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An Implementation of Final Year Project Management System: A Case Study at Universiti Sultan Zainal Abidin

M.A. Mohamed, AF. Abidin, A.A. Jamal, M.A.M. Amin, A. Rozaimee and F.A. Wahab

Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Malaysia

Abstract: The final year project is a mandatory course for the Bachelor Degree in Computer Science program at the Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin. It is a final course for students and a platform where students can showcase the knowledge and skills they obtained during classes and become an asset for the needed practical skills in the industry. Among the problems faced during the progress of the project is the absence of a systematic approach to provide a complete report. Consequently, supervisors faced difficulties in managing students and their project. The objective of this study is to propose the implementation of the Final Year Project Management System for monitoring and supervising student's project progress. The system is built to smoothen the communication between supervisors, students and heads of department, improving the efficiency in supervision and thus increase the chances for students to enhance their performance.

Key words: Final Year Project · Project Management · Project Monitoring · Automatic Reporting · Feedback System

INTRODUCTION

As part of the requirements to graduate, a bachelor degree student must successfully complete his final year project (FYP) [1]. The FYP has been very challenging, a stage where students exhibit their ability to apply the knowledge and skills they have obtained throughout their tenure as bachelor degree students [2-4]. The FYP normally runs for one whole semester or in some universities, it is spread over two semesters. In the computer science faculty, a student must agree upon one of many choices of the project which can generally be categorized into developing a software application for supporting real-world needs, conducting an experiment to study the real-world problem via computer simulation or developing a prototype for answering to innovation needs. In reality, some students find FYP hard to follow and they may end up with a low-quality result or even fail to meet the minimum objectives. Experience shows that a proper monitoring of students' progress can be very useful in making sure the student remains on the right track and thus completes the project.

Currently, at the Universiti of Sultan Zainal Abidin, data related to FYP is recorded manually using forms and booklet. Students and supervisors keep them in a dedicated file. Manually recorded data is error-prone and exposed to mishandling and missing out somewhere. Moreover, using this type of manual monitoring system, a student needs to arrange appointments with supervisors and present an update of project assignment on the weekly basis. Forms must be brought together to record the progress of the project while supervisors provide comments and validate the student's work. Indeed, it is difficult for a supervisor to determine exactly the current status of the project if the student missed out the appointment. In addition, supervisors may encounter problems in dividing the supervision time among students whenever there are many students under his supervision. Additionally, the manual process is considerably difficult in a situation where there is a need to locate student's files to retrieve previously stored data because it takes a long time due to the volume of data and sometimes, the data sought may not necessarily exist. Moreover, during the evaluation phase, the supervisor marks the students'

Corresponding Author: Mohamad Afendee Mohamed, Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Besut Campus, 22200, Terengganu, Malaysia.

works based on the continuous involvement of the students. In the event of any losses or damages to students' files and no backup files available, the students may risk getting a low grade.

The fact is, all project activities should be carefully monitored during the project [5]. It helps the supervisor to know the progress of the project and increases the chances for the students to complete the project on time. A project management system helps supervisors to monitor the progress of students by giving an immediate response to students, especially when supervisors are not on campus. Indeed, the way to approach a student is different for each supervisor. The best approach is to monitor the student's progress through a web-based application as students nowadays are well-versed in computerized systems.

This system helps students with any type of reporting and also helps supervisors in monitoring every detail despite the distance from the student. A management system for FYP allows students to easily update on the problems or progress of the project from time to time. Supervisors are made aware of the progress of the students under their guidance in a short time. The FYP management system is expected to help streamline the project management process. Students are always aware of the tasks to be performed and the supervisor can provide immediate feedbacks so that the FYP can be completed successfully. Based on the research conducted through observations and interview sessions of senior supervisors and students, the manual method based on the form booklet is still being used by lecturers and students for FYP management. This method is known to be outdated and problematic for both parties. The form is provided as a soft copy and students must have it printed and presented when having a meeting with the supervisor. Students will write weekly activities while the supervisors comment and endorse the progress of the student's FYP. This approach causes difficulties for supervisors in determining the progress of the students while completing the assignment because each supervisor is responsible for more than one student.

Earlier works on digitizing FYP communication has been numerous [6-8]. In this paper, we developed a web application that can be used to supervise and monitor the progress of student's final year project at the Faculty of Informatics & Computing, Universiti Sultan Zainal Abidin. The idea of this project is to smoothen the process of communication between students and supervisors. The underlying principles come from the field of project management [9, 10]. This application also includes another role for the head of department who is responsible for being a mediator between the two parties.

MATERIALS AND METHODS

This section describes the materials and methods that were used to complete this project. It includes some of the tools used for developing the application for this project. For the development of the product, we start off with system modeling and design of the application which would later result in the development of the product and finally followed by testing of the complete product. The product initial design is defined within a simple system overview. It represents an overall model of the project. Moreover, we translate user requirements into system functionality diagram and system database design.

The development process of this system is developed based on modules. The most important module in the development of this system is the module for supervisors to monitor the progress of the students' project through the web-based system. In this phase, the system testing process by the user will be made to determine whether the developed system can run properly or vice versa. This implementation is important for detecting errors in the system. After the initial system test is made by the supervisor, correction will be made if there is any problem with the system before it is used by the user.

Before that, it will be tested and maintained for the last time before use. This is to ensure that errors or problems identified in the previous phases can be improved and corrected as closely as possible to ensure the system runs smoothly. As soon as correction is made, the final presentation of the project will be carried out. Then a final draft of the report will be created and submitted to the supervisor and also a final report for the project will be prepared and sent to the faculty.

To implement this application, tools and technologies required are shown in Table 1. This is a web-based application, the coding part will be done in PhP and XAMPP with the help of MySQL as a storage. Human interface to this system is via Google Chrome. Reporting will be done in MS Word. The system overview is the most important part of the system design and it defines the scope and boundary for the application to be built, which is shown in Fig. 1 consisting of three main entities involved namely, Head of Department, Supervisor and Student. The system is responsible for providing an interface for the three entities to communicate.

Table 1: System Requirement

Google Chrome	This software is used to view project results after being designed using programming language.
Microsoft Word 2013	This software is used to generate project documentation.
XAMPP	This software allows this system to be used with Google Chrome software.
Notepad ++	This software is used to perform coding in developing the system.
PhpMyAdmin	This software aims to manage the database for this system.
Microsoft Visio	This software is used to design CD, DFD and ERD
MySQL	This software is used as a database system.

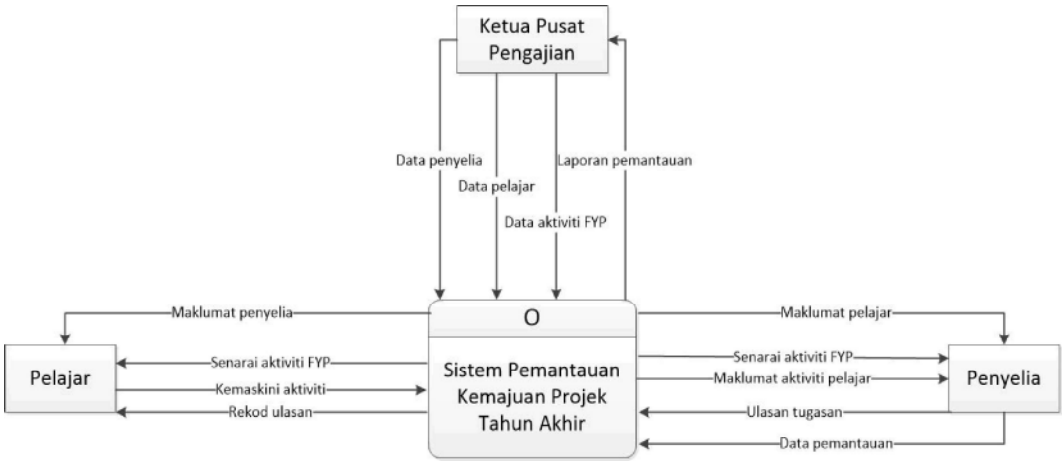

Fig. 1: System Overview

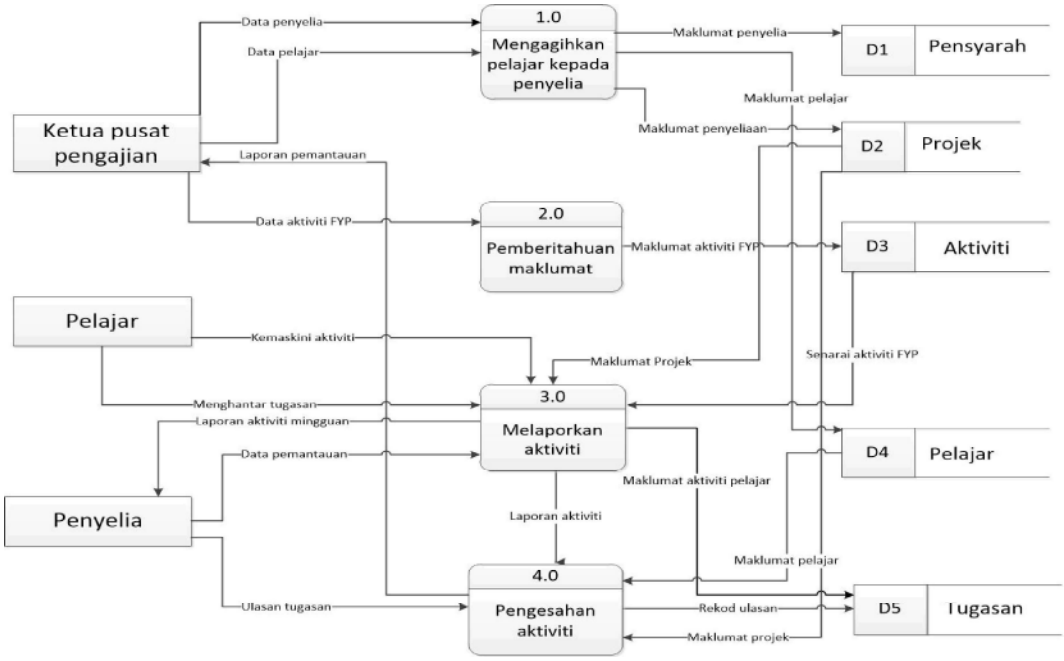

Fig. 2: System Functionality

Based on the agreed features requirement, the functionality of the system is displayed in Fig. 2. Each functionality defines the communication and the flow of data (type and direction) between two or more entities.

The Final Year Student Monitoring uses MYSQL as a database system. The database is designed according to Fig. 3, which consists of six different tables, those of Supervisor, Project, Student, Head of Department, Activity and Task.

