

DESIGN AND IMPLEMENTATION OF ELECTRONIC NOTIFICATION APPLICATION

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ABSTRACT

Effective communication is key to development of organizations. Communication is a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior. Effective communication is about more than just exchanging information. Information which is not received on time has no value, and this stems the fact that there is a need develop faster and effective ways of communicating. Mobile technology therefore is a vital tool that can be used to ensure communication is done effectively. This project therefore seeks to developed communication system for Ghana Technology University College (Koforidua). To aid in exchanging information on and outside the campus. . Data was collected using the technique of observation. Hence appropriate strategies were developed and effectively implemented to ensure the success of the proposed system (Electronic Notification System for android). Then was concluded stating that there is a need for such a system to be implemented in the activities of the institution.

Keywords: Effective communication, Mobile Technology, Information.

1. INTRODUCTION

The use of mobile devices in our generation have made it possible for us to be in touch with one another no matter where we find ourselves. And this is made possible by the use of electronic notification technologies such as SMS messaging (text message), Voice notes, emails and others. An electronic notification therefore be said to be any automated communication received by email, phone, text message, fax or any other related technology. Electronic notification have thousands of applications for business, governments, schools and even individuals. Some of the simplest and most common types of electronic notifications are:

- General news notifications.

- Weather alerts.
- Sports updates.
- Travel offers/ job offers received via emails.

Electronic notification is now being used by business, universities and many management agencies as it has proven to be very effective in mass communication, compared to the manual or tradition way of disseminating information. With these technologies organization can communicate within themselves with no geographical limitations. And by doing so they save themselves some time, money and other resources that they would use when doing it manually. And in situations where you will need the targets to give responses electronic notification has proven to be the easiest. As emails can be received and sent within the shortest possible time. Under education students, teachers and other staff members can be informed about incoming events, warnings and all other school activities. With healthcare too hospital can send appointment reminders to both doctors and patients to keep them aware. And Ghana Technology University College, still uses notice boards as means of communicating students, lecturers and staff members. So an electronic notification application is being developed to help in communicating information across

2. Methods and Requirements.

2.1 Research Design

Firebase is a mobile and web application development platform developed by Firebase,inc. in 2011, then acquired by Google in 2014. Firebase integrates various Google services to offer broader products and scale for developers. It was first known as Google Cloud Messaging (GCM), is a cross-platform solution for messages and notifications for Android, IOS and web applications at no cost. Firebase provides database and backend as service. The service provides applications developers an API that allows application data to be synchronized across clients and stored on Firebase's cloud. Firebase Storage provides secure file uploads and downloads for Firebase apps, regardless of network quality. Firebase will be used to store images, audio, video, or other user-generated content in our electronic notification system. Firebase Storage is backed by Google Cloud Storage.

2.1.1 Research Approach

The incremental build model is a method of software development where the product is designed, implemented and tested incrementally (a little more is added each time) until the product is finished. It involves both development and maintenance. The product is defined as finished when it satisfies all of its requirements. This model combines the elements of the waterfall model with the iterative philosophy of prototyping. The product is decomposed into a number of components, each of which is designed and built separately (termed as builds). Each component is delivered to the client when it is complete. The components delivered after each test are known as increments.

