# Maker Den Hardware Setup

## Device Hardware and Software requirements

1. Windows 10 PC. See <http://ms-iot.github.io/content/en-US/win10/SetupPCRPI.htm> for full setup requirements.
2. Internet Connection Sharing on each development PC to enable the Raspberry Pi to pass through internet requests – see [Enabling Internet Connection Sharing](http://windows.microsoft.com/en-us/windows/using-internet-connection-sharing#1TC=windows-7).
   1. The advantage of using ISC is that each device sets behind the NAT provided by ISC. The Raspberry Pis can connect out, but they are isolated from other development PCs in the Maker Den.
3. PC with two network interfaces
   1. One wired Ethernet port to connect to the Raspberry Pi (or use USB Ethernet dongle if no wired Ethernet port)
4. One Ethernet or Wifi port connecting to the Internet

## Recommendations

1. The default name for a freshly installed Raspberry Pi 2 is “minwinpc”. Suggest you rename all the devices to be used in the Maker Den to avoid Raspberry Pis that may be running elsewhere on the network with the default name being detected. Suggest you pick a name that presents the event you are running and name all the Raspberry PIs this name.
   1. Renaming is easily achieved via the Windows 10 IoT Core Web Admin console.
   2. You’ll use this name in the Maker Den Setup

## Maker Den Setup and Configuration Process

|  |  |
| --- | --- |
| What | Where |
| Installed Git for Windows command line tool on each machine | <http://git-scm.com/download/win> |
| Create Maker Den Bootstrap | <https://raw.githubusercontent.com/MakerDen/IoT-Maker-Den-Documentation-and-Guides/master/Resources/Setup/Bootstrap.bat> |
| Maker Den Solution (fyi) | <https://github.com/MakerDen/IoT-Maker-Den-Windows-for-IoT> |

1. Install the [Git for Windows](http://git-scm.com/download/win) Client
2. Create the Maker Den Bootstrap.bat. Click [here](https://raw.githubusercontent.com/MakerDen/IoT-Maker-Den-Documentation-and-Guides/master/Resources/Setup/Bootstrap.bat) and copy and paste contents to a new Bootstrap.bat file for local distribution.
3. Execute the Maker Den Bootstrap.bat file. This will create a MakerDen directory on the c: drive, clone the Maker Den Documentation, snippets, and lab reset bat files, then clone the Maker Den solution to the MakerDen\Source directory.

## Lab Hardware

The following components are used for the Maker Den.

|  |  |
| --- | --- |
| [**Raspberry Pi 2**](https://www.raspberrypi.org/)  These labs are built on the Raspberry Pi 2 running Windows 10 IoT Core.  You can find out more about Windows 10 IoT Core at <http://dev.windows.com/iot>. | http://www.raspberrypi.org/wp-content/uploads/2015/01/Pi2ModB1GB_-comp.jpeg |
| **Analogue Temperature Sensor** ([Microchip MCP9700A](http://www.microchip.com/wwwproducts/Devices.aspx?dDocName=en027103))  Reads the temperature and reports it as a value in Degrees Centigrade. | Microchip MCP9700A-E/TO 3-pin TO-92 Through Hole Temperature Sensor, 4.71 x 3.62 x 4.62mm |
| [**Light Dependent Resistor (LDR)** aka Photoresistor](https://en.wikipedia.org/wiki/Photoresistor)  A Light Dependent Resistor changes its resistance depending on light levels. | [https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcS7aJjceKsyMzGE1q812OdRM1MEnMNXG4Blk3EmSvSPCuXXRqPC](http://www.google.com.au/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&docid=9BBNCLtyZX5mFM&tbnid=rncu010iSzWXsM:&ved=0CAcQjRw&url=http://www.tiendaelectronica.com.ve/1241-fotoresistencia-10k-7mm.html&ei=Gn4jVKO_A4vM8gXO5YK4Ag&bvm=bv.76247554,d.dGc&psig=AFQjCNE9yGeexa-4GrEn-7ac_B5kD18Vew&ust=1411698570357670) |
| [**Adafruit Mini 8x8 LED Matrix**](http://www.adafruit.com/products/870)  Great for displaying scrolling text and basic graphics | [Image result for adafruit mini led matrix](http://www.google.com.au/imgres?imgurl=http://ecx.images-amazon.com/images/I/51sic0i9ANL._SY300_.jpg&imgrefurl=http://www.amazon.co.uk/Adafruit-8x8-Mini-LED-Matrix/dp/B00K9M6POO&h=300&w=300&tbnid=HAxVXpH_hP5dUM:&zoom=1&docid=Y-68K6hGjir4qM&ei=dBqWVZ3uGczS-QGxtYCgDA&tbm=isch&ved=0CEEQMygbMBs) |
| [**Explorer HAT Pro from Pimoroni**](http://shop.pimoroni.com/products/explorer-hat)  Useful prototypng HAT for RPi, has I2C ADC, I2C capacitive touch pads, motor driver, and a breadboard for prototyping. | http://cdn.shopify.com/s/files/1/0174/1800/products/explorer-hat-pro_grande.png?v=1424705343 |
| 1 x 10k resistor and breadboard wire jumper kit |  |

## Explorer Hat Pro Wiring

