# Arduino step by step tutorial

By: Dom, Haet, Puneet and Noah

Introduction

An arduino is an open-source platform used for building electronics projects.[1] An arduino includes a physical programmable circuit board and an IDE (Integrated Development Environment) which is a software that allows you to interact with the arduino. Arduino runs in simplified C++ which is a programming language that allows first time users to easily understand but in this PDF we will give you a step by step method on how to create a morse code translator! The user would input text into the computer and the audino will convert the text into morse code. We will be using Github to setup the coding aspect of the arduino.
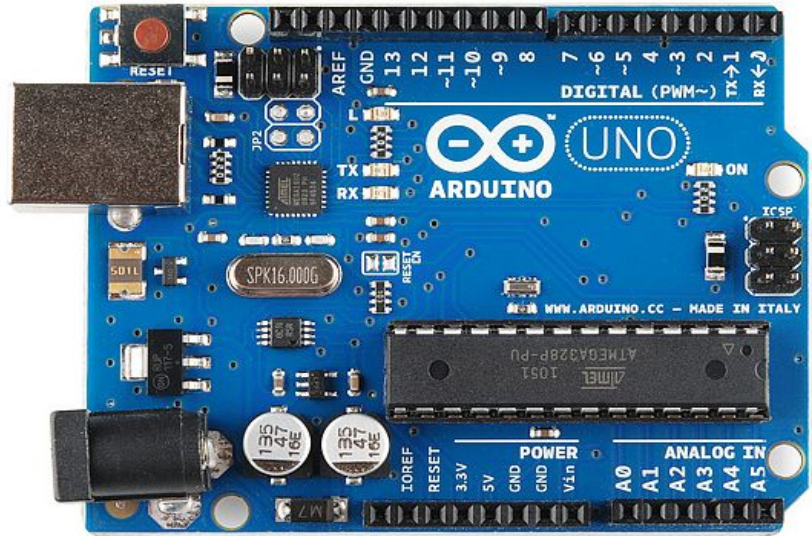
Github is an internet hosting service where it gives users easier management in source code. Github provides a Web-based graphical interface, this interface will make the download process of this tutorial much easier. We will be able to download the code from Github and upload it to the arduino. Once you know how to download code, you will be able to download code from other developers and do much more with the arduino but for now we will stick with the morse code.
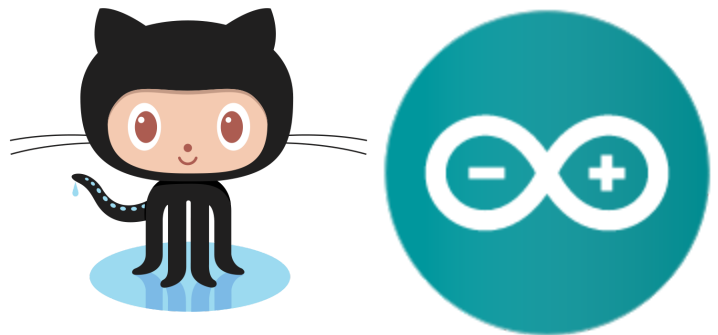
Firstly we will look at the budget aspect of this tutorial, you will need to know what pieces of equipment are needed to start this project. We also need to know how much of each equipment is needed also how much it will cost to start this project. After looking at the budget we will look at the hardware aspect of the audino, giving you a step by step method on how to set up the physical hardware of the audino. Finally we will look at the software aspect of the arduino by setting up the code using Github.

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[1]Source
 https://learn.sparkfun.com/tutorials/what-is-an-arduino
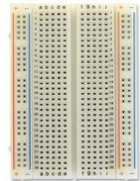
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Equipment

The Equipment we are going to need to be able to use the arduino:

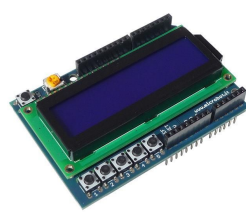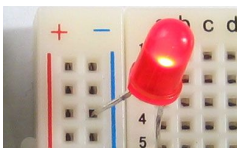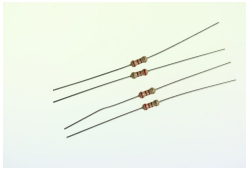| Equipment	Quantity	Cost
Arduino	1	£18
Breadboard	1	£5
Wires (Male to Male) Wires (Male to Female	20 10	£11
Buzzer	1	£3
LED screen	1	£10
LED's	1	£3 (Pack of 10)
Resistor	2	£2 (Pack of 10)

The images will give you a better picture of what the equipment looks like.