The diagram below shows how the model works

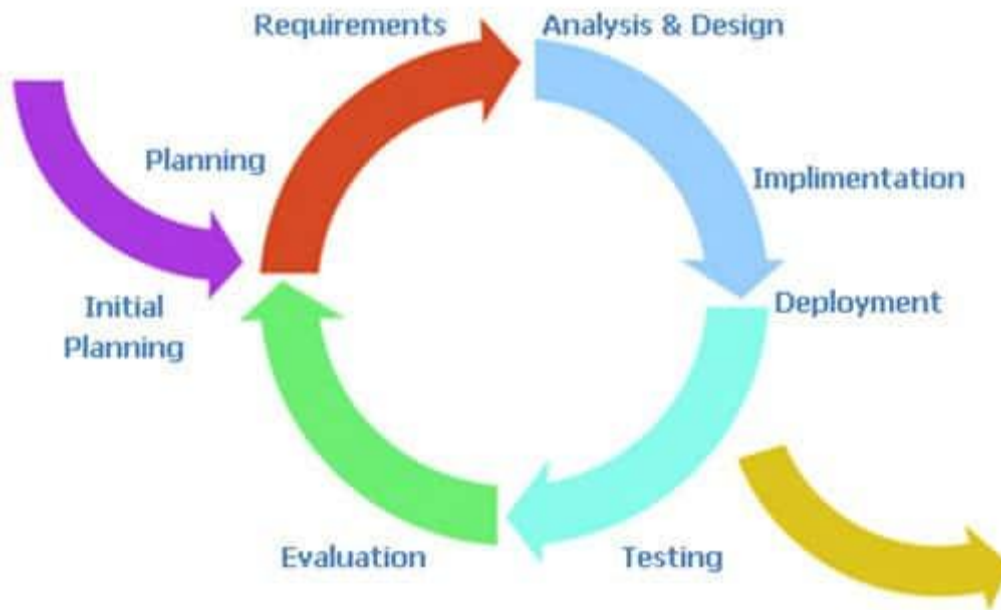


Figure 2.1 INCREMENTAL BUILD MODEL

2.1. INCREMENTAL MODEL APPLICATION

Incremental model can be applied successfully to the project in which designed, implemented and tested phase is upgraded and/or incremented until the required product is done. This method involves both development and maintenance phase.

ADVANTAGES

- Faulty elements of the software can be quickly identified because few changes are made within any single iteration.
- It is generally easier to test and debug than other methods of software development because relatively smaller changes are made during each iteration.
- Customer can respond to features and review the product for any needed or useful changes.
- Initial product delivery is faster and costs less.

2.1.3 REQUIREMENTS: All the possible requirement of the system to be developed are stated in this phase. Requirement are set of function and constraints that the end user expect from the system. The requirement gathered from the end user and are analysed for their validity and the possibility of incorporating them. Finally, a requirement specification document is created which serve the purpose of guidelines for the next phase

2.1. PLANNING: This deal with nothing more than measuring the speed which a team can turn user stories into working, production- ready system and then using that to figure out when they will be done.

2.2. DESIGN: This is when you take all the information gathered from analyzing the problem and construct or design a system to solve the problem. Describes desired features and operation in details.

2.3 DEVELOPMENT: Once basic user and system design has begun, the development phase is where most of the actual application coding takes place. Along with User Design, the incremental build model development phase is repeated as often as necessary, as new components are required or alterations are made to meet the needs of the project.

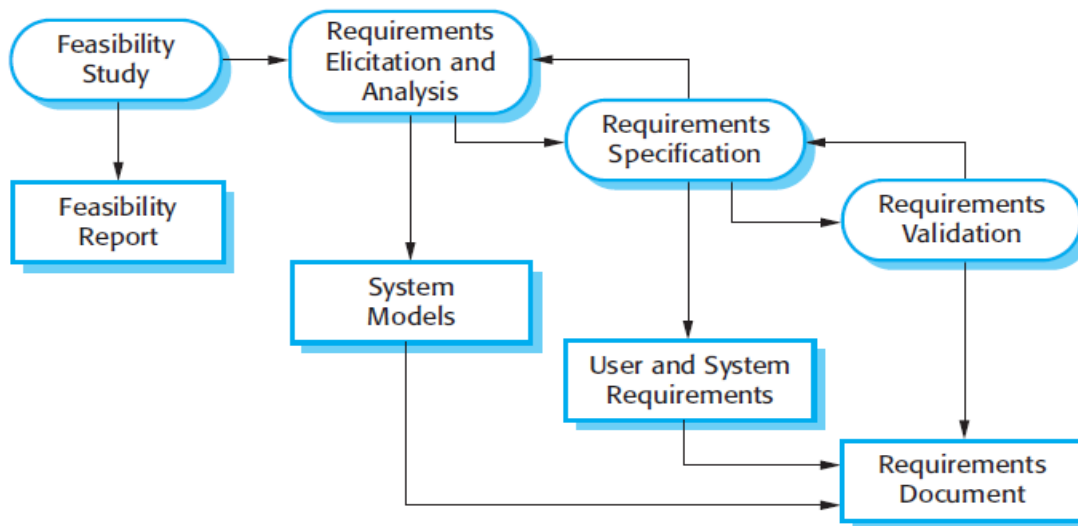
2.4 TESTING: Testing is finding out how well something works. In terms of human beings, testing tells what level of knowledge or skill has been acquired. In computer hardware and software development, testing is used at key checkpoints in the overall process to determine whether objectives are being met. For example, in software development, product objectives are sometimes tested by product user representatives. When the design is complete, coding follows and the finished code is then tested at the unit or module level by each programmer; at the component level by the group of programmers involved; and at the system level when all components are combined together.

