1. What is your research study all about?

Answer: Our study is about developing an individualized electric energy consumption monitoring system with the goal of measuring the electric energy consumption of an individual person in boarding houses and apartments.

1. Why did you choose this particular title for your research?

Answer: We, as students, have experienced living in boarding houses for most of our college days, and we have noticed that we are paying extra fees for the gadgets that we own while we are staying in boarding houses without any numerical basis of how much electricity we are using. As a result, it has piqued our interest to create a system that can make accurate measurements of the electricity consumed per individual, so that we only pay for the electricity that we use.

1. What is the scope of your study?

Answer: As stated in our study paper, the main focus of our study scope is shared houses, apartments, and boarding houses with occupants numbering 20 or less. As of the current stages of the system, we, the researchers, only limit it to applications in the environments having the certain parameters that were stated.

1. What phenomenon were you trying to understand with this research?

Answer: We, the researchers, are trying to solve the problem and issues that arise in rental establishments that are about the uneven billing procedure of electrical bills. In the majority of cases, boarding houses require the occupants to pay a fixed amount per gadget they own, regardless of how often they use it or how much electricity they consume. This is the custom method that is done in almost all local boarding houses that operate as of today. We are aiming to solve these issues by developing a system that will provide reliable data that can be used for electrical consumption billing.

1. Who will be most interested in your research?

Answer: Our study would be of great significance to owners of boarding houses and also the boarders themselves. We, the researchers, foresee that the application of the system to boarding houses would greatly attract more boarders knowing that they are only going to pay for the electric energy they consume. Also, the developed system may possibly pique the interest of smart home system researchers and future researchers in the same field and learn how our system is designed and operates.

1. Did your research questions evolve during the process? If so, how?

Answer: No, the research question of the study remains throughout the entire process of the study. The research question can be generally stated as "Is there a way to measure the electricity consumption of an individual?" And how? "

1. What gaps did you intend to bridge with your research?

Answer: The majority of the related literature about power and electricity management on smart homes that was reviewed for this study is integrated with IOT technology. And, as of now, IoT-enabled technologies are out of reach for the majority of people. We aim to bridge that gap by developing a system that operate and function without the need for internet connectivity and instead utilizes cellular SMS service, thereby reducing operational costs.

1. What did you find in your research?

Answer: Our findings show that the current measurement accuracy of the system decreases when measuring electrical loads that have low power ratting and less current draw. The system’s voltage measurement accuracy remains consistent with a percentage error of less than 1% across all devices tested. As per the current development of the system, all charger-type electrical loads, such as laptop chargers, smartphone and cellphone chargers, as well as 12V adapter power supplies, are not recommended to be connected and used in the system. Connecting and using charger-type loads on the developed system damages the system's module for measuring electrical parameters. The cause of the hazard is still unknown.

1. What research findings surprised you?

Answer: The findings show that the module component that we used for measuring electrical parameters cannot handle charger type electrical loads and instead be damaged when such types of loads are connected to the AC line the module is set to measure.

1. What are the implications of your study?

Answer: The developed system of the study would have a great impact on the calculation and division of billing expenses of boarding houses and apartments. The system's use will also improve the quality of life in boarding houses and help promote consumption awareness about the use of electricity, which could significantly contribute to energy savings.

1. Did you experience any limitations in your research?

Answer: Yes, mostly about communication protocols and integration of the components used in the system and more particularly in the planning and fabrication stages system. We have to somehow adjust the design of the system with what we have without compromising the main objectives.