

# Studies on Construction and Testing of an Improvised Leaf Electroscope and Web-based Service Request Management System

## Construction and Testing of an Improvised Leaf Electroscope

Nine samples of improvised leaf electroscope were constructed in order to test which samples can produce the highest approximate measured angle of deflection. Three various ways of test were made with three trials for each testing.

In the first test, the researcher used three different types of metal rod (aluminum, brass and copper). For the second test, three samples of copper rod of different length (4inches, 5inches and 6inches) were made in order to get the highest measured angle of deflection. In the third test, there were three samples of copper rod of the same length with various width of the aluminum leaves (0.5cm, 0.7cm. and 1.0cm.). All construction and tests were done at the Physics Stockroom, En203.



Results revealed that the newly developed improvise leaf electroscope has the lowest operating cost

per day of Php0.78. In case the aluminum leaves shall be wornout, the improvised leaf electroscope has the cheapest value for repair and maintenance of Php0.19 compared with the other brands that have the same function and operation.

It can be concluded that copper rod is the best metal stem to use with approximate measured angle of deflection of  $26^{\circ}$ . The appropriate length of the rod to use is 6 inches with  $46^{\circ}$  measured angles of deflection. The suitable width of the aluminum leaf is 0.5 cm. with  $30^{\circ}$  approximate measured angles of deflection. This study also shows relationship between the length of the rod and width of the aluminum leaf. The length of the rod is directly proportional to the angle of deflection. As the length of the metal rod increases, the angle of deflection also increases while the width of the aluminum leaf is inversely proportional to the angle of deflection. As the width of the aluminum leaves increases, the angle of deflection decreases.

It can also be concluded that the copper rod with 6 inch length of the metal stem and 0.5 cm width of the aluminum leaf is the appropriate measurement and combination for future mass production.

Furthermore, the description of this study is similar to the works of Noah Dorsey and Jean Antoine Nollet, a physicist who invented one of the first electroscopes.

Based on the findings and conclusion of the study, the following are recommended to improve the operation of the improvise leaf electroscope:

1) A good quality of plastic strips / rod (used to generate heat by rubbing) is needed to produce a widest split distance between the two leaves, thus it will also create the highest approx. measured angle of deflection. The plastic strips / rod used in this experiment were acquired outside the Philippines.

2) It is highly recommended to conduct a study on construction and testing of different kinds of plastic strips/rod to be used in electrostatic and electroscope experiment in order not to depend on the materials bought outside the Philippines.

3) Good quality of woolen cloth (material used to rub the plastic strip) is needed to attain maximum results.

*(Source: Construction and Testing of an Improvised Leaf Electroscope, by Rex S. Rubidy, completed July 2015)*

## Web-based Management Service Request Management System for the University Computer Service Center of Central Philippine University

The complexity of managing service requests specifically on the tracking of requests and tracking computer maintenance has led to the development of the Web-based Service Request Management System for Central Philippine University – University Computer Services Center.

The Service Request Management System was developed to manage the operation of the University

Computer Services Center which includes the tracking of service requests, personnel workload, feedback, computer maintenance history and generation of reports. The identified user requirement types for the software are categorized as functional, non-functional, technical, organizational, and documentation requirements. Each requirement is transformed into use cases to derive the detailed requirements of the system. The development of SRMS follows the object-oriented analysis and design methodology where individual components were derived from the requirements and use cases. It was modeled using the Unified Modeling Language (UML) that represents the high-level design of components, its functions and information flows. Individual classes were defined per component to simulate the functionality.

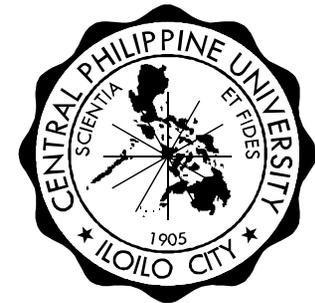
In the software construction, XAMPP was used to set up the development Apache web server. PHP was used to formalize the individual classes and packages. Sublime Text was used for developing the web pages including the code-behind for the graphical user interfaces (GUI) of the system. The database used was MySQL because it is free and easy to manipulate with regards to the creation of tables.

During testing, a number of defects were found because of the help of Firefox's web console and Apache/PHP/MySQL error logs. They automatically create warnings on defects during run-time. Most of the defects were found during unit tests since Sublime Text is just a text editor with syntax checking and lacks compiling and debugging features.

*(Source: Web-based Management Service Request Management System for the University Computer Service Center of Central Philippine University by Paul Roldan H. Pescos, completed September 2015)*

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