2.5 REQUIREMENTS GATHERING

As the saying goes “seeing is believing” so we chose observation technique as data collection over the other techniques. A direct observation was done on how information disseminations goes on the Koforidua campus of GTUC. Then the issues involved with the method was pointed out by complains made by students, lecturers and other staff members made.

- **Internet Research:** We also conducted an internet research to gather data and topics that are related to our Design

FIGURE 2.5 REQUIREMENT ENGINEERING PROCESS



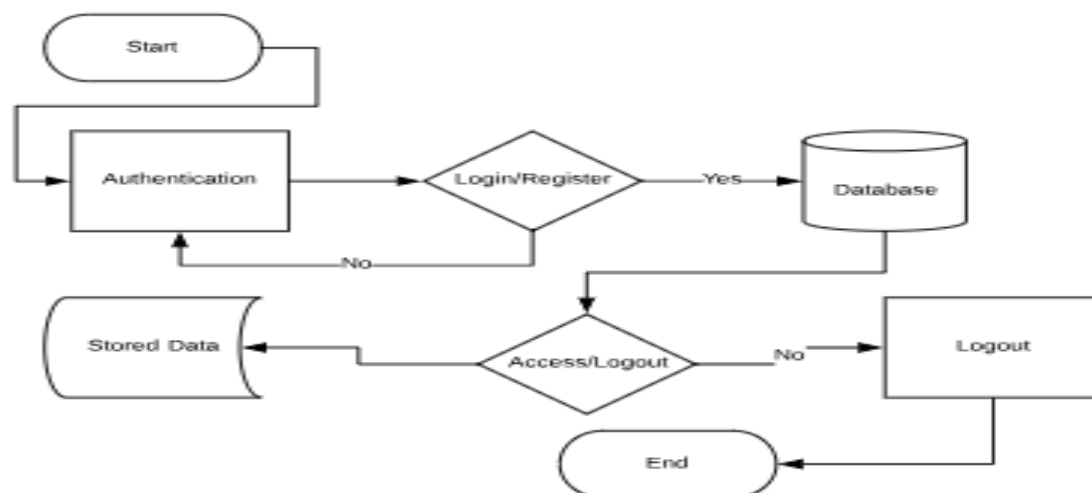
Process	Activity
Feasibility Study	Finds out if it is technically and financially feasible to build the system. Project Managers use feasibility studies to determine potential positive and negative outcomes of a project before investing a considerable amount of time and money into it.

Requirements Elicitation and Analysis	Finds out what system stakeholders require or expect from the system
Requirements Specification	Defining the requirements in detail
Requirements Validation	Checking the validity of the requirements

TABLE 2.5 Requirement Engineering Definitions**3.1 DATAFLOW DIAGRAM**

A data flow diagram is a graphical representation of the flow of data through an information system, modelling its process aspects. Focus is on the data flowing into and out of the system and the processing of the data. It is often used as a preliminary step to create an overview of the system. A data flow diagram shows what kind of information will be input to and output from the system, where the data will come from and go to, and where the data will be stored. It does not show information about the timing of process.

Figure 3.1 DATAFLOW DIAGRAM

**3.2. USE CASE DIAGRAM**

A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. Use case diagram defines the functionality of the various actors of the systems. In this context, the term "system" refers to something being developed or operated. Use case diagrams are employed in UML (Unified Modelling Language), a standard notation for the modelling of real-world objects and systems. A use case diagram contains four components.

- The boundary, which defines the system of interest in relation to the world around it.
- The actors, usually individuals involved with the system defined according to their roles.
- The use cases, which the specific roles are played by the actors within and around the system.
- The relationships between and among the actors and the use cases.

The actor in this instance, the administrator has access to the system and its resources. However, the administrator of the system has all privileges to the system.

