E-Content On Electronic Circuit Lab

Goals

We have chosen a topic of electronics lab on KVL KCL for our multimedia presentation. We will explain the basic information and operation of KVL and KCL. For better understanding we will present the information with the elements of multimedia like audio, video, graphics, animation etc.

- **Educational Goal**: Students will achieve basic circuit operation and learn to do how to measure current and voltage level in circuit lab profoundly.
- **Partial Goal**: Adding multimedia will enhance the learning medium, environment and encourage students to solve circuit problems easily.
- **General Goal**: Our goal is to make the topic more reliable, more fruitful for the improvement on understanding circuit.

Determination of goal accomplishment and coverage

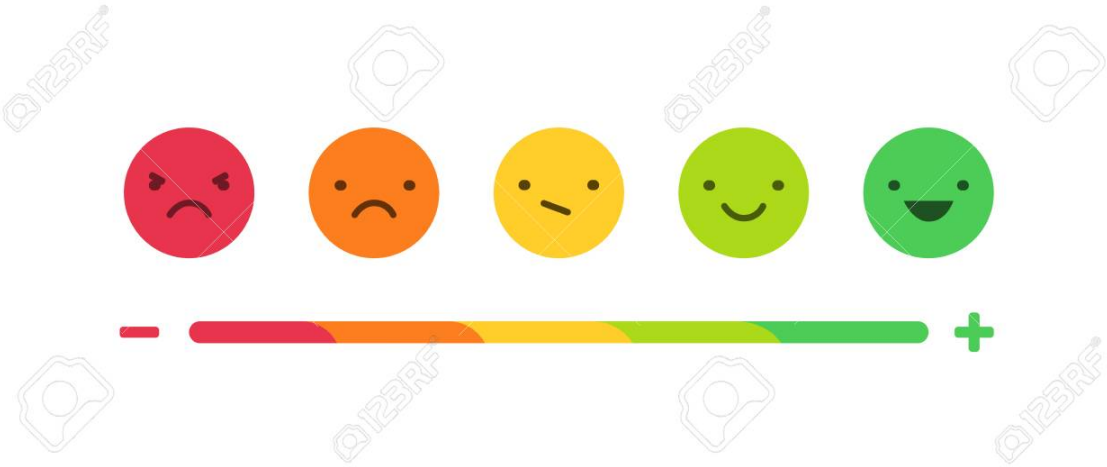
As KVL and KCL is a circuit based operation, it will be easy for a student if he or she can learn this operation with specific graphics, flow diagram and animation. So if we can arrange the information through the multimedia with necessary elements, we will accomplish our goal successfully.

Determine the evaluation scale

The project is specially made for students to make the basic circuit operation. To help them make understand, we will use certain multimedia elements for better and easier explanation. The project is on implementation phase and it's not complete yet. We are hopeful that we will reach our satisfaction level if we

do follow all the steps properly. Also we will ensure that the students will be benefited in the long run. Here rating will be added for students specially.

For example, users can give their reviews after using the system.



Materials to be used

We will use the following elements:

- **Text**
  It will held basic theoretical information. For example,

Review: KVL & KCL

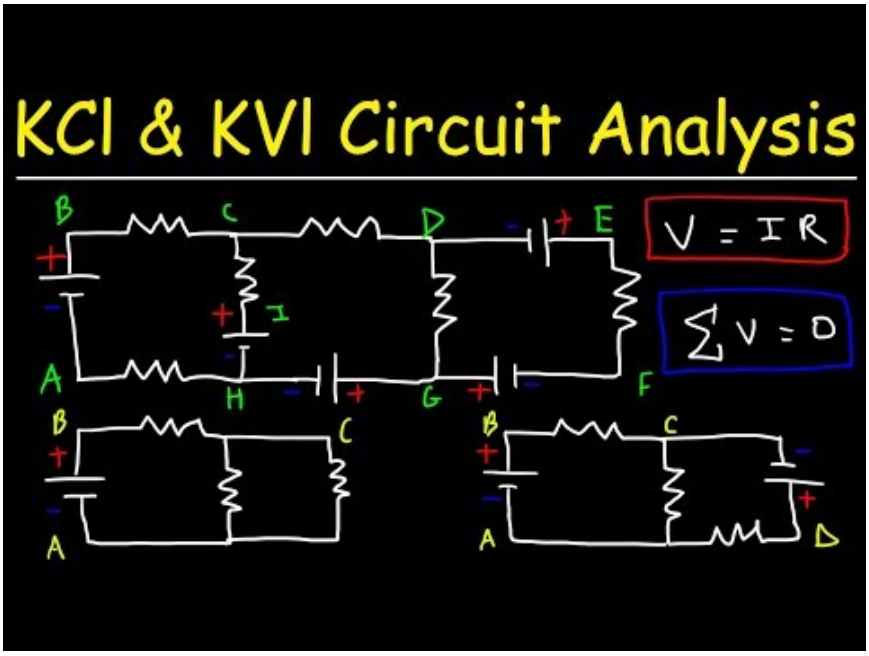
- **KVL: algebraic sum of all voltage differences around any closed loop is zero**

