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A Detailed Study aboutAsia Pacific University Program Leader's Information System

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ABSTRACT

The program leaders in APU act as a leader among the lecturers for the particular program that is offered by APU.This shows that program leaders having extra responsibilities compared to lecturers. The program leaders in APU need to prepare various reports such as monthly reports and trimesters reports to report to report to the management group of the university to update on the status of each program department. Currently, APU program leaders are required to prepare reports manually. Therefore, this project will be proposing to develop an information system to automate the process of creating reports and templates in order to ease the workflow of program leaders. The system will also promote centralized system, as all the information such as slides and important details for the meetings can be updated and uploaded into the system and authorized user are able to obtain the necessary information from the system.The system will also act as a "diary" for the program leaders to record all the reports and meeting log that is recorded through the system using the calendar. The calendar will also allow the user to set the consultation hour for the students to book for it.

***Keywords*: Analysis, Design, Methodology, Implementation, Testing**

I.INTRODUCTION

Since APU has different choice of programs offered to students, each program department must have a leader to manage the department. Hence, APU Program Leaders has additional responsibilities compared to other staff, which they are the leaders of the particular program department. The objective of this system is to develop a system that automate some of the process which are done manually in current approach. The domain research will be analysis on the definition of an information system and the types of information system, whereas the technical research will have study on 3 similar information systems to obtain experience and details on the development of information system from previous projects and learn from them in term of technical approach.

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II.DOMAIN RESEARCH

Information system is defined as a software that helps to organized and analyse data, hence the objective for an information system is to transform the raw data into information to be used or decision making in an organization [1]. According to [2], information system is also a collection of technical and human resources that provides the communication, storage, computing and distribution for the information required by every parts or certain parts of an enterprise. The proposed system is categorized as one of the information system as the purpose of the proposed system is to generate report, where the user will be able to input the data into the system and the system will gather the raw data and put into templates, enabling program leaders to print the report or track back the history data input into the system.Based on [3], there are different types of information system that can be classified in the business world and they can be identified by a method called classification. The oldest method that is used to classify the information system is known as the pyramid model as shown as below in "Fig.1":

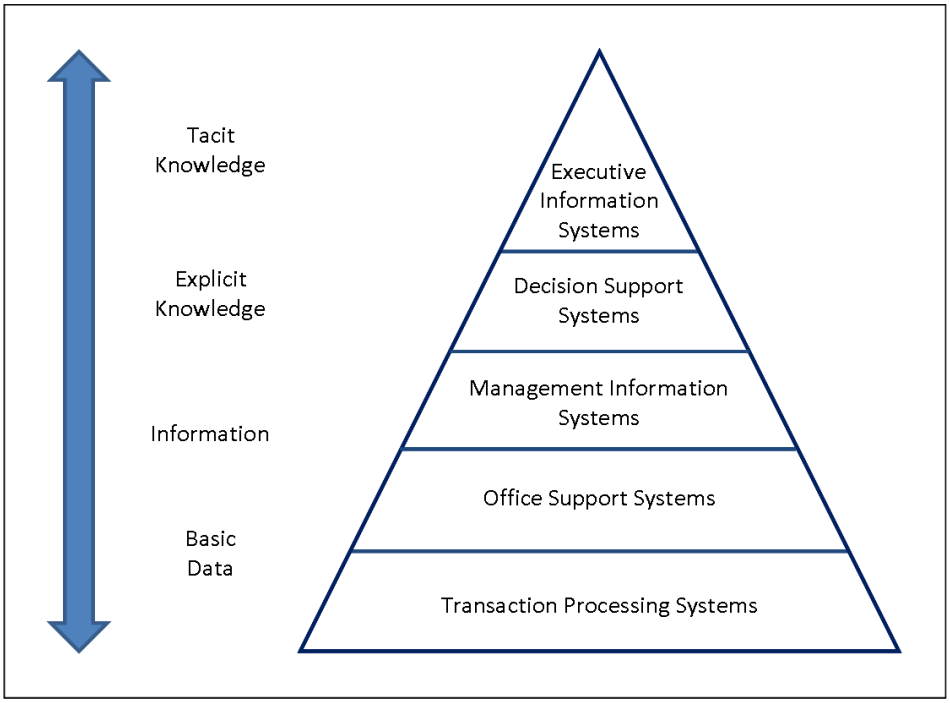


Figure.1 Pyramid model for Information System Classification [3]

It is important to determine the type of information system that APU Program Leader's Information System belongs to in order to scope down the deliverables and requirement for it. Based on different measurement, there will be different types of categorization. According to [4], the types of information system can be categorized into 2 big field, which are business operation support system and managerial decision making support system. Several

searching and finding it has been done to identify the type of information system that is belongs to the proposed system. Since the purpose of APU Program Leader's Information System is to support the program leader's daily workload, it is then identified as one of the managerial decision making support information system. Regardless on which field that the proposed system falls in, 5 types of information system that might be suitable for the proposed system has been chosen and analyse to determine the type of information system that the proposed system belongs to.

III.SYSETM DEVELOPMENT METHODOLOGY

Since the type of proposed system is identified as a type of information system, the system methodology that is chosen for the project will be the Information System Development Methodology (ISDM). The stage for ISDM included 7 phases, which are customer business needs analysis, scope definition, requirements analysis, design, development, "integration, test, acceptance", and implementation-deployment. Below is the diagram representing the process flow for the ISDM as shown below in "Fig.2":

Figure.2 Phases of ISDM [5]

In the first phase, the customer business needs are required to be analyzed. The purpose of this phase is for the customer to define the business needs and requirements and identify the problem, objectives, opportunities and requirements from the business perspective [5]. In this process, information such as status of the current approach and the rules and policies of the current business need to be obtain in order to perform business needs analysis. Since

the project will be developing an academic used information system which the target user are mainly program leaders, the focus on the requirement analysis will be only on the needs of program leaders.

Next, the second phase of this development methodology is the scope definition. Through the outputs and deliverables collected from the first phase, the scope need to be determined and defined for the solution. In this documentation, the scope has been defined in the "Introduction" section, where the system will be only used by the program leaders and the purpose of the system is to act as a "diary" for the program leaders. The system will be mainly involving in report generation, where it is to improve the current approach of report generation. In this phase, a time estimation plan and Gantt Chart with milestones will be created to have a brief planning on the period of the project development.

After that, the third phase of ISDM is requirement analysis, where we need to redefine and analyze the requirement collected from the first phase to conclude on the outputs of the system and produce a complete system requirement for the system in design phase [5]. The detailed system requirement including system feature, logical condition, and process flow requirement and user experience will be filtered and analyzed to fit the scope of the system that is defined in the second phase. For the APU Program Leader's Information System, all functionalities that might have made the goal of the system ambiguous will be remove from the deliverables of the system. For instance, the functionalities that involves admins will be remove since the purpose of the system will be only mainly focus on supporting program leaders.

The fourth phase of the ISDM approach is design. During the design phase, different diagram and explanation for the design of the system will be done. The system design will be including data model, process flow, user experience and system features[5]. The developer of the system will be receiving feedbacks continuously from the customer to ensure that the system design in on the right track to fit the purpose and scope of the project. Diagrams such as use case diagram and entity relationship diagram will be drawn.

In the fifth phase, the development of the system will be done. The system will be built in this phase, with the usage of programming skills. In this stage, the development will be completed and the documentations for the system will be prepared together. The requirement of the project will be also continuously being review to ensure that the system reaches the goal of the project. The quality of the system outputs will be also reviewed and assurance is evaluated critically to ensure that the solution meets the development standards [5].

Last but not least, the last stage of the ISDM is "Implementation-Deployment". As what is been told in the phase title, the system will be deployed into the production environment after confirm all the functionalities has worked as expected. All stakeholders of the system will be notified and the system and user support documentation will be distributed. As for the APU Program Leader's Information System, the project is planned to be deployed online for the use for the program leaders.

