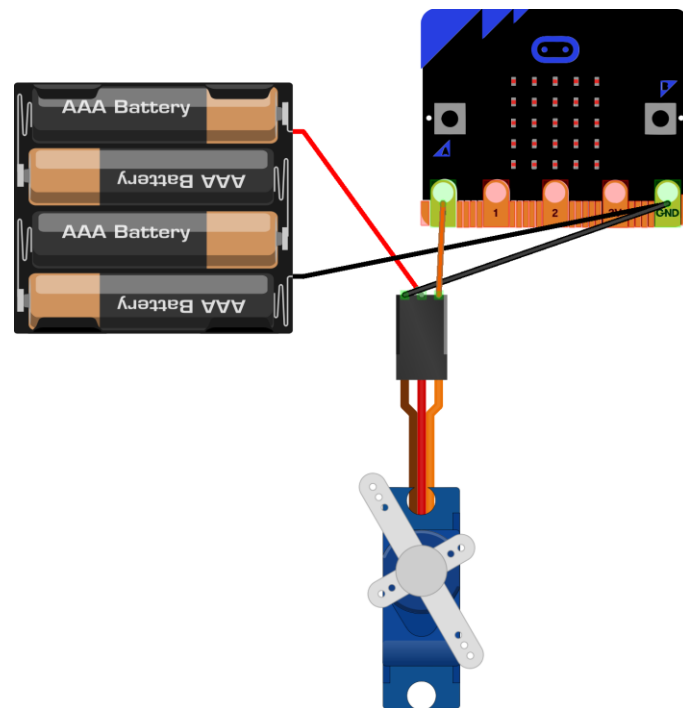


Advanced micro: Bit Workshop

Session 1 Part B
Motors and Circuits

Session Part B Overview

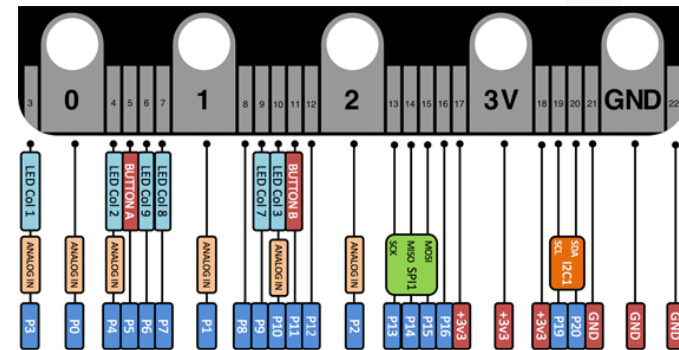
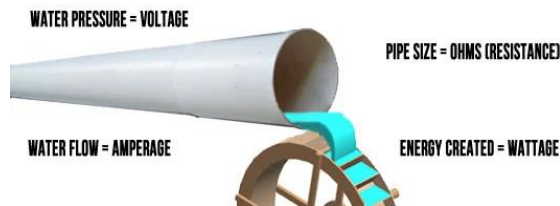
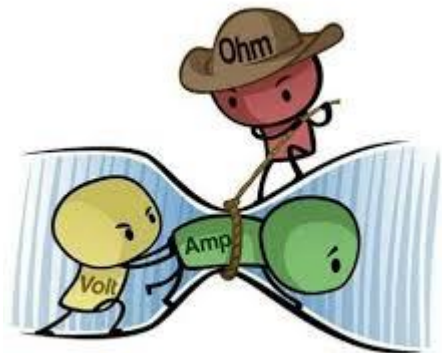
- Capabilities of the Micro:Bit
- Basic DC Motors
- Servo Motors
- Motor Driver Boards
- Possible Projects
- Circuits
- Resistors



fritzing

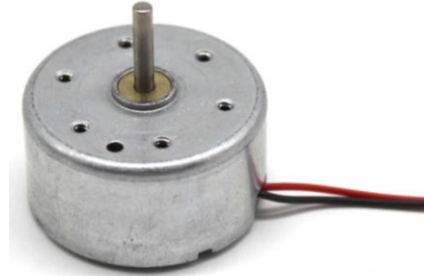
Capabilities of the micro:Bit

The micro:Bit is capable of outputting 3v and 90mA in order to power external devices. The MB has 25 pins which can be connected to sensors, motors and other devices. Some pins have dedicated functions and limitations.



