

LECTURE ASSESSMENT SYSTEM  
(MANAGE STUDENT ATTENDANCE MODULE AND MANAGE  
MARKS MODULE)

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UNIVERSITI TEKNOLOGI MALAYSIA



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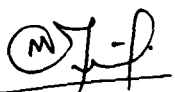
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LECTURE ASSESSMENT SYSTEM  
(MANAGE STUDENT ATTENDANCE MODULE AND MANAGE  
MARKS MODULE)


MOHD ZAINURI BIN SARINGAT


A thesis submitted in fulfillment of the requirements for the award of the  
MSc of Real Time Software Engineering

Centre for Advance Software Engineering  
Faculty of Computer Science and Information System  
Universiti Teknologi Malaysia

SEPTEMBER 2003

“I hereby declare that I have read this technical writing and in my opinion this technical writing is sufficient in terms of scope and quality for the award of the MSc in Real Time Software Engineering.”

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“Praise the Name of Allah, the Most High, Who Creates and Proportions Well, Who  
Determines and Guides”

*Special Dedication Of This Grateful Feeling To My Beloved Family*

*My Mother Misnah Bte Haji Taib,  
My Father Haji Saringat bin Ethnin.*

*For Their Love And Support.*

*Also This Special Appreciation To*

*My Loving Wife Maznah Bte Haji Ismail,  
My Daughter Nuranisah Bte Mohd Zainuri,  
My Son Muaz Bin Mohd Zainuri,  
And  
My Newborn Firhan Ali Bin Mohd Zainuri.*

*I Will Never Forget For Yours Effort, Support And Love.*



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## ABSTRACT

Kolej Universiti Teknologi Tun Hussein Onn (KUiTTHO) had been awarded the Quality Management System Standards ISO 9001: 2000. Unfortunately, there are still some problems on its student's assessment. At the end of a semester, mostly happen certain students had no marks but they had registered on the Student Information System. When comes to the end of the semester, there is too late to solve this problems. Its happens because of the students register the subject but they did not attend the class and sometime they attended on other class which is the same subject. In certain case, the lecturer miss transfer the students mark to the computer form. The management had introduced a general format to the lecturer to keep the students assessment record. After implement this format, the same problem still happened but the number of cases is reducing. The Lecture Assessment System becomes an alternative way to overcome this problem. Through this system, the management can monitor the students' progress marks with their attendance. Furthermore, the Lecture Assessment System is a web-based application.



## ABSTRAK

Kolej Universiti Teknologi Tun Hussein Onn (KUiTTHO) telah dianugerahkan Piawai Kualiti Sistem Pengurusan ISO 9001: 2000. Namun begitu masih terdapat kelemahan dalam pengurusan penilaian pelajar. Terdapat diakhir semester segelintir pelajar yang mendaftar matapelajaran dalam Sistem Maklumat Pelajar tetapi tidak mempunyai markah. Ia tidak seharusnya berlaku bila sampai diakhir semester. Keadaan ini berlaku kemungkinan disebabkan pelajar tersebut hadir ke kelas lain atau disebabkan kecuaiannya pensyarah ketika mengisi borang komputer. Pihak pengurusan telah memperkenalkan format yang sama untuk semua pensyarah dalam menyimpan penilaian pelajar tetapi ia masih tidak dapat mengatasi masalah tersebut. Namun ia dapat mengurangkan bilangan kes yang berlaku. Sistem Penilaian Syarahan boleh dijadikan satu langkah bagi mengatasi masalah tersebut. Penggunaan sistem ini pemantauan terhadap permarkahan dan kehadiran pelajar dapat dilaksanakan dari masa ke semasa. Sistem Penilaian Syarahan adalah berorientasikan laman web.



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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Company Background**

This part will give brief descriptions about the company background. It includes the type of company business, its organization structure and its experience in software development, software engineering technology and so on.

##### **1.1.1 Introduction of KUiTTHO**

Kolej Universiti Teknologi Tun Hussein Onn (KUiTTHO) is formally known as Polytechnic Staff Training Center or Pusat Latihan Staf Politeknik. It is formed and managed jointly by the Universiti Teknologi Malaysia and the Ministry of Education to train engineering lecturers for the Polytechnic under the 6th Malaysian Plan.

