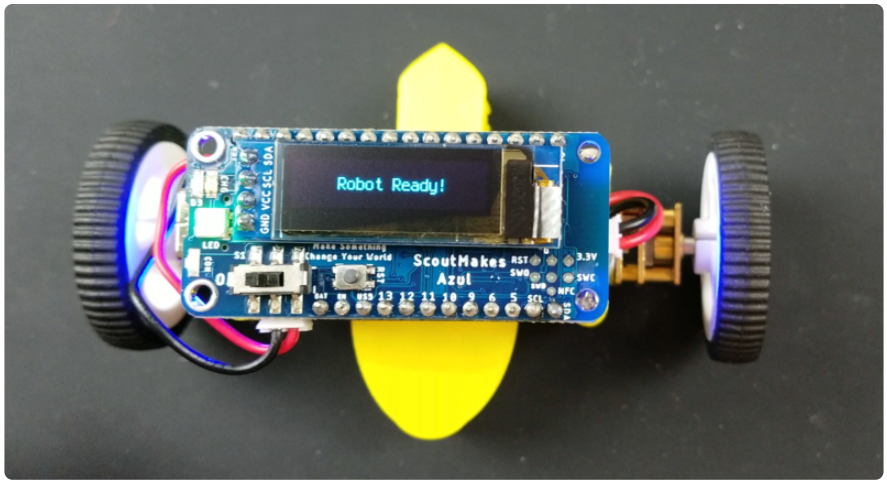
Code & Control

The Azul in the robot kit comes with a test program already loaded. So, when the slide switch is flipped to the ON position, the OLED screen will show "Robot Ready".

Connect to the robot using the Adafruit Bluefruit Connect app available in Android (https://adafru.it/f4G) or iOS (https://adafru.it/RE7).

Below are the steps 1-4 to connect to the robot via the app. Click on each highlighted button with the robot powered on.

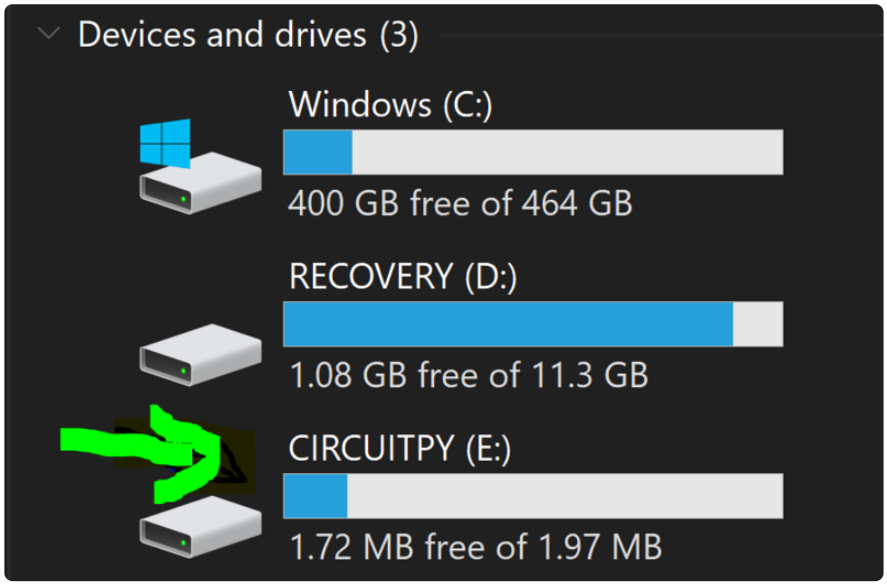




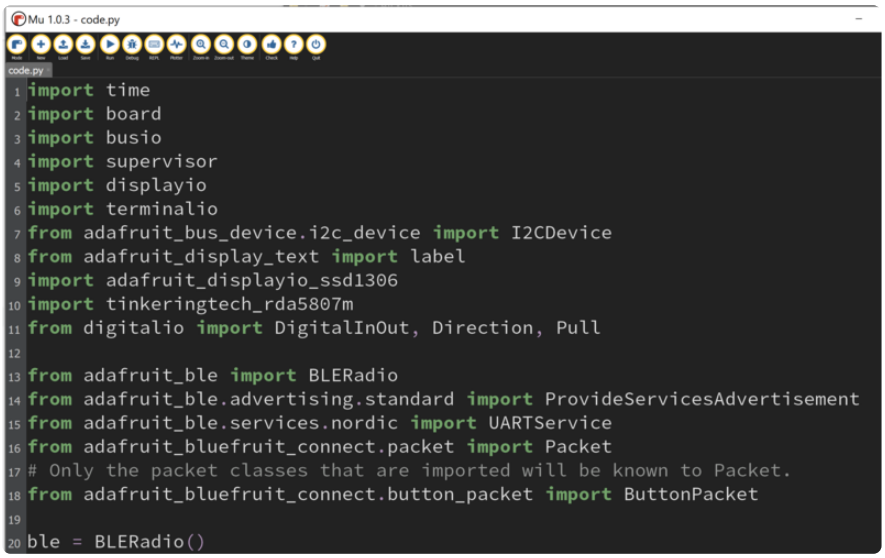
Modify the code

Modify the CircuitPython code on the Azul.
Our favorite code editor is Mu (https://adafru.it/Be6).

In order to modify the code, simply connect the supplied USB cable to the Azul and Azul will show up as a drive on your computer as CIRCUITPY.



You can then load the code.py file onto your Mu editor to modify the program (click the Load button on the Mu menu and navigate to the Azul drive in your PC).



Downloads

Design files and robot example source code (https://adafru.it/REa)

Tinkercad robot chassis source project (https://adafru.it/REb)