Integrated Time Management System

by

Shahida Binti Ahmad

Dissertation submitted in partial fulfillment of
the requirements for the
BACHELOR OF TECHNOLOGY (Hons)
(BUSINESS INFORMATION SYSTEM)

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1) website development
2) PHP (computer program language)

CERTIFICATION OF APPROVAL

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Shahida Binti Ahmad (3026)

A project dissertation submitted to the
Business Information System Programme
Universiti Teknologi PETRONAS
In partial fulfillment of the requirement for the
BACHELOR OF TECHNOLOGY (Hons)
(BUSINESS INFORMATION SYSTEM)

Approved by,

_____
(Mr. Mohammad Noor Bin Ibrahim)

UNIVERSITI TEKNOLOGI PETRONAS
TRONOH, PERAK
January 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.

SHAHIDA BINTI AHMAD

ABSTRACT

The development of this project will focus on the Information and Communication Technology (ICT), and Business Information System (BIS) department regarding the lecturer attendance. The objective of this project is to study the current lecturer attendance process and to automate the process by developing the Pre-Integrated Time Management prototype. It is to ensure that the system satisfied the entire user which is lecturers, head programme and students; to eliminate the redundant stage in the current manual process and to make the business process faster and organize. The problem with the current process is there are no efficient ways to track lecturer attendance, keep attendance records, to notify the availability of the lecturer, to make an appointment as well as request and approve leave. Due to no efficient way to keep track and store lecturer attendance, it can lead to data redundancy and lost in the middle of the process. The methodology that selected for the system development is Iterative Model. For the data collection, a survey is conducted to get the students feedbacks through questionnaires and interviews. *'Integrated Time Management System'* is developed to substitute the existing manual process to computerized system.

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First and foremost, praise be upon to Allah s.w.t for his mercy given me the strength, skill, knowledge, patience and good health in producing this report and system. The greatest pleasure in writing such report is when it comes to acknowledge the efforts of many people whose name may not appear on the cover, but without their handwork, cooperation, support and understanding, producing this report would be impossible.

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LIST OF ABBREVIATION

BIS	Business Information and Technology
ICT	Information Communication and Technology
MySQL	My Structured Query Language
PC	Personal Computer
PHP	Personal Home Pages
UTP	Universiti Teknologi PETRONAS

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Manually tracking employee attendance is not just inefficient; it is a highly labor-intensive process that is error-prone and susceptible to rampant cheating by employees. For many businesses, automating the collection of employee attendance data which is when employees begin and end their shifts is still a manual process. Even businesses that have automated or computerized processes such as scheduling, inventory, purchasing, general ledger and payroll processing still use manual methods such as time cards or attendance sheets that are to collect time and attendance data. Most businesses that use either software or a payroll processing service to produce paychecks for their employees mistakenly believe they have computerized and automated the process of paying their employees.

The similar methods are being use by Universiti Teknologi Petronas (UTP) in which through the observation, is been identified that the entire department is currently using the conventional paper-base method of attendance records. This is referring to the lectures attendance records in which lectures clock in and out their attendance manually in one log book for each building. Thus, make it inconvenient for the head programme and the students to know the availability of the lecturers either they are in or out of the office.

In the aim of improving the efficiency and productivity in time and attendance management of the departments, Integrated Time Management System is being

developed. The system has being focusing for the Information and Communication Technology (ICT), and Business Information System (BIS) departments. The system would be an ideal solution or alternative that can overcome some of the occurring problems which will be discussed in the problem statement.

1.2 Problem Statement

1.2.1 Problem Identification

Through various observations conducted, it has being identified few occurring problems which are as follows:

- Lectures can modify the time of their attendance although they are coming late.

- The department struggle with ways to effectively manage and monitor lecturers' time and attendance and the associated tasks.

- Head Programme were having the difficulty tracking who was coming in late, leaving early and even who was present at any given time.

- Students need to go to the lecturer place in order to set an appointment and the problem occurs when the lecturers are not at their place.

1.2.2 Significance of The Project

Integrated Time Management System is a system to record staff attendance by having a database using MySQL. It will record the availability of the staff from time to time in order to acknowledge the head department and students without going to their place. Dreamweaver will be use to design the interface of the system and PHP will be use to integrated each elements from the system to make it function.

1.3 Objectives and Scope of Study

1.3.1 The Relevancy of the Project

After comprehensive understanding of the problem statement, I come up with several objectives in developing the Integrated Time Management system for ICT and BIS department. The objectives are as stated as below:

- To improve lecturer attendance system by having an automated system. This is a PC- Punch Attendance for the lecturer. The system does not require terminals, badges or time card where the lecturers are able to punch from a pc with an easy-to-use, customizable virtual time clock.

- The head programme can monitor their lecturer by viewing the system. A PIN code can be entered for tracking purposes. In this case, a computer can be used for tracking the comings and goings of the lectures. This can be available on all computers on a network so lecturer can log in and out on their own computers.

- Students can know the availability of the lecturer via the system. This may reduce their time to go to the lecturer room just to check for the lecturer.

- Convenient messaging system for the users to request time off or set up an appointment.

1.3.2 Feasibility of the Project within the Scope and Time Frame

The study will further enhance the knowledge and research of attendance records technology and time management. Through continuous enhancement of the technology, new findings could be developed in order to produce better quality of time management.

The author is confident that relevance of this project will suit ideally with the scope of study.

Preliminary research has been done during the semester break. The author is initiating ongoing research on the project topic and is identifying the requirements and system workflow of the collaboration with the supervisors as well as searching information through the internet.

CHAPTER 2

LITERATURE REVIEW AND THEORY

2.1 Defining integrated

Integrated is define as to make into a whole by bringing all parts together where integrated the new procedures into the work routine. In today's complex business environment, enterprises are realizing a strong need to integrate the many systems used to operate business activities. An integration framework composed of application-specific interfaces to create communication paths among any number of management applications, allowing them to exchange alerts, notifications, trouble and support data, all in near-real time [1].

2.2 Defining system

A system is part of the universe, with a limited extension in space and time. What is outside the frontier of the system, we call its environment. Stronger or more correlations exist between one part of the system and another, than between this part of the system and parts in the environment. A system can also be define as a group of interacting, interrelated, or interdependent elements that together form a complex whole. All the parts of a system are related to the same overall process, procedure, or structure, yet they are all different from one another and often perform completely different functions.

2.3 Brief description of Integrated System

"Integrated systems" refers to complex interactions across hardware and software at several levels of structure, and to semiconductor, electronics, and computer systems within the context of real-world applications [2]."

This definition of an Integrated System identifies characteristics arranged in the broad categories of Data Issues, Application Issues, Presentation Issues, and Operational Issues. A brief name of the characteristic is given, followed by a paragraph defining the characteristic. While the degree of integration is likely to vary from product to product, an ideal integrated system would have all of the characteristics which are: (1) Data Issues, (2) Application Issues, (3) Presentation Issues and (4) Operational Issues [3].

By definition, an integrated system should track all expenses and be able to report at any time the current, accurate status of any research account to the dollar, without the need of shadow systems. Research-account status-checking and report-generation should also be enhanced and made easier [4].

2.4 Brief description about Time and Attendance Management

Time management and goal-setting have said that this is a skill that people absolutely must learn if they desire to achieve great results. Time management is life management. It is the core skill around which everything that you do revolves around. It can be said that the quality of your life will be determined by the quality of your time management. No other skill will give you a better payoff in terms of rewards, happiness, effectiveness and the pleasure of knowing that you have the ability to achieve the goals that are important to you. Time management is a skill like typing or playing the piano and it can be developed over time. Time management is really the external demonstration of self-discipline in your life.

Time management is about planning. It is estimated that planning will give a 500% return on energy, that's 5 times your investment. We have to learn to be good planners. A plan is a road map that shows you the quickest route to your destination. [5]

2.4.1 The challenges of Time and Attendance Management

The most common reasons cited for upgrading to time-tracking software are to eliminate: (1) incidents of employee time theft, (2) the collection and calculations of time sheets/time cards, and other payroll preprocessing tasks, and (3) human errors in calculations.

- **Employee Time Theft**: According to the U.S. Chamber of Commerce, time theft costs American businesses billions of dollars each year, with estimates ranging between two and five percent of a company's employee earnings.
- **Demands on Time**: The APA reports that manual calculation alone of employee time requires five minutes of administrative time per card.
- **Human Error**: Calculation errors can occur at multiple levels and may result from misreading records, transposing numbers, or incorrectly entering digits.

2.4.2 The Capabilities and benefits of Time and Attendance Management

A comprehensive time-tracking software solution can deliver powerful benefits for a small business. Automated systems enable more efficient use of time by administrators and employees that can save thousands of dollars, by (1) reducing time and labor involved in processing time sheets, (2) increasing time for core clinical matters, (3) eliminating duplication of data entry, (3) increasing accuracy of data by preventing human errors during payroll preparation, (4) improving morale, (5) preventing pay disputes, (6) enforcing work schedules and (6) providing documentation to prove compliance with wage and hour laws.

2.4.3 Importance of Automated Employee Time and Attendance

The technology behind time and attendance applications varies, but regardless of what drives them, all outperform the outmoded time clock and manual time sheet methods by providing superior accuracy both for capturing employee hours and in the conversion of hours to wages. Other benefits reported include: overtime reductions, reduced administrative costs, more efficient scheduling, improved staff accountability, productivity and morale. [6]

Automated timekeeping begins with data collection, thus wide variety of data collection are being offers to meet the demands of nearly any workplace. It is a beneficial to automate the system where the system can completely eliminates the cumbersome paperwork and time consuming delays associated with processing manual time sheets. Instead, all timesheets, time off requests, notifications, and approvals are sent electronically, either through the system or by email.

2.5 Time and Attendance Management System

In today's highly competitive marketplace companies are faced with pressures to provide products and services with more efficiency and less cost, while continuing to improve quality. This demands management decisions based upon real-time, updated information, something a traditional time and attendance system just cannot handle. Thus, enforce the management revolution with the leading Time and Attendance System. A system where employees register their attendance from a "virtual" time clock program on their PC workstation, or a PC dedicated to this purpose. Employees can punch IN/OUT from their PC, eliminating the need for a hardware time clock. PC Punch allows punching from a central computer or the employee's own workstation. Reduce cabling and administration of swipe cards. Employees simply enter their ID and PIN numbers to punch IN or OUT, or select from a simple menu any of the functions available on a PC. The attendance information entered is directly linked to the Jupiter software. With PC Punch, no additional time clock hardware, cabling, or cards are

needed. Employees are able to punch from a PC with an easy-to-use, customizable virtual time clock program. Programmable features include setting the "function" buttons to perform level changes, earning/deduction entry, view last punch, and review total hours for the current pay period. The PC Punch software utilizes the employees' workstation PC as a data collection device or a dedicated PC may be used for employees to record their hours worked. Eliminates long lines at the time clock and the need for time clock and badges all together.

Flexible, scalable and powerful programs can be configured for operating as simple as capturing lecturers in and out punches via their own PC workstation. Thus with PC Punch, no additional time clock hardware, cabling, or cards are needed. Employees are able to punch from a PC with an easy-to-use, customizable virtual time clock program. Programmable features include setting the "function" buttons to perform level changes, earning/deduction entry, view last punch, and review total hours for the current pay period. ClocTrak turns your computer screen into a sophisticated employee time collection, editing and information retrieval system. At last, an electronic time clock/time sheet application for YOUR work environment. ClocTrak provides individual controls on what each employee can view and edit. Employees simply enter their ID number (and a PIN number for security if desired) to gain access to their personal time card, schedule and hours information. Time Cards can be generated as punches by employees are received, or filled with daily scheduled hours or daily scheduled start and stop times - permitting employees to make any minor edits, if necessary, prior to submission of their worked hours. Editing controls permit maximum flexibility (e.g., an employee can be permitted to change a punch time, but not create or delete a punch time). Clicking the Signed Off button becomes their electronic signature acknowledging their submitted hours as accurate - supervisors can easily identify which employees have submitted hours and which have not, eliminating missed time sheets. A second level of electronic sign off permits supervisors to electronically sign off (approve hours for payroll) on employees they are responsible for. [7]

CHAPTER 3

METHODOLOGY / PROJECT WORK

3.1 Procedure Identification

Methodology is the steps taken in undergoing the research and project work. As for this project a system development techniques will be used. This is one of the ways to make the whole project more manageable and easy to understand that there is system development process that can be followed. Figure 3.1 shows a schematic of the development process. By following each step in the process, process of gathering and organize critical information can be done more effectively.

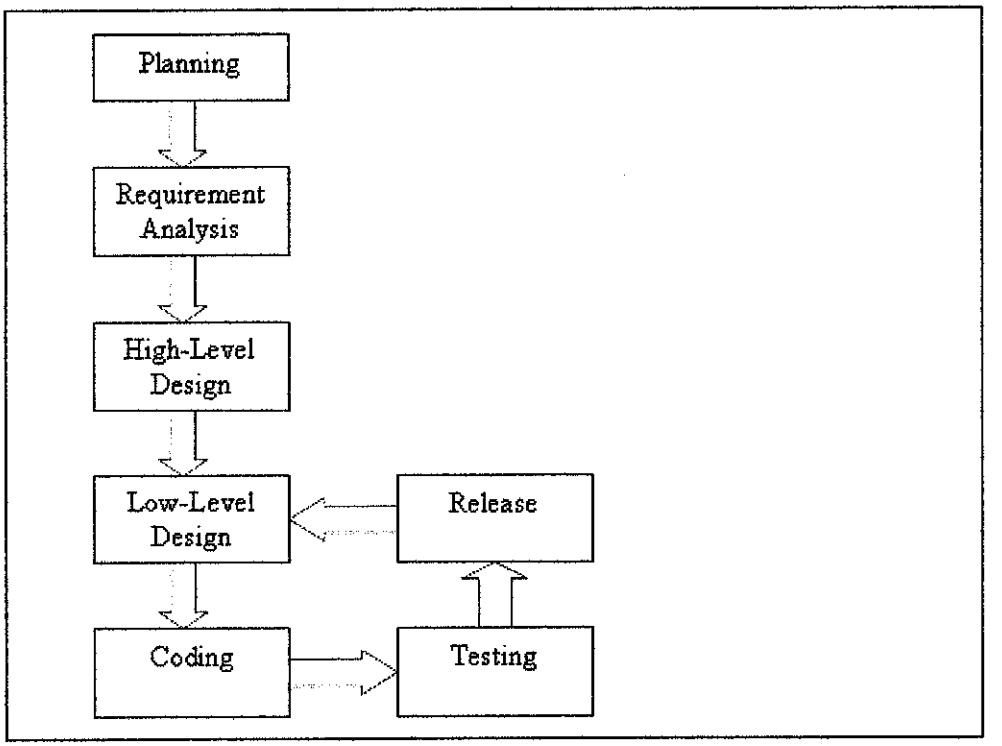

Figure 3.1: Iterative Model

3.2 Problem Definition

The problem definition step begins when task has been assigned with the topic which is Integrated Time Management System that going to be use by Lecturer, Head Programme and Student in which have their on specification system functions. The discussion will be focused on the method used in development of the system. Iterative Model consists of (i) Planning, (ii) Requirement Analysis, (iii) High-Level Design, (iv) Low-Level Design, (v) Coding, (vi) Testing and (vii) Release. Each of the phases has its own role and usage on how the author can relate it with the development of system.

3.2.1 Planning

The author conducts planning for the project such as Gantt chart that represented in APPENDIX A and identify the task for the system development.

3.2.2 Requirement Analysis

This is the most important phase in software development project; it is because if the requirements are not gathered properly and analyzed clearly, it can effect on the rest of the project. So in order to get better understanding of the current process, the author should take more time on this phase to do research on the existing business process.

For the data gathering, the author conducts Questionnaires and Interviews among two groups of people to get their feedback and comment on the current process and the new implement system. The groups that involved in the survey are: (1) Student (2) Lecturer and (3) Head programme. These groups only focusing for those that are from an Information Communication Technology (ICT) and Business Information Systems (BIS) programme.

3.2.3 Questionnaires

The questionnaires were prepared using simple and direct language to avoid confusion and ambiguity among the respondents. The author prepared a set of question to be given to student under ICT and BIS programme to comments regarding to the current system that being use to get the information and the availability of the lecturer as well as the head programme. The author also conducted a survey among the lecturer regarding to their attendance record method that being currently used and their comment about automate the attendance record system. Furthermore, the question is also being given to the head program to get their respond about the attendance record system and the important to monitor their staffs in which that deal with the entire process in order to get the whole view from the students and lecturer side regarding the manual process. The questionnaires will be able to identify the most critical problem faced by the manual process.

3.2.4 Interviews

For this phase, the author conducts interview with the person in charge in attendance record of the lecturer to have them explain the current process, feedback on each of the process. The author should pay close attention to the description of the process and its advantages and drawbacks. The purpose of the interview is to identify the current business process. This enabled the author to eliminate unnecessary flow in the process and automate the manual process. From interviewing, the author can obtain information faster and accurately.

3.2.5 High-Level Design

This phase is used to hash out low-level implementation details that relevant to which planned in the high level design. The implementation details should be thorough enough to avoid any problem while constructing the coding later.

In this phase, the author use object modeling to make the transition from the low level design to the coding of the implementation as smooth and easy as possible. The author uses the requirement analysis document to discover the classes that need to be hashed out and implemented during this phase.

Use Cases is used, which contain the descriptions of processes and real life cases of system usage. The scenarios and Use Cases help ensure that the final system meets the requirements. The Use Cases, scenarios and associated diagram help the author to identify the classes in the system and how they are to interact and integrate with each other.

3.2.6 Low-Level Design

After all the requirements have been gathered, analyzed and reviewed, design issues can be assimilated. Design issues that are brought up at this phase might be where to place certain business rules in objects whether on client or server, the delivery mechanism such as web forms, database architecture and so forth.

In this phase, the author design prototype that involves working out an interface. The purpose of the prototype will be to hash out the details with regard to the visual representation of the system. It is recommended to do prototype early so that little time wasted doing a full implementation of something that does not meet the user's expectations. The design of the storyboard is based on Usability, User Friendliness, Intuitiveness, Workflow and Consistency.

3.2.7 Coding

Coding phase involves with programming codes. The author should hash out all details with regard to requirements and design before getting on the codes. In this phase, the author must make sure that the coding phase started prematurely, any design issue will

affect coding phase and have to rewrite the codes. Selection of what type of programming language to be used is very important, this is to avoid time wasted.

This phase will involve a greater time spent to construct the working prototype. Firstly the author will start on creating the database for *'Integrated Time Management System'*. The database will be created using MySQL and integrated with PHP. The author has to setup Apache as a server to store all the pages and run the PHP codes. The author has to test the codes repetitively to ensure that the coding work effectively and efficiently.

3.2.8 Testing

Testing is crucial to any successful project. The purpose of this approach is to ensure that each release is as bug-free as possible. For this phase, it is a good idea to have somebody else test the code. It is because the author will likely to follow the same pattern with regard to a testing plan unlike someone else that will most likely to do things differently than the author would. In this scenario, UTP students that will undergo for their training will likely be the suitable person to test the system.
There are four basic testing:

(i) Unit Testing

- The author should perform this during coding to ensure that portion of the coding running correctly.
- The author does regularly during the end of the coding phase to ensure that they are on the right track.

(ii) Integration Testing

- The author will perform this testing after most of the coding is done. The purpose is to ensure that the program integrate with the rest of the program.

(iii) System Testing

- The author will test what has already been tested once.
- This testing encompasses the entire system.

(iv) Acceptance Testing

- The users of the system (UTP students) perform this to ensure that the end-product meets their requirements and expectations.

3.2.9 Release

In this phase, it provide concrete points for ongoing development so that user can provide feedback that will help the author to refine the next release until it matches exactly or comes close matching their expectation. If the author didn't meet the user requirements and expectations, the author should design back the Use Cases and associated diagrams in Low-Level Design until meet requirements.

3.3 System Requirement

In developing this project tools are used to ensure it wills successfully complete. It being identify that there are four (4) elements that are going to be used in developing the system that are (1) tools for development, (2) server, (3) database and (4) client. The brief description regarding to the system requirement are state as follows:

3.3.1 Tools for Development

- **Personal Home Pages (PHP)**
  - Server side scripting and programming language that will be used in conducting the system.

- **Macromedia Dreamweaver MX**
  - This web development software will be used to create the user interface for the system. It has more features compare to other software such as HTML Kit and FrontPage and easy to integrate with PHP.

- **Macromedia Flash MX**
  - Software that gives author the power to produce visually compelling drawings, smooth animations and complete interactivity.

- **Adobe Photoshop CS**
  - Graphic editor for image and graphic processing.
  - To make the header interesting and interactive.

3.2.1 Server

- **Apache Server**
  - The server that will be used in order to make the system online.
  - Apache is the web server component of the popular web server application called LAMP (Linux, Apache, MySQL and PHP).

3.2.2 Database

- **MySQL**
  - MySQL is popular for web applications like MediaWiki and PHP-Nuke and acts as the database component of the LAMP and WAMP platforms. (Linux/Windows-Apache-MySQL-PHP).
  - Its popularity as a web application is closely tied to the

popularity of PHP, which is often combined with MySQL

3.2.3 Client (minimum requirements)

- Pentium – class processor
- Microsoft Window 98 Second Edition, Windows Millennium Edition, Windows 2000, Windows XP Professional or Home Edition.
- 64MB of RAM.
- 30MB of available hard-disk space
- Web browser support.
  - Internet Explorer
  - Opera Browser
  - Avant Browser

CHAPTER 4

RESULTS AND DISCUSSION

4.1 Introduction

This chapter will conclude all the findings and research that has been done within the time frame given from the starting of the project. Most of the findings were gathered through the reference books that related to attendance record and online system and also Internet. These two types of findings have given a great input and information for the implementation of the project.

4.2 Requirement Analysis

Based on the responses that I have gathered through questionnaires and interviews, an analysis had been done in order to know what the overview results from both of the discussion are. The questionnaires have been distributed to a group of lecturer and student that are under BIS and ICT programme, **the respondent group consists of 10 people for each group**. The sample of Questionnaires is represented in APPENDIX B for lecturer and APPENDIX C for student. While in Interview section, the author manages to interview one staff that on duty on that day to help with the things that needs to knows about the application process for internship placement. The sample of Interview Questions is represented in APPENDIX D.

4.2.1 Result – Questionnaires for Lecturers

From the pie chart below, 60% of the respondent preferred to punch their attendance through online application compared to the current manual process. Most of the reason stated by the responded stated that people nowadays preferred doing things online rather than manually. While the other 40% respondents preferred to register manually stated the reason that they like to deal directly to the manual process rather than had to interact through the system. Apart from that, the internet connection in UTP also the main issue why they preferred to do manually compared to online.