Equipment	Picture
Arduino	
Breadboard	

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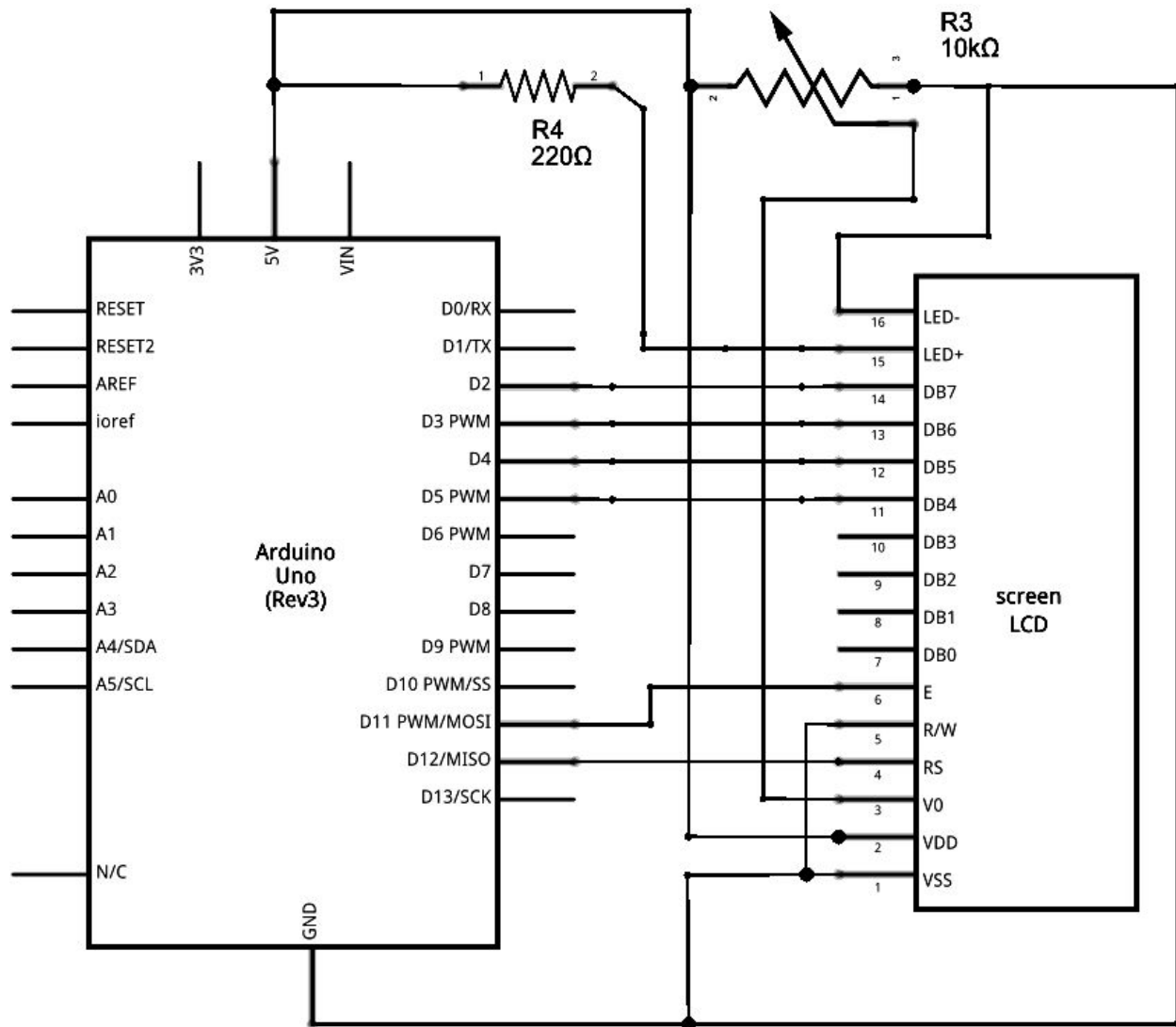|	
Wire (Male to Male	
Wire (Male to Female	
Buzzer	
LED Screen	
LED's	
Resistors	

Once you have acquired all the equipment, we will be able to start to setup the hardware aspect of the arduino.

