MIT App Inventor Codi Bot: Standalone demo

30 mins

(including Arduino IDE setup)

Level: advanced

This tutorial will test the hardware functions of the Codi Bot, separate from App Inventor. It is suggested you complete this tutorial first, before completing the App Inventor tutorials to add control to your Codi Bot through your mobile device.

- **source .ino**

MIT App Inventor Codi Bot

MIT App Inventor Codi Bot is an interactive robot to demonstrate App Inventor IoT.

We've use **LinkIt 7697** as the core MCU board to control all I/O peripherals and the interior is design based on it. In fact you can replace LinkIt 7697 with any MCU board supporting Bluetooth Low Energy communication.

You can extend more applications with App Inventor IoT **here**.

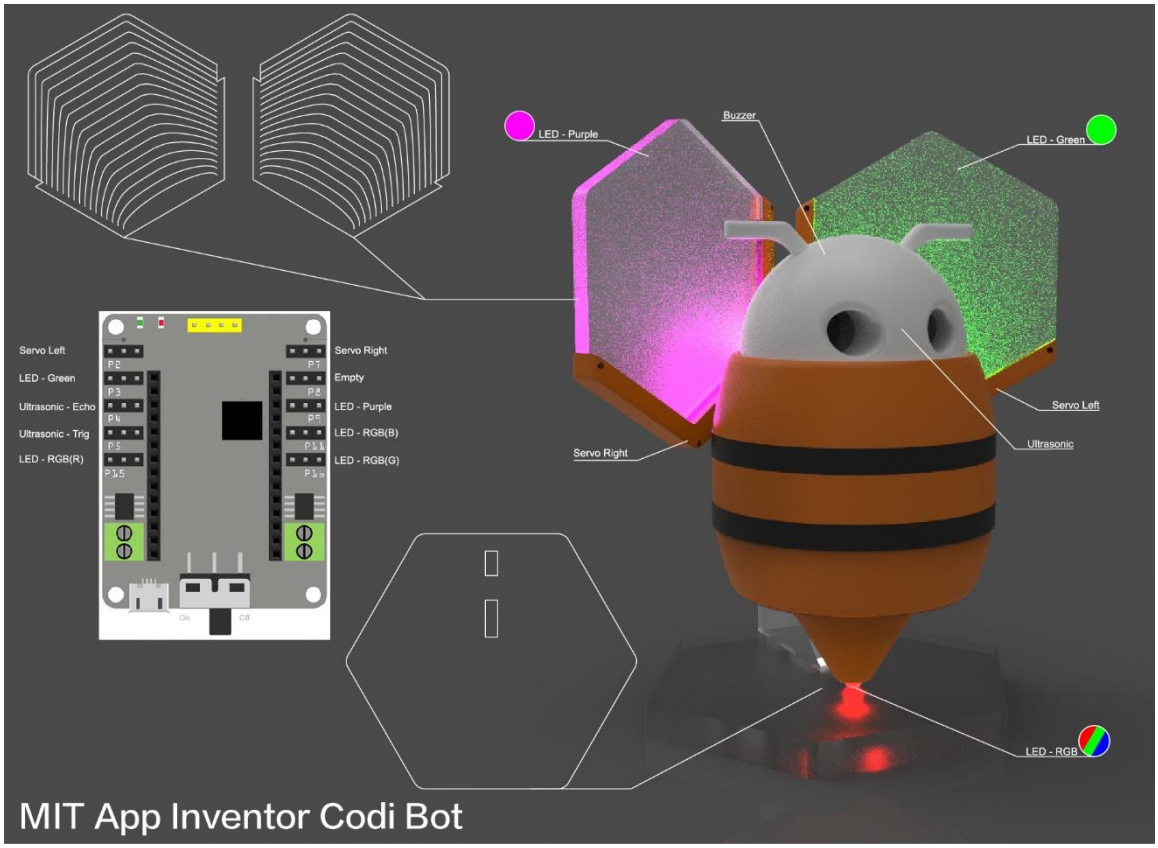
Hardware

Please follow this **building guide** to assemble your Codi Bot.

Part list:

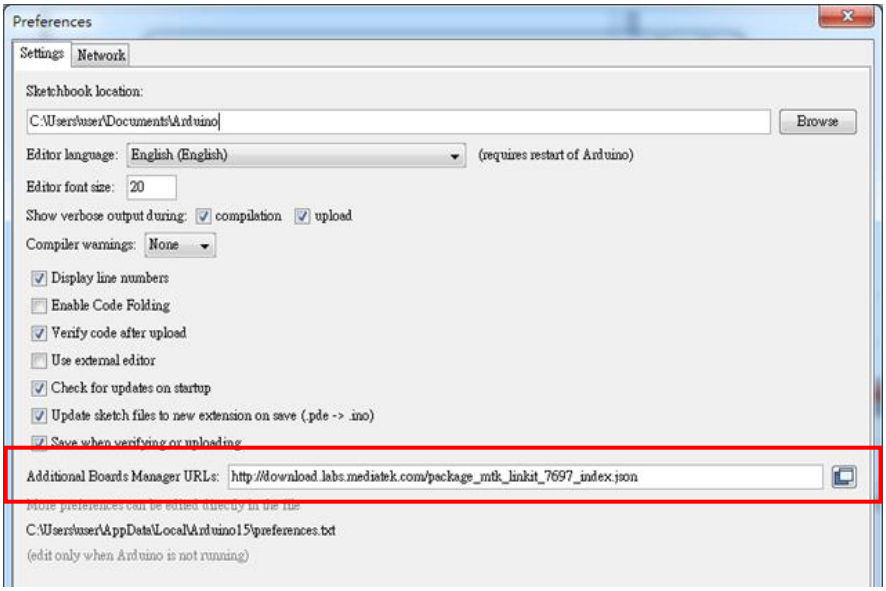
The Codi Bot kit included the following I/O parts:

1. **LinkIt 7697 MCU board**, 1
2. **RobotShield extension board**, 1 (with an onboard buzzer)
3. RGB LED (common cathode), 1
4. **LED stripe green** (left wing), 1
5. **LED stripe purple** (right wing), 1
6. mini servo motor (SG90), 2

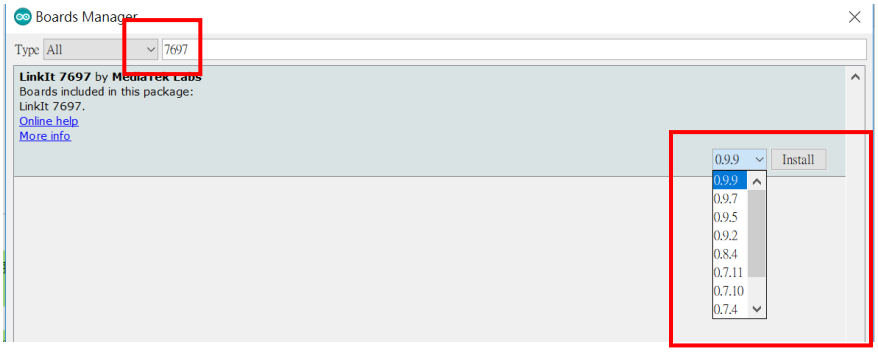


Arduino IDE Setup

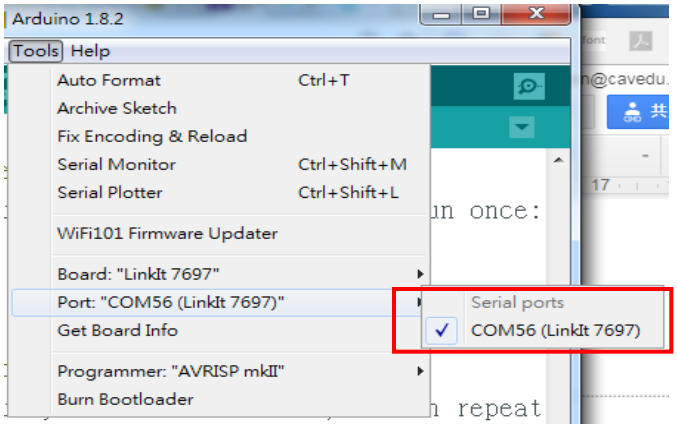
1. First, get Arduino IDE 1.8.x version from **arduino.cc**, download the .zip file, unzip and click **arduino.exe** to open the IDE.
2. From **File/ Preference** menu, enter the link below to Additional Boards Manager URLs field:
    - http://download.labs.mediatek.com/package_mtk_linkit_7697_index.json



3. Open **Tools/ Board/ Board Manager**, then search for "**7697**" and install the latest version of 7697 SDK.

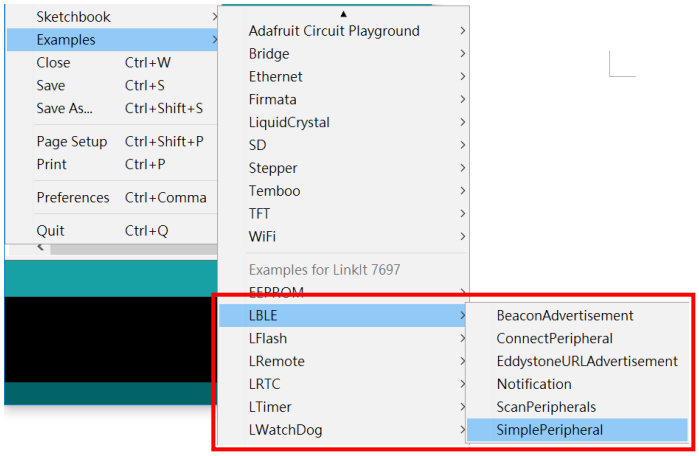


4. Download and install the **CP2102N driver**(Windows / MAC/OSX) , then check the COM port in your Device manager. Look for "**Silicon Labs CP210 USB to UART Bridge(COMXX)**", this is the COM port number of your LinkIt 7697.
5. For MAC users, it should be something like "**/dev/tty.usbserialXXX**…" and forWindows users, please check the picture below:



