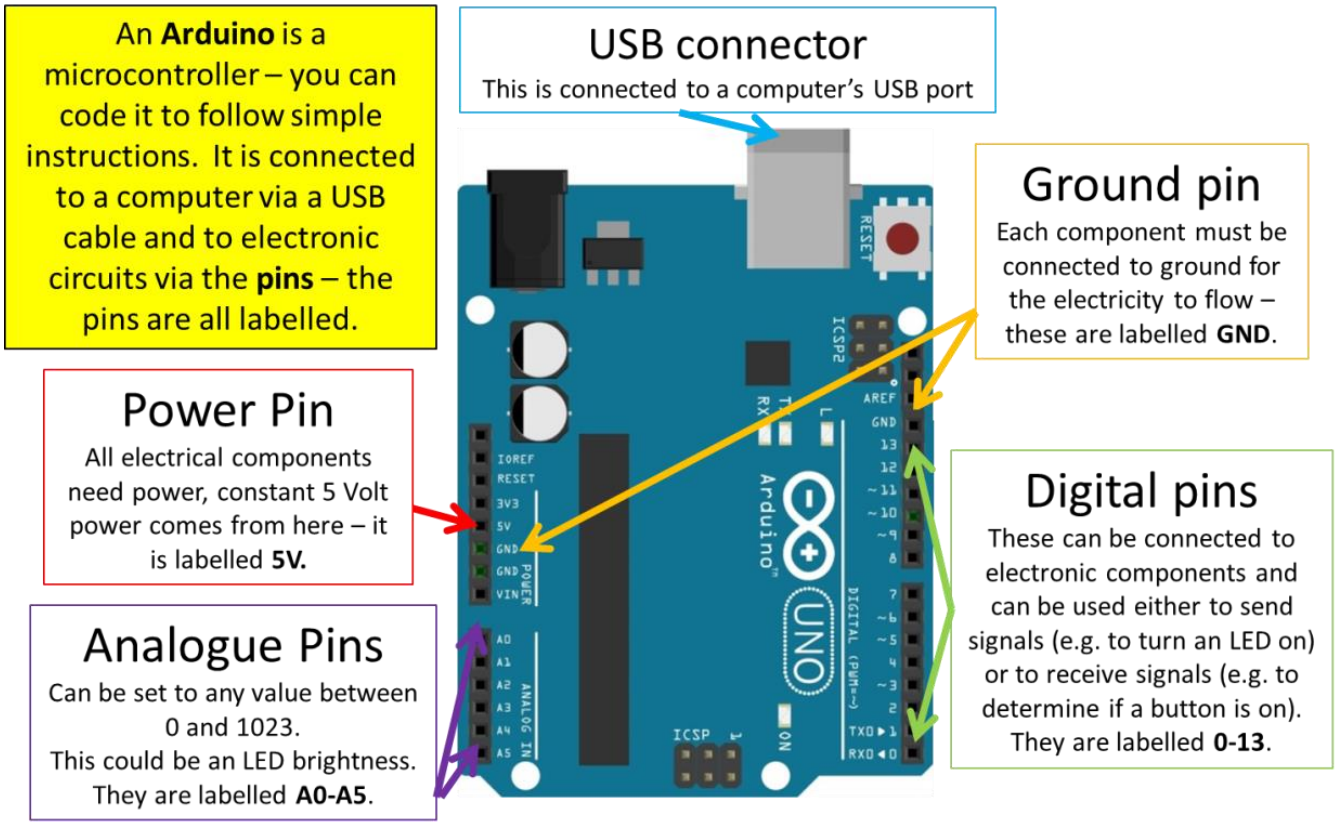
Code your Paper Lantern!

Arduinos

Arduinos are microcontrollers: small electronic devices which control things. 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 class on Tinkercad, please log on to **https://www.tinkercad.com/joinclass/** and enter your class ID and nickname.