Basic Motors

DC Motors convert electric energy into kinetic energy. The power ratings typically range from 3 to 6 volts for educational / recreational motors. They are not polarized and can be reversed easily.



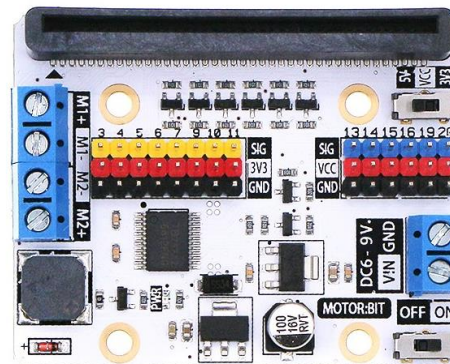
Servo Motors

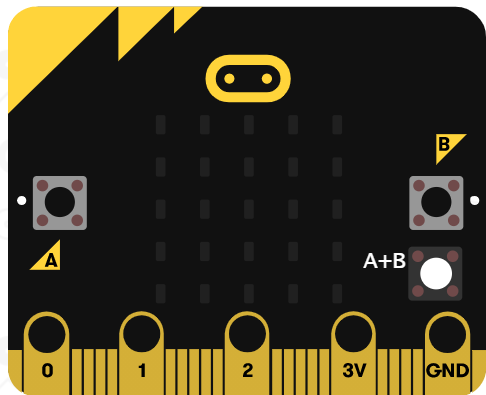
Servo motors can take input from the micro:Bit and are available in 180 and 360 degree variants. 3 volt Servos are available that are specifically designed for the MB.



Motor Driver Boards

Motor Driver boards enable the MB to driver more powerful motors. They do this by taking an external power input of 6 – 10.8 volts. The boards also provide pins which can used for sensors or lower powered servo's.