IV. PRIMARY RESEARCH

The research on the suitable data gathering method will be discussed and report in this section. The method of choosing a suitable data gathering method is important because a suitable method will help in gathering the requirement needed for the system. Although this project was proposed by the researcher, it is also important to know more on the other user expectation on the system so that the system can deliver quality expectation from the user.

This system is proposed to be fully supporting the program leaders; therefore, it is more suitable to focus on the expectation from only the program leaders about the system. Since the numbers of program leader are few and does not include a large range of user, the interview method is more suitable to be the data collection technique. Moreover, document reviews are also chosen as the data collection method for the proposal as the project involves in report generation, therefore the current templates for the report recording need to be evaluated. The following table.1 shows the questionnaire

No.	Questions	Explanation
1.	What are the possibilities that you expect the system may help while encounter with handling student issue?	The interviewee is expected to comment the expectation for the system in handling student's issue.
2.	What are the possibilities that you expect the system may help while writing the reports such as monthly report and trimester report?	The interviewee is expected to comment the expectation for the system in writing the monthly reports and trimester reports.
3.	What are the possibilities that you expect the system may help while engage with the professional bodies?	The interviewee is expected to comment on the problems that they encounter while handling engagement with the professional bodies.
4.	What do you think there is any additional functionalities that is needed to be in the system?	The interviewee is expected to give any functionality suggestion that they can think of to improve the steps for the system towards achieving its objective.

5.	What are the other suggestions about the interface and platform of the system?	The interviewee is expected to give comment on the expected interface and platform of the system, such as which interface and platform that are more user-friendly for them.
6.	What are the other expectations that you would like to see for this proposed system (overall system)?	The interviewee is expected to give comments about their expectation on the overall proposed system. Any other additional comments can be added here.

Table 1. Questionnaire

V.SYSTEM ARCHITECTURE

For this project, the main goal is to develop an information system that supports the program leaders. Therefore, the characteristic of the core features for this system will prioritize to ease the daily transaction for the program leaders in APU. Through data collections collected from different stakeholders, analysis has been made by the researcher and the functionalities has been briefly decided in this investigation study and the usecase diagram shown in "Fig.3".

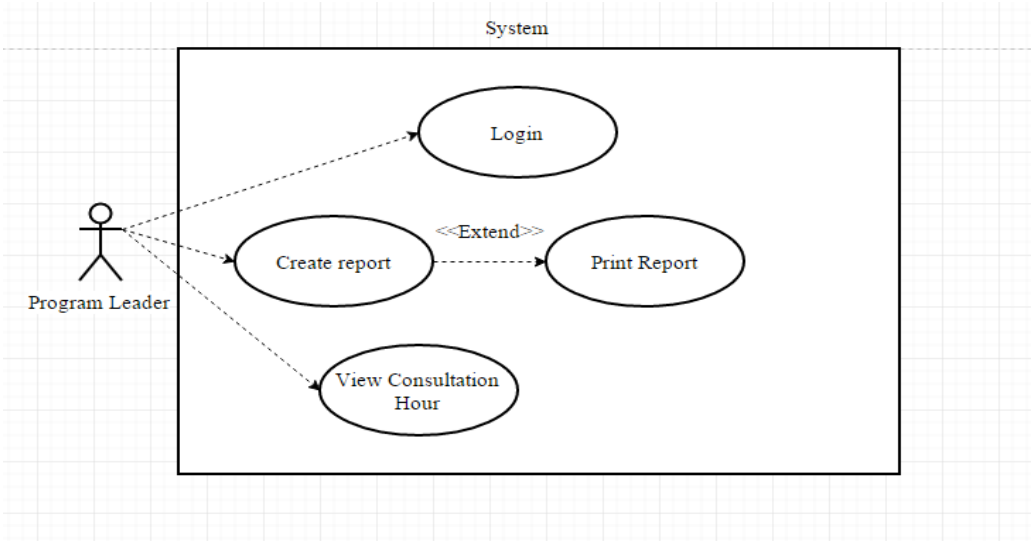


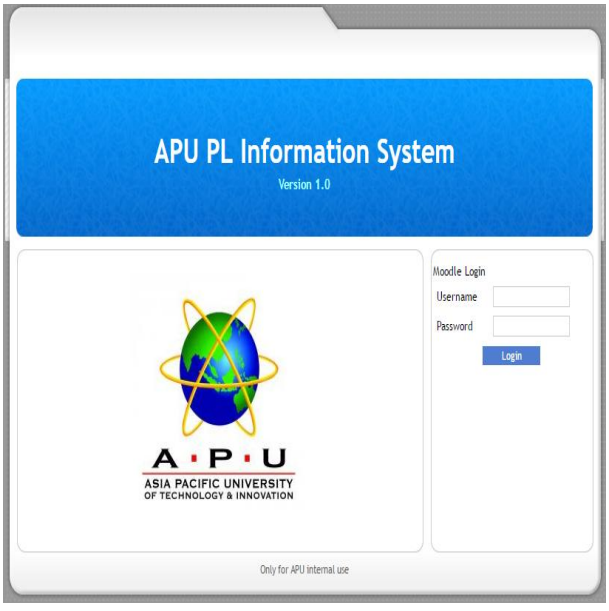
Figure.3 Usecase diagram (APU's programme leader information system)

VI. PROJECT PLAN

The test plan for the proposed project will be done in 3 different methods according to the phase of the software. The software testing methods for the project including unit testing, user acceptance testing and integration testing. As each functions serve important role in a system, each elements will be tested in the unit testing to ensure that every small parts in the system works fine before proceeding to the integration testing. Next, the functions need to be tested as a system, where the small parts declared in the unit testing will be group together. This is to ensure that each functions could work as a system and as well as to test the workflow of the system. Last but not least, the user acceptance test must be done in order to ensure that the system can work in real-world scenarios according to specifications [6]. The user acceptance testing can be also called as beta-testing, where a demo version of the software will be applied and users will have to use it and provide feedbacks on the system.

VII.IMPLEMENTATION

This page requires the user to sign in into the system. Since this system is designed for only APU internal used, no registration of the user is required. Upon successful login, the user will be directed to the home page of the system. Few GUI designs shown in the following "Fig.4,5 and 6".



