



# Lecture (00) preface

By:

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## What is electric circuit?

- The first electric batteries were invented by a fellow named Alessandro Volta in 1800.
- Volta's contribution is so important that the common *volt* is named for him.

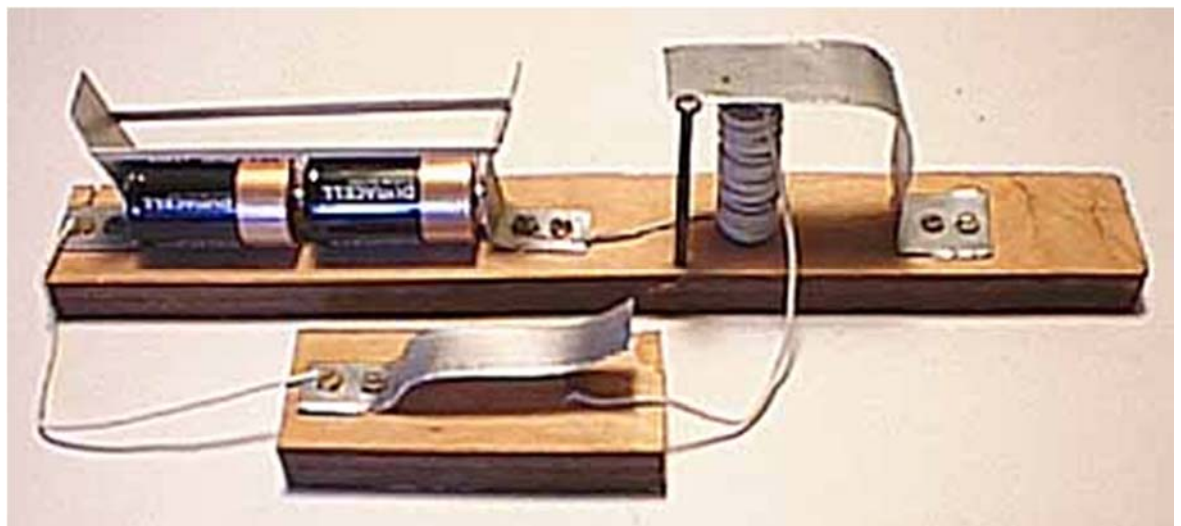


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- The electric telegraph was invented in the 1830s and popularized in America by Samuel Morse, who invented the famous Morse code used to encode the alphabet and numerals into a series of short and long clicks that could be transmitted via telegraph.



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- In 1866, a telegraph cable was laid across the Atlantic Ocean allowing instantaneous communication between the United States and Europe.



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- All of these devices, and many other common devices still in use today, such as light bulbs, vacuum cleaners, and toasters, are known as *electrical devices*.



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## So what exactly is the difference between electrical devices and *electronic devices*?

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- The answer lies in how devices manipulate electricity to do their work.
- Electrical devices take the energy of electric current and transform it in simple ways into some other form of energy — most likely light, heat, or motion.



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- The heating elements in a toaster turn electrical energy into heat so you can burn your toast.
  - And the motor in your vacuum cleaner turns electrical energy into motion that drives a pump that sucks the burnt toast crumbs out of your carpet.



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- That very first electronic device invented in 1883 by Thomas Edison manipulated the electric current passing through a light bulb in a way that let Edison create a device that could monitor the voltage being provided to an electrical circuit and automatically increase or decrease the voltage if it became too low or too high.



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- audio electronic devices add sound information to an electric current so that you can listen to music or talk on a cellphone. And video devices add images to an electric current so you can watch great movies until you know every line by heart



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- What used to be simple electrical devices now often include some electronic components in them.
  - For example, your toaster may contain an electronic thermostat that attempts to keep the heat at just the right temperature to make perfect toast.
  - And even the most complicated electronic devices have simple electrical components in them.
  - For example, although your TV set's remote control is a pretty complicated little electronic device, it contains batteries, which are simple electrical devices.

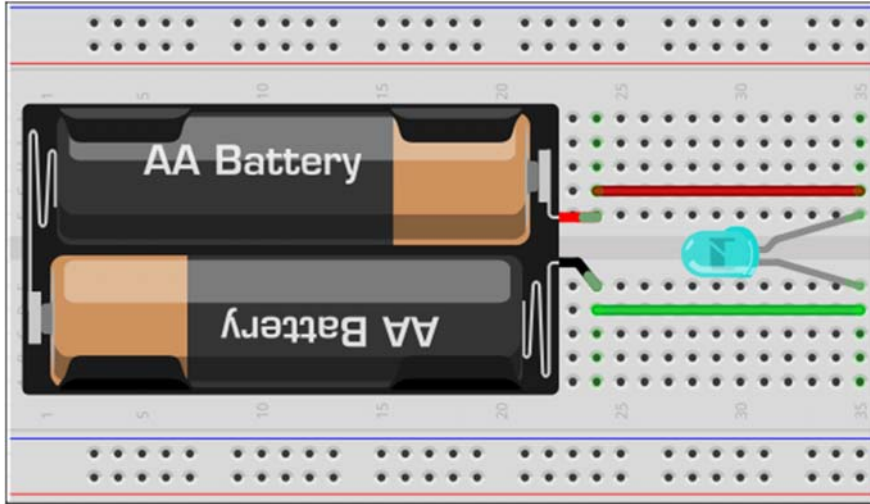
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# Simple eclectic circuit

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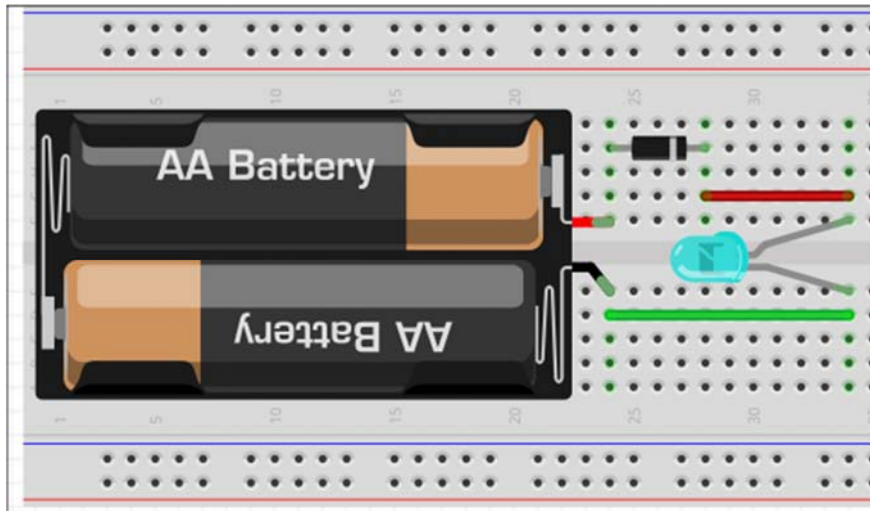
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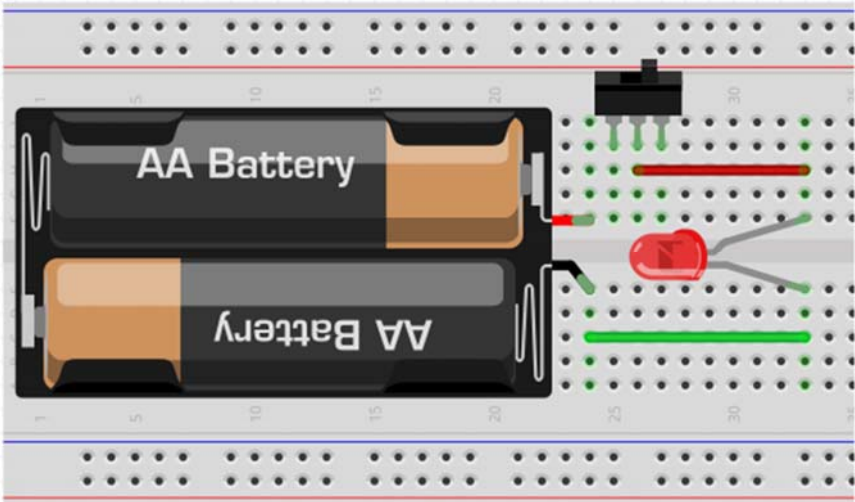
# Simple electronic circuit

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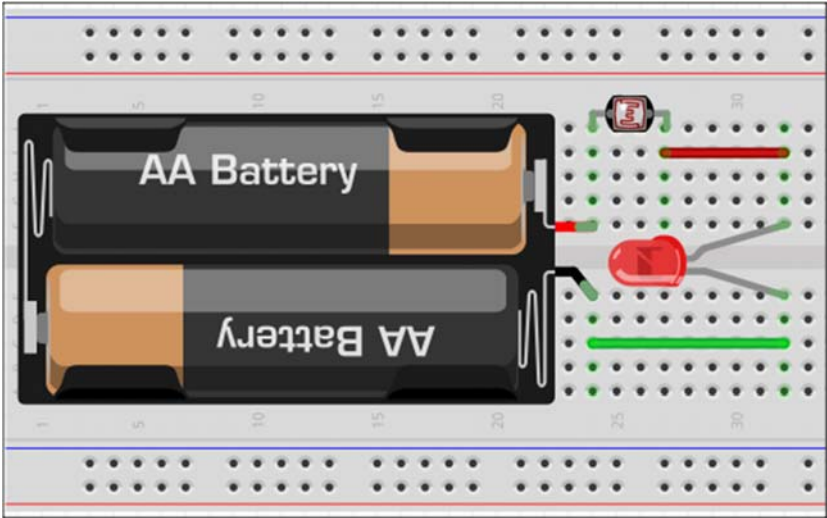
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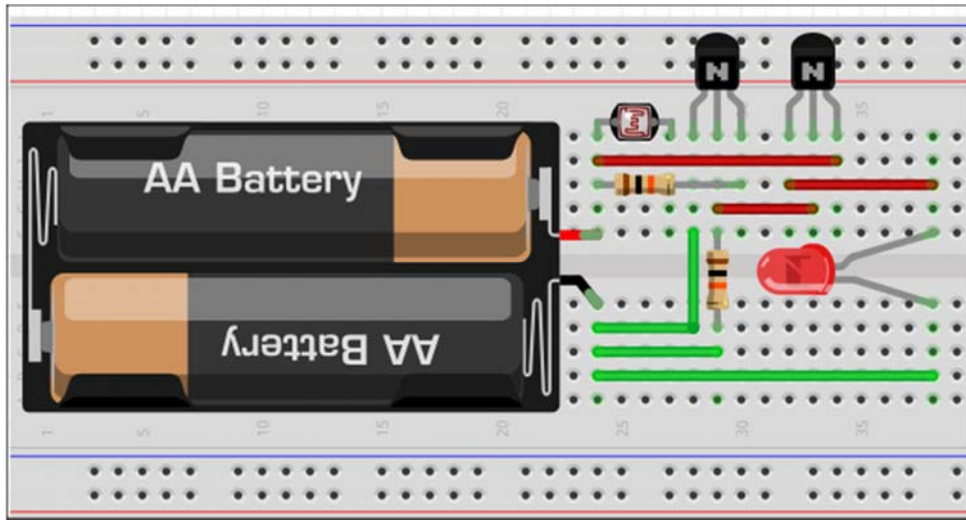
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