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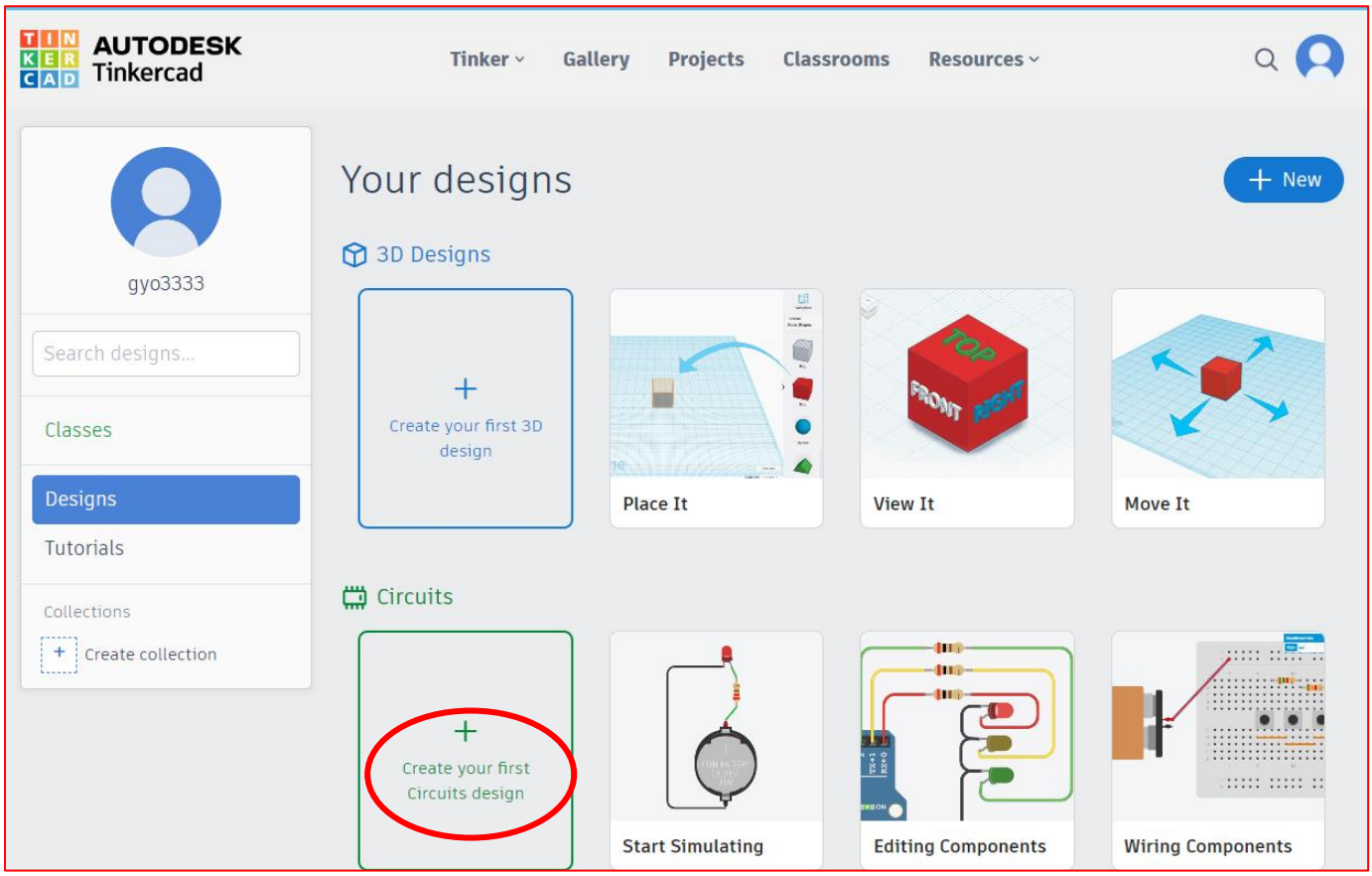
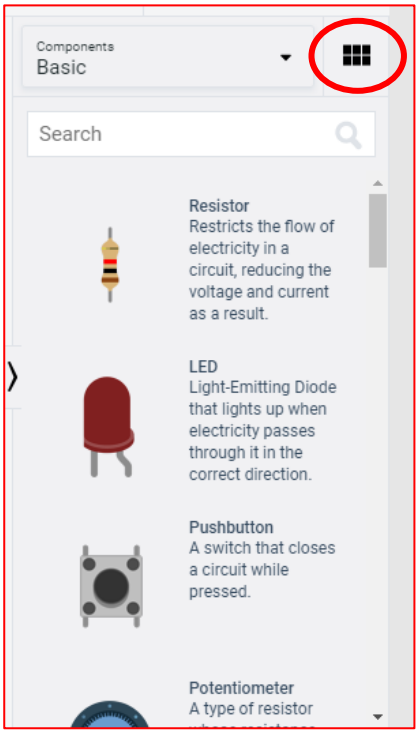
Getting started with Tinkercad

