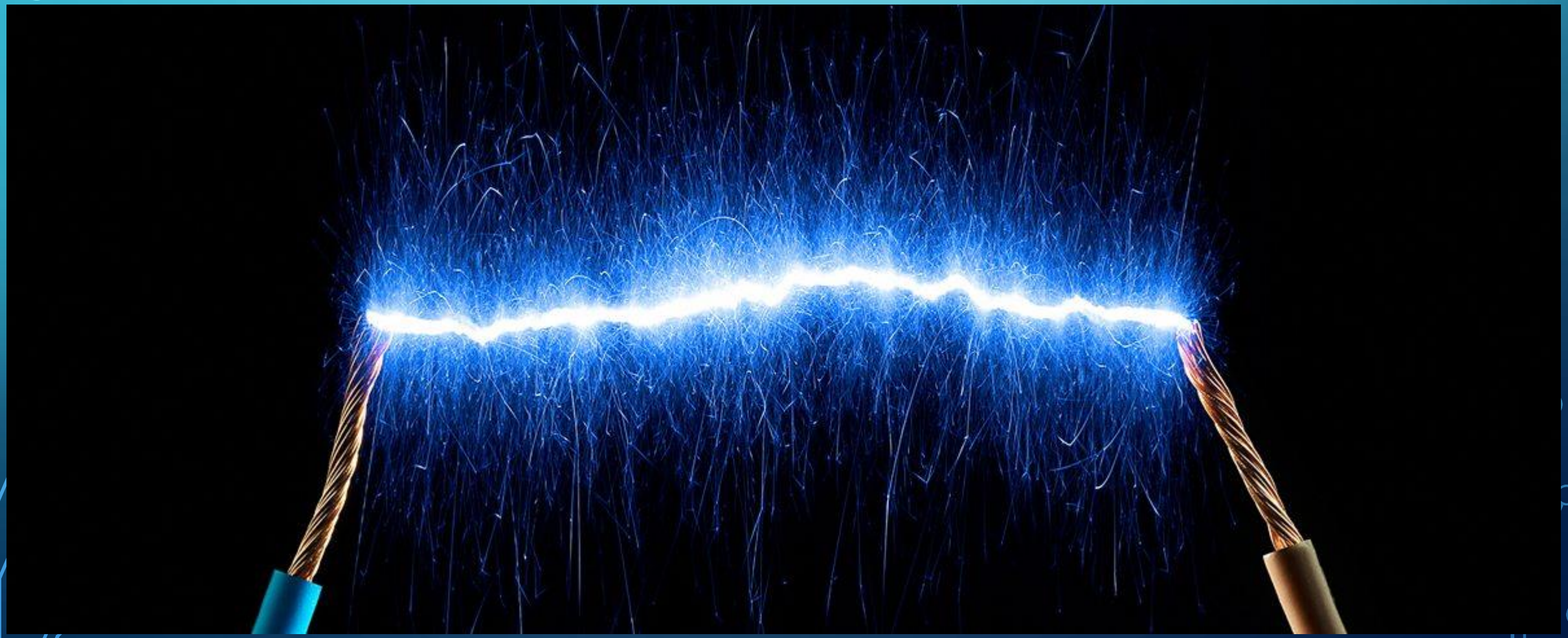
# 02. BASIC ELECTRONICS

M2U1P2

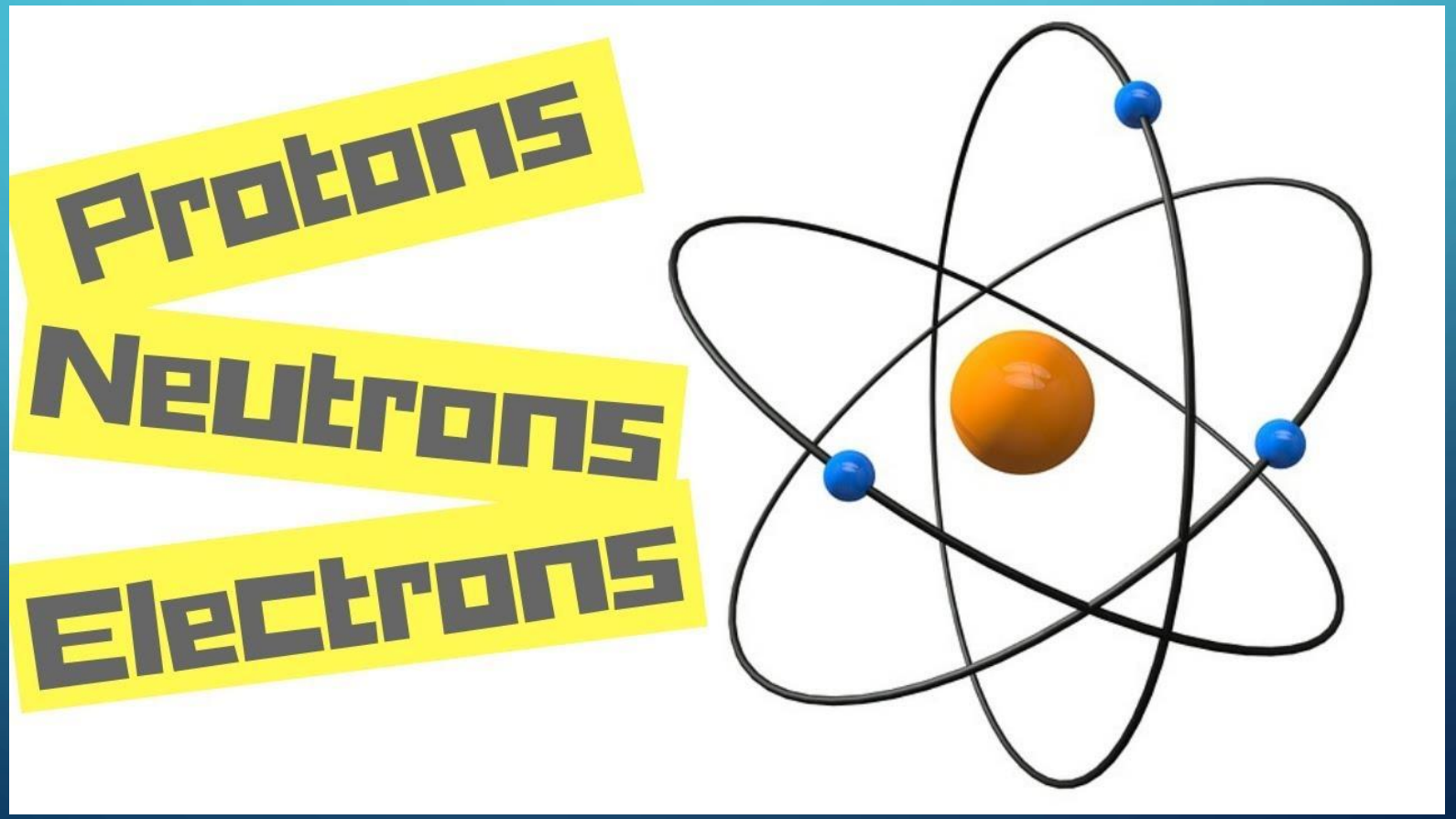
# WHAT IS ELECTRICITY?
# (ไฟฟ้า )



# ELECTRICITY (ไฟฟ้า)

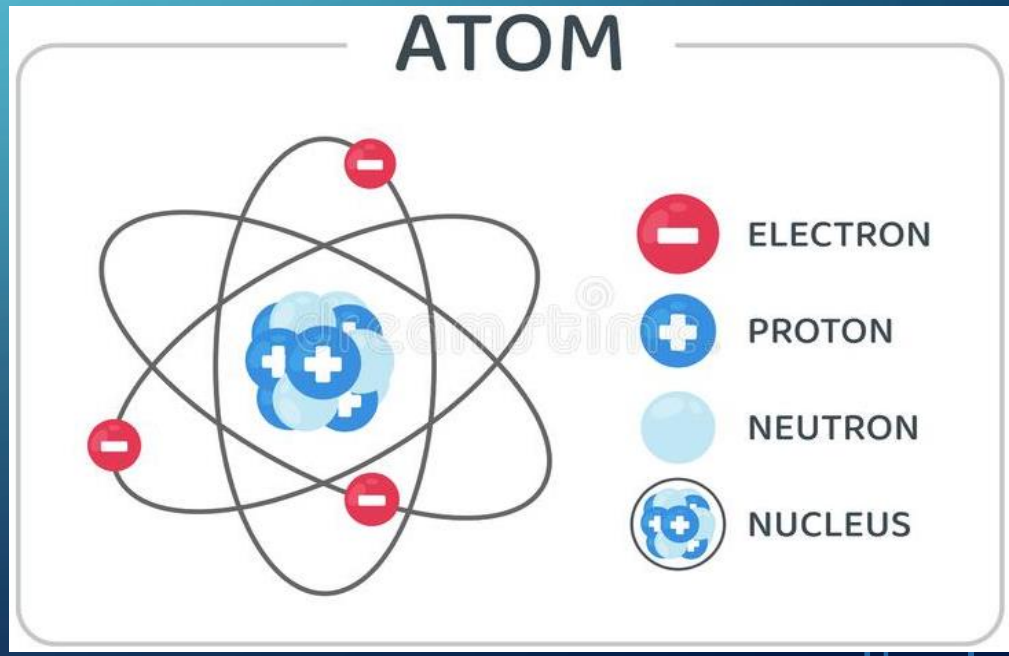
- **Electricity** is form of energy which is involved in the movement of electrons and protons, which can be used to convert to other forms of energy such as light, heat, sound, movement….
- Example
  - Light → light bulb
  - Heat → iron
  - Image and sound → TV
  - Movement → motor, something spinning

# WHAT ARE ELECTRONS AND PROTONS ?

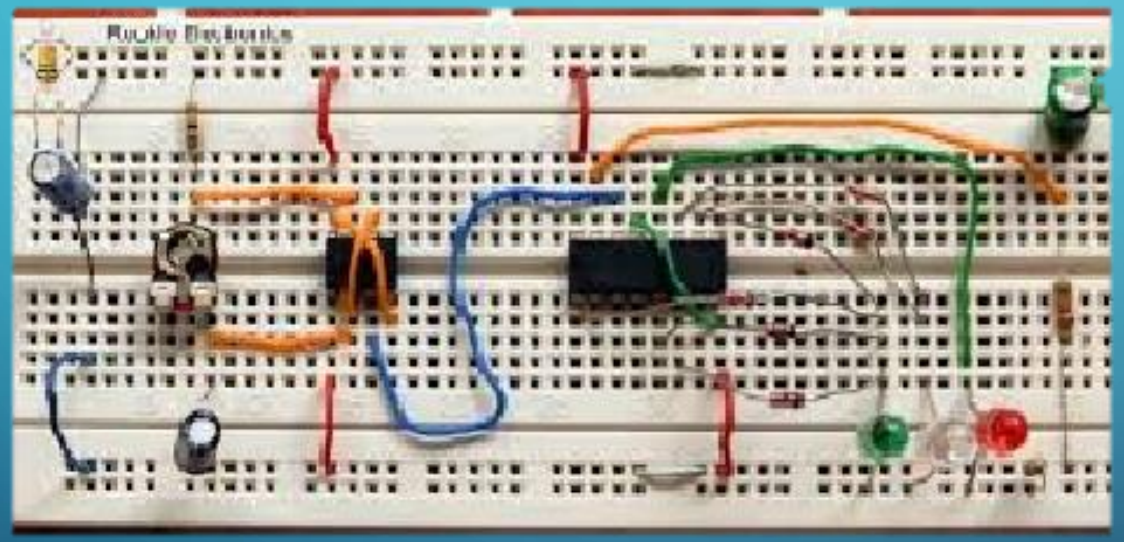


# ATOMS

- An **atom** is the smallest component of an element and the building blocks of all matter
- An atom consists out of electrons, protons and neutrons
- **Electrons** are negatively charged particles
- **Protons** are positively charged particles
- **Neutrons** are particles without a charge



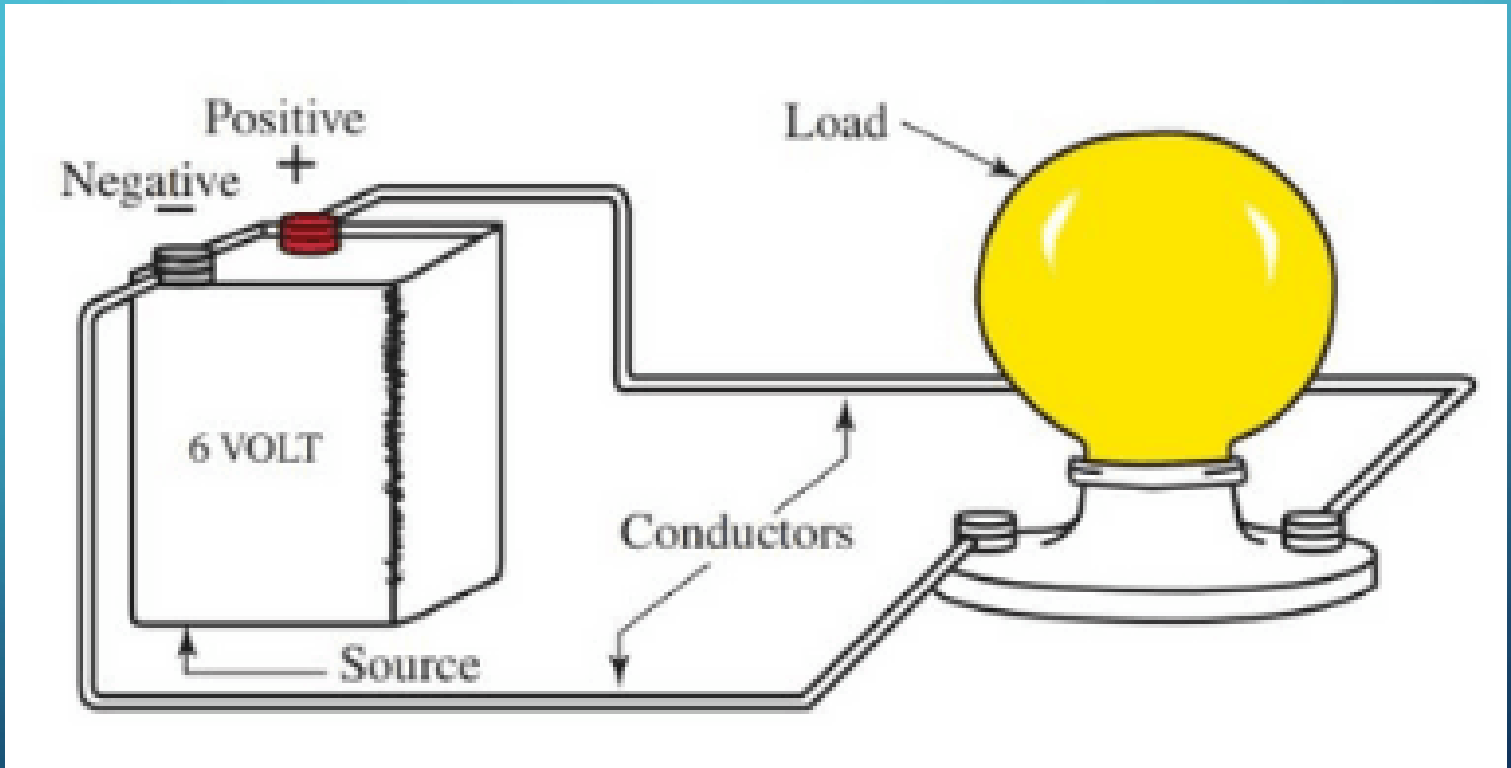
# WHAT IS ELECTRONICS?



# ELECTRONICS

- **Electronics** is in the study and control of electric current
- It controls the quantity and direction of electric current movement as needed
- Electricity and electronics are interrelated in the creation of various electrical appliances
- In an electrical appliance we have an **electrical circuit** that consists out of connected electrical equipment
- Each circuit works in a different way, depending on its functions

# WHAT IS AN ELECTRIC CIRCUIT?

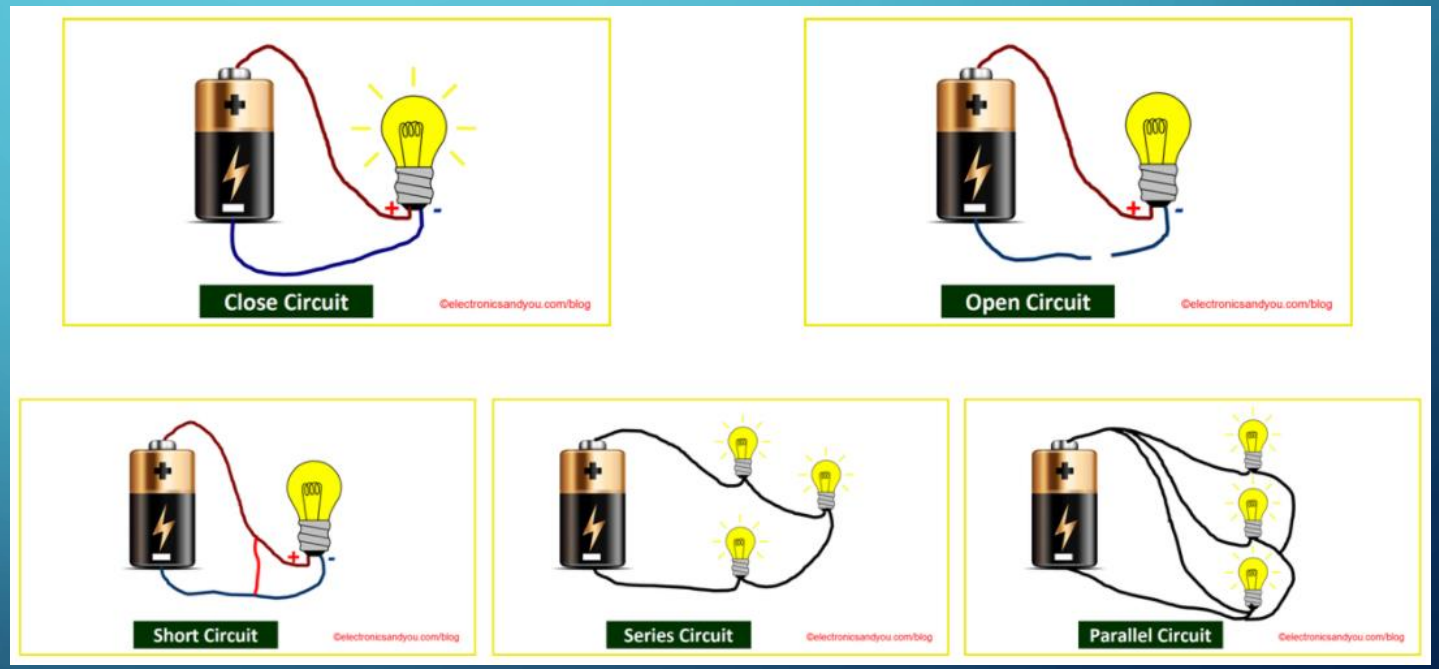


# ELECTRIC CIRCUIT

- An **electric circuit** is the conductive path for flow of current or electricity
- An electric circuit has:
  - Device that gives electrical energy (a battery or a generator)
  - Devices that use electrical energy (lamps, electric motors, or computers)
  - Connecting wires or transmission lines

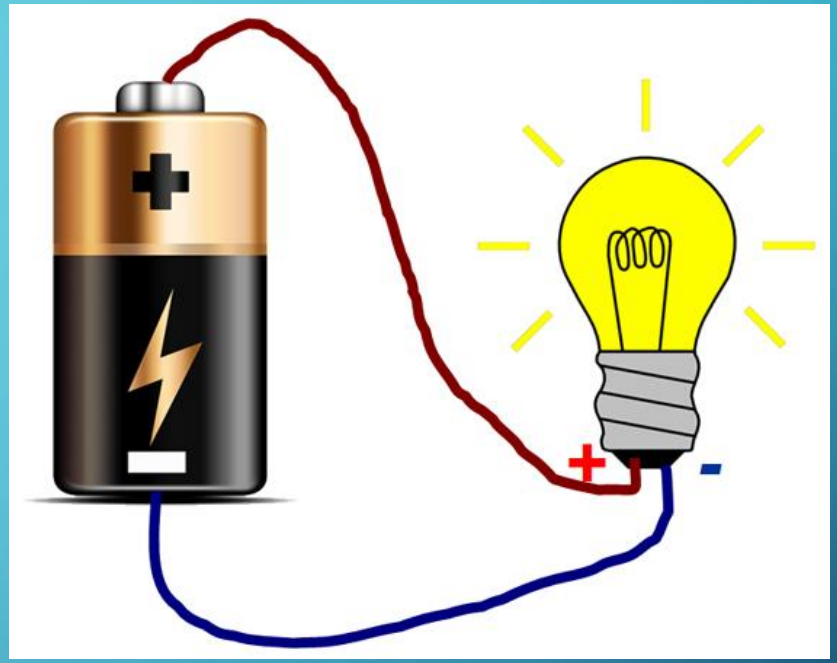
# ELECTRIC CIRCUIT

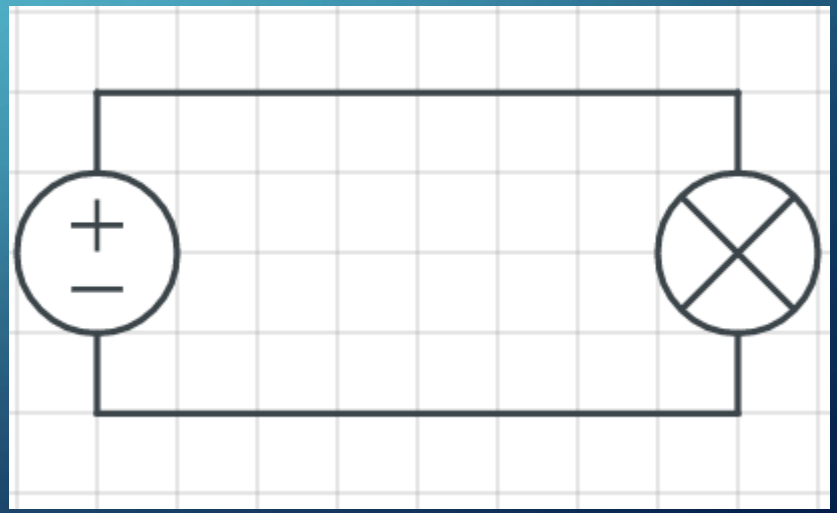
- There are 5 main types of electric circuits:
  - Closed Circuit
  - Open Circuit
  - Short Circuit
  - Series Circuit
  - Parallel Circuit



# CLOSED CIRCUIT

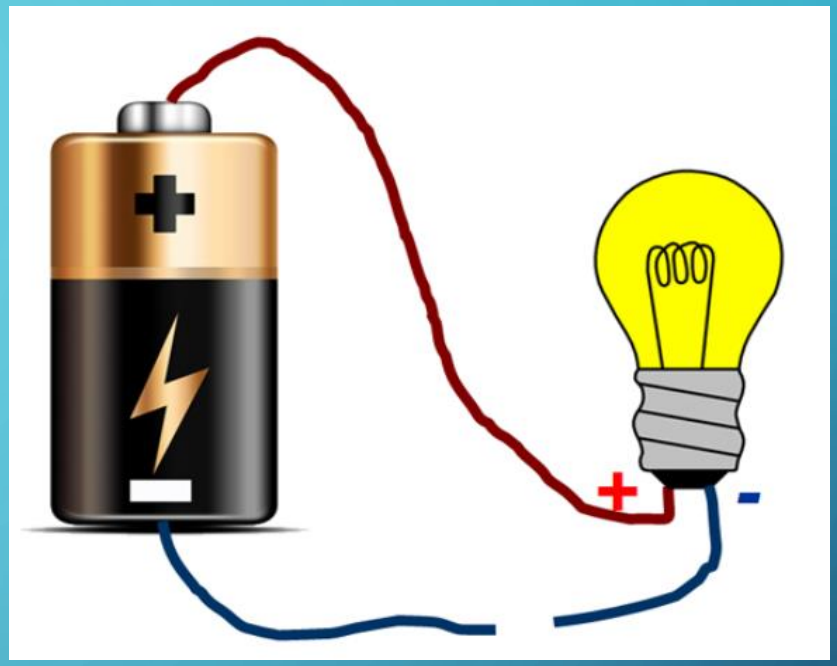
- A circuit without interruption
- The circuit is ON
- Electricity flows from one end of the circuit to the other end



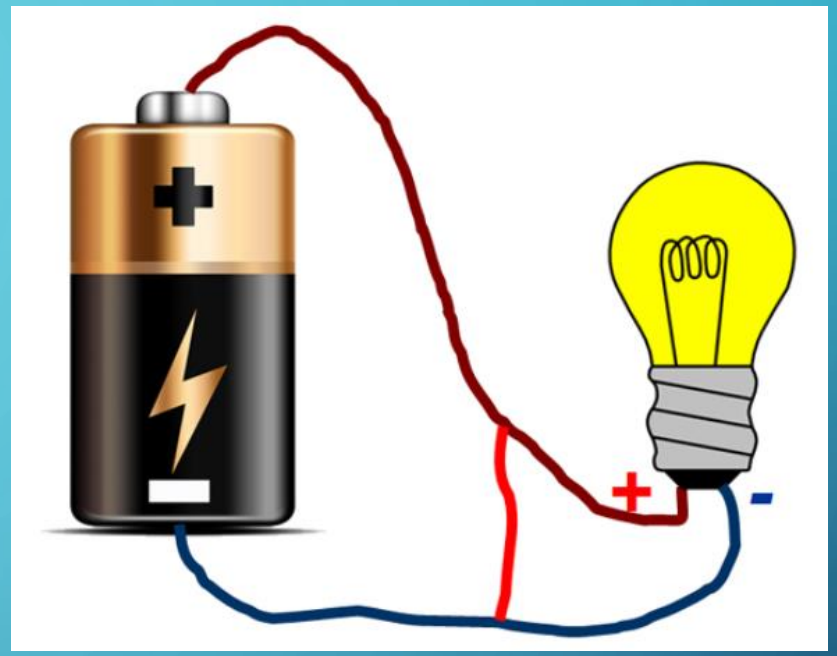
# OPEN CIRCUIT

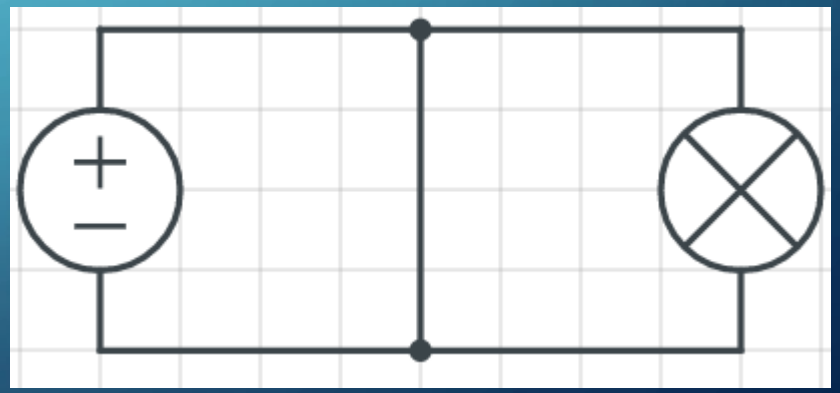
- A circuit with interruption
- The circuit is OFF
- Electricity can not flow from one end of the circuit to the other end
- Reasons are either broken wires or the switch is set to off position




# SHORT CIRCUIT

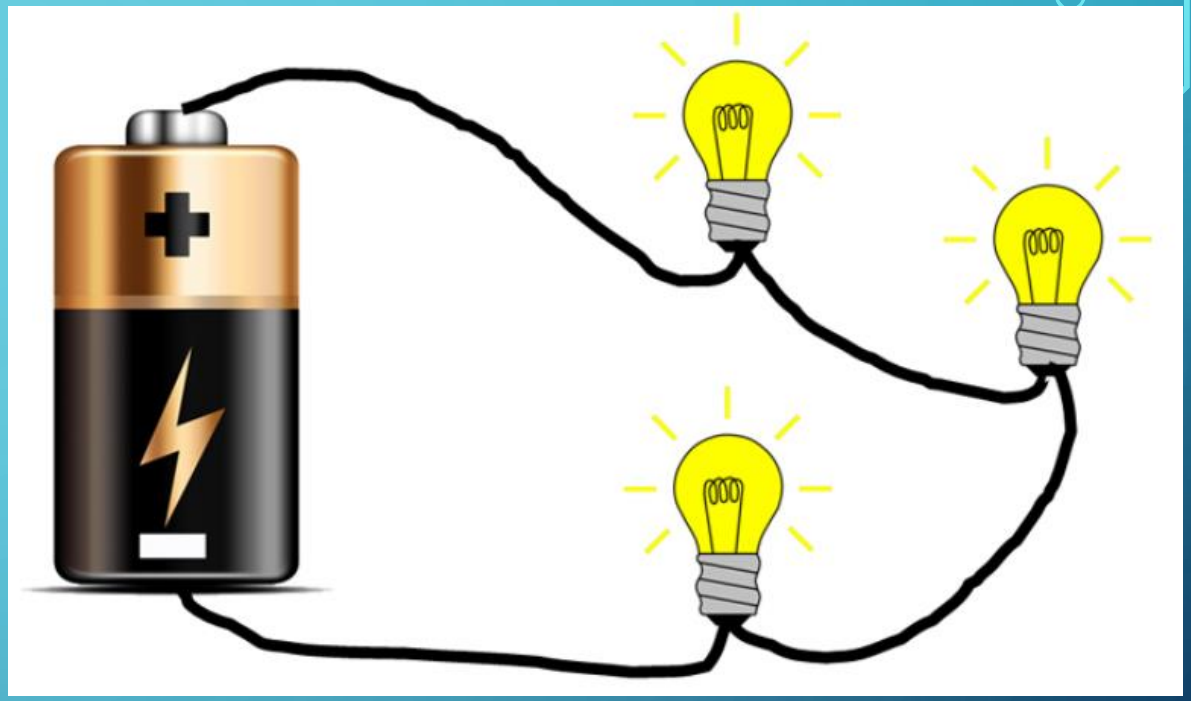
- When both points (+ & –) of voltage source in a circuit gets connected with each other for some reason then it is called Short Circuit
- Maximum current starts to flow under this situation

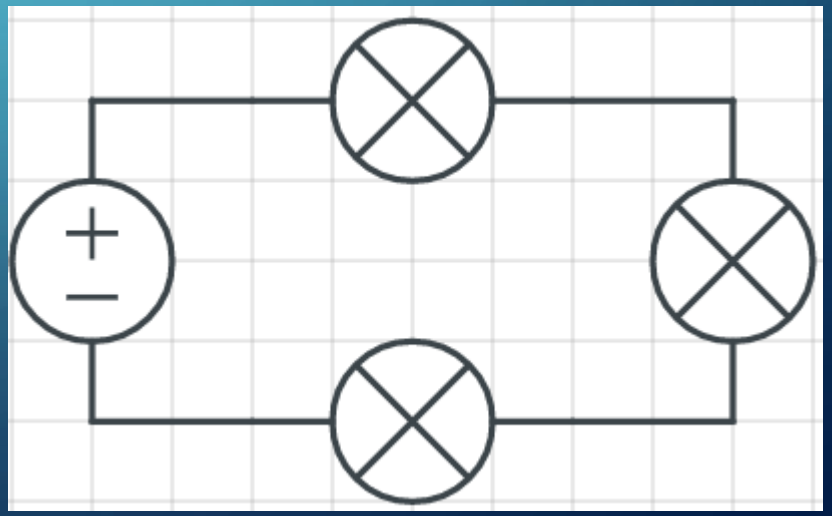


# SERIES CIRCUIT

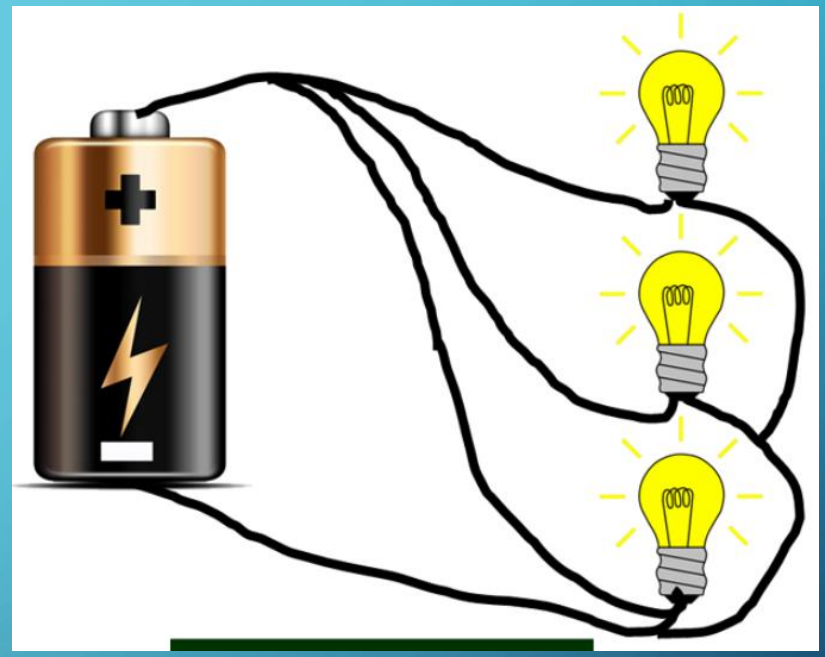
- When 2 or more loads (Bulb, CFL, LED, Fan…) are connected to each other in a series
- If one load or bulb stops working, then rest of the bulbs will not get power supply and will not glow

