Glow Your Own

Building and installing code onto your physical Arduino

You can build, test and code your circuits virtually on Tinkercad: www.tinkercad.com

If you would like to join the Glow Your Own class on Tinkercad, please log on to

https://www.tinkercad.com/joinclass/MUIZMQMRM **(class code: M U I Z M Q M R M)** and enter your login code– your login code has the form **gyo2026###** and everyone who signed up received a code with three unique numbers to use as the # keys.
If you need a new login code, please email visitral@stfc.ac.uk or ask in the Zoom chat during the session.

All Glow Your Own resources are in the individual events pages http://if-oxford.com/gyo

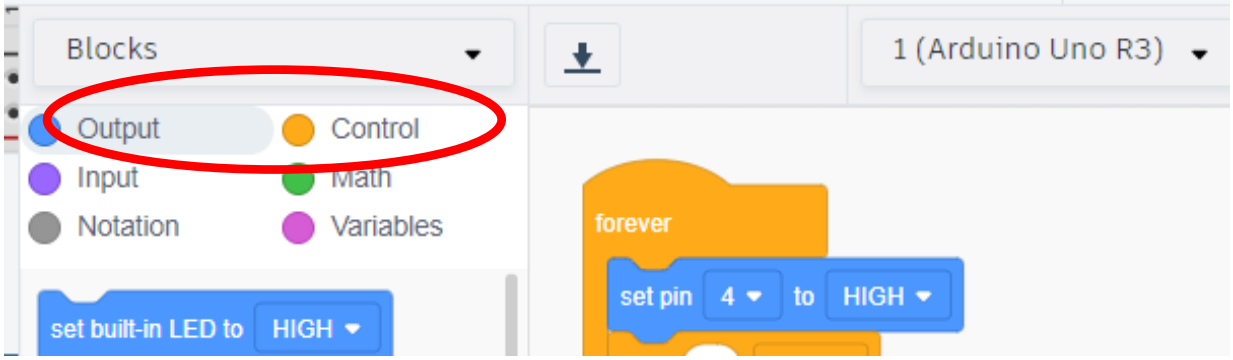
Remember, if you're building physical circuits with your real Arduino:

- Always remember to unplug your Arduino when you're changing components.
- Make sure all of the small components are kept out of reach of young children and pets.
- Make sure that all components are tidied up at the end of the session, and none are left on the floor or table.

Sending your code to the physical Arduino with the Duino App

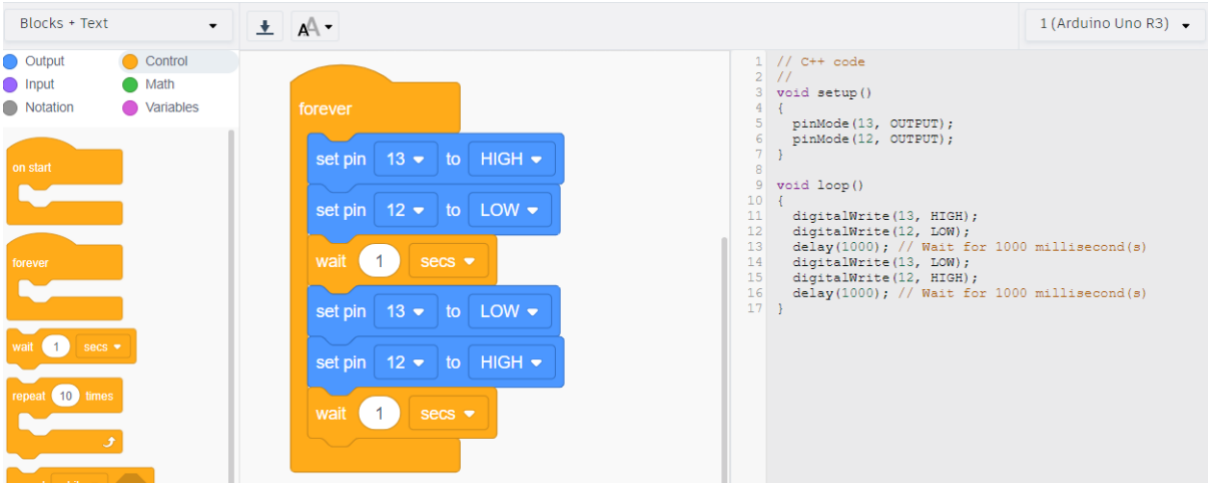
To send (or "upload") your code to your physical Arduino, the best option (particularly if you are using the Chrome browser or a Chromebook) is to use the **Duino App: https://duino.app/#/**.