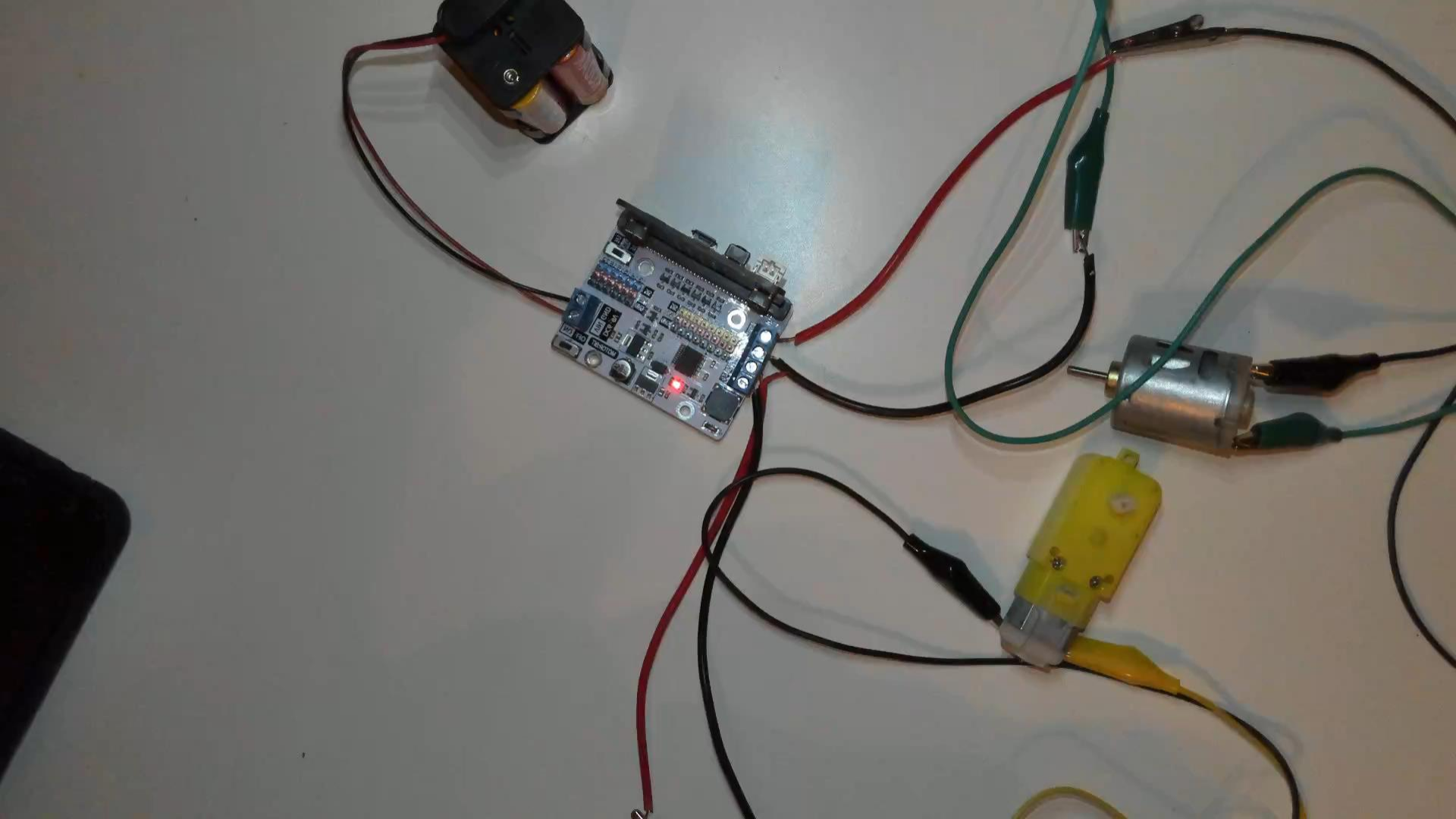


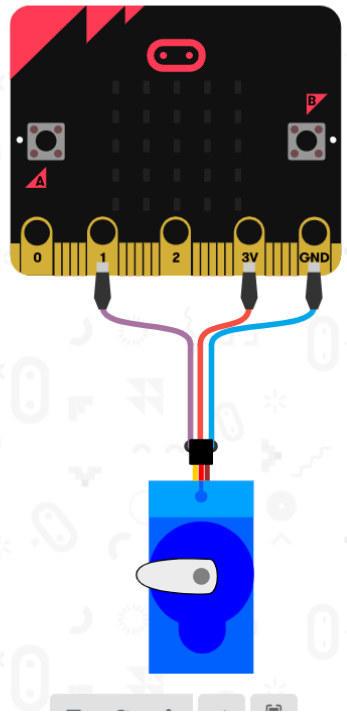
- Input
- Music
- Led
- Radio
- Servos
- Loops
- Logic
- Variables
- Math
- Tinkercademy
- Sonarbit
- OLED
- Motorbit
- Advanced

```
on button A pressed
  left wheel speed 0 right wheel speed 100

on button B pressed
  left wheel speed 100 right wheel speed 0

on button A+B pressed
  left wheel speed 0 right wheel speed 0
```

