INTEGRATED WEB BASED RECORD MANAGEMENT SYSTEM OF STUDENTS' ATTENDANCE & ASSESSMENT SUBMISSION

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ABSTRACT

Lecturers carry varieties of responsibility such as recording the students' attendance and students' assessment marks management. Currently, the lecturer manually records the students' attendance without having a proper web-based application system. Similarly for the submission of assignments or project papers, the students will be given a link by the lecturer using selected cloud. These resulted the file name uploaded by the students do not follow the standard and the lecturer need to rename manually the filename accordingly before the marking process is started. Hence, this article suggested an integrated web-based application system which the system will record the students' attendance and help the students to submit the assessments using the standard links as a one stop center for both modules. The methodology of SDLC has been applied for the system development. This web-based system has been developed using HTML and PHP programming to cater the attendance and assessments submission modules. The system has been tested to 97 students of diploma and degree students at Universiti Teknologi MARA, at Perlis branch for 1 semester. The students responded positively because the systems make the process of log in the attendance and assessment submission is easier than before. Furthermore, integration of both modules reduces the bureaucracy which make the lecturers work efficiently and feel unstressful.

Keywords: integrated, attendance, assessment submission, web based

Introduction

The role of lecturers not only focusing on teaching preparation, but they are also needed to manage other things such as taking attendance, giving and assess the assignments, conducts consultation, or acts as academic advisor to the students and others important tasks that need to be fulfilled (AGCAS, 2021).

At Universiti Teknologi MARA, the lecturer needs to record the students' attendance and analyse the progress of their attendance for fourteen weeks of classes. Imagine if the lecturer needs to conduct in average of 3 groups for each subject and mostly total subject assigned to each lecturer is 2 codes. A lot of clerical works need to be done just to manage the students' attendance.

In addition, the lecturer is also responsible to give assessment to each student and total of assessments depend on the subject nature. Some of the subject will be having more assessments when the weightage of the summative assessment (coursework) is higher than the formative assessment (final examination). Since the Covid-19 pandemic outbreak, the classes must be conducted as online mode. The assessment will be submitted as a softcopy and not the hardcopy anymore. The links for assessment submission will be shared by the lecturer to the students through social media such as the WhatsApp or Telegram application. The lecturers complaining that the assessment submitted by the students to the

cloud does not follow the standard as stated in the instructions such as the filename is not consistent, varieties of file format and size. Hence, the lecturer needs to manually rename the file name and repair some of the files. This become very tiring and exhausted to the lecturer if number of students are many.

According to the studies on lecturers are burnout during the Covid-19 pandemic conducted by (Panisoara, 2020), the lecturers had to cope with many stressors within their professions including the ambiguity of their roles, difficulties in class management and exhaustion from teaching online.

This article will share an innovation which combine the attendance and assessment submission as a comprehensive web-based application. This online system will help the students to record the attendance and submit the assessment easily and no issues of inconsistencies of file format or corrupted file submitted by the students. In addition, the workload of the lecturer will be reduced because most of the clerical tasks will be processed by the system.

Generally, the organization of this paper is started with a brief introduction of the project title. Next, this article explained some of the related research or previous works that have been conducted. The research methodology will be further explained before the analysis and discussion of the project are elaborated. Finally, the project future enhancements will be recommended as conclusions.

Literature Review

Many of higher education institutions had implemented the Student Attendance Management System which include Internet systems like web-based, mobile-based system and others computerized attendance system with embedded hardware technology such as fingerprint, iris-based, face recognition, RFID (Radio Frequency Identification) and Bluetooth (Jacki, et. all, 2015). According to (Anita, et. all, 2016), the web-based Attendance Management System which using the SMS technology to send the status of students' attendance reports to their parents will increase the students' motivation and responsibility to attend the class. Some universities use the QR technology to record the students' attendance and the record will be automatically stored into the server (Anita, et. all, 2016). The QR code technology speedup the data entry process and avoid the data entry erroneous. In most of higher education institution, the lecturers will evaluate overall attendance in a semester to determine the condition of the students if there are eligible to sit the final examination (Benyo, et. all, 2012).

