Glow Your Own

Worksheet for session 1

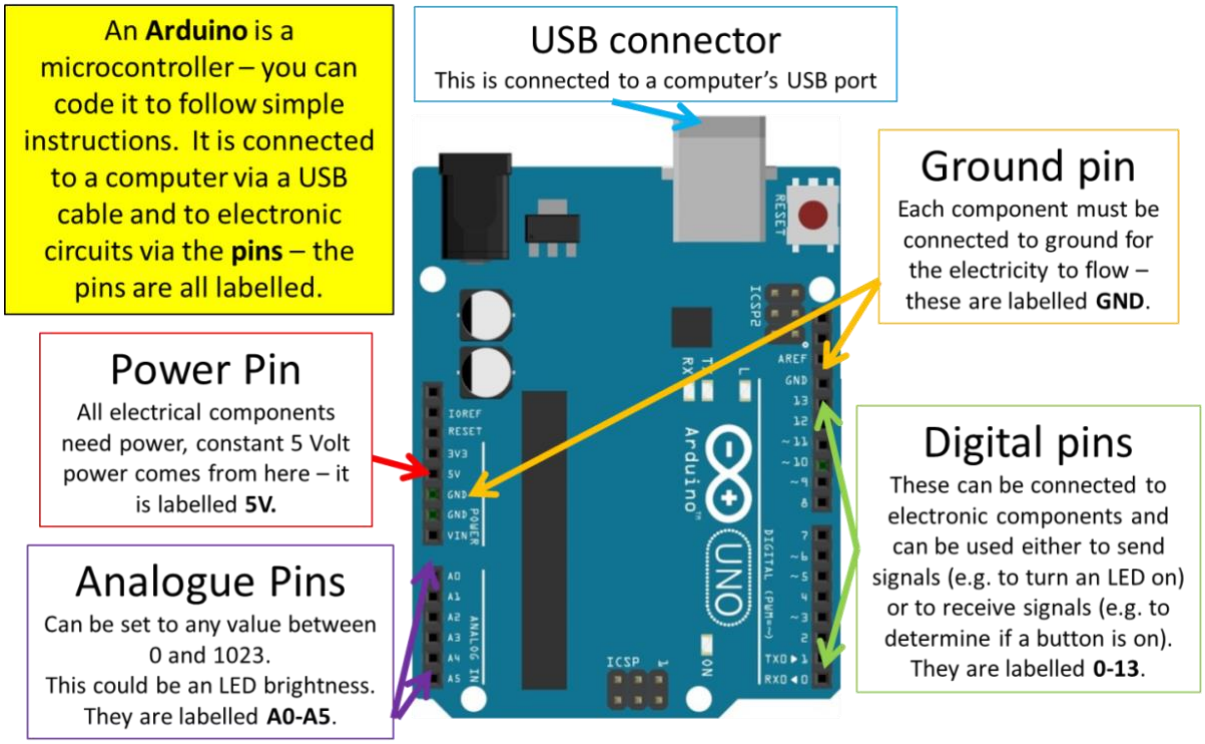
Coding is the language used by machines and computers, including everything from how a mobile phone works to controlling the colour sequence of traffic lights. Learning to code can open new areas of creativity, problem solving, collaboration and communication.

Glow Your Own is a six-week project, bringing together science and arts organisations, connecting creative coding and artistic practice to help develop transferable skills during an enjoyable project. It started in 2020 and previous videos and ***how to*** worksheets are online: https://if-oxford.com/GYO

Glow Your Own aims to help people of all ages and groups to join in online: go from technology trepidation to creative coding confidence, using Arduino, Tinkercad computer programming and craft making.

Arduinos

Arduinos are small electronic devices which control things (or microcontrollers). Microcontrollers are used in everyday life as well as in scientific experiments: washing machines, for example, are controlled by them. You can connect your Arduino to a computer to code it (give it a set of instructions), and to electronic components, like buttons, or lights.