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

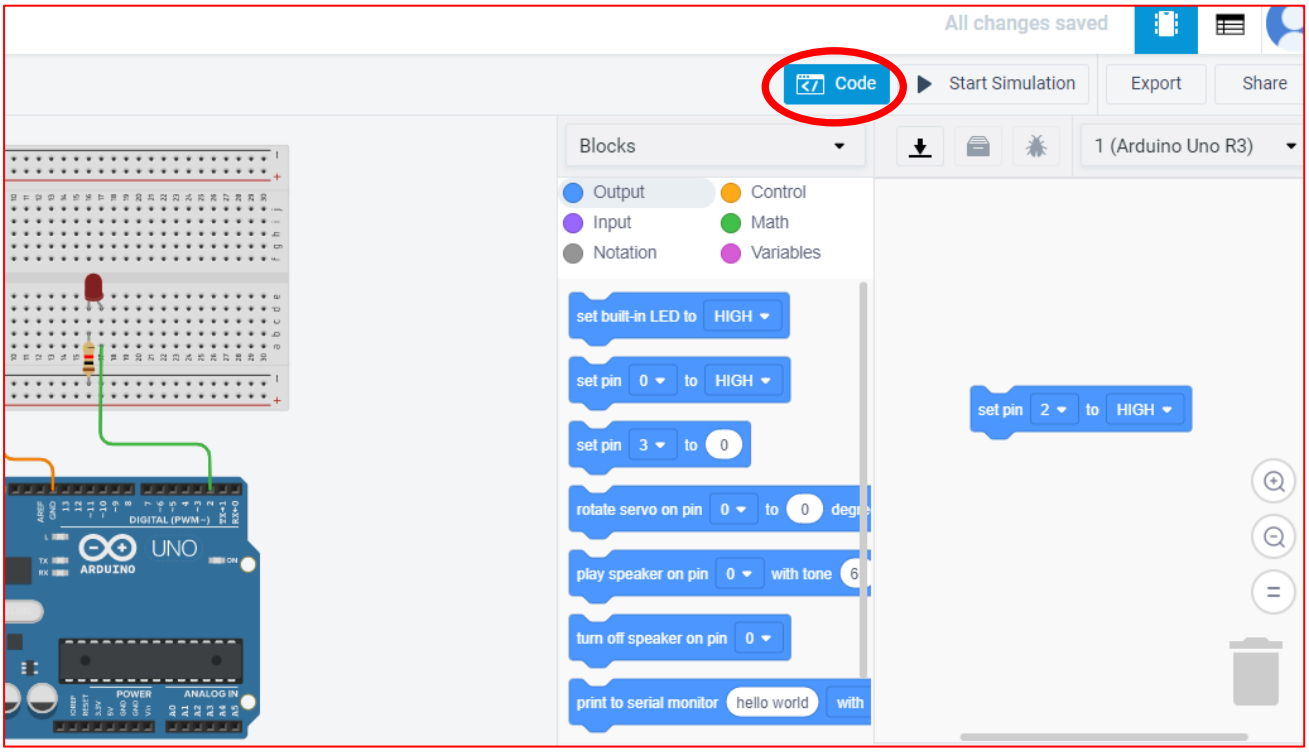


- First – name your circuit! You can do this by clicking in the box at the top left of the screen – here we've named the circuit "Glow Your Own – Getting Started". This will make it easier for you to remember what each circuit does.