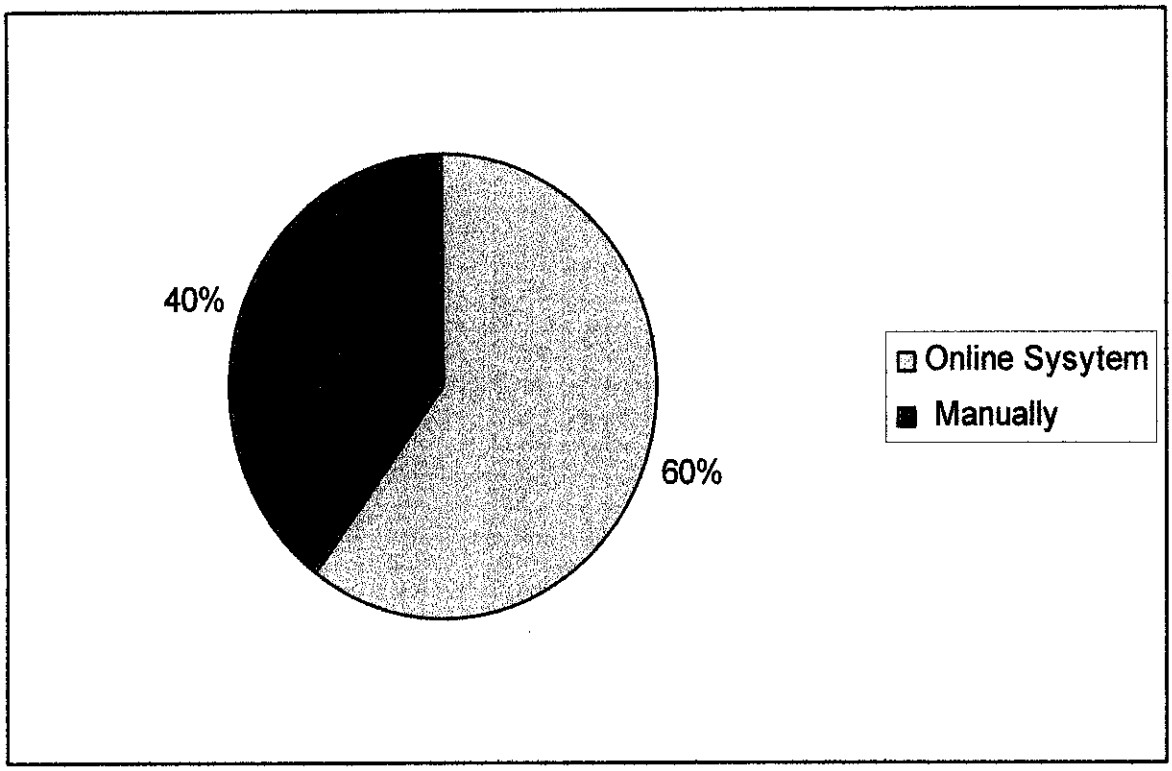

Figure 4.1, Pie Chart: Lecturers Feedback on their Preferences to Punch Attendance

For the next question, the respondents were asked to rank their satisfaction for the current manual process. 20% answered slightly dissatisfied. 50% answered dissatisfied and the other 30% answered satisfied. From the analysis, mostly the respondents answered dissatisfied because the manual process had a certain problems such as late reply to update the leave request approval from the head programme.

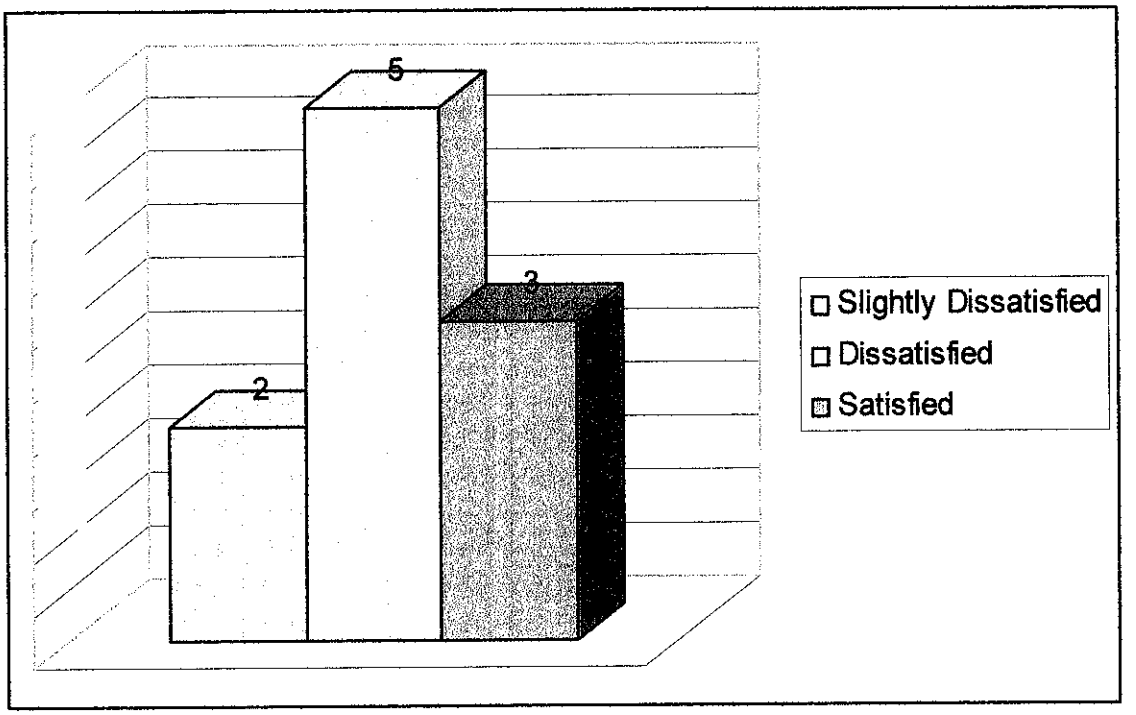

Figure 4.2, Bar Chart: Lecturers Ranking of Satisfaction on the Current Manual Process

Majority of the respondents think that the current process should be automated because it is easy and more organize compared to manually done. Through online system, the respondents can just access the web through their rooms.

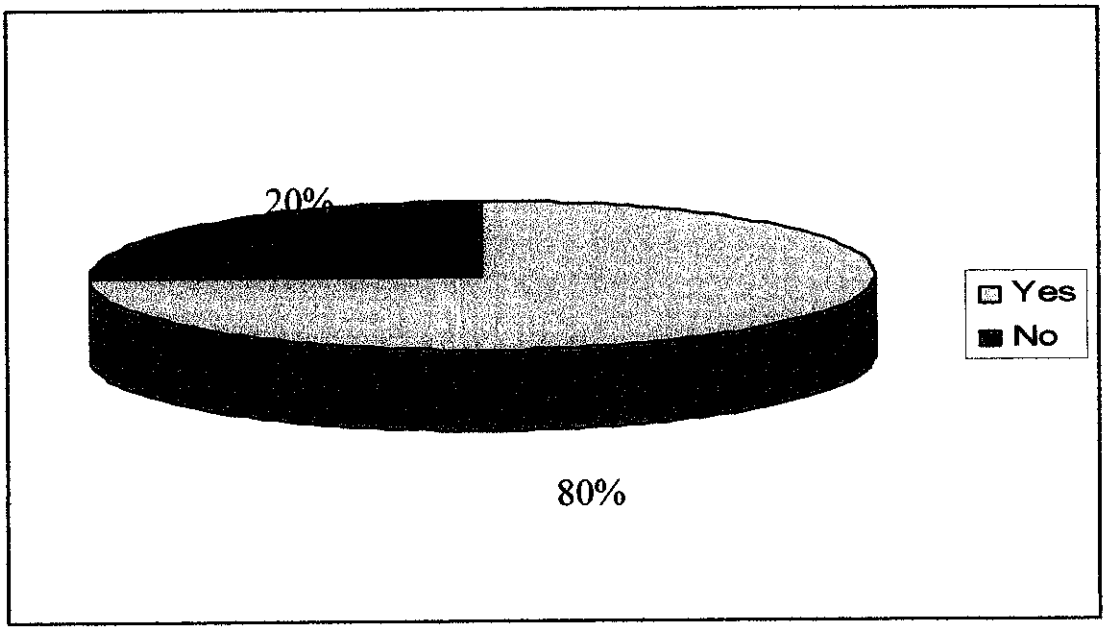

Figure 4.3, Pie Chart: Lecturers Feedbacks on the Automation of the Current Process

The respondents were asked to rank their satisfaction toward the other lecturers that deals with the current time management method. Half of the respondents ticked 2(middle). From the analysis shows that the respondents neither satisfied nor dissatisfied with the lecturer.

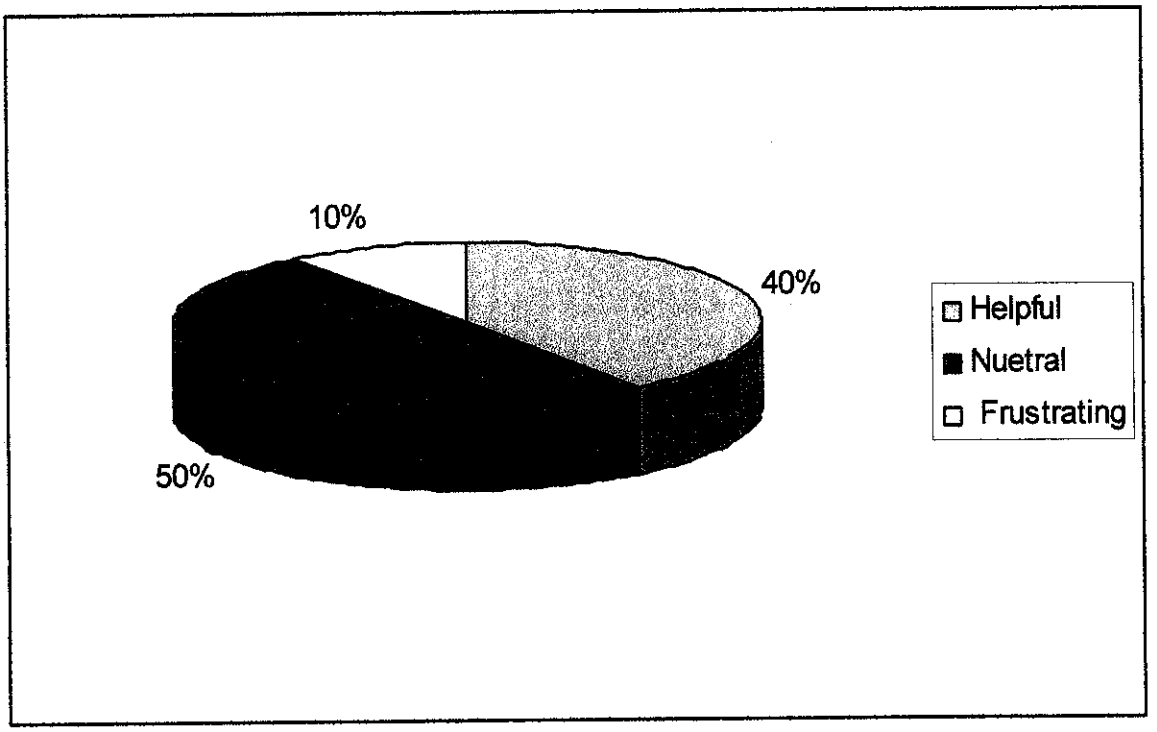

Figure 4.4, Bar Chart: Lecturers Satisfaction toward other Lecturer

Last question asked the respondents to rate the difficulty in getting their task done during the process. The task divided into *class schedule, on leave, outstation, deals with students, confirm appointment and others*. Majority of the respondents ranked *'class schedule'* as the highest difficulty to get their task done during the process; while the lowest ranking is *'deals with students'*. Analysis for the highest rank showed that it is very hard to know reason for the other lecturer not coming to work. They are not sure that the lecturer is on leave for holiday or are outstation for educational purposes. As for the lowest rank, analysis showed that it is easy and fast to deal with students as when the students can only come to their office.

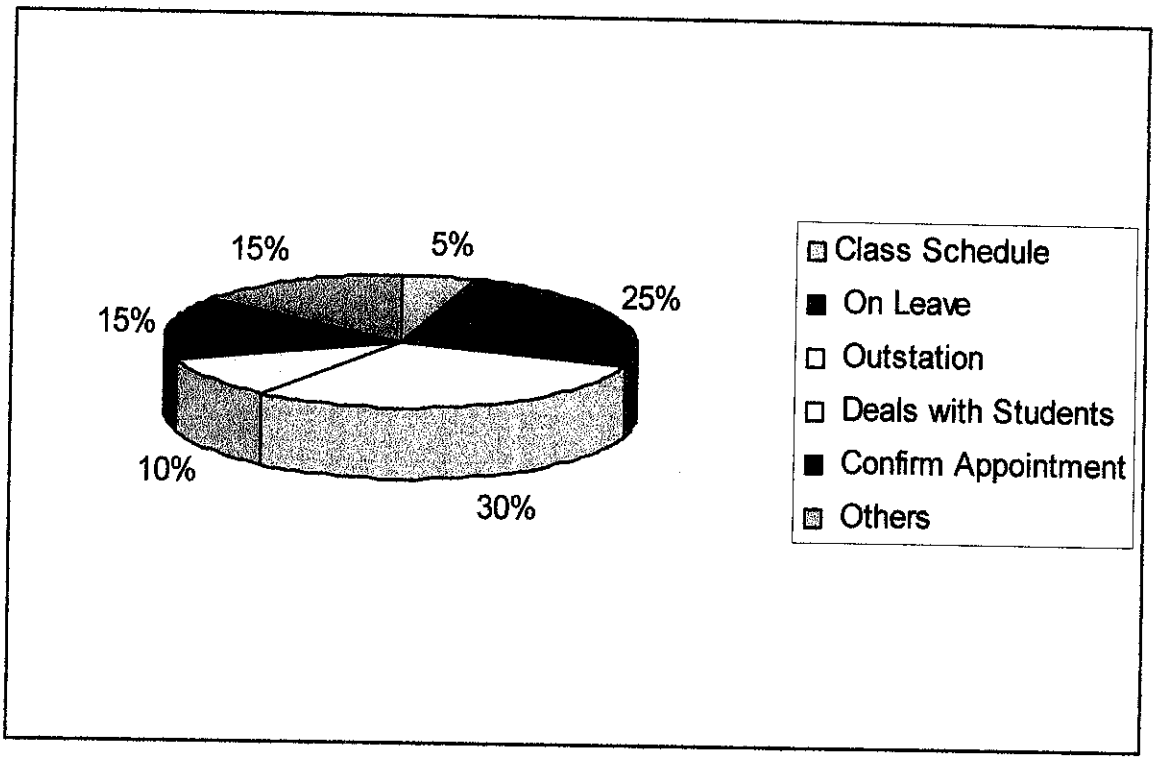

Figure 4.5, Pie Chart: Rate of Difficulty in Getting the Lecturer Particular Availability

4.2.2 Result – Questionnaires for Students

From the pie chart below, 80% of the respondents are agreed to have an online application compared to the current manual process to know lecturer availability. Most of the reasons stated by the respondents are because online systems give them opportunities to know their lecturer availability from their room in which can save their time. Besides, they can set an appointment with their lecturer easily. While the other 20% respondents preferred to register manually stated the reason that they like to deal directly to the manual process rather than had to interact through the system. Apart from that, the internet connection in UTP also the main issue why they preferred to do manually compared to online.

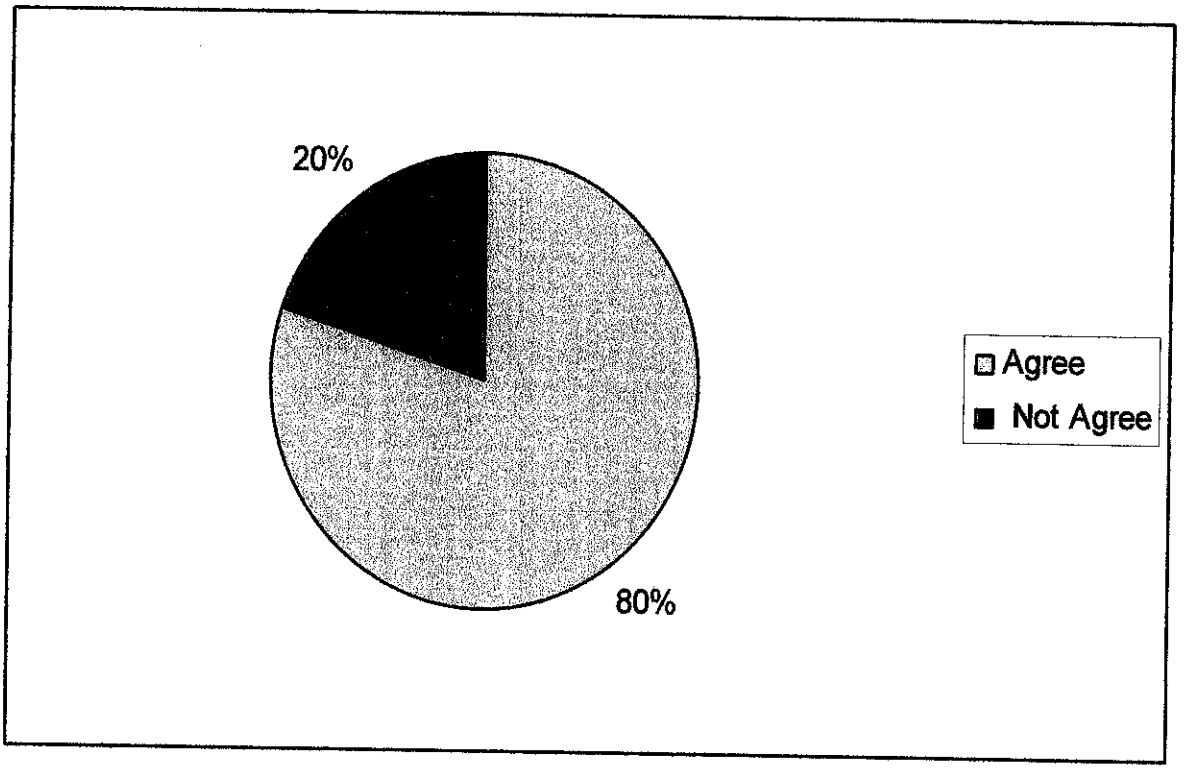

Figure 4.6, Pie Chart: Students Feedback of their Acceptance to have an Online System

For the next question, the respondents were asked to rank their satisfaction for the current manual process. 20% answered slightly dissatisfied. 70% answered dissatisfied and the other 10% answered satisfied. From the analysis, mostly the respondents answered dissatisfied because the manual process had a certain problems such as late reply to update the leave request approval from the head programme.

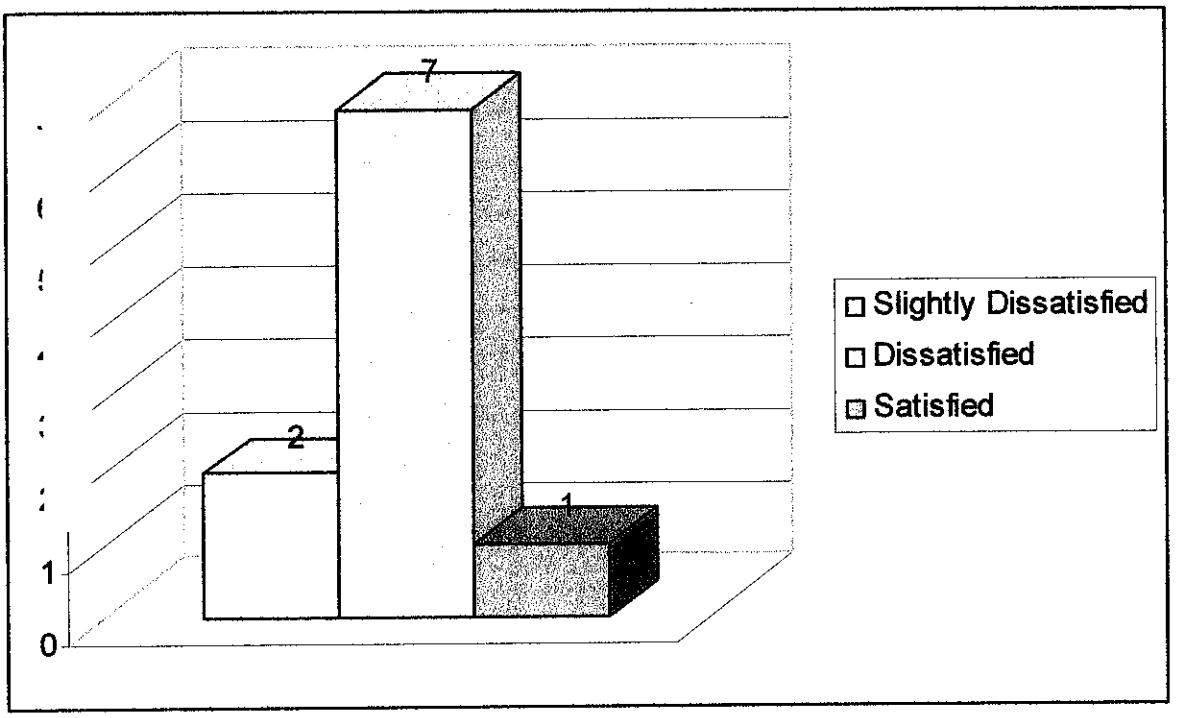

Figure 4.7, Bar Chart: Students Ranking of Satisfaction on the Current Manual Process

Majority of the respondents think that the current process should be automated because it is easy and more organize compared to manually done. Through online system, the respondents can just access the web through their rooms.