Once you've created, coded and tested your circuit in Tinkercad, you can build your circuit in real life. Once the physical circuit is complete, use the USB cable to connect your Arduino to your computer. If you need to change your electrical components, always remember to unplug your

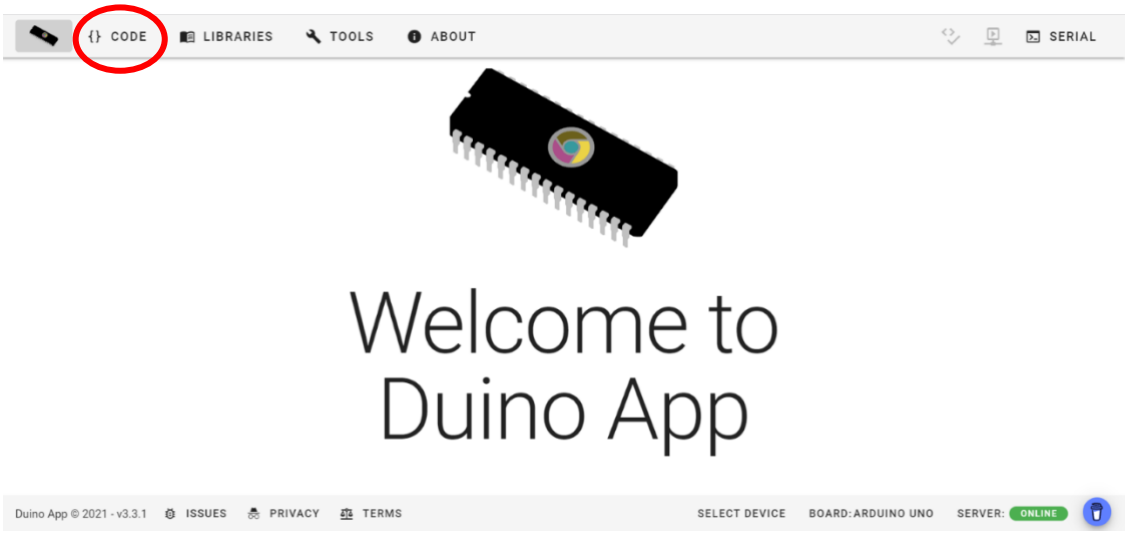


Arduino from your computer first! Then in Tinkercad, in the Code section, change “Blocks” to “Blocks + Text”

