Kirchhoff current law lab report discussion

Abstract The purpose of this experiment is to confirm the law of OHM, the Voltage Law of Kirchof (KVL) and the current law of Kirchof (KCL). Om's law shows the relationship with the among voltage, current and resistance while Kirchof's laws specifically deal with current and voltage. A circuit was constructed using a schematic diagram given on the prototype board (breadboard). The circuit was then observed using various methods such as; Kirchoff's voltage and current law, ohm's law, and a digital multi-meter. In this laboratory we study how to read the schematic diagram of the electronic network, change the schematic in the actual component connection, correct the way to design a breadboard connection of a network, join the DMM for network components, and.... Show more content... KCL..... 7 Discussion..... The purpose of the report includes measuring the current through each resistors and also the voltage on each nodes in the circuit. The circuit under observation is designed using a given DC power supply, digital multi-meter, electrical wiring, breadboard, and random resistors. KVL and KCL are very important for analyzing a linear circuit. OM's law says that the potential difference is equal to current time resistance, or V = IR. If we graph the potential difference as a function of the current for an electrical component, then the slope component of the line will resist. KCL belongs to the current flowing in and out of the same node. It says that the current flowing into the node and the current flowing from the node should be equal to zero. KVL states that the algebraic sum of all voltages in the closed loop should be equal to zero. A closed loop is a path in a circuit that returns the return path to a current. The purpose of this experiment is to provide proof of these laws. Goals and... Show more content... Errors seemed to grow as deterrence numbers increased. This was probably due to the addition of errors in calculations. The intermediate calculation describes the steps for small error increments such as roundness. Another possible source of error was in the values of the selected resistors. The resistors all had values in the Kilo-Om range, such large resistance values would make it difficult to actually measure small currents passing through them. This will account for part of the variation. The errors were all quite small which come to the conclusion that OM's law is undoubtedly valid. The findings are ohm law, Kirchoff's current law and Kirchoff's voltage laws are necessary and are the most basic techniques for analyzing linear circuits. Using three laws can be found to voltage through any resistance, current or across a resistant if any two are already known. The purpose of this experiment is to provide proof of these laws. Current and voltage values Measured and placed in KCL and KVL equations to determine whether they turned out as expected. These measured values were then used in om's law equation to find resistance. Measured and calculated values were then equal to the expected results from the principles. All variances between testing and expected values were small, so all three of the laws can be considered effective. Academia.edu uses cookies to personalize content, tailor ads and improve the user experience. By using our site, you agree to the collection of our information through the use of cookies. To learn more, refer to our Privacy Policy. × Abstract: In this report we enforce the laws of conservation in electrical energy which are kirchof's voltage and current law (KVL and KCL). First we theoretically calculate our hand to find results based on given values and write down values in the table. Then, we emulate the circuit in Figure 3 of Lab Handout 2, on orcad software to achieve values and compare with our hand count. We draw circuits in laboratory handouts so we do actual circuits on the breadboard and lab equipment by using real measurements. After placing the values obtained by laboratory equipment in tables we will compare them with fake and calculated values. Want to get original paper on this subject? Just send us a request write my paper. It's quick and easy! Theory: Kirchoff's Voltage and Current Laws (KVL and KCL) are basically preserving electrical energy or charge laws. First, kirchoff's voltage law says that the algebraic sum of all voltage around the closed loop is zero. Which means that if we add all the voltage of branches in the closed path as this equation will be deemed more equal to zero: V1 + V2 + V3 +... + Vn = 0 Kirchoff current law states the sum of streams entering a node equal to the amount of streams leaving the sum node. Initially, the node is the point or door that is possible to flow currents through them. This equation will be understood: Figure 2I1+I2+...+ In=I3+I4+...+ in example on Figure 2: I1+I3+I4=I2+ I5 Processes: At the beginning of the experiment we use the PC to open the PSPA software and create a circuit that in lab handout figure 4. Second, we emulate the circuit and put the received values into the table. Then, we should take the necessary tools such as breadboards, wires and resistors where there are types of resistors (R1= 1K, R2= 2.7K, R3=1.8K, R4=4.7K). Later we open digital multimeter and DC power supply. After opening the DC power supply, we modify the voltage and current values thus (12V and 0.1A) respectively. Then, the resistors will be measured by the DMM and put values on the table without connecting them to the DC power supply. In this part we place the resistors on the breadboard and connect it to the DC power supply, but we were supposed to check for current and voltage values In the DC power supply, make sure we open the output switch after. Using DMM we measure the voltage in each resistor and put the values on the table. We also measure the current using DMM, however, we must break the circuit on the first terminal of the resistor that we need to measure. The values received should also be written in the table. Finally we used all the equipment to shut down and take out the resistors from the breadboard and put them in the proper place. Further Analysis: 1) Verify KVL in any loop of figure 4 circuit from fake hospital value. KVL states that the sum of the voltage of the branches in the closed loop is equal to zero. These equations will verify this statement: -Vs+Vr1+Vr2=0-5v+1. 438v + 3. 562v= 0v2) Verify KCL in data 3 circuits from hardware measurement. KCL says the current entering the node is equal to the current leaving it. In the node between Ir1 and Ir2, Ir3 we can see that: Ir1 = Ir2 + Ir34. 127≈2. 91 +1. 211 Conclusion: After all the functions placed in the laboratory it helped us and taught us how to use KVL and KCL in our calculations, how to use them and which circuits need to be used by KCL and which of them need to use KVL. First of all, we realized that with the use of KVL, we have to include loops in our calculations, given how the circuit starts and ends and if the voltage of the elements is positive or negative depending on their terminals. We also noted that KCL calculations require us to look at nodes and detect the relationship between different currents flowing within the circuit. Therein there was another important observation, too, when we dealt with a circuit in which all of its elements are in parallel, since the voltage across each element of KVL cannot be used is the same, so the only solution in this case is to use KCL. O slideshare utilization cookies para otimijar a fensionalde e o desentho site, assim como para apranter péblid mais relevant aos nosos eusuerios. Se vosse continuity a caveger o site, vosse aceta o uso de cookies. Leya Noso Contrato do Usuário e nossa Política de Privacidade. O slideshare utilization cookies para otimijar a fensionalde e o desentho site, assim como para apranter péblid mais relevant aos nosos eusuerios. Se vose continuity a utility o site, vose aceta o uso de cookies. Leya nosa politita de privasidae ei noso contrato do Usuário para otter mais ditalhes. detalhes.