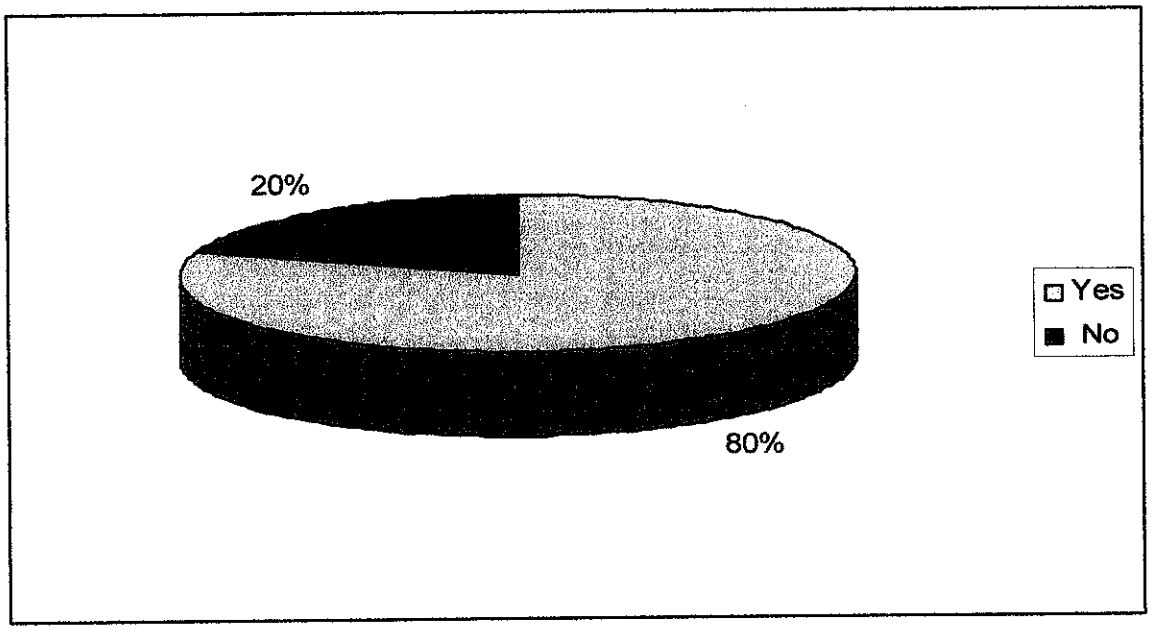

Figure 4.8, Pie Chart: Students Feedbacks on the Automation of the Current Process

4.2.3 Discussion – Interviews

I have gained a lot of information from the interview session with administration assistance at the ICT department. The staff really gives full cooperation in helping me to get the necessary information needed. The staff agreed if online system is implemented to substitute the current manual process. It can really help the staff to reduce time and cost. Through online system, give the easiness for the lecturer to punch their attendance through their own workstation.

The staff also stated that the entire department is currently using the conventional paper-base method of attendance records. This is referring to the lectures attendance records in which lectures clock in and out their attendance manually in one log book for each building. Thus, make it inconvenient for the head programme and the students to know the availability of the lecturers either they are in or out of the office.

By implementing the system, it can ease their works and save time. Besides, it can reduce the space to place the paper-based lecturer attendance records and to avoid from the data being loss and misplace. In the future, this system can be enhanced or added up more features so that it could fulfill the needs of the lecturers and students as well.

4.3 System Modeling for High Level Design

4.3.1 Use Case Diagram

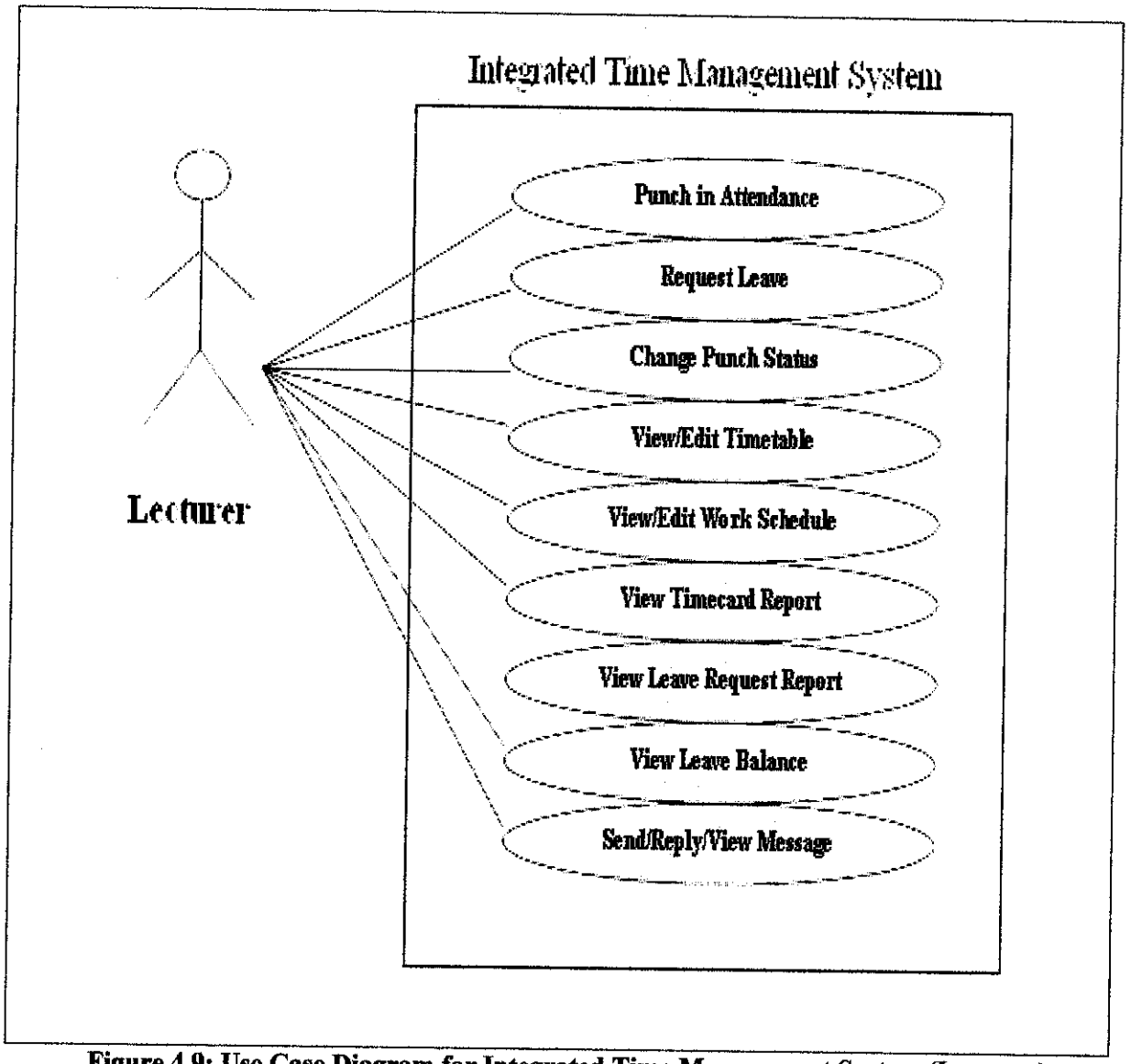

Figure 4.9: Use Case Diagram for Integrated Time Management System (Lecturer)

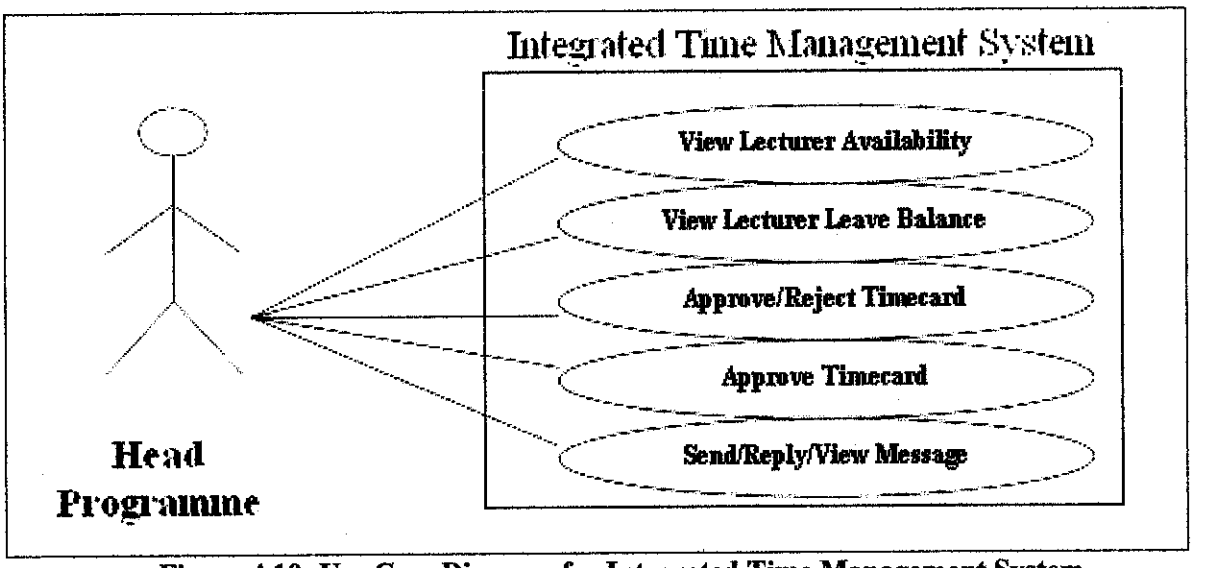

Figure 4.10: Use Case Diagram for Integrated Time Management System (Head Programme)

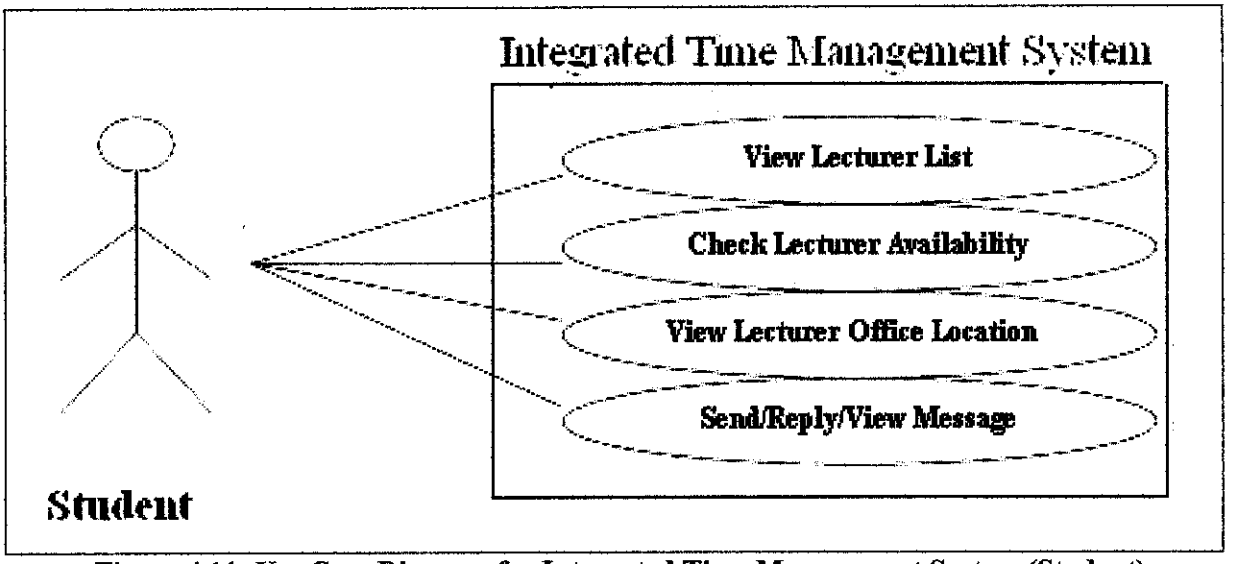

Figure 4.11: Use Case Diagram for Integrated Time Management System (Student)

4.3.1.1 Use Case Analysis

Use Case defines basic business process the system needs to handle. The actors represent the function of a system, which the system must support from the user's point of view. Figure 4.10, Figure 4.11 and Figure 4.12 illustrates the Use Case Diagram for 'Integrated Time Management System'. The actors that involve in the process are

lecturer, Head Programme and Student which consists of 18 use cases involved in the entire system.

Lecturer:

1. Punch in Attendance
    - Lecturer can easily punch in their attendance at their own workplace when they reach to their office via the system using their own ID.
2. Request Leave
    - Lecturer can request leave to their head programme through the system and can get the request status or approval faster.
3. Change Punch Status
    - Lecturer can change their punch status regarding to their availability either in the office or out from office.
4. View Timetable
    - Provide the function where lecturers are available to check their attendance time when ever needed.
5. View and Edit Work Schedule
    - Easy to view and modify their work schedule.
6. View Timecard Report
    - Lecturer is available to view their timecard at any time they wish to view.
7. View Leave Request Report
    - Lecturer can view their leave request report where to give information on their leave particular.
8. View Leave Balance
    - Lecturer is able to view their leave balance so that it can make the Information provided to manage and plan for their holiday and other particular regarding to the time management.
9. Send , Reply and View Message
    - Availability to sent, reply and view email via the system where not

require additional email address.

- Easy for the student to set an appointment with the other lecturer, head
  programme and the student.

Head Programme:

10. View Lecturer Availability
    - Head Programme can be able to view the lecturer availability by login the system using their ID and password.
11. View Lecturer Leave Balance
    - Provided the head programme with the lecturer's leave balance information so that the head programme will know the available balance for the lecturer as the reference either to approve or reject the leave request.
12. Approve or Reject Request Leave
    - Able to approve or reject request leave that being requested by the lecturer through the system.
13. Approve Timecard
    - Head programme will be able to approve the lecturer time card via the system.
14. Send , Reply and View Message
    - Availability to sent, reply and view email via the system where not require additional email address.
    - Easy for the student to set an appointment with the lecturer and the student.

Student:

15. View Lecturer List
    - Student is available to view lecturer list which stated the entire lecturer name that are under BIS and ICT Programme. Thus, easy for the student to know the real name of their lecturer regarding to their respective course teach.
16. Check Lecturer Availability
    - By providing the functionality of the lecturer availability, student can know either their lecturer is in their workplace or not without they have to go to the lecturer office. Thus, reduce time in knowing lecturer availability.
17. View Lecturer Office Location
    - The student can know the actual location of their lecturer so that they are no more confuse their lecturer location is either at building one or at building 2.
18. Send, Reply and View Message
    - Availability to sent, reply and view email via the system where not require additional email address.
    - Easy for the student to set an appointment with their lecturer.

4.4 System Development for Low Level Design

'Integrated Time Management System' consists of a numbers of pages. The system is divided into three parts which are (1) Lecturer Page, (2) Head Programme Page and (3) Student Page. In the Lecturer Page, it consists of Main Page, Punches Status Page, Change Password Page, Request Leave Page, ITMS Message Page, Instruction for Request leave Page, Existing Leave Request Page, Leave Request Balance Page, Verify Timecard Page, Timecard Report Page and Messaging Page.

4.4.1 Storyboard

Storyboard is divided into three parts (1) Lecturer, (2) Head Programme and (3) Student. Both of the design is based on: - (Storyboard is represented in APPENDIX E.)

- Usability
  - The key functional in the system should be easily accessible and obvious.
  - If the user had problem to understand the system, there is a help menu to help to assist them through out the system.
- User friendliness
  - This system is design to make the user's job easy, quickly and efficiently.
  - The button, linking and menu are understandable and easy to navigate.
- Intuitiveness
  - I have eliminated certain manual steps and combine task into one simplified process.
- Workflow
  - Implement logical workflow process that is easy to go from one step to the next.
  - Figure 4.12, Figure 4.13 and 4.14 illustrate the flow for Lecturer, Head Programme and Student. The entire of the flow chart showed the functionality of the system.
- Consistency
  - Keep forms, menus and other interface elements consistent throughout the entire system.
  - The design of the template for every page is the same. It will not confuse the user as the background is standardized to all pages. It is consistent through out the pages and the arrangement is according to HCI concept.

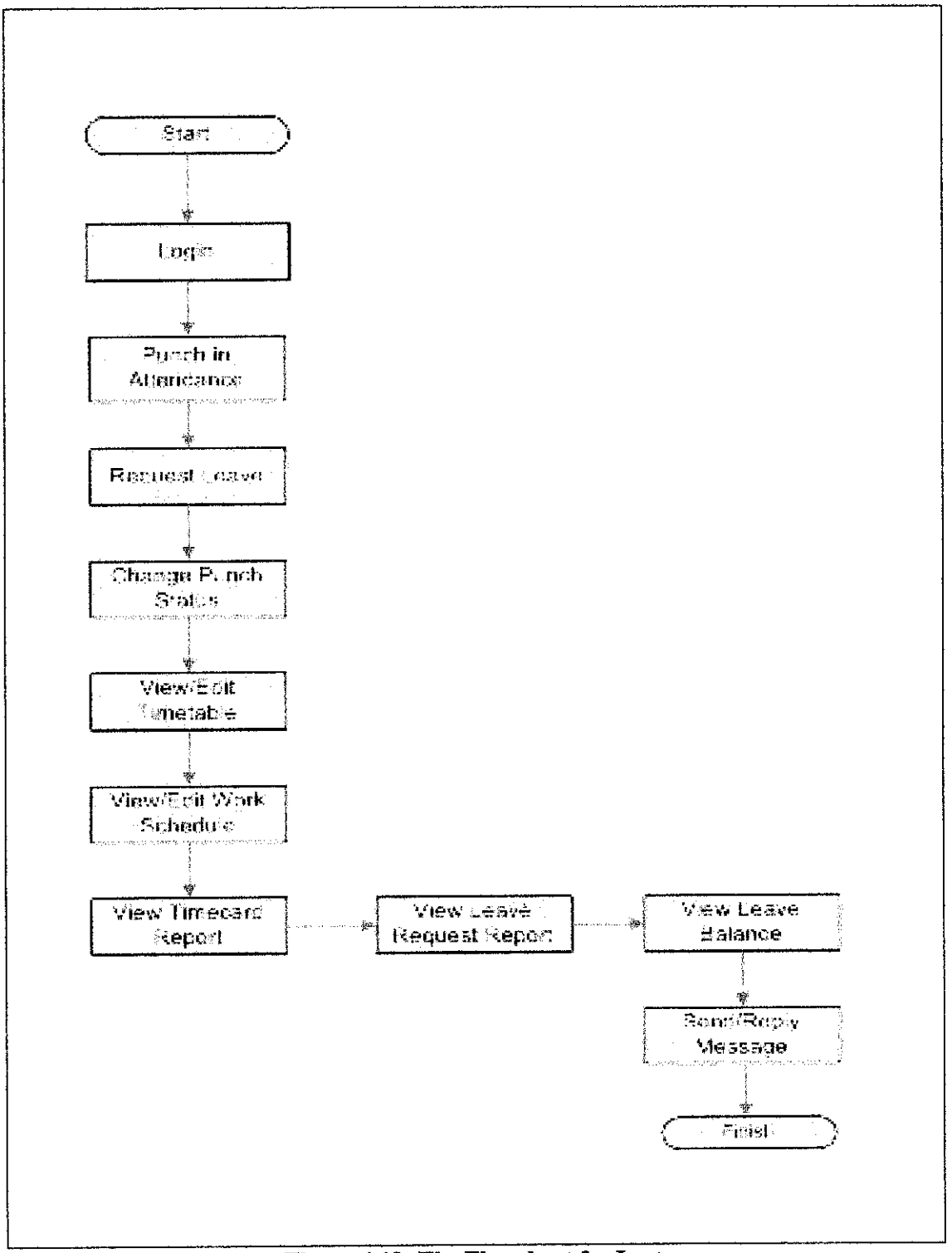

Figure 4.12: The Flowchart for Lecturer

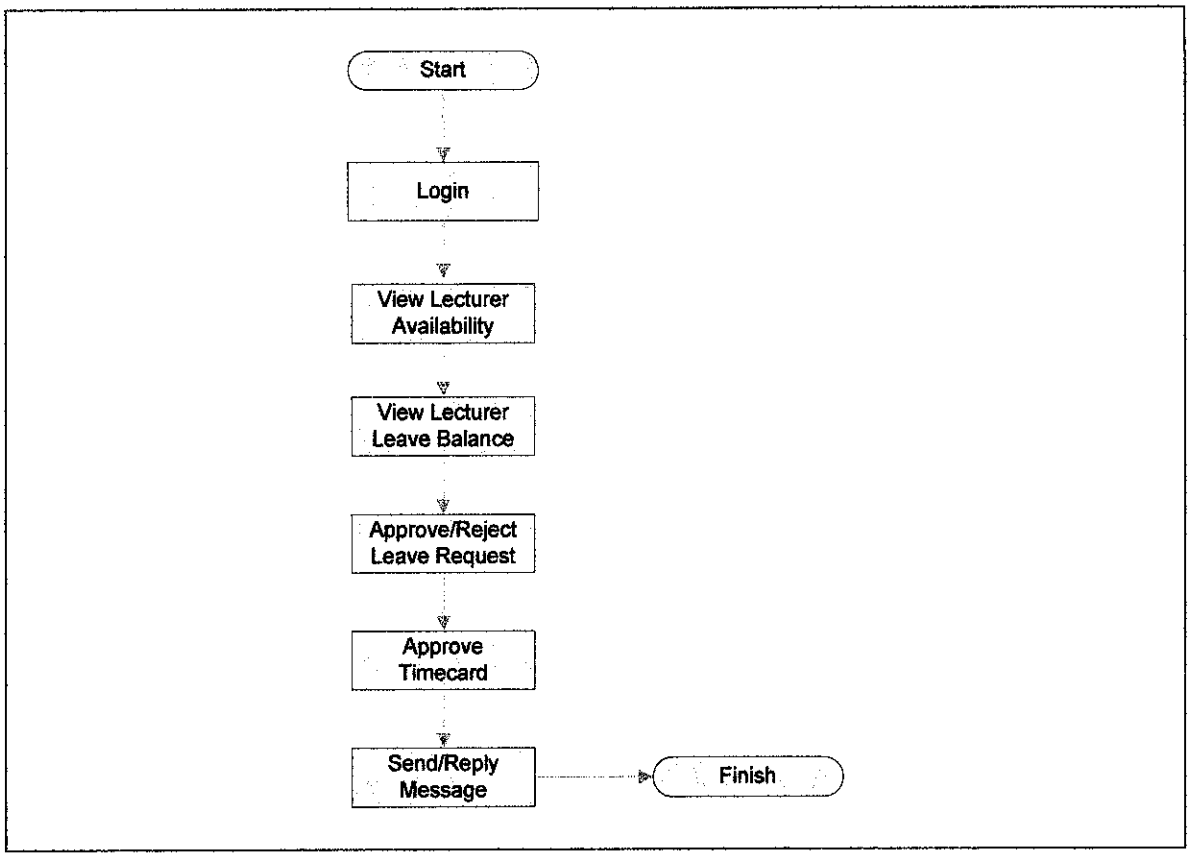

Figure 4.13: The Flowchart for Head Programme

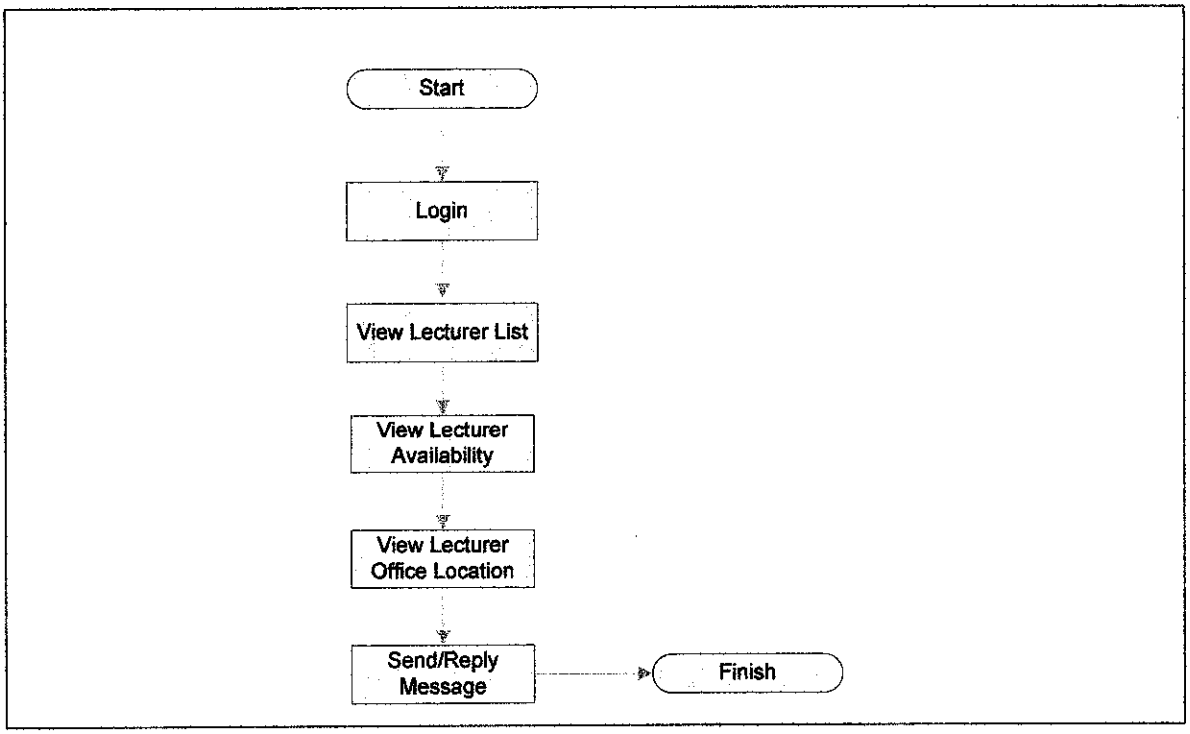

Figure 4.14: The Flowchart for Student

4.4.1 Prototyping

In prototyping, the author has designed simple and attractive pages. All pages have the same template, appearance, font, colors and other properties. The use of Cascading Style Sheet, CSS in all the pages can save time because the appearance, colors and font can easily be changed in the future, instead of changes on every page.

