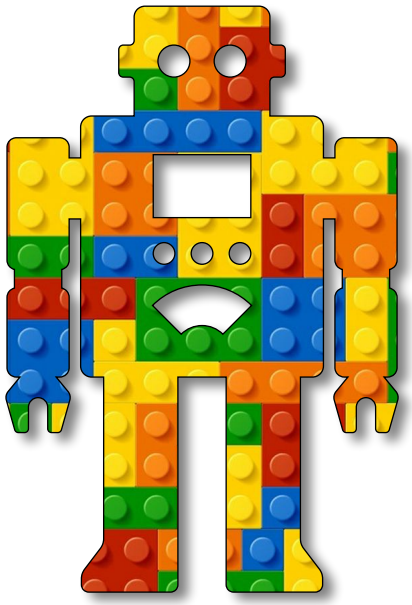
Intelligent Machines
Module A
Unit #2
the software



Content

Module A unit #2 software

Introduction to the software needed

To put code onto your device, in this case the Arduino Nano 33 BLE, you need a bit of software to help you. This is called an IDE, which stands for:

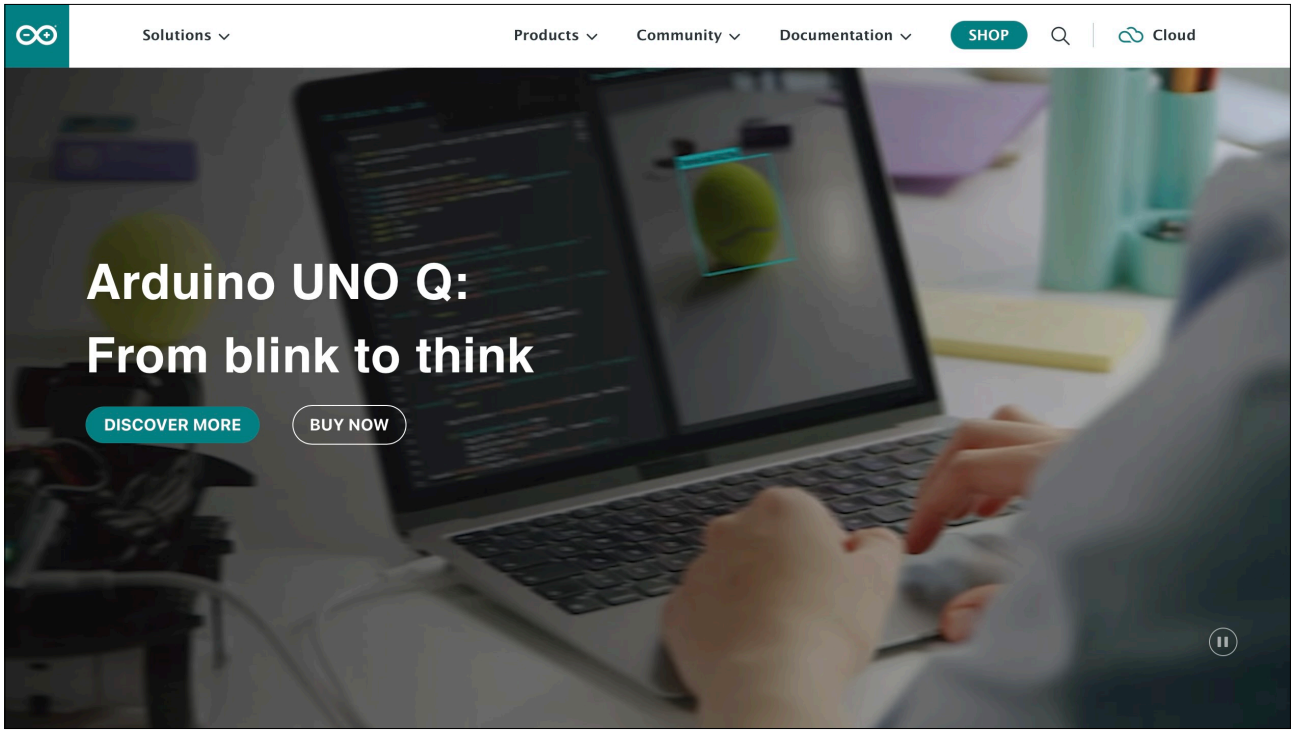
"Integrated Development Environment, a software application that combines common tools for writing and testing software code into a single graphical user interface (GUI). It streamlines the development process by providing a central platform for tasks like editing source code, debugging, and building applications, making developers more productive".