Due to its significant role and contribution in producing qualified polytechnic lecturers as well as the government's trust towards the capability of the organization, the training center was officially upgraded to Institut Teknologi Tun Hussein Onn (ITTHO) on 12th April 1996 by Minister of Education, Dato' Seri Najib Tun Abdul Razak. It is named after the third Prime Minister of Malaysia, the late Tun Hussein Onn.

With the government's trust as a motivation, ITTHO kept on moving ahead with excellent creative and innovative programmes. Thus, on 27th September 2000, the cabinet decided to award the status of ITTHO to full pledge public university under the Section 20 of the University and University Colleges Act 1971 to fulfill the demand of producing highly qualified professionals and technocrats in the fields of engineering and technology. The inaugural announcement of Kolej Universiti Teknologi Tun Hussein Onn (KUitTHO) was made on 30th September 2000 by the Minister of Education, Tan Sri Dato' Seri Musa bin Mohammad.

Information of KUitTHO is in the website in way to introduce KUitTHO to the world. Its can be surfed at <http://www.kuittho.edu.my>.

### **1.1.2 Introduction of Information Technology Centre**

The Information Technology Centre was established at KUitTHO with a mission to coordinate the integration computerization planning for each faculty, department, unit and center. It's had started operation in December 1994 and until now, its had a wide campus link with based on a Fiber Optic Backbone, the UTP and Coaxial cable. This link is also interrelated with the outside world through a leased line with 512 KBPS speed and was upgraded to 2 MBPS speed at the end of 2001.

There is a network server system running through a backbone fiber optic line which is able to support data until 100 MBPS by using the Fast Ethernet Technology and it is in the process of upgrading to GBIT technology which is able to reach a maximum of 1000 MBPS speed. The development of the high-speed link system is essential to implement the video streaming Technology and online which needs highly recommended specifications in order to be effective.

As the coordinator for the integration of computerization for all staffs at KUiTTHO, Information Technology Center had defined their major objectives to achieve. There are:

- i) Provide facilities and technology services to the KUiTTHO.
- ii) Handling and give basic training to the community of KUiTTHO especially on office automation such as Word, Excel and PowerPoint.
- iii) Give support and advice on computer technology and related fields including on purchasing computer equipments for faculty, department and unit.
- iv) Provide computer services to all staffs including the supporting and academic staffs at ration of 1 to 1 and the students at a ratio of 1 to 5.





## 1.2 Organization Structure

Information Technology Centre consists of three main unit with 41 staffs. There are Technical and Operation Unit, System Development Unit and Administration Unit. Most of each unit has subunit to support main unit. Its organization structure is illustrated as below:

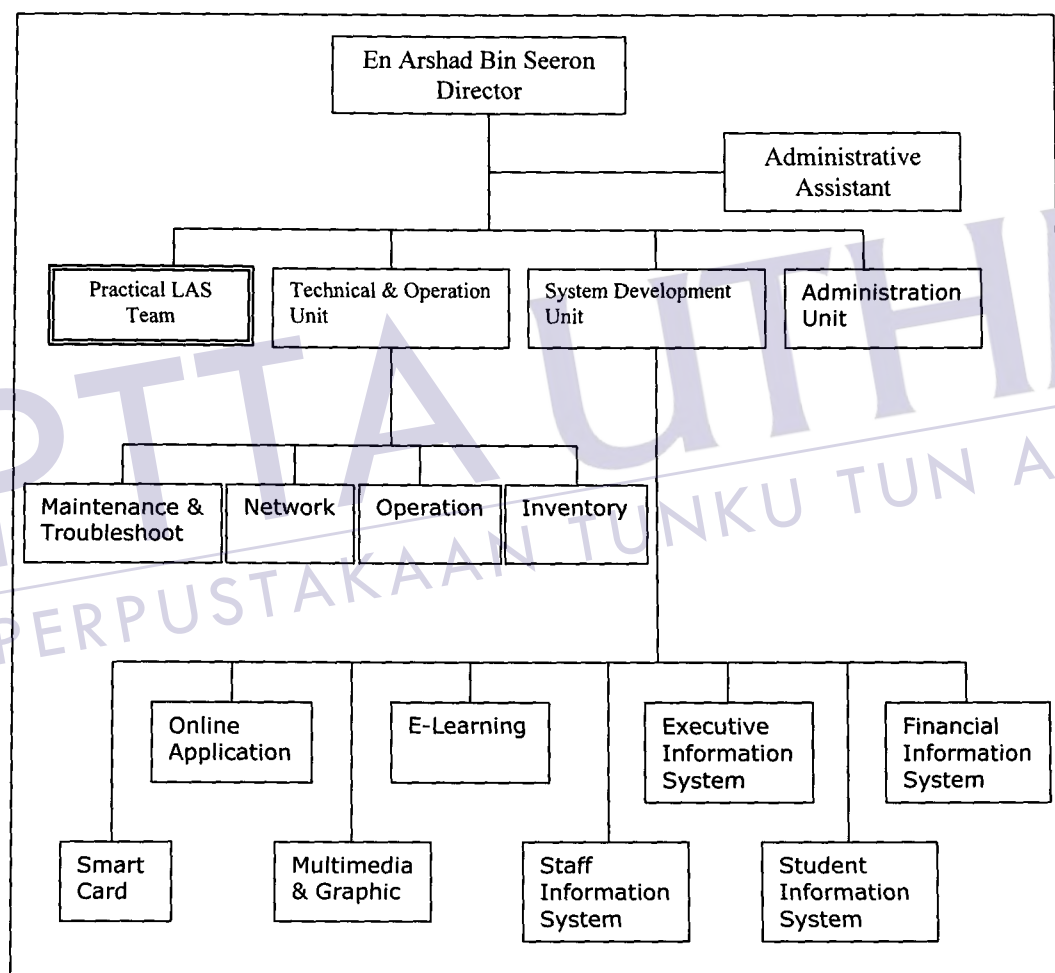


Figure 1.1: The Organization Structure for ITC

Practical team for developing Lecturer Assessment System is assigned directly under director of Information Technology Center as shown in figure 1.1. This unit is created as temporary just for this project. This unit has three members, which is the writer as the leader for this practical team and assist by the Norhanim Bt Selamat and Noraini Bt Ibrahim. They are practical student from the Centre for Advanced Software Engineering, Universiti Teknologi Malaysia (CASE, UTM)



## **CHAPTER 2**

### **OBJECTIVE**

#### **2.1 Project Overview**

This part will give brief descriptions about current system and the Lecture Assessment System.

##### **2.1.1 Total Campus Management System for KUiTTHO**

KUiTTHO had decided to implement Total Campus Management System (TCMS) that will have availability for managing the resources effectively through accurate distribution information to the users. It is a campus management system that gives advantages to management of university as a whole through data integration, an optimum resources management and preparing an efficient information technology service. This system was setup and managed by Information Technology Center.

Currently, Total Campus Management System for KUiTTHO consists of 10 subsystems. They are as listed below:

- i) Student Information System
- ii) Online Academic Advisor System
- iii) Staff Information System
- iv) Financial Information System
- v) Executive Information System
- vi) Online Student Information System
- vii) Online Senate Meeting System
- viii) Lecturer Teaching Evaluate System
- ix) E-Learning
- x) Library Virginia Technology System

### 2.1.2 Lecture Assessment System

Lecture Assessment System is a new required system to support current Student Information System and becomes one of Total Campus Management System. It is a web-based application. It provides user to access from anywhere through web. The LAS input are from Student Information System, Lecturer and Room Time Table System. Student Information System will supply information of students registered, academic advisor and subject offered. Lecturer is the main user that will retrieve list of registered students on his subject taught and took its as his attendance sheets. After class, the lecturers need to input their students' attendance to Lecture Assessment System. The lecturer also must input his student assessment. For monitoring purpose, the user such as academic management office, academic advisor or head of department can view report to see progress of attendance and assessment from time to time.

Lecture Assessment System provides reliable and powerful data processing. It is a cost effective application and help the management to monitor the progress attendance and assessments to all KUiTTHO's student. LAS will be an important system in KUiTTHO. Besides monitoring the progression of students' attendance and assessments, its can be used to monitor the room usage and transparently the lecturer performance.