To see the result of prototyping, please refer to APPENDIX F. These snapshots provide the interface design that involve in the workflow process between the lecturer, head programme as well as the student.

4.5 Testing

This phase is to test the performance of the system, whether it meets the requirement or not. The test will be based on certain criteria. If there is a problem during the test, I had to study back the use case diagram and altered the part that create problem.

4.5.1 Acceptance Testing

This is the final stage in the testing process before the system is accepted for operational use. In this phase, its reveal errors and omissions in the system requirements definition because the real data exercise the system in different ways from the test data. The testing Acceptance Testing between lecturer, head programme and the student are important to gather the feedback from the interface that had been developed. The Accepting Testing is based on the user interface, effectiveness and efficiency, user friendly or navigation and functionality of each of the task.

4.6 Security Issues

One of the important issues that needs to be considered when developing a system. The three Security Issues that the user discussed are stated below.

4.6.1 User Authentication

In order to log in to the system, the user has to key in their ID and Password. If the user enters the wrong combination of ID and Password, prompt messages will indicate them to re-enter their ID and Password. Only authorized user can log in to this system.

4.6.2 Authorization

The system is divided into three parts (1) Lecturer (2) Student and (3) Administrator. Different user can only view their own page and they cannot view the other user pages.

4.6.3 Data Security and Integrity

I has designed all the field contain error checking. This is to make sure that important field is not left out.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Relevancy to the Objectives

It is concluded that this study will further enhance the knowledge in order to produced efficient system in term of their performance. Through continuous enhancement of this technology, new findings could be developed in order to produce better quality of the department in order to increase its productivity and efficiency especially in the specific area of study.

'Integrated Time Management System' is specially developed to ease the communication between lecturer, head programme and student of BIS and ICT programme. It is hope that by using this system, it will help to automate the task in enhancing the performance of job process by providing paperless environment. The functions consist in the system are easy to navigate and user friendly, it will make the users job easier.

Successful development of the system will eliminate the current manual process whereby head programme can directly monitor their staffs' attendance status. Furthermore, this system can improve the efficiency and effectiveness to handle the communication process among the users within the system. Through this system, it is easy to track the lecturer's attendance and their status. Apart from that, lecturers can request leave without having to do it manually. With the new system, hopefully it can reduce the cost and time as most of the processes now are automated.

5.2 Suggested Future Work for Expansion and Continuation

There are several suggestion and recommendations that can be done to this project and the prototype, so that it can be expended in the future to produce more reliable and practical system.

i) In the future, the author should consider the high performance database with high capabilities to support the processing of lecturers and information. Because of the increasing of student from time to time, it is recommended to use Oracle that can support larger capacity of database.

ii) There should be one mechanism to ensure that the through this system, Application form can be send directly to the host company for approval instead of sending mail or letter.

iii) To integrate this system in the E- Learning Web Page. It is to avoid overhead cost maintaining the system.

iv) It is recommended that this system can access through Online and LAN as well. It is to ease the student if the internet in UTP is down.

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APPENDIX A: PROJECT TIMELINE / GANTT CHART

Shahida Binti Ahmad

Gantt Chart for the One Semester Final Year Project (Information System)

NAME: SHAHIDA BINTI AHMAD **ID NUMBER: 3026**

No.	Detail/Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Selection of Project Topic - Topic assigned to student	■														
2	Preliminary Research -Introduction -Objective -List of reference/literature -Project planning		■	■												
3	Submission of Preliminary Report			●												
4	Project Work -List of Reference/Literature -Prepare Interface & Coding				■	■	■	■	■							
5	Submission of progress Report									●						
6	Project Work Continue -Work on the coding									■	■	■	■	■		
7	Submission of Dissertation Final Draft														●	
8	Oral Presentation															●

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APPENDIX B: QUESTIONNAIRES (Lecturer)

Shahida Binti Ahmad

(This questionnaire will act as an evaluation form on the websites that will be tested as part of the fulfillment on UTP Final Year Project. Your cooperation is highly appreciated. Thank You.)

1. Do you prefer punch your attendance through: (Please tick either one and state why)
   a) Integrated Time Management System ____
   b) Manually ____

Reason:_____

_____

_____

2. How would you rate your satisfaction on the current manual method?

Strongly Dissatisfied	Dissatisfied	Neither Satisfied nor Dissatisfied	Satisfied	Strongly Satisfied
☐	☐	☐	☐	☐

_____

3. Do you think that the current process should be automated to fully online system? (Please tick either one and state why)
   a) Yes ____
   b) No ____

Reason:_____

_____

_____

4. Please tick your satisfaction toward other lecturer that deals with the current time management method.

Helpful ___ ___ ___ Frustrating

1 2 3

---

5. Please rate your difficulty (1-5) in getting the lecturer particular availability.

a) Class Schedule ____
b) On Leave ____
c) Outstation ____
d) Deal with student ____
e) Confirm appointment ____
f) Other(s)_____

_____

_____

_____

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APPENDIX C: QUESTIONNAIRES (Student)

Shahida Binti Ahmad

(This questionnaire will act as an evaluation form on the websites that will be tested as part of the fulfillment on UTP Final Year Project. Your cooperation is highly appreciated. Thank You.)

1. Do you agree to have an online system to check lecturer availability? (Please tick either one and state why)

a) Agree ____

b) Not Agree ____

Reason:_____

_____

_____

2. How would you rate your satisfaction on the current manual method?

Strongly Dissatisfied	Dissatisfied	Neither Satisfied nor Dissatisfied	Satisfied	Strongly Satisfied
☐	☐	☐	☐	☐

_____

3. Do you think that the current process should be automated to fully online system? (Please tick either one and state why)

a) Yes ____

b) No ____

Reason:_____

_____

_____

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APPENDIX D: SAMPLE OF INTERVIEW QUESTIONS (Staff)

Shahida Binti Ahmad

(This questionnaire will act as an evaluation form on the websites that will be tested as part of the fulfillment on UTP Final Year Project. Your cooperation is highly appreciated. Thank You.)

1. How could Integrated Time Management System help lecturer in their work?

2. What will make the difference if the proposed Online System is implemented compared to manual process?

3. Please comment on how to improve the current process through the proposed Online System.

Reason:_____

_____

_____

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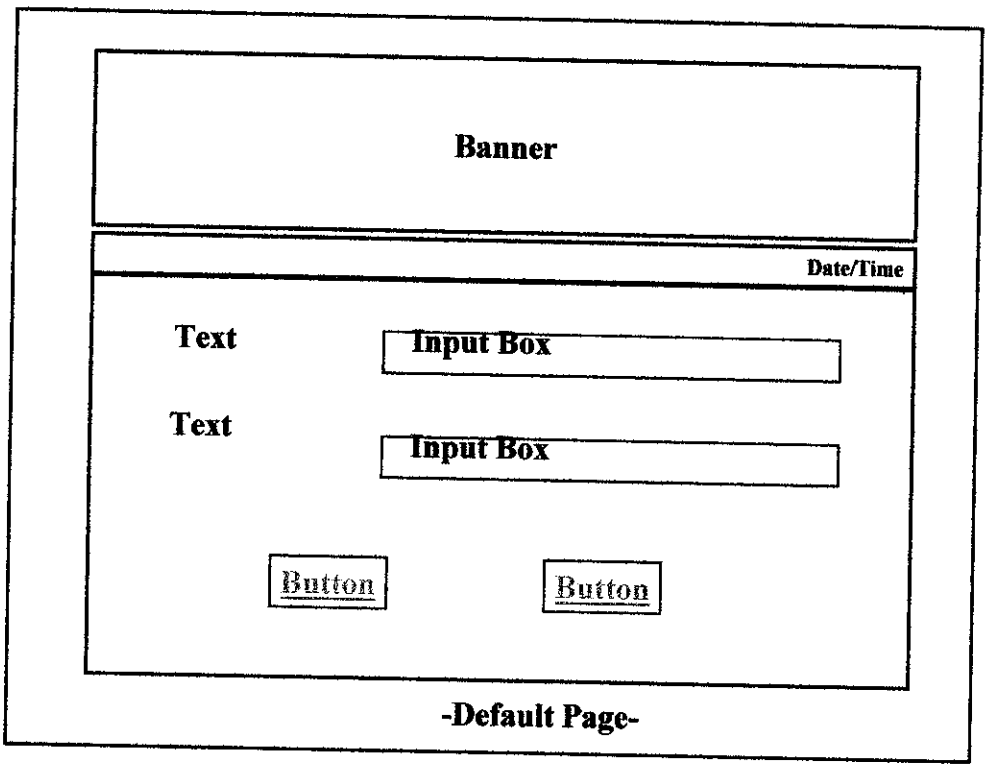
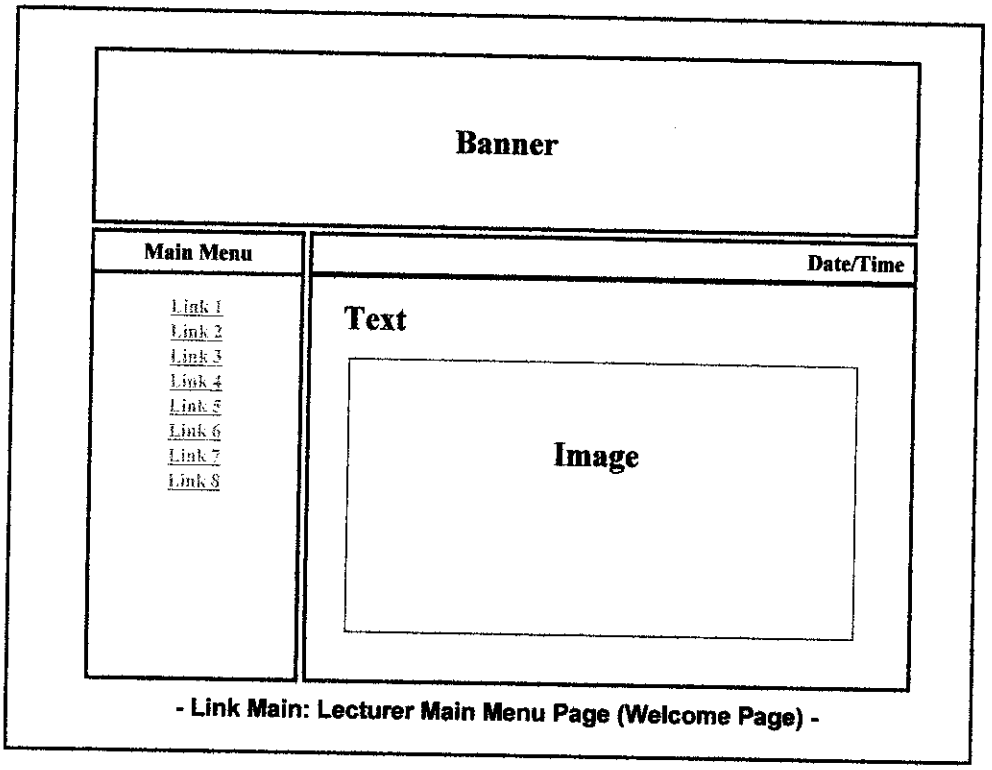
APPENDIX E: STORYBOARD

Shahida Binti Ahmad

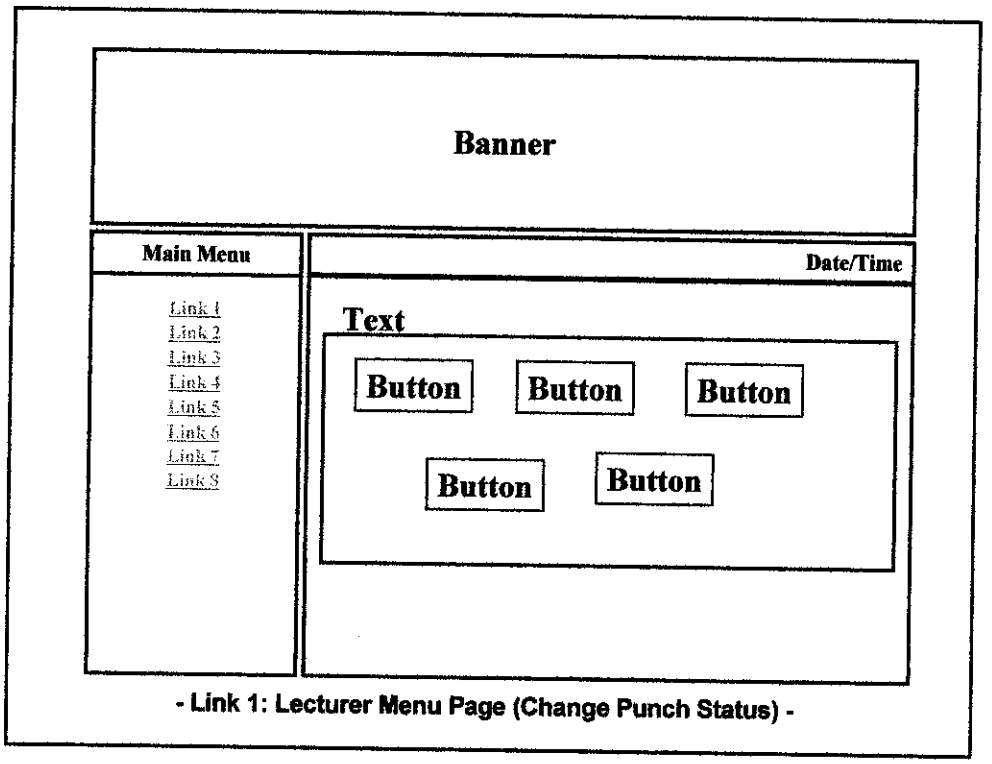
"Integrated Time Management System"
-Lecturer Page-



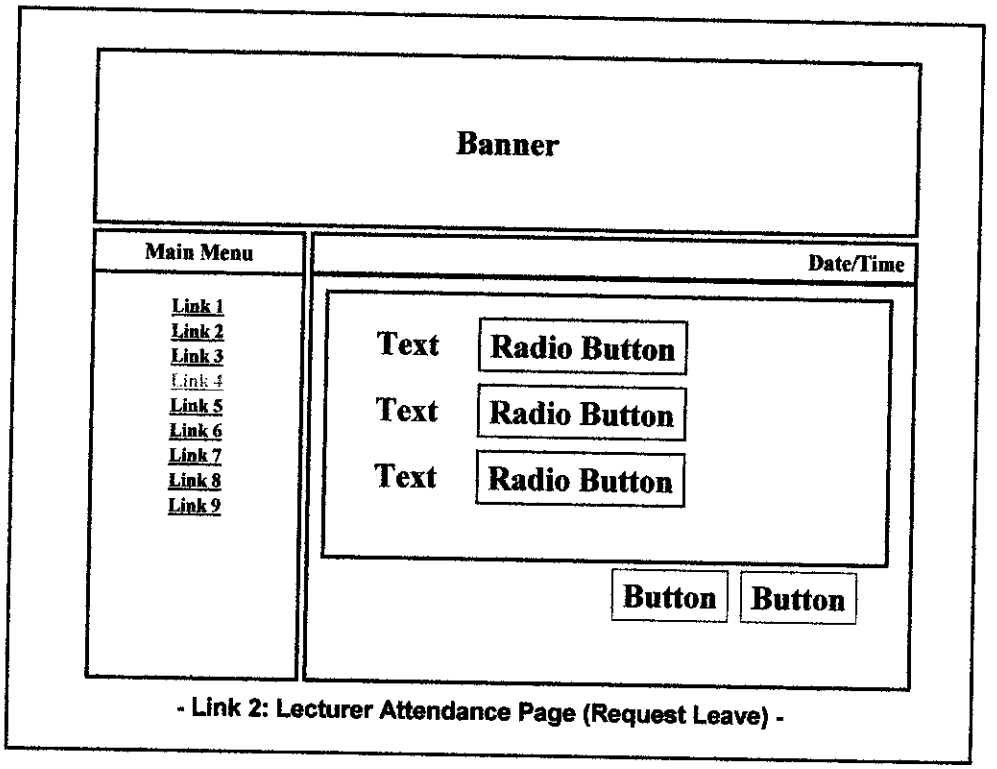
-Default Page-



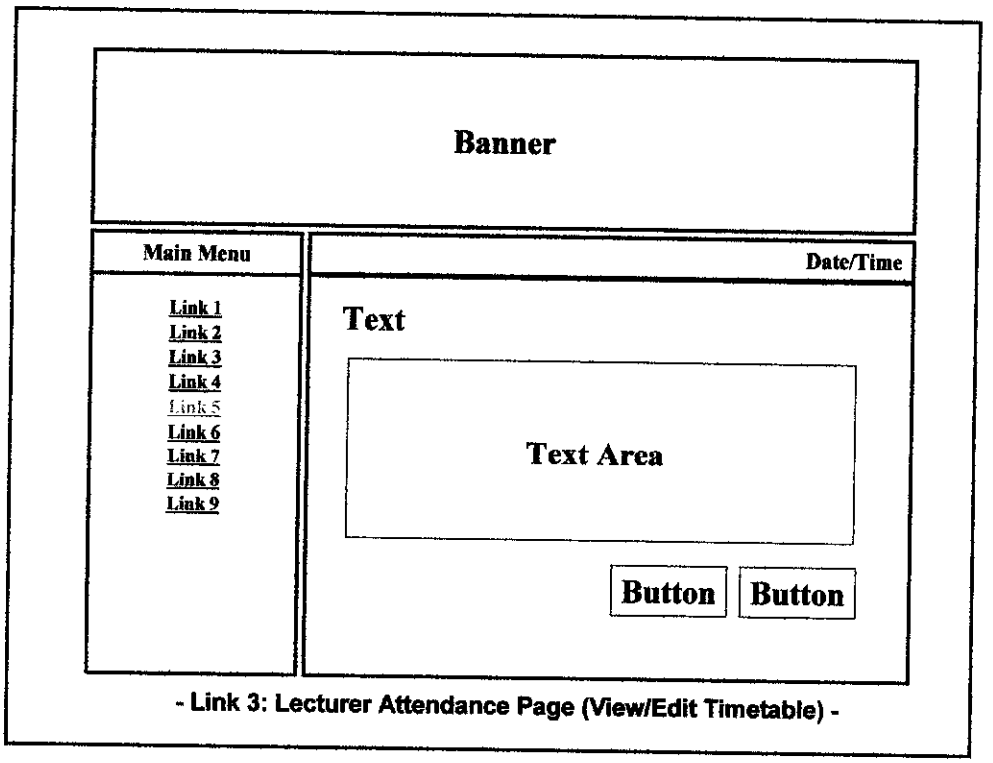
- Link Main: Lecturer Main Menu Page (Welcome Page) -



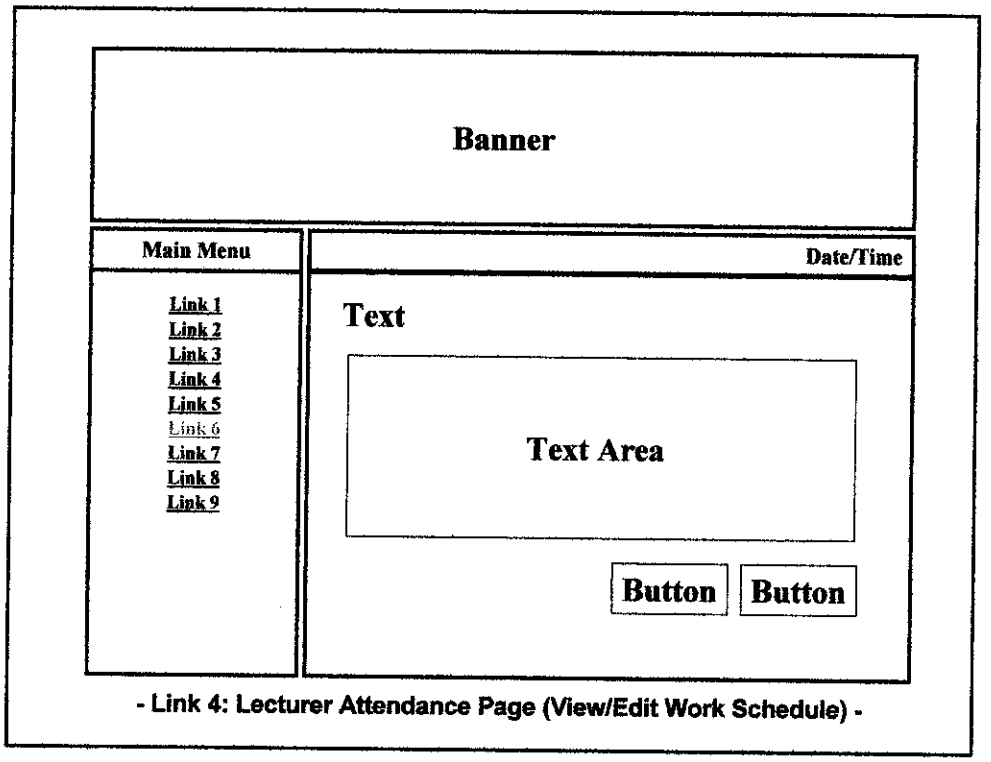
- Link 1: Lecturer Menu Page (Change Punch Status) -