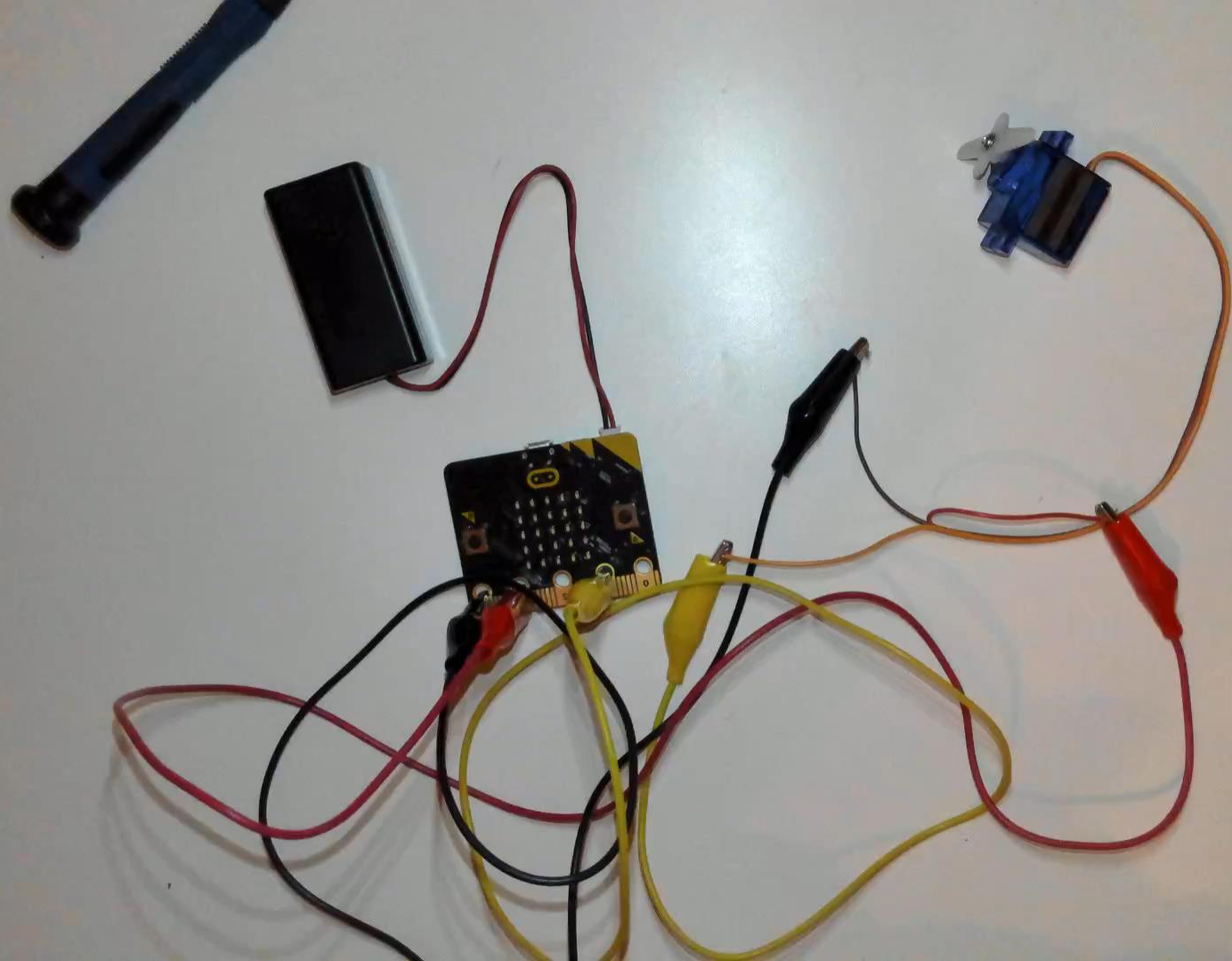




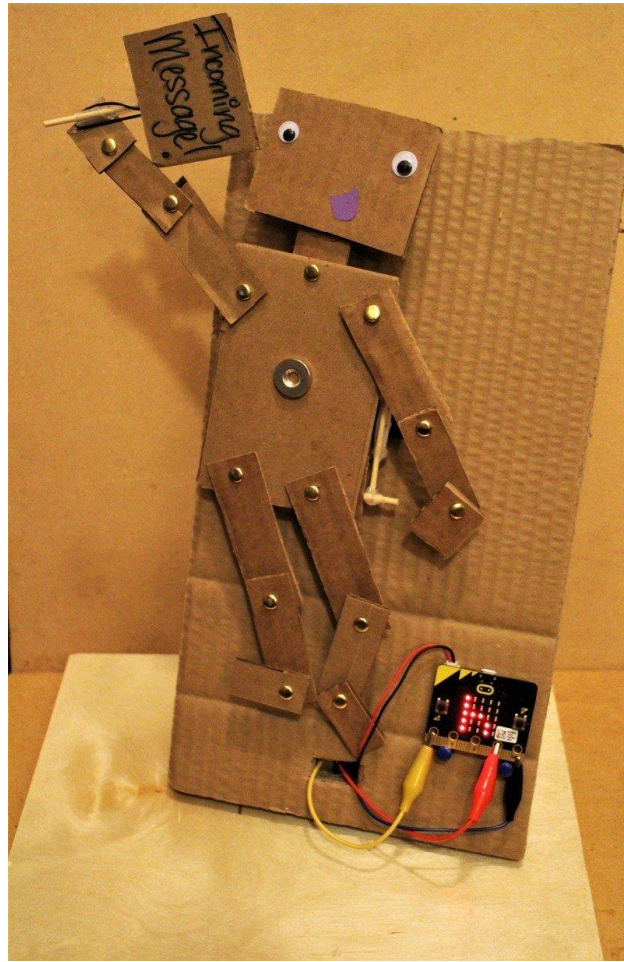
- ap
- Search
- Basic
- Input
- Music
- Led
- Radio
- Servos
- Loops
- Logic
- Variables
- Math