## 2.2 Project Objectives

The system is built for the lecturer to store the students' attendance and assessment. The objectives of this project are:

- i) Enable KUiTTHO lecturer to input student's mark electronically through web based. So, the management such as head of department will get an updated students' mark directly from the lecturer and this system has a real-time online.
- ii) To provide a list of registered student's name in the lectured class.
- iii) To provide a list of student attendance and in the same time indicate the lecturer to produce the warning letters to one or more absence students.
- iv) To produce student's grading based on total marks of assignments, tests, quizzes, laboratories and final exam.
- v) To produce an assessment report of student's progress mark and student's progress attendance to the Head of Department, Academic Advisor and Academic Management Officer.

- vi) Enable the management to monitor the progress of every class by providing a report of usage of lecture room, lecture hall, seminar room, and theater room.
- vii) This Lecturer Assessment System is enhancement from current general format of assessment using Microsoft Excel, which is geared to be a web base application.
- viii) To fulfill the requirement which are:
  - a. The system has to be real time online.
  - b. To provide security control at different data file, user access and system level. The system proposed has two level of security such as introduce user identification and audit trail.
  - c. Provide a menu driven inquiry facility.
  - d. Can monitor progress attendance and assessment and has graph for normalization of the subject result.

### 2.3 Project Scope

In the early stage of this project, everybody in our team is involved to study the current system, understanding the user requirement and on the preliminary design of the system. After that we divide the system to our team members for detail design and coding the system. The Lecture Assessment System consists of five main modules, which are:

- i) Login
- ii) Manage User
- iii) Manage Student Attendance
- iv) Manage Marks
- v) Retrieve Report

In the Lecture Assessment System software development, the writer focused on requirements gathering, analyze the requirement and produce the prototype for Manage Student Attendance Module and Manage Mark Module. For this he had prepared the System Proposal, which contains the System Requirement Specification. On the system documentation he provide the System Development Design that will be used as a reference by the Information Technology Centre. The functional scopes for the modules are:

i. Manage Student Attendance

This module used by the lecturer to get list of student registered on his subject from Student Information System and create this record at Lecture Assessment System. These students list will be used as attendance sheets. In this module also the lecturer will be inserted the attendance record and allows modifying the records. This module consists of the following function.

a. Update Record

This function is available only for the lecturer for his subject taught to create his students record in Lecture Assessment System. This record will be used for others module.

b. Print Attendance Sheets

This function is available only for the lecturer for his subject taught to print out the list of students base on subject and section or classes for attendance records.



c. Attendance Record

The lecturer for his subject taught must update attendance record such as present, excuse or absent. This function also will show the number of classes done and the number of each student's attendance records.

d. Print Warning Letter

This function provides the lecturer with warning letter for his students who do not attend his class.

e. Modify Attendance Record

This function is for the lecturer to change or insert attendance record for one student at one time. This is to cater any mistake inputting by the lecturer.

ii. Manage Marks

These modules used by the lecturer could set percentage of assessment and define the number of assessment. After that the lecturer must input marks for those assessment. Finally this module will show the total marks and grade for each student. This module consists of the following function.

a. Number Assessment

The lecturer must input the number for each assessment such as test, quizzes, laboratory, assignment and project.

b. Percentage

The lecturer must input the percentage for each assessment and this percentage should be not greater than 100 percent.

c. Grading

This function will calculate the students' marks that have been input by the lecturer and display the total marks and its grade.



d. Graph

This function provide bar chart graph.

iii. Database Module

The writer responsible to setup his personal computer as database server, web server and database design for this three modules. In this system, the writer chooses to use the centralized database that offers distributed data processing and promotes high level of integrity, accuracy and security. Oracle 9i is used as the database because of all system here using oracle and for easy maintains, performance and integration.

## 2.4 Project Deliverables

Among the documents that we have to produce as project deliverables are:

- i. Software Requirement Specification (SRS)
- ii. Software Design Document (SDD)

## 2.5 Project Schedule– Gantt Chart

For my project schedule, please refer to Appendix A.