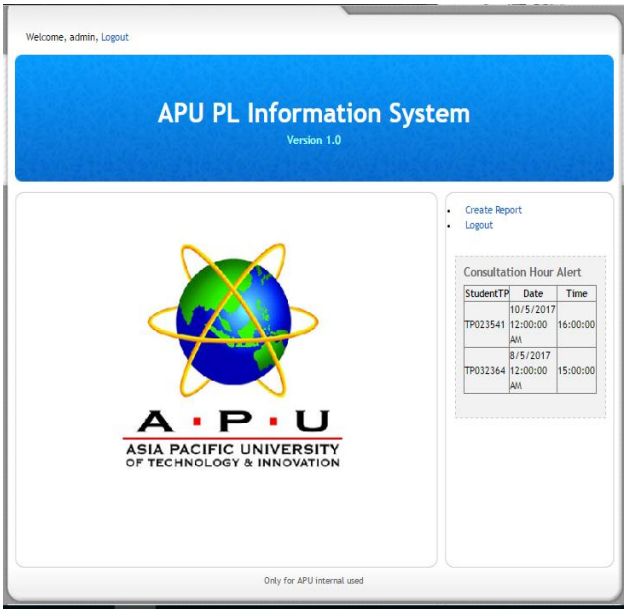


Figure.4 APU PL LoginFigure.5 APU PL Information System

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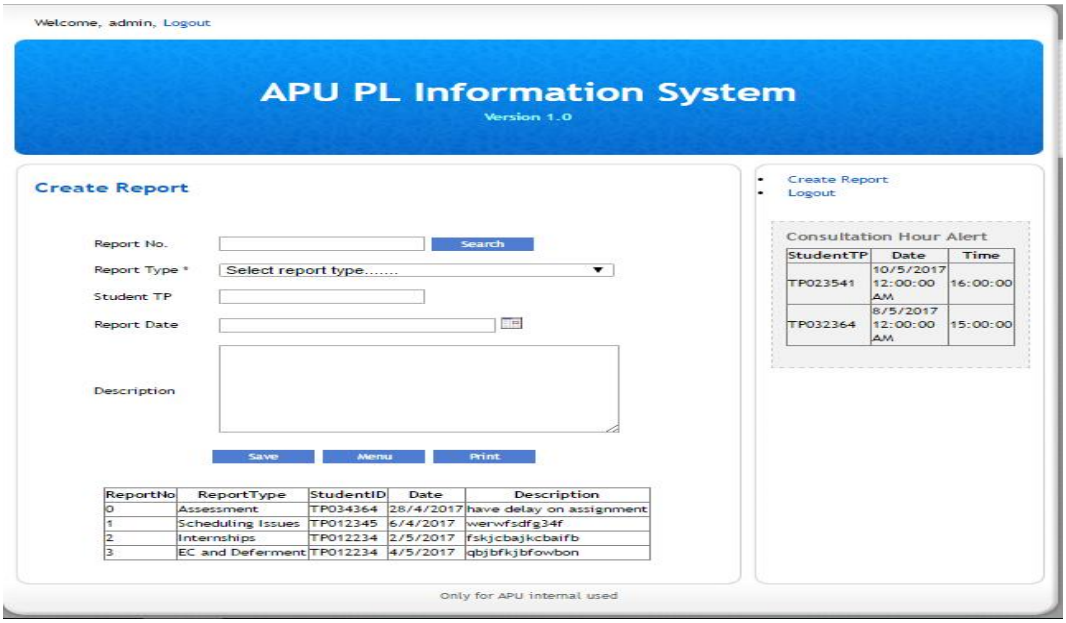

Figure.6 Creating Report

VIII.SYSTEM VALIDATION

S.No	Test ID	Test Function	Description	Expected Result	Actual Result	Status
1.	TID 1	Login	Enter username, password	Login successful	Login successful	Pass
			Enter wrong username, correct password	Username Invalid	Login failed	Pass
			Enter correct username, wrong password	Password Invalid	Login failed	Pass
			Enter wrong username and password	Invalid username and password	Login failed	Pass
2	TID 2	Create Report	Enter all information with correct data format	Creation successful	Creation successful	Pass

			Enter only the mandatory fields of the information	Creation successful	Creation successful	Pass
			Enter only the non-mandatory fields of the information	Creation unsuccessful	Creation unsuccessful	Pass
			Did not enter any information	Creation unsuccessful	Creation unsuccessful	Pass
3	TID 3	Consultation Hour Display	Link to the database and display the consultation hour details	View successful	View successful	Pass
4	TID 4	Search Report	Type the report number that exist in the database.	Report view successful	Report view successful	Pass
			Type the report number that does not exist in the database	Nothing shown	Nothing shown	Pass

IX.CONCLUSION AND REFLECTIONS

In this detailed study, the surface investigation is performed and recorded inside according to different sections. As the detailed design and product has not been produced during this phase. This document successfully presented the aim and objectives of the system, scope of the system, justification of the system methodology used, research on the types and technologies of information systems, study on different technical approach of similar system, the relationship between user and system, the details of the functionalities, and the test plans for the system. The architecture design need to be further analyse and explore where a clear image of the functionalities and how they connected with each other need to be defined as well. There is also a huge gap on the research and design, as per data collection, the expectation of the stakeholders for the different seems has gone into a different direction.

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