ONLINE PROJECT AND GUIDANCE SYSTEM (OPAGS)

by

Kiranjeet Kaur Jusvir Singh

Dissertation submitted in partial fulfillment of

the requirements for the

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(Information and Communication Technology)

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CERTIFICATION OF APPROVAL

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A Project Dissertation submitted to the

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Approved by,

....

(Mrs. Savita K. Sugathan)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

NOVEMBER 2006

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.

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(KIRANJEET KAUR JUSVIR SINGH)

ABSTRACT

Online applications are ruling the way businesses run in today's world. Many companies are moving towards online applications not only in business environments but also in the educational perspective. Companies are moving into the e-commerce era but educational institutions are working on improving the efficiency of the way they run their daily activities by improving their online applications. This is also done to help their students and staff in ways such as easier accessibility to information and easier ways to conduct their daily work. The system (OPAGS) is a prototype of a very large system that would be appropriate for any educational based environment, be it a college, university or even at a lower level. What is assured is that the development of such a system is done with the main intention of improving the standard of working in such an environment. It concerns more of a project management based environment.

. This report is an extension of the proposal submitted for approval as a Final Year Project. The following paper will present the background of study, problem statement on the problem the current system in terms of users interaction, effectiveness and the HCI properties of the system and the objectives and scope of this study. The methodology used by the researcher is based on the Waterfall Model where two phases which are analyze phase and design phase is covered in this report. It also covers the findings of the research carried out by the research and explained them in terms of pie charts and the functionalities of the proposed system and how they work has also been explained by the usage of use case, class diagram and sequence diagram. Among the implications and contributions of this research is the identification of features that may maximize the likelihood of user satisfaction and return visits to the system

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Firstly, I would like to thank God for giving me the chance to be able to engage in this project. With Him, all things are possible.

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Last but not least I express my gratitude towards friends and family members who have indirectly contributed towards the successful kickoff of this project.

ABBREVIATIONS AND NOMENCLATURES

- UTP: Universiti Teknologi PETRONAS
- OPAGS : Online Project Assessment and Guidance System
- ICT: Information Communication Technology
- BIS : Business Information Systems
- UniKL : Universiti Kuala Lumpur.
- HCI : Human Computer Interaction
- ERD : Entity Relationship Diagram
- PAGOL : Project Assessment and Guidance Online System

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1. INTRODUCTION

1.1 Background of study

Web - based applications are ruling the way businesses run in today's world. Many companies are moving towards online applications not only in business environments but also in the educational perspective. Companies are moving into the e-commerce era but educational institutions are working on improving the efficiency of the way they run their daily activities by improving their online applications. This is also done to help their students and staff in ways such as easier accessibility to information and easier ways to conduct their daily work.

University Technology of PETRONAS is an institution where the numbers of students are growing rapidly. There is certainly in need of a system that is able to support the increasing amount of students especially catering for the final year ICT & BIS students. Project management plays a crucial role in the success or the failure of a system. An existing system (Google group) helps guide these ICT and BIS final year students but improvisations have to be made in order for the system to be more reliable and interactive. The current system is a system designed catered for students and lecturers. This system allows lecturers or more precisely supervisors only to post updates on the latest events or if any reminder was to be announced to the students.

Functions catered for students in the current system do not seem to attract them. Lecturers (supervisors) also have their fair share of complaints. Therefore it is found that there is a need to attract students so that they will actually use the system and in order to do so, there is a need to improve the existing system (Google group). Considering the current scenario, which is taking place now in University Technology of PETRONAS, to

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solve the problems listed, it will require a better system then the current one so as to that an improved and enhanced prototype is developed that will better the functionalities.

1.2 Problem Statement

There is always a reason to why users tend to get uncomfortable when using a system that because they are facing some kind of problem while using it or the system does not cater their needs fully. As in the case of the current system, it too faces some tribulations. All the problems that the current system faces are explained in this chapter for better understanding of the reader as to why the project was undertaken.

When preliminary study took place it was important to find out if undertaking the project was feasible. It was also necessary to find out if enhancements could be made in order to overcome any problems that occurred. It would have been rather ludicrous to take up a project if no enhancements could be made. The investigation showed that the current system does need enhancements since students were major group of users that were having complaints pertaining to the current system. Further investigation just proved the fact that the current system was not a satisfactory system for all the users. When investigation took place, users were interviewed or were asked to fill out questionnaires to gather necessary information to prove the fact that problems did exist. Most students refuse to use the system unless it is absolutely required. This lead to curiousness and so it was necessary to find out why is such a situation taking place.

The interface plays a huge role in the success of a system. In the current system, the interface is not all that appealing due to the current navigation style which is some what confusing to use. Besides that, the system is also not interactive and user friendly. A puzzling interface only leads to irritated users. The navigation style is not that of a standard navigation style which sometimes leads to confused users. Not only that, the current system page is too wordy where there are no graphics or fonts of different colour

to enhance the appearance of the system and the arrangement of hypertext is not appropriate.

The current system interface in terms of links where users can navigate through the system are rather baffling; due to the fact that users do not have any idea to what certain functions are for since there is no proper explanation or descriptions allowing the users to comprehend the whole purpose to the button being there.

There is very little communication taking place in the current system between the supervisor and the supervisee. Students who wish to email their respective supervisors while logged into the current system need to log out of the system to mail their lecturers using the existing student mail account or mail them from their private mailing accounts. This is also the same problem for the lecturers. A system that is catered for users to assess students and guide them is rather flawed if no collaboration takes place. Interaction is vital for a project based system since it is not always possible for students to meet their supervisors and vice versa so the best way is to interact via the internet, but to do so is such a hassle in the current system. It is not lacking because users can still e-mail each other and so on but the fact that it is a project based system and no interaction exists is rather insupportable.

Another collaboration problem exists where students who wish to book consultation hours also cannot do so unless they logout and go to their mail account where they can mail their supervisors asking for their time. All this only takes up pointless time and creates hassle for them. This was the most common problem that users came up with. Lecturers cannot put up consultation hours since there is no such function created for them.

Another problem exists with the existing reminder function to remind students of important dates that are sent by email. There is no reminder function that allows students or lecturers to set reminders to remind them of dates that they wish to be reminded on. Users wish they could do so in order to lessen the hassle and believe it will also encourage more interaction between the users.

There's no function that acts like a Gantt chart where students can input their tasks allowing them to keep track of their progress. Keeping track of their project progress is important in order not to get side tracked. It is not necessary to have a function that acts wholly like a Gantt chart though that would be really good, but it is sufficient for users to log into the system and allow them to input their tasks and setting the status of the tasks so that they can do it fully online in the system instead of having copies of papers or files trying to keep track of the work that's done.

The whole system is supposed to be just a forum but in this era of globalization and technology it is necessary to have task done in an easier and more productive manner. Through research done, 70 percent of higher institutions in Malaysia are already using on online assessment system and there should be no reason for an international university not to have one.

These are the many problems faced by the current system that can be overcome. It was vital to find out what the problems were before commencing with the project. Without which, it would have thoroughly outlandish and impractical to carry on with.

1.3 Aim, Objectives and Scope of Study

1.3.1 Aim

The aim of this research project is to learn and acquire the knowledge experience and expertise to develop a working an online system for students, lecturers and administrators in UTP as well as to study the fundamentals of an enhancement of technology. The second aim here is to ensure that the final result will satisfy end users involved and that too within the promised time scale. The reason the developer even takes the trouble to practice project management is so that possible dangers and difficulty that might be face could be predicted and could be avoided. In addition to that, it makes it possible to plan, organize, and control all our activities so that the project can be completed on time.

1.3.2 Objective

There is always a reason as to why a system is proposed be it something entirely new or an enhancement of an existing system. There could be many reasons as to developers come up with proposed systems, the core reason is the fact that there is a problem with the way existing work is done so to overcome these problems a new way of doing things is proposed, sometimes not entirely new and sometimes a fully new system. As in this case, with the help of preliminary investigation that was done, there are problems that need to be encountered and the investigation showed that the current system needs to be enhanced to provide a better working environment for the users.

Online Project Assessment and Guidance System (OPAGS) is an enhanced version of the existing system known as the ICT / BIS Google Group System. As mentioned before, preliminary investigation was carried out to assist

with the feasibility study of the project. A study on feasibility of having this type of system in the university was carry out by looking at other universities academic system. Besides that, this project was conducted to seek understanding and expertise in developing application based on online system. Once it was decided that it was feasible to develop such a system, it was concluded that the current system needs some changes to make an improved one.

Every project has it own objectives that work as drivers to achieve success at the end of the whole progression. The objectives of the system that need to be implemented are as stated below:

- To develop a system where anything pertaining FYP is submitted online and interaction with lecturers are more easily based on the functions provided.

- To achieve user needs so that the whole purpose of developing such a system is superior then the existing Google group which is not interactive and attractive.

- To be on par with other higher institutions and also on the move with the technological changes in the world by using online based system for assessment and guidance in the university.

1.3.3 Scope of study

The scope of this project will evolve around the learning of the website development, ASP.NET, MY SQL and IIS script in developing the application. These include creation of necessary database for students, user interface in building the application and its implementation. Besides that, the intended users for this project are UTP students, administrators (ICT & BIS Faculty) and lecturers generally.

2. LITERATURE REVIEW

Show that theories or evidence designed for some purpose in one literature could be applied in another literature to solve an existing but apparently unrelated problem

OPAGS will be used as a means of assessing how much effort is to be contributed towards FYP and manage student's current resources, namely Time. The system is a prototype of a very large system that would be apt for any educational based environment, be it a college, university or even at a lower level. University Technology of PETRONAS is an international as well a well known University in the world. The main rationale of the system still remains the same as the current system where it will still be the source of guidance for the students and the means to guide them for the lecturers but in a more enhanced and systematic yet attractive manner. The reason this system is required is so that users can fully utilize it.

Based on a research carried out by Dr. Suzana from University of Malaya in the year 2003, she pointed out that using online based system as an assessment and reporting tool will indirectly save the environment. This indirectly saves the environment in the forms where less paper is used in submission of assignments, reports, test, etc where leads to less trees been cutting down for the purpose of producing papers. "If we have the technology and expertise and at the same time make the world a better place to live, why can't Malaysian adapt to an online based education assessment" (Dr. Suzana, 2005). According to Dr. Suzana (2005) by implementing an online assessment and reporting tool could lead to lesser time consumption of students printing their task as well as lesser money consumption to spend on papers and binding.

Through research carried out the current system features that may influence users' satisfaction such as loading time, color and font use, organization of information

content, navigability, active links, etc is not taken into consideration in the current system. The system is not appealing to be used. As for the current system, the page is too wordy, there are no graphics to enhance the appearance of the system and the arrangement of hypertext is not appropriate. Herzberg (1993) points out that "these factors determine the user satisfaction on using a web page". It has also been proven in a study carried out by Alderfer in the University of Ohio where two different educational web sites where students were to take their test online in a given period of time were developed and implemented for a testing period of 3 months. One website had the appropriate usage of font and colour, layout was perfect, links were clearly noticeable as well as not wordy and very user friendly. The other website was very wordy, font used were not appropriate, users couldn't not distinguish between header's and normal text, colour combination was very poor and the layout was very confusing. This study was carried out to analyze the performance of the students using both the websites. The students were chosen randomly and results showed that the first system users finish their task in a shorter period of time as well as scored better compared to the second systems users. This also proves that, the system interface, font, colour, layout and links does make a difference in the usability of it.

Boschkow (2002) points out that "to determine the effectiveness of an online system, it is important for the system to act as a motivator where all the Human Computer Interaction properties are met". Boschkow (2002) says that the main factor that determines the effectiveness of an educational system is the appearances of the page. The appearance he meant here is the usage of font in terms of size, style and colour, the layout of the page in terms of the arrangements of buttons, links and graphics, and also the colour combination of the background as compared to the contents of the page. Boschkow (2002) also mentioned that a too wordy page may also be very distractive to a user's performance as well as interest in using the application. This falls back to the current Google system where it only consist of words and it difficult to

determine which a hypertext is and which is normal text. This may be one of the causes for the system not to be accessed by many students.

Besides that, University of Kuala Lumpur in Malaysia had also done major improvements on their website in January 2006 where now it is more user friendly, attractive and is up to date with all the latest news and upcoming events as well as it include all necessary details on the UniKL. Previously, their website only included the faculties, addresses of the faculties, courses offered in UniKL but now it has so much more information. Recently the Amway direct selling group had poll on their website to know the view of user on the current website. Based on many negative responses on the interface, not accurate and enough information as well as not interactive the restructured their website and came up with an entirely new look and services. A poll was only conducted after the improvements and since them the online sales as well as number of people visiting the website has increased in 60%. (Charlie KS, 2006)

As compared to the current group, OPAGS incorporate approximately 99% of more features as the current group only allows announcements to be posted and viewed. A comparative study was carried out between OPAGS and PAGOL (Project Assessment and Guidance Online System) which is implemented in APIIT College in Malaysia. This study was carried out to compare the functionalities and HCI features of OPAGS and PAGOL. Through the study that was carried out, OPAGS engages more functionality such as the chatting function, SMS reminders, set reminders and also the internal mailing system. In terms of HCI features, OPAGS was more user friendly, easy and simple to understand and use.

This concludes that the development of a new system was necessary to achieve the objectives as it relates to the development of OPAGS and its objectives of development were achieved.

3. METHODOLOGY / PROJECT WORK

3.1 Requirement Analysis

In order to accomplish the project, the developer has decided to use a good guideline. This guideline is represented by the "Waterfall" Model, which serves as the conceptual guideline for most projects. Royce and Winston (1997) says that the verbs of waterfall development are 'analyze', 'design'. 'code' and 'test'. The process described by the model involves development through specific, sequential stages. There are specific objectives to be accomplished in each stage; each activity must be deemed successful for work to proceed to the subsequent phase. The process is usually considered non iterative. Each phase requires the delivery of particular documentation products. As for now, the developer has carried out analysis on the current system as well as some documentation on designs of the system.

3.1.1 Data Gathering

Abouchedid and Nasser (2002, p. 200) points out that the procedures to obtain the feedback from a clustered sample of ICT/BIS students is an adaptation of the methods introduced in to suit the current setting of student population in UTP. The following describes the steps involved in each phase:

    a. Questionnaire creation

    A questionnaire consisting of was prepared and administered to ICT/BIS final year students randomly (See Appendix A). The first part sought to obtain standard demographic and background information of course, year and sponsor. Names and contact details were left optional

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for respondents and its purpose explained as merely for contacting respondents who did not complete the questionnaire or there was a need to clarify certain opinions pertaining to the answered questionnaires.

The second part of the questionnaire had 6 questions, which sought to understand respondents' perspective on the implementation of a new online project assessment and guidance reporting tool to help students achieve their targeted results. The questions in this part can be categorized into the following:

i.   Control Questions'

There are three control questions, namely Question 3, Question 4 and Question 5 in the questionnaire, which will be used to determine whether feasibility of implementing proposed reporting tool.

ii.   Perception and awareness

For question 5, respondents were asked to select the criteria which would determine the effectiveness and the usability of a proposed online project assessment and guidance reporting tool reporting tool. Meanwhile, Question 3 and 4 asks whether the current systems interfaces were useful as well as the level of user friendliness. Question 3 requires respondents to select the area of weakness in the current system used. If their answer was Others or No to Question 3 and Question 4, respondents are required to specify their reasons of choosing so. to Lastly, Question 6 required respondents to suggest any additional functionality

as addition to the proposed system to further meet their specific needs as users of the system.

iii.   Level of interest

Question 5 requires respondents to rate their level of interest on a scale of 1 to 5 (1 for least interested and 5 for very interested) for the five modules proposed in the online project assessment and guidance reporting tool. In addition, they were asked to comment on their reasons for providing such ratings.

iv.   Quantitative measures for causality

Questions 3 provides several possible reasons for students to critic or analyze the current system based on the researchers' own assumptions from previous experiences as a student. Respondents were asked to select their opinion on the current system interface where the selection was based on human computer interaction aspects and to specify their answers if there were none which describes their answer(s) to this question.

3.1.2   Questionnaire Distribution

i.   Sample selection

A sample representing 1.8 percent of the total population of students currently registered in the ICT/BIS program was selected based on cluster sampling techniques in which a minimum quota of 50 respondents from final year first semester and second semester

were selected to represent population of ICT/BIS students who will be primary users of the proposed system. This satisfies the internal validity criteria as opinions from all levels of background were selected to account for students' perceptions and opinions.

ii.   Distribution and collection strategies

In order to minimize classroom disruptions, the researcher sought out representatives to act as agents to distribute and collect the questionnaire. The main weakness of this procedure was that some respondents did not understand the questions posed and therefore did not respond accordingly.

3.1.3   Data Analysis & Interpretation

For control questions and levels of interest, quantitative measures of causality and perception and awareness, data is summarized by categorizing students' opinions into similar answers and relevant points will be highlighted in Results and Discussion.

3.2 System Architecture and Design

3.2.1 Use Case Diagrams

The Use case diagram is used to "identify the primary elements and processes that form the system" (James, 2002). The developer wants to represent the functionalities of the system in a simplified and easily understandable manner to understand the functional aspects of the system at hand. While developing the use case diagram, significant characteristics in the system were discovered and this will further help with the design of the system.

The preliminary investigation conducted helped in the design of the system as the use case diagram shows and depicts what are the functionalities of the system. The user requirements gathered are showcased in Figure 1. Each use case represents the functions available in the system, who are the users of the system and what functions are available for their use.

As a conclusion, with the help of preliminary investigation that took place, user requirements were gathered and with the help of use case diagrams, the user requirements were finalized and they were defined and modeled which will lead to the proper development of the prototype of the system.

3.2.1.1 Student Module
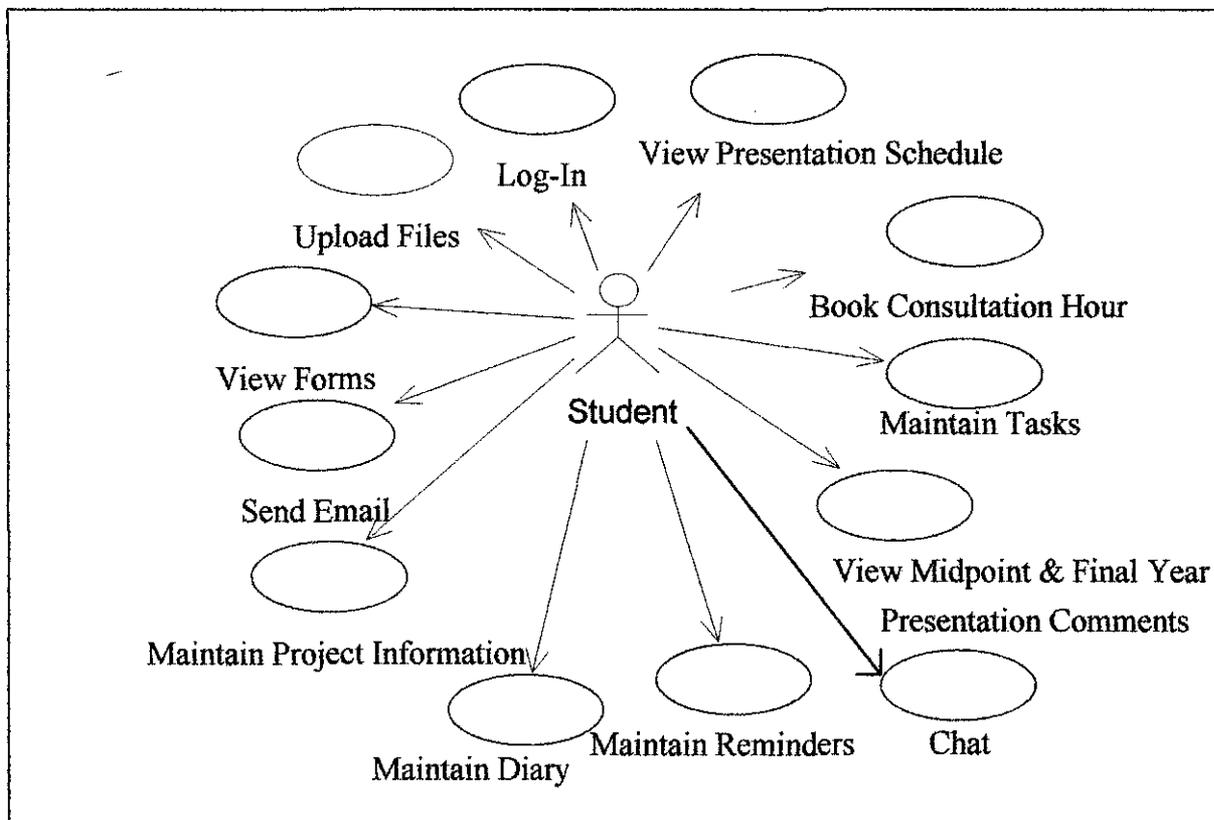
Figure 1 : Student Module Use Case Diagram

3.2.1.2 Lecturer Module
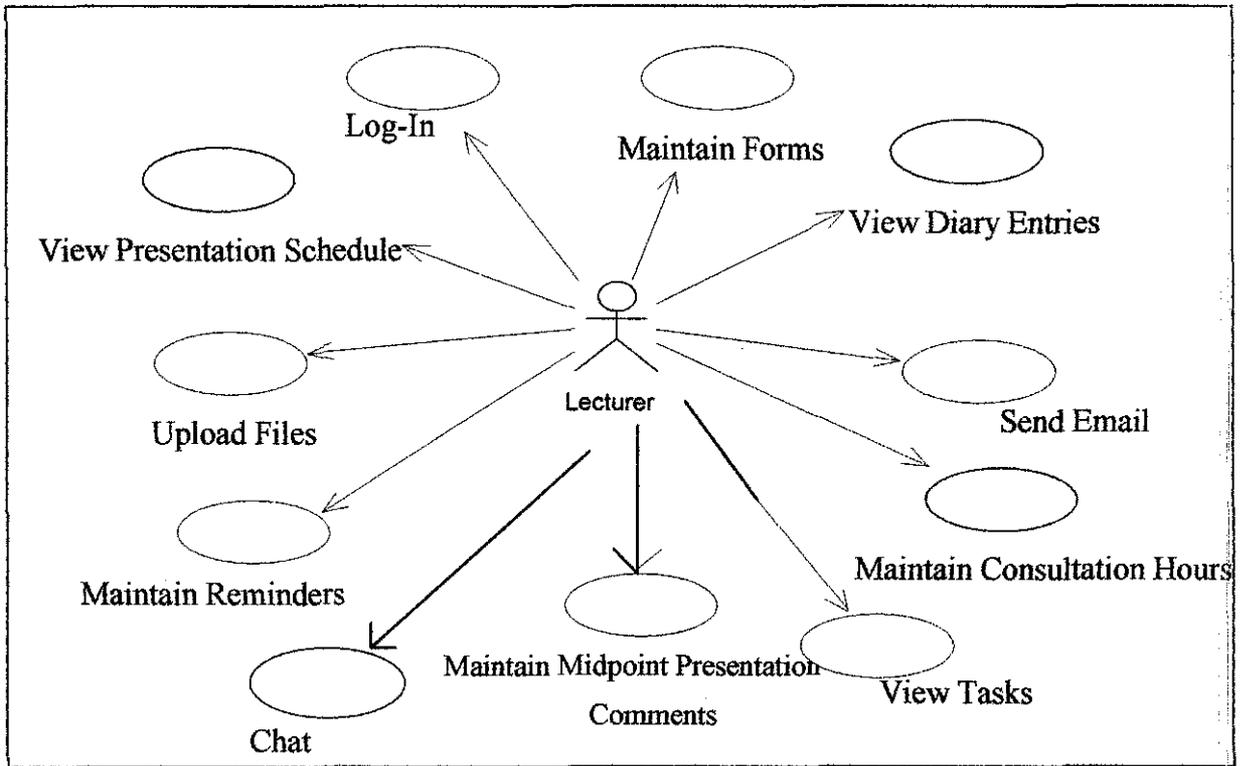
Figure 2 : Lecturer Module Use Case Diagram

3.2.1.3 Administrator Module
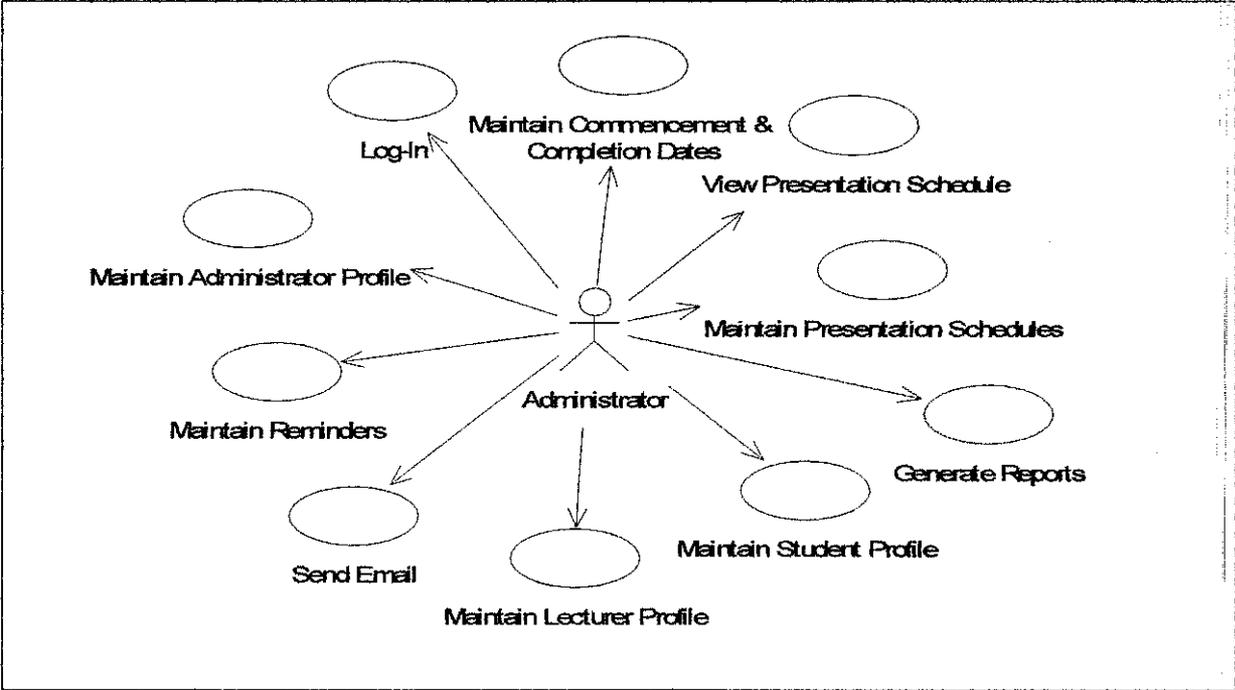
Figure 3 : Administrator Module Use Case Diagram

3.3 Comparative Study of Available Tools

Research on technical matter explains the reasons as to why the programming language, database server and other relevant technical matters are chosen. This section explains to the reader in detail what made the developer chose and why it was chosen to help with the development and implementation of the system at hand.

