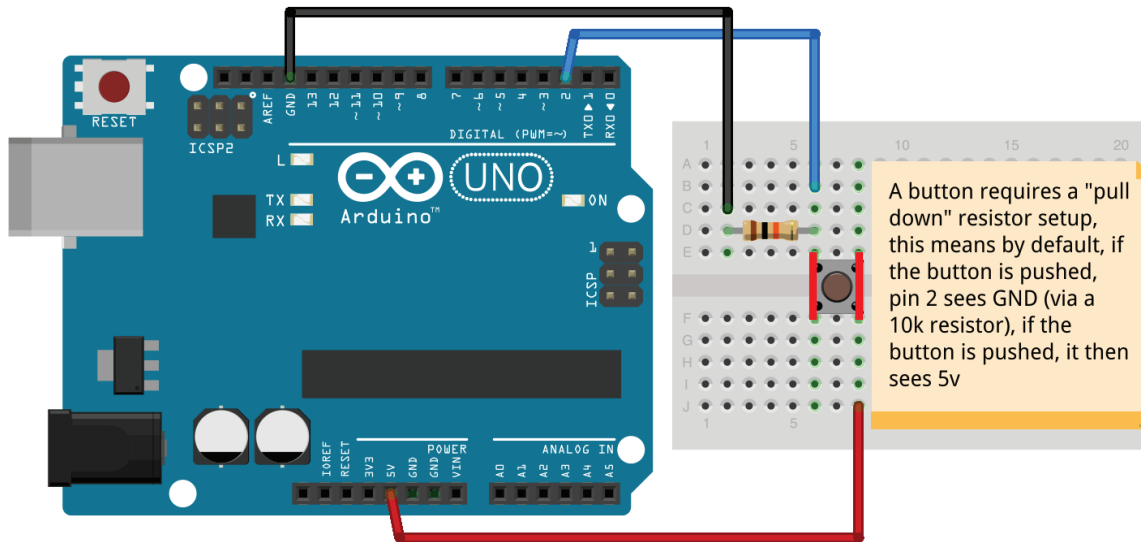


## Basic Information

**Buttons** are a very simple **input**. They either let current through, or they don't. Because of this, they are **digital** (either True or False) inputs. The **buttons** you will be using have 4 legs, they are connected together in pairs. On the diagram below, the red lines across the **button** show which legs are connected internally together. We also need a large value **resistor**, in our case we will be using a 10k **resistor** connected to **ground**, this is to stop the input floating (see below)



10,000 ohm resistor (10k)



A button requires a "pull down" resistor setup, this means by default, if the button is pushed, pin 2 sees GND (via a 10k resistor), if the button is pushed, it then sees 5v

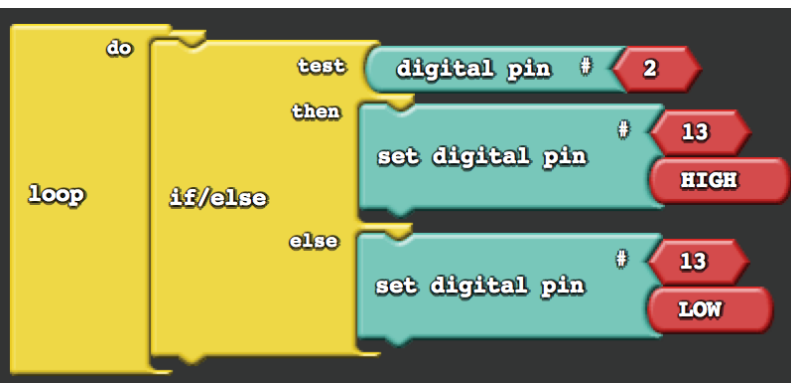


Push button

## Detecting button press

A vital part of the circuit above is the **resistor**. It is 10k (very high resistance). Without it, when the **button** is not pushed, the input pin is not connected to GND ( - ) or 5v ( + ). This means the pin may "float". Floating is when the pin **input** randomly switches back and forth between detecting GND or 5v, because neither is present.

The **resistor** is used to make sure that if the **button** is not being pushed, the pin will read GND ( - ), but if the **button** is being pushed, current will flow from 5v ( + ) as there is less resistance (no huge resistor!).



## Now try

1. Make it when the **button** is held down, **LED** on pin 13 goes off, when it is not, **LED** should be on
2. Try using *Serial println* to relay back the **button** status to you via **serial console**. (Hint, the "glue" block may be needed)
3. Try adding an **RGB LED** and change colour based on the **button** press.