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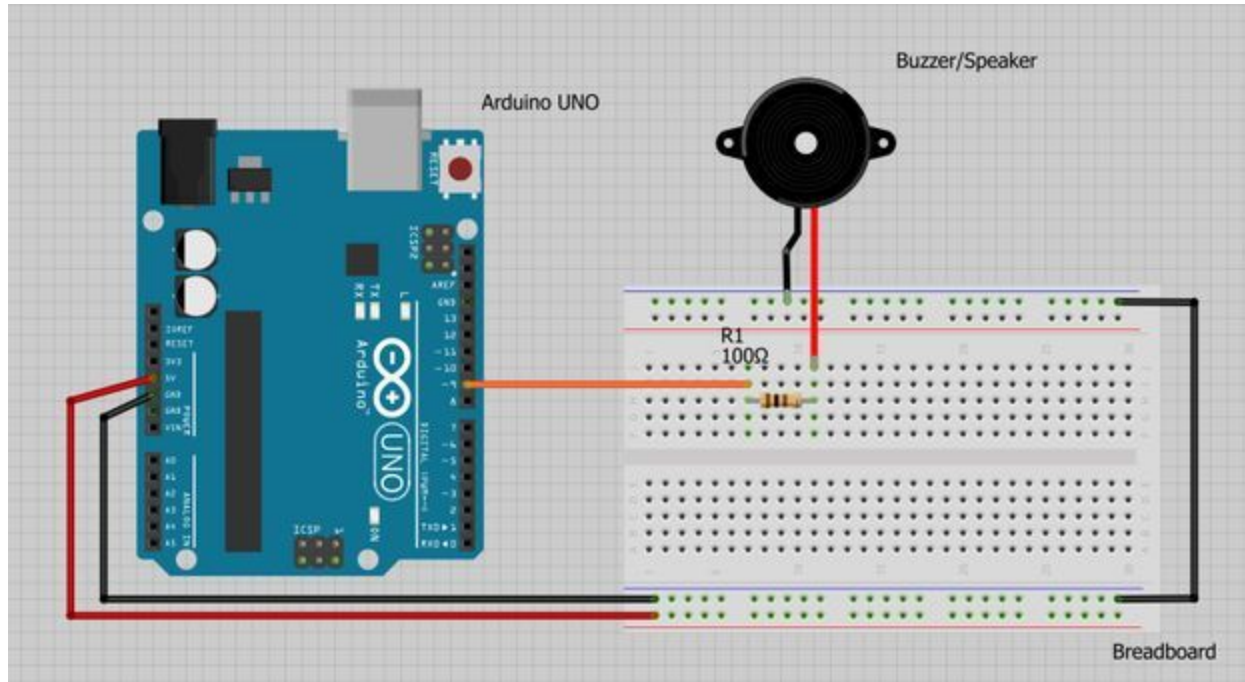
Hardware Setup

To setup the arduino follow these graphs below:

This schematic shows how to connect the LCD screen to the arduino.

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Optionally you can connect the LED just to have some flashing to represent the signals.

You can use this as a reference but preferably you would want to have the whole of the arduino in some casing.
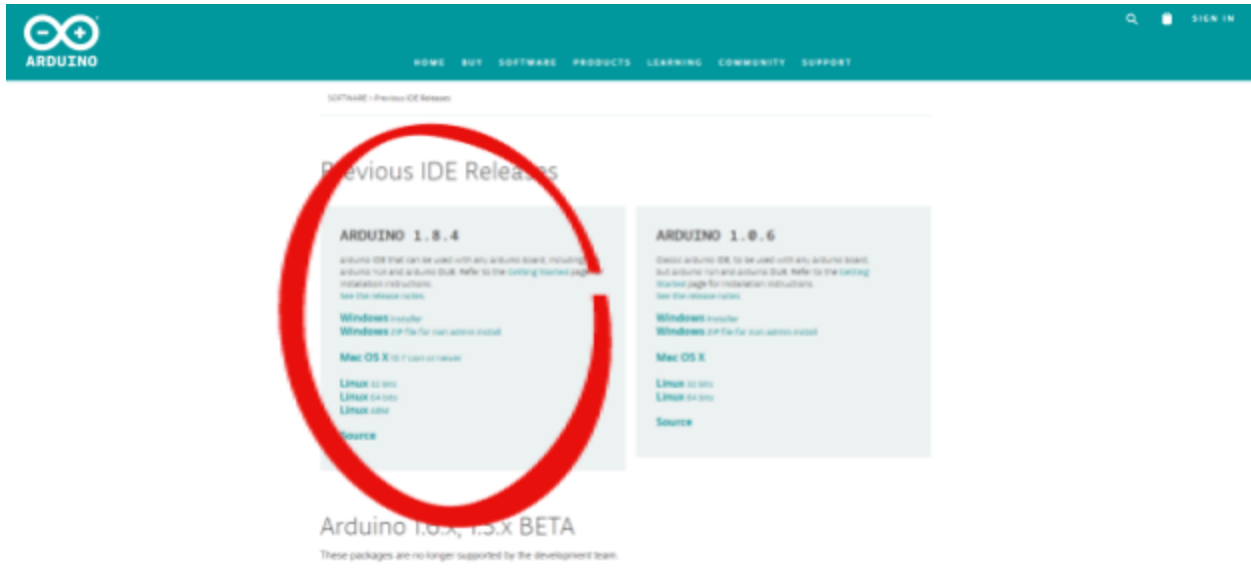
Software Setup