3.3.1 Programming Platform Used (ASP.NET)

ASP.NET is a set of .NET classes used to create Web-based, client-side (Web Form) and server-side (Web Service) applications. ASP.NET was derived from the Microsoft Active Server Pages (ASP) Web technology and adapted for use in the .NET Framework.Even though ASP.NET takes its name from Microsoft's old web development technology, ASP, the two differ widely. Programmers can write ASP.NET code using any of the different programming languages supported by the .NET framework, usually Visual Basic.NET, JScript .NET, or C#, but also including open-source languages such as Perl and Python. ASP.NET encourages the programmer to develop applications using an event-driven GUI paradigm, rather than in the conventional web scripting fashion. ASP.NET uses the .NET Framework as an infrastructure. The .NET Framework offers a managed runtime environment, providing a virtual machine with JIT and a class library, like JAVA

There are ever so many reasons to select ASP.NET as a project platform to develop this Online Project Assessment & Guidance System. Some of ASP.NET's main competitors are Perl, Microsoft Active Server Pages (ASP), PHP Hypertext Preprocessor (PHP), Java Server Pages (JSP), and Allaire Cold

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Fusion. In comparisons of these languages, ASP.NET has much strength including the following:

- **Improved Security.**

- **ASP.NET is part of the .NET Framework.**

- **Multiple language support.**

- **Cross-Language Compatibility.**

- **ASP.NET pages are compiled. Ease of configuration.**

- **Code-behind logic.**

- **Browser-independent applications.**

- **Memory leak, deadlock, and crash protection.**

- **Performance and scalability.**

- **Simplified deployment.**

Through the research that has been carried out, it allows the developer to analyze as to why ASP.NET is the appropriate language to be used in developing my system. By analyzing the benefits of the web development language it is found suiting the developers programming needs. Not only does ASP.NET allow the developer to finish the work faster (after which the developer understood the

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language thoroughly well), ASP.Net allows the developer to re-use codes, which also leads to faster deployment of the system. Another way on how ASP.NET improves efficiency is by pre-compiling and dynamically compiling codes when a page is requested, allowing for faster response. The developer was working on developing a system that will allow her to implement a faster responding system, so as to that this is a suitable language for the system.

Even if PHP is open source, ASP.NET is also available for free over the internet, so that is not a reason for the developer to divert to using PHP. As a conclusion it is understood that ASP.NET is the most appropriate language for the deployment of the system at hand not only because it will provide the developer with a more efficient system but also due to its security features.

3.3.2 Database Server Used (Microsoft SQL Server)

Microsoft SQL Server is a relational database management system produced by Microsoft. It supports Microsoft's version of Structured Query Language (SQL), the most common database language. MS SQL provides many benefits to its users, allowing for more reasons as to why the database server is used widely among developers.

The many benefits of MS SQL are:

- **Scalable from Laptop to cluster**

- **Replication Services**

- **Full-Text Search**

- **Ease of use**

3.3.3 Internet Server Used (Internet Information Services Server)

Microsoft Internet Information Services (IIS, sometimes Server or System) is a set of Internet-based services for servers using Microsoft Windows. It is the world's second most used web server in terms of overall websites but most widely used web server for corporate, commerce and secure websites.

As comparison to Apache server, there is not much that can be said about which server is better. Both have their positive properties but, the IIS server does come across as a better server in certain areas compared to the Apache server. It fully depends on what programming platform or what operating system one is using. Like in the case of this project, ASP.NET is used and ASP.NET and IIS server work together, hand in hand. The compatibility level is far more superior compared to using Asp.NET and Apache server.

Analyzing all the facts, IIS server is better to be used to develop this particular system compared to the other servers because of its compatibility reasons.

4. RESULTS AND DISCUSSION

As the aim of the research is to do research on the function and role played by OPAGS (Online Project Assessment Guidance System) in bringing the efficient way to provide systematic features to the ICT & BIS Faculty students', lecturers' and administrators who are in charged of the Final Year Project by easing everyone's task. Data gathered from the feedback of system's primary end users (students) was compiled, analyzed and summarized to justify the feasibility of implementing OPAGS to ensure that the system's goals is met which is to further meet the specific needs of current system's users. Results from the attempted data collection techniques, namely, questionnaires (See Appendix A) and feedback from prototypes will serve to determine user requirements and used as a basis to measure the effectiveness and usability of the system. The feedback analyzed through the questionnaire is as shown below in the form of pie charts.

As the data was analyzed the developers has develop a rough idea on how the system should be working. This was done by using the class diagram where it is a core to object-oriented design. The class diagram describes the types of objects in the system and the static relationships between them. The class diagram in this case is used to show the classes existing within the model of the system. Design class diagrams allow the reader to see what needs to be implemented in the system from the developer's point of view. The diagrams attached here are concerning the core functions of the system.

4.1 Pie Charts

These pie charts are derived from the respondents view and opinion through the Questionnaire (See Appendix A) handed out to them. A pie chart was derived for each question to get a better understanding on the primary end users view on the current system and functionalities that they expect to be in the proposed system. As mentioned earlier, this survey was carried out among 50 final year ICT/BIS students

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4.1.1 How often respondents Log onto IT_IS Google Group.
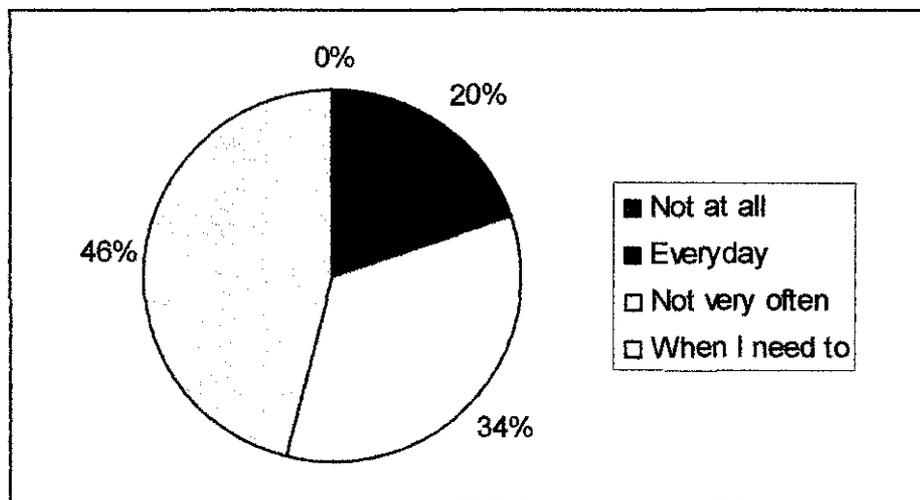
Based on the responds from the students, majority of them access to the current IT_IS Google Group only when they need. This data clearly shows on the efficiently of the current system.

4.1.2 Reasons specified by respondents if their desired answer was either When I need to, Not very often or Not at all.

▨	When I receive info regarding my FYP
■	Check latest info
❑	When I need to read the announcements
❑	Check due dates
■	The information on the group is not updated on a daily basis. So I only check sometimes for updates
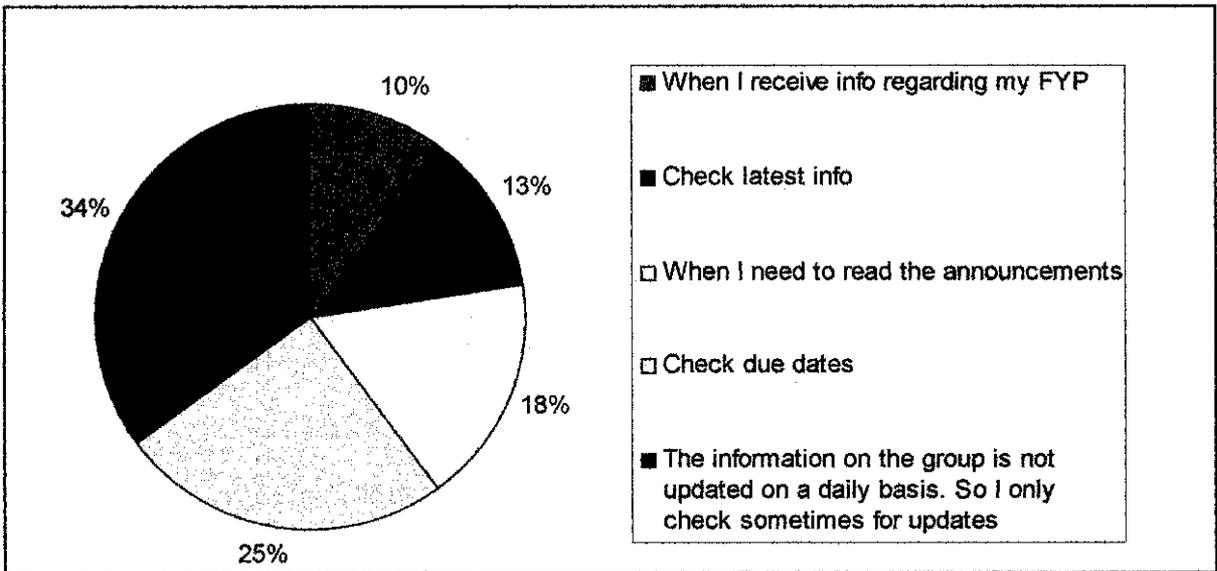
Based on the pie chart above, majority of the students log on to the Google Group to check due dates, or latest information or announcement.

4.1.3 Respondents opinion on the current system interface.
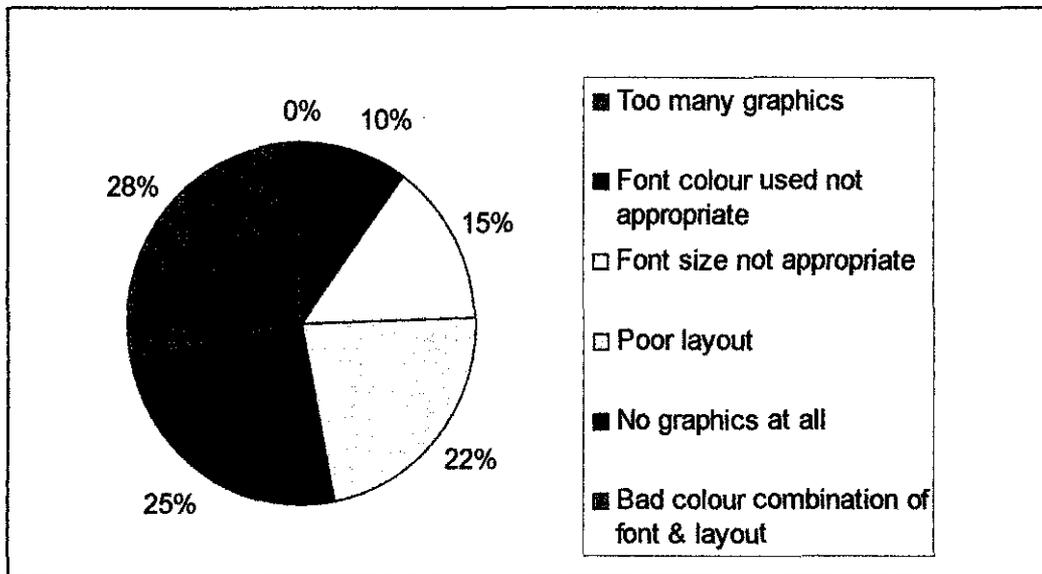
Based on the chart above, it is clear that all students have their share of complaints on the current system. Out of 50 students, 28% say that the interface has a bad colour combination of layout and font, 25% of them state that the interface is too wordy where no graphics are included, 22% agree that the layout of the system is poor, 15% state that the font size is not appropriate and 10% agree that the font colour used is not appropriate. Based on this data, it is proven that majority of the end users which mainly consists of students are not satisfied with the current system interface.

4.1.4 Whether respondents find the current system user friendly and convenient to them as final year degree students.
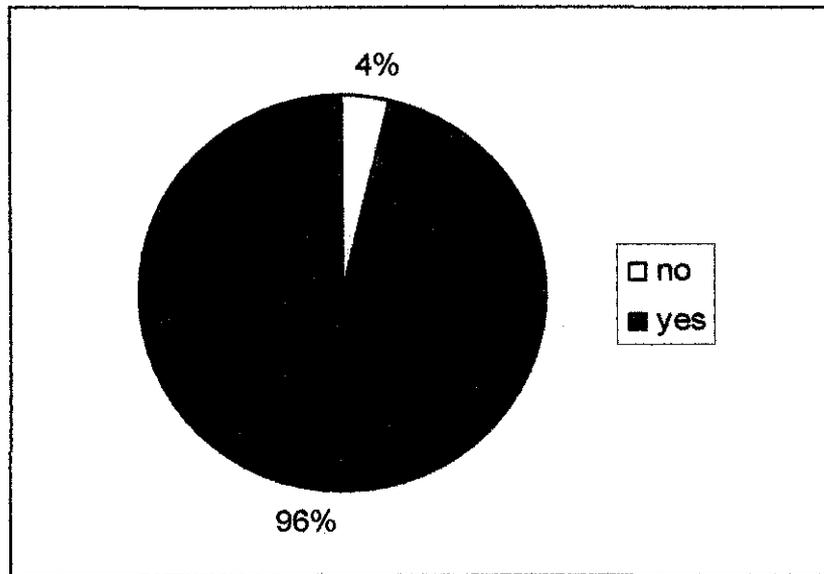
48 out of 50 students responded that the current system is not user friendly and not convenient to them as final year degree students.

4.1.5   Respondents rate the functionalities provided by the user to incorporate in the proposed system by the scale of 1 to 5, where 1 is least interested and 5 is most interested.

Lecturers' consultation hours.
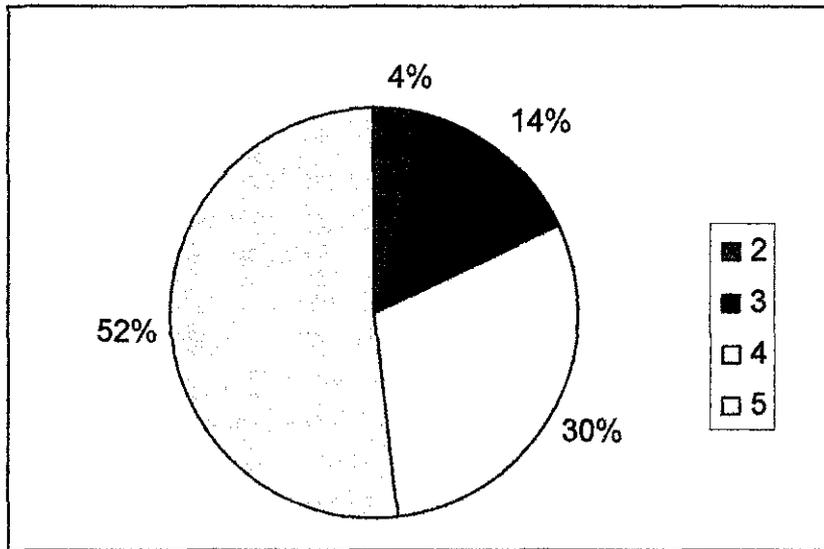
Students' final year presentation schedules.
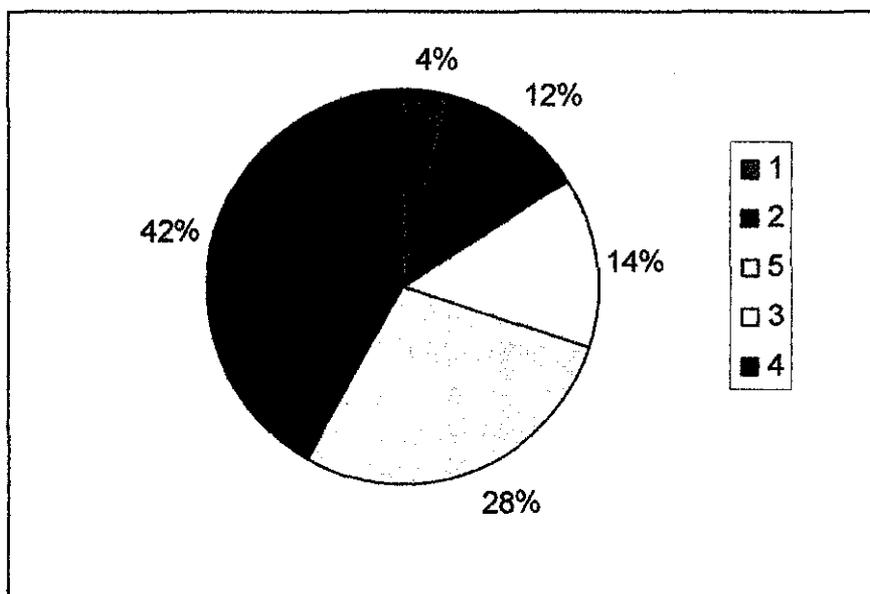
Appropriate reminders, reminding you of important dates either by email or SMS.
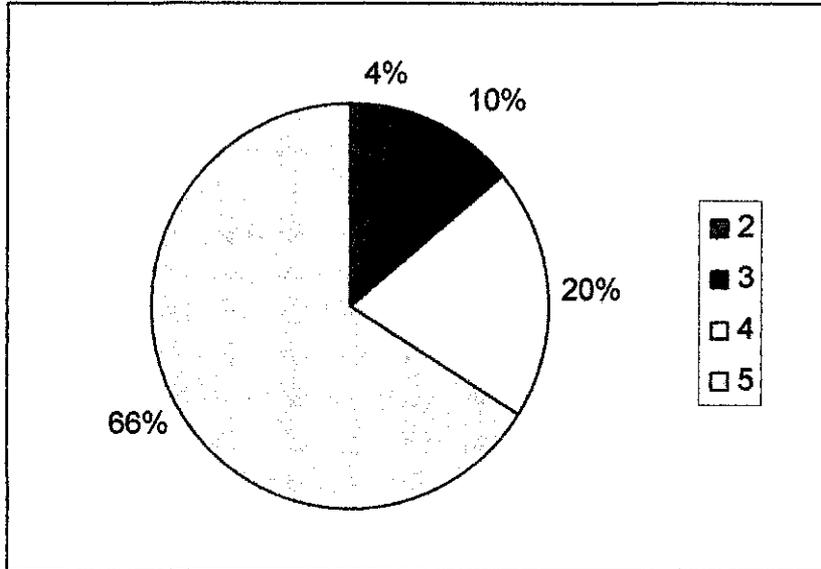
Submission of all tasks online
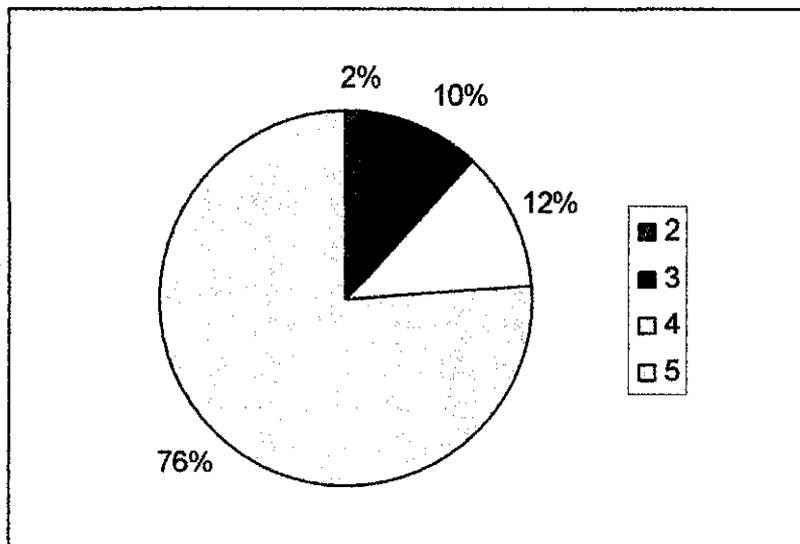
Having an online communication with lecturer (chatting)
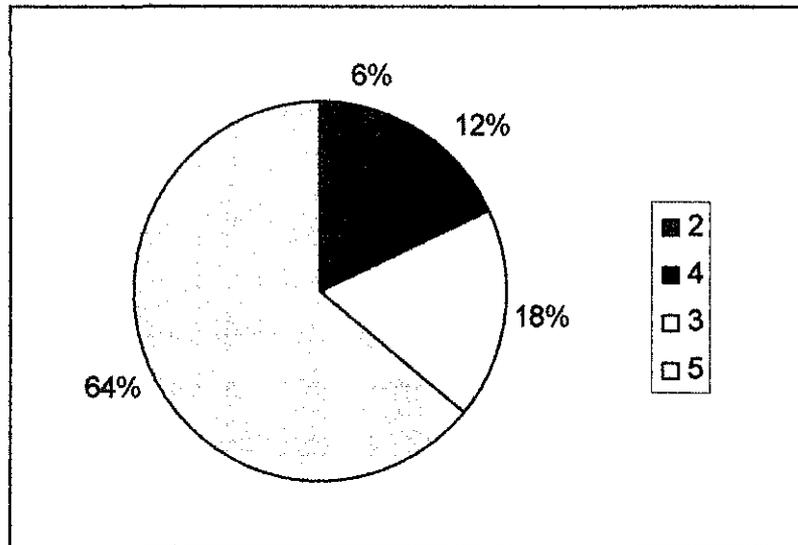
For this section of the questionnaire, respondents were asked to rate from the scale of 1 to 5 the functions that they were most interested that should be incorporated in the system to the least interested. Each respondent had their own views, and based on the results, majority of them rated the submission of all tasks online the highest.

