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Creation of final year project administration system using php script and MySQL

Yusnita Halim[1*)], Afsal Abdullah[1], Sharifah Nurulhuda Tuan Mohd Yasin[2]
[1]Department of Information Technology and Communication, Polytechnic Kuala Terengganu, Malaysia
[2]Department of Electrical Engineering, Polytechnic Kuala Terengganu, Malaysia

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ABSTRACT

This research describes the development of the Final Year Project (FYP) Management System, which aims to provide an efficient way to manage the FYP for students of Politeknik Kuala Terengganu (PKT). The problem is that there are no organized and systematic FYP records and reports that the coordinator of FYP can manage in PKT. Further, no platform is provided to store and access FYP reports that students have documented resulted in difficulty for reading and reference purposes. There are two objectives for this project. First, to develop a management system and data storage related to the FYP online more systematically. Second, to facilitate the FYP coordinator, supervisors and students to access information on FYP more quickly and accurately. This research has succeeded in its goal by implementing the V-Model methodology as a framework for system development with PHP script and MySQL as the database. In conclusion, this research has succeeded in its goals by making it easier for users to manage and access previous FYP report by offering an online smart archive system.

Corresponding Author:
Halim, Y. B.,
Polytechnic Kuala Terengganu, Malaysia
Email: yusnita@pkt.edu.my

Introduction

A database management system (DBMS) is system software for creating and managing databases. A DBMS makes it possible for end users to create, protect, read, update and delete data in a database. The most prevalent type of data management platform, the DBMS essentially serves as an interface between databases and users or application programs, ensuring that data is consistently organized and remains easily accessible (Mullins, 2022). MySQL is an open source relational database management system (DBMS). It is developed, supported, and distributed by Oracle Corporation. MySQL is the most widely adopted relational database management system and can be used for mission critical apps, dynamic websites, and as an embedded database for software, hardware, and appliances (Vasiliuk, 2022) .Hypertext Preprocessor, or PHP, is a server-side scripting language, which implies that programmes created in it execute on a web server and are not dependent on a web browser. Due to its many benefits, the PHP coding language is currently considered one of the greatest and most widely used programming tools for web development (Roznovsky, 2022).

Final Year Project (FYP) is an academic project or task that every polytechnic diploma student must complete to meet the graduation requirements. The aim is to see the skills and knowledge that students have acquired in their studies. Students who have passed all the requirements are eligible to take this FYP course. The whole FYP process involving groups of students and their supervisors achieve the project objectives that have been targeted. FYP allows students to choose a topic, methods and tools and make decisions throughout

the entire project. At the end of the FYP, students will show the products produced and document the FYP report.

However, several problems related to managing documented FYP report arises. All FYP record information were previously managed using excel software and google form. Additionally, students also face difficulties in having access to earlier FYP reports for reading and reference purposes to get new ideas in the development of FYP projects. Supervisors and lecturers can't determine whether the proposed project is already among the previous research project or a new one. Unfortunately, the past FYP thesis is usually kept in a specific thesis room. Hence, this will make going to the thesis room and searching the thesis for references quite burdensome (MatTaib et al., 2020). Since the covid19 epidemic, the FYP report document is in soft copy and it is kept by each project supervisor individually and this contributes to the risk of being lost. The lack of electronic management and systematic for FYP report makes it difficult for FYP coordinator to handle completed FYP projects and can still create issues such as data loss, data manipulation and impact on decision-making. Better data management and access enable the generation of higher-quality data, which serves as the foundation for better decision-making (Thiru).

Based on the problem, this study has set two main objectives. First, to develop a management system and data storage related to the Final Year Project online more systematically. Second, to facilitate the Final Year Project coordinator, supervisors and students to access information on FYP more quickly and accurately.

Table 1 <The Final Year Project Coordinator, Supervisors and Students to Access Information>

Research	Issues	Findings
The development of a final year project management system for Information Technology Programmes (Leung et al., 2015)	-FYP programme organizer (PO) will have to assign project topics according to the preferences and academic record of the formed project groups. This is a tedious and error prone task to manually complete the allocation of projects. -Students are required to have meetings with supervisor, hand in project proposals, progress report and carry out presentation of their completed works throughout the whole academic year. The supervisor and the students have to work closely, face challenges and deadlines when finishing the project. - Students will only have enough time to report on their progress and preparation goals for the coming weeks during the meeting.	From this study, it shows that the main function of this system is to facilitate the management of final year project implementation in the IT program at the institution.This system is divided into five modules based on their functionalities; they are project allocation module, communication module, project management module, file sharing & repository, and submission & grading module. Three user different parties involved in the FYP, they are the Programme Organizers (PO) or Administrator, Supervisor/Marker and Students.
Development and Use of A Research Database Management System (Yasin & Ramli,2022)	This study states that there are several problem statements that have been identified, namely: -users take advantage of their colleagues to send articles and at the same time they have been plagiarized. - difficulty in making any dealings with Unit Penyelidikan Inovasi dan Komersilan (UPIK) through conventional process. -difficulty in presenting the journal systematically.	According to this paper, Research Database Management System is a system that makes the delivery of articles from offline to online platforms. This system allows user to to upload articles, proof of payment, upload full papers, view invoices, view letters of acceptance and view certificates. This research used Software Development Life Cycle (SDLC) as a system development model. The Laravel framework and the PHP programming language were used. For database management, its controlled by a database management system (DBMS).

Research	Issues	Findings
Smart Final Year Project Archive System Using Laravel Framework with Email Notification (SFYPAS) (MatTaib et al., 2020)	The following are some problem statements for this study; -It is difficult to find topics for final year projects as there is no facility to access previous FYP theses which can help students generate some ideas. - Supervisors and lecturers also can't determine whether the proposed project is already among the previous research project or a new one. - Past FYP theses are usually kept in a specific thesis room and it is burdensome to go to the thesis room and look for thesis references.	This project aims to develop Smart Final Year Project Archive System (SFYPAS) using Laravel Framework. The system was tested based on its functionality, user acceptance with Technology Acceptance Model (TAM). SFYPAS is developed and the methodology used throughout the project is using Software Development Life Cycle (SDLC).

Method

In the *Method* section, you explain *clearly* how you conducted your research order to: (1) enable readers to In this study, the V-Model methodology has been applied to ensure that the development of this system runs smoothly and that each module in the system is achieved. The V-Model is an SDLC that places a strong emphasis on the idea of "Verification and Validation". There will be a testing phase corresponding to each stage of development in the V-Model, validating the method as it goes. Testing phases will be developed concurrently with the stage against which they are to be tested, and they will be linked at the bottom by the actual coding process (Nakkasem, 2020). In V-Model, it starts from the verification phase (Requirement Analysis, System Design, Architecture Design, Module Design and Coding) until the validation phase (Unit Testing, Integration Testing, System Testing and Acceptance Testing).

In the first phase, all raw data and information about the customer's specification requirements are collected and analyzed. Then all the hardware and software were identified, and the database during the Software Design phase. For the Architectural and Module Design phase, logical design is the main requirement in program development. The logical designs built are Entity Relationship Diagram (ERD), Data Flow Diagram (DFD), Context Diagram and Flow Chart design. Figure 1 shows logical designs for this system. Finally the end of the validation phase, the programming is written based on the logic design that has been built. After completion of the verification phase, several tests on the system are performed. These tests can be clearly seen in the results and discussion section. According to Yasin & Ramli (2021), before the development of the system is done, sketch of system design should be done in order to develop the system be more systematics.

Entity Relationship Diagram (ERD)

An Entity Relationship Diagram is a diagram that represents relationships among entities in a database (Simplilearn, 2021). Based on the relationships between entities in this ERD, Figure 1 shows that the majority of cardinality relationships are one-to-many. For each entity there is a list of attributes that describe the characteristics of the entity.

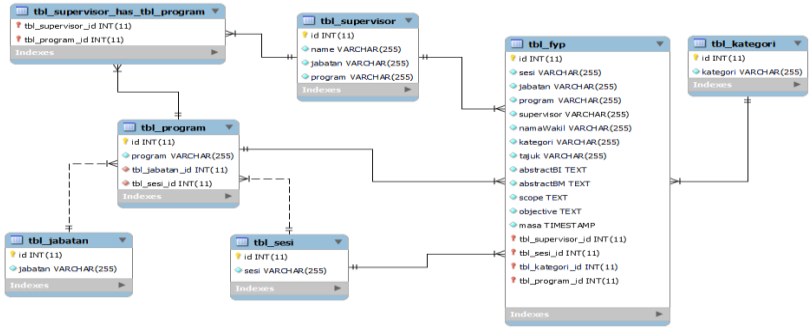


Figure 1 <ERD System>

Data Flow Diagram (DFD)

A Data Flow Diagram (DFD) depicts how information moves through any system or process. All data inputs, outputs, storage locations, and routes between each destination are displayed using symbols. The diagram below shows an overview of the incoming and outgoing data for each process involved in each of these systems (Figure 2).

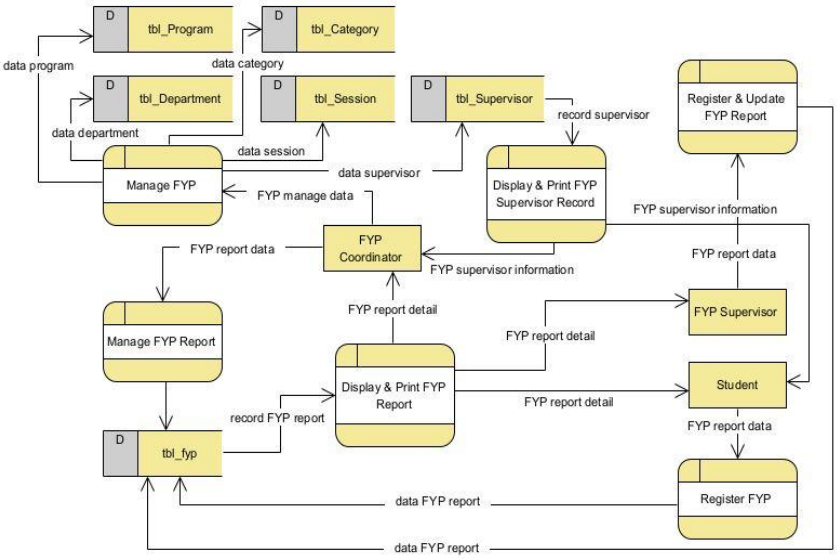


Figure 2 < DFD System>

Context Diagram

A context diagram is a visual representation of the relationship between data and business processes (Opinaldo & Morgan, 2021). Thus the context diagram has helped in defining the scope of the system by identifying entities based on their scope, boundaries and relationships with external components. Figure 3 represents the context diagram in our study.

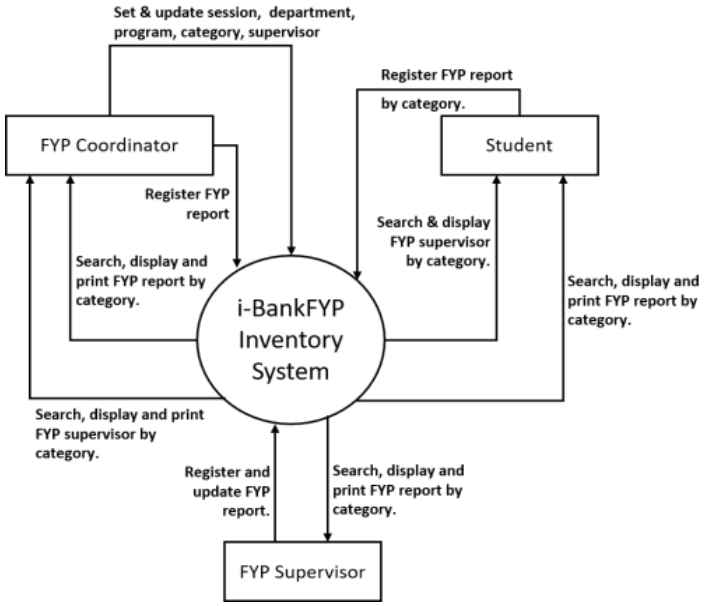


Figure 3 <Context Diagram System>

Flow Chart

The flowchart is a method that has been widely used in practise for specifying, building, and graphically illustrating the system (Tiwari & Lalji, 2015). Therefore, a complete flow chart diagram can help the system developer clearly understand the work flow that goes into the process and the results of the process itself. Figure 4 displayed the flowchart of our system.

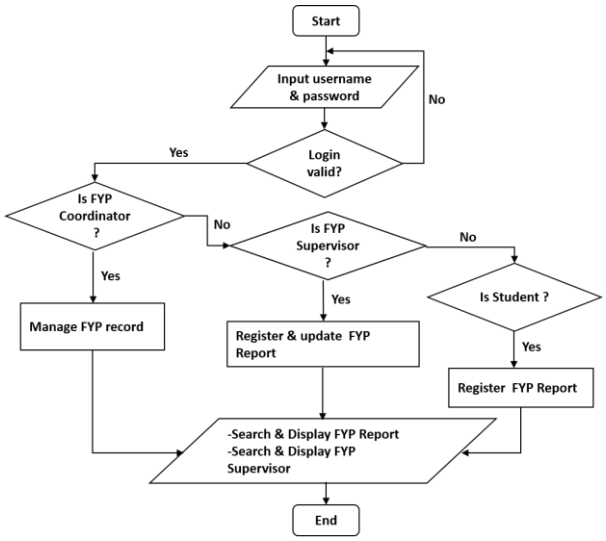
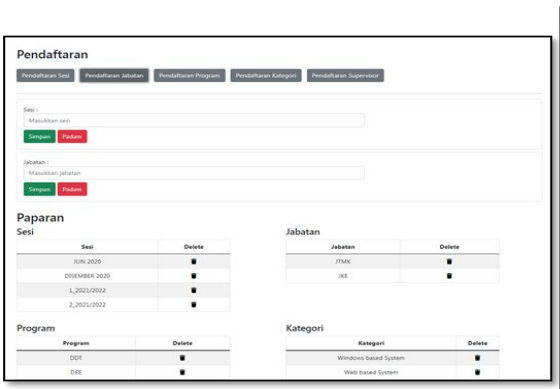


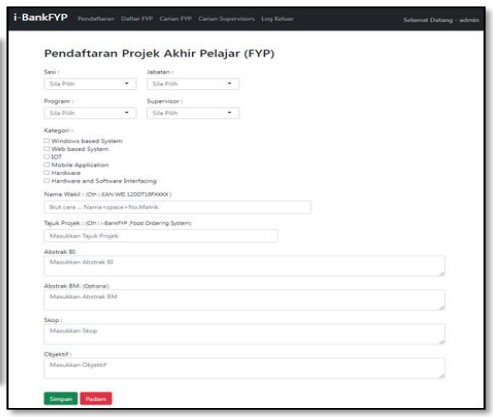
Figure 4<Flowchart System>

Results and Discussions

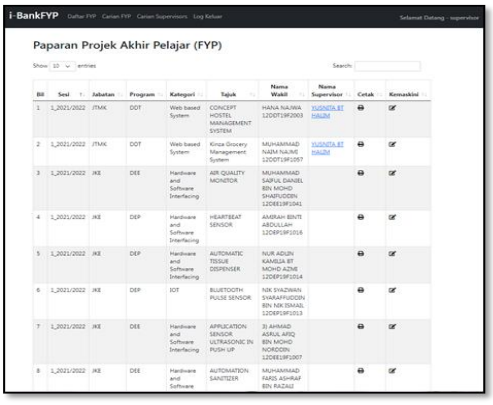
To measure the effectiveness and efficiency of the Final Year Project (FYP) Report Database System, the raw data that has been analyzed and selected as input for the processes in this system must be accurate. This is necessary, so that the records generated can help management make decisions and the reports generated by the system can be used as a reference. The user -friendly interface design and easy system process flow can further streamline the use of the system. An illustration of the system interface created for this system may be seen in the diagram below (Figure 5).



Registration Page



FYP Report Registration Page



FYP Report Record Searching Page

FYP Report Detail Page

Figure 5 <User Interface System>

To ensure that the system can achieve its objectives, several forms of system testing have been done. Among the forms of system, tests are User Acceptance Testing, Unit Testing and Integration Testing. User Acceptance Testing (UAT), also known as application testing or end-user testing, is a stage of the software development process when the target user group tests the product in the real world (Gillis, 2022). Unit testing as well as integration testing are two popular testing techniques that are used in industry and academia (Trautsch et al., 2020). A unit test isolates the component being tested (usually a class or a method) from the rest of the system. An integration test exercises the interfaces between units; if an integration test reveals a flaw, the code that implements the protocol connecting the units should be flawed (Orellana et al., 2017). The following is a table that shows sample of verification tests that have been done for this system (Table 1 Table 3). The displayed of "pass" on all "Test case name" variables without "failure" indicated that the developed system in our study was successful.

Table 1 <User Acceptance Test (FYP Coordinator)>

Test Case Name	Acceptance Requirement	Result (Pass / Failure)
Log Masuk	User is required to '*Log Masuk*' before enter the system.	Pass
Pendaftaran Sesi, Jabatan, Program, Kategori, Penyelia	User is required register *'Sesi', 'Jabatan', 'Program', 'Kategori'* and '*Penyelia*' before register FYP.	Pass
Pendaftaran Projek Akhir Pelajar (FYP)	User is required to fullfill requirement in the registration form according to *'Sesi', 'Jabatan', 'Program', 'Kategori'* and *'Penyelia'*.	Pass
Carian Rekod Projek Akhir Pelajar (FYP)	User is required to find specific FYP's record either by *'Sesi', 'Jabatan', 'Program', 'Kategori', 'Tajuk', 'Nama Pelajar'* or *'Nama Penyelia'*.	Pass
Carian Penyelia Projek	User is required to find specific FYP's supervisor record either by '*Nama Penyelia',' Jabatan'* or '*Program'*	Pass
Log Keluar	User is required to *'Log Keluar'* to complete exit the system.	Pass

Table 2 <User Acceptance Test (FYP Supervisor)>

Test Case Name	Acceptance Requirement	Result (Pass / Failure)
Log Masuk	User is required to '*Log Masuk*' before enter the system.	Pass
Pendaftaran Projek Akhir Pelajar (FYP)	User is required to fullfill requirement in the registration form according to *'Sesi', 'Jabatan', 'Program', 'Kategori'* and *'Penyelia'*.	Pass
Kemaskini Projek Akhir Pelajar (FYP)	User is required to select a specific FYP's record to update and fullfill requirement in this form to update the record.	Pass
Hapus Rekod Projek Akhir Pelajar (FYP)	User is required to select a specific FYP's record to delete and make a confirmation to delete the record.	Pass
Carian Rekod Projek Akhir Pelajar (FYP)	User is required to find specific FYP's record either by *'Sesi', 'Jabatan', 'Program', 'Kategori', 'Tajuk', 'Nama Pelajar'* or *'Nama Penyelia'*.	Pass
Carian Penyelia Projek	User is required to find specific FYP's supervisor record either by '*Nama Penyelia',' Jabatan'* or '*Program'*	Pass
Log Keluar	User is required to *'Log Keluar'* to complete exit the system.	Pass

Table 3 <User Acceptance Test (FYP Student)>

Test Case Name	Acceptance Requirement	Result (Pass / Failure)
Log Masuk	User is required to '*Log Masuk*' before enter the system.	Pass
Pendaftaran Projek Akhir Pelajar (FYP)	User is required to fullfill requirement in the registration form according to *'Sesi', 'Jabatan', 'Program', 'Kategori'* and *'Penyelia'*.	Pass
Carian Rekod Projek Akhir Pelajar (FYP)	User is required to find specific FYP's record either by *'Sesi', 'Jabatan', 'Program', 'Kategori', 'Tajuk', 'Nama Pelajar'* or *'Nama Penyelia'*.	Pass
Carian Penyelia Projek	User is required to find specific FYP's supervisor record either by '*Nama Penyelia',' Jabatan'* or '*Program'*	Pass
Log Keluar	User is required to *'Log Keluar'* to complete exit the system.	Pass

Conclusions

This research was conducted to design and develop a Final Year Project Management System which is a web-based archive system. A system that has the ability to manage and store all FYP information. The Final Year Project Management System successfully displays the FYP report quickly and accurately as a result of a search for uploaded information based on the keywords entered by the user. This Final Year Project Management System can also provide a supervision history where it shows a list of FYPs that have been supervised by a particular lecturer. The results of the system testing prove that this research has achieved the objective of the study and it is proven that the system can satisfy users. Nevertheless, the system can be improved to be more efficient, by include a function to identify FYP has a record of awards or win any competition. Indirectly the system is able to help PKT management to choose the best Final Year Project for awards at the convocation ceremony. This system can also be improved by generating statistics according to the relevant FYP research area. This information helps the FYP coordinator (system administrator) determine the distribution of students in specific research fields (MatTaib et al., 2020).

A web based software system Final Year Project Management System will be introduced to provide a comfortable environment of management. This project is a comprehensive solution to the problems faced by the manual FYP management. The success of the FYP will reduce the weight of FYP coordinators, simplify the protocol and increase the performance of all the management. All the participants can interact with each other and exchange the information online. The feasibility of the project is guaranteed so this project should really be developed and implemented. The FYP is hoped to perform very well in enhancing the quality of FYP management (Abdul Wahab , 2012). Finally, as this system evolves, it may become easier for people to utilise it effectively (Yasin & Ramli ,2021),.

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