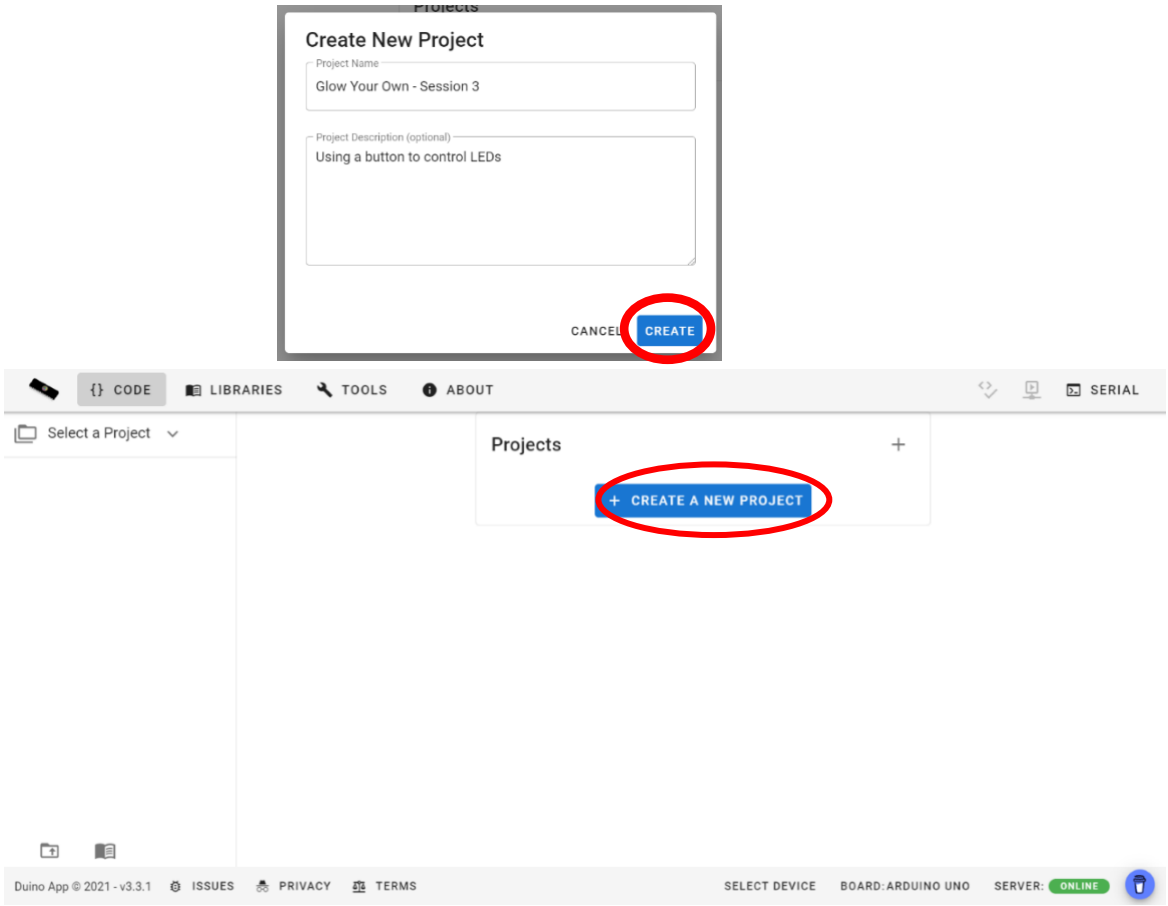
You’ll then be able to see two versions of your code – one in blocks, and one in text. The code is the same, the computer is just showing your code in two different languages:



In the Duino App (https://duino.app/#/), click “Code”, in the top left corner of your screen, then “Create a new project”

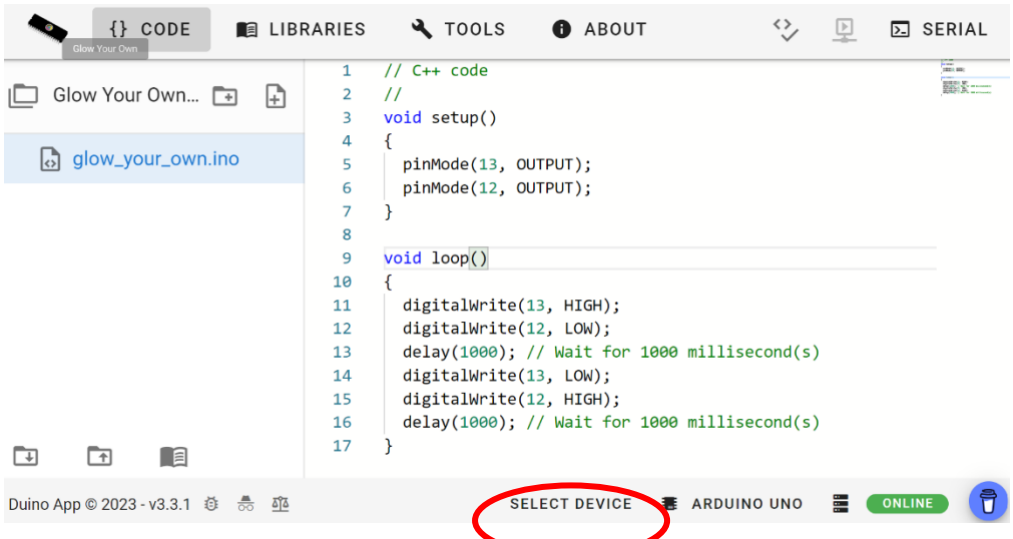


Name your code and write a short description (we've named ours "Glow Your Own – Session 3"), then click "Create".

