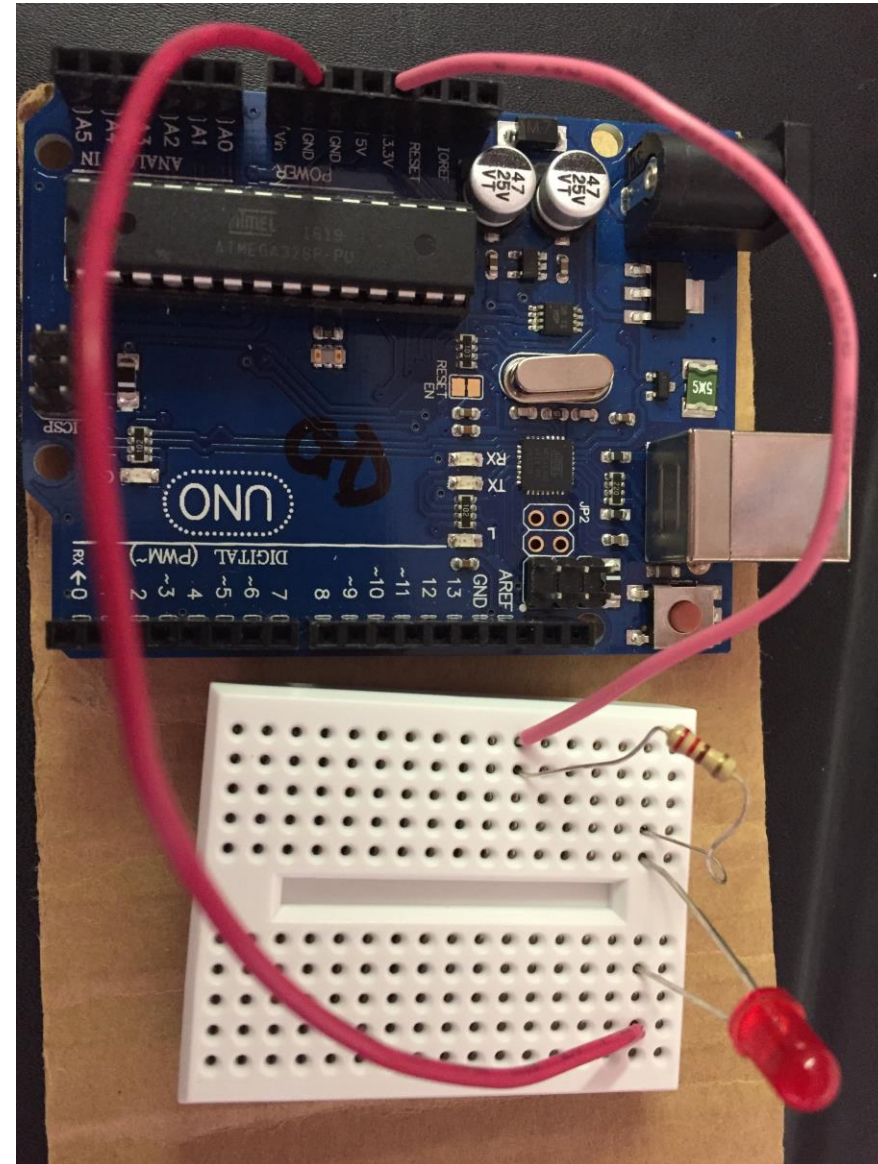


Experiential Learning in Technology

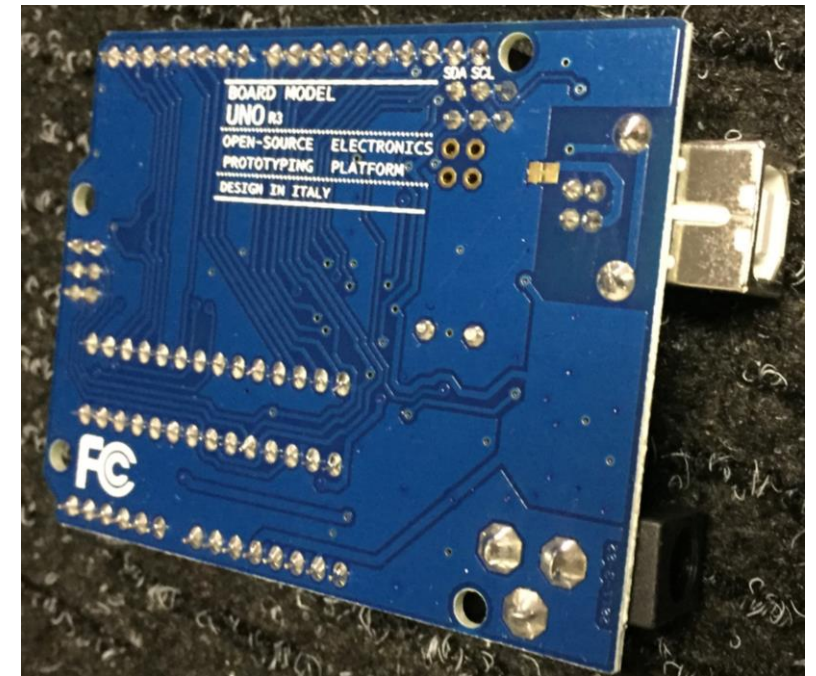
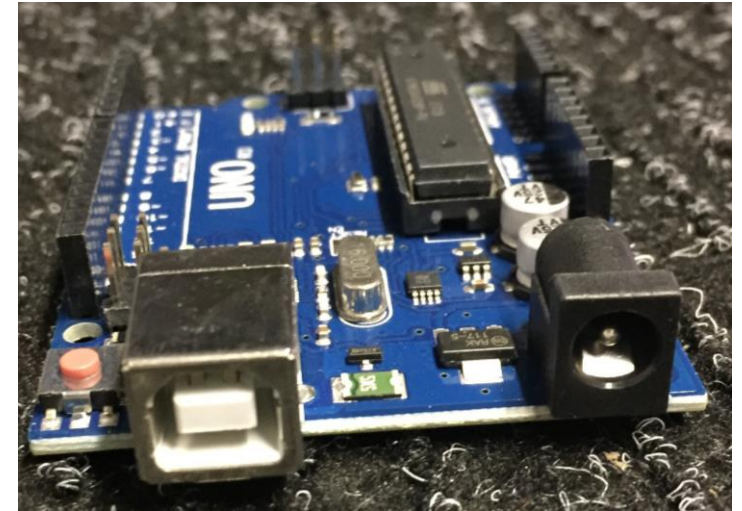
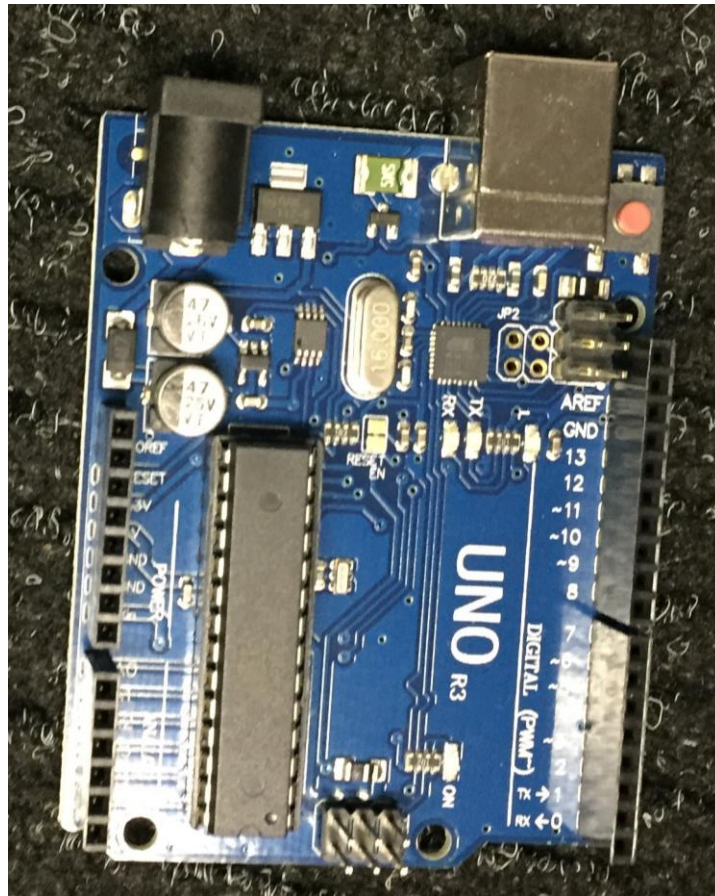
By Nkosi Mthembu

Build a circuit....

- **EXPERIMENT:** Build a circuit on a breadboard with a 220 Ω resistor and an LED. Use the Arduino to provide power from the computer. You will need to connect the circuit on the breadboard to the GND on the Arduino and the other end to the 5 V pin. Use the USB cable so there is power.
- Try connecting the LED in different ways.



