

Glow Your Own

Session 3

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/TQ4WP2KL8Z91> and enter your nickname. If you need a reminder of your nickname, or a new nickname, please email visitral@stfc.ac.uk

For a reminder of how to access Tinkercad and get started, see the 'How To' sheet for Session 1. There are instructions for how to upload your code in the 'Duino' How To sheet.

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

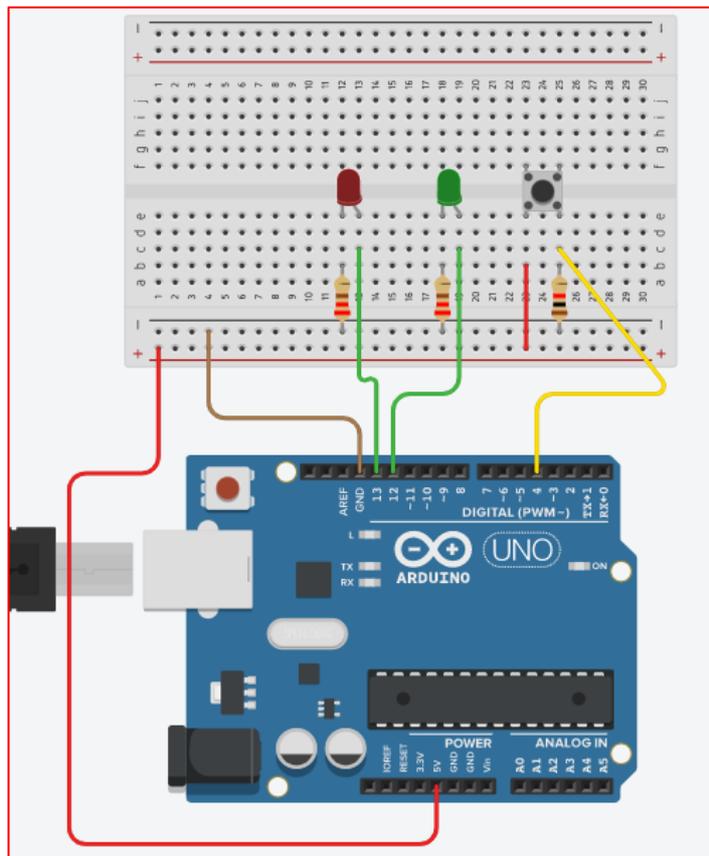
- Always remember to unplug your Arduino when you're changing components.
- Make sure all of the small components are kept out of reach of young children.
- Make sure that all components are tidied up at the end of the session, and none are left on the floor or table.

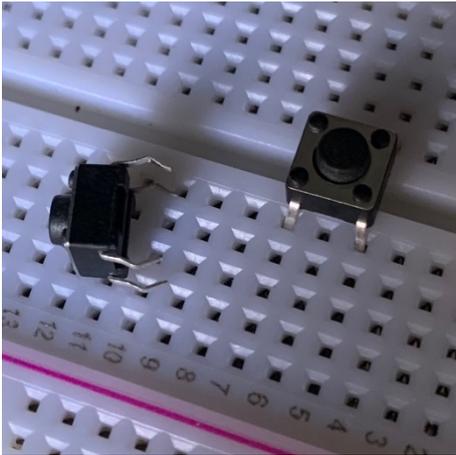
Circuits to build and code

Turning an LED on with a button

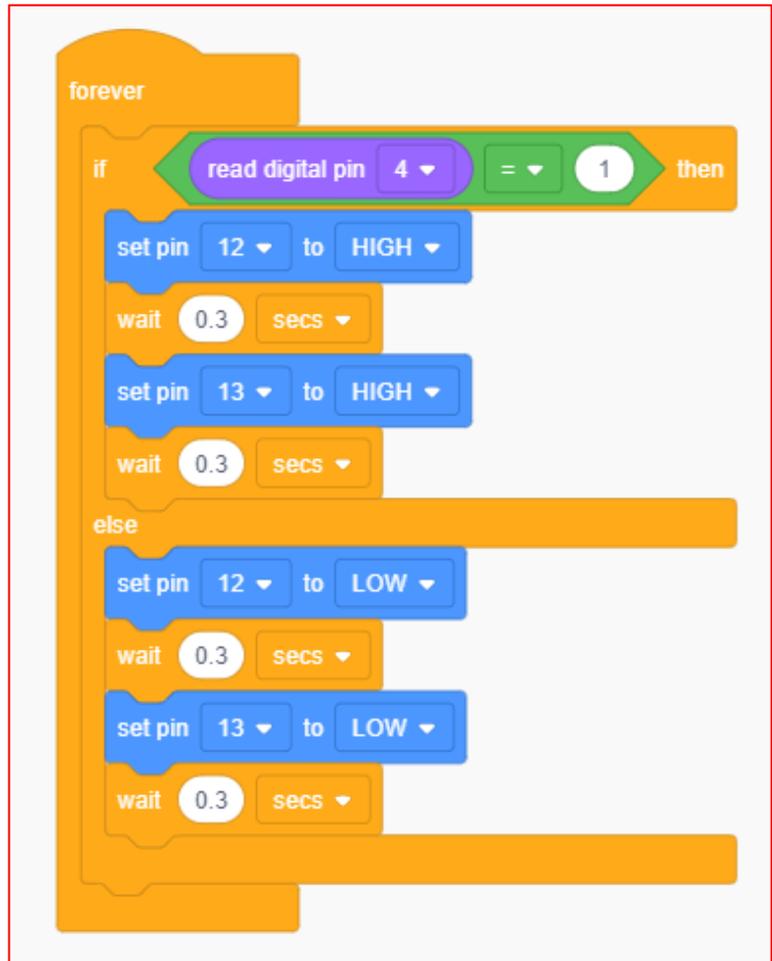
You can control your LED by clicking a button. You need the same type of circuit as with the photoresistor, as below (use a 1 kΩ resistor with your button):

Don't forget the red wire on the left hand side of the diagram! This links the button to the 5V (power) pin on the Arduino – the button needs this power to work! To code our new circuit, we need to use an "if then else" block: this block is used when we want to ask the computer a question. We ask whether the button has been pushed. If it has been pressed, we instruct the Arduino to turn the LEDs on (one after the other), if the button is not pressed, we instruct the Arduino to turn the LEDs off (one after another), using the code below.





When you simulate your circuit on Tinkercad, in order to press the button just click-and-hold the button on your screen.



Adding a power source

We don't always want our Arduino to be connected to a computer while it's working. We can add an alternative power source to our circuit, which means that it will continue working after being disconnected from the computer (so long as the code works!)

To do this, you can either use a USB rechargeable battery pack (eg. a mobile phone external power bank) instead of connecting the Arduino to your computer, or simply connect your power source to "Vin" and "GND" pins on the Arduino, as in the circuit diagram below.