## CHAPTER 3

### LITERATURE STUDY

#### 3.1 Project Background

Student Information System is one of the main systems in KUiTTHO that was running since 1998. This system focuses on major students activity such as registration, examination and keep student's detail information. Currently, the students' evaluation was not including in this system.

In early of each semester, every lecturer should prepare the students name list for keep track his students attendance. Sometime he also needs to produce warning letter to his student who does not attends at certain number of classes. This attendance record should be managed carefully because it may effect on his students grading at the end of the semester. As stated the KUiTTHO academic rule, the students who did not attend his class 80 percent and above will be get grade E. Its mean this student will fail this subject. Mostly this rule is not really implemented because lacking on handling students' attendance. The current activity is described in figure 2.1.

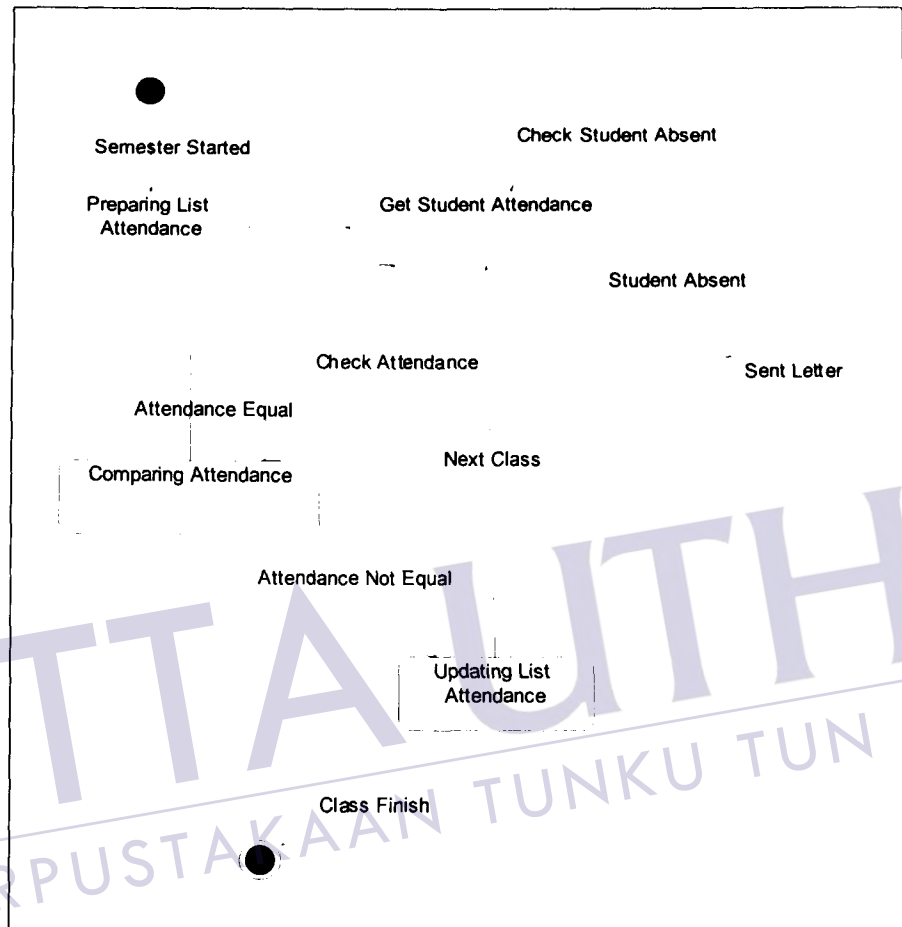


Figure 3.1: Activity Diagram - Current Students Attendance

As a lecturer, one of his major duties is keeping the student assessment record using his style and method. The lecturer uses no standard format. To get the total of the student marks, he needs to calculate all assessments including quizzes, test, laboratory report and assignment for the lectured subject. Usually at the end of every semester, he needs to transfer his students' marks to a computer form, prepared by the Information Technology Center. Then, a clerk at the faculty will insert the completed mark to the Student Information System. The current process is described in figure 2.2.