Quite number of universities have started to encourage the students to use the Learning Management Systems (LMS) for assessment submission. University of Southern Queensland (USQ), Australia implemented two LMS named Writely and Moodle to their students to submit the assignments (Petrus & Sankey, 2007). The students and lecturers were responded positively because both platforms make the students easier to submit the assignments and the lecturer to give feedbacks to the students. Another similar web-based system named, Automated Homework Submission System which consists of three modules User Interface Module, Submission Acceptance Module and Grader interface Module

(Sam, 1998). The system will allow the lecturers to upload the file or question paper to the students, allowed the authorized students to view the questions and participate to answer, export the marks to excel sheet, send reminder message of the assignment deadlines to students and finally share the assessments that have been marked with the students.

The article written by (Eaganathan and Maruf, 2018), had proposed a comprehensive system of assessment submission to the department of ICT at ASIA Pacific University. The submission of the assessment should be secured with the encryption algorithm and cryptography technology. The students were allowed to check the plagiarism percentage before the assignment is submitted. The assignment is allowed to be viewed by the students after the lecturer marks the assignment. The system will blast message to students either email or SMS to remind for the late submission. Hence, implementation of these features will strengthen the system integrity and improve users' satisfaction.

Methodology

The Integrated Web Based Record Management System of Students' Attendance & Assessment Submission have been developed using the common methodology called System Development Life Cycle (SDLC). The SDLC consists of five (5) phases starting the Analysis, Design, Implementation, Testing and ended with Maintenance phase (Dora & Dubey, 2013).
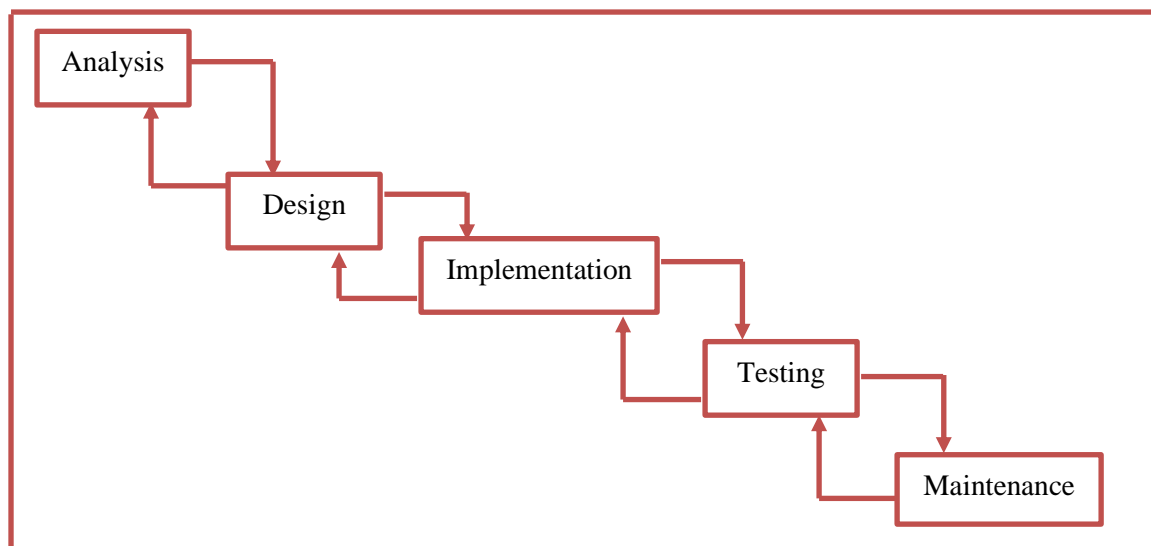

Figure 1. System Development Life Cycle (SDLC)

Figure 1 indicates that the SDLC phases are flowing from the analysis until the maintenance phase. SDLC helps the developers return to the earlier phase if they need to improvise or perform some corrective actions. Analysis is the crucial phase in SDLC. Developers must identify the business requirements. Data collections need to be validated and regularly updated and restructured with user requirements. The project problem statements need to be clearly defined so that the project objectives

are quantifiable and realizable. Interviews with the users have been conducted as the instruments of information gathering and data collection.

Analysis documentation has been presented, accepted and verified by the main users and top management. Next, the design phase continued by engaging the design of the system with database integrity framework, system interactivity, system functions, security and other related matters. The prototyping methodology is also applied to speed up the development process. Prototyping is generally used when the developer performed the design, implementation and testing phases in SDLC methodology simultaneously (Tavolato & Vincena, 1984). Prototyping method helps to reduce the project duration and overall budget. The first workable prototype will be tested by the main users and developers. Corrective actions will be taken immediately by the developers for system enhancement. Once the correction action has been taken, the system will be represented until no issues are raised by the users. Other related aspects of testing that will be considered by the developers are the database and network performance, concurrency problems, system security and integrity.