We must download the **IDE** (Integrated Development Environment) to be able to program the arduino. Please copy this link:

https://www.arduino.cc/en/Main/OldSoftwareReleases

Download the 1.8.4 version and make sure you download the one which matches your operating system.

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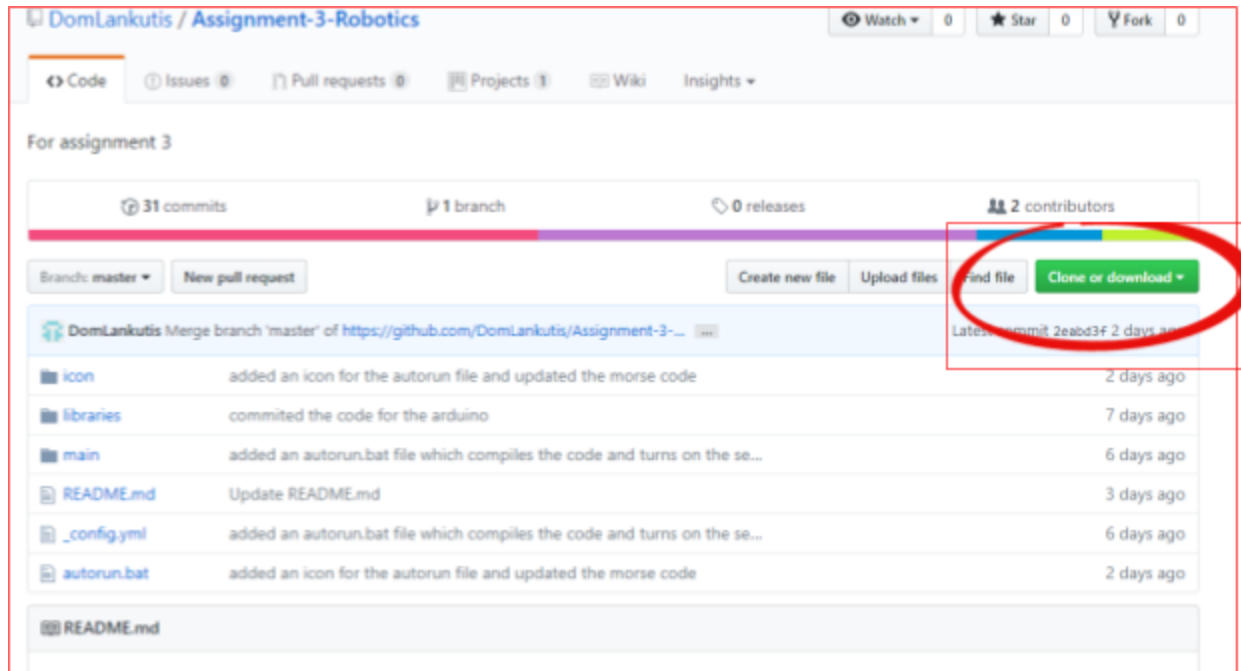Run the .exe file to install the arduino. Make sure you click **next** and then click **I agree**.