- 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



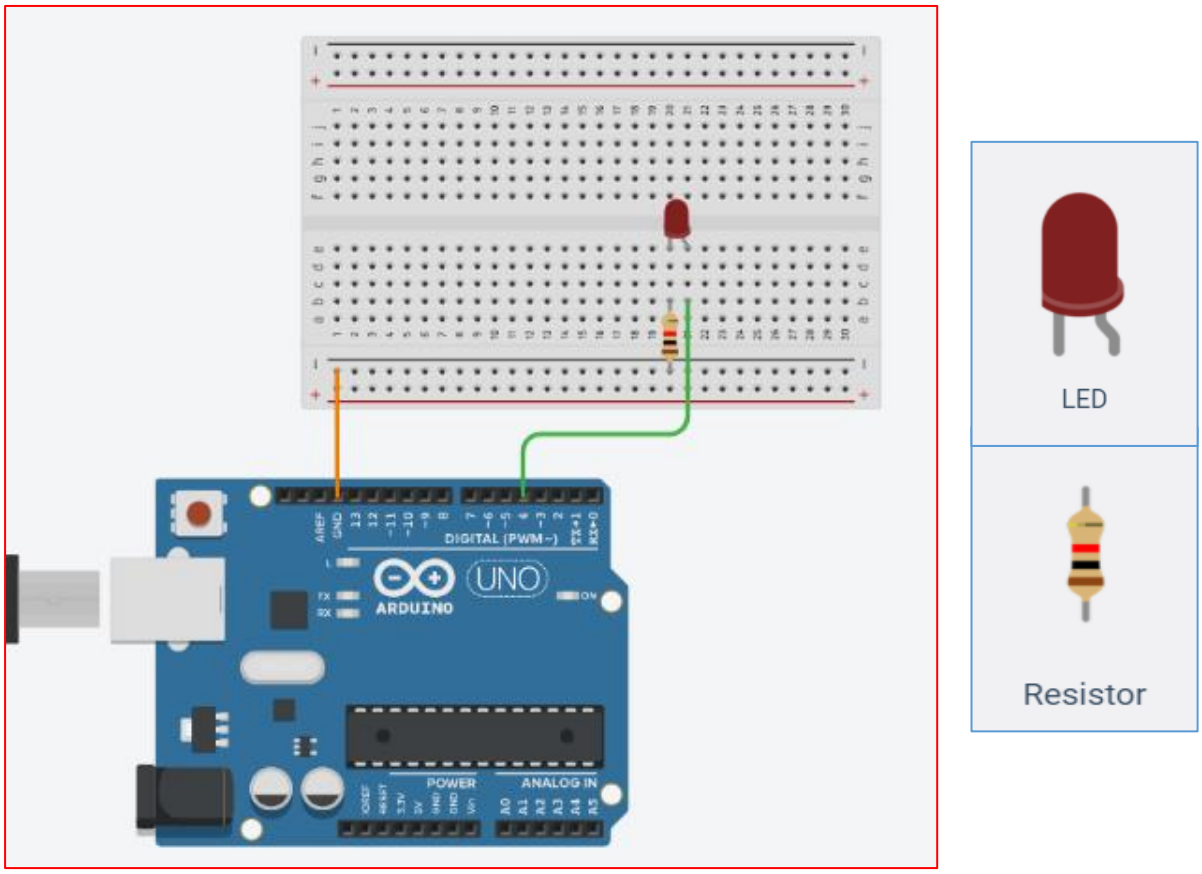
- You can code your Arduino by clicking on the 'Code' button and dragging the code blocks you need to the right.



Code your lantern!

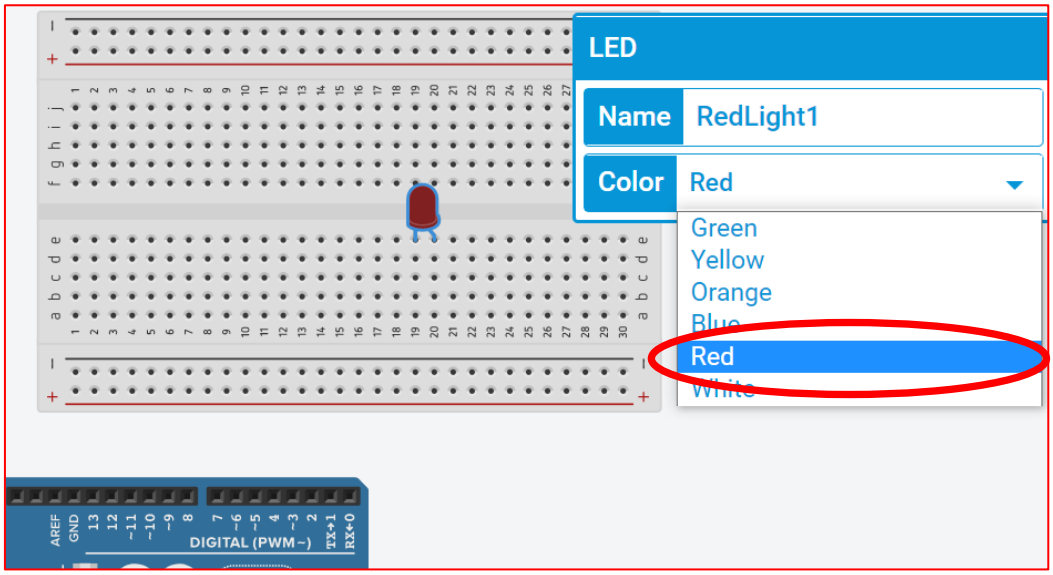
Turning on a light

The simplest circuit to build and code is one that turns on a light – which we call an LED (Light Emitting Diode).