After several cycles of SDLC phases, the system is successfully implemented and now the web-based being used by 97 students of degree and diploma students at University Teknologi MARA, Perlis branch before expanded to all students at the faculty level.

Analysis and Design

The Integrated Web Based Record Management System of Students' Attendance & Assessment Submission has been developed using HTML and PHP programming language and the database of the system was designed with MySQL. As mentioned in the previous section, this web-based system consists of two modules, which the first module is to record the students' attendance, while the second system is to manage the students' assessment submission. The following table shows the list of business requirements that must be confirmed for both modules which has been stated by the users.

Table 1: List of Business Requirements Stated by Users for Attendance &
Assessment Submission Modules

Attendance Module	Assessment Submission Module
- The student is allowed to log in the attendance during class only. - The student is able to upload evidence of a document if they are absent with reason. - The lecturer is able to update the attendance if the students are forgotten to log in the system during the class. - The student is able to view their record of the attendance.	- Only the authorized user is able to upload the assessments. - The student will choose the type assessment that they want to submit. - The size of file and the format has been specified. - The student is able to check and confirm the submission of the assignment at the system.

● The system shows the status of attendance and display percentage of attendance as of current date. ● The system is able to notify an email to the students if absent. ● The system is able to list records of students who were absent for a particular day. ● The system allows only the authorized user to access the system. ● The system allows only the specified format and size of evidence file to be uploaded. ● The system allows the students to update data such as the phone number and email address. ● The system will do details analysis of students' attendance records as overall performance of attendance progress report.	● The lecturer is easily downloading the assessment submitted from the system before marking. ● The assessment that has been marked is easily reuploaded to the system before returned to the students. ● The students are able to check their assessment marks and download the assessment that have been marked. ● The students are also able to check the overall marks or their coursework marks.

The following figure 2 shows the main menu of Attendance & Assessment Management Systems or the acronym is AAMS.
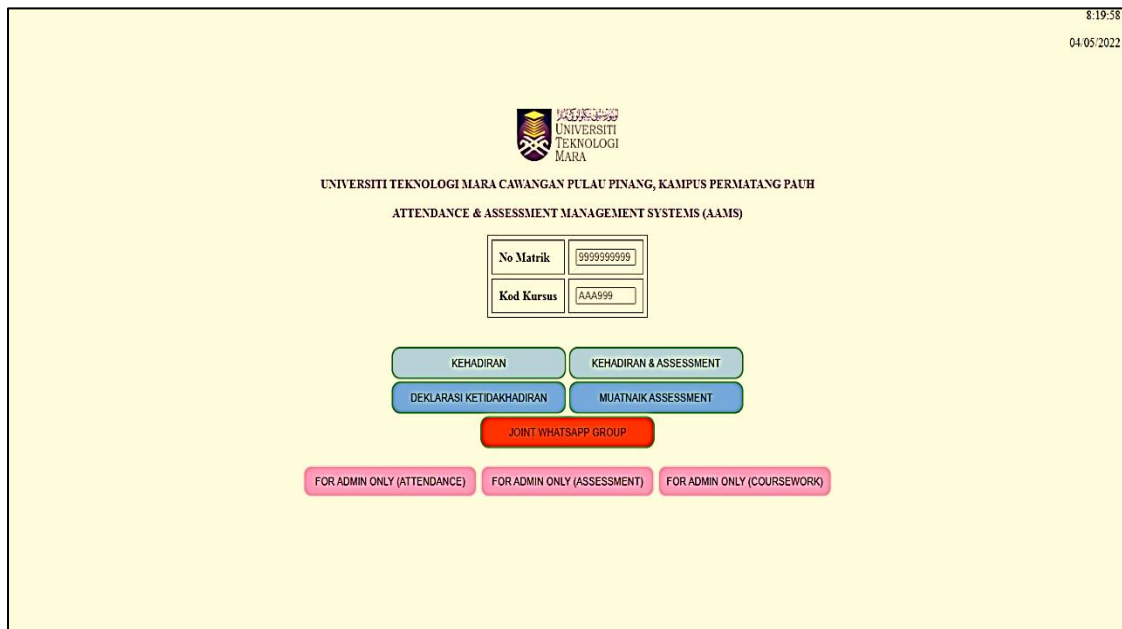
Figure 2. The Main Menu of AAMS