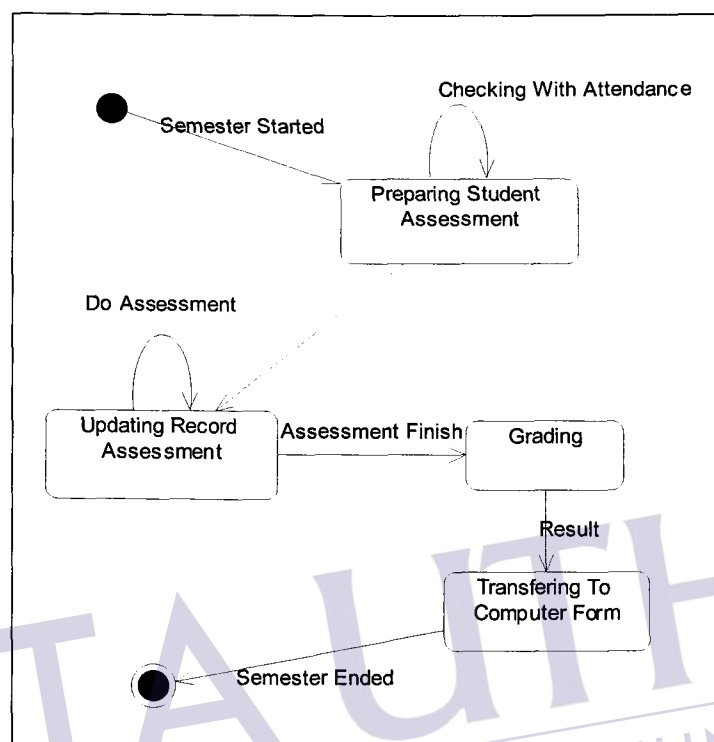


Figure 3.2: Activity Diagram - Current Students Assessment

Currently, both keeping student attendance and assessment lecturer as the major tasks were considered as separate activity event both of it has strong relationships. The current practice does manually produces a lot of problems. Many actions already have been taken to solve this problem but it is still happening. Among the problems identified are:

- i) The list of attendances that is prepared by the lecturer mostly is inaccurate.
- ii) The number of students in a class is not fix and always changes. This situation happens until the middle of each semester.

- iii) The lecturers do not send any reminder letter or warning letter even the particular registered student always absence in his class. At the end of a semester, they realized the certain student has no marks.
- iv) Mistakes happen during the transformation of result.
- v) The management such as the head of department cannot monitor the progression of attendance and assessment done by the lecturer.
- vi) The students' attendance is a pre requisite for student assessment but sometime its not taken in account by the lecturer.
- vii) It is found that a registered student on certain subject has got no marks and no attendance record by the end of each semester.
- viii) Many complain came from the students because of their result were not accurate even after senate meeting.

### **3.2 Current Student Attendance And Assessment Activity**

The preliminary investigation activities have been conducted in the early stages of the software development phases. The activity has been implemented on the current students attendance and assessment.

Academic Management Office has an intention to have a standard student assessment method by introduce format of assessment using Microsoft Excel. Hopefully by introducing this format it will easily trace and reducing mistake. This office prepared a list of student base on pre-registration subject for the student attendance sheet with a format of warning letter for the absent students. Then this

document is shared to the entire lecturer. The lecturer can make use this student list for student attendance and keep the assessment record such as quiz, test, assignment and others. By using the Microsoft Excel, the lecturer can plot a graph base on the total marks of student assessment. Current technique just concerns on storing the students' record and does not cater on how the lecturer does the assessment. The format contains a sample of attendance and assessment, which state the percentage and formula to calculate the end result. The Academic Management Office had done survey and found that not many lecturers used this format event the management in encourage them to do so.

### 3.2.1 Problem And Limitations

The existing students attendance and assessment technique has the major problem and limitations. The negative responses on using standard format from the lectures because of the disadvantages of this technique are as listed below:

- i) The students' list base on pre-registration is not accurate. Mostly there are student drop or insert subject during the semester. The lecturers still need to update this student's list.
- ii) The management such as Academic Management Office or Head of Department cannot monitor the usage of standard format because of standalone concept.
- iii) Not attractive for the lecturer of using this format.
- iv) The current student attendance and assessment format that has been applied does not address the requirement from lecturer and no proper studies conducted. The format contains what the management wants.



- v) This has lead to non-availability of service, which is important to lecturer.