- Advanced
- Functions

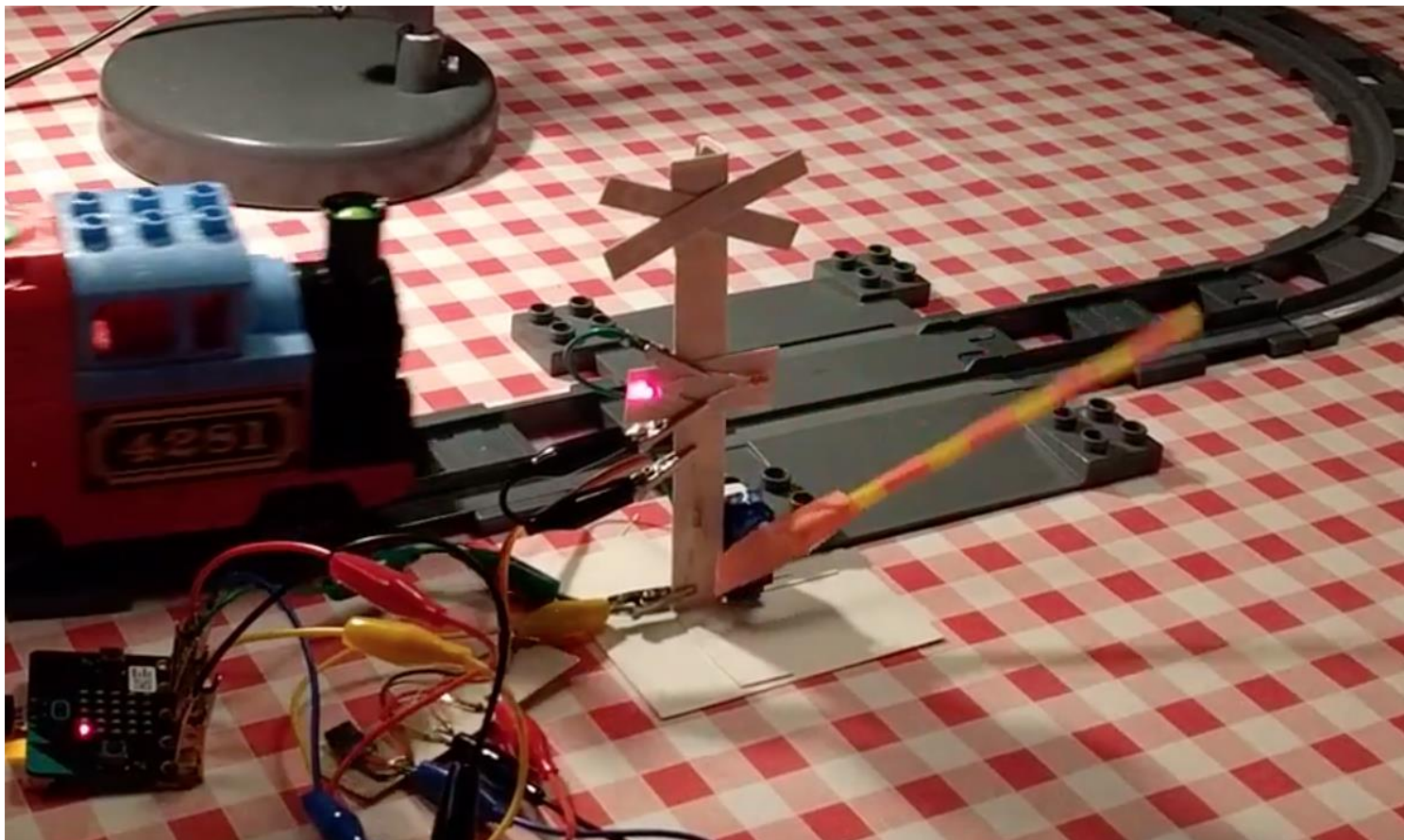
```
on button A pressed  
set servo P1 angle to 0 °
```

```
on button B pressed  
set servo P1 angle to 180 °
```