Thus, the use cases column of the table below states the allowable actions that can be taken by the system administrator.

It involves two actors namely:

Figure 3.2 USE CASE DIAGRAM

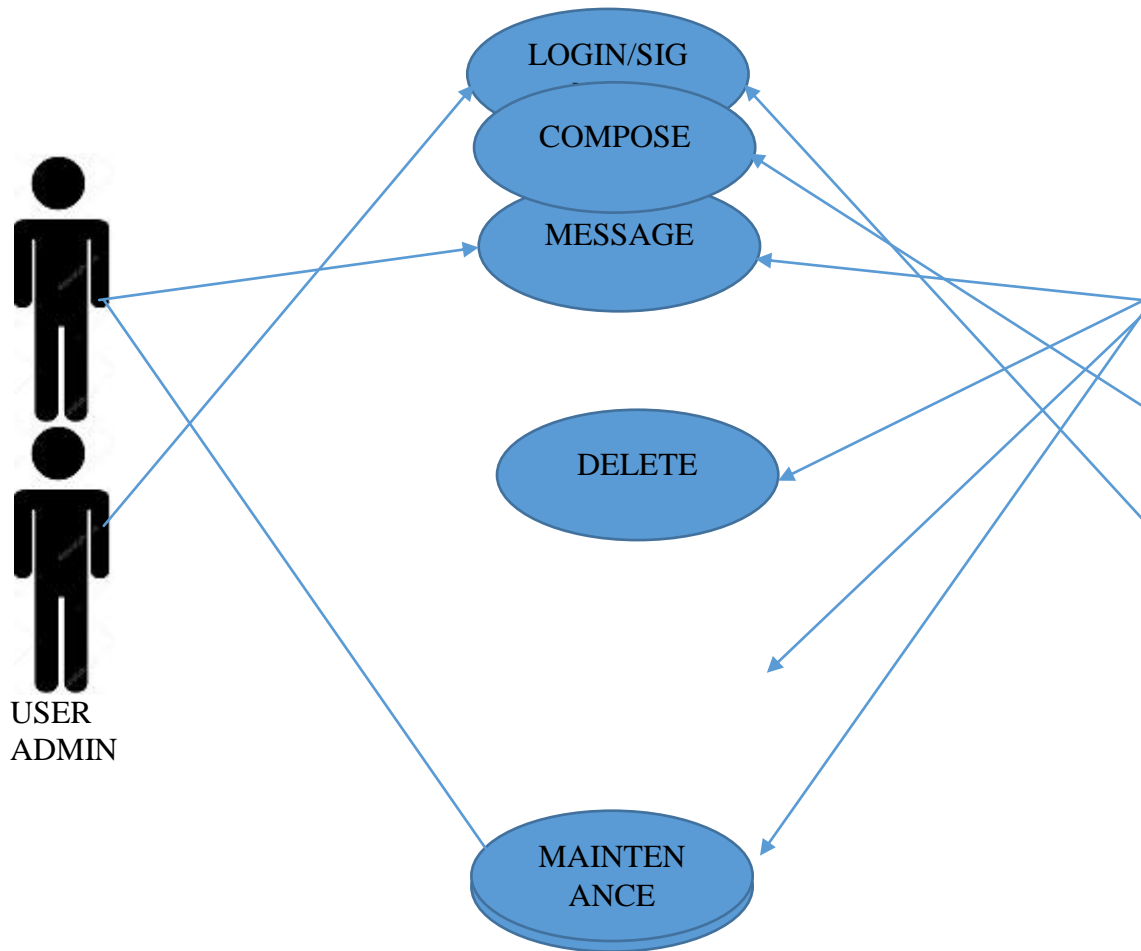
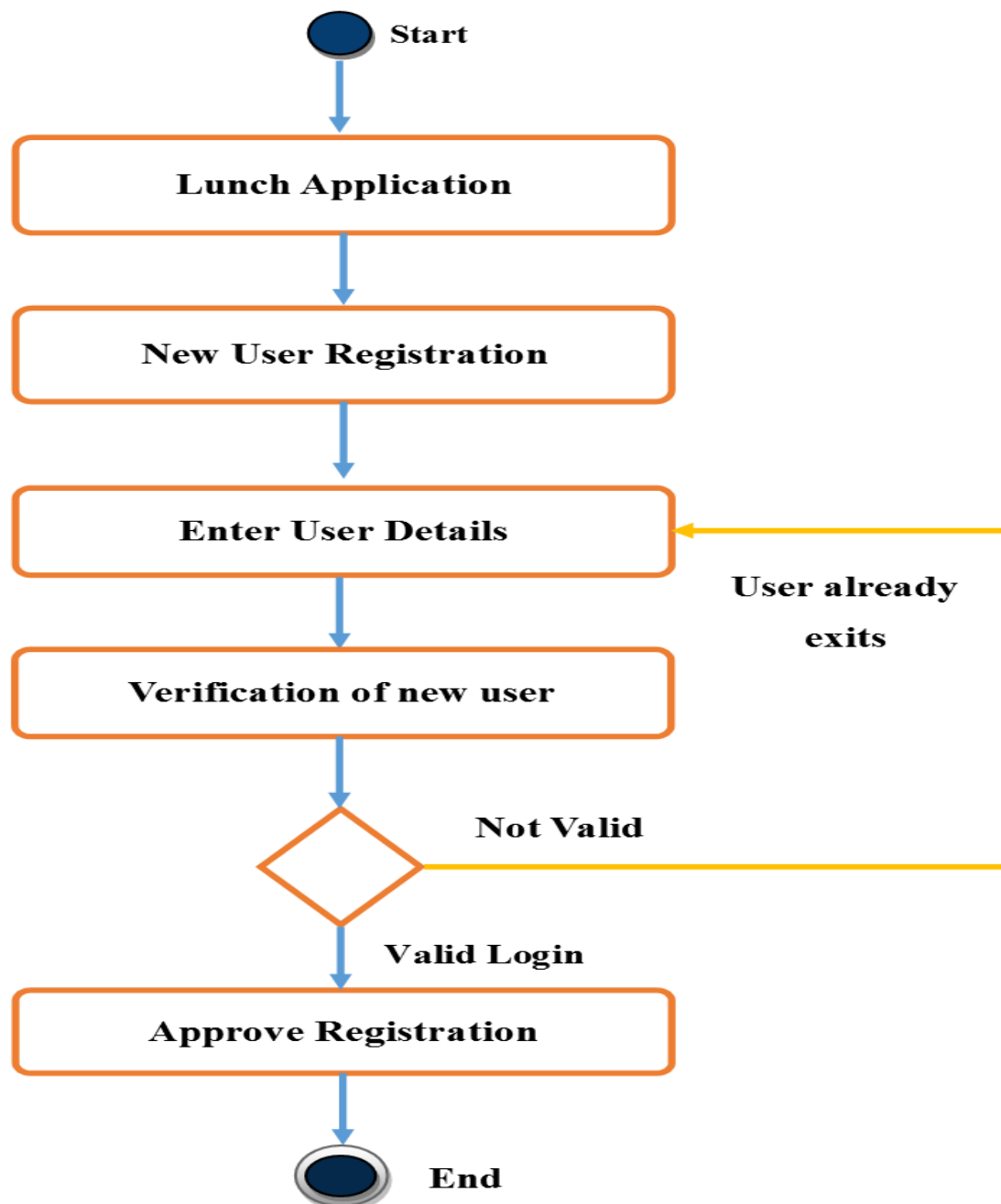


