**Preface**

This tutorial assumes some background knowledge of programming, but no prior experience with Raspbian (or any Linux distribution), GPIO microprocessors (RPi, Arduino, etc), or Python. References may be made to previous tutorials.

My main programming languages are Java, C#.NET, and VB.NET. You may notice some slight differences between my Python code and the standard conventions and formatting for Python. This should not affect your understanding of the code.

**Goal**

Set up your Raspberry Pi 3 to be ready for creating an IoT Hub device.

**Getting Started**

This quickstart guide will help you fast-forward through the setup procedure of your Pi 3. While it is almost always better to be thorough in installation and updating your device, I’ll take you through a straightforward list of steps to ensure that your Pi will be ready to connect to the Azure IoT Hub service quickly and painlessly.

Prepare your peripherals for your device. You will need a keyboard and some sort of monitor connected through HDMI. Note that some of the smaller screens made for Pi’s may require a driver that your device doesn’t have. It is recommended to perform the initial setup with a regular computer monitor or television screen with HDMI input. USB wireless-dongles should work, but in case they do not, it may be better to use a wired keyboard instead. A mouse isn’t absolutely necessary, but it will help speed things along.

**NOOBS**

The Raspberry Pi website’s ‘Downloads’ page has a link towards a ZIP file called “NOOBS”, which stands for New-Out-Of-Box-Software. If your Pi came with a microSD card with NOOBS pre-loaded, go ahead and skip to the next step. If not, using a microSD-to-USB or microSD-to-SD adapter, connect your card to your computer. You may format the card if you want. Visit the Raspberry Pi website and download the NOOBS zip. Extract all the files from within the NOOBS zip into the microSD card. The files should be placed at the root directory, and not within another folder.

**Installation of Raspbian**

Raspbian is a special build of Debian made for the Raspberry Pi. We’ll be installing it from the microSD card with NOOBS on it. (Safely!) remove the card from your computer and insert it into the Pi’s microSD card slot.

Prior to powering the Pi on, be sure to attach the heat sinks to their respective chips. The setup process will be processing intensive, so keeping the CPU cool will prevent internal heat damage.

Plug in the power cable to your Pi, and wait for it to boot. Once it does, a window will appear asking which operating system you want to install. Although the Windows IoT Core OS sounds tempting, we’ll need to use Raspbian for the rest of the tutorials, so select “Raspbian” and install it. Notice that it is described as a “community-create port of Debian jessie” – ‘jessie’ refers to the build name.

The installation will take some time. Once this completes, you will be brought to the desktop. Familiarize yourself with the ‘start menu’, looking for the Python 2 IDLE launcher in particular. When you think you’re ready to finish the setup, start up a new ‘Terminal’ or command interpreter. We’ll have to update your Pi’s packages to get them all up to date.

Before we start downloading new updates, however, you’ll need to connect your Pi to the internet. If you’ve used a LAN cable, then you should be good to go. If you’re using Wi-Fi, set up your network connection by clicking on the network icon at the top right. Test your network connection – if it’s connected but you can’t load any webpages, make sure you’ve set the correct region, time, and WiFi country code. A quick look online will tell you what to set.

Once you’re all connected, close out of any unnecessary windows except for the Terminal – we want to conserve what little RAM we have onboard.

We’ll need to enter two commands into the terminal. The first is:

sudo apt-get update

This will take a few seconds. When the Terminal prompts you for the next command, enter:

sudo apt-get dist-upgrade

This second command updates your Raspbian image to the latest version available and may take a while to complete.

If your microSD card had NOOBS pre-loaded, you may notice a very large change in appearance during this upgrade because your card may have an older version of Raspbian prepared. If you manually downloaded NOOBS, you may not notice any differences at all. Regardless, it is important to keep your device up-to-date to prevent issues with old dependencies.

**Finish Up**

Your Pi is now ready to rock! I strongly recommend you spend a few minutes playing around with the menus and various options. If connecting to an external monitor is an inconvenience to you, look into setting up VNC to allow you to remote-desktop into your Pi. Don’t forget to enable it from within the Raspberry Pi Configuration tool.

Congratulations! You are now ready to proceed into *Tutorial 1*, where we’ll set up your Pi as an IoT device and create an IoT Hub.