This technique is still cannot solve the major problem of monitoring the attendance of student and transparently also the lecturer attendance and the students assessment.

### 3.3 Peer Assessment System (PASS)

Richard Goodman and Fiona Lamb created a web-based system for peer assessment called PASS. This system is one of the Loughborough University LEARN web-based resources. The Peer Assessment System is an efficient web-based application for collecting peer group marks and processing the data.

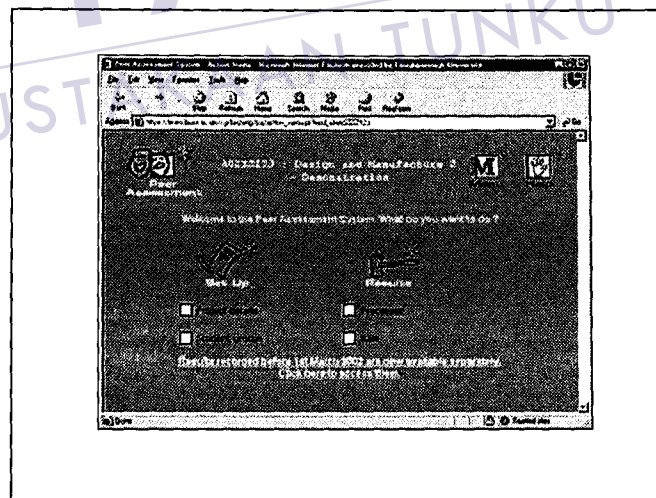


Figure 3.3: Main Menu Of The Peer Assessment System

This system provided online test for the students. The lecturer must create a list of question, which is an objective or true false question on the server, the answer and set the mark for each question. The lecturer must set the students identifier and the password for accessing this system. The students will login the system to attend the online test. Finally, the lecturer will get the result generated by the system. The advantages of the system are quick and easy for the lecturer to set up assessment criteria and allocate students to groups. Marks are automatically processed and put in an online report for the lecturer to access.

PASS is a secure web based application which is only available to Loughborough staff and students by using the LEARN secure log-in user id and password. It provides an interface for staff to create groups of students for a particular module and then create a question set or project details for the groups on a form, with dates that the form will be available to the students. After the student has logged into PASS, they can locate the form made available to their particular group and fill in the form and submit to the PASS system. PASS then processes the data using a standard algorithm and returns the results to the lecturer either as processed data, or alternatively the raw data can be returned so that a different algorithm can be used.

### **3.4 Comparison With Existing System**

This comparison was done based on publicized features of Lecture Assessment System, Current Manual Assessment System and Peer ASsessment System (PASS) in the public domain. Table 1 below describes the comparisons.

Table 3.1: The Comparisons Between LAS With Existing System

Feature	Current Manual	PASS	LAS
<b>Monitor (Supervise)</b>	<ul style="list-style-type: none"> <li>Not Applicable.</li> </ul>	<ul style="list-style-type: none"> <li>The Lecturer can monitor his student marks.</li> </ul>	<ul style="list-style-type: none"> <li>Head of Department or CEO can monitor the progress marks and class.</li> </ul>
<b>Multi-User</b>	<ul style="list-style-type: none"> <li>Only for the lecturer standalone on his personal computer.</li> </ul>	<ul style="list-style-type: none"> <li>The system interacts with lecturers and students</li> </ul>	<ul style="list-style-type: none"> <li>System will be used by lecturers, Head of Department, officer of Academic Management Office and academic advisors</li> <li>This system will be linked with existing system that is Student Information System</li> </ul>
<b>Real Time Information Updates</b>	<ul style="list-style-type: none"> <li>Base on the lecturer</li> </ul>	<ul style="list-style-type: none"> <li>An efficient web-based resource for collecting peer group marks and processing the data</li> <li>Marks are automatically processed and put into an online report for the lecturer to access</li> </ul>	<ul style="list-style-type: none"> <li>Support real time information. (base on the lecturer input)</li> </ul>

Table 3.1: The Comparisons Between LAS With Existing System (Continue)