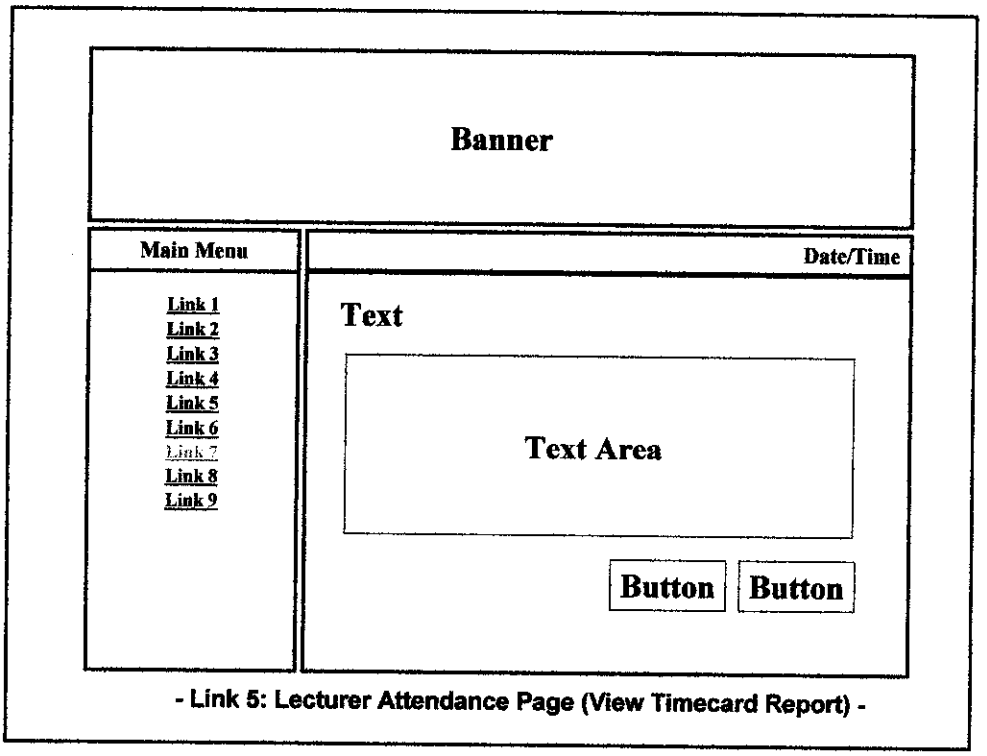
- Link 2: Lecturer Attendance Page (Request Leave) -



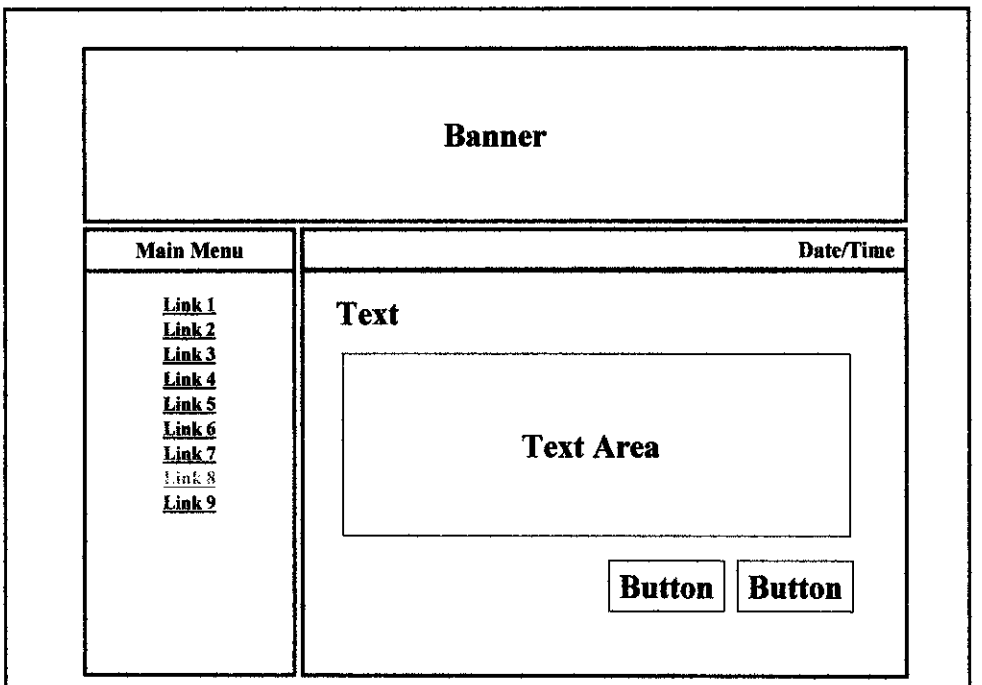
- Link 3: Lecturer Attendance Page (View/Edit Timetable) -



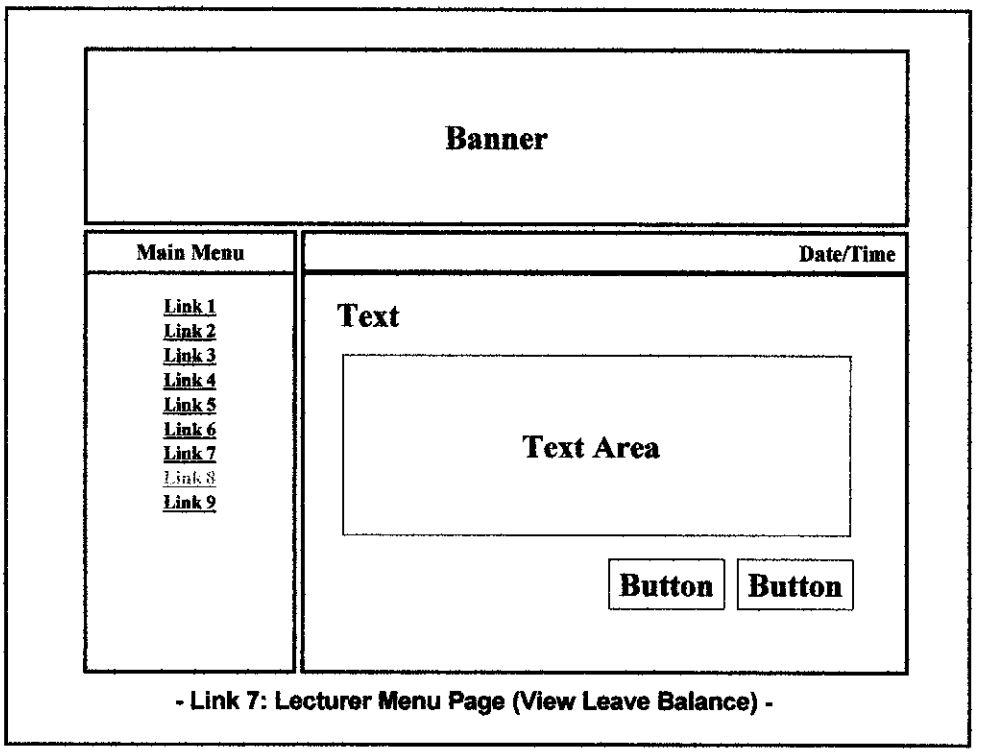
- Link 4: Lecturer Attendance Page (View/Edit Work Schedule) -



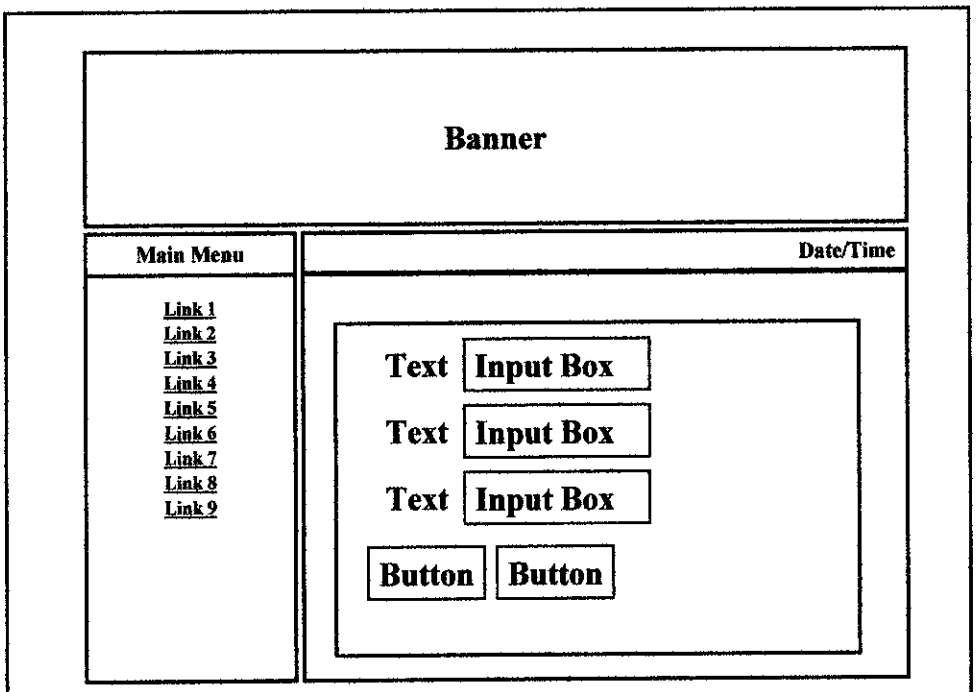
- Link 5: Lecturer Attendance Page (View Timecard Report) -



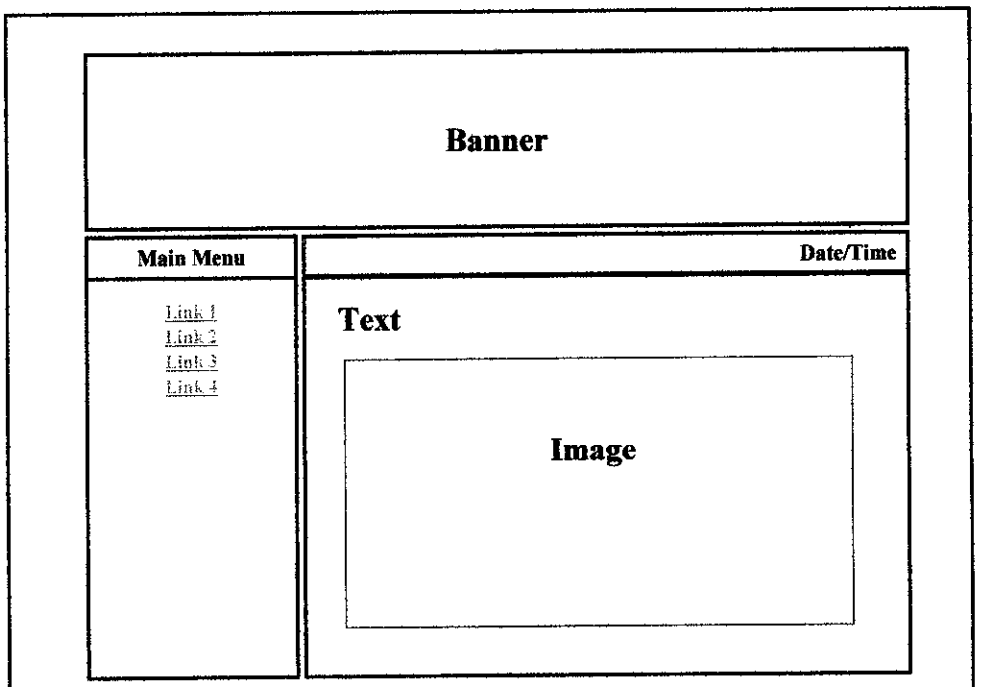
- Link 6: Lecturer Menu Page (View Leave Request Report) -



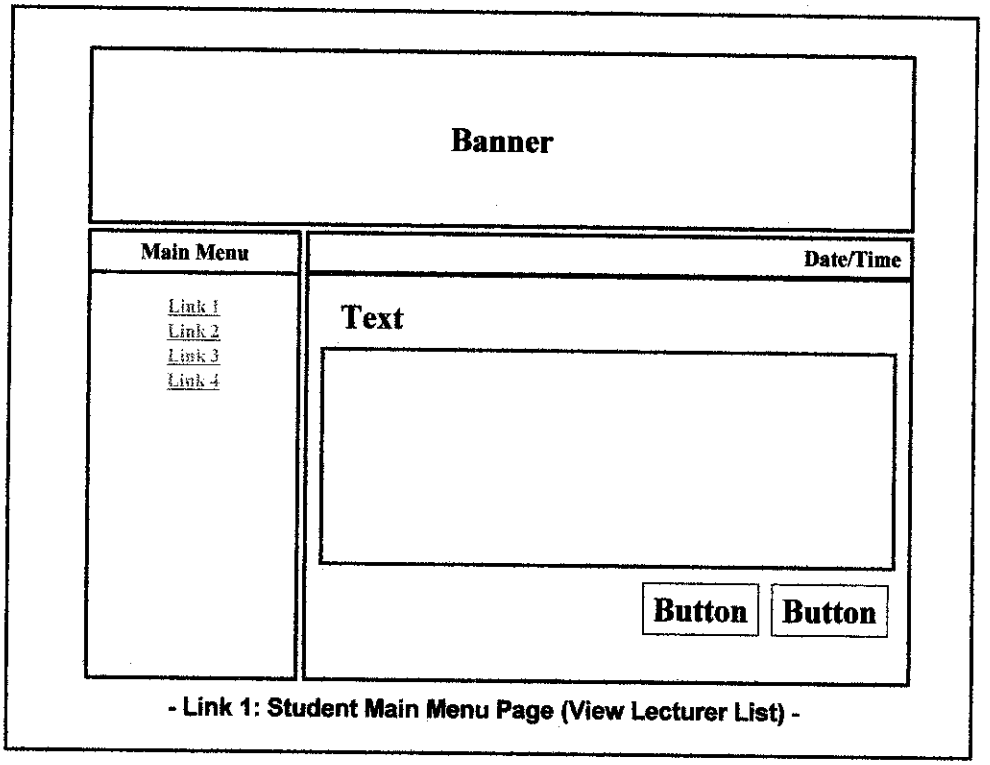
- Link 7: Lecturer Menu Page (View Leave Balance) -



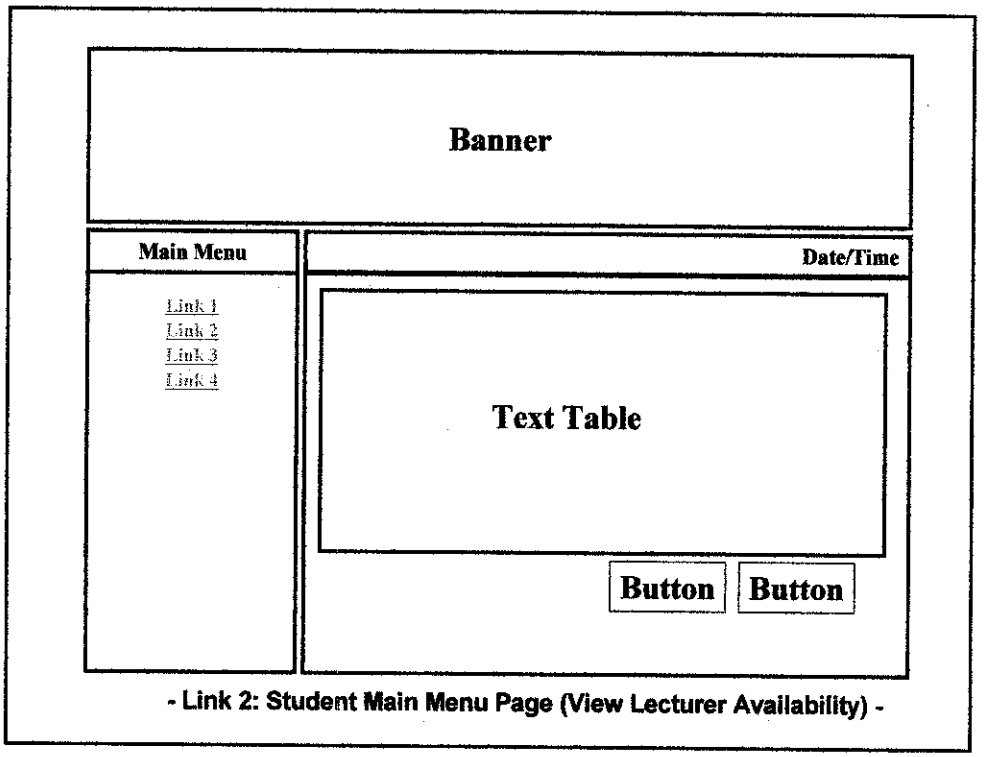
- Link 8: Lecturer Menu Page (Send/Reply/View Message) -



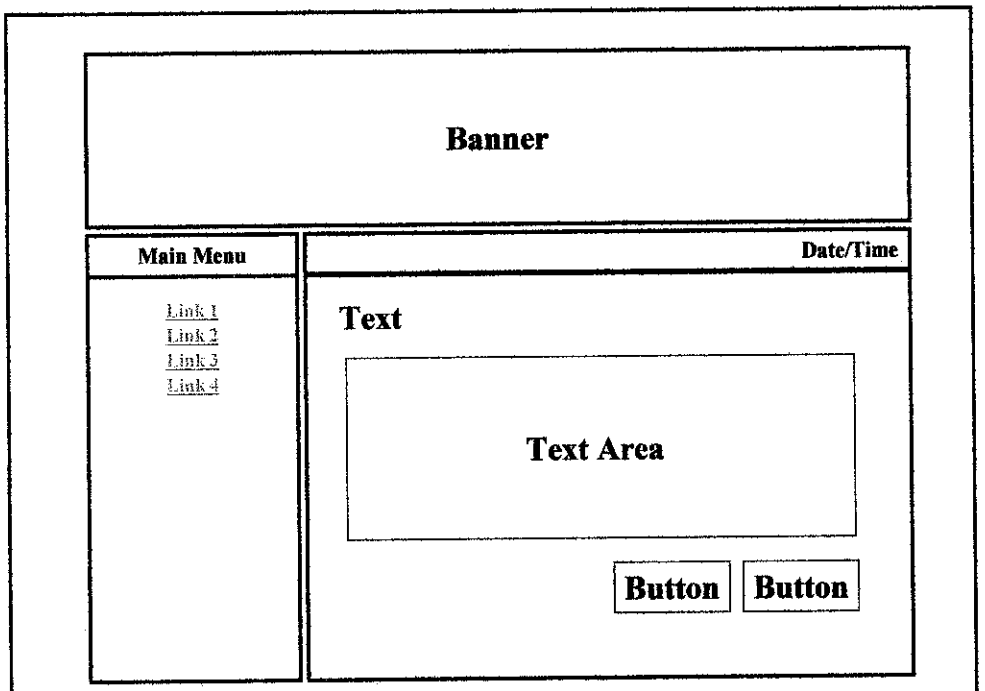
- Link Main: Student Main Menu Page (Welcome Page) -



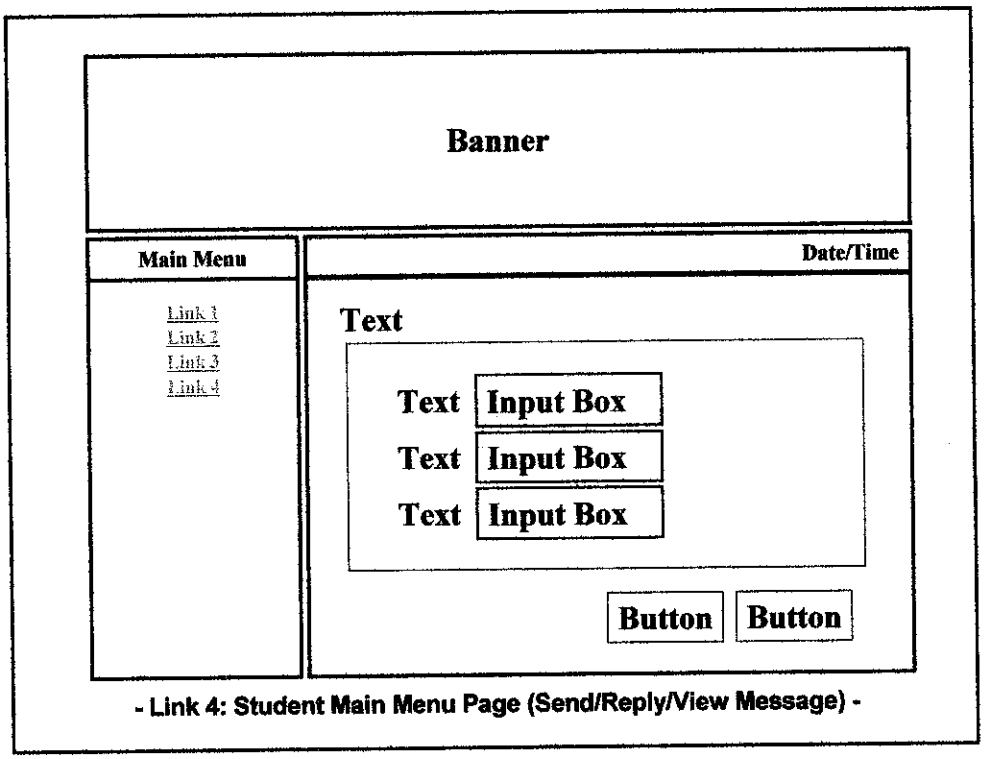
- Link 1: Student Main Menu Page (View Lecturer List) -