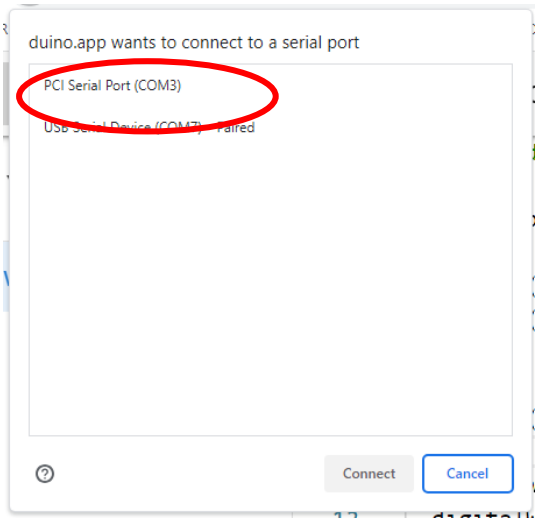


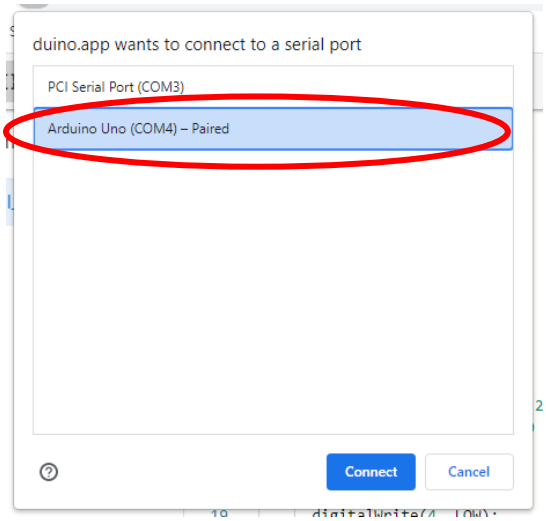
Delete the standard code that appears, and copy and paste from the Text section of Tinkercad into the Duino App.

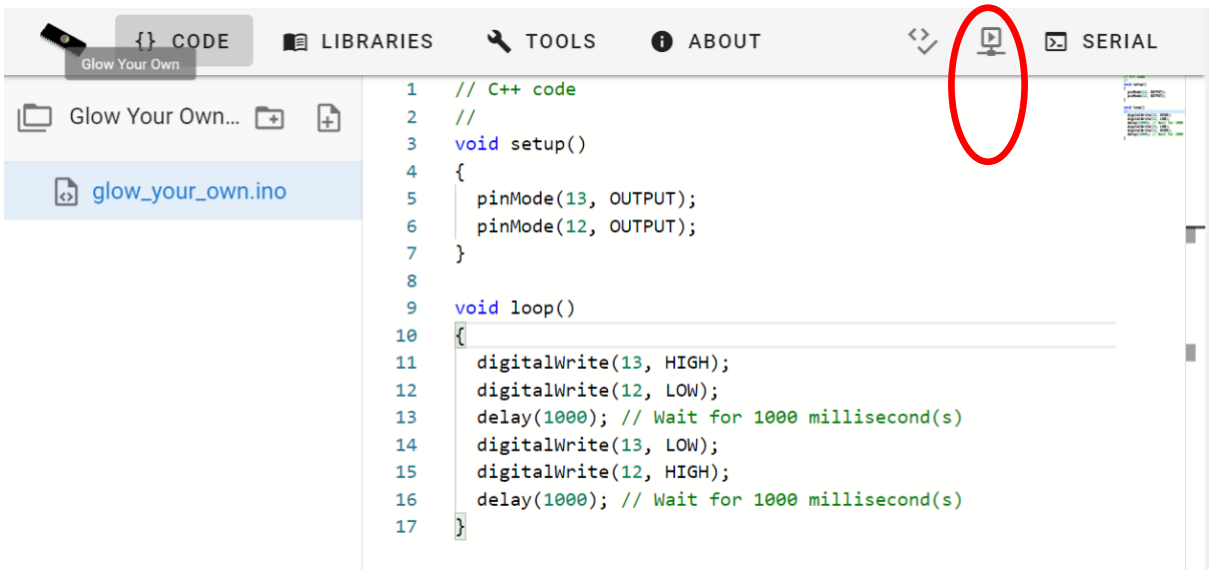
In the bottom right corner, click "Select Device". You'll see different options (some are shown below) – different computers can show this differently! If one of them says "Arduino", select that, but if it is not there, click "USB Serial Device",