4.1.6 Functionalities suggested by respondents to be added into the proposed system to meet their needs as users.
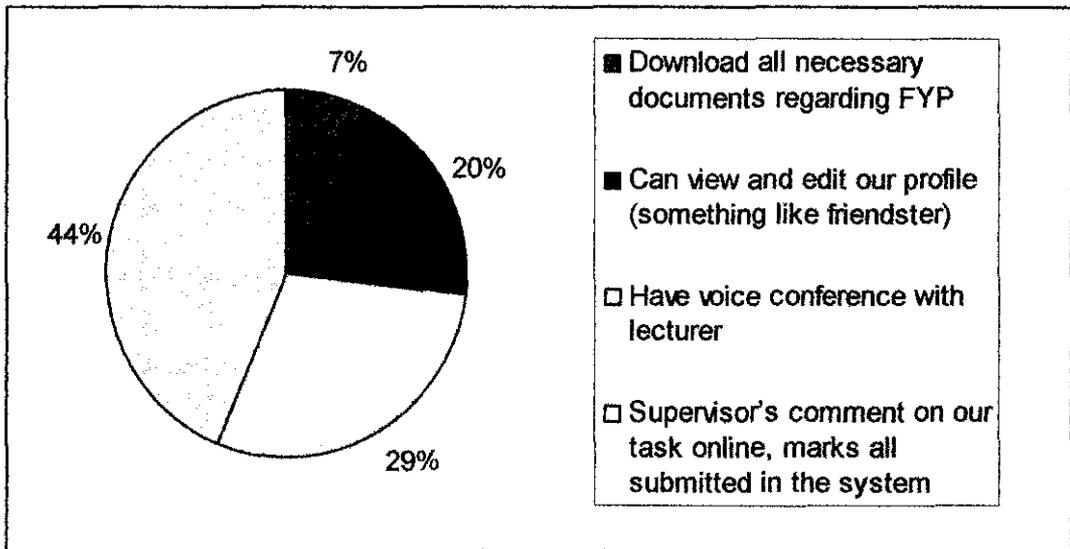
Besides the functionalities provided in the questionnaire, 44% of the respondents suggested that supervisors comment on the system as well all the accumulated marks function should be included. 29% of them suggested to include a voice conference function in the system where 20% of the students suggested on having a UTP style friendster, where the students can edit and view their profile. Only a small number of the respondents suggested on having a download function where all necessary documents regarding FYP can be downloaded.

4.2 Use Case Specifications

Use case specifications allow for better understanding of the flow of events that take place in a system. The use case specifications are as a reference to the sequence diagrams that are attached at the later part of this documentation. The use case specification is used to understand the possible set of event that can take place in the system.

4.2.1 Student Module

4.2.1.1 Use Case: Book Consultation

Description: This use case is for student to select a particular lecturer's name for the week as to view the consultation slots that have been allocated by the lecturer.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: After the main menu being displayed, student has to select the link that says book consultation hour. In addition, choose the lecturer name and the week.

Precondition(s): Students need to specify or select on a lecturer first.

Post condition(s): Students will be able to book consultation hour with the particular lecturer for that week.

Primary (happy) path: Students select on the particular lecturer's name and book the available consultation slot.

Alternate pathway(s): Student is able to edit tasks successfully.

Exception pathway(s): The drop down menu is not activated because of the database error.

Happy Path Flow of Events

Lecturer key in his/her user name and password and logs in successfully into the system.

1. Student logs in with valid username and password
2. Main menu will be displayed
3. Click on the appointment link
4. Select a lecturer's name and look for available consultation slot
5. Book consultation slot.

Exceptional Path Flow of Events

Lecturer's username does not match the password entered.

1. Student logs in with valid username and password
2. Main menu will be displayed
3. Click on the appointment link
4. Drop down menu to select lecturers name is not activated
5. Contact administrator.

4.2.1.2 Use Case: View Presentation Schedules

Description: This use case is for students to view their presentation schedules.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: A final year student must be nearing his/her presentation date to check if he/she is on the presentation list.

Precondition(s): Students has to log in and selects to view schedules.

Post condition(s): The schedules will be displayed.

Primary (happy) path: Student is able to view the schedules.

Alternate pathway(s): None

Exception pathway(s): There are no schedules in the database.

Happy Path Flow of Events

Student is able to view the schedules after clicking on the function.

1. Student logs in with valid username and password
2. Main menu will be displayed.
3. Click on the view schedules link.
4. The schedules will be displayed.

Exceptional Path Flow of Events

There are no schedules in the database.

1. Student logs in with valid username and password
2. Main menu will be displayed.
3. Click on the view schedules link.
4. Schedules not found.

4.2.1.3 Use Case: Upload Files

Description: This use case is for students to upload files to their supervisors.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: A final year student has to be logged into the system to upload.

Precondition(s): Students has to log in and selects to upload files.

Post condition(s): The schedules will be displayed

Primary (happy) path: Student is able to view the schedules after clicking on the function.

Alternate pathway(s): None

Exception pathway(s): Error while uploading.

Happy Path Flow of Events

Student is able to view the schedules after clicking on the function.

1. Student logs in with valid username and password
2. Main menu will be displayed.
3. Click on the upload files link and upload files.

Exceptional Path Flow of Events

Error while uploading.

1. Student logs in with valid username and password
2. Main menu will be displayed.
3. Click on the upload files link.
4. Upload files.
5. Files unable to be uploaded.

4.2.1.4 Use Case: Set Reminder

Description: This use case is for students to set reminders for themselves.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: A final year student has to be logged on to set reminders.

Precondition(s): Students has to log in and selects to set reminder.

Post condition(s): The reminders will be set.

Primary (happy) path: Student is able to set reminders successfully.

Alternate pathway(s): None

Exception pathway(s): Reminder not set on the right date.

Happy Path Flow of Events

Student is able to set reminders successfully.

1. Student logs in with valid username and password.
2. Main menu will be displayed.
3. Click on the set reminder link.
4. Set reminders.
5. Reminders set.

Exceptional Path Flow of Events

Reminder not set on the right date.

1. Student logs in with valid username and password.
2. Main menu will be displayed.
3. Click on the set reminder link.

4. Set reminders but unable to set.

4.2.1.5 Use Case: Send Mail

Description: This use case is for students to send mails to their supervisors.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: A final year student has to be logged on to send mail.

Precondition(s): Students has to log in and selects to upload files.

Post condition(s): The schedules will be displayed

Primary (happy) path: Student is able to send mails successfully.

Alternate pathway(s): None

Exception pathway(s): Student is unable to send mails because SMTP error.

Happy Path Flow of Events

Student is able to send mails successfully.

1. Student logs in with valid username and password
2. Main menu will be displayed.
3. Click on the send mail link.
4. Send mail.
5. Mails sent.

Exceptional Path Flow of Events

Student is unable to send mails because database error.

1. Student logs in with valid username and password
2. Main menu will be displayed.
3. Click on the send mail link.
4. Send mail but mail not sent.

4.2.1.6 Use Case: Edit Task

Description: This use case allows students to edit their tasks and ends once the tasks have been edited.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: 1

Assumptions: After the main menu being displayed, student has to select the link that says edit tasks.

Precondition(s): Students need to be logged into the system first.

Post condition(s): Students will be able to make the necessary changes.

Primary (happy) path: Student is able to edit tasks successfully.

Alternate pathway(s): None.

Exception pathway(s): Student is unable to edit tasks successfully.

Happy Path Flow of Events

Student is able to edit tasks successfully.

1. Student enters username and password.
2. User name and password is verified.
3. Student is able to make the changes.

4. Changes are saved.

Exceptional Path Flow of Events

Student is unable to edit tasks successfully.

1. Student enters username and password.

2. User name and password is verified.

3. Student is not able to make the changes.

4.2.2 Lecturer Module

4.2.2.1 Use Case: Put Up Consultation

Description: This use case is for lecturers to allocate consultation slot in order for the students to book.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: Lecturer has to log on to put up slots.

Precondition(s): Lecturer logs in with his/her user name and password

Post condition(s): Lecturer will be able to put up consultation slot for the students to book.

Primary (happy) path: Lecturer allocates consultation slot.

Alternate pathway(s): None

Exception pathway(s): Lecturer tries to put up consultation slot but unable to.

Happy Path Flow of Events

Lecturer allocates consultation slot.

1. Lecturer logs in with valid username and password.

2. Lecturer clicks on allocate consultation slot link.

3. Lecturer put up slots.

Exceptional Path Flow of Events

Lecturer tries to put up consultation slot but unable to do so.

1. Lecturer logs in with valid username and password

2. Lecturer clicks on timetable link

3. Lecturer clicks on allocate consultation slot link

4. Unable to put up slot due to some technical errors.

4.2.2.2 Use Case: View Presentation Schedules

Description: This use case is for students to view their presentation schedules.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: Lecturer needs to be logged on to view schedules.

Precondition(s): Lecturers has to log in and selects to view schedules.

Post condition(s): The schedules will be displayed.

Primary (happy) path: Lecturer is able to view the schedules after clicking on the function.

Alternate pathway(s): None

Exception pathway(s): There are no schedules in the database.

Happy Path Flow of Events

Lecturer is able to view the schedules after clicking on the function.

1. Lecturer logs in with valid username and password
2. Main menu will be displayed.
3. Click on the view schedules link.
4. The schedules will be displayed.

Exceptional Path Flow of Events

There are no schedules in the database.

1. Lecturer logs in with valid username and password
2. Click on the view schedules link.
3. The schedules will be displayed.
4. Contact administrator.

4.2.2.3 Use Case: Download Files

Description: This use case is for Lecturer s to download files sent to them.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: A Lecturer has to be logged into the system to upload files.

Precondition(s): Lecturers has to log in and selects to download files.

Post condition(s): The schedules will be displayed

Primary (happy) path: Lecturer is able to view the schedules after clicking on the function.

Alternate pathway(s): None

Exception pathway(s): Error while uploading.

Happy Path Flow of Events

Lecturer is able to view the schedules after clicking on the function.

1. Lecturer logs in with valid username and password
2. Click on the upload files link.
3. Upload files.
4. Files uploaded.

Exceptional Path Flow of Events

Error while downloading.

1. Lecturer logs in with valid username and password
2. Click on the upload files link.
3. Upload files.
4. Files unable to be uploaded.

4.2.2.4 Use Case: Set Reminder

Description: This use case is for Lecturers to set reminders for themselves.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: A Lecturer has to be logged into the system to upload files.

Precondition(s): Lecturers has to log in and selects to set reminder.

Post condition(s): The reminders will be set.

Primary (happy) path: Lecturer is able to set reminders successfully.

Alternate pathway(s): None

Exception pathway(s): Reminder not set on the right date.

Happy Path Flow of Events

Lecturer is able to set reminders successfully.

1. Lecturer logs in with valid username and password.
2. Click on the set reminder link.
3. Set reminders.
4. Reminders set.

Exceptional Path Flow of Events

Reminder not set on the right date.

1. Lecturer logs in with valid username and password.
2. Click on the set reminder link.
3. Set reminders.
4. Reminders unable to be set.

4.2.2.5 Use Case: Send Mail

Description: This use case is for Lecturers to send mails to their supervisors.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: A Lecturer has to be logged into the system to upload files.

Precondition(s): Lecturers has to log in and selects to upload files.

Post condition(s): The schedules will be displayed

Primary (happy) path: Lecturer is able to send mails successfully.

Alternate pathway(s): None

Exception pathway(s): Lecturer unable to send mails because database error.

Happy Path Flow of Events

Lecturer is able to send mails successfully.

1. Lecturer logs in with valid username and password
2. Click on the send mail link.
3. Send mail.
4. Mails sent.

Exceptional Path Flow of Events

Lecturer is unable to send mails because SMTP error.

1. Lecturer logs in with valid username and password
2. Main menu will be displayed.

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3. Click on the send mail link.

4. Send mail.

5. Mails unable to be sent.

4.2.2.6   Use Case: View Task

Description: This use case for lecturers to view their supervisees' tasks.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: Lecturer has to be logged on to the system to use view tasks.

Precondition(s): Lecturer has logged on to the system.

Post condition(s): Able to view tasks.

Primary (happy) path: The lecturer is able to view tasks successfully.

Alternate pathway(s): None

Exception pathway(s): Unable to view tasks.

Happy Path Flow of Events

The lecturer is able to view tasks successfully.

1. Lecturer logs in with valid username and password.

2. Click on the view tasks link.

3. Choose the student.

4. View tasks.

Exceptional Path Flow of Events

The lecturer is unable to view tasks.

    1. Lecturer logs in with valid username and password.

    2. Click on the view tasks link.

    3. Choose the student.

    4. Unable to view task due to database error.

4.2.3 Administrator Module

4.2.3.1 Use Case: Maintain Schedules

Description: This use case is for administrators to set maintain schedules.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: Administrator has to be logged into the system.

Precondition(s): Administrator s has to log in and selects to set reminder.

Post condition(s): The schedules will be maintained.

Primary (happy) path: Administrator is able to maintain schedules successfully.

Alternate pathway(s): None

Exception pathway(s): Unable to maintain schedules.

Happy Path Flow of Events

Administrator is able to maintain schedules successfully.

    1. Administrator logs in with valid username and password.

2. Click on the maintain schedule link.
3. Enter schedules.
4. Schedules updated.

Exceptional Path Flow of Events

Unable to maintain schedules.

1. Administrator logs in with valid username and password.
2. Main menu will be displayed.
3. Click on the maintain schedules.
4. Set schedules.
5. Schedules unable to be set.

4.2.3.2 Use Case: Set Reminder

Description: This use case is for administrators to set reminders for themselves.

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: An administrator has to be logged into the system to upload files.

Precondition(s): Administrator s has to log in and selects to set reminder.

Post condition(s): The reminders will be set.

Primary (happy) path: Administrator is able to set reminders successfully.

Alternate pathway(s): None

Exception pathway(s): Reminder not set on the right date.

Happy Path Flow of Events

Administrator is able to set reminders successfully.

1. Administrator logs in with valid username and password.
2. Click on the set reminder link.
3. Set reminders.
4. Reminders set.

Exceptional Path Flow of Events

Reminder not set on the right date.

1. Administrator logs in with valid username and password.
2. Main menu will be displayed.
3. Click on the set reminder link.
4. Set reminders.
5. Reminders unable to be set.

4.2.3.3 Use Case: Send Mail

Description: This use case is for Administrator to send mails..

Author: Kiranjeet Kaur

Actor(s): Final year degree student

Location(s): UTP

Status: Pathway defined

Priority: (1)

Assumptions: Administrator has to be logged into the system to upload files.

Precondition(s): Administrator s has to log in and selects to upload files.

Post condition(s): The mail will be sent.

Primary (happy) path: Administrator is able to send mails successfully.

Alternate pathway(s): None

Exception pathway(s): Administrator is unable to send mails because database error.

Happy Path Flow of Events

Administrator is able to send mails successfully.

1. Administrator logs in with valid username and password
2. Click on the send mail link.
3. Send mail.
4. Mails sent.

Exceptional Path Flow of Events

Administrator is unable to send mails because of database error.

1. Administrator logs in with valid username and password
2. Click on the send mail link.
3. Send mail.
4. Mails unable to be sent.

4.3   Class Diagram

The class diagram here shows the static existence of classes, class categories, and their relationships. This diagram would provide the readers with a clearer picture on the functionalities of the system and how they operate.

4.3.1   Use Case : Book Consultation Hour

BookConsultationHourUI	BookConsultationHourController	ConsultationHour
◆enterLoginDetails()	◆validateLoginDetails()	
◆userAcknowledged()	◆userExists()	
◆displayMenu()	◆selectLink()	◆verifyLoginDetails()
◆slotBooked()	◆selectSlots()	◆checkLoginDetails()
◆unableToBookSlot()	◆unableToSelectSlots()	◆saveEntry()
		◆errorSaving()
		◆Verify login details()
		◆bookSlot()

4.3.2   Use Case : Maintain Project Information

MaintainProjectInformationUI	MaintainProjectInforamtionController	Project
◆enterLoginDetails()	◆validateLoginAttempt()	
◆userAcknowleged()	◆userExists()	
◆displayMenu()	◆selectLink()	◆verifyLoginDetails()
◆detailsSaved()	◆enterDetails()	◆checkLoginDetails()
◆unableToSave()	◆errorWhileSaving()	◆saveDetails()

4.3.3 Use Case : Maintain Reminders

MaintainReminderUI

♦enterLoginDetails()
♦userAcknowledged()
♦displayMenu()
♦reminderSet()
♦ReminderNotSet()

MaintainReminderController

♦validateLoginAttempt()
♦userExists()
♦selectLink()
♦enterDetails()
♦errorSettingReminder()

Reminder

♦verifyLoginDetails()
♦checkLoginDetails()
♦setReminder()

4.3.4 Use Case : Send Mail

SendMailUI

♦Enter login details()
♦enterLoginDetails()
♦userAcknowledged()
♦displayMenu()
♦mailSent()
♦unableToSendMail()
♦selectLink()

SendMailController

♦validateLoginAttempt()
♦userExists()
♦selectLink()
♦selectLecturerandMailInfo()
♦errorSendingMail()
♦selectStudentandMailInfo()
♦enterConsultationHours()

Mail

♦verifyLoginDetails()
♦checkLoginDetails()
♦sendMail()

4.3.5 Use Case : Upload Files

UploadFileUI	UploadFileController	Upload
◆enterLoginDetails() ◆userAcknowledged() ◆displayMenu() ◆fileUploaded() ◆unableToUpload()	◆validateLoginAttempt() ◆userExists() ◆selectLink() ◆attachFile() ◆errorWhileUploading()	◆verifyLoginDetails() ◆checkLoginDetails() ◆uploadFile()

4.3.6 Use Case : Download Files

DownloadFileUI	DownloadFileController	Download
◆enterLoginDetails() ◆userAcknowledged() ◆selectLink() ◆displayMenu() ◆unableToDownload() ◆viewDownloadedFile()	◆validateLoginAttempt() ◆userExists() ◆selectLink() ◆chooseFile()	◆verifyLoginDetails() ◆checkLoginDetails() ◆errorDownloading() ◆downloadFile()

4.3.7 Use Case : View Presentation Schedules

ViewPresentationSchedulesUI	ViewPresentationSchedulesController	PresentationSchedules
◆enterLoginDetails() ◆viewSchedules() ◆userAcknowledged() ◆unableToViewSchedules()	◆validateLoginAttempt() ◆userExists() ◆displaySchedules() ◆schedulesNotFound()	

4.3.8   Use Case : View Tasks

ViewTasksUI	ViewTasksController	Task (from MAINTAIN TASKS)
◆enterLoginDetails() ◆userAcknowledged() ◆viewTasks() ◆unableToViewTasks()	◆validateLoginAttempt() ◆userExists() ◆displayTasks() ◆tasksNotFound()	◆verifyLoginDetails() ◆checkLoginDetails() ◆saveInfo() ◆selectLink() ◆displayTasks() ◆verifyLoginDetails()

4.3.9   Use Case : Chat Function

Server Chat	chat window	

enlogin();
connection request();
valide_username();
wstcp_server();
	sendmsg();
	privmsg();
	senddata();
	exit();
		timer();
		getevent();
		sent_nicks();
		get_nicks();
		get_event();
		timer();

By using this system, it will definitely enhance the usage of online technology. This is one of the advantages of the system. Some security features have been implemented inside this system which is the password to login – this is for ICT & BIS students, lecturers and administrators only. This login will verify that not all the staff of UTP can see the information and that only the right person can view and access the page where there would be an access privilege.

4.4   Sequence Diagram

The sequence diagram shows how the objects interact with others in a particular scenario of a use case. The sequence diagrams were used to show the behavior of the system. To show the reader as to how the interaction takes place in the system, the sequence diagrams were used. These diagrams allow the user to understand what interaction and when the interaction takes place. The analysis sequence diagrams show the reader the interactions in a simplified manner. Design sequence diagrams allow the reader to see what needs to be implemented in the system and what interaction takes place from the developer's point of view. The diagrams attached here are concerning the core functions of the system.

4.4.1   Student Module

4.4.1.1   Use Case: Book Consultation Hours

Happy Flow of Events
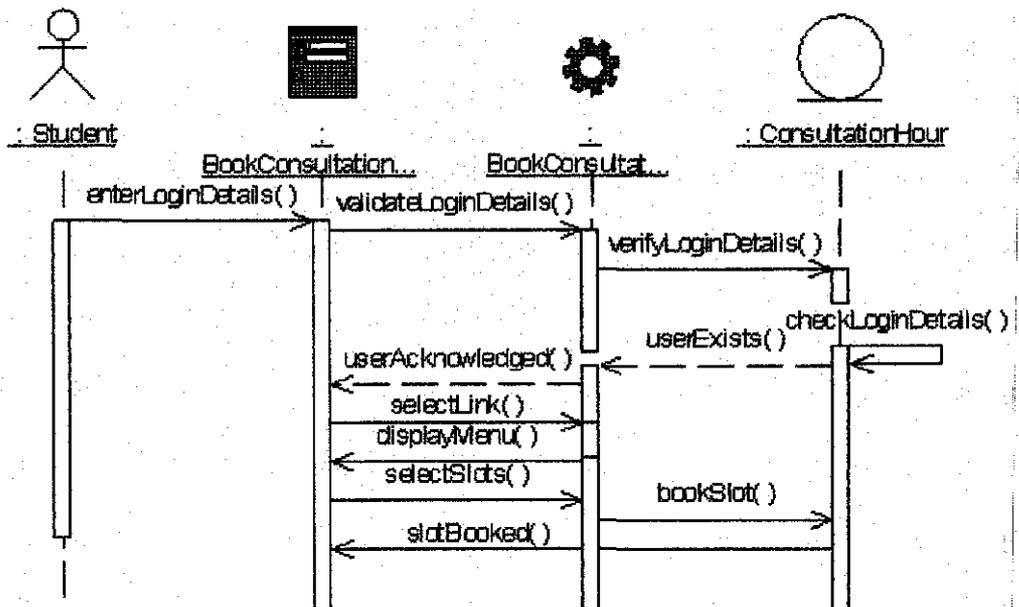
Exception Flow of Events
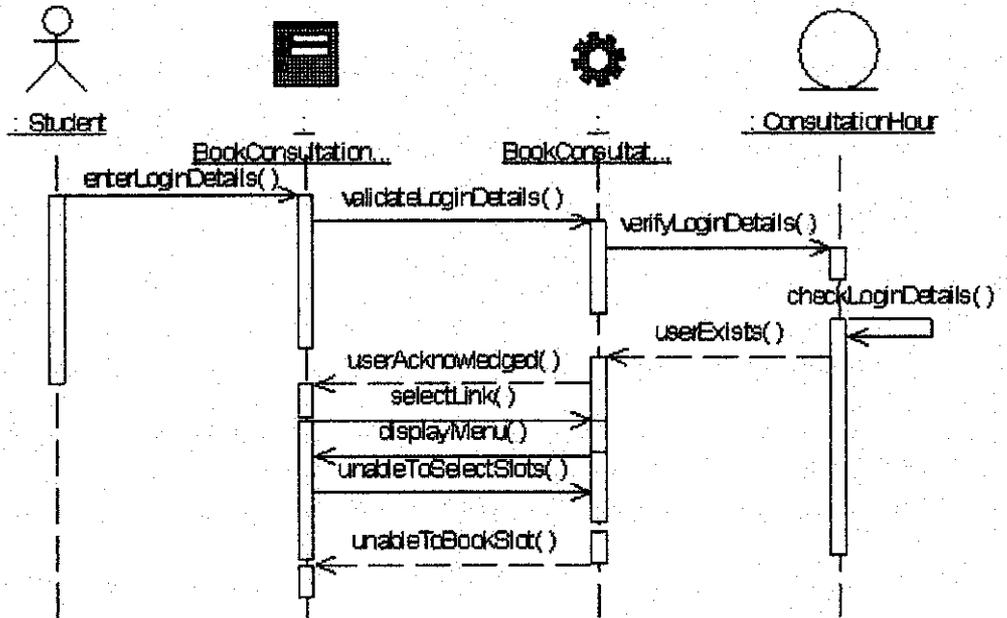
4.4.1.2   Use Case: Maintain Reminder

Happy Flow of Events
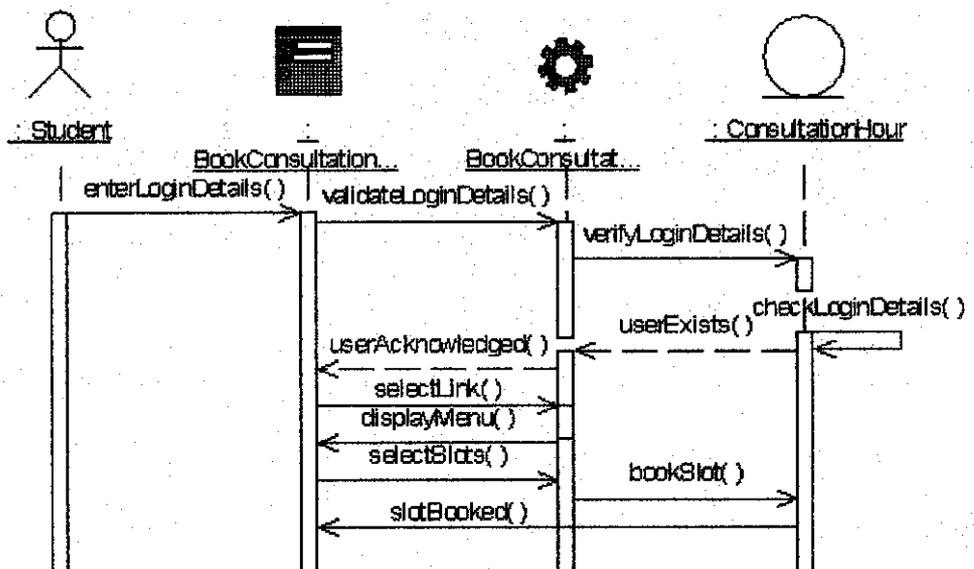
Exception Flow of Events
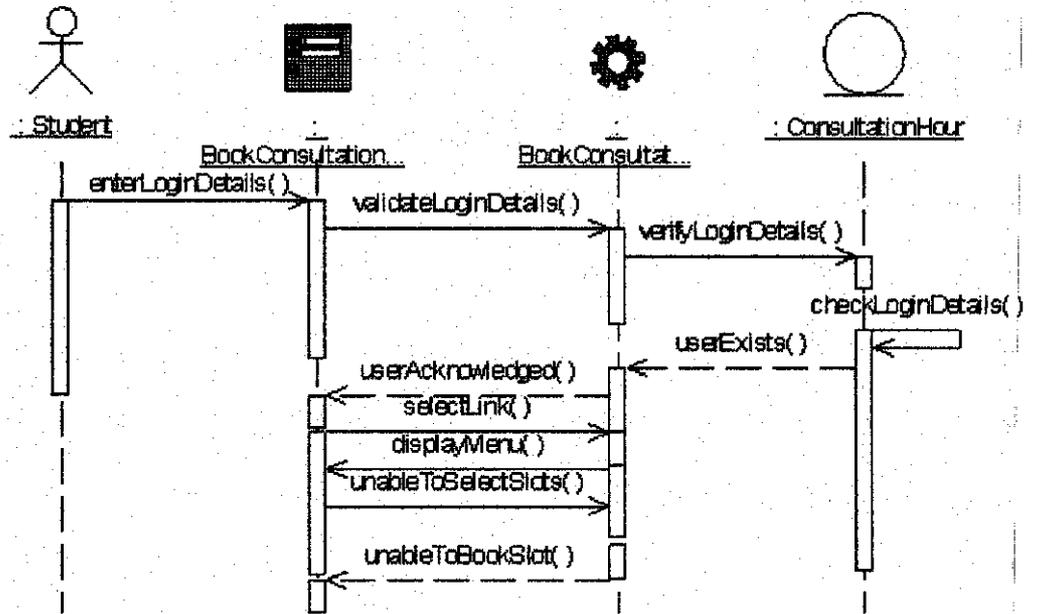
4.4.1.3 Use Case: Maintain Tasks

Happy Flow of Events
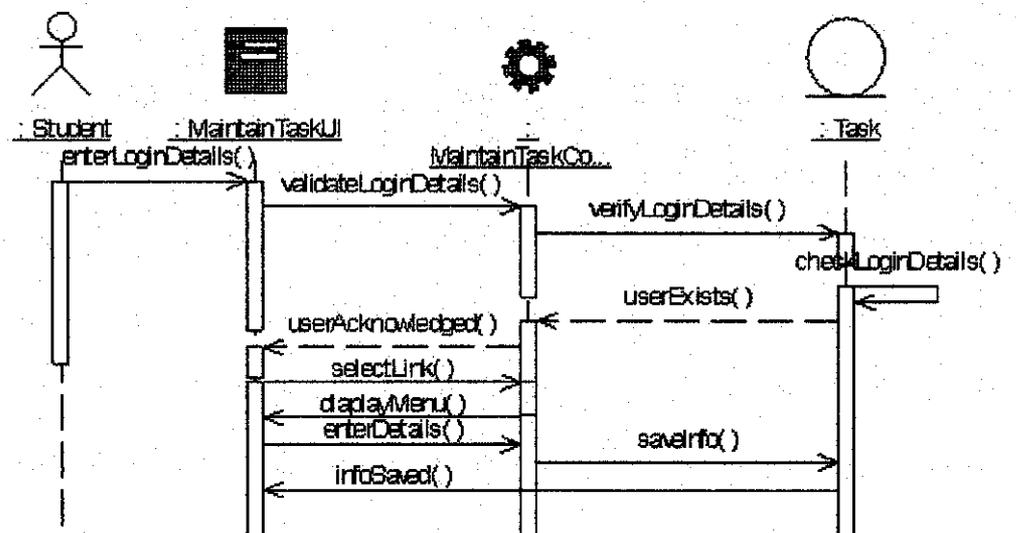
Exception Flow of Events
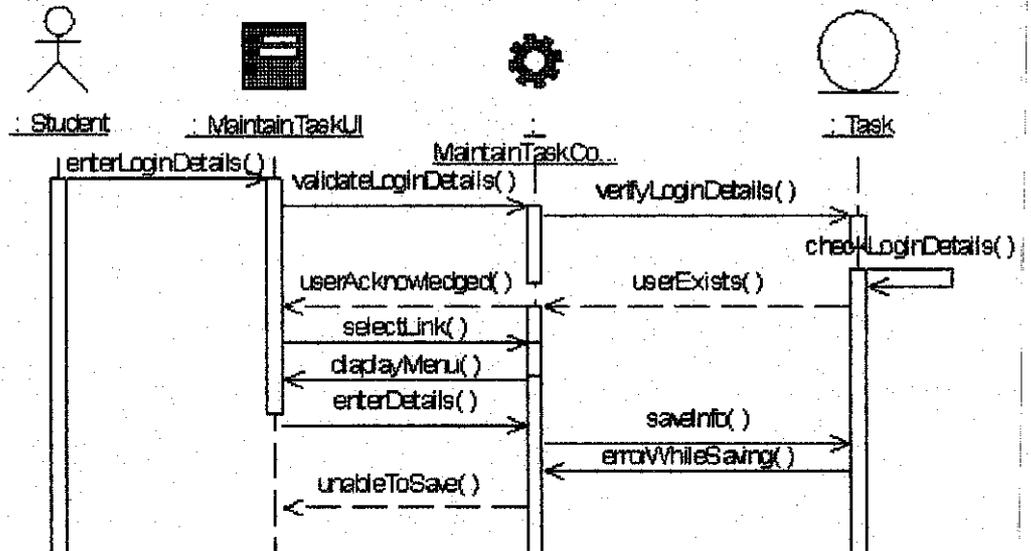
4.4.1.4   Use Case: Send Mail

Happy Flow of Events
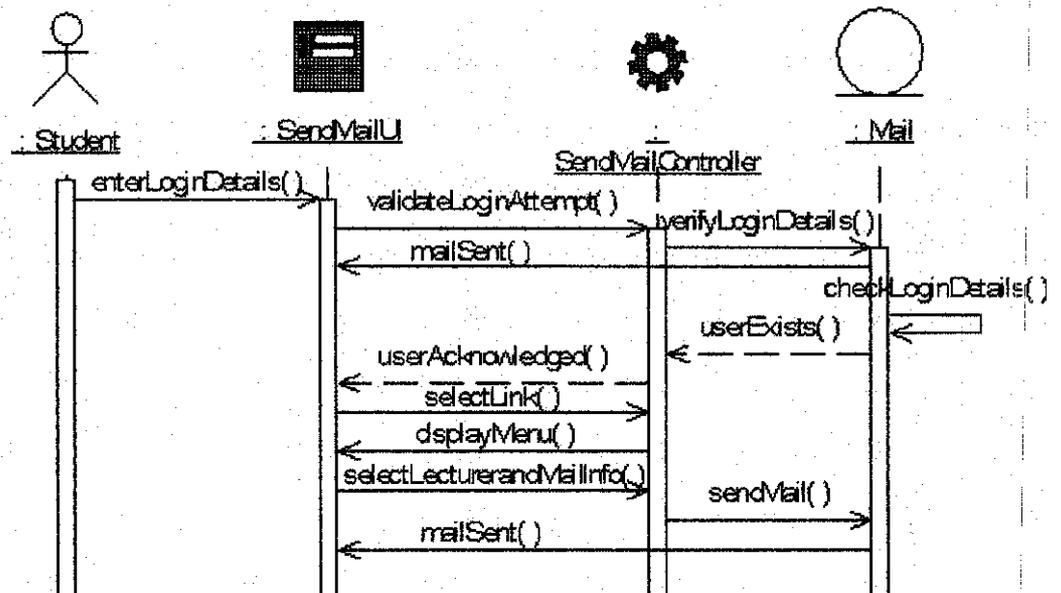
4.4.1.5 Use Case: Chatting

Happy Flow of Events
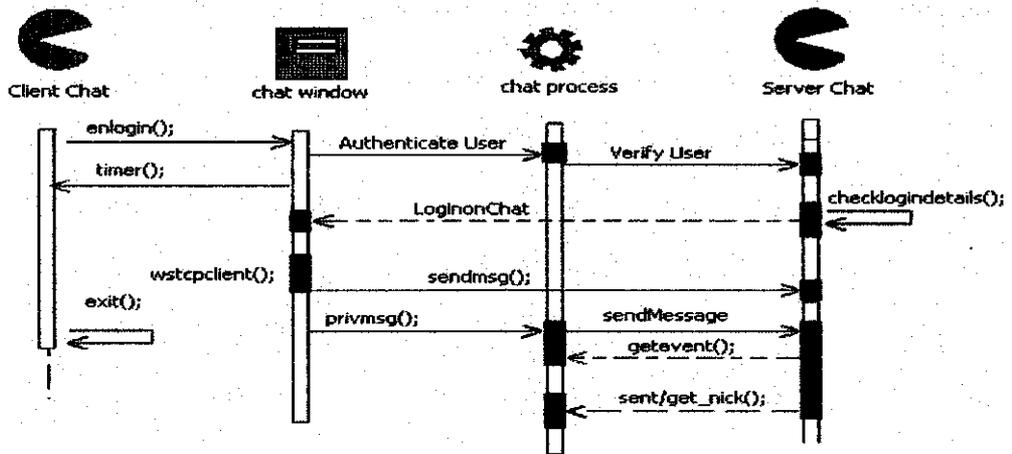
4.4.2 Lecturer Module

4.4.2.1 Use Case: Download Files

Happy Flow of Events
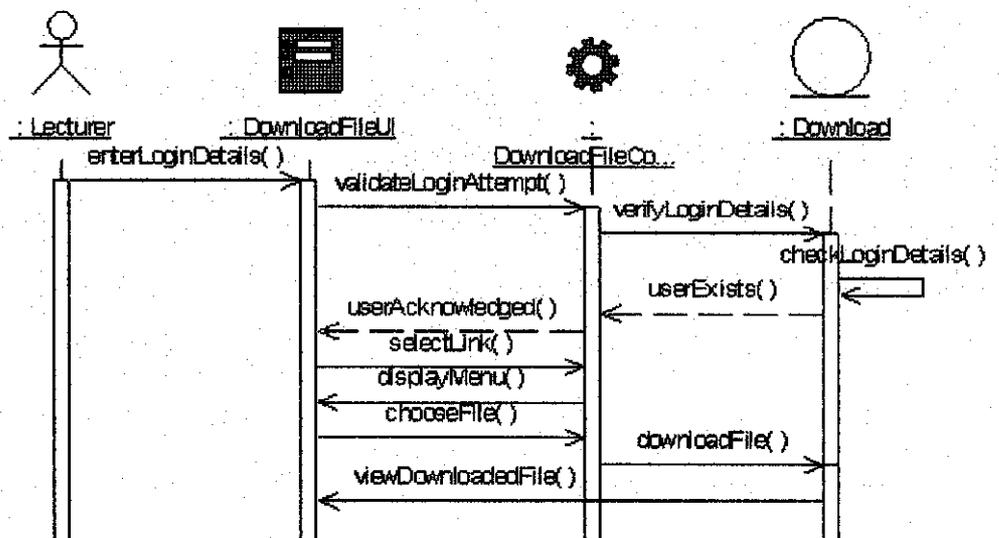
Exception Flow of Events
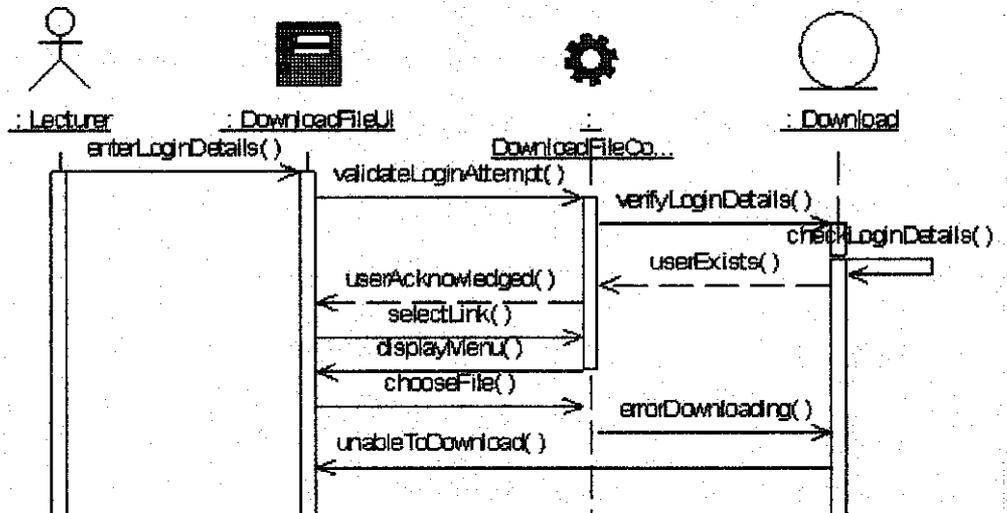
4.4.2.2 Use Case: Maintain Consultation Hours

Happy Flow of Events
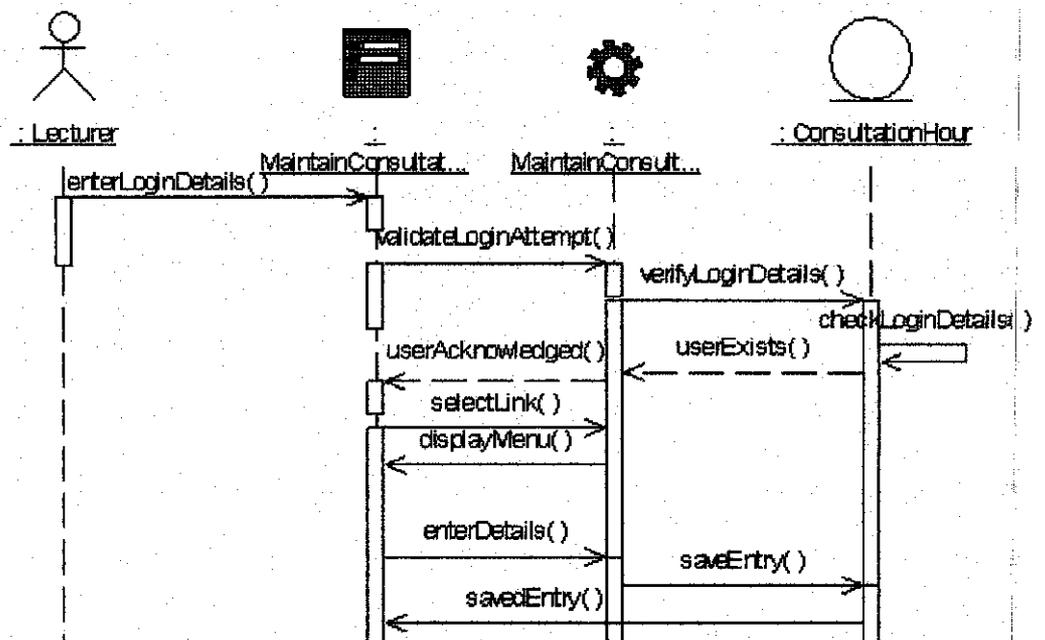
Exception Flow of Events
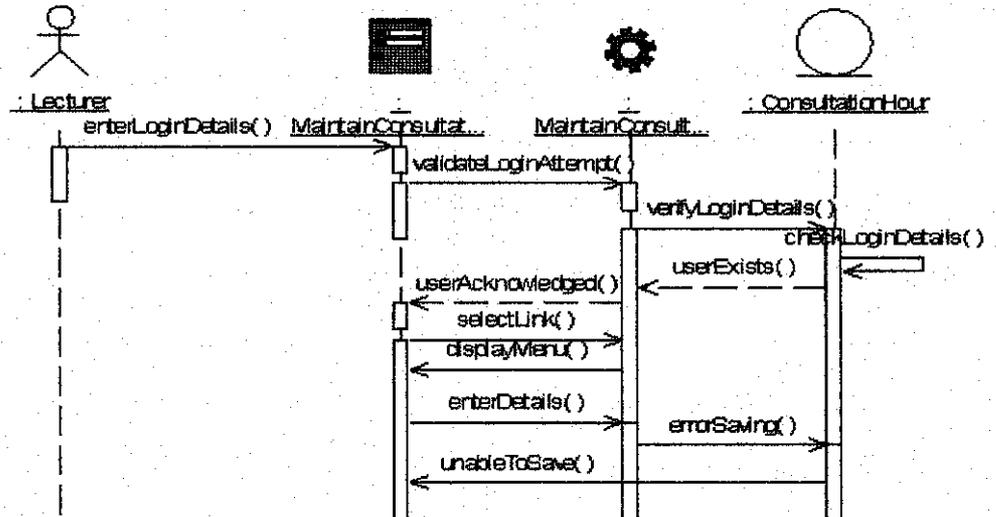
4.4.2.3 Use Case: Maintain Reminders

Happy Flow of Events
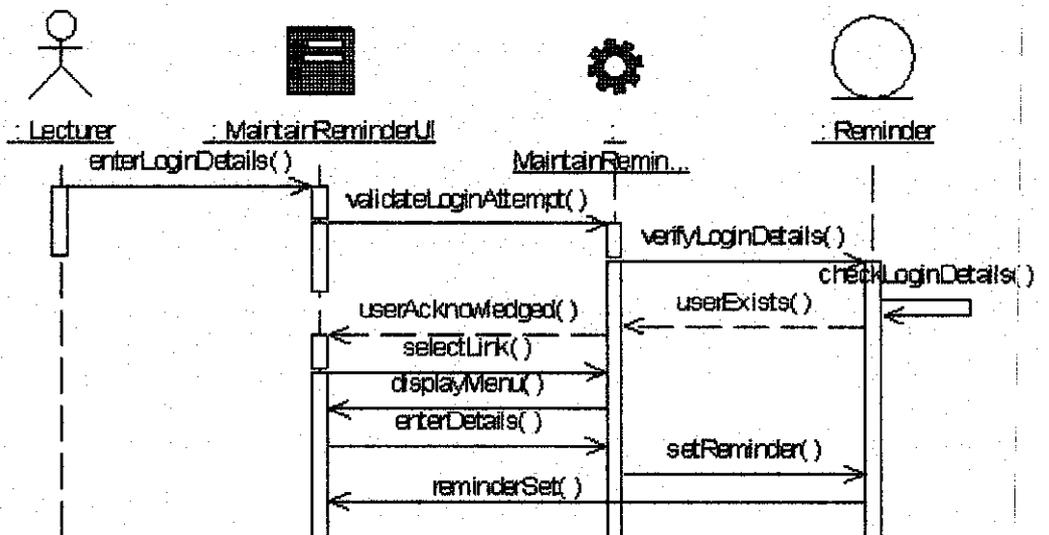
Exception Flow of Events
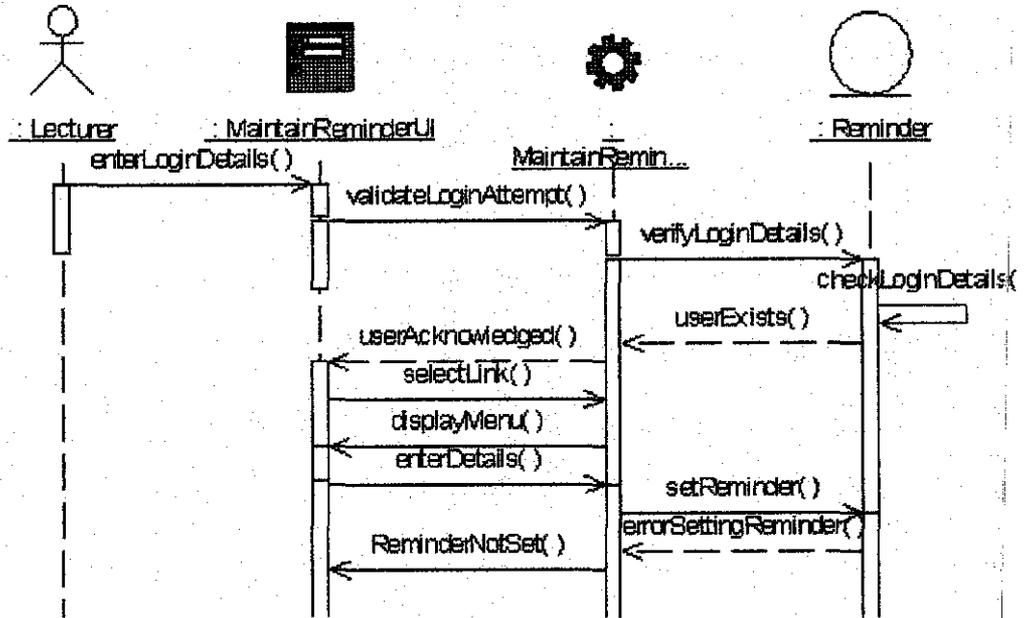
4.4.2.4 Use Case: Send Mail