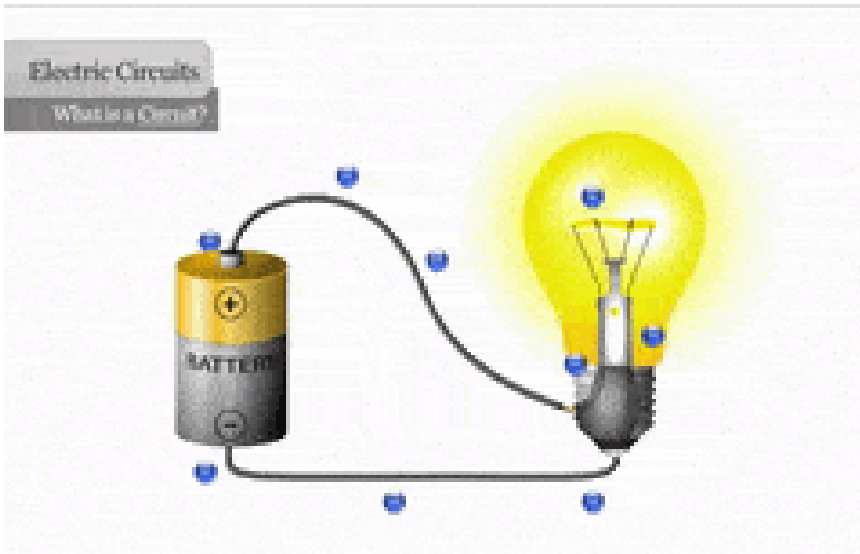


Possible projects







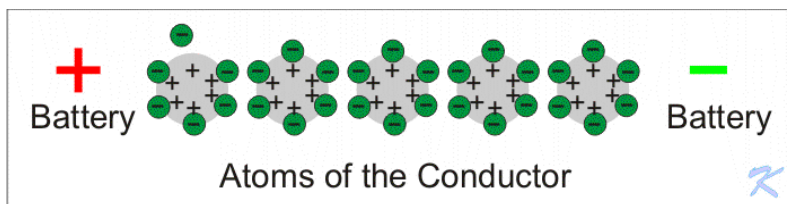


Circuits

Electricity flows through the circuit from negative to positive. The circuit must be complete for current to flow.