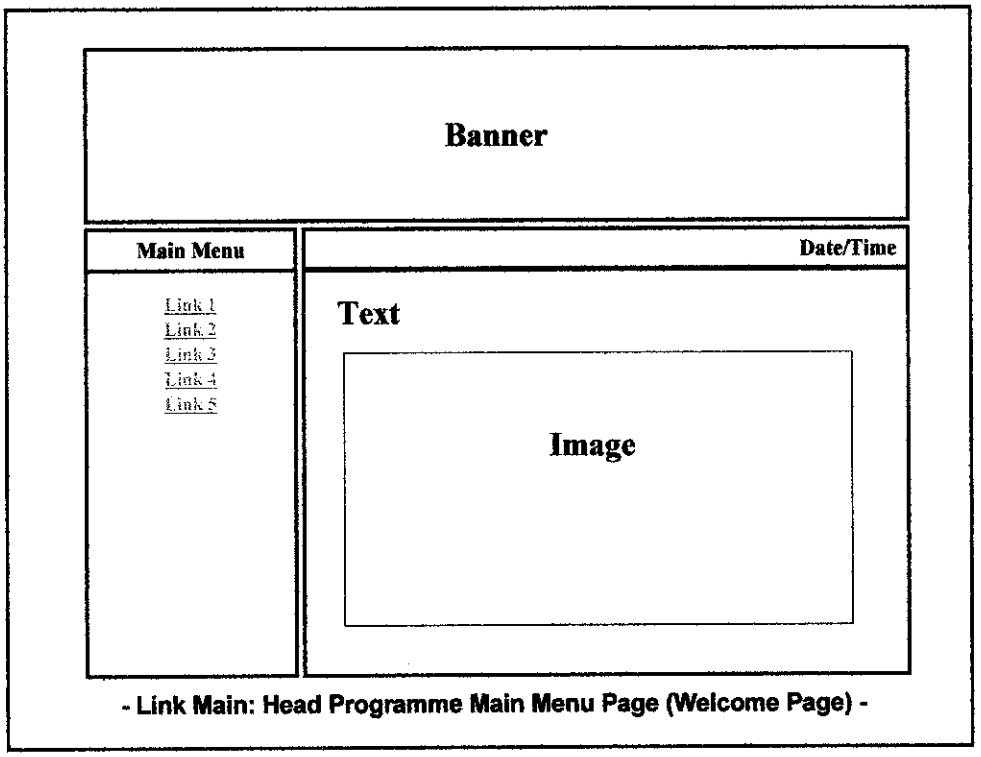
- Link 2: Student Main Menu Page (View Lecturer Availability) -



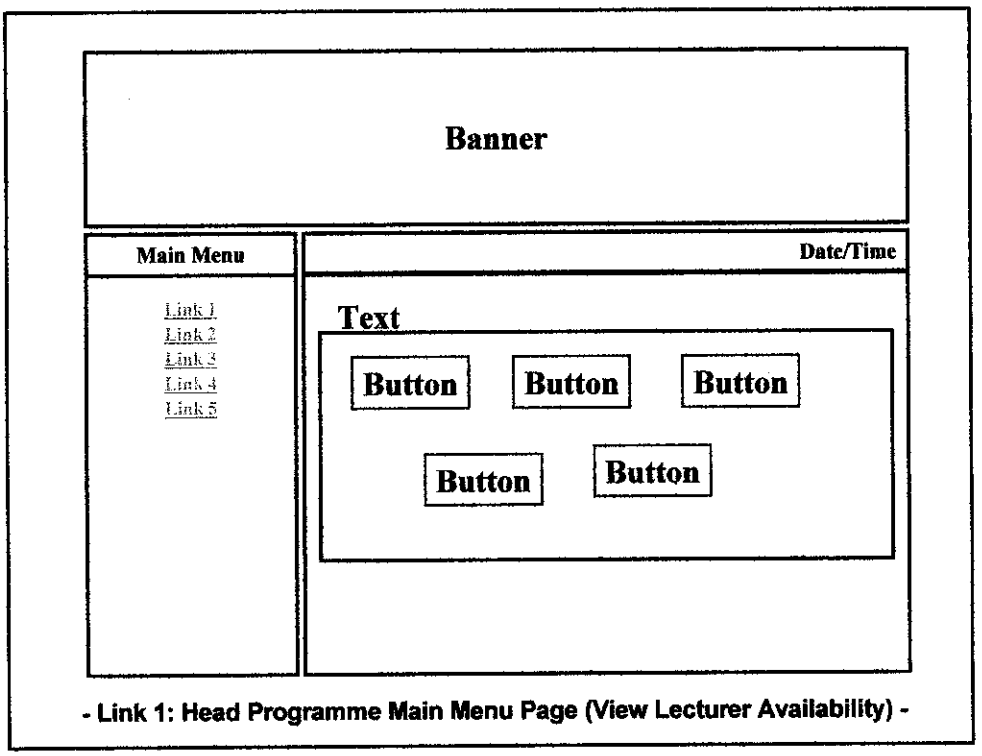
- Link 3: Student Main Menu Page (View Lecturer Office Location) -



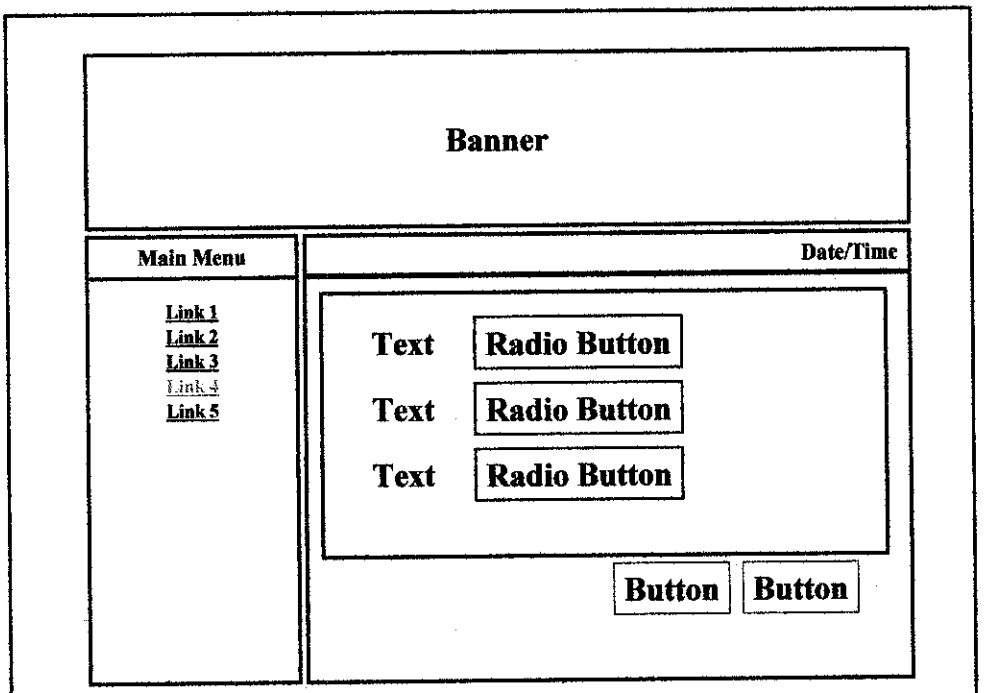
- Link 4: Student Main Menu Page (Send/Reply/View Message) -



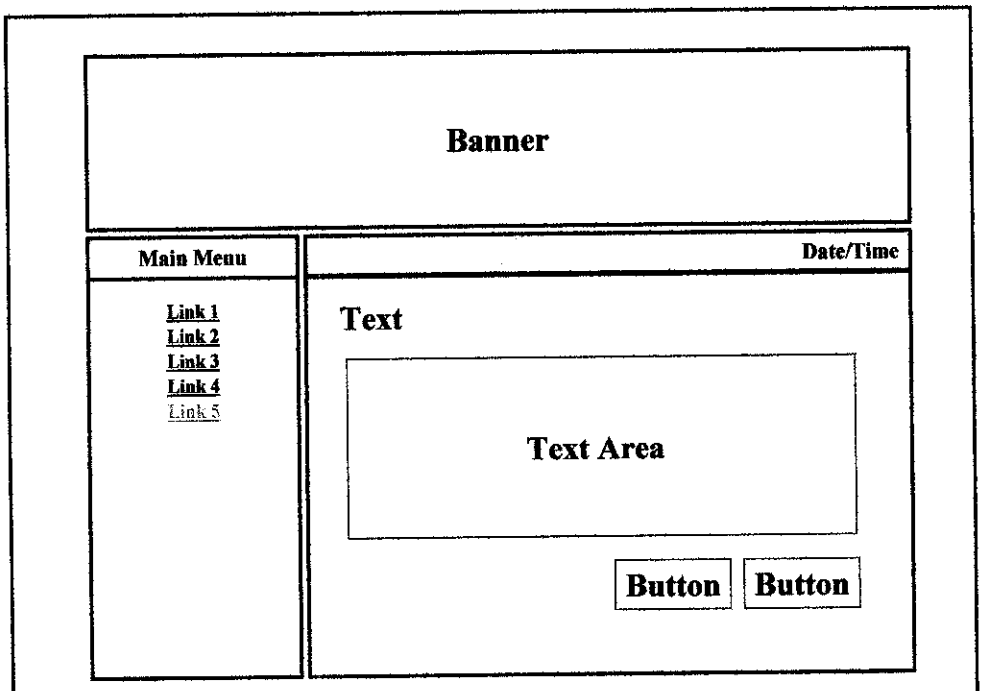
- Link Main: Head Programme Main Menu Page (Welcome Page) -



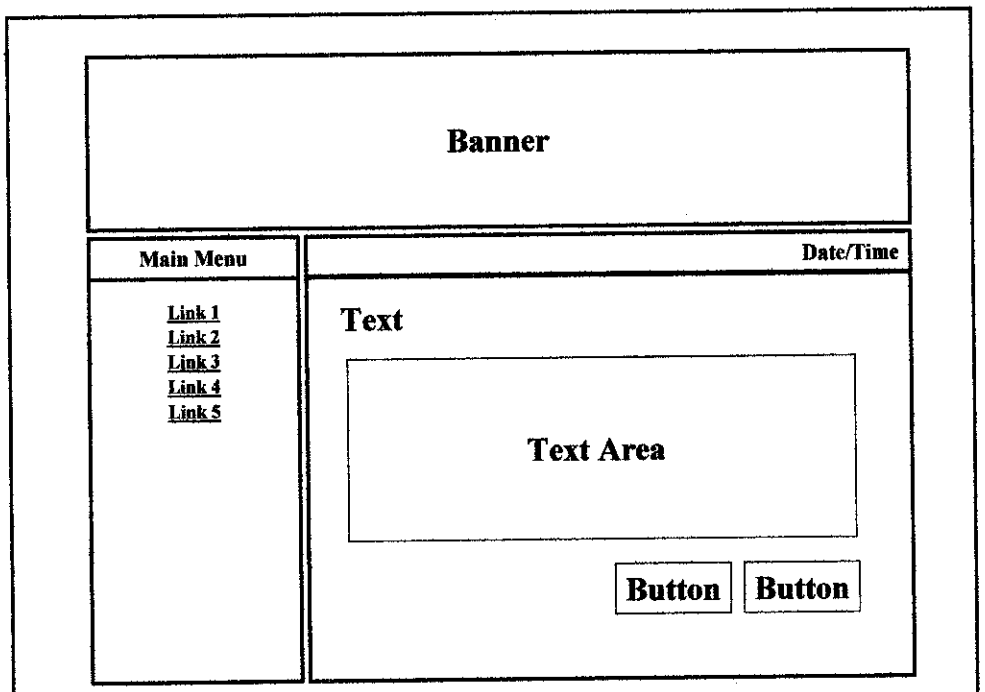
- Link 1: Head Programme Main Menu Page (View Lecturer Availability) -



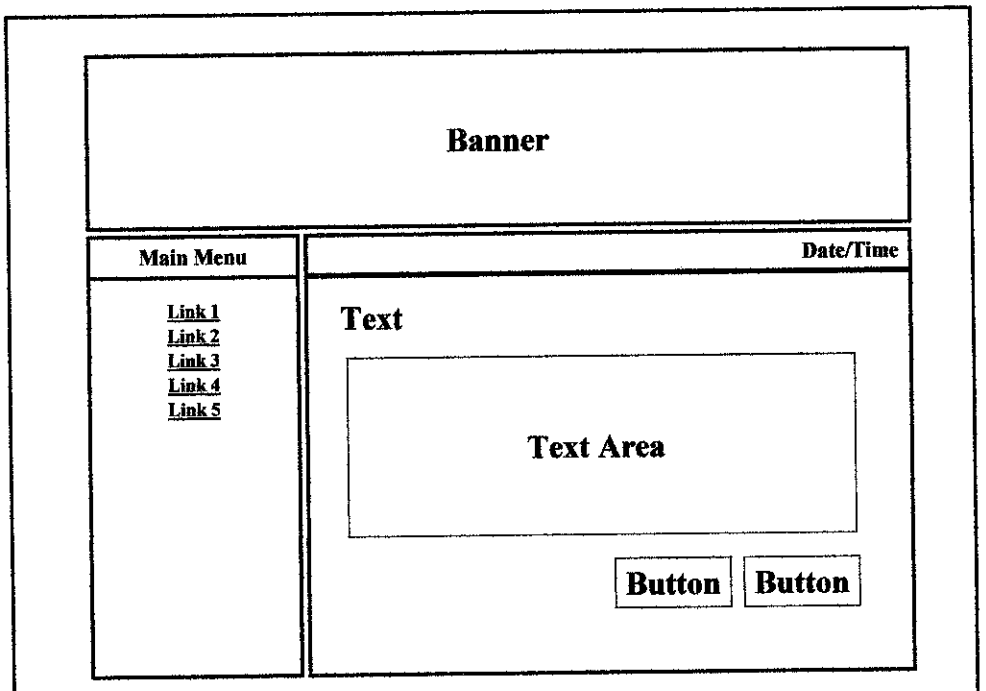
- Link 2: Head Programme Main Menu Page (View Lecturer Leave Balance) -



- Link 3: Head Programme Main Menu Page (Approve/Reject Lecturer timecard) -



- Link 4: Head Programme Main Menu Page (Generate Report) -



- Link 5: Head Programme Main Menu Page (Send/Reply/View) -

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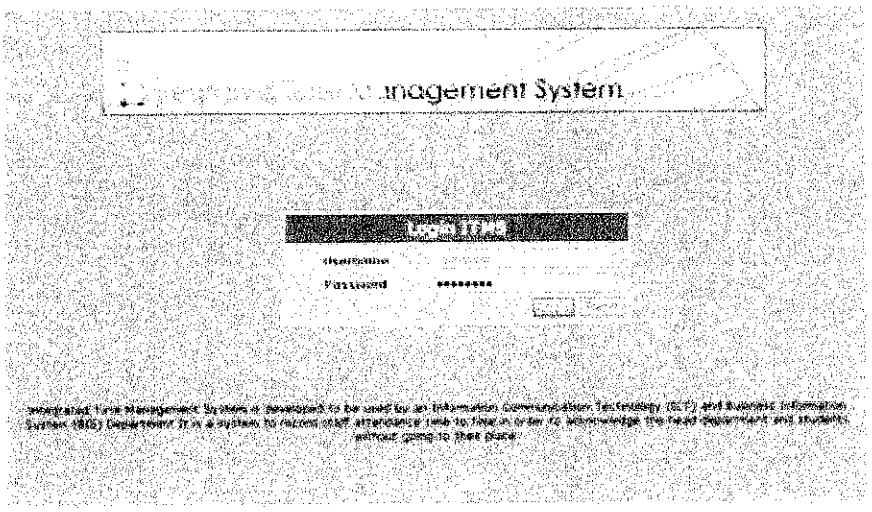
APPENDIX F: PROTOTYPING (User Interface)

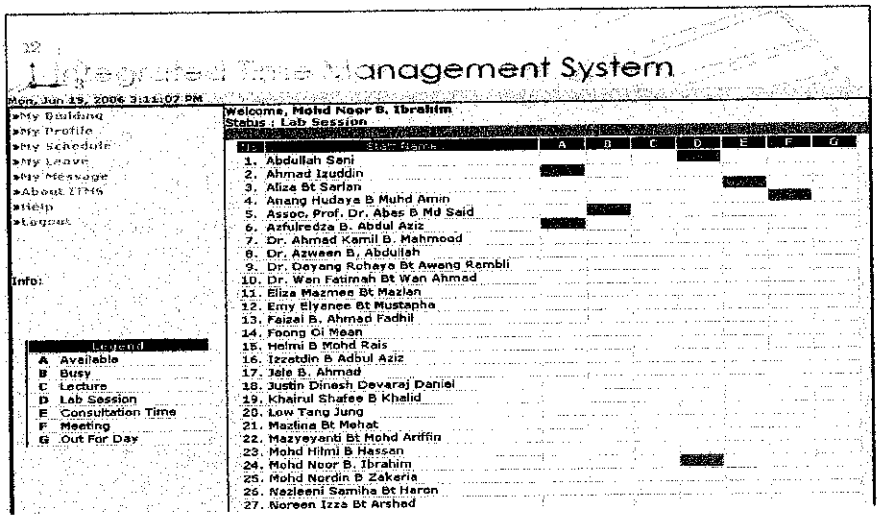
Shahida Binti Ahmad

SNAP SHOT OF 'INTEGRATED TIME MANAGEMENT SYSTEM'

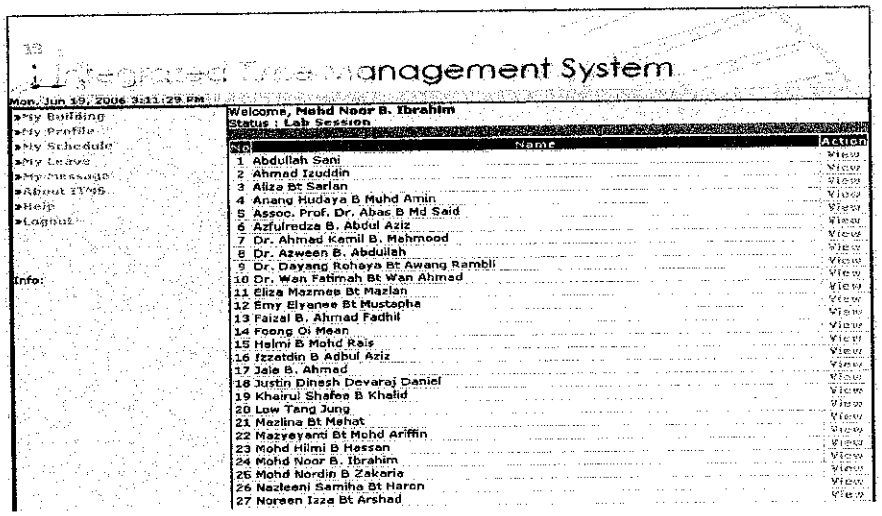
Lecturer Login Page



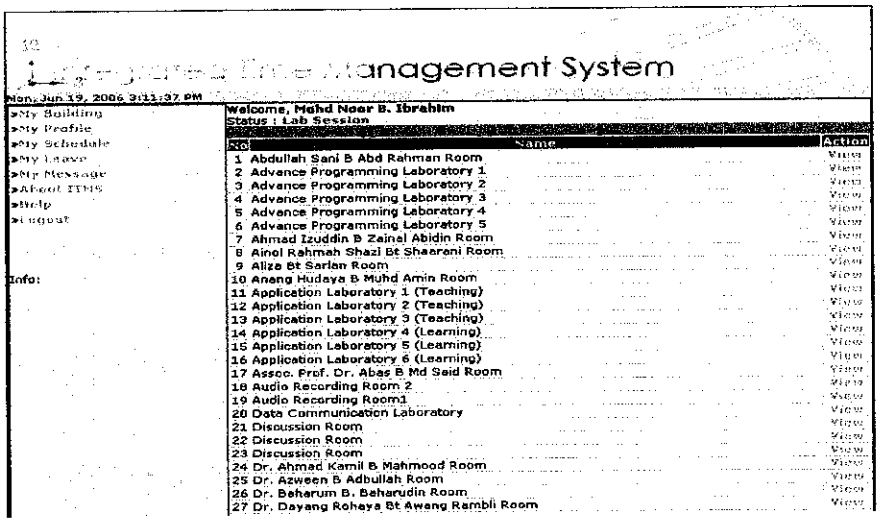
Lecturer Main Page : Staff Availability



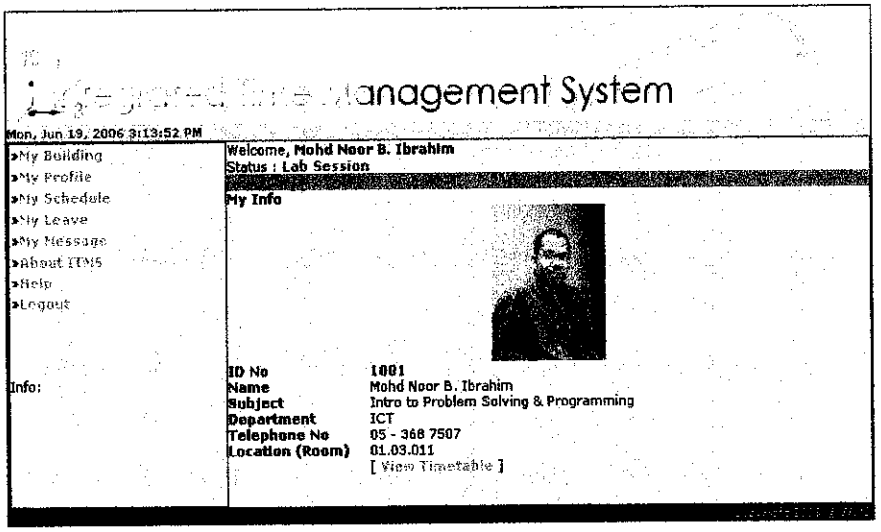
Lecturer Main Page: Staff Details List



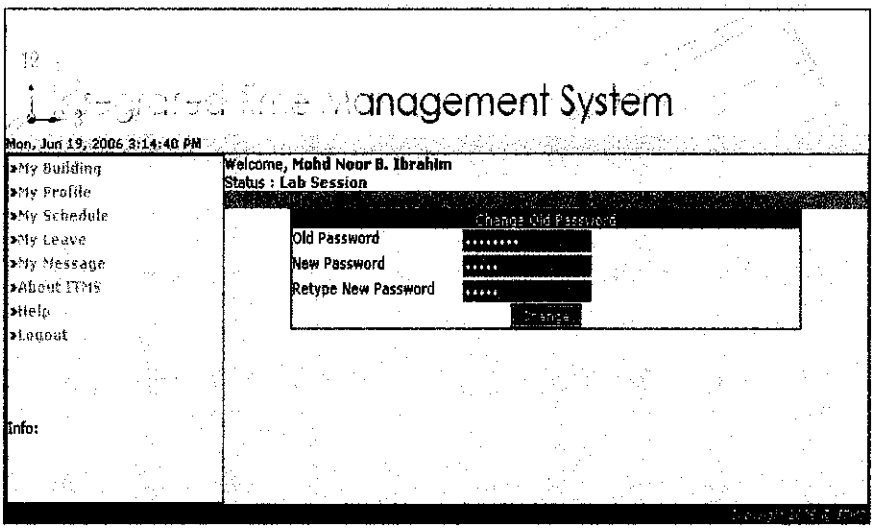
Lecturer Main Page: Building Plan List



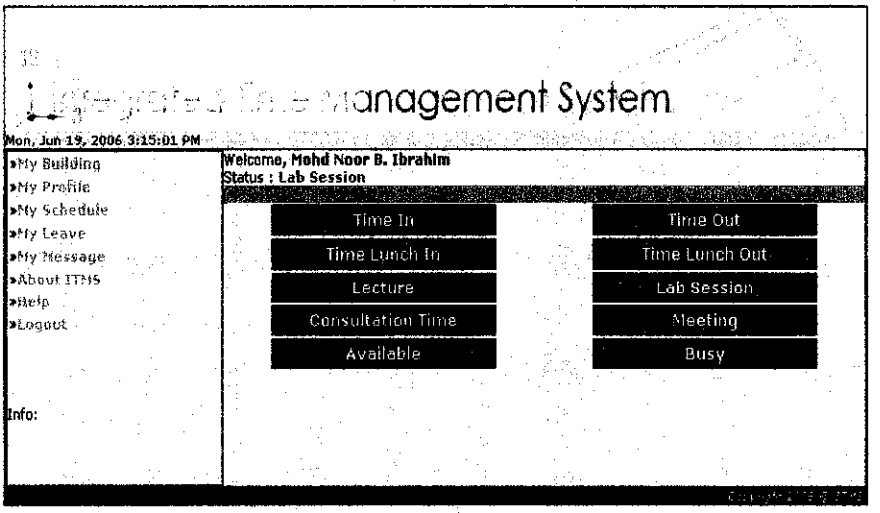
Lecturer Main Page: Personal Profile



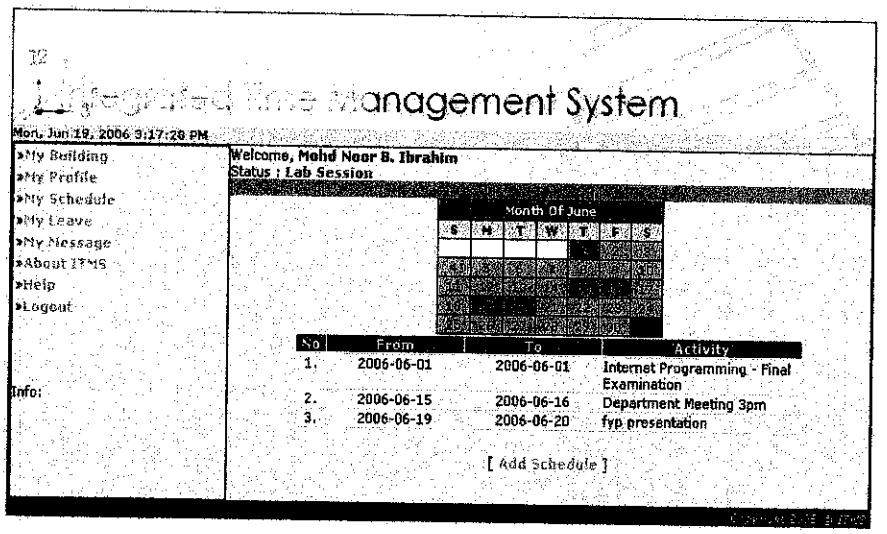
Lecturer Main Page: Change Password



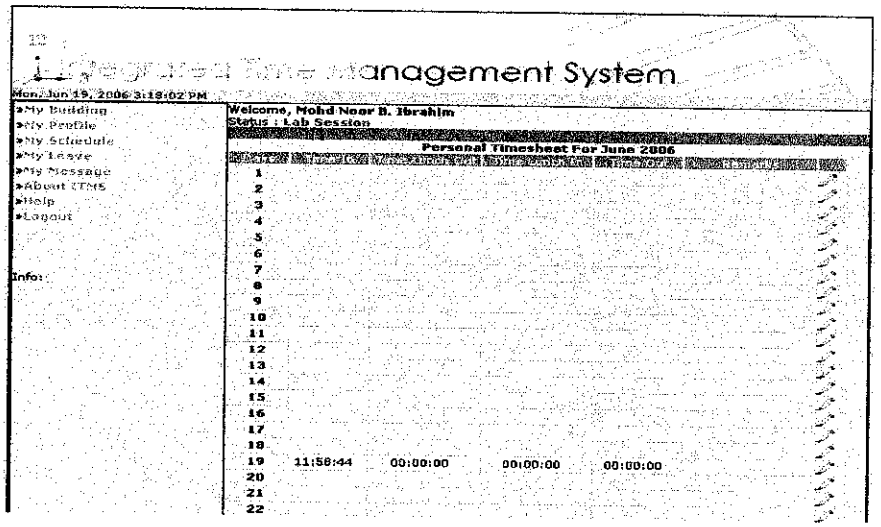
Lecturer Main Page: Punches



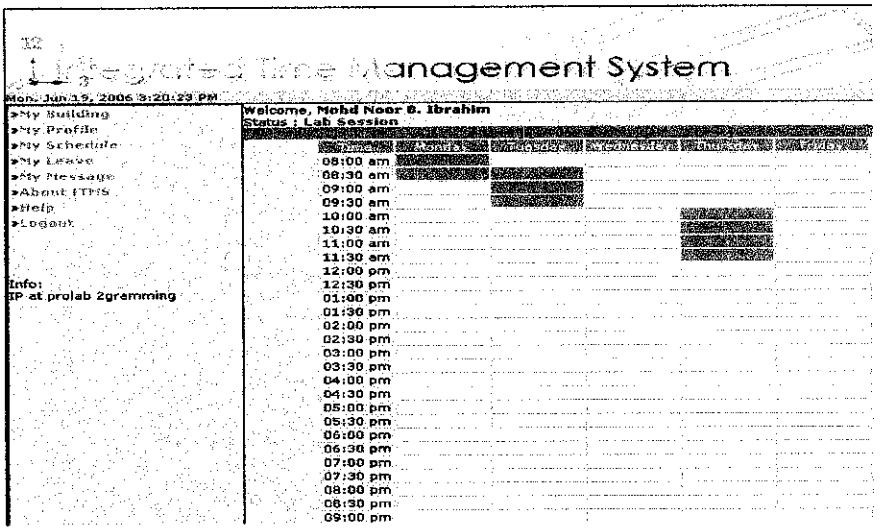
Lecturer Main Page: Schedule



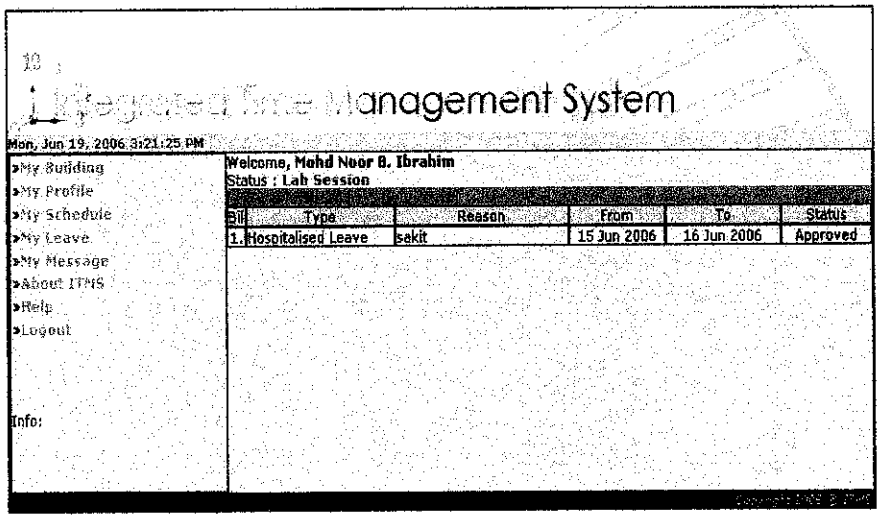
Lecturer Main Page: Personal Timesheet



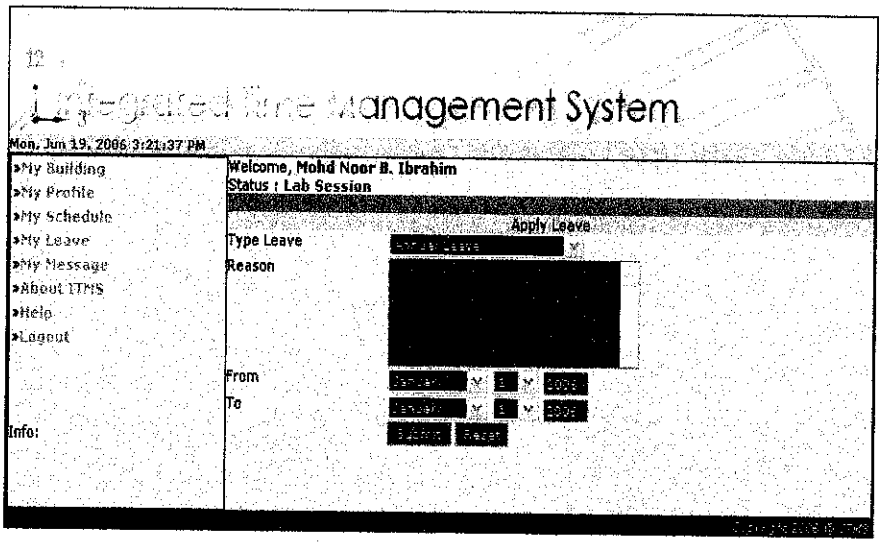
Lecturer Main Page: Time Table



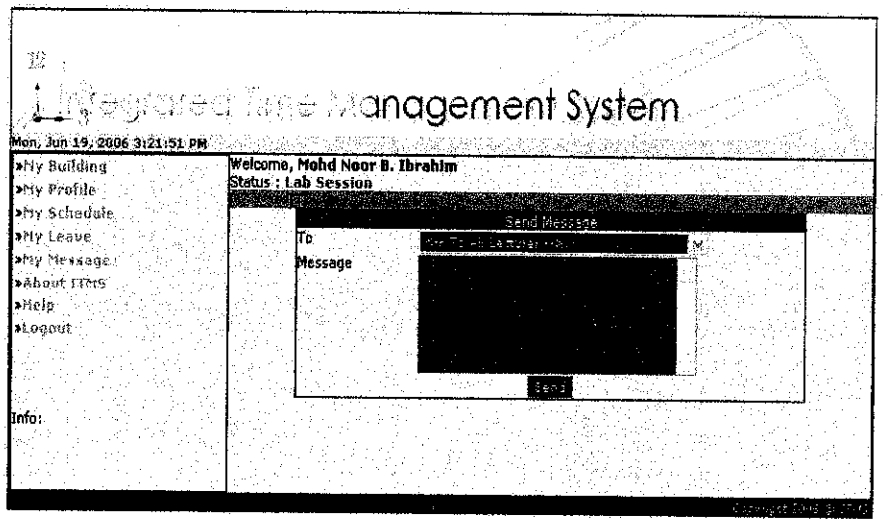
Lecturer Main Page: Leave Status



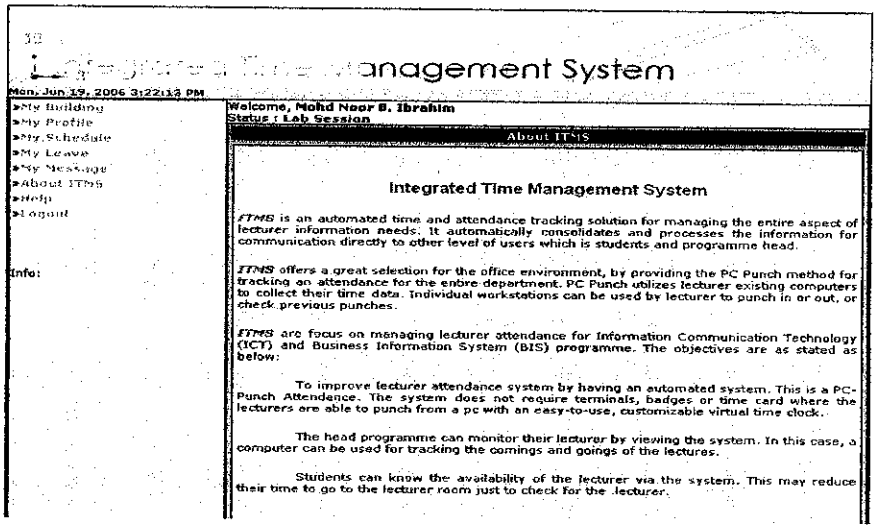
Lecturer Main Page: Apply Leave



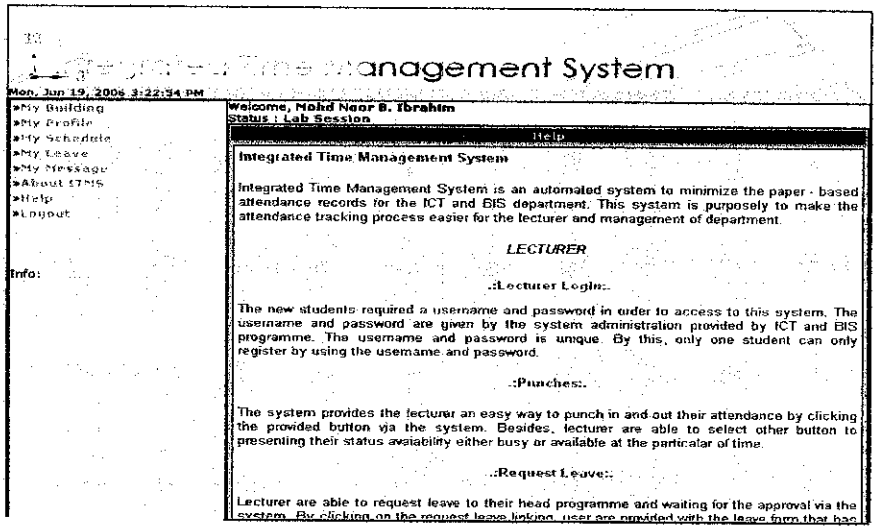
Lecturer Main Page : Send Message



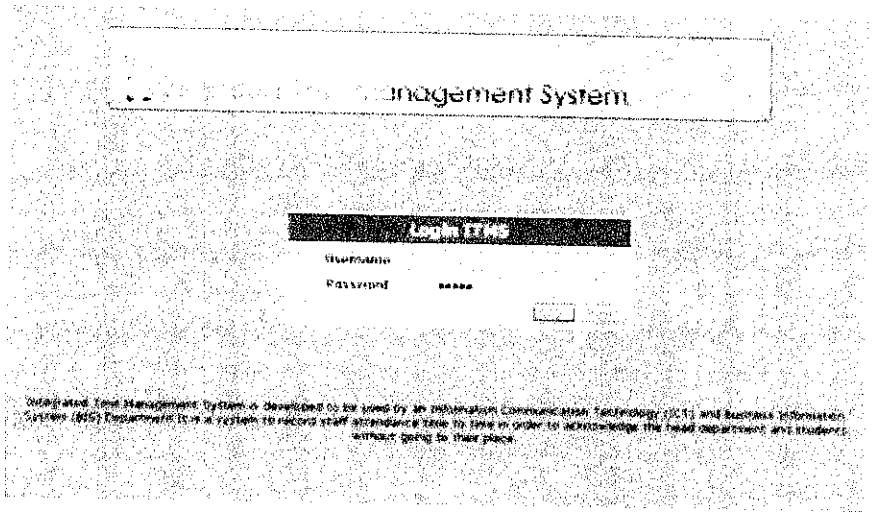
Lecturer Main Page: About ITMS



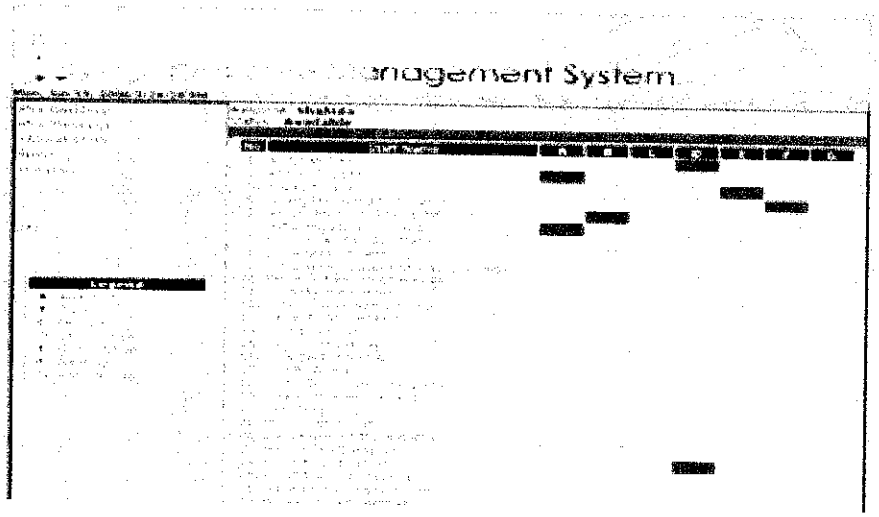
Lecturer Main Page: Help



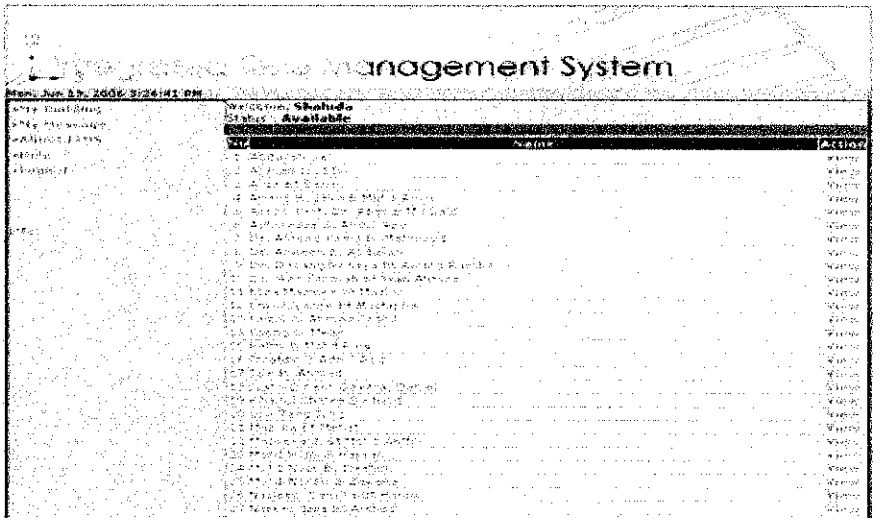
Login: Student Page



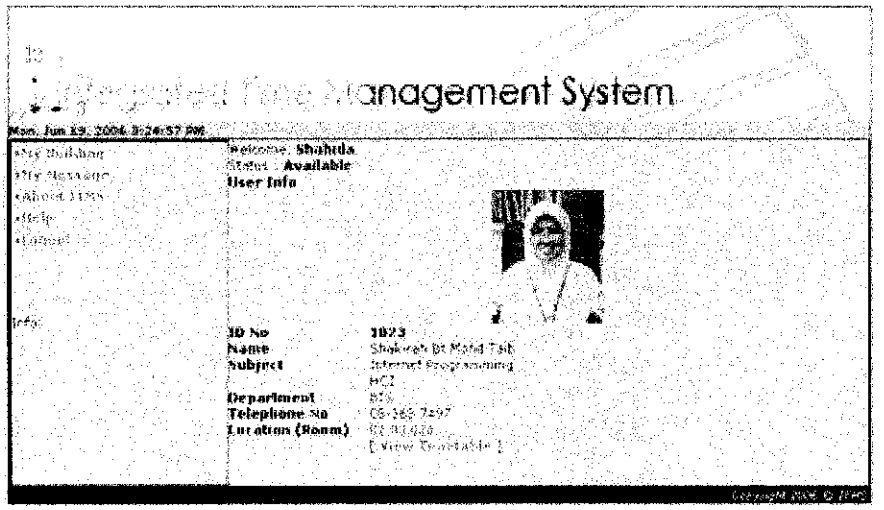
Student Main Page: Staff Availability