$$\sum_{k=1}^{N} v_k(t) = 0$$

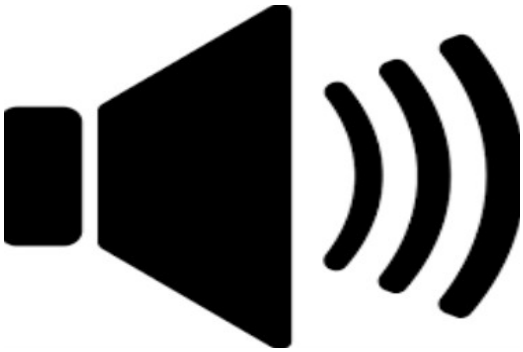
- **KCL: algebraic sum of all currents entering a node is zero**

$$\sum_{k=1}^{N} i_k(t) = 0$$

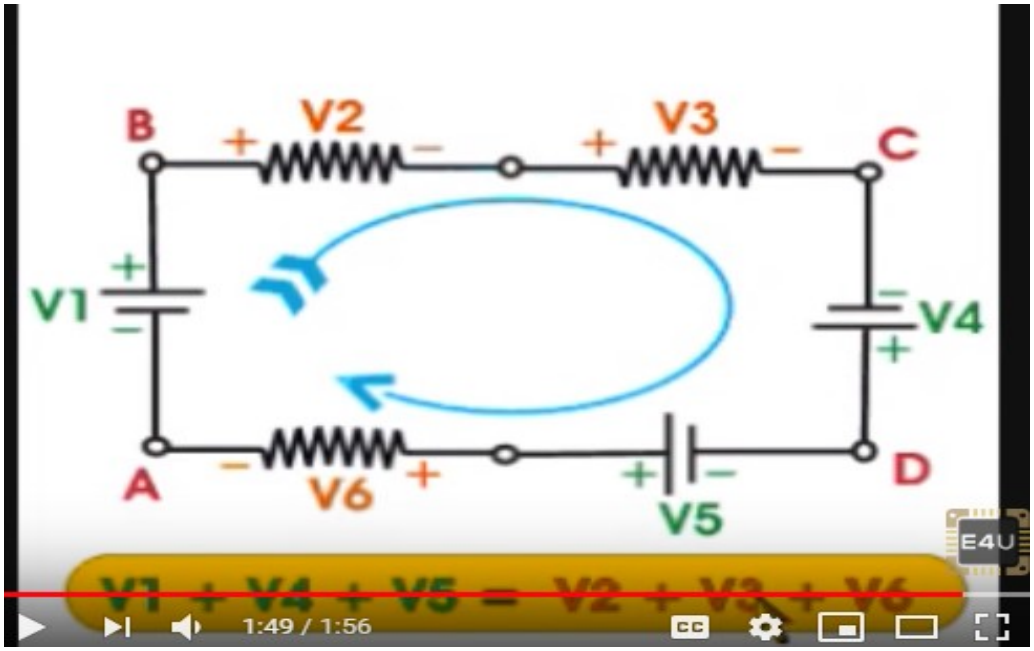