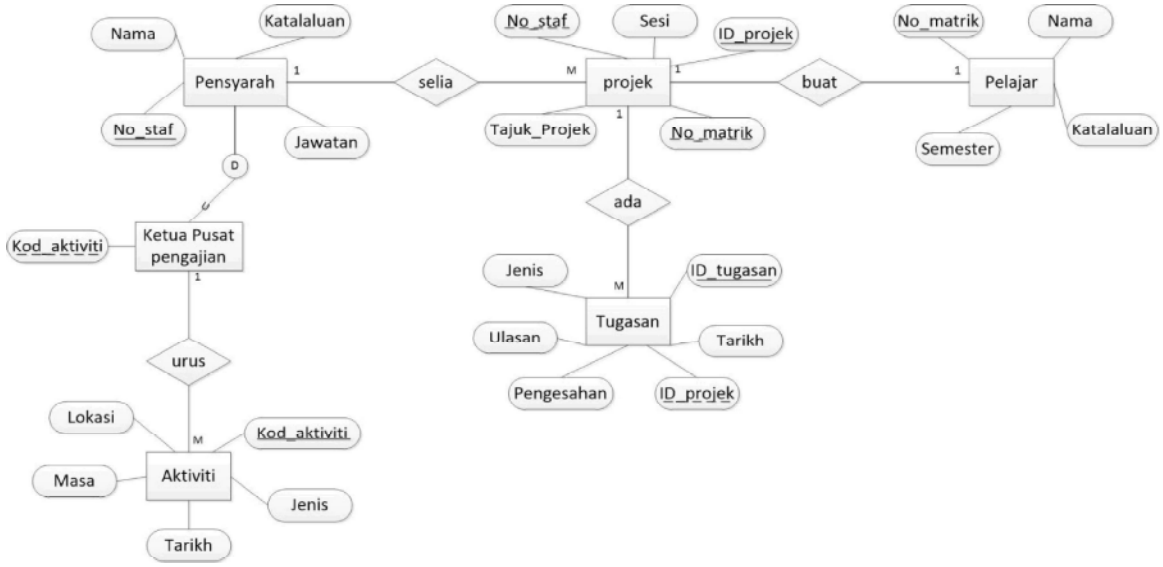

Fig. 3: System Database

In this project, we performed two types of testing namely, unit testing and system testing. This process is essential for the system to run smoothly and according to the needs of the user. Testing for each process or unit is important for several reasons; first, it helps to identify the accuracy of the developed system processes. Second, testing on databases is done to identify whether there is duplication of data or not. It also helps to ensure that each program can function properly. Among the tests performed were validation, buttons, relationships and processes. System Testing is very important to produce a good and orderly process. This test is made when all processes are formed into a large system. System testing is carried out by entering actual data because it is necessary to verify the accuracy of all system components that are based on the specifics of the design.

RESULTS AND DISCUSSION

In this section, we developed our proposed system accordingly, at the same time ensuring that the information system is operational and adheres to specification. The testing has also been done to detect possible errors and discrepancies in the products. In this application, the interface consists of a few parts, however, the most important ones are the main interface, HOD, student and supervisor interfaces.

Fig. 4 shows the main interface of this application. It provides the login page for the Head of Department, Supervisor and Students Home to access the information. With the right identification (login and password), one belongs to either one of the three group aforementioned. According to Fig. 5, as a HOD, you are allowed to add,

Fig. 4: Main Page

Fig. 5: Administering Student Activity page

Fig. 6: Project Title Registration Page

Fig. 7: Task Assignment Page

edit and delete an activity assigned to final year students. In addition, on this page, you are permitted to distribute students to be supervised by a selected lecturer and finally generate reports.

Meanwhile, students are allowed to add the project information such as registering the final year project title after having agreed with the supervisor, as shown in Fig. 6, which will later be submitted to the HOD for further

evaluation and approval. Moreover, students can also use this page for checking the assigned tasks, uploading completed tasks, reporting current project progress and submitting a project report for monitoring purpose by supervisor.

Finally, as a supervisor, you are allowed to administer tasks to respective students with the deadline specified as shown in Fig. 7. Moreover, from this page, a supervisor can monitor the progress of the set of activities assigned by the HOD. Supervisors are also able to monitor the current progress of the project. It includes receiving reports from students and making comments and assessment and asking for resubmission if required, on the report.

CONCLUSION

The Final Year Project Management System is a system that gives new insights into FYP supervision and is expected to help lecturers in managing the projects more efficiently and effectively. The system is also able to further generate reports which will allow the Head of School to view the student's supervision report. For future works, the system can be improved in terms of better security. Moreover, we can add some other processes such as the automated computation of student grading.

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