

# Glow Your Own

## Worksheet for session 2

### Building and coding your circuit

You can build, test and code your circuits virtually on Tinkercad: [www.tinkercad.com](http://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](mailto: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.

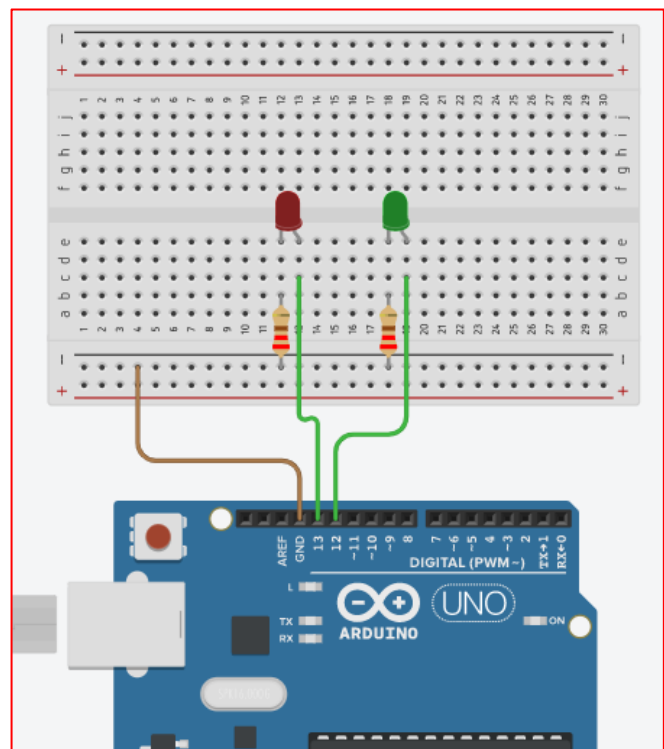
### Circuits to build and code

#### Flashing, alternating lights

We can create our own flashing lights using two LEDs and 220Ω resistors:

#### Components needed:

- Arduino + USB Cable (and UNO R3 software download)
- Breadboard
- LEDs (approx. 3-5)
- Jumper/Dupont wires (3x black wires for ground and 2x wires in a colour of your choice)
- Resistors (2x 220Ω)



We can code the LEDs to flash on and off alternately using the same blocks we used in Lesson 1.

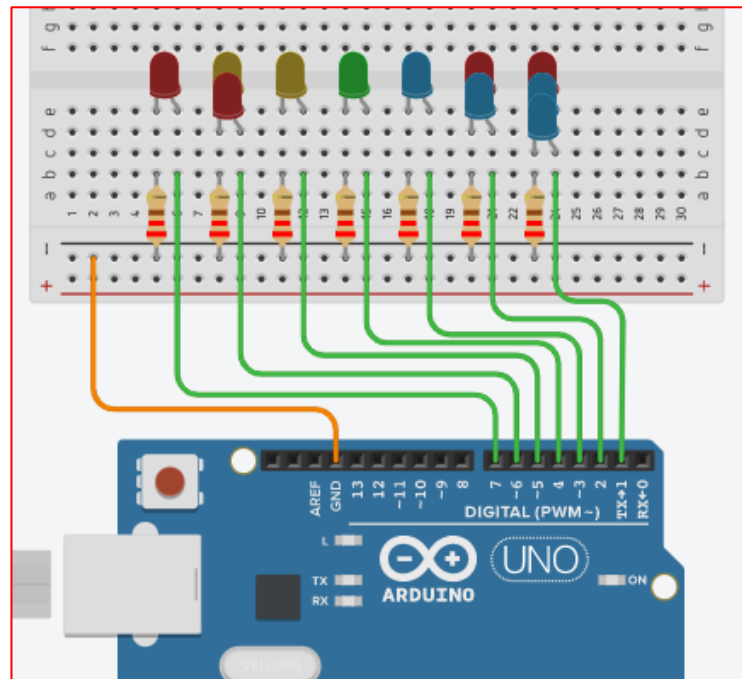


Remember to make sure that the pin numbers in the code match the pins in the Arduino!

If you are using a physical Arduino, 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".

## Making a rainbow

You can add to your first circuit to make a beautiful rainbow!



(Use resistors of  $220\ \Omega$  or less with your LEDs.)

To turn your LEDs on in a sequence, according to the colours of the rainbow, you can use the following code: