



# Lecture (01)

## Preface

---

By:

**Dr. Ahmed ElShafee**

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

## Basic Electronic Components

---

### Power source:

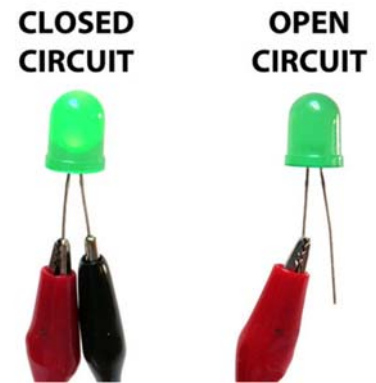
- There are two types of electrical signals , those being alternating current (AC), and direct current (DC).
- With Direct Current, electricity flows in one direction between power and ground. In this arrangement there is always a positive source of voltage and ground (0V) source of voltage



# Circuits

---

- A circuit is a complete and closed path through which electric current can flow.
- In other words, a closed circuit would allow the flow of electricity between power and ground.
- An open circuit would break the flow of electricity between power and ground.
- Anything that is part of this closed system and that allows electricity to flow between power and ground is considered to be part of the circuit.



Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

# Resistance

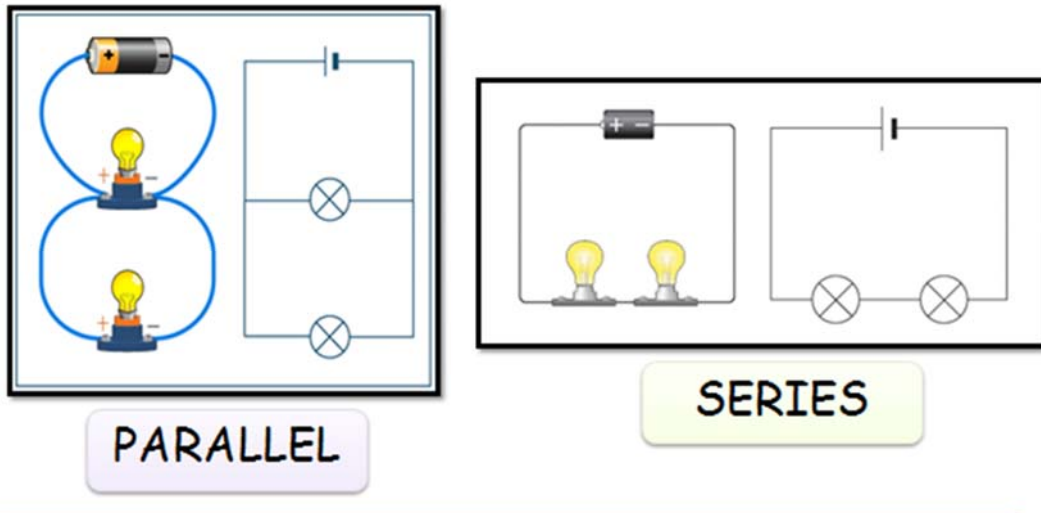
---

- there needs to be something wired between positive and ground that adds resistance to the flow of electricity and uses it up.
- If positive voltage is connected directly to ground and does not first pass through something that adds resistance, like a motor, this will result in a short circuit.
- This means that the positive voltage is connected directly to ground.
- Shorts are bad because they will result in your battery and/or circuit overheating, breaking, catching on fire, and/or exploding.



# Series Vs. Parallel

- There are two different ways in which you can wire things together called series and parallel.