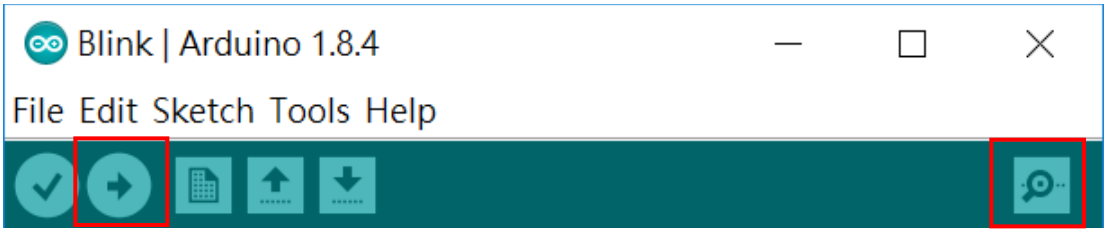
Arduino sketch

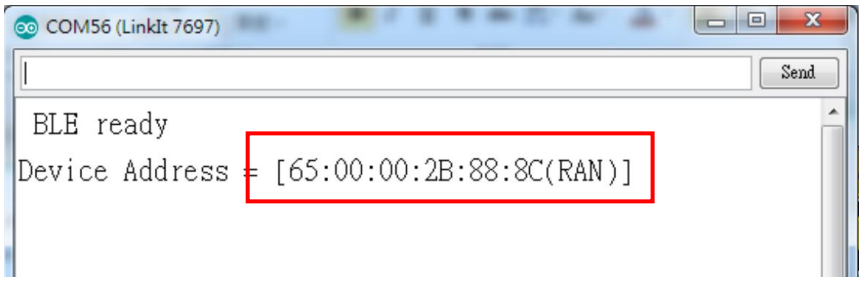
1. Please open **this sketch** in your Arduino IDE, this sketch is to check all peripherals of Codi Bot work correctly (**video**).
2. For safety reasons, not every board is marked with its Bluetooth address on the board (Arduino 101 is an exception). In Arduino IDE, first set the board to "**LinkIt 7697**" then open example "**SimplePeripheral**" from **File/Examples/LBLE** menu.



3. Set the Board from **Tools/ Board** menu to "**LinkIt 7697**" and set COM port from **Tools/ COM port** to what you've discovered in Device Manager.
4. Connect the LinkIt 7697 to your computer with a micro-USB cable.

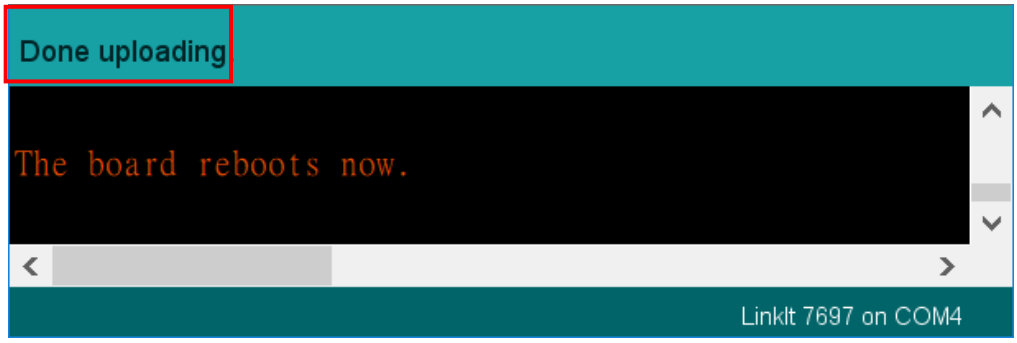
5. Press the "**Upload**" right-arrow button, this will compile and upload the Arduino sketch in Arduino IDE to your LinkIt 7697. Please make sure you see the "**done uploading**" message in the console below.





Run Codi Bot standalone code

Please download **the sketch** and upload to your LinkIt 7697.
Press the "**Upload**" right-arrow button, this will compile and upload the Arduino sketch in Arduino IDE to your LinkIt 7697. Please make sure you see the "**done uploading**" message in the console.



Codi Bot will flap its wings and changing the RGB LED color randomly. Put your hand in front of Codi Bot's "eye", which is actually an ultrasonic sensor, its wings will light up with purple and green color. We set the distance as 15cm in the Arduino sketch, you can modify this value and upload again the sketch to your Codi Bot.

Video: https://youtu.be/Tj4fRxPBwqg

Troubleshooting

1. Wings, LEDs are not functioning?
    - Check your Robot shield is switched on.
    - Robot Shield may run out of power, connect it to your PC/laptop USB port by an USB cable.
    - Most problems came from wiring, please always check you've connect all the components correctly. (refer to **pin mapping section of user manual**).