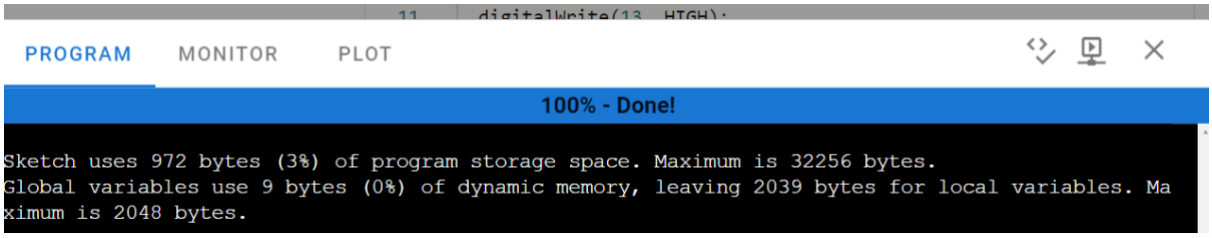
You can then send your code to your physical Arduino by clicking “Compile and upload”, in the top right corner.



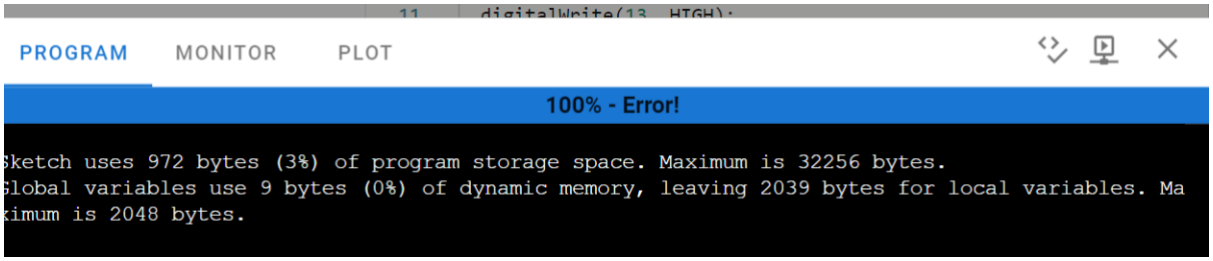




If the code uploads correctly, you should see a message saying “100% Done!” at the bottom of your screen.



Sometimes (especially if you have unplugged your Arduino and then plugged it back in), the Duino app gets confused and can no longer find the Arduino. If this happens, you'll get an error message ("100% Error!"), as below:

