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**Basic set up:**

To begin this project you must download and set up your environment for the Pi.

<http://www.raspberrypi.org/downloads>

This link gives the different environments that can be downloaded, I used Raspbian. To install, download the image file for the wheezy release and extract onto an SD card of at least 4GB in size.

Once the image of the environment is on the Pi, insert the SD card into the Pi.

To use your Pi you will need a power supply, the SD card with the OS on it, a display cable, a keyboard, and an Ethernet cord. If you want to use the GUI for the Pi then you will also need a mouse for navigation.

The first time you use your Pi, you will need to set up the basic configurations. The tool raspi-config should be the first screen you see when you power up your Pi. This allows you to configure your basic settings. If you want to access it again, type:

Sudo raspi-config

If you would like to access the Pi GUI instead of the command-line interface, use the following command:

Startx

**Installations:**

**Git:**

After your Pi is configured and you have explored the GUI and basic commands in the terminal, you will need to install a few packages to begin the project. You will need to have the Pi connected to an Ethernet cable in order to download packages. This is done by using the apt-get command. The apt-get command is also used to update packages you already have. First I installed git so that I could have a remote repository to keep all project files. To install git:

sudo apt-get install git-core

If you get any errors use the following commands to make sure your Pi is up to date

sudo apt-get update

sudo apt-get upgrade

Go to www.github.com and create a repository. Then clone your repository onto your Pi:

git clone <your\_repository>

Practice the different options and functions of git using the following tutorial: <http://git-scm.com/book/en/Git-Basics>

**Node.JS:**

Then install the node.js package. First make a directory for node.js:

sudo mkdir /opt/node

Then download and unpack the binary package, and put it in your node folder:

wget http://nodejs.org/dist/v0.10.2/node-v0.10.2-linux-arm-pi.tar.gz

tar xvzf node-v0.10.2-linux-arm-pi.tar.gz

sudo cp -r node-v0.10.2-linux-arm-pi/\* /opt/node

Add node.js to your path variable. To do so you need to edit your profile configuration file.

nano /etc/profile

Put The following lined into this file before the export command

NODE\_JS\_HOME="/opt/node"

PATH="$PATH:$NODE\_JS\_HOME/bin"

export PATH

After this is complete, restart your Pi by logging out and then back in. Continue your set up and start up of node.js according to the following link: <http://blog.rueedlinger.ch/2013/03/raspberry-pi-and-nodejs-basic-setup/>

Complete the following tutorial on node.js before you move on <http://net.tutsplus.com/tutorials/javascript-ajax/node-js-for-beginners/>

**SQLite:**

The database I used in this project is SQLite. To install this use:

sudo apt-get install sqlite3

to create a database use:

sqlite3 database.db

When the changes are committed this database will be created. To create the table with temperature and time information, use the template in the following link: <http://raspberrywebserver.com/sql-databases/set-up-an-sqlite-database-on-a-raspberry-pi.html>

**Quiche:**

With these packages you can now take temperature data and send it to the database. In order to display this data use the Google Chart tools, quiche. To install this use:

npm install quiche

The following repository contains the different templates for creating different types of charts (bar, chart, line, pie, scatter, etc.): <https://github.com/ryanrolds/quiche>

You can now view your temperature data and the corresponding time in a chart and a graph.

**References:**

<https://github.com/ryanrolds/quiche>

<http://www.techradar.com/us/news/computing/pc/how-to-get-to-grips-with-your-raspberry-pi-s-command-line-interface-1161712>

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<http://www.raspberrypi.org/downloads>

<http://elinux.org/RPi_Easy_SD_Card_Setup>

<http://elinux.org/RPi_Beginners>

<http://webrpi.wordpress.com/2013/10/02/sqlite-temperature-logging-on-a-raspberry-pi/>

<https://developers.google.com/chart/interactive/docs/quick_start>