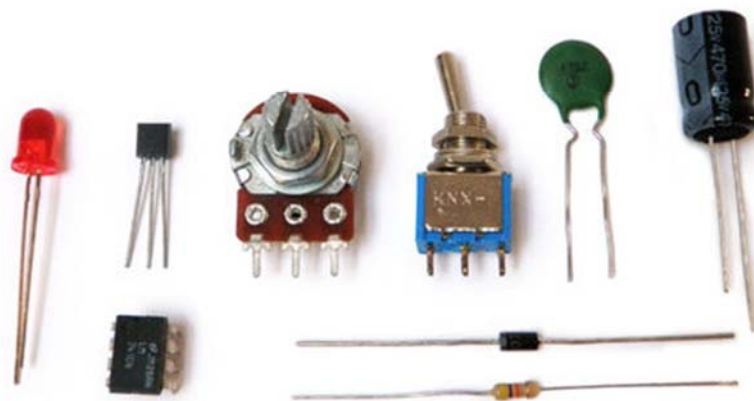


◦

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

# Basic Components

- 



# Resistors

---

•



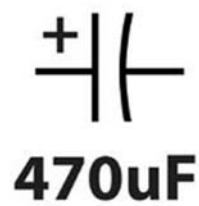
Y

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

# Capacitors

---

•



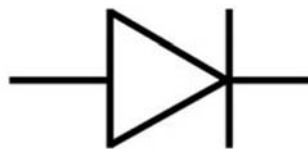
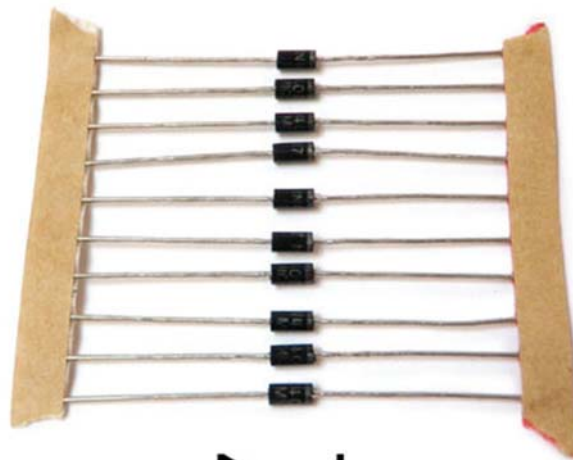
A

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

# Diodes

---

•



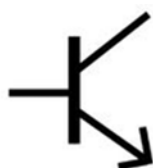
9

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

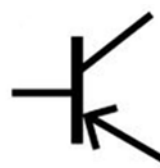
# Transistors

---

•



**NPN**



**PNP**

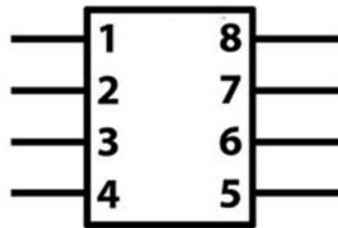
10

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

# Integrated Circuits

---

•



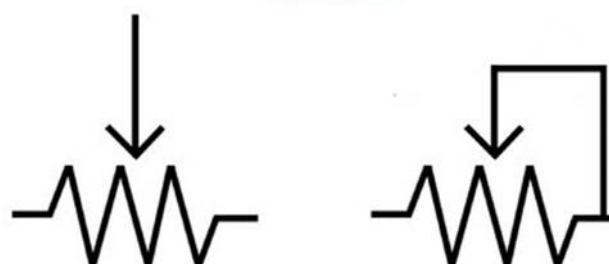
١١

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

# Potentiometers

---

•



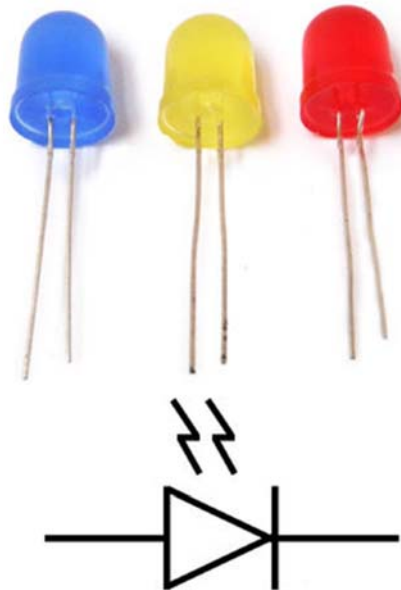
١٢

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

# LEDs

---

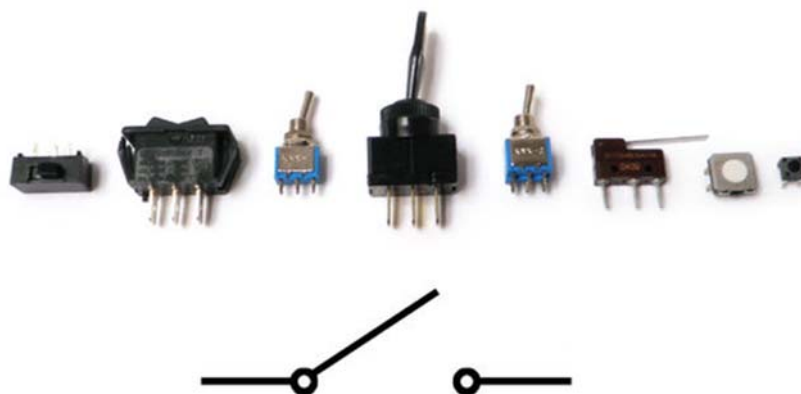
•



# Switches

---

•



# Batteries

---

•



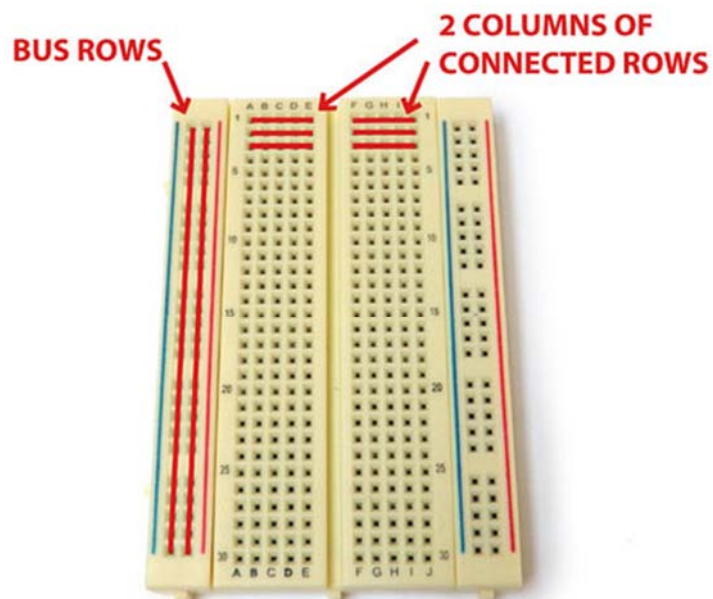
10

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

# Breadboards

---

•



11

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01



# Wire

---

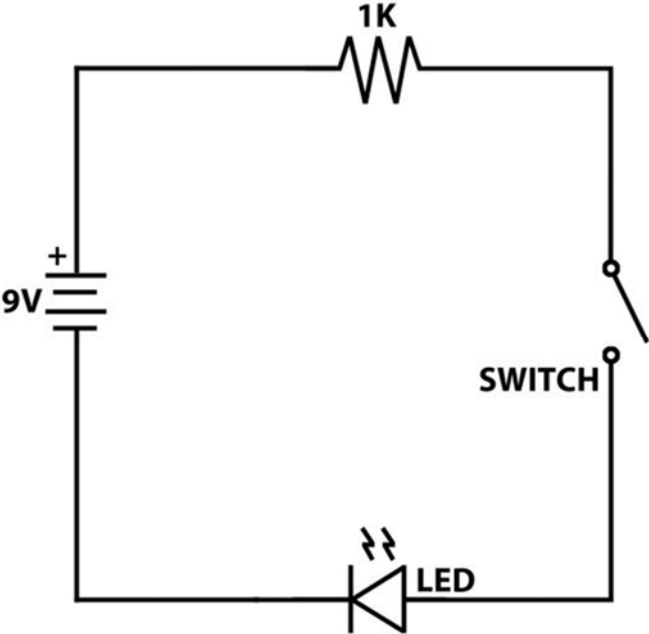
- 

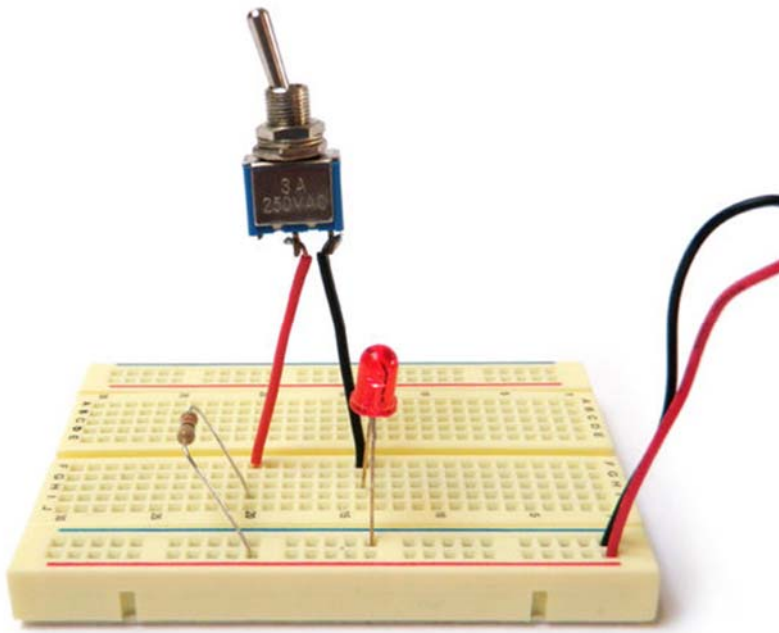


# Circuit 01

---

- 

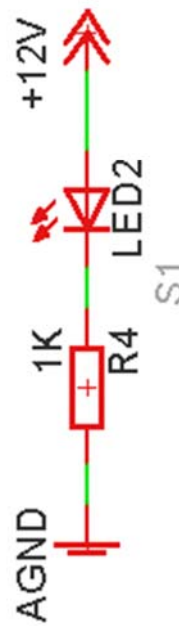
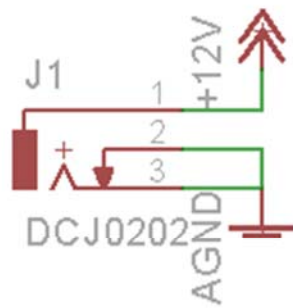




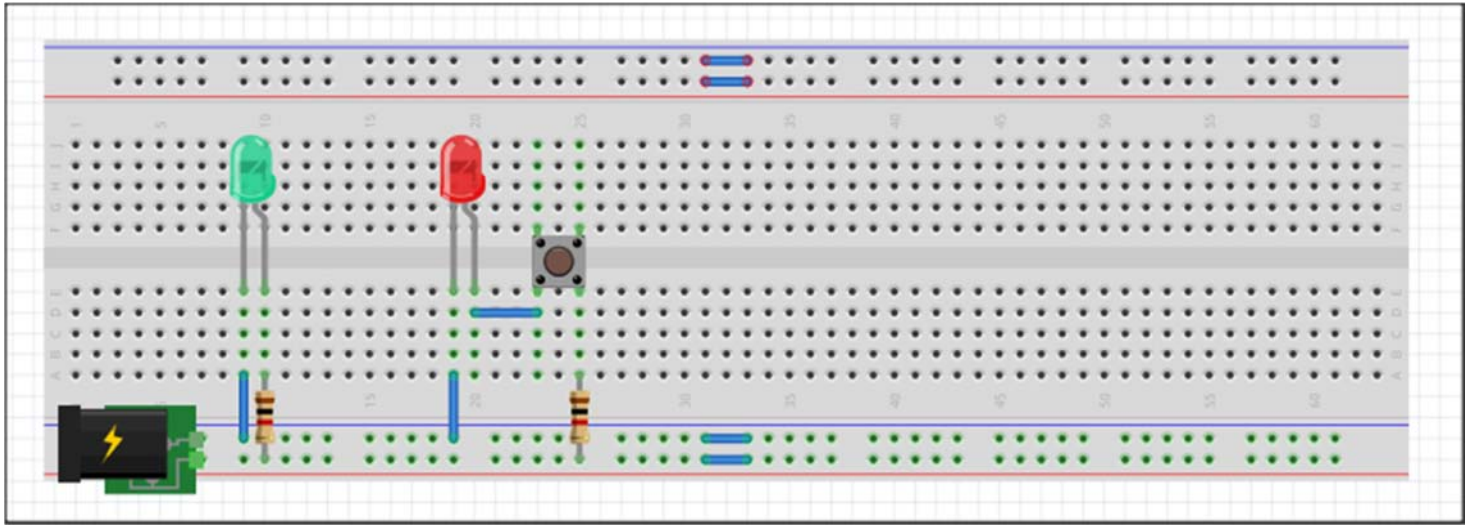
١٩

Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01

## Circuit 02

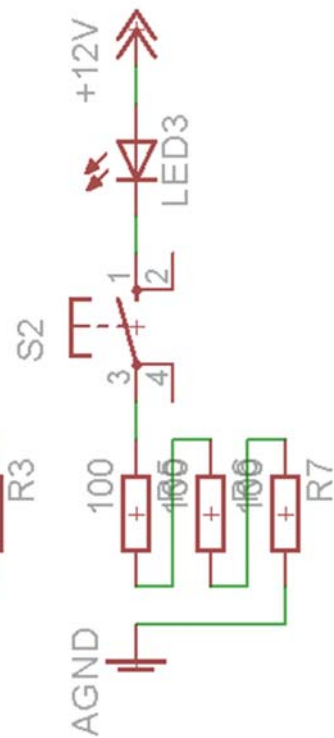
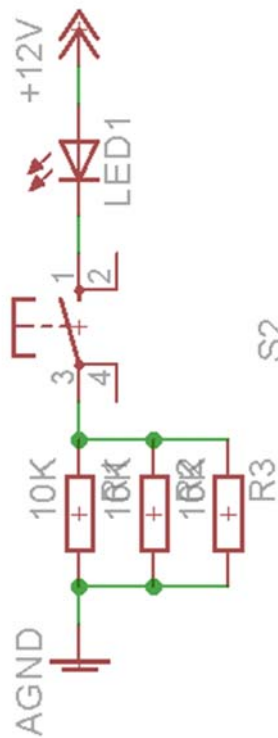
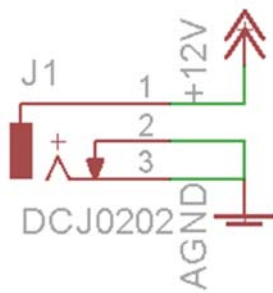


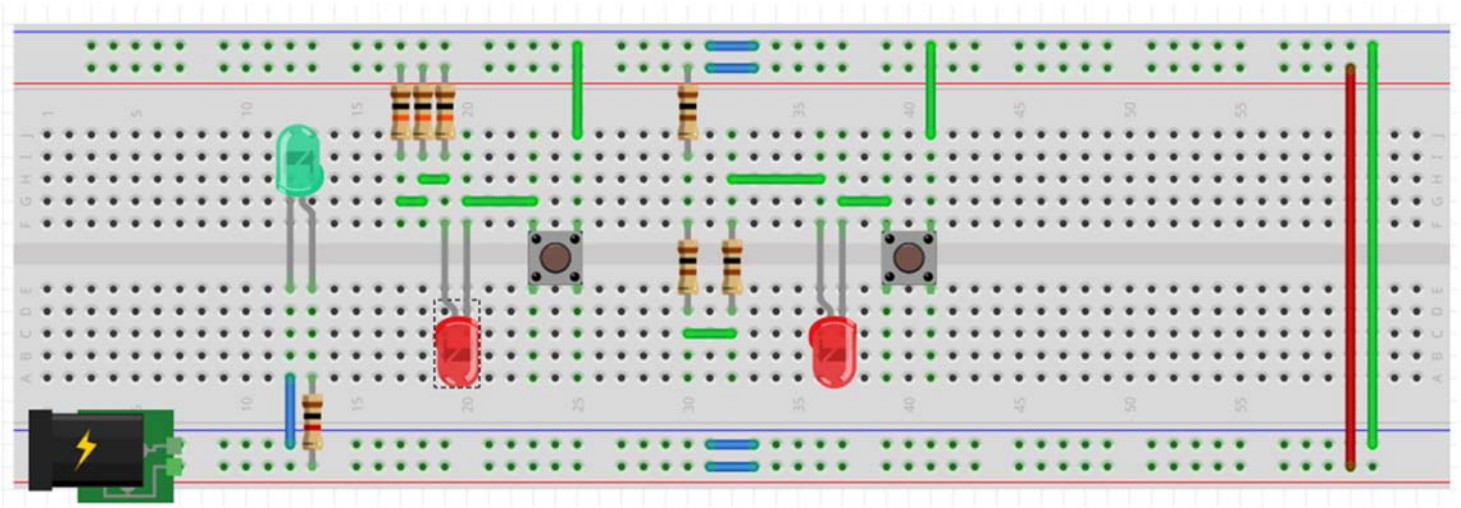
٢٠



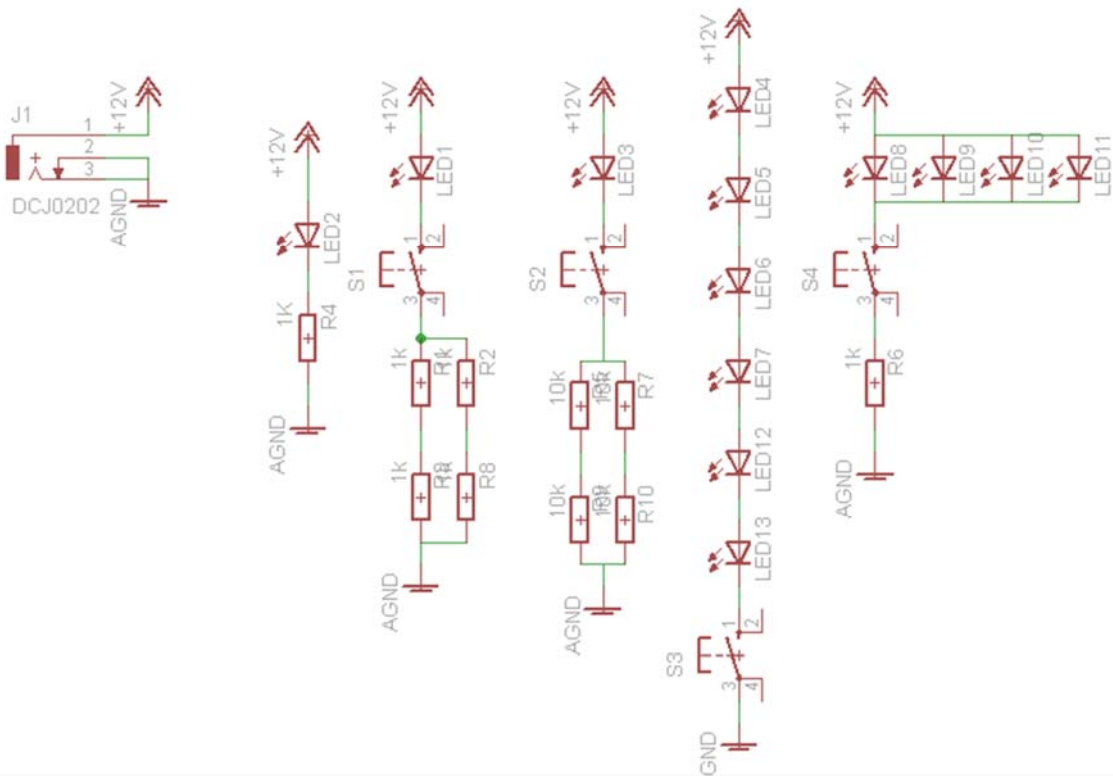
# Circuit 03

- 





# Circuit 04 : Home work





**Thanks,..**  
**See you next week (ISA),...**

٢٥  
**Dr. Ahmed ElShafee, ACU : Fall 2017, Practical App. EE 01**