FIGURE 3.3 New user registration activity diagram



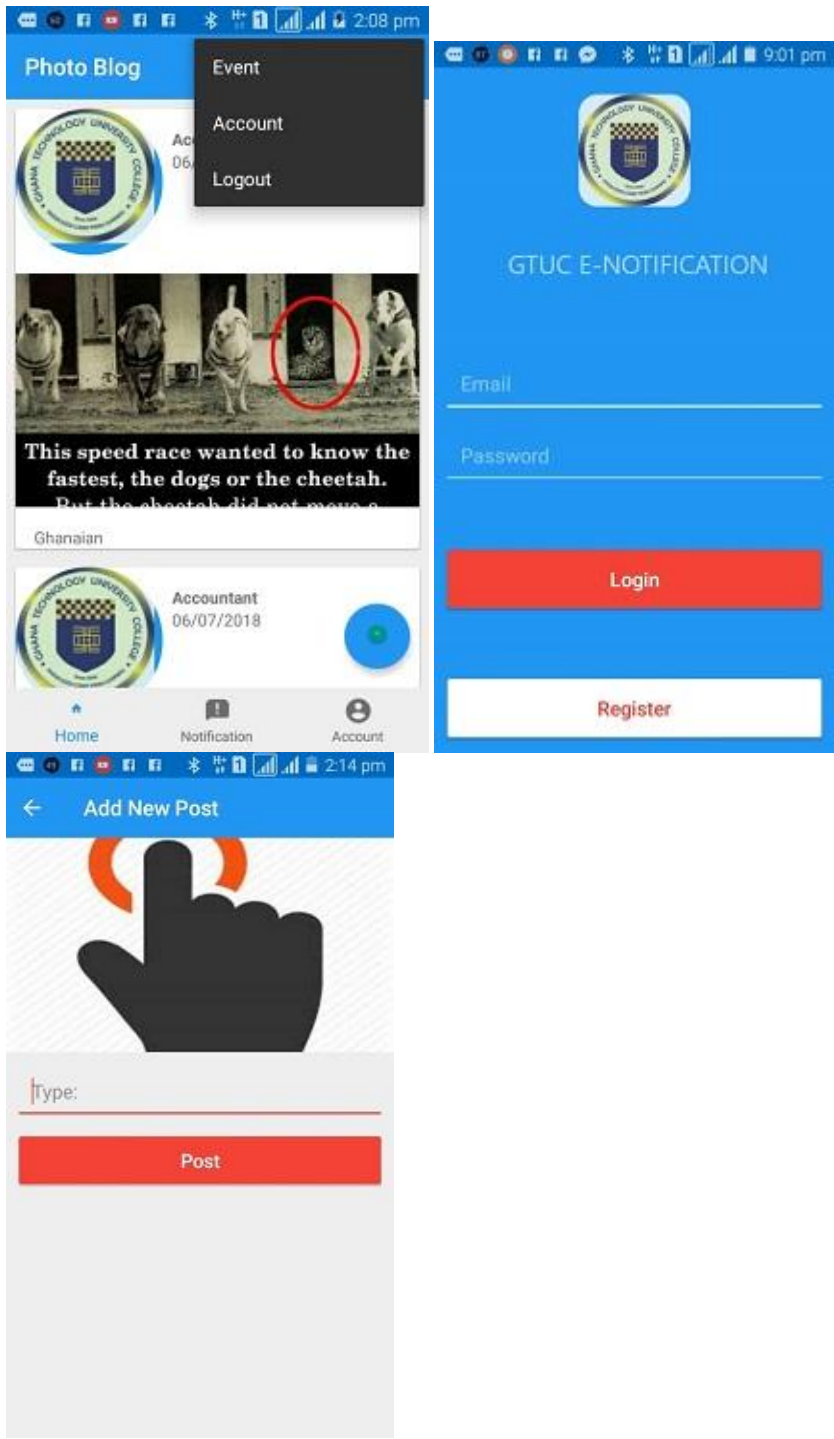
4. RESULTS AND DISCUSSIONS

After the system developed, process of system testing must be carry on in order to test if the system is free of bugs. If during the system testing, there are bugs or errors detected, the developer may need to correct and fix the bugs immediately.

Testing is the process of evaluating a software or system to detect differences between given input and expected output. Testing is conducted to assess the quality of a system hence can be said to be a validation and verification process. This ensures that system meets the

technical requirements that guided its design and development, works as expected and can be implemented with the same characteristics. limited only to the development team but it also requires the help from specific outsider (beta-tester) to test on the system acceptance.

Some of the screen-shots after testing



5. CONCLUSION

Building this project initially was presumed to be relatively difficult and after encountering all of the problems faced it was realized that there was more to it than just thinking or imagining because implementing an idea is very challenging since we did not have the full knowledge in how we were going to implement it. Finally, we conclude by saying, this project has been a very challenging academic exercise that has given us a lot of experience from understanding error messages in order to debug them to applying all that we've been taught from our first day of lecture to our very last lecture.

6. FUTURE WORK

In future developments, more research will be done to improve on the current functions and to add more functions through user feedback on the system usage and addition of more features so as to heighten the progress of the software to the school's and user's benefit.

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