Arduino Uno - processor

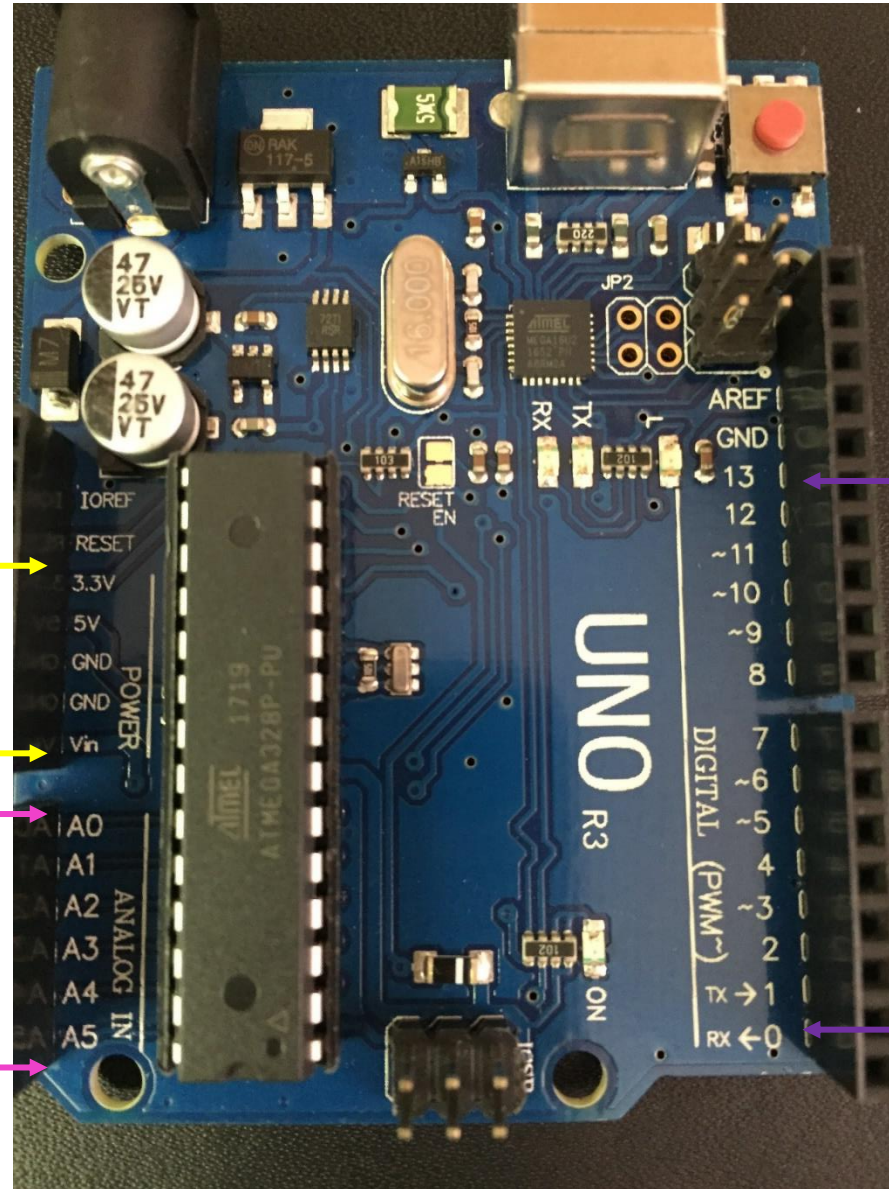


Arduino

Zooming in...