Happy Flow of Events
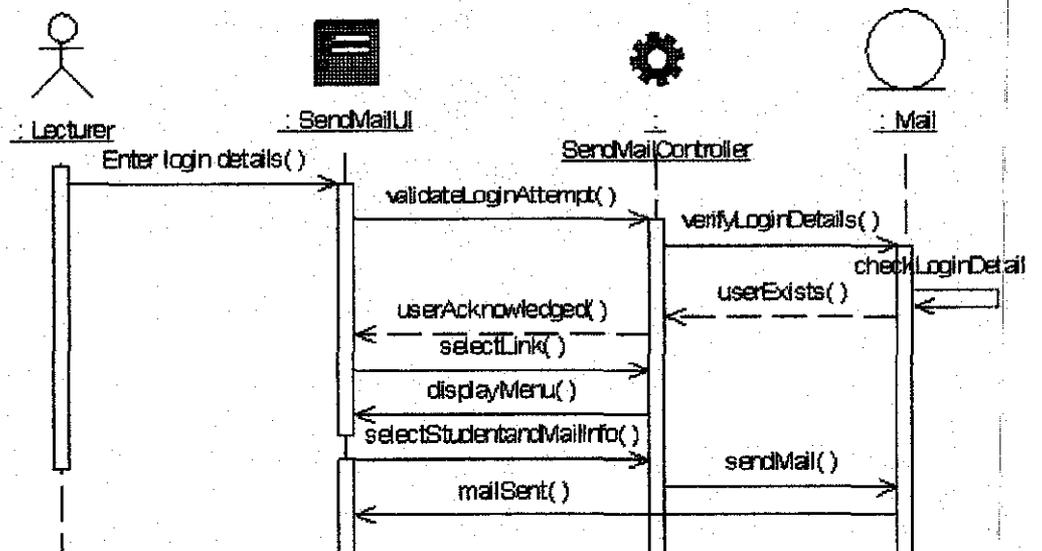
Exception Flow of Events
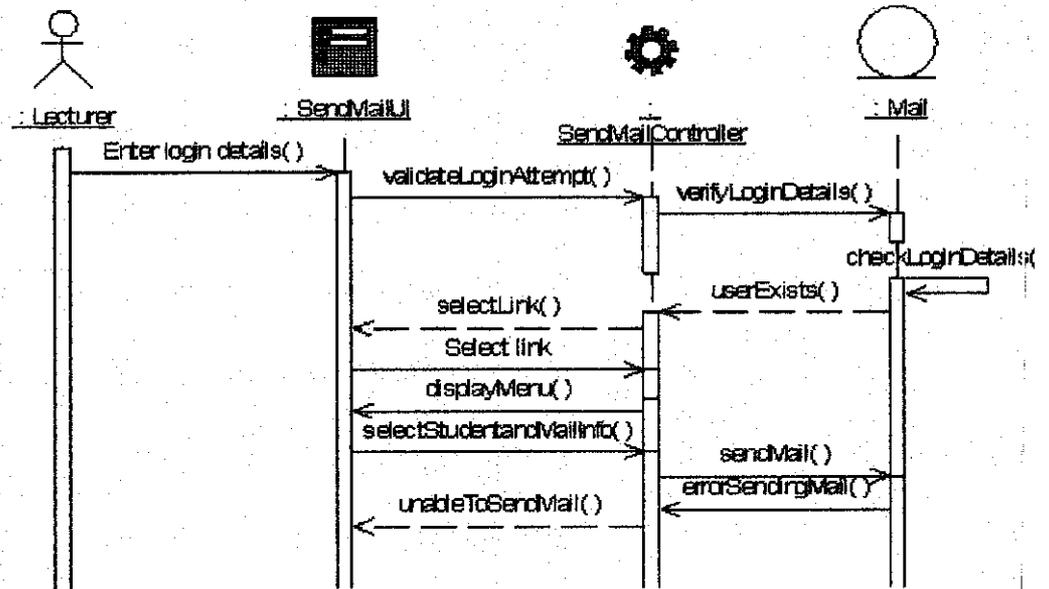
4.4.2.5   Use Case: View Presentation Schedules

Happy Flow of Events
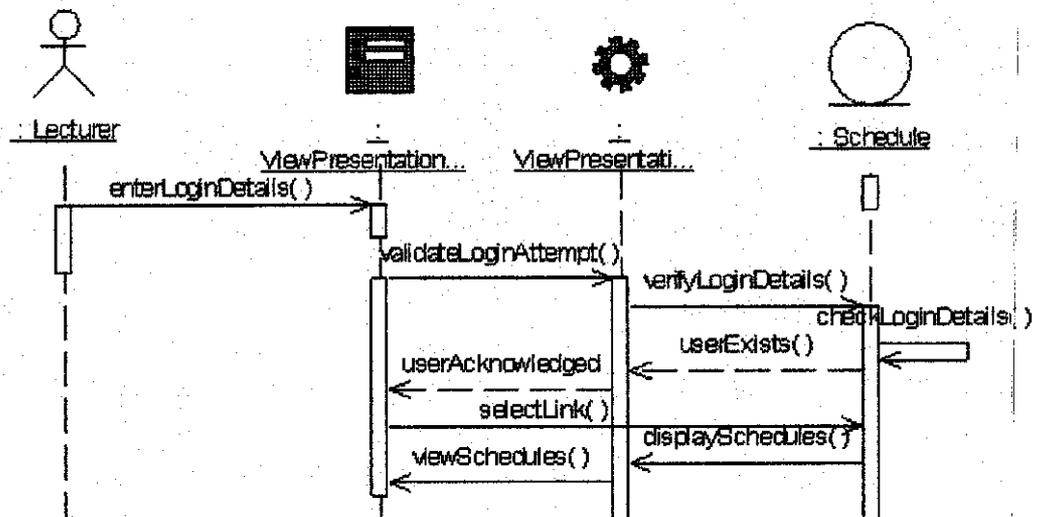
Exception Flow of Events
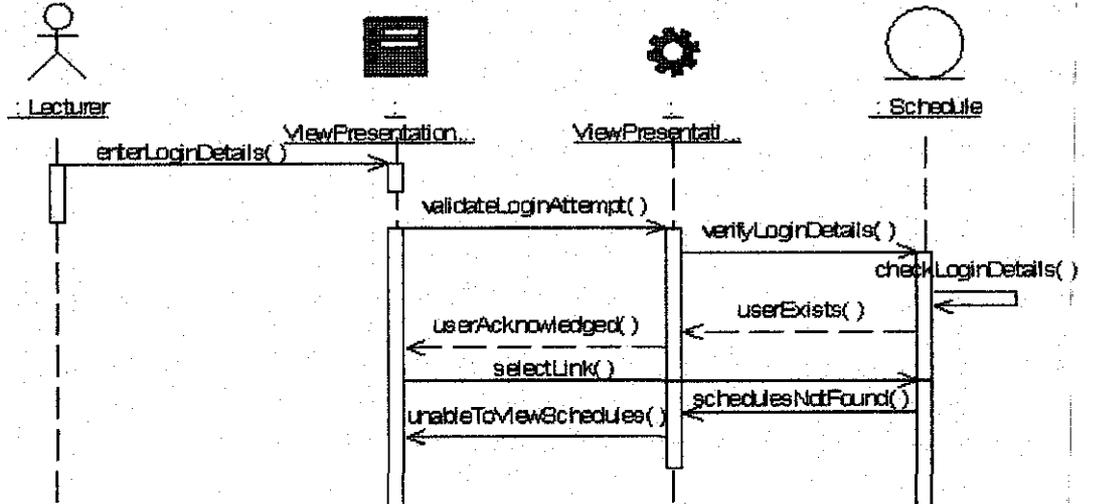
4.4.2.6   Use Case: Chatting

Happy Flow of Events
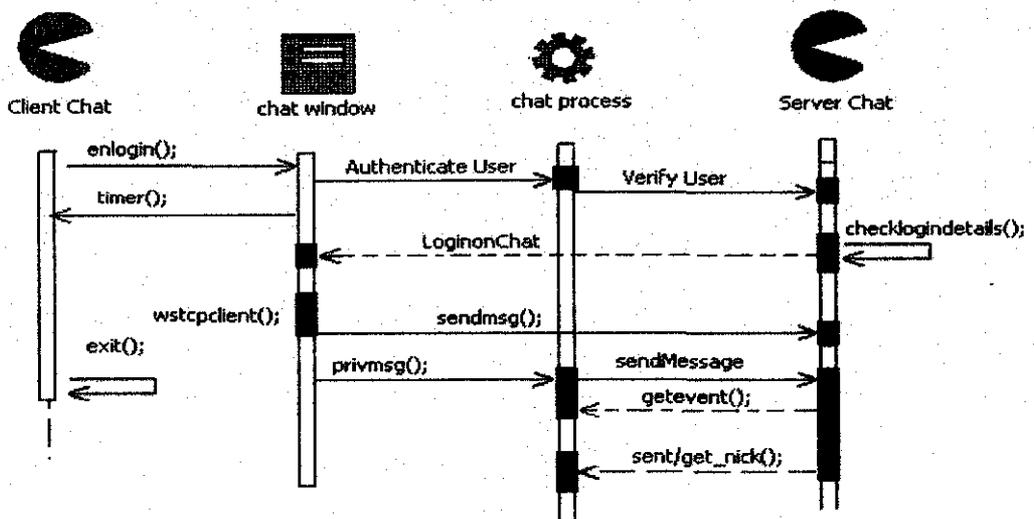
4.4.3 Administrator Module

4.4.3.1 Use Case: Maintain Presentation Schedules

Happy Flow of Events
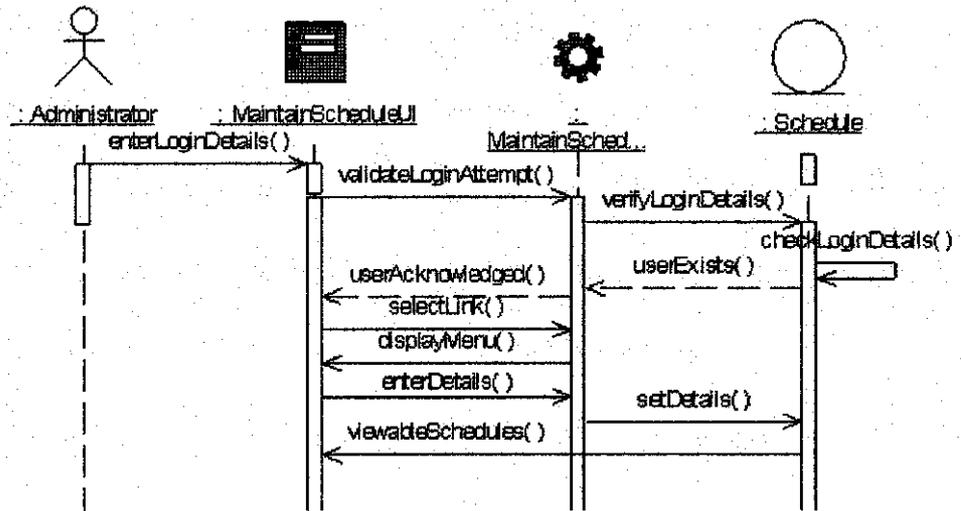
Exception Flow of Events
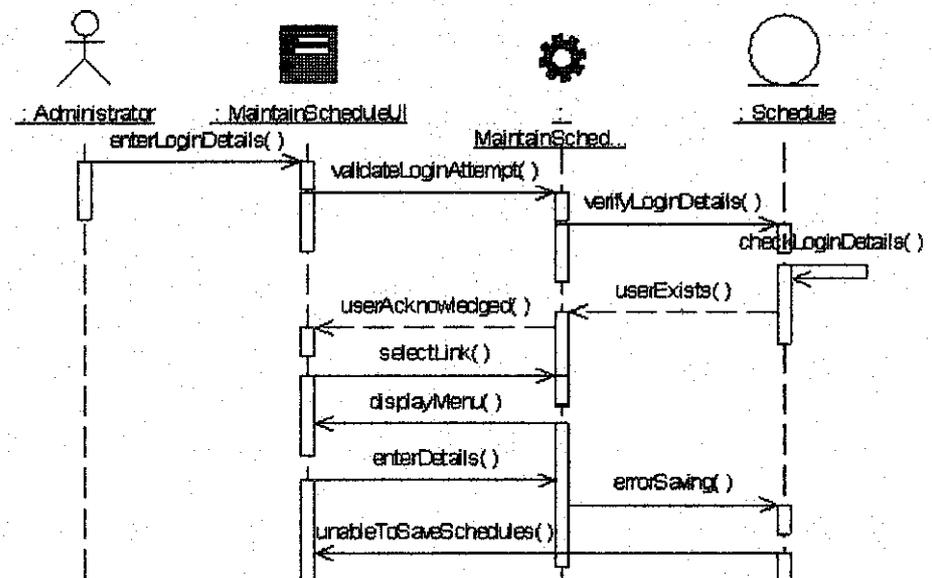
4.4.3.2 Use Case: Maintain Reminders

Happy Flow of Events
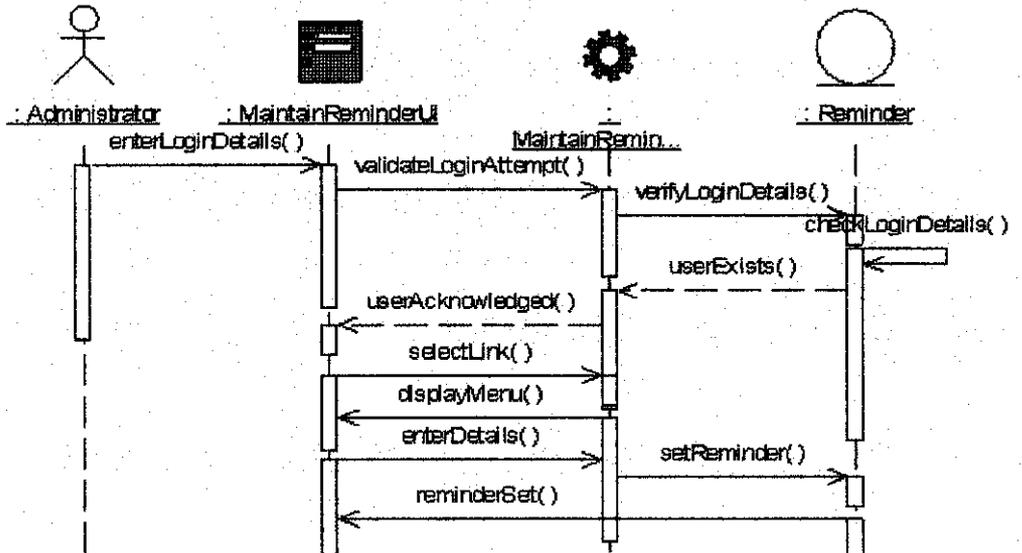
Exception Flow of Events
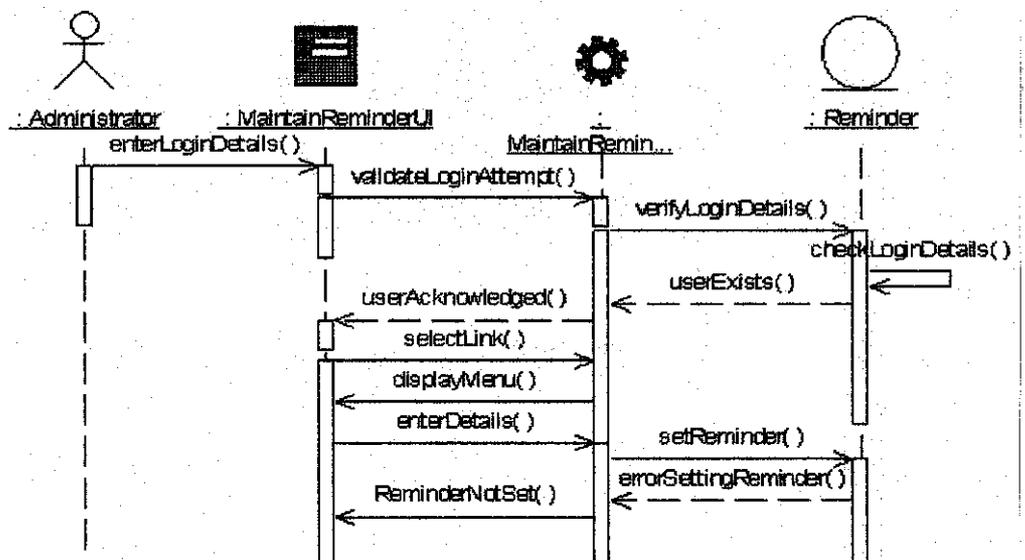
4.4.3.3 Use Case: Send Mail

Happy Flow of Events
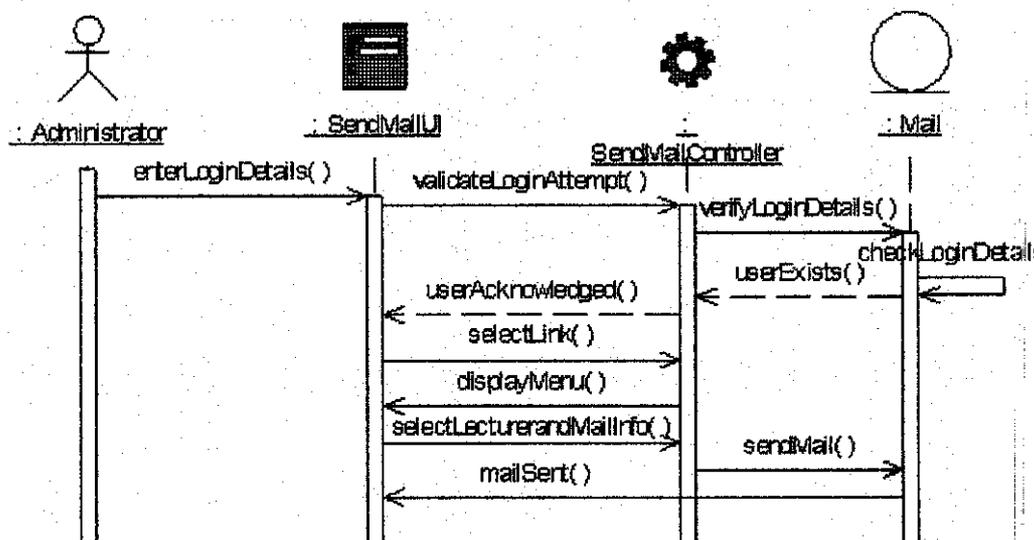
Exception Flow of Events
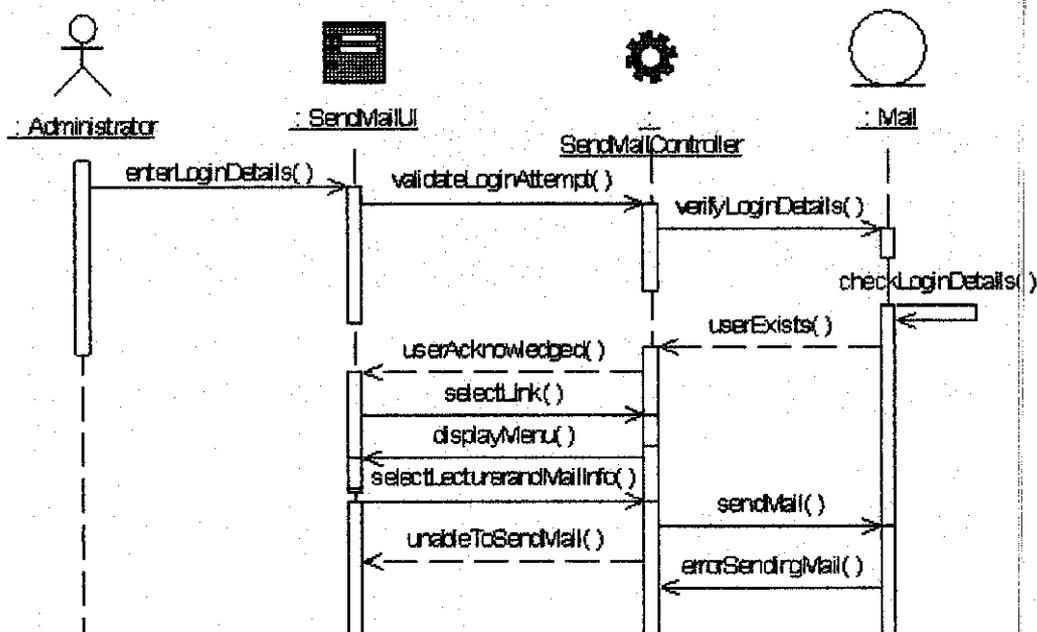
4.5   Interface Design

It is important to design the interface so that time is not wasted trying to figure out what the system should look like. The interface designs shown here only concern the login and main page as the design is standardized.