The main menu consists of two main modules which the module of attendance and assessment submissions. The buttons with blue color are accessible by the students, while the pink color buttons are only accessible by the lecturer or system administrator. The button with pink color cannot be seen by the students because the button has been set with the IP (Internet

Protocol) number of the system administrator. The basic profile of the students such as the student number, name, program, part and subject code are retrieved from the Student Information Management Systems (SIMS). These basic profiles are injected into the database of AAMS, so that only the authorized students are allowed to access the system. The student needs to enter the matric number and subject code whenever they want to login the attendance. Once successfully logged in, the system will record the time stamp of the login attendance into the system. The system only allowed the students to log during the time that has been allocated or the slot of the class.

The following diagram, figure 3 shows the interface for the students to declare evidence of absenteeism.

Figure 3. Interface to Upload the Evidence of Absenteeism

This interface only allows the students to upload the evidence in PDF format and size of the file not exceeding 2 MB. The system will allow the evidence to be uploaded whenever the matric number is valid, the time slot of absents are exists in the system and will not accept the evidence if the student is already logged for attendance for that particular slot or date. The concept and interface for assessment submission is similar with the declaration of absenteeism evidence interface.

The students are able to view their attendance records and assessment submissions as shown in the following diagram 4. The following interface is needed because the students are able to check

whether their attendances are recorded properly and the assessments are successfully submitted to the server.

Figure 4. Interface of Students Attendance and Assessment Submissions Records

From the same interface, the students are able to check the percentage of attendance and their status. For Universiti Teknologi MARA (UiTM) the percentage of absenteeism should not exceeding 80%. Otherwise, the students will be barred for taking the final examination. The students are also able to check their assessment results and downloads the assessments that have been marked by the lecturers. This interface is a one stop page which the attendance and coursework mark progress can be examined or observed by the students.

For the administrators or lecturers, they are also being given a special privilege to examine the progress of students' coursework marks and attendance performance as shown in the following interfaces figure 5 and figure 6 respectively.

Figure 5. Interface of Students Attendance Performance

Figure 6. Interface of Students Coursework Marks
(All marks shown are 0 mark because the assessments submitted are not finished marked yet)

The feedback given by the students and lecturers are very encourage able because most of the students responded that systems had eased the process of taking the attendance and the submission of the assessments. The lecturers are also responded positively because since the Open Distance Learning (ODL) classes are conducted, it is quite tedious to handle the submission of assessment and to analyse the students' attendance. The highest and positive impact that can be seen from the system is the part of automatic calculation and analysis of students' attendance will be done in a second.

The followings table 2 shows, the three questions that have been asked to the students on the system acceptance level and the mean obtained for each question. Based the table 2, it shows that the students acceptance level is almost reaching 4.00, whereby the Likert scale 0 to 4 have been applied to answer the three questions below.

Table 2. Analysis of System Acceptance

Questions	Mean
1. *Overall, the assessment submission module is fulfilled.*	*3.89*
2. *Overall, the students' attendance module is fulfilled.*	*3.95*
3. *Overall, the analysis of students' attendance and coursework mark is fulfilled,*	*3.91*

Conclusion

As a conclusion, the system has increased the satisfaction level of among students and lecturers after this system is successfully implemented. This system will be expanded to the faculty level once the special committee approved the system functional.

Enhancement of the systems have been suggested by the lecturers to improve the system such as providing the features of reminder notification to the students whenever they are absent. Through this feature at least the students are alert about the importance of attending the class. The same feature will be applied for assessment submission module whenever the students did not submit the assignment until the due date is reached.

Security of the system is another important feature which the assessment submitted to the system is not easily accessed by the unauthorized user. The developer of the system will ensure that all assessment will be encrypted and cannot be viewed by unauthorized user unless the permission is given by the system administrator. Similar method is applied for viewing the details individual coursework marks which only can be viewed by the respective lecturer and authorized student. Our team believes that this system will improve the satisfaction index level among lecturers and students. Hence, the university education quality will become a benchmark to other higher education institutions.

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