GND, V_{in} , 3.3 V and 5 V
to supply power

A0 – A5 – analog pins
to read variable
voltage in circuit



Digital input-output pins 0
– 13 - Used to send
messages to the circuit

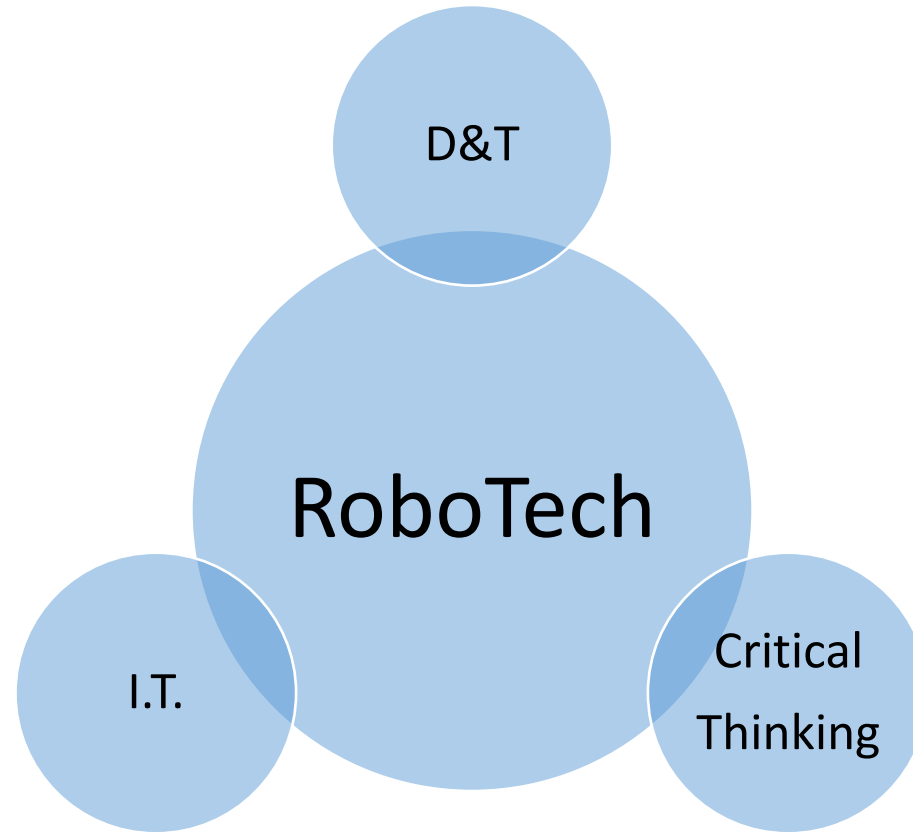
Why Robotech aka Robotics?

- Technology has evolved in the past 10 – 15 years and the psychology of Instant gratification has evolved also.
- Instant - messaging (social media), food, car request, movies, real-time gaming, streaming, banking etc..
- Just press the button!!! Internet...

How is this affecting the education sector?

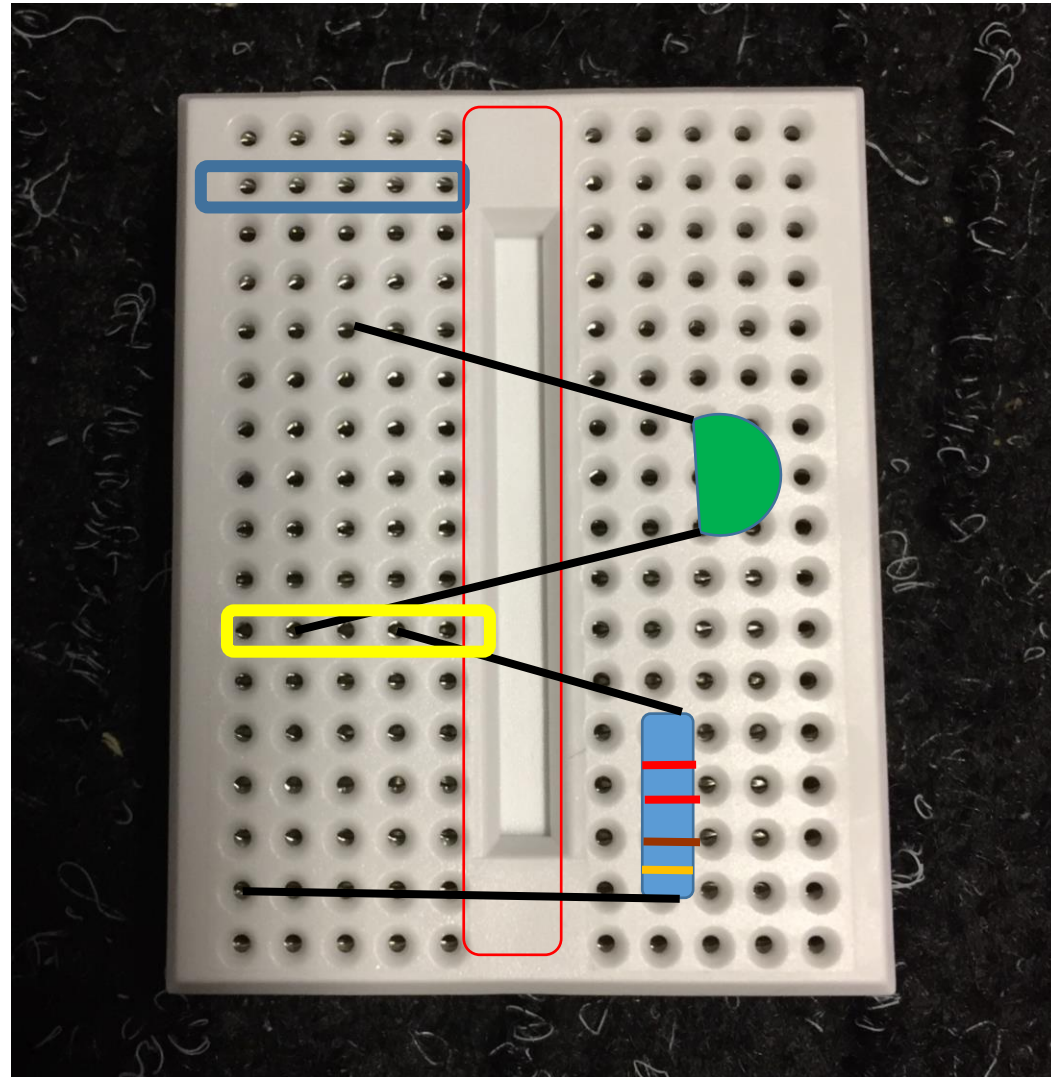
- Kids are constantly on their phones(gaming, social media)
- Be at school or home. They are always glued to their screens.
- Attention in the classroom lacks.
- Constantly need to be appraised, validated etc...