4.5.1   Storyboarding

4.5.1.1   Login Screen

OPAGS BANNER IS PLACED HERE

USERID :

PASSWORD :

4.5.1.2 Other Screens

OPAGS BANNER IS PLACED HERE	
THE NAVIGATIONAL BUTTONS ARE PLACED HERE	THE INFORMATION IS CHANGED HERE FOR EVERY PAGE, THE DESIGN IS STANDARDIZED.
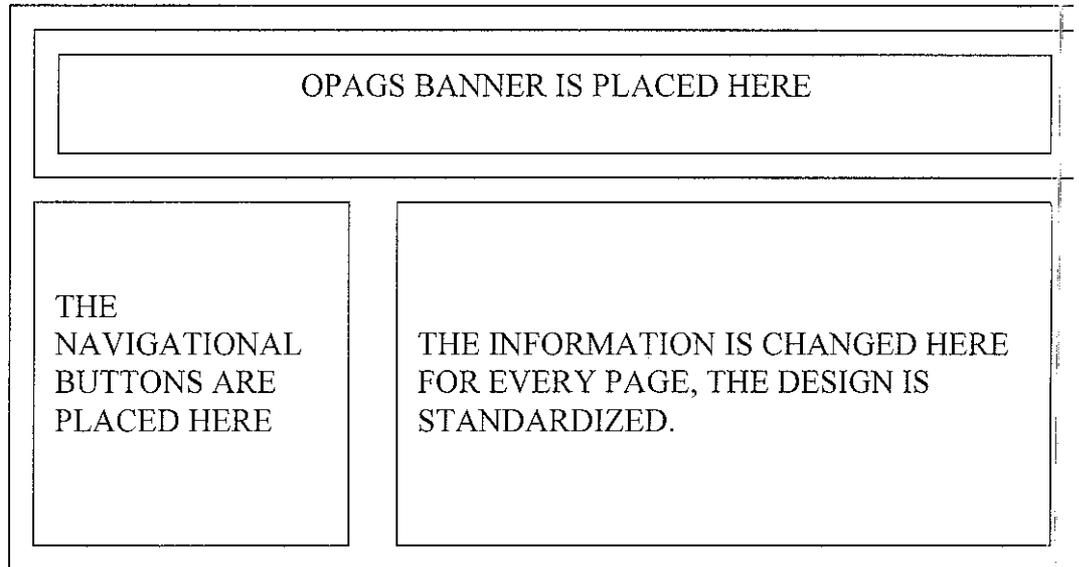
4.5.2 Screen Snapshots
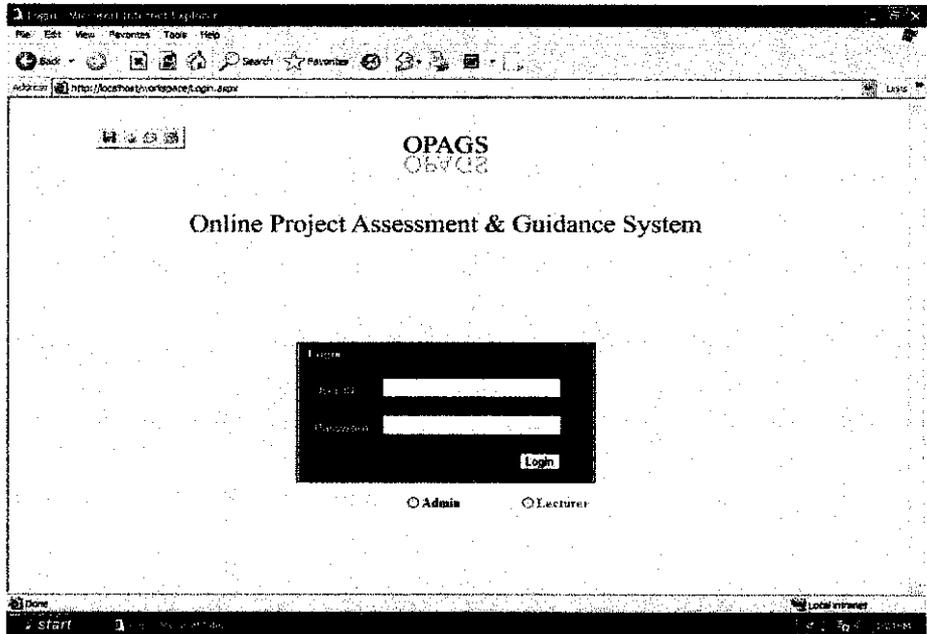
Figure 4: OPAGS login page
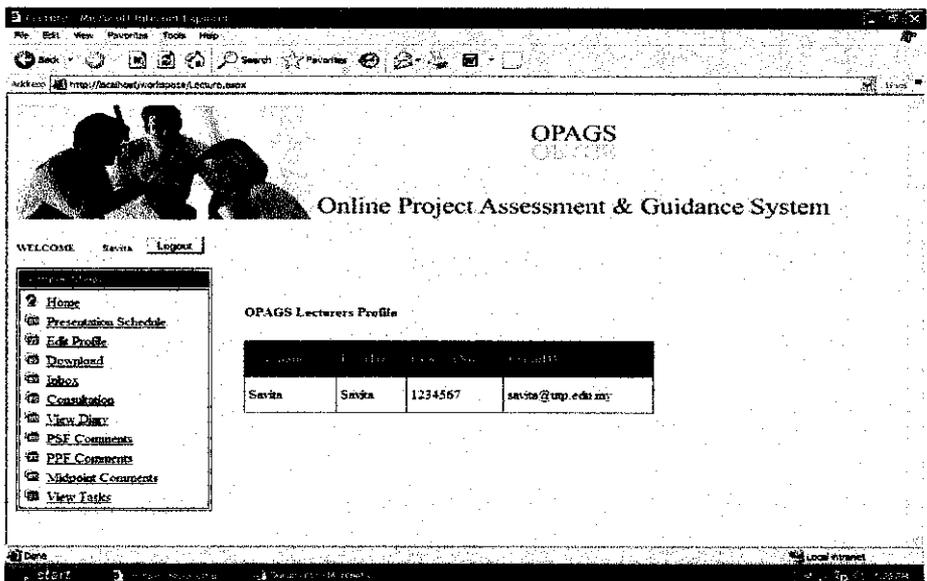
Figure 5: OPAGS's lecturer main page
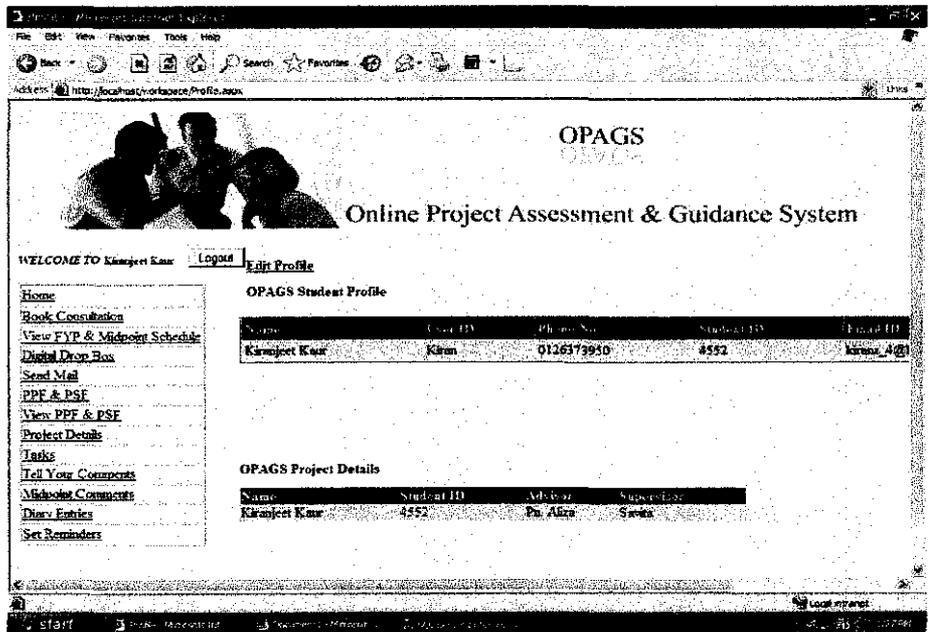
Figure 6: OPAGS's students main page
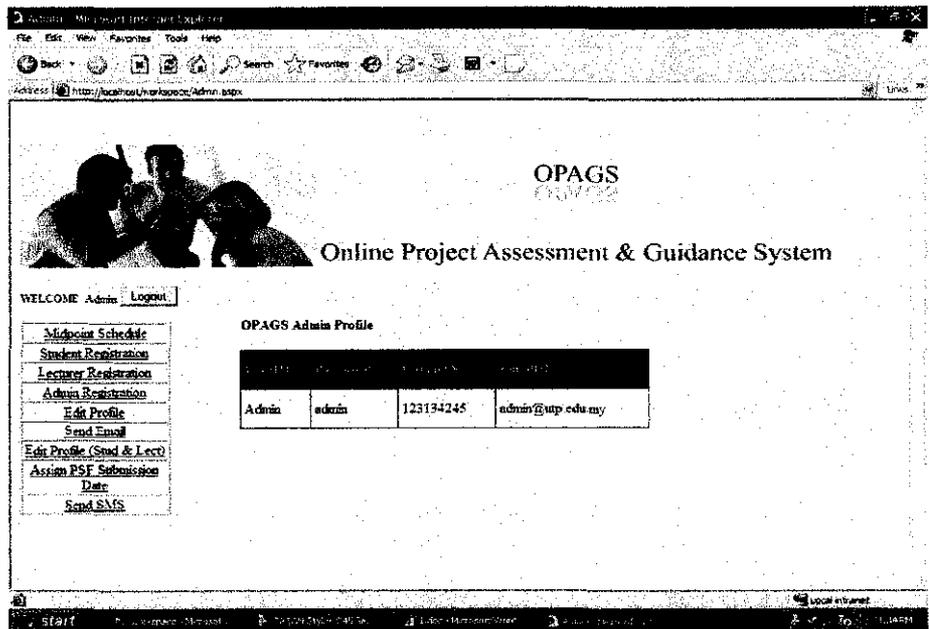
Figure 7: OPAGS's administrators main page

4.6 Database Design

The database design concerns the database that was implemented in the system. All the tables that exist in the system to enable implementation are explained here.

4.6.1 Entity Relationship Diagram (ERD)

The ERD showcases the relationships between tables. The ERD is attached on the next page.

Download
- DownloadID
- Code
- Catergory
- Name
- Description
- App

Project Details
- ProjectTitle
- CommencementDate
- CompletionDate
- TaskDescription

Consultation
- ConsultationID
- LecturerName
- StartTime
- EndTime
- Date Reason ContactNo.

Tasks
- TaskTitle
- TaskCommencementDate
- TaskCompletionDate
- TaskStatus
- TaskDescription

Lecturer
- LecturerID
- Username
- Password
- EmailAdd
- ContactNo
- Intake
- StudentID

Student
- StudentID
- Username
- EmailAdd
- ContactNo.
- Password
- Intake
- SupervisorName
- AdvisorName

Reminder
- DateSent
- ReminderDate
- Subject
- Message

Diary
- Date
- Message
- Description

Midpoint
- PresentationDay
- PresentationTime
- SupervisorName
- AdvisorName
- PresentationRoom
- PresentationType

MailDetails
- StudentID
- MailFrom
- Subject
- MailTo

Admin
- AdminID
- Username
- Password
- ContactNo.
- EmailAdd

Can download

Can upload

Can add

Can book

Can put up

Can view

Can add

Can set

Can set

Can view

Can add

Can send

Can view

Can send

Maintain

Can send

71

4.6.2 Normalization

Normalization works through a series of stage called normal forms. First normal from (1NF) removes the repeating groups in the table, but it still contains partial dependency. Second normal form (2NF) removes the partial dependencies, but it is still possible for a table in 2NF to exhibit transitive dependency, that is one or more attributes maybe functionally dependent on non-key attributes. Third normal form (3NF) removes the transitive dependency and sorting them in a separate table. The normalized tables here only are shown that concern the core, special and extra features.

4.6.2.1 Un-Normalized Form

Tasks (<u>Student   ID</u>, TaskTitle, TaskCommencementDate, TaskCompletionDate, TaskStatus, TaskDescription, MailFrom, Subject ,MailTo, ConsultationID, LecturerName, StartTime, EndTime, Date, Reason, ContactNo., DownloadID, Name, Code, Category, Description, App, LecturersName, Subject, Message, ProjectTitle, CommencementDate, CompletionDate, TaskDescription, DateSent, ReminderDate, Subject, Message, PresentationDay, PresentationTime, SupervisorName, AdvisorName, PresentationRoom, PresentationType)

4.6.2.2 1st Normalized Form

Task

(TaskTitle,TaskCommencementDate,TaskCompletionDate,TaskStatus, TaskDescription)

Midpoint (PresentationDay, PresentationTime, SupervisorName, AdvisorName, PresentationRoom, PresentationType)

Reminder (MailFrom ,Subject ,MailTo, ConsultationID, LecturerName, StartTime, EndTime, Date, Reason, ContactNo., DownloadID, Name, Code, Category ,Description ,App, LecturersName, Subject ,Message, ProjectTitle, CommencementDate ,CompletionDate ,TaskDescription, DateSent, ReminderDate, Subject, Message)

4.6.2.3   2nd Normalized Form

Task

(TaskTitle,TaskCommencementDate,TaskCompletionDate,TaskStatus, TaskDescription)

Midpoint (PresentationDay, PresentationTime, SupervisorName, AdvisorName, PresentationRoom, PresentationType)

Reminder (DateSent, ReminderDate, Subject, Message)

Project Details (ProjectTitle, CommencementDate, CompletionDate, TaskDescription)

LecturersMail (LecturersName, Subject ,Message)

Download (DownloadID, Name, Code, Category, Description, App)

Consultation (<u>ConsultationID</u>, DownloadID, LecturersName, Subject, Message, Name, Code, Category, Description, App, LecturerName, StartTime, EndTime, Date, Reason, ContactNo.)

4.6.2.4   3rd Normalized Form

Task

(TaskTitle,TaskCommencementDate,TaskCompletionDate,TaskStatus, TaskDescription)

Midpoint (PresentationDay, PresentationTime, SupervisorName, AdvisorName, PresentationRoom, PresentationType)

Reminder (DateSent, ReminderDate, Subject, Message)

Project Details (ProjectTitle, CommencementDate, CompletionDate, TaskDescription)

LecturersMail (LecturersName, Subject ,Message)

Download (<u>DownloadID</u>, Name, Code, Category, Description, App)

Consultation (<u>ConsultationID</u>, LecturerName, StartTime, EndTime, Date, Reason, ContactNo.)

Mail Details (<u>Student ID</u>, MailFrom ,Subject ,MailTo)

4.7   Implementation

Implementation is one of the last few phases in the development of a system. The implementation process is the transformation stage from the system design to the executable system. Besides the actual coding of the system, the selection of programming language and techniques employed, the use of the appropriate tools and the way implementation problems are handled play an important role in the success of the implementation process.

Implementation steps that were followed and included in the process of developing this system were:

- Writing computer software or coding: this is the task of actually writing code with emphasis on ensuring that programs meet design specifications.
- Testing the software: this involves the use of test data and scenarios to see how the system will function in normal and abnormal circumstances.

The developer explains the core functions that were implemented in the system. Functions that the developer faced problems with and how they were overcome are all explained in this chapter. Problems are discussed upon and solutions are stated.

4.7.1   Description of Implementation Plan and Method

It is always good to plan the implementation process like all the other processes involved in developing a project. The developer planned out in advance how to actually develop the system step by step to ease and systematically follow the implementation process. The diagram below shows the

overall implementation plan for the system and how each module was implemented is showcased in another diagram and is included for readers viewing and understanding.
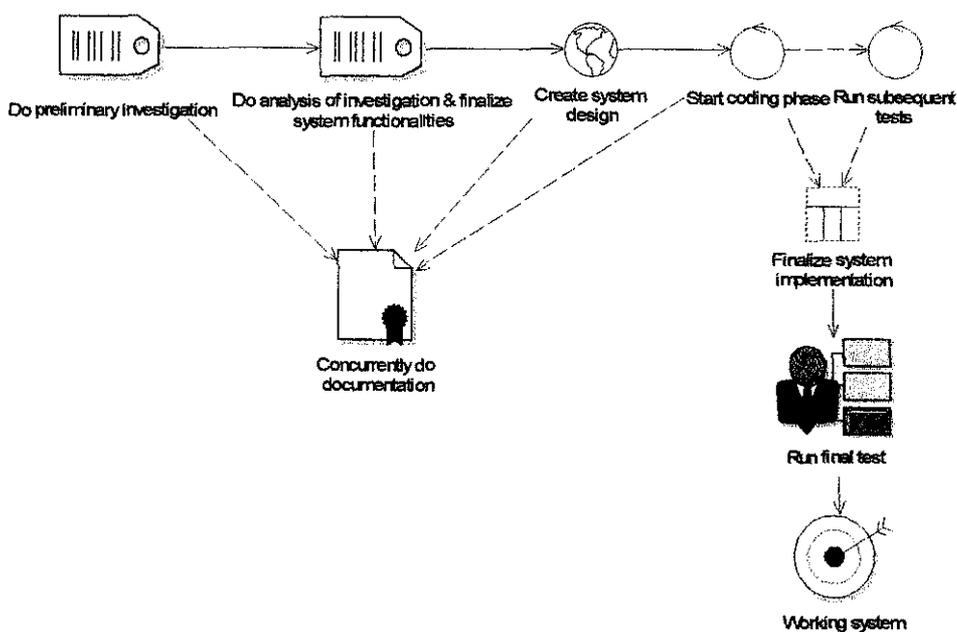
Figure 8: Overall Implementation Plan

*Note: The doted lines represent concurrently done activities

The preliminary investigation that took place lead to the developer analyzing and studying the findings, from the findings the developer came up with the system design taking into account meeting the user requirements. The coding phase is then carried out and concurrently the tests are also done as the methodology used is Waterfall Model which allows for tests to be conducted while the system is still in the development phase. These tests were conducted by the developer as to find out if the codes generated were working.

can then be implemented in the other modules easily, resulting in a shorter time spent on implementation.

4.7.2 Explanation on Functions Implemented

Whatever functions that were the core of the system are explained in this particular section. How these functions work and what was needed is also discussed for the readers understanding.

4.7.2.1 File Upload Function

The upload function allows students to upload files that they wish to send to their lecturers. Once the user clicks on the function, the user has to choose the file that is desired to be uploaded. The user is able to browse through the files in the computer and choose the correct one, attach the file to the database and then submit it to be uploaded. Multiple files can be uploaded but they have to be attached one by one sequentially. The file upload functions does not use protocol in particular such as the file transfer protocol this is because the file is not uploaded on the server hosting it but instead the file is uploaded on the database and directly sent to the lecturer so there was no need to implement this function with the help of FTP.

4.7.2.2 File Download Function

The download function allows the lecturers to download the files that were sent to them by their respective student supervisees. The list of files that were sent to them is listed and all the lecturers need to do is

choose the file and download it.

4.7.2.3 Set Reminder Function

The set reminder function allows all the three types of users to set reminders on certain chosen dates with the help of a calendar and once the reminder has been set, on the right date, an email is sent to their respective email addresses. The system has a calendar running in it allowing it to send mails on the right date. The mail is sent to the email address specified in the users' profile. The system will detect the reminder date and then will detect the mail ID and send the mail to the respective user on the specified date.

4.7.2.4 Send Mail Function

This function on the other hand allows all the three types of users to be able to send mail without using external software. The mail is sent within the system itself with the help of a database. The mail is stored in the database. Once the user specifies to whom the mail should got to in the MailTo text box, the system checks for the destination of the mail, when the system has determined the who the mail should go to, by checking the userID, it will appear in the inbox of the respective receiver. The mail will arrive with the subject, the message and also the MailFrom information informing the receiver who sent the mail. When the receiver clicks on the reply button, the system goes through the same process.

4.7.2.5 Put Up and Book Consultation Hours Function

This function allows the students to book available time slots set by their lecturers. The students first have to choose the lecturer that the student wants to meet, once the student does that the system will search for the particular lecturers available set slots from the database, extract the information and display the slots. All the user needs to do next is to book the desired slot.

4.7.2.6 Maintain and View Schedules Function

This function allows the lecturers to put up free slots so that they can be booked by their students. The lecturer is able to input the date and time of his/her free slots and these slots are then saved into the database. The students are able to view the available slots by choosing the lecturer and then they are able to book the slots that are provided. The booked slots are not able to be booked by another but are able to be viewed.

4.7.2.7 Maintain Project Details Function, Maintain Tasks and View Tasks Functions

The students are able to maintain their project details with the help of this function. There is a calendar function allowing the students to choose the start and end dates. The same goes with the maintain tasks function. This function allows the students to enter tasks that act like Gantt chart tasks where the student can use to keep track of their project and these tasks can be viewed by their respective supervisors after which they have chosen the student whose tasks they want to view.

4.7.3 Problems Encountered During Implementations and Solutions

There were a number of problems that were encountered during the implementation phase of the system. The problems mentioned here concern the coding phase. Each major problem faced is explained here in detail and how it was encountered.

Normally in another language if connecting to controls using data source property, it will show all the data from the database, but this one was not showing. Data grid was being used in lot of places to show the data to the different type of users. Therefore, this error affected other pages as well, since this asp.net component was used to show the data to the users in other places too .The developer cleared this error first, so the developer manage to clear all the other errors.

One problem that the developer faced was the fact that the developer found the user ID to be of very huge importance. Quite a number of petty errors occurred due to the developer not stating the right field name in the codes, which was the user ID. Only with the user ID can the developer make the system work. The delete function in the mail inbox of all the three users were not able to be deleted although everything was stated. Once debugging took place the developer found out that the field name stated in the codes was wrong, which disallowed the delete function to work. Once the developer changed the filed name from the wrong one to user ID, the delete mail function was able to work without any problems. Initially it was StudentID but then later after seeing the database, the code was changed to userID and it worked.

Another problem that the developer faced was when the developer could not make the send mail function work. Once the user reads the mail and decides

to reply the mail, after which the user has clicked on the reply button, the mail is not sent, after thorough debugging, the developer found out that the StudentID was the reason as to why the mail could not be sent. The problem was faced on the lecturers' end, which is why the StudentID played a huge role.

One major problem that the developer faced was in the administrator module. The developer did not realize that the system was not able to register students due to the error in the codes. The error that occurred was concerning the insert statement, where the error mentioned that the insert statements were more then the values that could be entered because the number of values should be the same as specified in the insert statement.

Lastly, another problem faced was concerning the add diary entries, since the developer first stated that the diary table has a primary key, due to the primary key, the developer was not able to enter more than one diary entry. The developer had to change the diary table primary key from diaryID to StudentID which at the end of the day made the add diary function work.

As a conclusion, the problems encountered were able to be overcome by thoroughly debugging the system. Once the error was pointed out, it was changed and run again; from there the system started functioning well. There were a few other problems faced but they are not stated here, only the main ones are.

4.8   Testing

Testing is carried out to discover bugs that might not be visible to the naked eye during the development process. In order to create a successful system, thorough testing has to be performed. There are numerous number of types of testing that can be done, all of which concern this system are explained in details in the later part of this particular section.

Testing will ensure completeness and success of the system. At the same time, the quality control level in developing this system. Without carrying out testing, the development process is not complete. The developer carried out testing through out the entire development process although the emphasis lays at the completion of the system.

Another reason as to why the testing was done concurrently is due to the fact that the testing users' time is precious; the developer had to make sure that the system works in order to be confident enough to actually run any kind of tests. The other minor tests were carried out concurrently through out the coding phase and the recorded tests were done after which the whole system was finalized.

The test plans and test results attached are only of the core, special and extra features that were implemented in the system. The test plans of the incorporated functions from the existing system were not included as they would take up too much documentation space and in order not to confuse the reader.

4.8.1   Types of Testing

There were a number of tests that were done in order to finalize the system as a successful system and a system that has met the user requirements.

Each test had its significance to why it was conducted. The tests that took place are described briefly for the readers understanding purpose:

- **Functional testing** – according to Louis Tamres functional testing covers how well the system executes the functions it is supposed to execute. This testing was done by the developer because she wanted to determine how well the developed system lived up to its functional objectives by confirming if the system functions the way the users and the developer wants it to, regardless of browser type, languages, or platform.

- **Usability testing** - G. J. Myers pointed out that usability testing is a core skill because it is the principal means of finding out whether a system meets its intended purpose and all other skills that are deployed or cultivated aim to make usability successful. The reason as to why the developer did this test was because it was necessary to compare the developed system see if it meets the core target users' expectations, needs and requirements.

- **Security testing** - is where the system is tested using an integrated black box application against its security requirements and the implementation of its security mechanisms for example the system fails to identify and authenticate a user and allows a user to perform an unauthorized function.

- **Acceptance testing** - is a formal documented process in

which users use the system, to verify that it works correctly under operational conditions, and note any errors that need to be fixed. This type of testing was also done because it was necessary to determine if the system satisfies its acceptance criteria and to enable the users to determine whether or not to accept the system.

- **Regression testing** - helps to ensure that changes made to the systems code do not break other previously working parts of the system. This type pf testing was carried out frequently while writing codes.

4.8.2   Duration of Tests

Since the system is being developed to cater three categories of users, students, lecturers and administration staff, the tests phases mentioned above were participated by them. The tests were conducted once the system was completed; the administrative users test took approximately 45 minutes. The same goes for students, the students who participated in the test phases consist of third year students. Lecturers on the other hand tested the system and it took them approximately 30 minutes.