In other words, this is where you type in your code and send it to your device. An IDE can use any user-friendly language. It interprets what you write and converts it into meaningful code for the device. The coding language we are going to be using for the Arduino IDE is C/C++. It is very similar in format to p5.js.

The home page

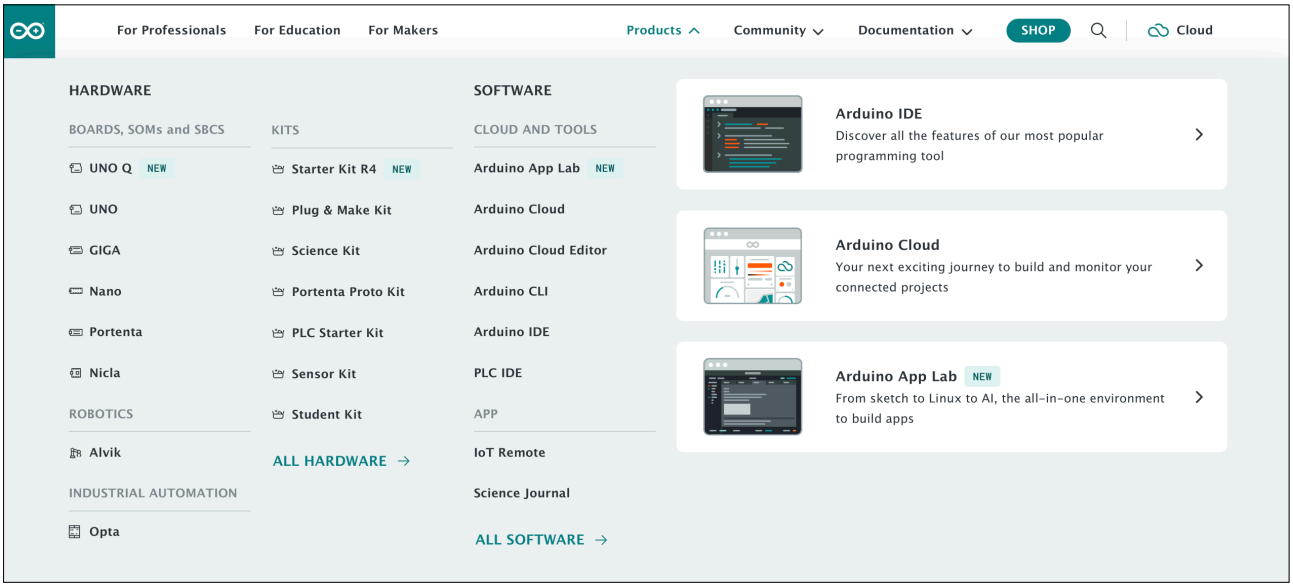
You will need to download the software to upload the computer code to the Nano. Go to the Arduino website at: https://www.arduino.cc/

Figure 1: Arduino home page



And click on the Products tab and then click on the Arduino IDE.

Figure 2: Arduino IDE



Download Arduino IDE

Then download the appropriate one for your operating system. You will see that there is a version 2.3.6 (as of writing).