How was Robotech formed?



Breadboard

- Used for solderless prototyping
- Holes connect through a row of 5 holes.
- No connection across the trench
- Connect a component (e.g. an LED) over 2 rows, NOT in one row
- To connect 2 components, they must share a row

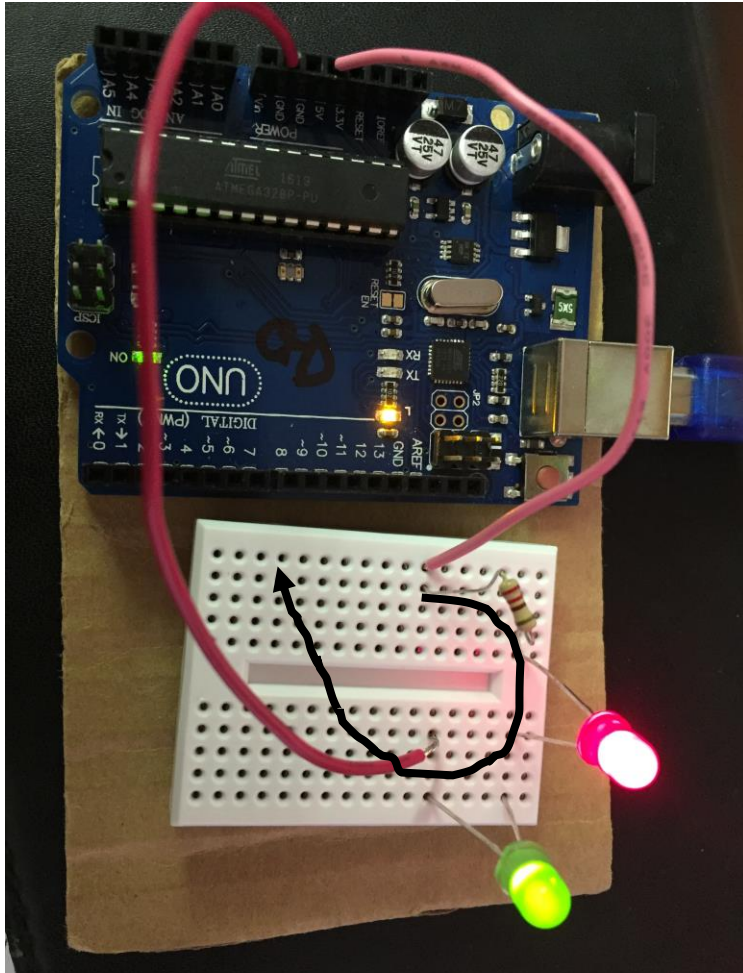


Pros and Cons

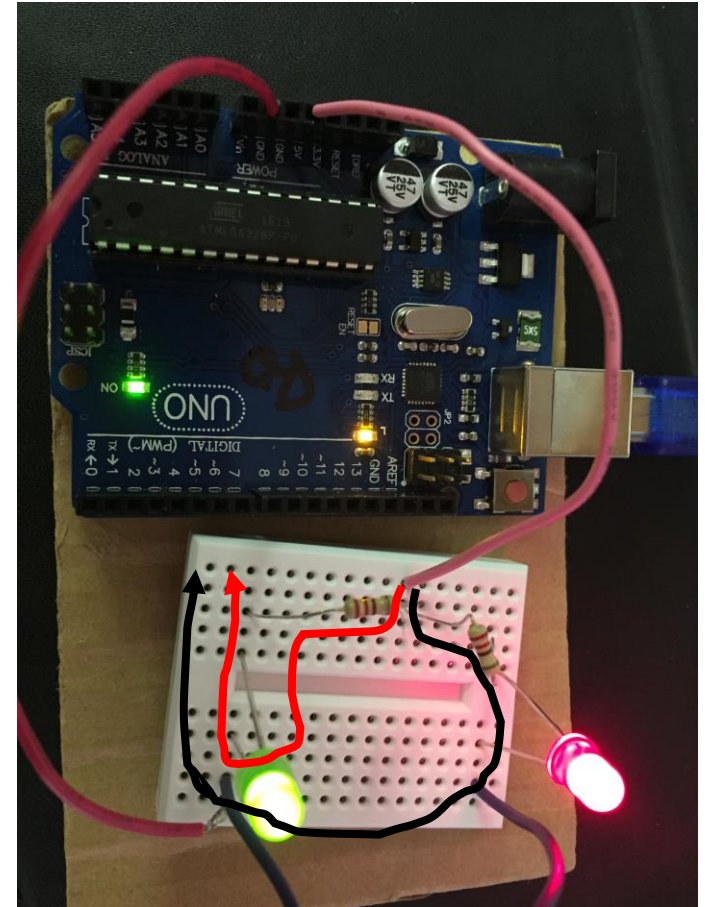
- Instant results
- Increased self-esteem/
confidence
- Work on your own pace
- Problem solving skills/ trouble
shooting.
- Chaos
- Content is limited.

Connect 2 lights in different ways