Feature	Current Manual	PASS	LAS
<b>Online Assessment Report</b>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>Online report is provided for the lecturer to access</li> </ul>	<ul style="list-style-type: none"> <li>The system automatically will be able to generate report of total marks of the assessment</li> <li>Online assessment report is provided for the 3 groups; Head of Department, officer of Academic Management Office (PPA) and academic advisor.</li> </ul>
<b>Web Portal Creation</b>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>Quick and easy for the lecturer to set up assessment criteria and allocate students to groups</li> </ul>	<ul style="list-style-type: none"> <li>Web design is part of the standard package offered</li> <li>Uses real time interactive software to enable direct client participation in the design process</li> </ul>

### 3.5 Programming Techniques

In order to develop Lecture Assessment System as a web based system, the writer are using Macromedia Dreamweaver MX as text editor, PHP Version 4.0 is programming language, Internet Explorer version 6.0 as web browser, Apache as the Web Server and ORACLE Server 9i for the database server. On editing image Photoshop 6.0 and sometime paint are used.

#### 3.5.1 Macromedia Dreamweaver MX

The Macromedia MX family such as Dreamweaver MX is an integrated suite of tools, server, and client technologies which streamline the creation and delivery of everything from a simple website to rich internet application. These products are easy to use, provide powerful capabilities and integrate with existing standards and technology investments.

Now Dreamweaver MX is popular for building websites and Internet applications. Every member of development team such as designers, developers, and programmers can work in a single integrated environment to create, build and manage websites and Internet applications. Macromedia Dreamweaver MX combines its renowned visual layout tools with the rapid web application development features of Dreamweaver UltraDev and the extensive code-editing support of Macromedia HomeSite. So the world's best way to create professional websites is now the easiest way to build powerful Internet applications. Dreamweaver MX now includes the powerful file versioning and administration capabilities of Macromedia Contribute, the tool that lets anyone update and publish content to existing websites without knowing HTML. Dreamweaver MX is also well

known as the professional HTML editor where there are include specific feature for three users designer, coder and developer.

Dreamweaver MX is easy to achieve complete control over code and design. The users can build the site they want, the way they want it, using the visual layout tools of Dreamweaver combined with the code-editing tools of HomeSite. Rapidly develop Internet applications for the latest server technologies will made this editor powerful web software. Drag-and drop visual tools and robust code-editing support make it easy to develop for any popular server technology. Furthermore, Dreamweaver MX is building open concepts. Unlock the benefits of emerging standards and new web technologies, including XML, web services, XHTML, and accessibility compliance. Retrofit existing sites or build next-generation applications. There are new and enhanced features for the Dreamweaver MX rather than the previous product from Macromedia Dreamweaver.

The writer chooses this because he can write code faster than ever before using high powered coding features like code hints, tag editors, extensible color-coding, tag choosers, snippets, and code validation.

The writer is using the market leading web development tool in Macromedia Dreamweaver MX to quickly create, build, and manage websites and PHP applications. The tools are:

- i) Native PHP support, including libraries of PHP server behaviors for quick application building
- ii) Open, extensible API to customize the product – take advantage of the hundreds of free extensions on the Dreamweaver Exchange
- iii) Live data view in design-time provides precise control of the application user interface

### 3.5.2 PHP Programming Language

Rasmus Lerdorf created PHP in 1995, initially as a simple set of PERL scripts for tracking accesses to his online resume. As more functionality was required, Rasmus wrote a much larger C implementation, which was able to communicate with databases, and enabled users to develop simple dynamic Web applications. Rasmus choose to release the source code for PHP/FI for everybody to see, so that anybody can use it, as well as fix bugs in it and improve the code. We choose PHP as our programming language because of these reasons below:

- i) The developers at Information Technology Center currently using PHP for develop web-based application. This system will hand over to ITC for implementation and maintenance.
- ii) PHP is open source that is free downloading and user friendly. It is easy to get support.
- iii) Many websites provide material as our references on the Internet that provide idea and sample.
- iv) The PHP syntax was similar to PERL that the writer had learnt before.
- v) PHP has strong extensibility features. In addition to provide end users with a solid infrastructure for lots of different databases, protocols and APIs.
- vi) The PHP were the object oriented syntax support and the much more powerful and consistent language syntax.
- vii) One of the strongest and most significant features in PHP is its support for Oracle, which is used by the ITC.



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