4.8.3   Testing Group of Users

As mentioned before, there are three types of users that were tested on, the students, the lecturers and the administrative users. Each of the types of users played a significant role in the testing process.

4.8.4   Manner of Which Tests Were Conducted

4.8.4.1   Before Testing

Before the tests were actually conducted, it was necessary to see if the system was ready to be tested. So that is why concurrently the system was tested for bugs during the coding phase, by performing regression testing where major or little bugs were corrected in tandem. Time is a precious thing, and so as to that, it was not a god idea to waste the time of the users and also the developer's. Secondly, users were determined and chosen at random to run the tests but making sure that there were testers from each type of group. Next the, test schedule was determined. The tests were executed on a basis of three days. Each day was catered for one type of tester.

When conducting tests, it is better to have prerequisites that will be a source of guidance. These prerequisites act like formal scripts so that whatever the groups of testers are to do, would be doing it in a standard manner. Another reason as to why it is proper to have such scripts is so that the users know what to accomplish at the end. Tests should be done to achieve some sort of completion at the end of the day, an example would be to find out what kind of errors existed or what did the targeted user think of the overall system. Depending on the tests executed, post test questionnaires were given out in order to determine and document what the user felt about the system. The prerequisites results are attached in **Appendix 3-1.**

4.8.4.2 During Testing

Before they users were asked to start testing the system, they were briefed on the functionalities of the system. The users were also asked to verbalize what they had to say or in other words, say out what they feel.

Users were asked to start on the testing. While the testing was taking place, observations were made and actions, errors and results were recorded so that they could be documented. Users were not guided on how to use the system as that was the only way to find out if the tester is able to actually use the system since the system is of a familiar nature.

Observations were noted by recording user responses by filling up a question sheet specifically for this purpose. Everything the tester mentioned was noted till the body language that the user was showcasing. Observation questions sheet is attached in **Appendix 3-2**.

4.8.4.3 Questions Asked and Justification of Questions Asked

Each question asked has its own purpose. The questions asked for functional testing that was conducted for all the types of users were just as guidance for the participants where they had to follow what was stated in the set of questions.

On the other hand for usability testing, a set of questions were asked which were related to the user's satisfaction. These questions were only concerned if the users find the system to be usable and satisfying. These set of questions were applicable for all the three categories of testing participants.

Finally, the developers' observation was also important to be recorded. A set of questions were needed to be answered after each test that took place. These questions were answered by the developer by observing the participants reactions every time they did something during the test.

4.8.5   Post Testing

Users were asked to test the system and note down whatever they felt necessary. The questionnaire was asked to be filled with their most sincere answers. The only reason these questions were asked because they are not based entirely on specific tasks that the user has performed since that was noted down upon during the observation that was conducted. Conclusions were made from the responses received and observation results were also documented.

4.8.6   Reported Errors

Most of the errors that took place were at the coding phase of the development of the system. Since the methodology used was Rational Unified Process (RUP), it allowed the developer to run small tests during the end of each phase. The tests reported here are the overall systems tests that were done with the help and participation of the targeted users.

The errors that were encountered were mostly coding errors where certain functions were not able to function due to some kind of error in the codes syntax and logic. These were natural errors as to err is human. From the errors that occurred, the developer managed to learn how not to make the same mistake occasionally.

The system did not contain many bugs at the end when the system was tested with the users because it is essential for the system to be a proper working system in order for it to be tested because as mentioned earlier, the users time and energy is to be appreciated and tested upon, testing of the system is essential without the users mind being bias and irritated with small bugs such as coding syntax errors.

4.8.7 Measures Taken

When the system was tested occasionally by the developer during the coding phases, the errors were debugged at the time the errors were located. This was so that the errors would not be forgotten of and would not cause anymore problems later on.

This can be concluded that the developer did not waste any time when it came to debugging the bugs that were found, so that the system was ready to be tested fully at the end of the day by the three targeted users of the system, the students, lecturers and administrators.

4.8.8 Test Plans

4.8.8.1 Tested Modules

Here each module was tested independently. The three modules exiting are the students', lecturers' and administrators' module. The modules were tested as one full section each, and later looked at in a discrete manner in the next step of testing that took place. The test plans attached here concern the core functions in the system.

Student Module

Function	Description	Result/Remarks
Login	Granting access to the system as a student user.	Student was able to log in provided the user provided the system with the correct username and password.

Lecturer Module

Function	Description	Result/Remarks
Login	Granting access to the system as a lecturer user.	Lecturer was able to log in provided the user entered the correct username and password.

Administrator Module

Function	Description	Result/Remarks
Login	Granting access to the system as an administrative user.	Administrator was able to log in provided the user entered the correct username and password.

4.8.9 Tested Functions

The next step was where each function was tested in each module thoroughly. Every existing function in the modules were looked at and not treated lightly. The test plans attached in this section are the test plans of the core functions existing in the system. The test plans attached here are of the core functions implemented in the system.

Student Module

Functions	Description	Result/Remarks
View Midpoint/ Final Year Presentation Schedule	If user clicks on the view midpoint schedule function, user is able to view the midpoint schedules uploaded.	The user was able to access the function without any problems and was able to view the schedules allocated.
Book Consultation Hour	If user clicks on book consultation hour, user is able to choose which lecturer he/she wants to book a time slot with.	User was able to access the page where the user can choose which lecturer he/she wants to book a time slot with. The drop down menu worked fine.
	If user chooses a certain lecturer, user is able to view the available time slots provided by the chosen lecturer.	User was able to view the time slots provided if there were any uploaded by the chosen lecturer without any errors prompted.
	If user chooses to book a time slot, the user will be able to book it provided the time slot is available.	User was able to book the provided time slots without any problems.
	If user clicks on cancel appointment, user is able to cancel the appointment(s) made and the time slot is re-open for booking by others.	User was able to cancel the booked time slot and the time slot was re-opened for others.

Set Reminder	If user clicks on the set reminder function, user is able to view the page where the user is able to set reminders sent to their mails.	User is able to view the page provided successfully allowing him/her to choose which date and what the user wants to be reminded on.
	If user fills in the required details as in what the user wants to be reminded on, and chooses when he/she wants to be reminded, the user will be able to do so.	The user is able to fill in the required details and a reminder is received on the date set reminding him/her of the reason the mail was sent at the first place.
Upload File	If user clicks on the upload file function, he/she will be redirected to a page allowing the user to view.	
Send Mail	If user clicks on the send mail function, user will be able to access the page that allows the user to choose which lecturer the user wants to mail.	User successfully is able to view the mentioned page without any problems faced.
	If user chooses a certain lecturer, user is able to mail that lecturer.	User was able to choose the desired lecturer and was able to mail the lecturer without encountering any

		kind of problems.
Add Project	If user clicks on this function, user is able to view the page the user is able to enter details of his/her project.	The user is able to access the particular page without facing any sort of difficulty.
	If user clicks on add project, user is able to enter details of his/her project.	User was able to enter desired details to of his/her project without facing difficulty.
Add Tasks	If user clicks on this functions, user is able to view the page where the user is able add tasks related to the project.	User was able to access the page without facing any prior problems.
	If user clicks on the add task function, user is able to enter tasks that are related to their project, working like some sort of Gantt chart system.	User was able to enter tasks that are related to their project without any difficulty.
	If user clicks on set status of the tasks, the user is able to set the status of the tasks so that they can looked at occasionally and act as guidance.	User was able to set the status of the tasks without facing any sort of problems, the status that were able to be set are, pending, processing and completed.
	If user clicks on modify	User was able to make

	task, user is able to make changes to the tasks already set.	necessary changes to the tasks already set without facing any kind of problems.

Lecturer Module

Functions	Description	Result/Remarks
View Midpoint/ Final Year Presentation Schedule	If user clicks on the view midpoint schedule function, user is able to view the midpoint schedules uploaded.	The user was able to access the function without any problems and was able to view the schedules allocated without encountering any type of problems.
Set Consultation Hours	If the user clicks on the consultation hour's function, the user will be redirected to the page where he/she can upload available time slots for student user usage.	The user is able to access the page where he/she can upload available time slots for student user usage.
	If user clicks on the add consultation hour function, he/she will be able to enter available dates that will allow student users to view and book the consultation	The user is able to add the consultation hours for student users to be able to view and book.

	hours.	
	If user clicks on the edit consultation hour slots function, users are able make changes to the already set time slots provided.	User is able to amend the time slots previously provided for booking.
Set Reminder	If user clicks on the set reminder function, user is able to view the page where the user is able to set reminders sent to their mails.	User is able to view the page provided successfully allowing him/her to choose which date and what the user wants to be reminded on.
	If user fills in the required details as in what the user wants to be reminded on, and chooses when he/she wants to be reminded, the user will be able to do so.	The user is able to fill in the required details and a reminder is received on the date set reminding him/her of the reason the mail was sent at the first place.
Download File	If user clicks on the upload file function, he/she will be redirected to a page allowing the user to view	
Send Mail	If user clicks on the send mail function, user will be able to access the page that allows the user to choose which lecturer/student the	User successfully is able to view the mentioned page without any problems faced.

	user wants to mail.	
	If user chooses a certain lecturer/student, user is able to mail that lecturer/student.	User was able to choose the desired lecturer/student and was able to mail the lecturer/student without encountering any kind of problems.
View Tasks	If user clicks on this function the user will be directed to a page where the user is able to view the tasks of their respective supervisees.	User was able to view the page without any problems faced.

Administrator Module

Functions	Description	Result/Remarks
Add Midpoint/ Final Year Presentation Schedule	If user clicks on add midpoint schedule, user is able to view the midpoint schedules uploaded.	The user was able to access the function without any problems and was able to view the schedules allocated without encountering any type of problems.
	If user clicks on add midpoint schedules, users are able to add new schedules for further	User is able to add the schedules and the schedules are available for viewing by all users without facing any

	viewing by the lecturers and students.	problems.
	If user clicks on edit schedules, user is able to make changes to existing schedules available for viewing by other students.	User is able to make changes and the changes are visible to the other users and the new schedules can be viewed by the other users without facing any sort of problems.
Send Mail	If user clicks on send mail, user will be able to access the page that allows the user to choose which lecturer/student the user wants to mail.	User successfully is able to view the mentioned page without any problems faced.
Set Reminder	If user clicks on the remind me function, user is able to view the page where the user is able to set reminders sent to their mails.	User is able to view the page provided successfully allowing him/her to choose which date and what the user wants to be reminded on.
	If user fills in the required details as in what the user wants to be reminded on, and chooses when he/she wants to be reminded, the user will be able to do so.	The user is able to fill in the required details and a reminder is received on the date set reminding him/her of the reason the mail was sent at the first place.
Send SMS	If user clicks on this	The user is able send an

	function, user will be able to send an SMS to anyone he/she wishes to by inserting the phone number as well as message.	SMS successfully to the intended receipent.

4.8.10 Summary of System Testing

In conclusion, the testing results obtained have proven that, this system is able to meet the user requirements as well as addressing several usability issues successfully. All the functionalities are integrated well as a whole system, although there are some minor bugs appearing here and there. However, these are not major issues, as all of the bugs can be solved. The internal and external interfaces of the application are tested as each module is combined together.

This is where the system has been designed, the interface is been created to see if it is standardized. In this part, testing was not really conducted by the developer yet nevertheless it has been given to the users to test the system and at the same time, required them to answer a few questionnaires.

After receiving the feedback and analyzing the response, the developer came to a conclusion that 95% of the users are very much satisfied with the interface layout, the font type, font size, background color etc. the remaining 5% feels that the colors used are too vivid and not all that comfortable to utilize the site. The developer will take into consideration the flaws and the defects in the system, and improve it in the nearest future enhancement.

As the system testing is being carried out, there are several limitations, in which system is unable to avoid. This is believed that if longer tie is given then all these limitations can be overcome generally. In addition, there is a need to know when to stop testing.

Testing is a never-ending task and one cannot say that testing is 100% complete and bugs free. If the developer continues testing with the goal of zero-bug, it takes time and consumes many resources. This is not feasible for this project, since this project has a due date to be met and the developer should conduct the testing until certain level of test.

The more the system gets tested, the more the developer will find out the limitations or errors of the system. Sometimes, by solving this problem, a new error will occur. The most crucial thing here is to minimize the number of errors that could prevent the system from functioning well, and some of the bugs maybe stated as "Not Fix" due to the period and the programming skills of the developer.

5. CONCLUSION AND RECOMMENDATIONS

The whole purpose to having goals and objectives and achieving them are to satisfy the users' needs and requirements. When developing a system, users' needs and requirements are and always should be looked into. If in any case they are not kept track of, then the developed system might not serve a purpose to the targeted end users. To conclude if the system is beneficial to the targeted users, users' must be mostly if not wholly satisfied with the developed project.

Testes were conducted; observations were made in order to find out if the system is of any benefits to the users'. From the results received, it can be concluded that the system is advantageous to users since they were purely pleased with it when using it.

The system designed is easy to use. In other words, it is a fairly user friendly system. Not only does it cater for users' who are computer literate, it also does not forget the users' who are somewhat new to the computer world. The functions available for each targeted group of users serve a significant purpose for that particular group. Let us analyze each and every enhanced function available and what are the benefits to the targeted end users by looking at each core function separately.

- **Students are able to book consultation hours as set by lecturer and lecturers are able to enter consultation hour slots to be assessable by the students.**

    When preliminary investigation took place, most of all the final year ICT / BIS students had only one key thing to suggest when it came to answering the question, if there was one thing that you could enhance in the current system to help you work better, what would it? They came up the answer, integrating consultation slots function into the current system. It is a benefit to this group of users because they do not need to log out of the current system and re-login into

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the other system that exits, to access that particular function. It creates less hassle and students can easily access their supervisors' free slots to book a meeting with them for their project purposes.

- **Students are able to view their midpoint & final year presentation schedules and lecturers are also able to view the midpoint & final year presentation schedules. The admin is able to maintain the midpoint & final year presentation schedules.**

Midpoint schedules and final year presentation schedules are very important schedules that also are incorporated into the system. Since the name does suggest that the system is analogous with a project management based system it is found that it is beneficial to students that this function exists, to help them manage their project appropriately. This function is also favorable to the lecturers as they too need to manage their time.

- **Students are able to upload files (add files online) & are able to send those uploaded files to their respective supervisors or advisors. Lecturers are also able to download the files uploaded by the students.**

Collaboration between supervisor and supervisee is extremely important to achieve a successful outcome of the project at the end of the development process. The major benefit of this particular function in the system is the fact that if in any case the student is not able to meet their supervisees due to unforeseen circumstances they are able to upload files for the viewing of their respective supervisors. It is not only beneficial for that particular purpose, just the fact that

students are able to send files with the help of the system so that their lecturers are able to access them for assessment is superior.

- **Students, lecturers and administrators are able to set reminders in the system which will send them email notifications (as in select dates that they think are important).**

Reminders are an important function. Reminders help in situations when students tend to forget certain important dates. Being able to set reminders themselves is a satisfying thing since the risk of forgetting an important date will be lessened.

- **Students are able to view form submission history- able to view the date & time the form was submitted, able to view the supervisors action towards the form(status of the form) to see if its pending, approved or rejected, and are also able to view the date & time the forms were approved or rejected. Lecturers are also able to view form submission history & see which forms are pending, approved or rejected.**

The fact that students are able to view mistakes that they made in their previous rejected forms is a fine concern so that they can prevent themselves from making the same mistake twice. The do not have to wait to long to find out what is the status of their forms and do not have to ask around to know what is going on. All they need to do is view what is the status in the system.

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- **Students are able to send email to their respective supervisors, advisors and also the administration via OPAGS itself without using external email software such as outlook. Lecturers and administrative users are also able to send email to their respective supervisees and also the administration via OPAGS itself without using external email software such as outlook.**

Collaboration and interaction is extremely important in a project based environment what more a project based system. With OPAGS students and lecturers are able to communicate without sending mails using external software everything is done in the system. The students do not even need to know the lecturers email addresses and vice versa which saves a lot of time and trouble.

- **Students are able to add (modify & delete) a project where there is a form like page allowing them to enter their project title, project description, project commencement & project completion dates.**

This function acts modestly like a Gantt chart but not altogether like it. Students are able to keep track of their project in a systematic manner instead of relying fully on notes or diary entries.

- **After adding the project, they are able to add (modify & delete) tasks that will allow them to enter the task name, task description, task commencement & task completion dates. Students are also able to state by themselves if the task is pending, overdue or completed. A calendar like function should allow the students to choose the dates.**

This function on the other hand works more like a Gantt chart. It contains all the tasks that a student has to do. Students are able to keep track of their tasks more systematically leading to a better working environment and more methodical project management approach.

- **Students are able to have a chat with the lecturer when they login the system if the lecturer is logged on to the system at the same time as well.**

This function ease the communication between the supervisor and supervisee as it reduces the hassle of students meeting them face to face or call the supervisor for enquiries.

- **Lecturers are also able to view midpoint and final year presentation history & view which students' marks & comments are pending or already set.**

It is also vital for lecturers to be able to view presentation history. Keeping track of their work is a beneficial thing since it is rather tedious to forget their responsibilities. Lecturers can get tied down with their workload so this function helps them to keep track of what they have done n what is yet pending and so on.

There are many indefinable benefits that can be gained by the targeted end user at the end of the day. There are many other functions in the system that also exists in the current system but by analyzing the core functions it can be concluded that the new system provides more repayment then the existing one to the three groups of users.

5.1   Limitations and Errors

Like any other system designed, there are bound to be some sort of limitations that will exist in the implementation. This system, like those other systems is not excluded but future enhancements can be made in order to overcome certain limitations existing.

One of the many limitations of the system is, not all users can access the current system since the system only caters the functional three levels of users. Users such as first year or second year students are not able to make usage of the system. Students are also just limited to very few functions, not able to make changes and so on since they are mostly able to just viewing the functions allocated for them.

Another quite interesting limitation is that the system does not incorporate other groupware features at the moment. It would have been better if the system was able to incorporate such features.

Finally, the security features of the system are not all that thorough. The system would have been much more secure if more security measures were implemented.

5.2   Problems Encountered

As with any software development, problems occur throughout the implementation process. There is no exception to this system. A number of problems surfaced during the testing and the implementation stage. Different ways and alternative methods were used to counter back or overcome the problems.

As with any web programming, the coding needs to be first tested using a web server. The scripts were then tested on IIS. The system started to hang each time the developer tried to run the scripts. After several attempts and repeated restarts, the developer managed to make it work.

The developer also joined the mailing list to several programming sites, which offered tips on a weekly basis. Help was also sought from siblings and colleagues. All these efforts did contribute a lot towards the developer's understanding of the language. Nevertheless, the developer was still unable to successfully test the coding. Finally, as one last try, the developer modified the codes a little, tested it, and finally got it running. The same problem was faced during the implementation of the core functions.

5.3   Possible Future Enhancements and Recommendation

Drawbacks in the system implemented leads to possible future enhancement ideas. The many enhancements that can take place are explained in detail.

- **More interactive user interfaces**

    In the future, animation technology will be included in this project to make the project more interactive. Animation and other additional multimedia elements will slow down the loading time of the page; therefore, it should be designed when it is necessary. For example, animation can be included in a help function where it guides the user on how to engage themselves with OPAGS.

- **Enhance the entire system**

    The system will be a large system and will comprise various functions for different levels of users. By incorporating Groupware features, the system not only is large, but also one that is able to fit in and function in almost any educational organization or institution.

- **Enhance certain functions**

    Time did not permit the developer to emphasize on certain functions that could be enhanced. One of the many is the reminder function. In the future, users would be able to choose between being reminded by email or SMS, allowing more interaction with wireless and mobile devices. Another enhancement would be to allow the whole system to be accessed via wireless mobile devices.

- **Version control**

    Features of the system can be modified, added, or removed and it is better to a version control on the page. This way, from the version number, the user can

know that monitoring system has been changed. This will encourage the user to use latest version. This is the developer's contribution to version 1.0.

- **Improve the security features**

  Security plays a crucial role in any system. A better and more secure system would be implemented in the future. For example, students and lecturers should be able to set and change their own password and not only use the one given to them. This can help others access their account easily by random guessing of passwords.

- **Include aspects of latest technology**

  Include aspects of wireless technology in the system where it can be accessed through mobile phone using Bluetooth.

In summary, for the future I would think that:

1. Greater consideration of resource constraints and more satisfied students, lecturers because of better use of resources.

2. The UTP ICT & BIS family will be on par with the current technology where everything is done online.

3. The flow of both the faculties Final Year Project will not be messed up and very systematic as well as it will ease the task of all students', lecturers' and administrators'.

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7. APPENDICES

Appendix 1-1: Survey Questionnaire

Online Project Assessment & Guidance System (OPAGS) Questionnaire.

n currently in the process of collecting information for my Final Year Project (FYP) which is
sed on developing a new system where all our documents are submitted online and all other
sk as well. In order for me to develop a good quality system, I need appropriate information and
at is where this questionnaire comes in. I am planning on improving the current IT_IS Google
roup (use for FYP purposes) system where we hardly access. The rationale of the system is to
velop a new system where all our tasks will be submitted online as well as announcements and
iportant dates (practically all tasks will be performed online). Kindly please answer these
iestions, as they are part of my survey, in order for me to understand students' needs. Your
operation is highly appreciated.

Name	
Year (Semester)	
Course	
E-mail Address	
Contact Number	

How often do you Log onto IT_IS Google Group?

When I need to	When you want to find out the latest submission dates, or when you are mail on the latest updates.
Not very often	Once a month
Not at all	Do not log in at all

- ☐ Everyday
- ☐ When I need to
- ☐ Not very often
- ☐ Not at all

If your desired answer was either When I need to, Not very often or Not at all, please specify
the reason(s).

_____

_____

What is your opinion about the current system's interface? (Please select **at least one**).
- ☐ The font size use is not appropriate
- ☐ The font colour use is not appropriate
- ☐ Bad colour combination of font and layout
- ☐ Too many graphics
- ☐ No graphics at all
- ☐ Poor layout
- ☐ Others (Please Specify) ....

Do you find the current system user friendly and convenient to you as a final year degree student?

- ☐ Yes
- ☐ No (Please Specify Why) ....

Please look at the detailed functionalities as listed in the given attachment, and rate your level of interest of having these modules implemented by using the scale of **1 to 5**, where **1** is **least interested** and **5** is **most interested. Could you please provide the reason(s) for your rating?**

Module	a) Rating Scale	Reason(s) for Rating
ecturers' consultation hours.	1 2 3 4 5	
tudents' final year presentation :hedules.	1 2 3 4 5	
ppropriate reminders, reminding ɔu of important dates either by nail or SMS.	1 2 3 4 5	
ubmission of all tasks online	1 2 3 4 5	
aving an online communication ith lecturer (chatting)	1 2 3 4 5	

Do you have any suggestions or ideas to be added to the functionalities of the system to further meet your needs as the user of the system?