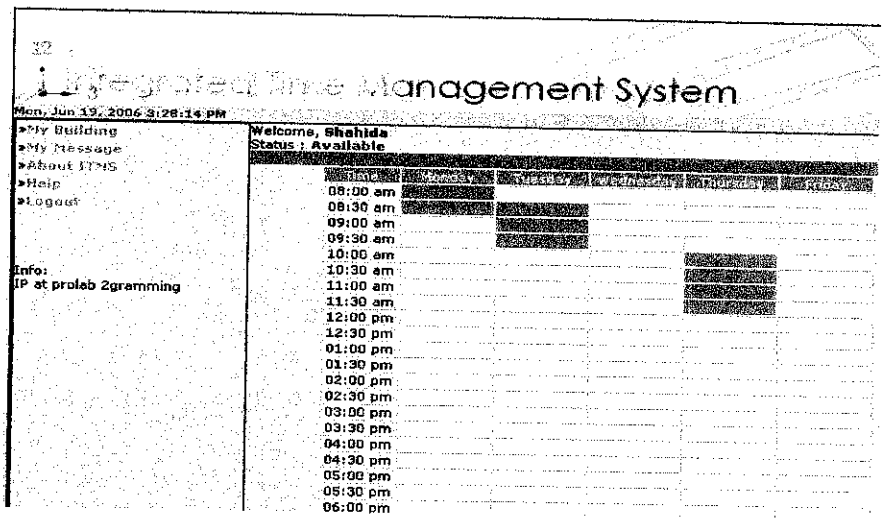
Student Main Page: Staff Details List



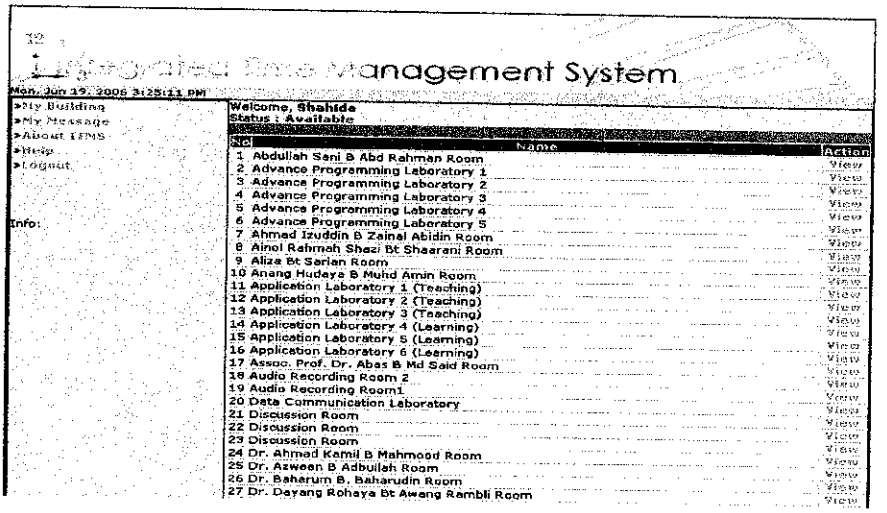
Student Main Page: View Staff Detail



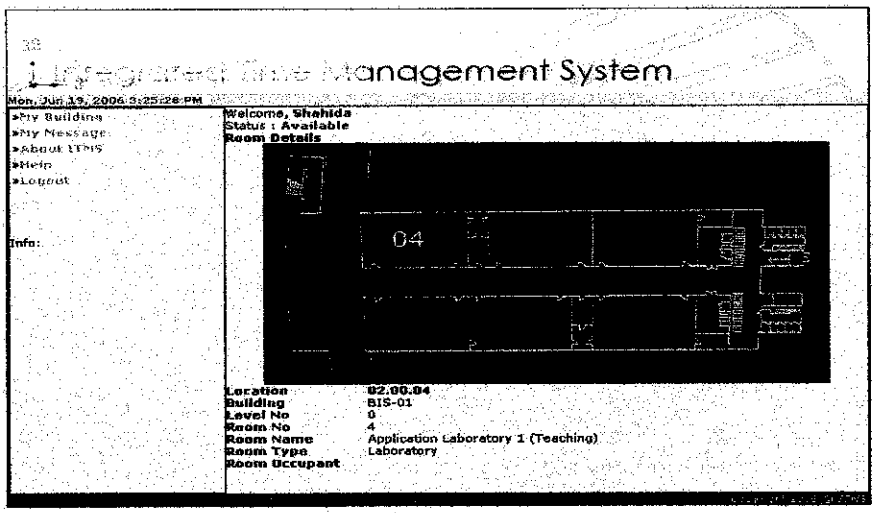
Student Main Page: Lecturer Time Table



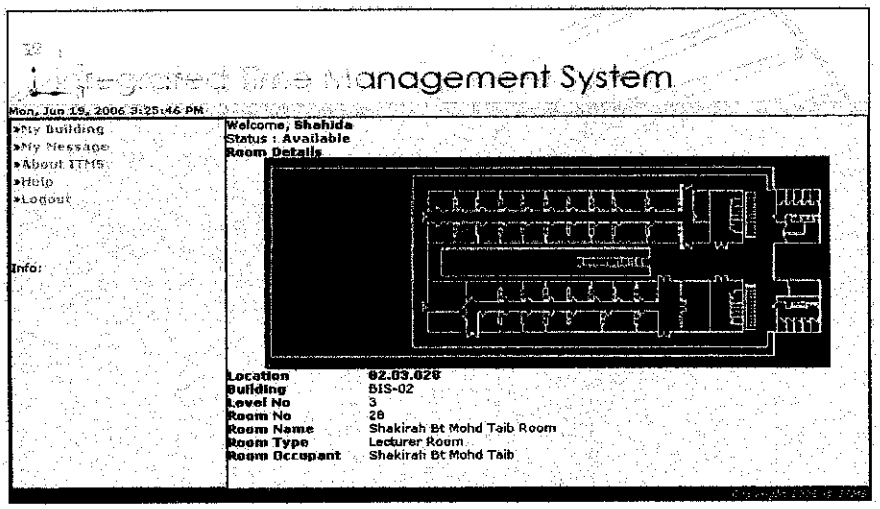
Student Main Page: Building Plan List



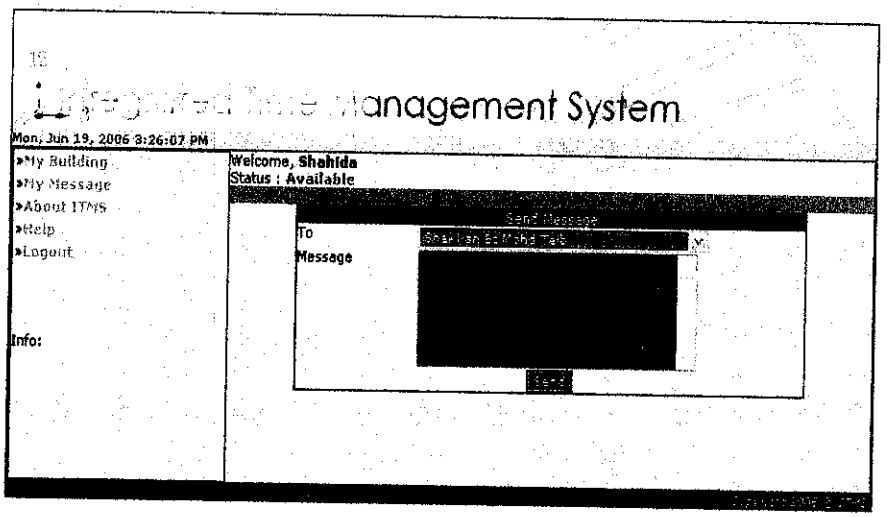
Student Main Page: Room Details (laboratory)



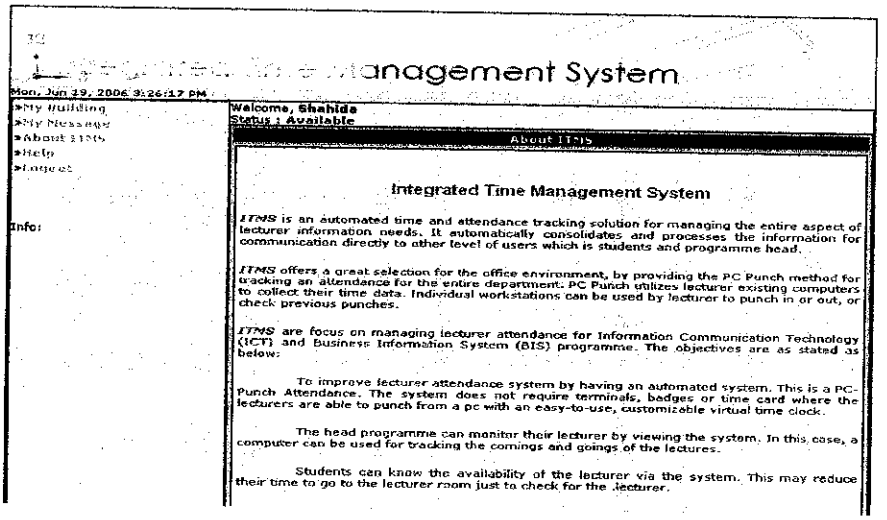
Student Main Page: Room Details (lecturer room)



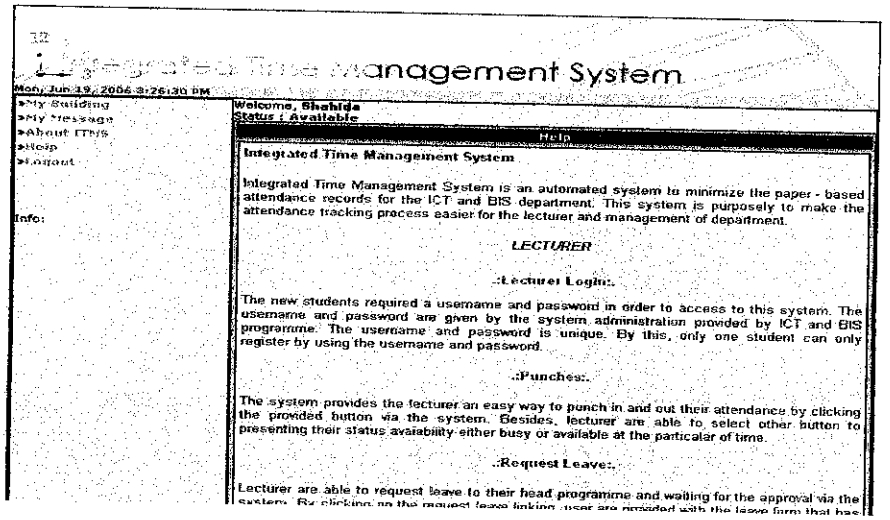
Student Main Page: Send Message



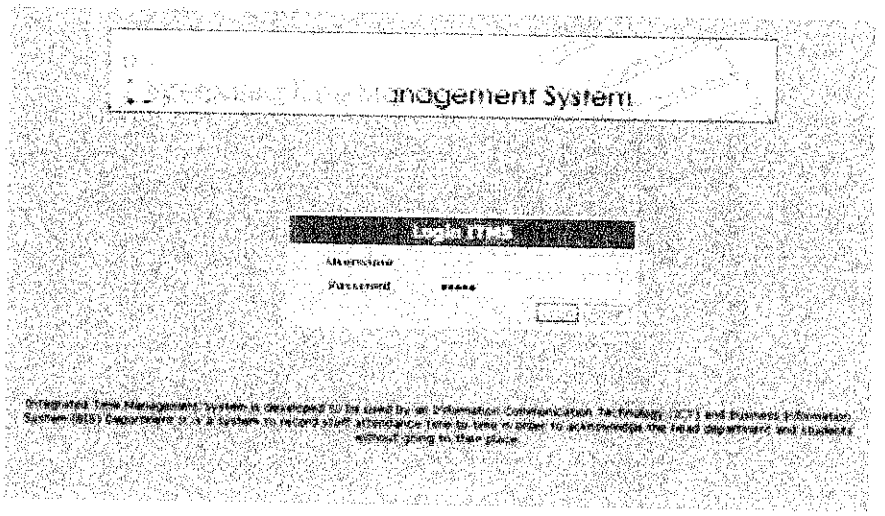
Student Main Page: About ITMS



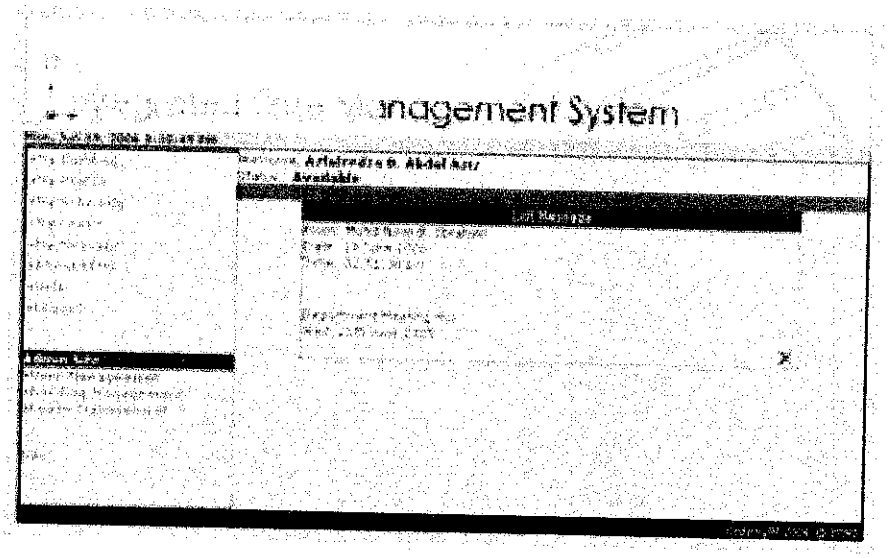
Student Main Page: Help



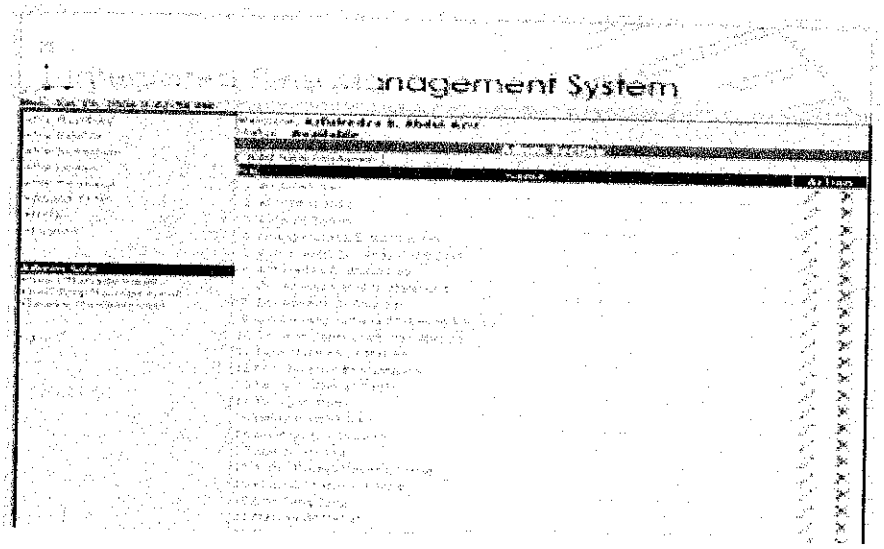
Login: Admin Page



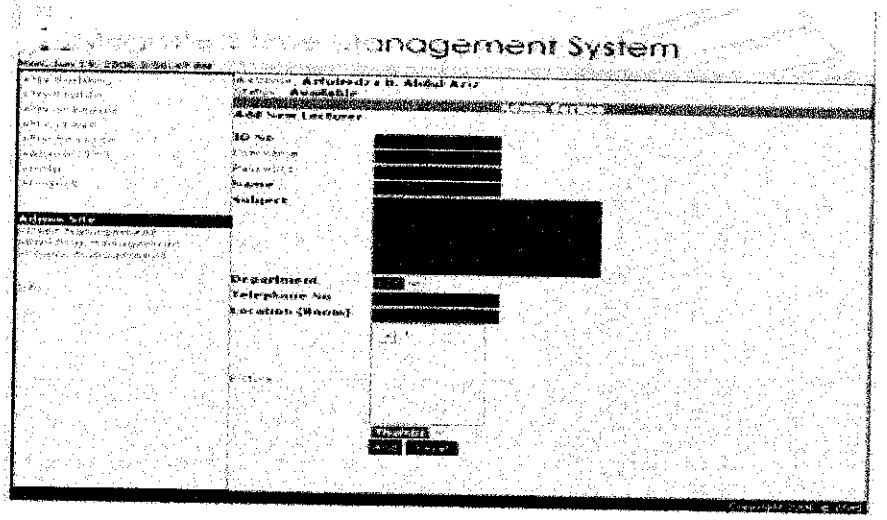
Admin Main Page



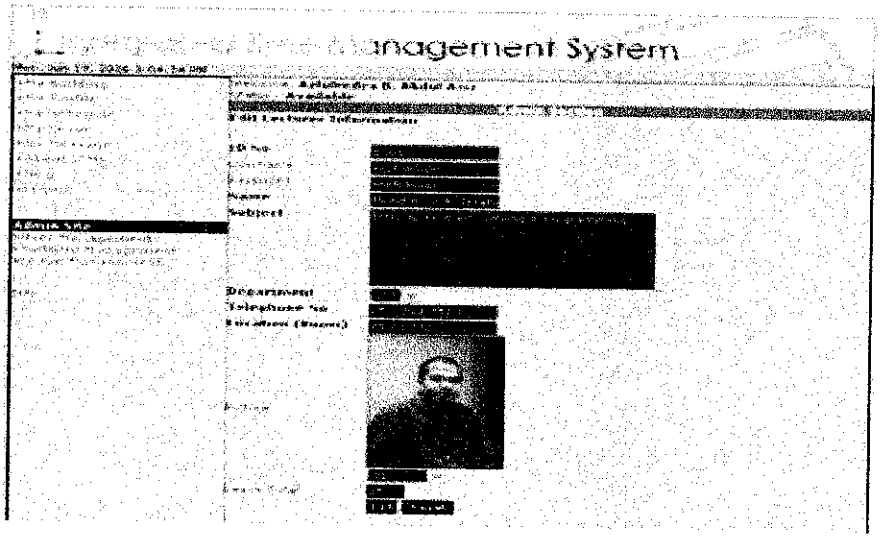
Admin Main Page: User Management



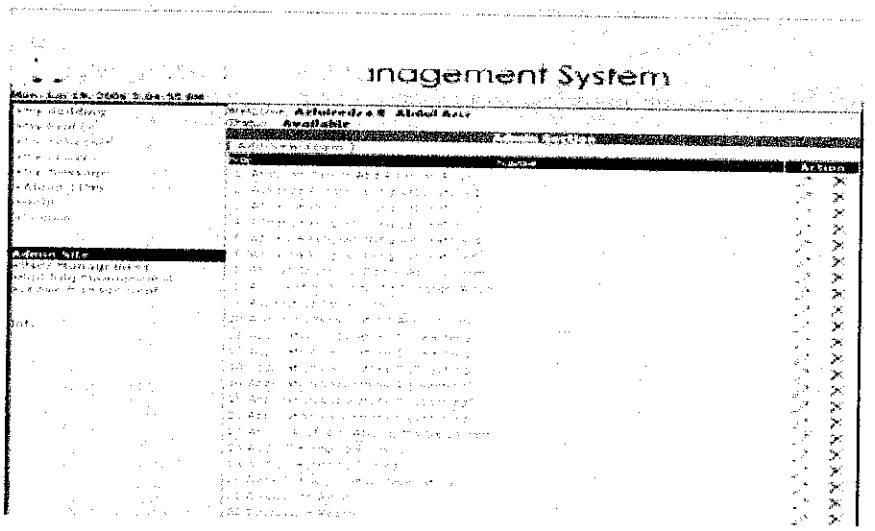
Admin Main Page: Add New Lecturer



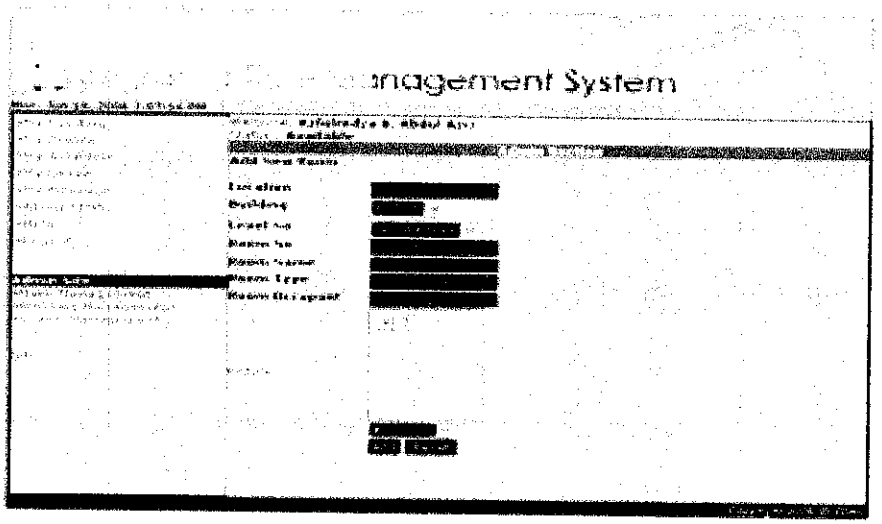
Admin Main Page: Edit New Lecturer



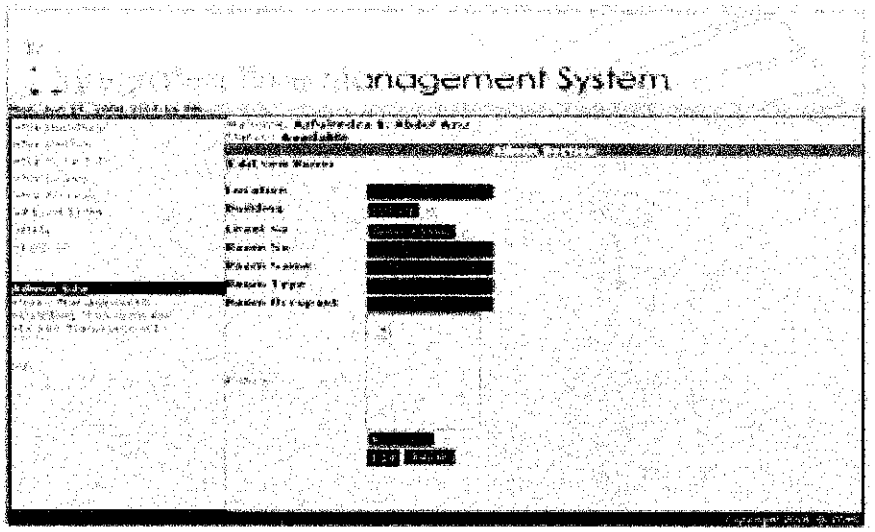
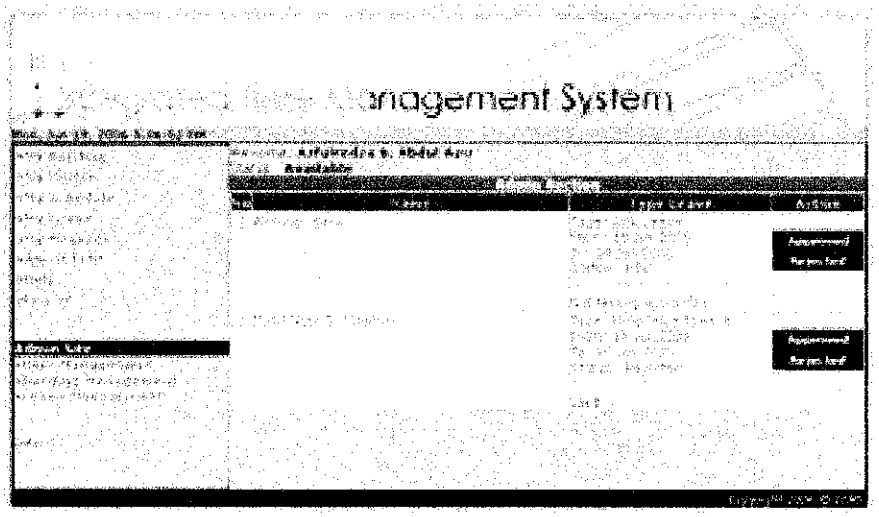
Admin Main Page: Building Management



Admin Main Page: Add New Room



Admin Main Page: Edit Room



Admin Main Page: Leave Management