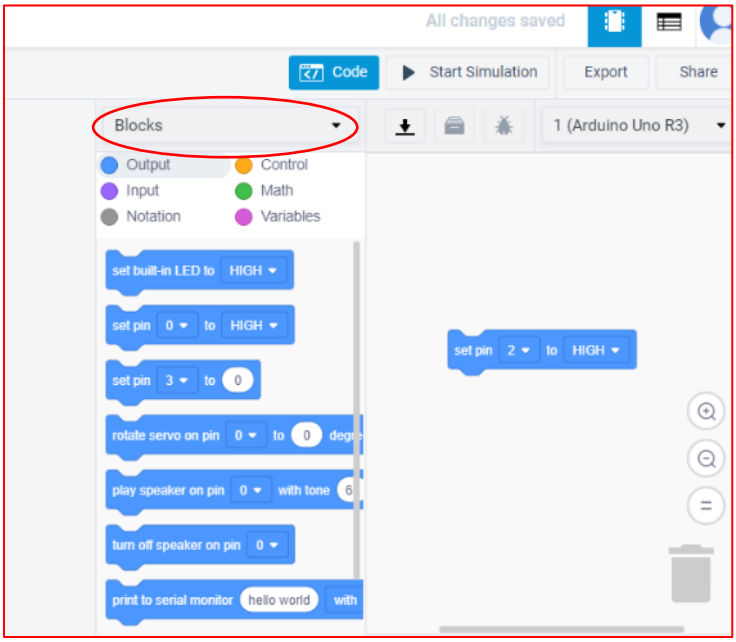


The easiest way to solve this is to close the Duino app tab and then re-open it. Sometimes it can also help to unplug your Arduino again and plug it into a different USB port on your computer.

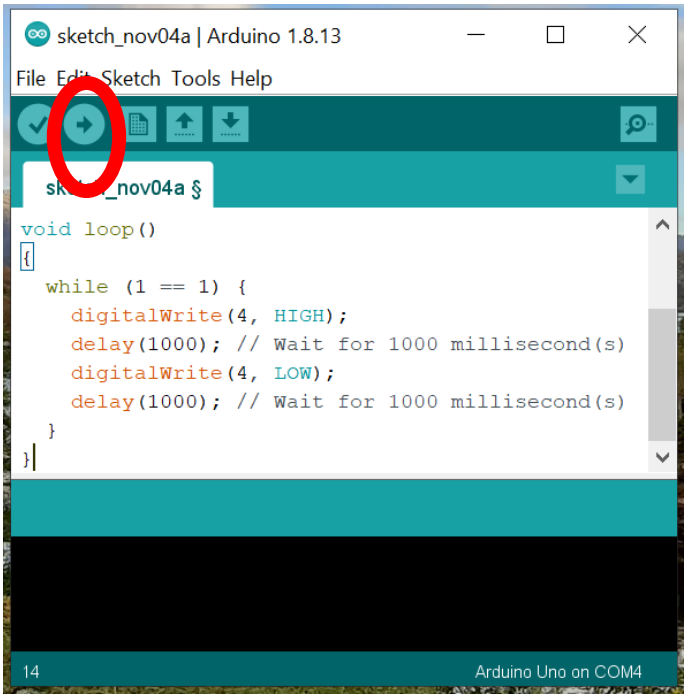
Sending your code to the physical Arduino with the Arduino IDE

To send (or "upload") your code to your physical Arduino, an alternative option is to install the Arduino program on your computer. You can install it from here: https://www.arduino.cc/en/software