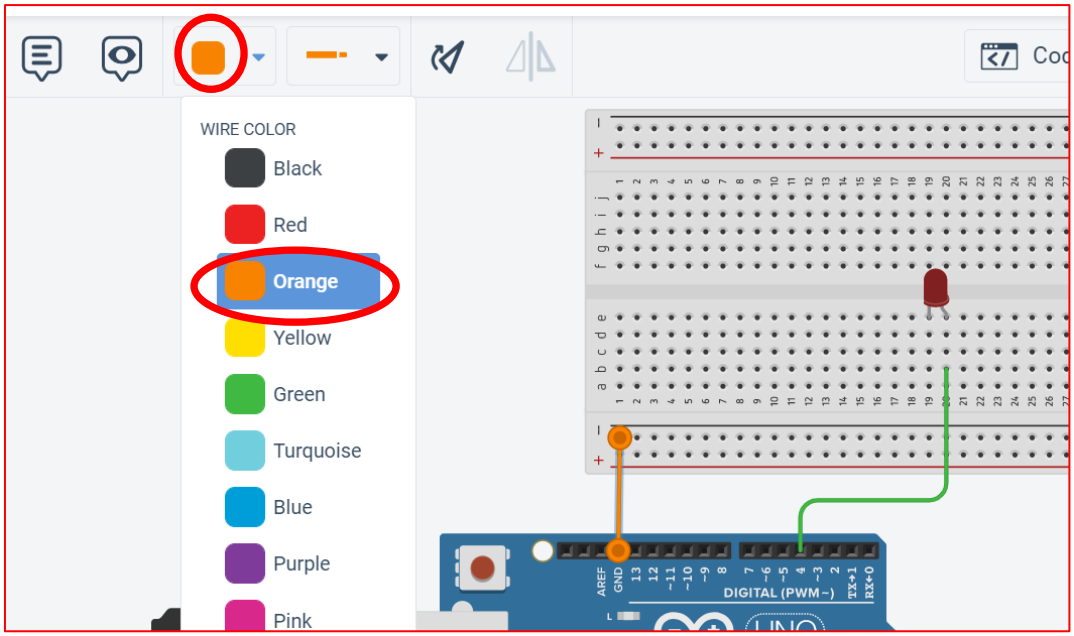


This circuit uses an LED, two wires and a resistor:

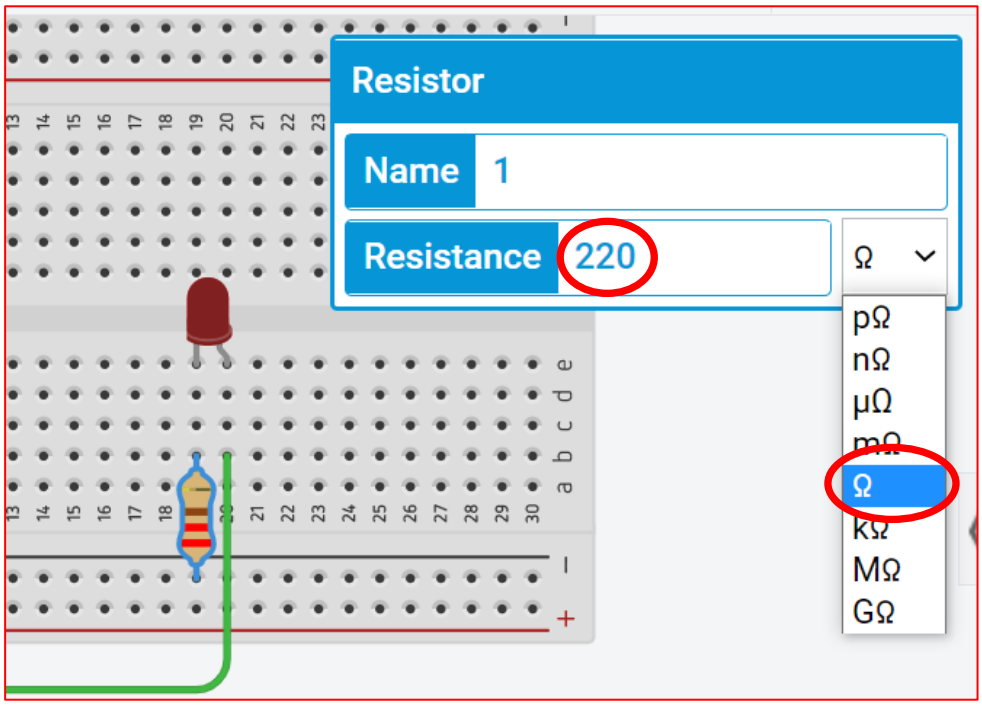
- To change the colour of your LED, click on the LED and change the colour with the drop-down menu in the box that appears.