_____

_____

****************************THANK YOU****************************

Appendix 2-1: Table Structure

Table Structure

Table Name: Task

Primary Key: TaskID

Foreign Key: Student ID referencing Register

Attribute	Description	Data Type	Size
TaskTitle	The title of the task that the student wants to input.	char	10
TaskCommencementDate	The date the tasks begins its cycle.	char	10
TaskCompletionDate	The date the task should end its cycle.	char	10
TaskStatus	The status of the task.	char	10
TaskDescription	The description of the task.	varchar	8000

Table Name: Mail Details

Primary Key: Student ID

Foreign Key: None

Attribute	Description	Data Type	Size
Student ID	Student identification.	nvarchar	50
MailFrom	The source of the mail.	varchar	50
Subject	The subject of the	varchar	50

	mail.		
MailTo	The destination of the mail.	varchar	8000

Table Name: Download

Primary Key: Download ID

Foreign Key: Student ID referencing Register

Attribute	Description	Data Type	Size
DownloadID	Download identification.	int	4
Name	Name of the file.	varchar	50
Code	Code of the file.	varchar	50
Category	Category of the file.	varchar	50
Description	Description of the file.	varchar	200
App	Application that needs to be used to open the file.	varchar	100

Table Name: Consultation

Primary Key: Consultation ID

Foreign Key: Student ID referencing Register

Attribute	Description	Data Type	Size
ConsultationID	Consultation identification.	int	4
LecturerName	Name of the lecturer.	varchar	50

StartTime	Start time of the free slot.	varchar	50
EndTime	End time of the consultation slot.	varchar	50
Date	Date of the available slot.	varchar	50
Reason	The reason as to why the slot was booked.	varchar	8000
ContactNo.	The contact details of the student.	varchar	50

Table Name: LecturersMail

Primary Key: None

Foreign Key: Lecturer ID referencing LecturerDetails

Attribute	Description	Data Type	Size
LecturersName	Lecturers name.	char	50
Subject	Subject of mail.	char	50
Message	Message in the mail.	char	5000

Table Name: Project Details

Primary Key: None

Foreign Key: Student ID referencing Register

Attribute	Description	Data Type	Size
ProjectTitle	The title of the task.	varchar	50
CommencementDate	The date the tasks	char	10

	begins its cycle.		
CompletionDate	The date the task should end its cycle.	char	10
TaskDescription	The description of the task.	varchar	8000

Table Name: Reminder

Primary Key: None

Foreign Key: None

Attribute	Description	Data Type	Size
DateSent	Date the reminder was set.	char	10
ReminderDate	Date the reminder must be sent.	char	10
Subject	Subjet of the mail that will be sent.	char	50
Message	Message in the mail.	varchar	8000

Table Name: Midpoint

Primary Key: PresentationTime

Foreign Key: None

Attribute	Description	Data Type	Size
PresentationDay	Date the presentation.	varchar	10
PresentationTime	Tiem of the	varchar	10

	presentation.		
SupervisorName	Name of supervisor.	varchar	10
AdvisorName	Name of advisor.	varchar	10
PresentationRoom	Where the presentation will be held.	varchar	10
PresentationType	The type of presentation.	varchar	10

Appendix 3-1: Test Evaluation Pre-Requisite Questionnaires

TEST QUESTIONS (STUDENT) - FUNCTIONAL TESTING

These sets of questions are like a guide to help the tester (you) know what needs to be accomplished in order to find out if the system functions properly. Just tick the functions that could be accomplished.

- ☐ Register yourself and log into the system
- ☐ Set a reminder to yourself with today's date and check your email (after a few minutes) to see if the reminder has been sent.
- ☐ Send in your PSF/ PPF to see if it can be submitted.
- ☐ Book a consultation hour with a lecturer.
- ☐ Enter information about your project and save them.
- ☐ Do the same for the tasks that need to be done and set their statuses.

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**Thank you for participating; your cooperation is highly appreciated.

TEST QUESTIONS (LECTURER) - FUNCTIONAL TESTING

These sets of questions are like a guide to help the tester (you) know what needs to be accomplished in order to find out if the system functions properly. Just tick the functions that could be accomplished.

- ☐ Set a reminder to yourself with today's date and check your email (after a few minutes) to see if the reminder has been sent.
- ☐ View the PPF's /PSF's and their statuses.
- ☐ Enter your free consultations slots.
- ☐ Enter midpoint comments.
- ☐ View meeting comments and student diary.

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**Thank you for participating; your cooperation is highly appreciated.

TEST QUESTIONS (ADMINISTRATORS) - FUNCTIONAL TESTING

These sets of questions are like a guide to help the tester (you) know what needs to be accomplished in order to find out if the system functions properly. Just tick the functions that could be accomplished.

- ☐ Set the presentation schedules, midpoint and final year presentation schedules.
- ☐ Edit the schedules, both midpoint and final year presentation schedules.
- ☐ Edit your own profile, and edit profiles of other users, the lecturers and students.
- ☐ Assign and reassign supervisors to students and intakes.
- ☐ Assign and reassign completion dates for the projects at hand. Assign and reassign completion dates for existing projects for individual students.

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**Thank you for participating; your cooperation is highly appreciated.

Appendix 3-2: Test Questions (Developers Observation) – Usability Testing

TEST QUESTIONS (FOR ALL USERS) - USABILITY TESTING

These set of questions allow you (the user/tester) to determine if the system is useable. Any positive or negative comments should be stated in the space provided. Your help, time and effort is much appreciated.

- ☐ Does the system function as expected?
- ☐ Is the system user friendly?
- ☐ How easy was the system to use?
- ☐ Which area did you like?
- ☐ What kind of enhancements could be made?
- ☐ Is the interface and navigation style appropriate?

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**Thank you for participating; your cooperation is highly appreciated.

TEST QUESTIONS (DEVELOPERS OBSERVATION) - USABILITY TESTING

These set of questions are for the developers use only. By answering these questions the developer will be observing what the users reactions are to the testing that is taking place.

1. Does the user seem restless using the system?

2. Is the user moving from function to function in a progressively smooth manner?

3. Does the user seem lost using the system?

4. Did the user need guidance while using the system?

5. Does the user seem satisfied with the system? (Note on body language)

Appendix 4-1: Coding for Login Page

```
age Language="vb" AutoEventWireup="false" Codebehind="Login.aspx.vb" Inherits=          ↙
workspace.Login"%>
TYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
>
HEAD>
    <title>Login</title>
    <meta content="Microsoft Visual Studio .NET 7.1" name="GENERATOR">
    <meta content="Visual Basic .NET 7.1" name="CODE_LANGUAGE">
    <meta content="JavaScript" name="vs_defaultClientScript">
    <meta content="http://schemas.microsoft.com/intellisense/ie5" name=              ↙
vs_targetSchema">
/HEAD>
body MS_POSITIONING="GridLayout">
    <form id="Form1" method="post" runat="server">
        <asp:panel id="Panel1" style="Z-INDEX: 101; LEFT: 320px; POSITION: absolute;  ↙
OP: 296px" runat="server"
            Width="334px" Height="170px" BorderStyle="Double" BorderColor="IndianRed" ↙
ackColor="Desktop">
            <P> 
                <asp:label id="Label3" runat="server" Width="160px" ForeColor=        ↙
LightCyan" Font-Bold="True">Login</asp:label></P>
            <P>   
                <asp:label id="Label1" runat="server" Width="72px" ForeColor="#FFFF80"↙
Font-Bold="True" Font-Size="X-Small"
                    Font-Names="Arial">User ID</asp:label>
                <asp:textbox id="TextBox1" runat="server" Height="24px" Width="200px">↙
/asp:textbox></P>
            <P>   
                <asp:label id="Label2" runat="server" Height="16px" Width="72px"       ↙
oreColor="#FFFF80" Font-Bold="True"
                    Font-Size="X-Small" Font-Names="Arial">Password</asp:label>
                <asp:textbox id="TextBox2" runat="server" Height="24px" Width="200px"  ↙
extMode="Password"></asp:textbox><BR>
                <BR>
                           &     ↙
osp;             &      ↙
osp;             &      ↙
osp;       
                <asp:button id="Button2" runat="server" Height="24px" Width="48px"      ↙
ext="Login"></asp:button></P>
        </asp:panel><asp:image id="Image1" style="Z-INDEX: 102; LEFT: 88px; POSITION:  ↙
osolute; TOP: 24px" runat="server"
            ImageUrl="file:///D:\Inetpub\wwwroot\workspace\Images\OPAGS.gif"></asp:     ↙
mage><asp:requiredfieldvalidator id="RequiredFieldValidator1" style="Z-INDEX: 103;     ↙
EFT: 328px; POSITION: absolute; TOP: 272px"
            runat="server" Width="136px" Font-Size="X-Small" ErrorMessage="Please      ↙
nter User Name" ControlToValidate="TextBox1"></asp:requiredfieldvalidator><asp:        ↙
equiredfieldvalidator id="RequiredFieldValidator2" style="Z-INDEX: 104; LEFT: 496px;   ↙
OSITION: absolute; TOP: 272px"
            runat="server" Width="152px" Font-Size="X-Small" ErrorMessage="Please      ↙
nter Your Password" ControlToValidate="TextBox2"></asp:requiredfieldvalidator>
        <asp:RadioButton id="RadioButton1" style="Z-INDEX: 106; LEFT: 440px; POSITION:↙
absolute; TOP: 480px"
            runat="server" Text="Admin" Font-Bold="True" ForeColor="Blue" Font-Names=  ↙
Calisto MT" GroupName="Mycontrol"></asp:RadioButton>
        <asp:RadioButton id="RadioButton2" style="Z-INDEX: 107; LEFT: 568px; POSITION:↙
absolute; TOP: 480px"
            runat="server" Text="Lecturer" Font-Bold="True" ForeColor="SeaGreen" Font-↙
ames="Calisto MT"
            GroupName="Mycontrol"></asp:RadioButton></form>
/body>
L>
```

Appendix 4-2: Coding for Send SMS Page (Administrator Module)

```
egister TagPrefix="ucl" TagName="AdminUserControl" Src="AdminUserControl.ascx" %>
age Language="vb" AutoEventWireup="false" Codebehind="sendSMS.aspx.vb" Inherits=
workspace.sendSMS"%>
TYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
>
HEAD>
    <title>sendSMS</title>
    <meta content="Microsoft Visual Studio .NET 7.1" name="GENERATOR">
    <meta content="Visual Basic .NET 7.1" name="CODE_LANGUAGE">
    <meta content="JavaScript" name="vs_defaultClientScript">
    <meta content="http://schemas.microsoft.com/intellisense/ie5" name=
vs_targetSchema">
/HEAD>
body MS_POSITIONING="GridLayout">
    <form id="Form1" method="post" runat="server">
        <asp:textbox id="TextBox1" style="Z-INDEX: 101; LEFT: 392px; POSITION:
bsolute; TOP: 248px"
            runat="server"></asp:textbox><asp:label id="Label1" style="Z-INDEX: 109;
EFT: 392px; POSITION: absolute; TOP: 216px" runat="server"
            Width="108px" Visible="False"></asp:label><asp:requiredfieldvalidator id=
RequiredFieldValidator2" style="Z-INDEX: 108; LEFT: 560px; POSITION: absolute; TOP:
96px"
            runat="server" Width="164px" Font-Size="Smaller" ErrorMessage="Message
annot be left Blank" ControlToValidate="TextBox2"></asp:requiredfieldvalidator><asp:
equiredfieldvalidator id="RequiredFieldValidator1" style="Z-INDEX: 107; LEFT: 560px;
OSITION: absolute; TOP: 248px"
            runat="server" Width="149px" Font-Size="Smaller" ErrorMessage="Cell No
annot be left Blank" ControlToValidate="TextBox1"></asp:requiredfieldvalidator><asp:
abel id="Label4" style="Z-INDEX: 106; LEFT: 264px; POSITION: absolute; TOP: 288px"
unat="server"
            Width="83px" ForeColor="Blue">Message</asp:label><asp:label id="Label8"
tyle="Z-INDEX: 105; LEFT: 264px; POSITION: absolute; TOP: 248px" runat="server"
            Width="83px" ForeColor="Blue">Cell No</asp:label><asp:label id="Label3"
tyle="Z-INDEX: 104; LEFT: 264px; POSITION: absolute; TOP: 192px" runat="server"
            Width="136px" ForeColor="Blue" Font-Size="Small" Font-Bold="True">OPAGS
end SMS</asp:label>
        <asp:Button id="Button1" style="Z-INDEX: 103; LEFT: 496px; POSITION: absolute;
TOP: 368px" runat="server"
            Text="Send"></asp:Button>
        <asp:TextBox id="TextBox2" style="Z-INDEX: 102; LEFT: 392px; POSITION:
bsolute; TOP: 288px"
            runat="server" Width="152px" Height="56px"></asp:TextBox>
        <ucl:AdminUserControl id="AdminUserControl1" runat="server"></ucl:
dminUserControl></form>
/body>
L>
```

Appendix 4-3: Coding for Sending Mail Page (Student Module)

```
egister TagPrefix="uc1" TagName="StudDesign" Src="StudDesign.ascx" %>
ige Language="vb" AutoEventWireup="false" Codebehind="SendingEmail.aspx.vb" Inherits=✔
vorkspace.SendingEmail"%>
TYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
>
IEAD>
    <title>SendingEmail</title>
    <meta name="GENERATOR" content="Microsoft Visual Studio .NET 7.1">
    <meta name="CODE_LANGUAGE" content="Visual Basic .NET 7.1">
    <meta name="vs_defaultClientScript" content="JavaScript">
    <meta name="vs_targetSchema" content="http://schemas.microsoft.com/intellisense/  ✔
a5">
/HEAD>
>ody MS_POSITIONING="GridLayout">
    <form id="Form1" method="post" runat="server">
        <asp:Label id="Label1" style="Z-INDEX: 104; LEFT: 320px; POSITION: absolute;  ✔
OP: 232px" runat="server"
            Width="304px" ForeColor="Blue"></asp:Label>
        <asp:label id="Label5" style="Z-INDEX: 111; LEFT: 312px; POSITION: absolute;  ✔
OP: 336px" runat="server"
            ForeColor="Blue" Width="112px" Height="16px">Date</asp:label>
        <asp:textbox id="TextBox1" style="Z-INDEX: 101; LEFT: 440px; POSITION:        ✔
osolute; TOP: 368px"
            runat="server" Width="344px" Height="24px"></asp:textbox>
        <asp:textbox id="TextBox2" style="Z-INDEX: 102; LEFT: 440px; POSITION:        ✔
osolute; TOP: 400px"
            runat="server" Width="416px" TextMode="MultiLine" Height="296px"></asp:  ✔
extbox>
        <asp:button id="Button1" style="Z-INDEX: 103; LEFT: 760px; POSITION: absolute;✔
TOP: 704px" runat="server"
            Width="96px" Text="Send"></asp:button>
        <asp:label id="Label7" style="Z-INDEX: 105; LEFT: 312px; POSITION: absolute;  ✔
OP: 368px" runat="server"
            ForeColor="Blue" Width="112px" Height="16px">Subject</asp:label>
        <asp:label id="Label3" style="Z-INDEX: 107; LEFT: 312px; POSITION: absolute;  ✔
OP: 400px" runat="server"
            ForeColor="Blue" Width="112px" Height="16px">Your Message</asp:label>
        <asp:textbox id="TextBox4" style="Z-INDEX: 108; LEFT: 440px; POSITION:        ✔
bsolute; TOP: 336px"
            runat="server" Width="152px" ReadOnly="True"></asp:textbox>
        <asp:label id="Label6" style="Z-INDEX: 110; LEFT: 312px; POSITION: absolute;  ✔
OP: 304px" runat="server"
            ForeColor="Blue" Width="112px" Height="24px">Mail To</asp:label>
        <asp:calendar id="Calendar1" style="Z-INDEX: 109; LEFT: 232px; POSITION:      ✔
bsolute; TOP: 424px"
            runat="server" Width="48px" Height="176px" Visible="False" ForeColor=    ✔
Black" BorderStyle="Solid"
            NextPrevFormat="ShortMonth" BackColor="White" CellSpacing="1" Font-Size= ✔
9pt" Font-Names="Verdana"
            BorderColor="Black">
            <TodayDayStyle ForeColor="White" BackColor="#999999"></TodayDayStyle>
            <DayStyle BackColor="#CCCCCC"></DayStyle>
            <NextPrevStyle Font-Size="8pt" Font-Bold="True" ForeColor="White"></      ✔
extPrevStyle>
            <DayHeaderStyle Font-Size="8pt" Font-Bold="True" Height="8pt" ForeColor="#✔
33333"></DayHeaderStyle>
            <SelectedDayStyle ForeColor="White" BackColor="#333399"></               ✔
electedDayStyle>
            <TitleStyle Font-Size="12pt" Font-Bold="True" Height="12pt" ForeColor=    ✔
White" BackColor="#333399"></TitleStyle>
            <OtherMonthDayStyle ForeColor="#999999"></OtherMonthDayStyle>
        </asp:calendar>
        <asp:Label id="Label2" style="Z-INDEX: 106; LEFT: 312px; POSITION: absolute;  ✔
'OP: 216px" runat="server"
            Width="208px" Height="24px" ForeColor="Blue" Font-Bold="True">OPAGS      ✔
lailing to Lecturers</asp:Label>
```

```
        <uc1:StudDesign id="StudDesign1" runat="server"></uc1:StudDesign>
        <asp:TextBox id="TextBox5" style="Z-INDEX: 112; LEFT: 600px; POSITION:        ↙
>solute; TOP: 352px"
            runat="server" Width="184px" Visible="False"></asp:TextBox>
        <asp:DropDownList id="DropDownList1" style="Z-INDEX: 113; LEFT: 440px;         ↙
)SITION: absolute; TOP: 304px"
            runat="server" Width="152px" Height="24px">
            <asp:ListItem Value="Savita">Savita</asp:ListItem>
            <asp:ListItem Value="Nordin">Nordin</asp:ListItem>
            <asp:ListItem Value="Shakirah">Shakirah</asp:ListItem>
            <asp:ListItem Value="Hilmi">Hilmi</asp:ListItem>
            <asp:ListItem Value="Anang">Anang</asp:ListItem>
            <asp:ListItem Value="Amy">Amy</asp:ListItem>
            <asp:ListItem Value="Kavita">Kavita</asp:ListItem>
        </asp:DropDownList>
        <asp:LinkButton id="LinkButton1" style="Z-INDEX: 114; LEFT: 312px; POSITION:  ↙
>solute; TOP: 248px"
            runat="server" Width="48px" Height="24px" Font-Bold="True">Inbox</asp:     ↙
inkButton>
        <asp:LinkButton id="LinkButton2" style="Z-INDEX: 115; LEFT: 368px; POSITION:  ↙
bsolute; TOP: 248px"
            runat="server" Width="96px" Height="24px" Font-Bold="True">Mail to Admin</↙
sp:LinkButton>
    </form>
/body>
L>
```

Appendix 5-1: Gantt Chart

No	Detail/Week	1	2	3	4	5	6	7	8	9	10	11	12
1	Preparation of Progress Report	■	■										
2	Development of OPAGS	■	■	■	■	■	■	■	■				
3	Implementation of OPAGS								■				
4	Preparation of Final Report							■	■				
5	Conducting test on Users									■	■		
6	Preparation of Dissertation Report										■	■	■

Appendix 6-1: User Manual

Student Module

Functions	Description
Login	Insert in user ID, correct password and click the login button.
Home	If user clicks the Edit Profile button on the home page, user would be able to edit his/her personal information.
Book Consultation	If user clicks on this function, user is able to choose which lecturer he/she wants to book a time slot with.
	If user chooses a certain lecturer, user is able to view the available time slots provided by the chosen lecturer.
	If user chooses to book a time slot, the user will be able to book it provided the time slot is available.
	If user clicks on cancel appointment, user is able to cancel the appointment(s) made and the time slot is re-open for booking by others.
View Midpoint/ Final Year Presentation Schedule	If user clicks on this function, user is able to view the midpoint and FYP schedules uploaded.
Digital Dropbox	If user clicks on this function, he/she will be redirected to a page allowing the user to upload a file to the lecturer he/she wishes to.
Send Mail	If user clicks on the send mail function, user will be able to access the page that allows the user to choose which lecturer the

	user wants to mail.
	If user chooses a certain lecturer, user is able to mail that lecturer.
	If user chooses the Mail to Admin function, user is able to mail the Administrator.
	If user chooses the Inbox function, user is able to to view their mails or delete them.
PPF & PSF	If user clicks on this function, the user will be redirected to the Project Proposal Form page where he/she can insert their relevant data and submit it to their supervisors. Click on the PSF function on the same page to be redirected to the Project Specification Form page.
View PPF & PSF	If user clicks on this function, user will be able to view their PPF & PSF Forms as well as the comments given by lecturers.
Project Details	If user clicks on this function, user is able to add details of his/her project.
	If user clicks on the Edit Project Details function, user is able to edit details of his/her project.
Tasks	If user clicks on this function, user is able to view the page where the user is able add tasks related to the project.
	If user clicks on set status of the tasks, the user is able to set the status of the tasks so that they can looked at occasionally and act as guidance.
	If user clicks on modify task, user is able to make changes to the tasks already set.
Midpoint Comments	If user clicks on this function, user is able

	to view the comments by their supervisors regarding their Midpoint Presentation.
Diary Entries	If user clicks on this function, user is able to enter the weekly diary entries.
	If user clicks on the View Diary function, user is able to view their diary entries
Set Reminder	If user clicks on the set reminder function, user is able to view the page where the user is able to set reminders sent to view reminders inbox.

Lecturer Module

Functions	Description
Login	Insert in user ID, correct password, tick on the admin button and then click the login button.
Presentation Schedule	If user clicks on this function, user is able to view the midpoint and FYP schedules uploaded.
Edit Profile	If user clicks the Edit Profile button on the home page, user would be able to edit his/her personal information.
Digital Dropbox	If user clicks on this function, he/she will be redirected to a page allowing the user to download a file he/she wishes to which was uploaded by their supervisees.
Inbox	If user clicks on this function, user will be able to access the page that allows the user to view their mails or delete them.
	If user chooses the Mail to Admin function, user is able to mail the Administrator.
	If user chooses the Mail to Intake function, user is able to mail all the students in that particular intake.
Consultations	If the user clicks on the consultation hour's function, the user will be redirected to the page where he/she can upload available time slots for student user usage.
View Diary	If user clicks on this function, he/she will be able to choose their respective supervisees through the dropbox and view their diary entries.

PSF Comments	If user clicks on this function, user will be able to choose their respective supervisees through the dropbox, and view their respective Project Specification Form.
	User will be able to put in their comments and send it back to the supervisees.
PPF Comments	If user clicks on this function, user will be able to choose their respective supervisees through the dropbox, and view their respective Project Proposal Form.
	User will be able to put in their comments and send it back to the supervisees.
Midpoint comments	If user clicks on this function, user will be able user will be able to choose their respective supervisees through the dropbox, and key in their comments on the supervisees midpoint presentation based on the criteria laid out to them.
View Task	If user clicks on this function, user is able to view the progress of the supervisees.

Administrator Module

Functions	Description
Login	Insert in user ID, correct password, tick on the lecturer button and then click the login button.
Midpoint/ Final Year Presentation Schedule	If user clicks on this function, user is able to users are able to add new schedules for further viewing by the lecturers and students.
Student Registration	If user clicks this function, user will be able to register another student that will be able to use this system.
Lecturer Registration	If user clicks this function, user will be able to register another lecturer that will be able to use this system.
Admin Registration	If user clicks this function, user will be able to register another administrator that will be able to use this system.
Send Mail	If user clicks on this function, user will be able to access the page that allows the user to view their mails or delete them.
	If user chooses the Mail to Intake function, user is able to mail all the students in that particular intake.
	If user chooses the Mail to Lecturer function, user is able to choose the particular lecturer through a dropbox and mail him/her.
Edit Profile	If the user clicks on this function, the user will be redirected to the page where he/she will be able to edit and update each

	student's profile.
	If the user clicks on the Update Lecturer Profile, the user will be redirected to the page where he/she will be able to edit and update each lecturer's profile.
Assign PSF Submission Date	If user clicks on this function, he/she will be able to assign the Project Specification Forms for the students.
Send SMS	If user clicks on this function, user will be able to send an SMS to anyone he/she wishes to by inserting the phone number as well as message.