In series – one long loop



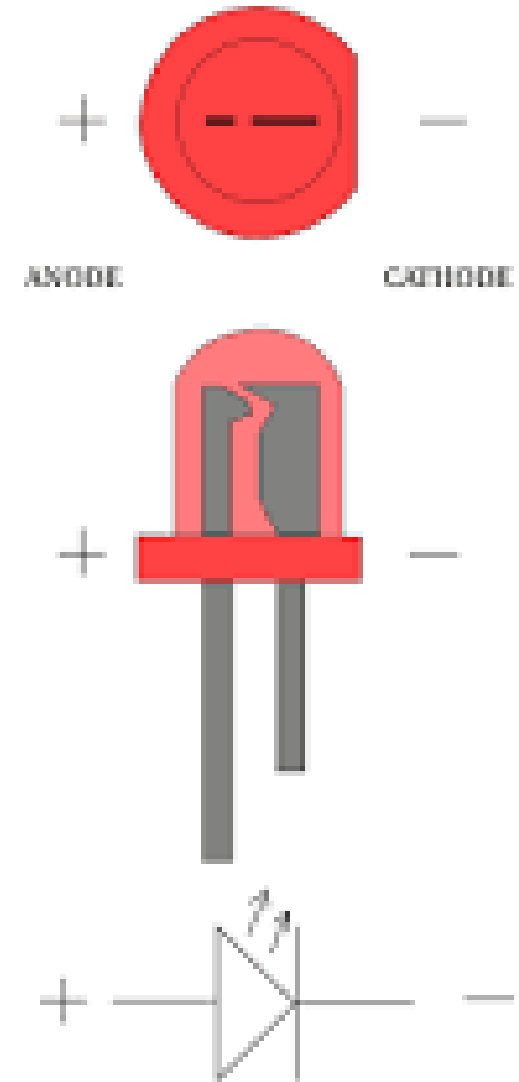
In parallel – separate loops



LED (Light Emitting Diode)

LED must be connected the correct way round. It will not shine if you put it in the circuit the wrong way round.

We usually put a resistor in the circuit with an LED to protect the LED from having too much charge flow through it per second.



Make a light flash

- Change the connection from 5 V to the Digital pin number 10
- Program using ArduBlock
 - Go to Arduino
 - Tools
 - ArduBlock