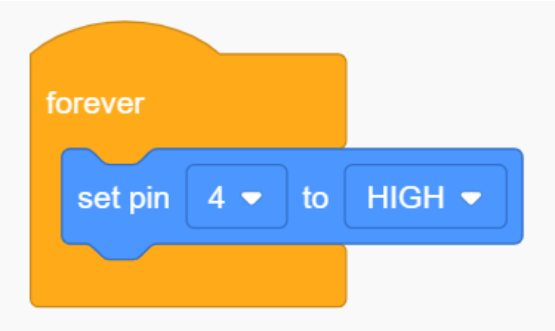
- You can create wires by clicking on the places you want the wire to start and end. You can change the colour of the wire by changing the coloured block at the top of the working area.



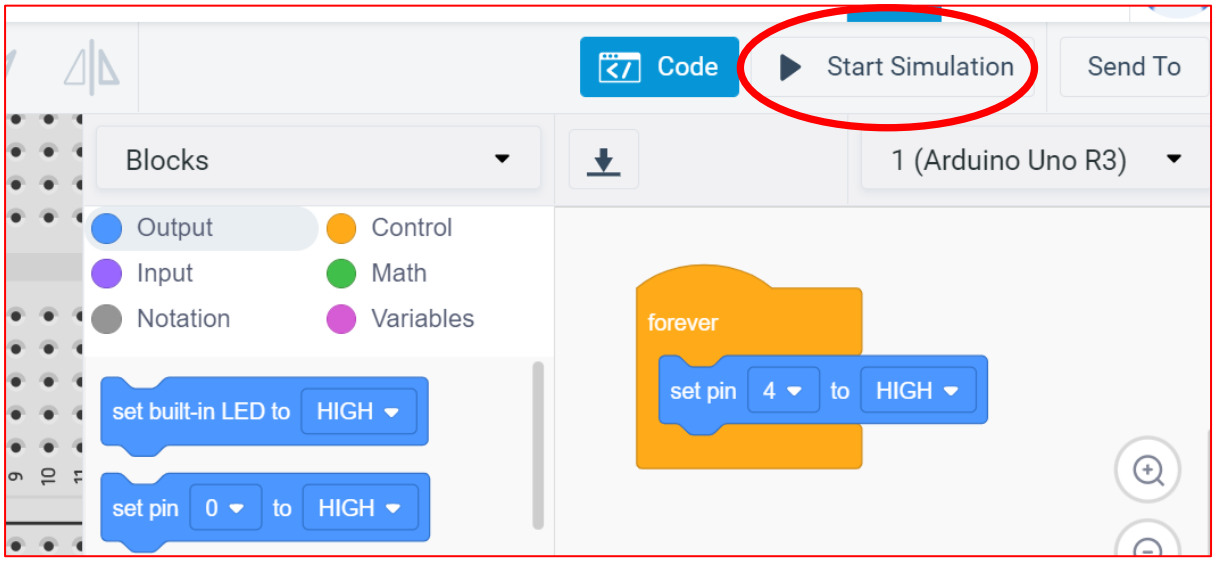
- You can change the strength (or value) of your resistor by clicking on it and changing the numbers in the box that appears. The best value to use for your resistor is 220 Ω.



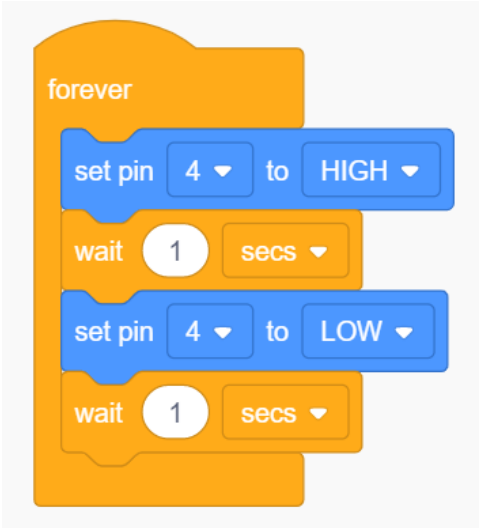
To turn your light on, you can use the following piece of code



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:



You can try adding more LEDs to make even more beautiful patterns!

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