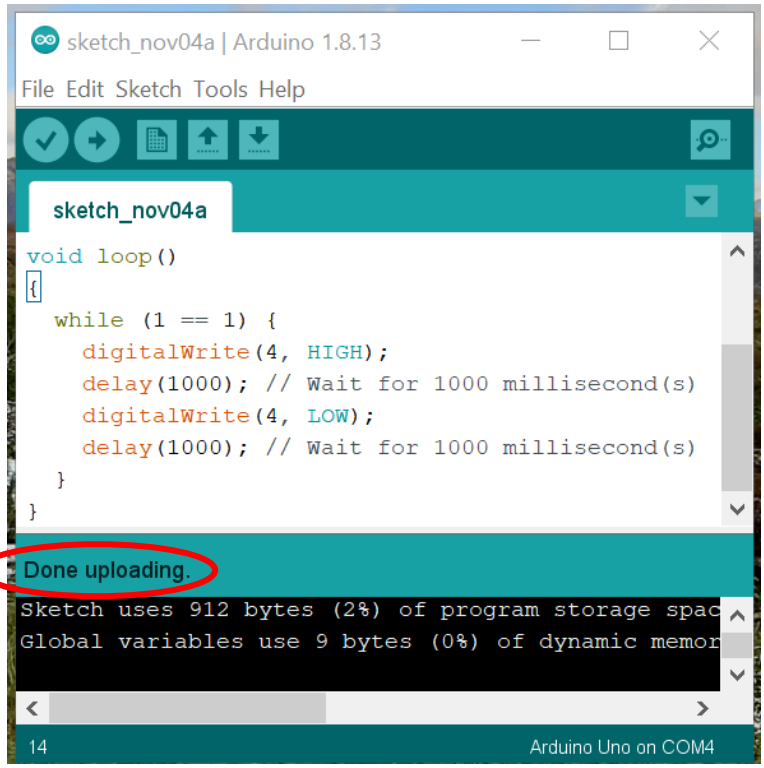
Once you've built your circuit, use the USB cable to connect your Arduino to your computer. If you need to change your electrical components, always remember to unplug your Arduino from your computer first! Then in Tinkercad, in the Code section, change "Blocks" to "Blocks + Text"



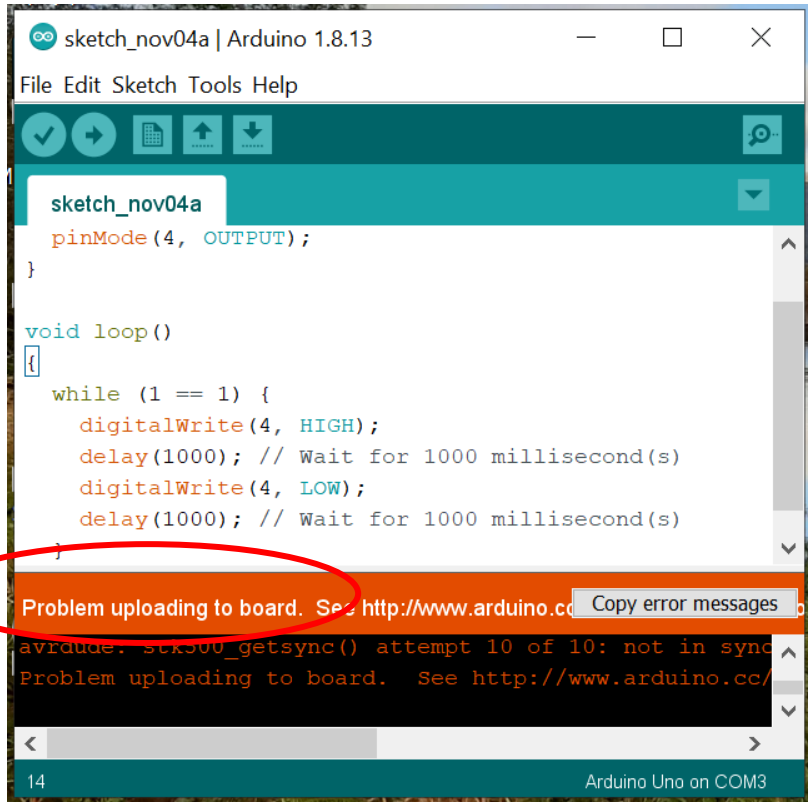
Copy and paste from the Text section of Tinkercad into the Arduino program, save your code and then click the right-pointing arrow to send (or "upload") your code to your Arduino.