Building and coding your circuit

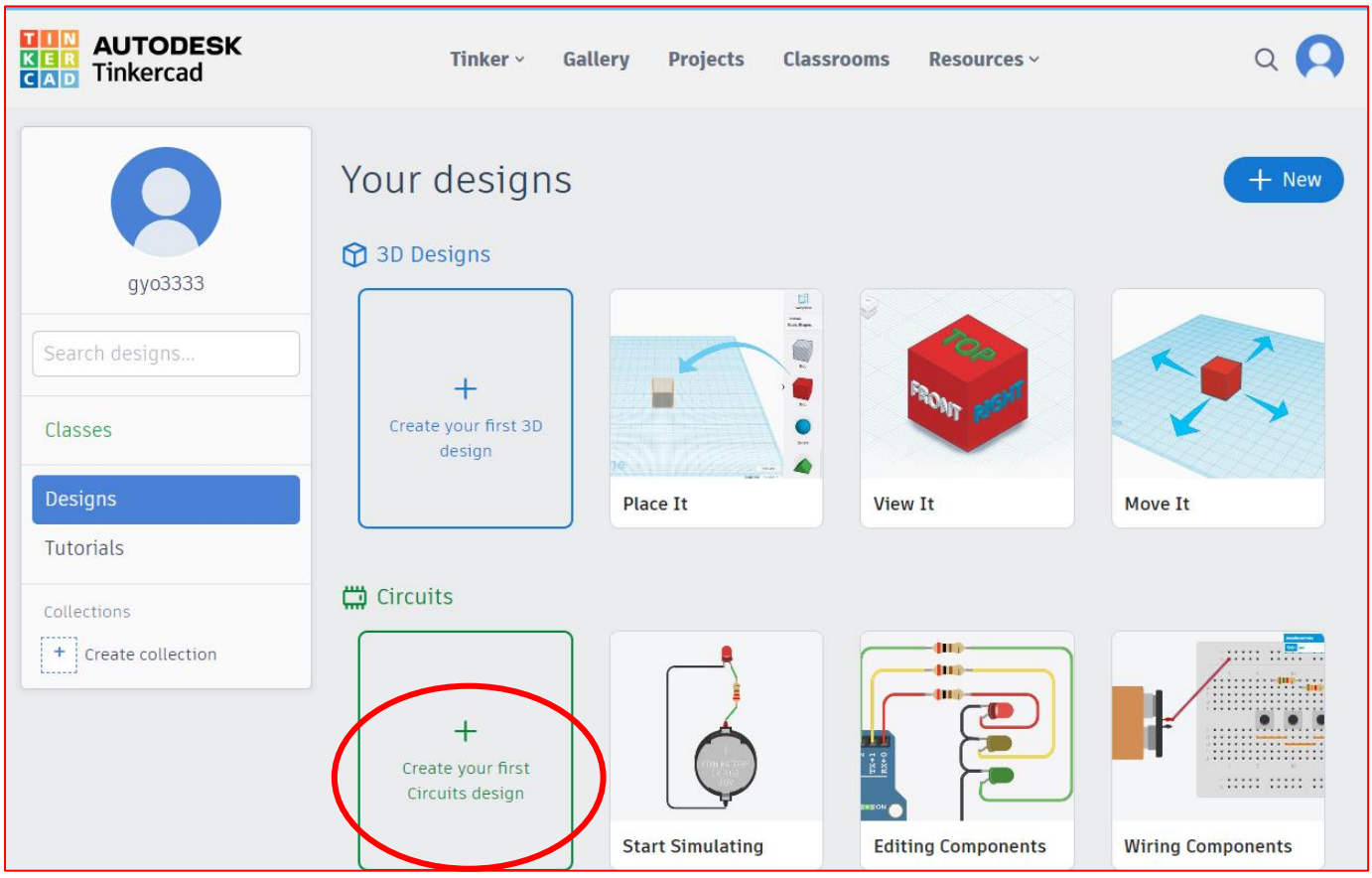
You can build, test and code your circuits virtually on Tinkercad: www.tinkercad.com