Go to github and search for **Assignment-3-Robotics** or copy this link
https://github.com/DomLankutis/Assignment-3-Robotics

The next step is to Click on **Clone or download**

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Now you must download the ZIP file. You do have the option to open in desktop but you must first download Github to use this feature but to keep this simple please click on **Download ZIP**
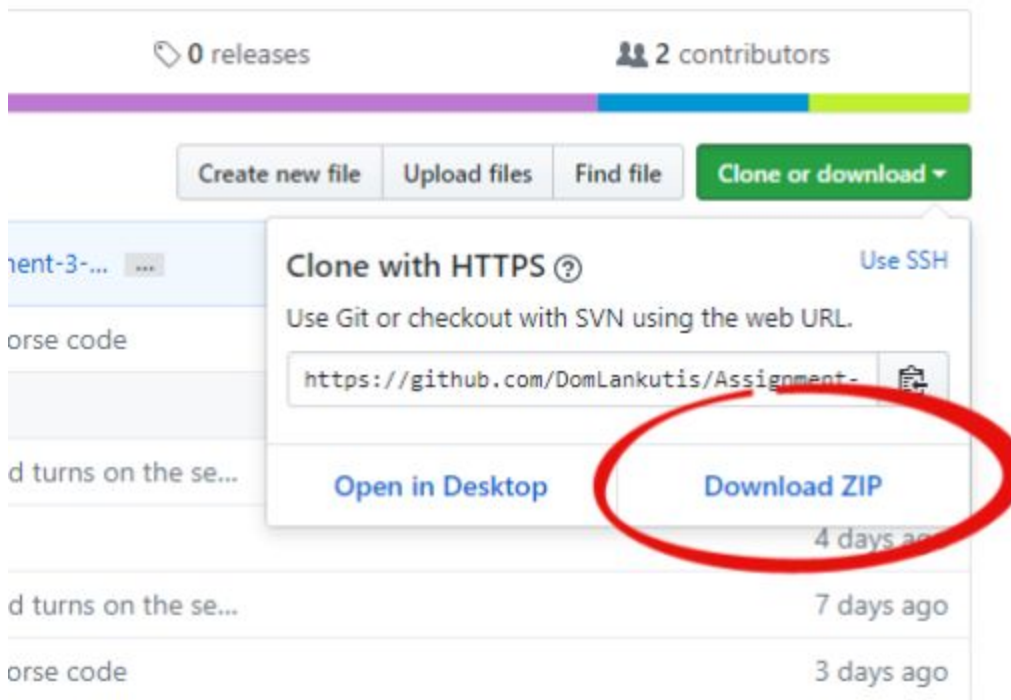
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Once You have downloaded the ZIP file, click on the up arrow and click on **Show in Folder.**
Then create a new folder to keep the ZIP file in.

For the next step we need a software called WinRAR to extract the files, if you don't have
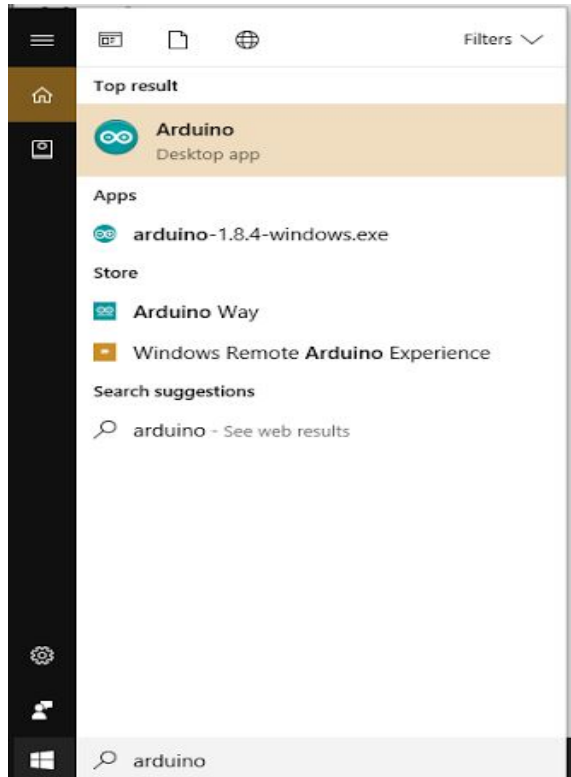WinRAR please go to this link and download it
https://www.win-rar.com/start.html?&L=0

Once you have downloaded WinRAR, **Right click** on **Assignment-3-Robotics-master.zip** and
click **Extract here**.

This folder should appear and you should be able use this folder with the IDE (Integrated
Development Environment)

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Launch up the arduino and go to **file** and **open** or you can press **ctrl + o** .

Once you have found the folder, click on **Assignment-3-Robotics-master**
Next you double click on **Main** and then double click on **Main.ino**

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You're done! Use these two buttons to upload the code to the arduino!