- **Image**



- **Audio**

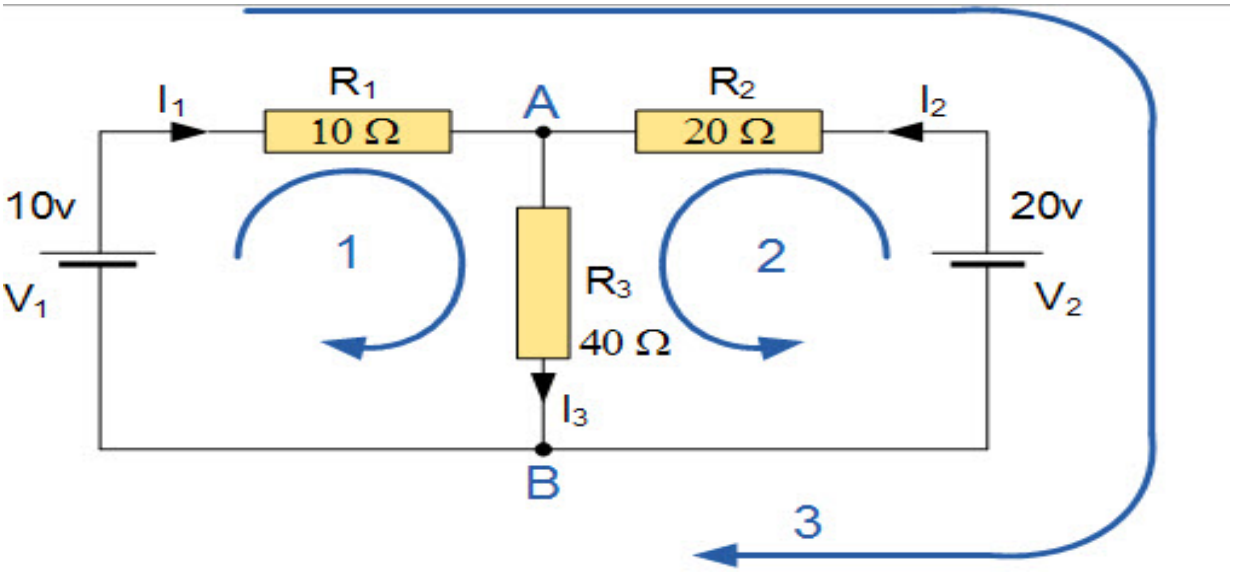


- **Video**

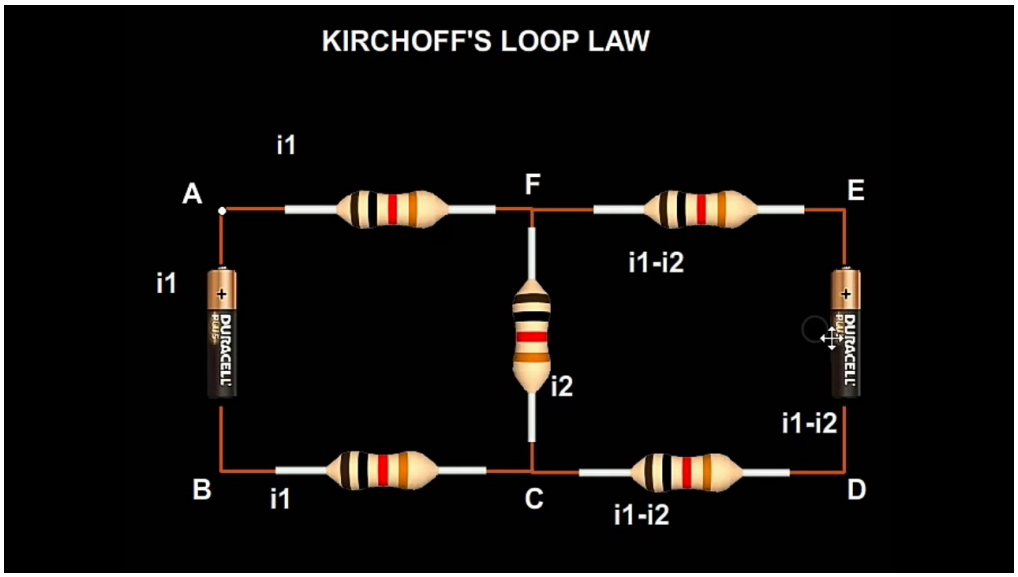


- **Animation**

We will show the flow of current among the nodes using animation.