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

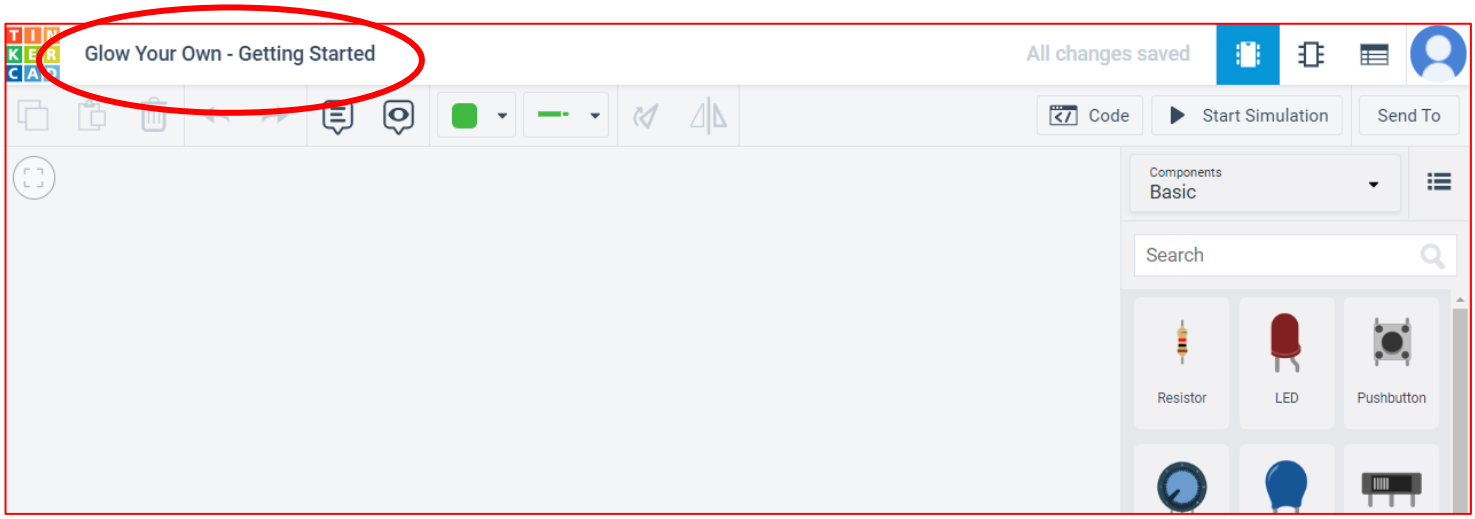
https://www.tinkercad.com/joinclass/MUIZMQMRM **(class code: M U I Z M Q M R M)** and enter your login code– your login code has the form **gyo2026-###** and everyone who signed up received a code with three unique numbers to use as the # keys.
If you need a new login code, please email visitral@stfc.ac.uk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

Getting started with Tinkercad

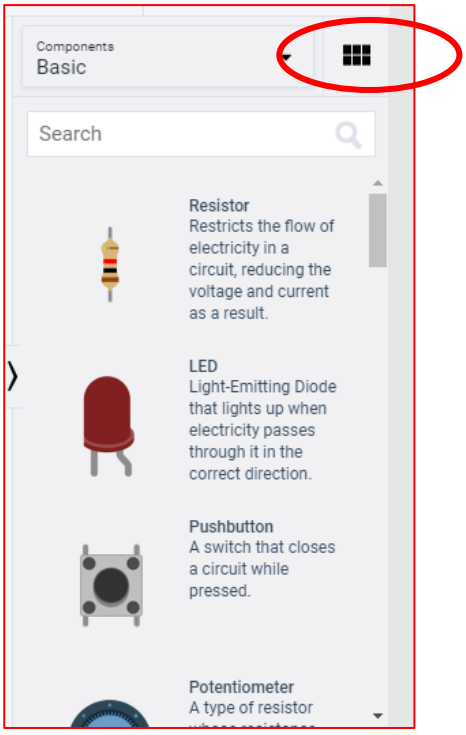
- The first time you've signed in to Tinkercad you'll see a screen as above. Click on "Create your first Circuits design" – circled in red.



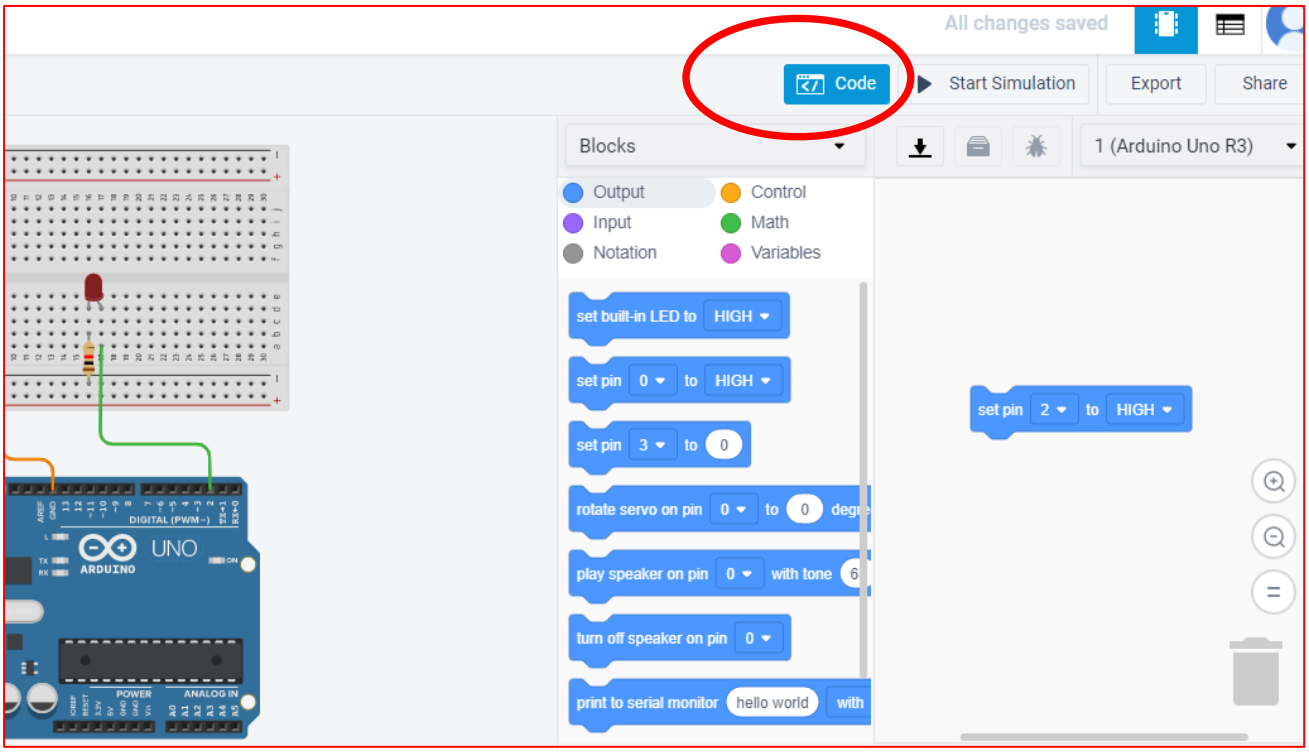
- First – name your circuit! You can do this by clicking in the box at the top left of the screen – here we've named the circuit "Glow Your Own – Getting Started". This will make it easier for you to remember what each circuit does.