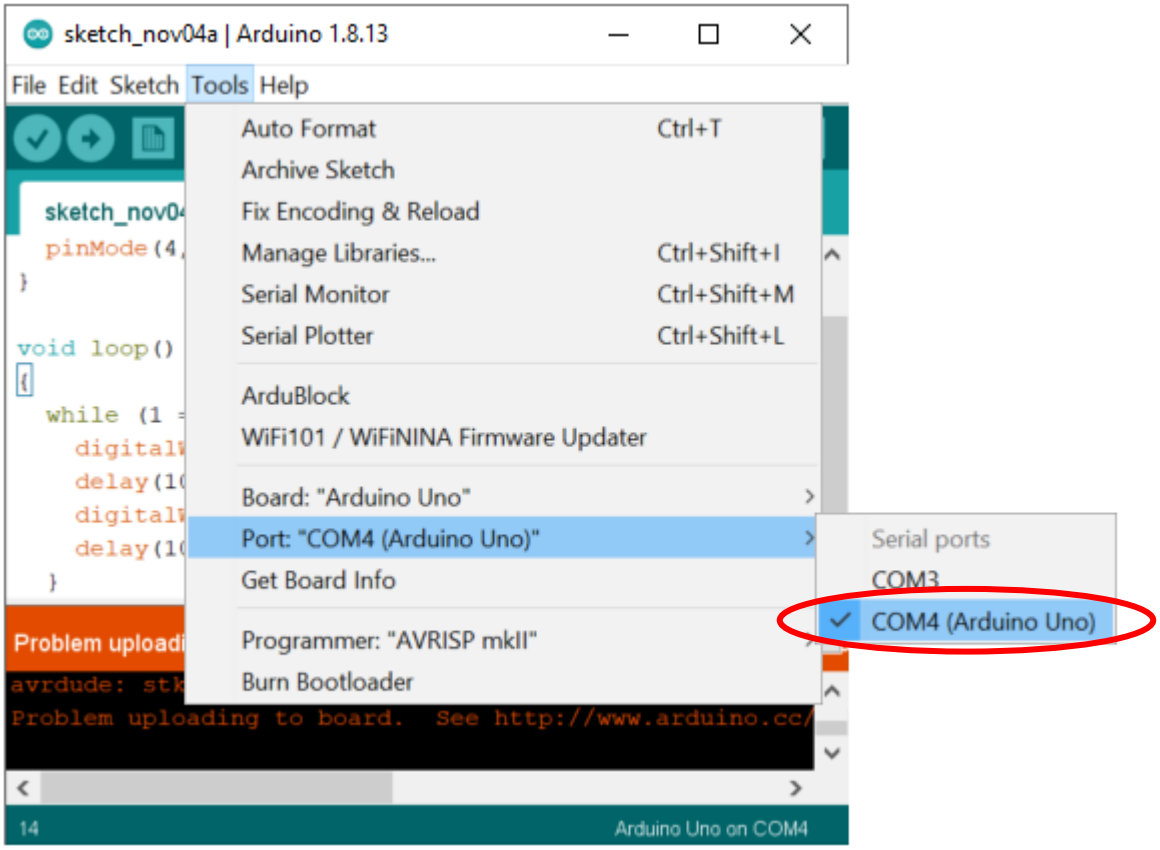
If the code uploads correctly, it should say “Done uploading” at the bottom of the screen:



One common error to watch out for is when the computer doesn’t know which USB port the Arduino is connected to – if this happens you will see an error message at the bottom of the window:



To fix this problem, open the “Tools” menu, and check that the “Port” option has (Arduino Uno) in brackets, as below.



Sometimes it also helps to unplug the Arduino and plug it in again to a different port!

It also might be the cable!

Some USB cables can only charge and can't carry data. They look exactly the same as a data cable, and your Arduino's power light may still come on, but your computer won't be able to see it. The Arduino might not appear in the Duino App's "Select Device" list, or under "Port" in the Arduino program's "Tools" menu with a power only cable

If this happens, try a different USB cable – ideally the one that came with your Arduino, or one you know transfers data, such as a phone cable you have used to copy photos. Once you've found a cable that works, mark it with a bit of tape or a sticker so you can tell it apart from any charge-only ones.

If your Arduino has a USB-C socket and your computer only has USB-C ports, a USB-C to USB-C cable may not power the Arduino at all – some boards will only switch on from an older, rectangular USB-A port. If your Arduino stays dark, use a USB-C to USB-A cable with a USB-A to USB-C adapter (or a USB-C hub with USB-A ports) to plug it into your computer. Check that the cable and adapter both carry data, not just power.