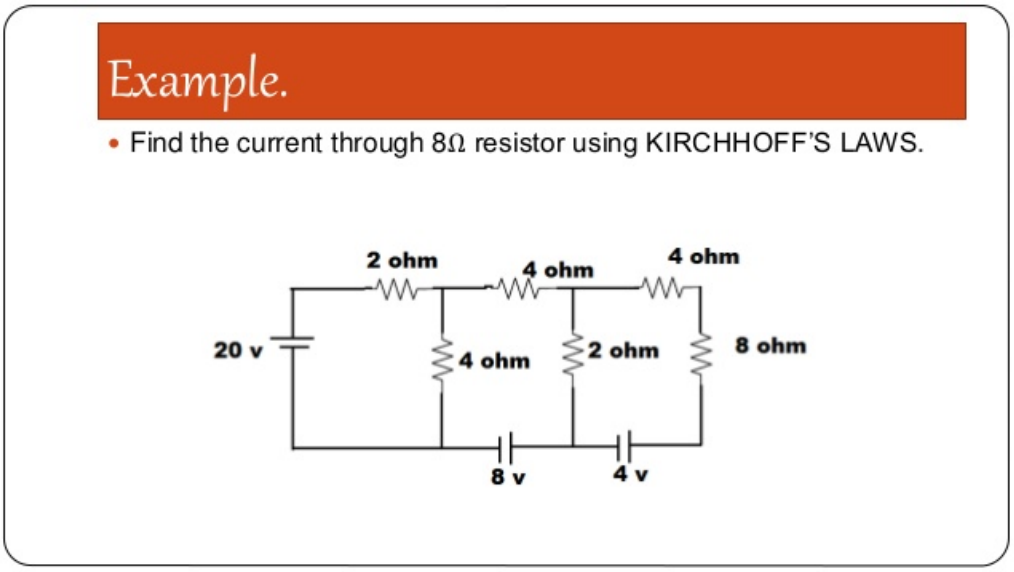


- **Graphics**

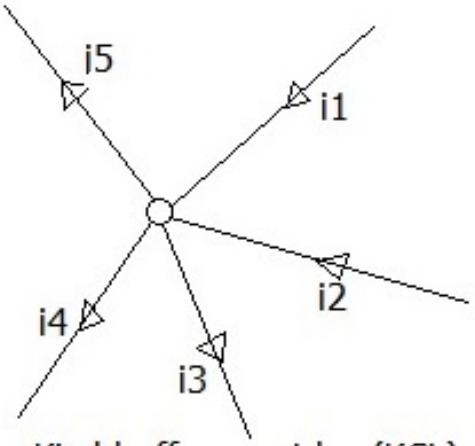


Building the materials

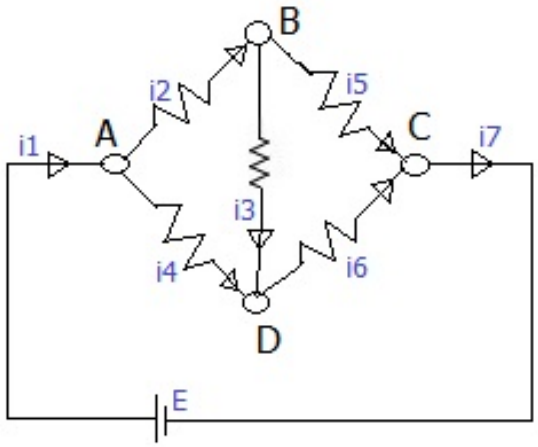
- **Experiment name** (An experiment as an example).



- **Theoretical concept with text and audio.**

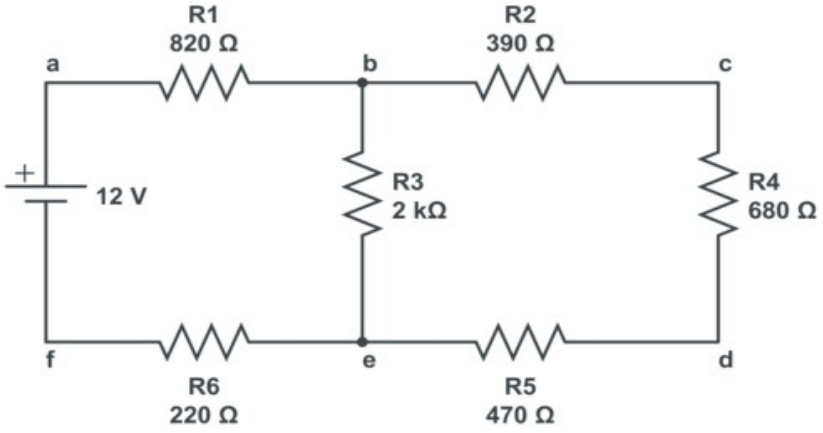


Kirchhoff current law(KCL)



KCL Example

- **Image for explanation.**



- **Conceptual video.**
- **Instrumental list with images and short description.**
- **Steps to follow** (both audio and text). For example,

  - STEPS TO PROVE KCL:

  1. Select the three resistors.
  2. Make the circuit as shown in the diagram.
  3. Measure the current I_1, I_2, I_3 across the three resistors using multimeter.
  4. Verify KCL by the following equation: $I_s = I_1 + I_2 + I_3$.

- **Video explaining steps.**
- **Result analysis.**
- **Discussion.**
- **Question session.**

Feedback on a trial version

After making a trial version, we will gather the queries and reviews from students. If they want more information or better explanation, we will collect ideas and make updates on the version based on their queries.