- You can see the electronic components you can use on the right-hand side of the screen. To choose a component, simply click on it and drag it to the working area on the left-hand side. You can find out more about each component by changing the view, using the button below



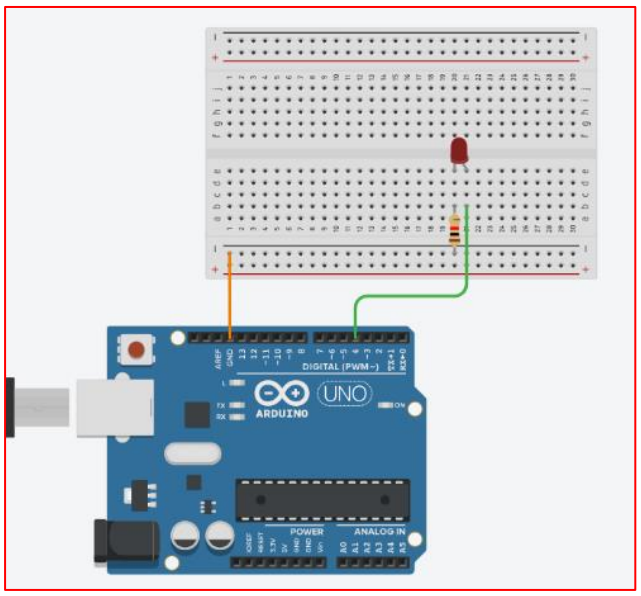
- You can code your Arduino by clicking on the ‘Code’ button and dragging the code blocks you need to the right.

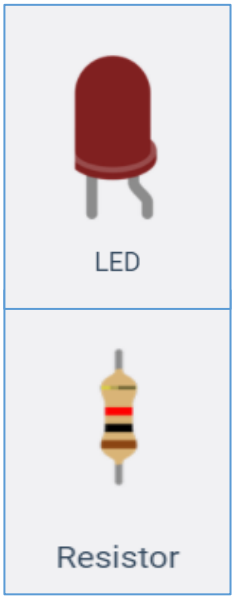


Circuits to build and code

Turning on a light

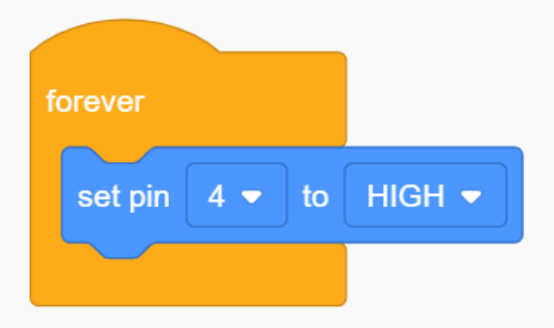
The simplest circuit to build and code is one that turns on a light – which we call an LED (Light Emitting Diode). It uses an LED, two wires (sometimes called ‘jumper wires’) and a resistor.





(The best value to use for your resistor is 220 Ω.)

To turn your light on, you can use the following piece of code



This tells the Arduino to send a message saying “turn on” to pin number 4. You can then test your code by clicking “Start Simulation” on Tinkercad. Does your LED turn on?

You can also get your light to flash in beautiful patterns by changing your code as follows: