

Service Learning Project

SLICE

Prototype Fabrication Experience

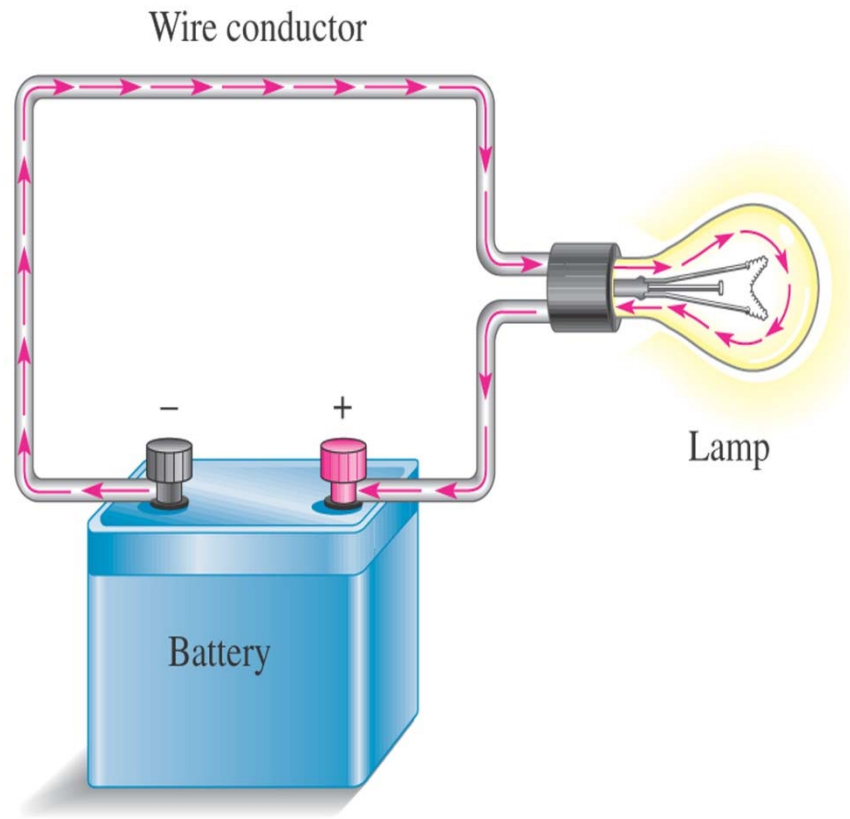
Xiaotian Zou
University of Massachusetts Lowell



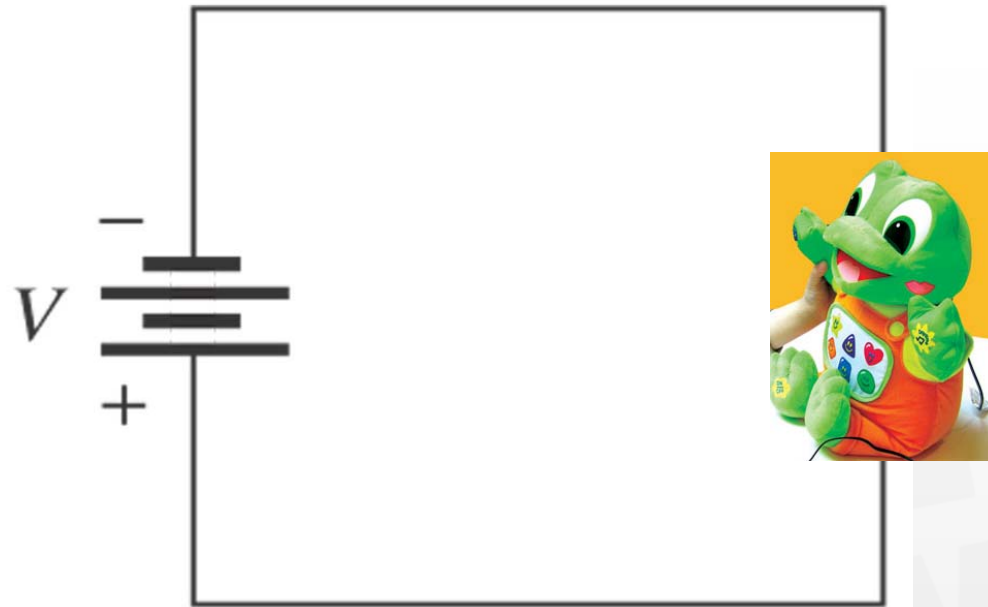
Ability Switch in Use



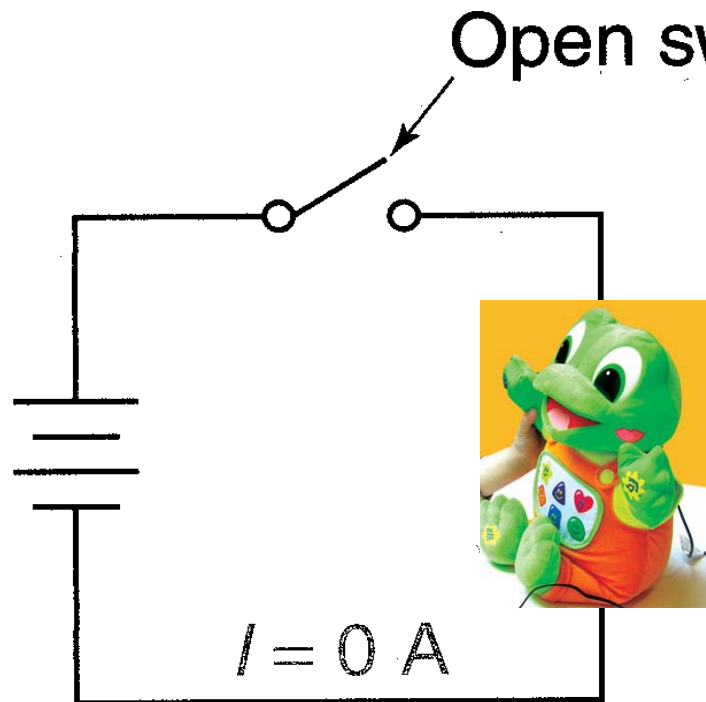
Electronic Circuit



Electronic Circuit

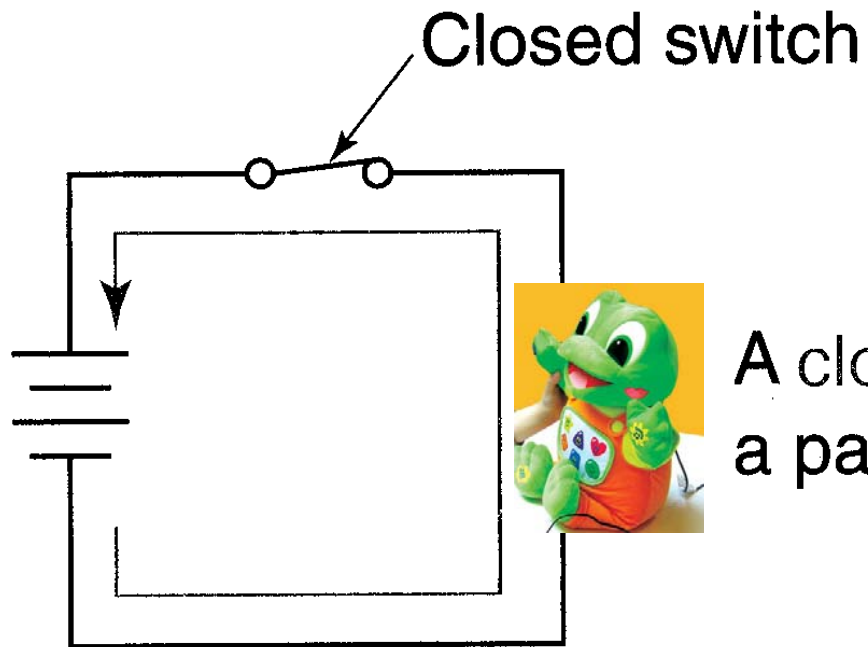


Open Circuit



An open switch breaks the conduction path and blocks current.

Closed Circuit



A closed switch provides a path for current.

The purpose of this project?



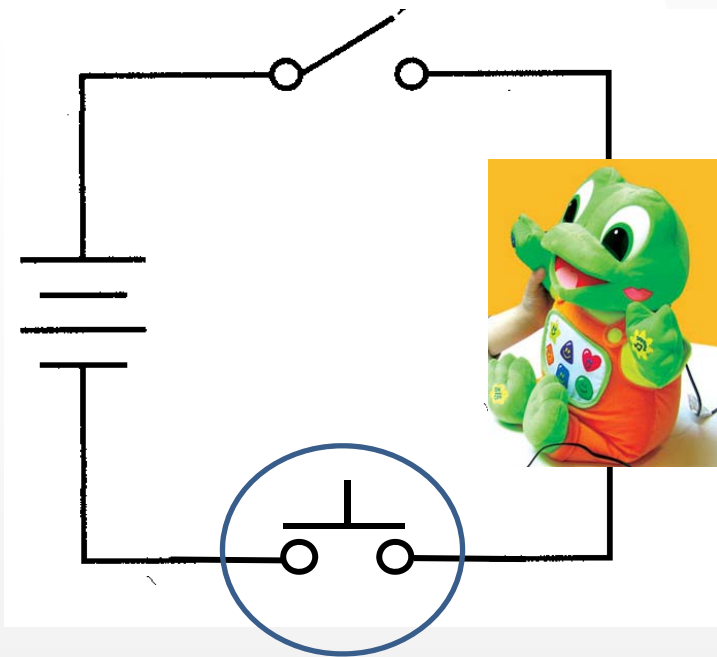
**Push button
Switch**

Push Button Switch

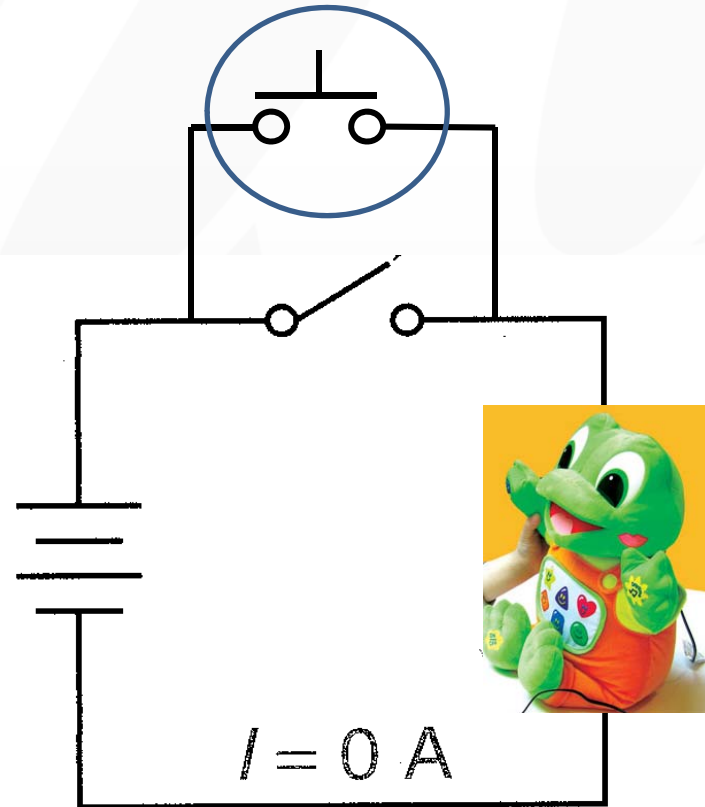


NOPB
switch

Series and parallel circuits



Series circuits



parallel circuits

Series circuits

Series circuits

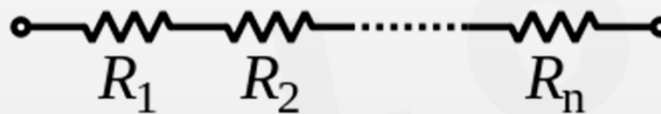
The current in a series circuit goes through every component in the circuit. Therefore, all of the components in a series connection carry the same current.

Current

$$I = I_1 = I_2 = \dots = I_n$$

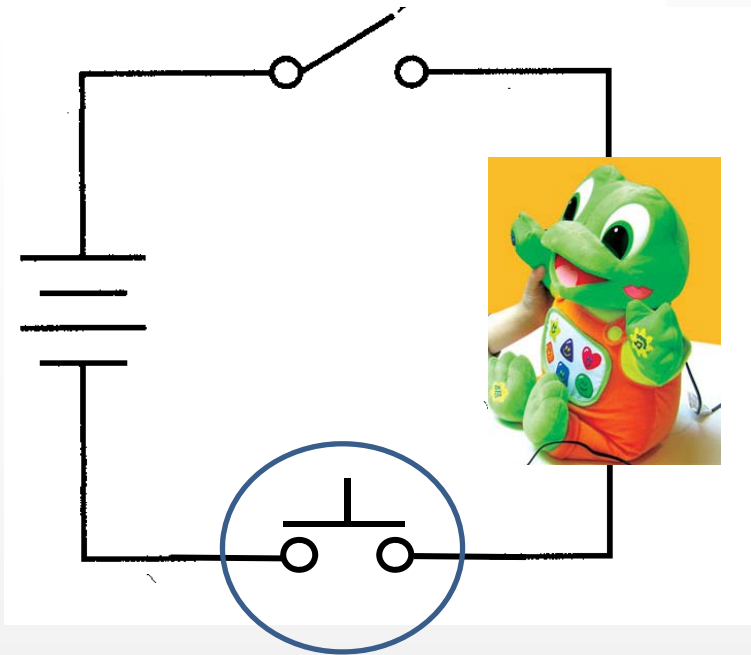
In a series circuit the current is the same for all elements.

Resistors



The total resistance of resistors in series is equal to the sum of their individual resistances

Series circuits



Series circuits

There is only one path in which its current can flow, opening or breaking a series circuit at any point causes the entire circuit to "open" or stop operating.

Parallel circuits

Parallel circuits

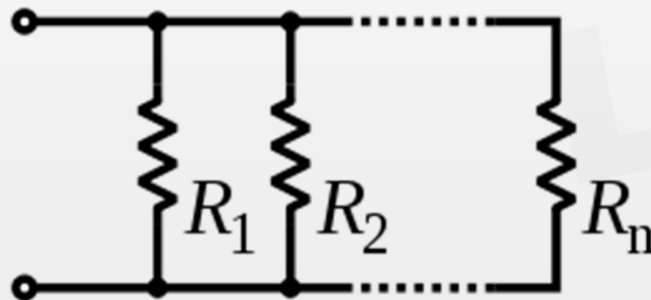
The same voltage is applicable to all circuit components connected in parallel. The total current is the sum of the currents through the individual components, in accordance with Kirchhoff's current law.

Voltage

$$V = V_1 = V_2 = \dots = V_n$$

In a parallel circuit the voltage is the same for all elements.

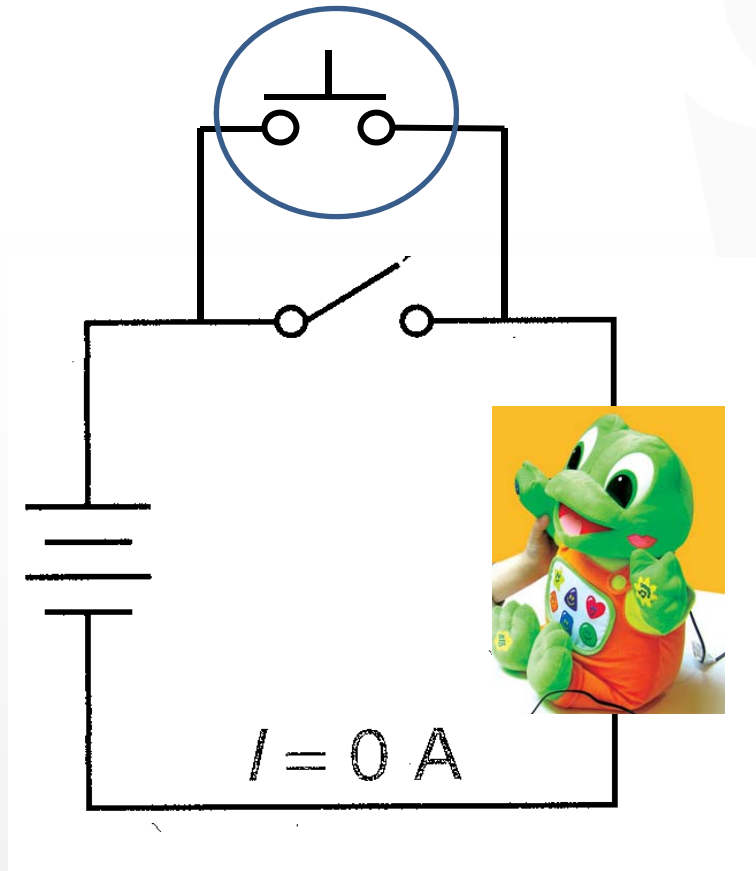
Resistors



$$\frac{1}{R_{\text{total}}} = \frac{1}{R_1} + \frac{1}{R_2} + \dots + \frac{1}{R_n}$$



Parallel circuits



parallel circuits

There are multiple paths in which its current can flow.

How to Solder

Tinning The Soldering Tip

Before use, a new soldering tip, or one that is very dirty, must be tinned. "Tinning" is the process of coating a soldering tip with a thin coat of solder. This aids in heat transfer between the tip and the component you are soldering, and also gives the solder a base from which to flow from.

Step 1: Warm Up The Iron

Step 2: Prepare A Little Space

Step 3: Thoroughly Coat The Tip In Solder

Step 4: Clean The Soldering Tip

Soldering A Wire Joint or Splice

Step 1: Strip The Wires To Be Joined

Step 2: Twist The Wires Together

Step 3: Apply Heat

Step 4: Apply Solder To The Joint

Step 5: Clean The Flux

Step 6: Insulate The Joint

http://www.youtube.com/watch?v=xrVCkEoY_8M

Quiz problem

What is the series circuit ?

What is the parallel circuit ?

Utilizing Library Resources

Signup sheets for week 5 class, Guest lecture: Margaret Manion Utilizing Library Resources has been posted on the hall way next to Ball Hall 403. Please sign up ASAP.

Section time schedules

10/8(Tuesday)	9:00 AM-9:50 AM	10:00 AM-10:50 AM
10/10(Thursday)	9:00 AM-9:50 AM	10:00 AM-10:50 AM
10/11(Friday)	9:00 AM-9:50 AM	10:00 AM-10:50 AM