Figure 3: download IDE

The icon

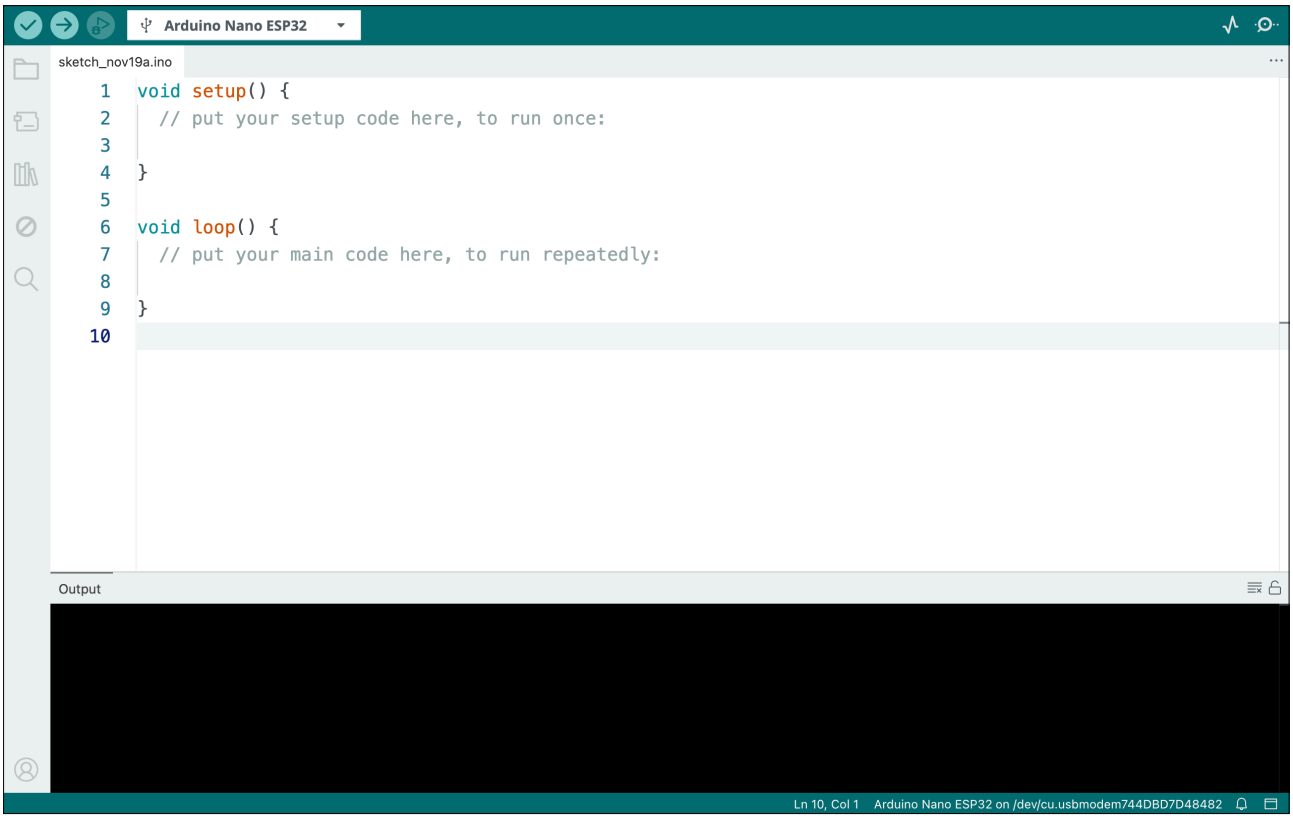
Once you have downloaded the software (you may be given the option to donate, but you don't have to), open it up. You should have a symbol like this. Click on it to open it up.

Figure 4: Arduino IDE icon

Once you have downloaded the software and opened it up, you should get a page like this. My preference is to delete all that and learn by typing it in again. Just like p5.js, all the code is called a sketch.

You will notice that instead of `function setup()` and `function draw()`, we have `void setup()` and `void loop()` instead. It is tantamount to the same thing.

Figure 5: default sketch



🗒️ Notes

Just in case you are new here:

1. All the code that goes between the curly braces in the `void setup()` function happens just once.
2. All the code that goes between the curly braces in the `void loop()` function is a continuous loop.

```
void setup()
{
  ........
}

void loop()
{
  ........
}
```

The buttons

When you want to upload the code, you press the arrow button (middle).

Figure 6: the main buttons

You may get an error message because it will first compile to check the code is OK, you can manually compile (left button tick) before uploading. The error message you get may or may not be very helpful. You can copy it and then see if there are any answers on the internet. Usually, there is a small typo somewhere, and the error message will give a hint.

Note: You may need to press the restart/reset button (grey) on the Arduino after you have uploaded. This is evident if the built-in LED is `glowing`.

Installing the board software

Just to make sure we have the right board software installed for the Arduino Nano 33 BLE, we go to the list of icons on the left-hand side. Click on the second one down (outline of an Arduino Uno) and you should get the tab BOARDS MANAGER. Type Arduino Nano 33 BLE into the search box.

You will get three; the top one is the one you want. Click INSTALL and wait for it to be downloaded. You will notice that I have already downloaded it. It is important to keep up to date with all software. You usually get a reminder if there is an update.

Figure 7: downloading the board software