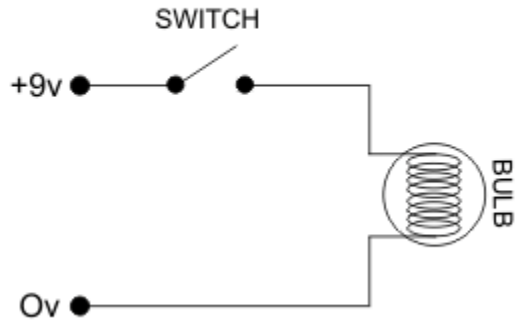
← **Electrons Move to the Left**

Positive Charge Moves with Missing Electron →

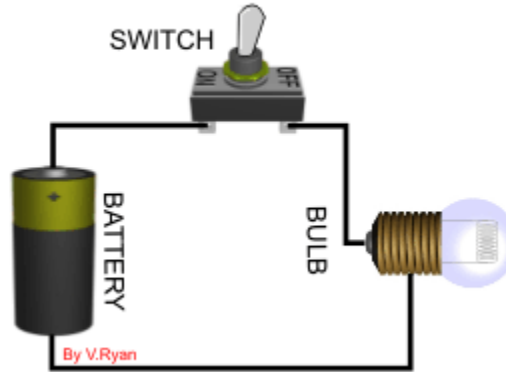


Circuit Diagrams

CIRCUIT DIAGRAM

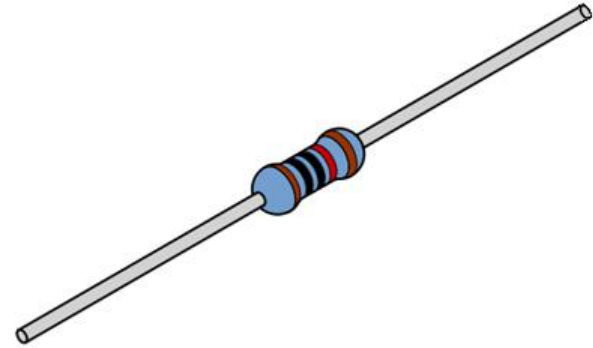


PICTORIAL CIRCUIT DIAGRAM



Resistor

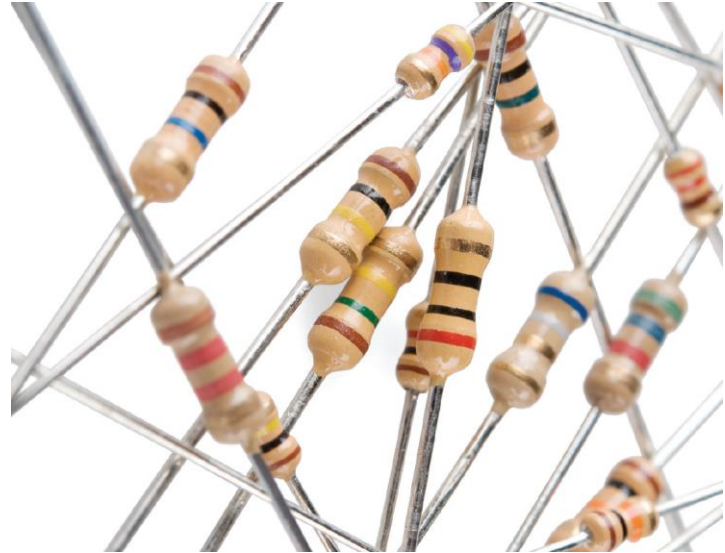
The function of a Resistor is to restrict the flow of electric current through a circuit



Symbol

Uses for Resistors

- Limiting current to another component
- Reducing voltage to part of the circuit
- Controlling the voltage/current going into another component
- Protecting the inputs of sensitive components



4 Band Resistor