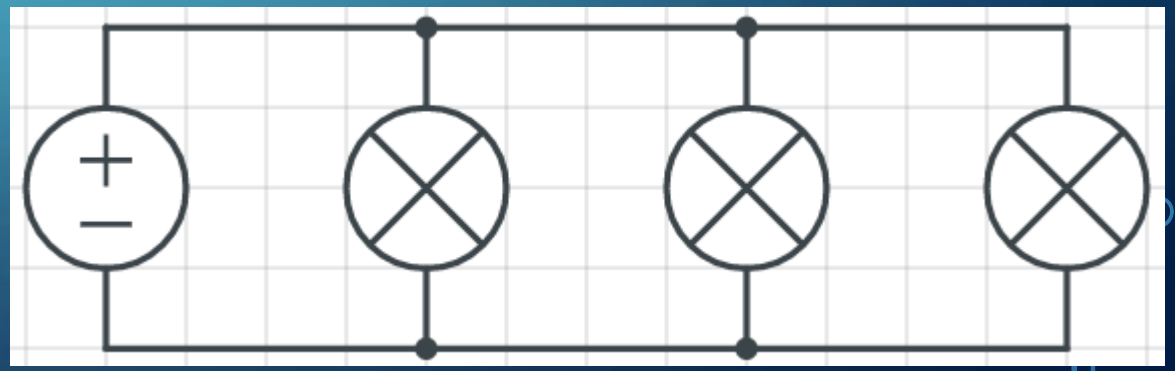




# PARALLEL CIRCUIT

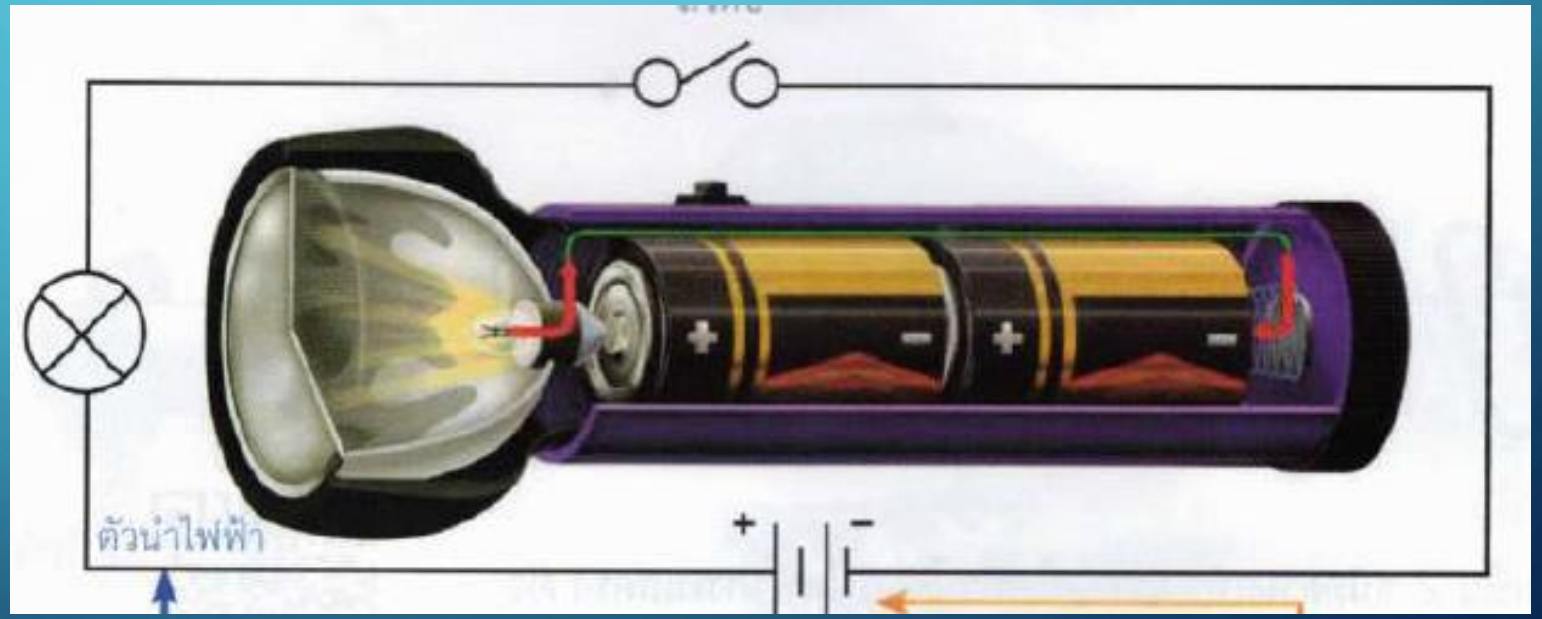
- When 2 or more loads (Bulb, CFL, LED, Fan…) are connected to each other in parallel
- If one load or bulb stops working, then rest of the bulbs will still get power supply and will glow



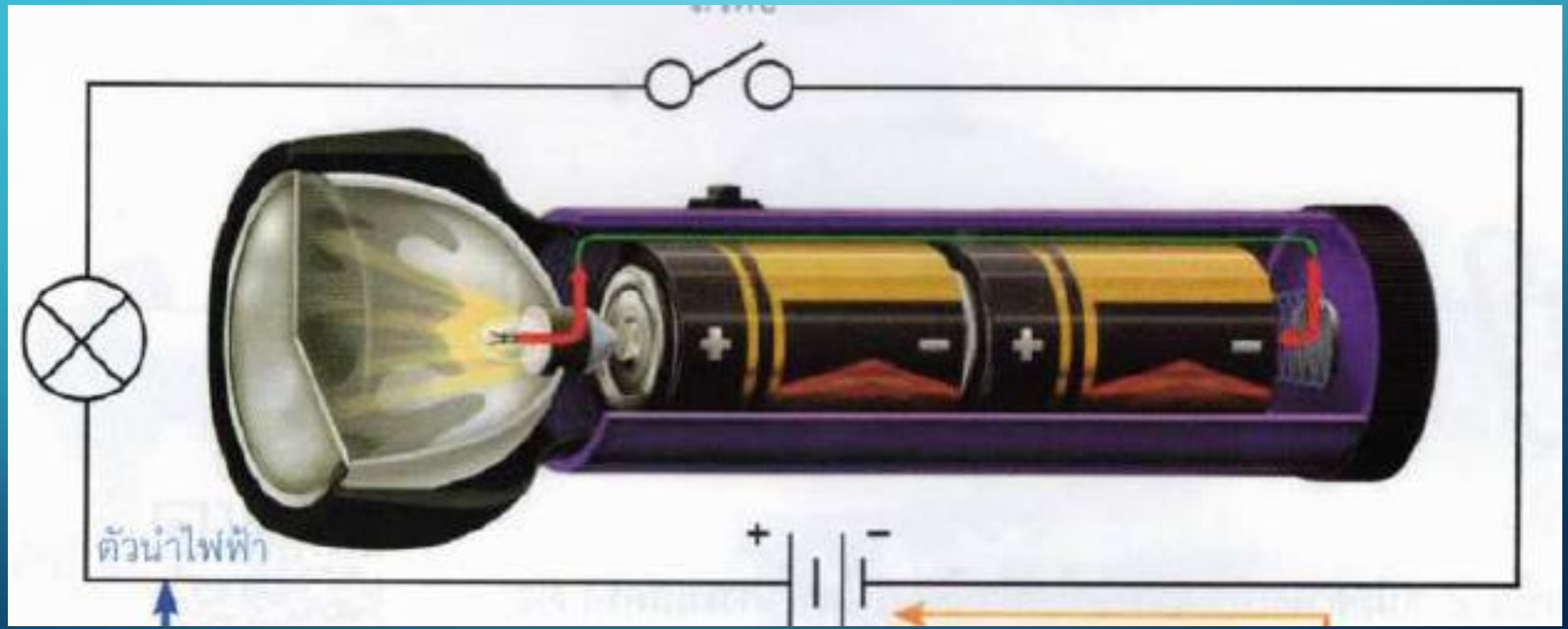


# EXAMPLE: FLASHLIGHT

- A flashlight can be seen as a simple electrical circuit. It has 3 components,
  - Source
  - Switch
  - Lightbulb



# WHAT KIND OF CIRCUIT IS IT?



# ANY QUESTIONS?

# WORKSHEET

# THE END