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## EXTENDED ABSTRACT BOOK

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# **i-JaMCSIIX** **2022**

International Jasin Multimedia & Computer Science Invention and Innovation Exhibition

Extended abstract

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i-JaMCSIIX

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## The Development of Web-Based Student Leadership Program Management System for ‘Unit Kepimpinan Pelajar (UKP)’

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**Abstract**—Currently, students are having problems registering for leadership programs and filling out the attendance forms. Students will send their detail to their club adviser, who will subsequently distribute the list to UKP staff. This process takes time since the UKP staff must first trace the names of students who have already attended the program. This first problem has been solved since this system allows students to scan QR codes to update their attendance and allows students to register for or cancel the program. Aside from that, they still manage and store all the information manually. It is not an effective way of managing the data. This second issue has also been resolved, as this system allows UKP staff to save all UKP data in the database, making it easier for them to access previous data. The procedure of distributing certificates to students is also complicated. Normally, UKP staff must first check the names of students to ensure that there is no redundancy during the distribution of certificates. This third problem has also been resolved since the system makes it easier for UKP staff to approve student attendance and automatically generate certificates, which are then given to students through email as a certificate notification, which can already be downloaded from the website. As a result, having a systematic platform can help the process become smoother and more efficient. The Waterfall Model is being used to develop the Student Leadership Program Management System for ‘Unit Kepimpinan Pelajar’. Thus, the data can be well maintained and utilized over one platform. In a nutshell, the Student Leadership Program Management System for ‘Unit Kepimpinan Pelajar’ has the ability to access and share information, and this system will act as a medium that allows UKP staff and students to access UKP information.

**Keywords**—management system, attendance, UKP, leadership programs

### I. INTRODUCTION

UKP UiTM Melaka Branch is one of the active units and plays a role in implementing self-development and student leadership programs in line with UiTM’s student development policies. UKP is also responsible for conducting courses and seminars to help students physically and mentally to be proactive and experienced in leadership aspects, where students at the diploma and bachelor’s degree levels are required to attend training modules for self-development and student leadership. Based on the interview session on 6th of April 2021 with the head of UKP UiTM Melaka branch, Encik Shafiei Ayub, the current process of student registration to the program cause problems to the UKP staff. Data management, student attendance and registration tracking, and e-certificate distribution are all processes involved in this UKP. UKP also performs all of these procedures manually. This makes it difficult for them to find or track back to the old data. This was also cause them to take a long time to complete a task if it involves with searching for previous data. As a result of this situation, an online system is developed in which students and staffs can access the website in order to manage all program’s activities. This system would make it easier for the UKP to handle the process. The system provides a proper management of the data such as automated facility of storing the data, to reduce work process. In addition, the security of the data stored in the proposed project can be guaranteed.

## II. LITERATURE REVIEW

### A. Overview of Student Leadership Programs

There are two main programs organized by the UKP that will run for each semester, which are 'Program Kepimpinan Pewaris Bangsa' and 'Program Kenegaraan'. Each program has their own modules that need to be completed by the students. For program 'Program Kepimpinan Pewaris Bangsa', there are three modules that need to be completed. For the second program, 'Program Kenegaraan' there are two main modules that need to be completed. Physically, each of the modules is three days duration with a total of 60 students per module. Data management, student attendance and registration tracking, and certificate distribution are all processes involved in this UKP. UKP also performs all of these procedures manually. This makes it difficult for them to handle their everyday activities and causes them to take longer than necessary to complete tasks

### B. Student Leadership Program Management System

This system is an advanced web-based system which suit the daily process of UKP, due to the UKP's constant need to update the program's information every semester. According to [1], this student leadership program management system will be implemented to target every UiTM Melaka branch personnel and UKP students. One of the focus is to achieve the traditional method of taking attendance [2]. If students fill out the registration and attendance forms for the program, they are participating in the content process. In addition, this system was also designed to ensure that program and student data are stored in a systematic way. Furthermore, this program was designed to focus on speeding up the process of distributing e-certificates to students.

The QR code will be used to make it easier for students to fill out their attendance forms. As a result, students will spend less time filling out their attendance forms. At the same time, the student leadership program management system will be used by UKP staff to track student attendance, and also can make sure that these students will not attend the same module again. Furthermore, email alerts are also used as a useful tool for alerting users to process changes and integrating in-app activity. It also very convenient and a good way to re-engage passive users who do not use the app on a daily basis [3]. Email messages used to be brief pieces of text, act as the nature of an effective communication to address potential users [4]. Email serves as a reminder to students that their e-certificate can be downloaded from the Student Leadership Program Management system. This email is also an automation email because it is delivered to a specific student automatically from the website.

## III. METHOD

This section is divided into four subsections, based on waterfall phases.

### A. Requirements Gathering and Analysis

The initial step in this phase is to collect the data information from the stakeholders of UKP. The first activity to gather the information data or a list of requirements was to conduct an interview session with the stakeholder. The second activity is to analyse all of the stakeholders' requirements and information. The analysed requirements are documented using the SRS document.

### B. Design and Development

a) *Architectural Design:* Fig. 1 shows the Three-tier Architecture Diagram of Student Leadership Program Management System. The first layer which is the view layer, is connected to the internet and functions as the website's user interface. The domain layer is where all of the user interaction will occur. For the third layer, the data access layer, which will allow the website to connect to the database and save or retrieve all of the data that has been saved.

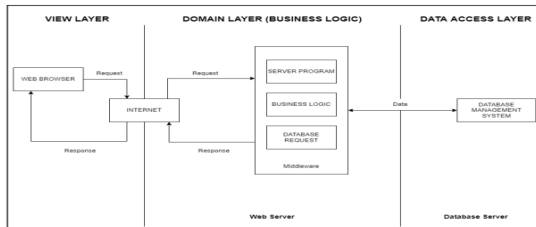


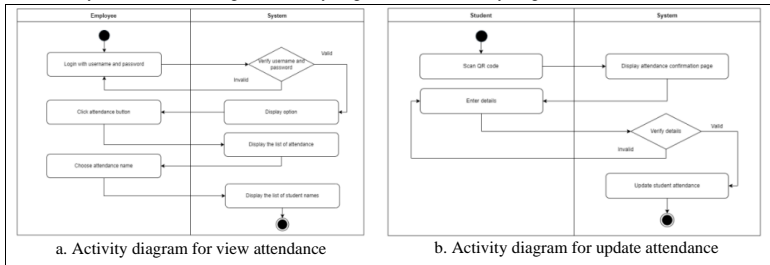
Fig.1. Architecture diagram of Student Leadership Program Management System

b) *Use Case Diagram:* The use case diagram explains the activity that the system will perform. The actors are the UKP staff and students. It involves implementing twenty-one (21) use cases as shown in Fig. 2.



Fig.2. Use case diagram for Student Leadership Program Management System

c) *Activity Diagram*: The activity diagrams show a set of steps in the form of a flow chart based on the actor's and system's actions during each activity. Fig. 3 shows the activity diagrams of attendance function.



a. Activity diagram for view attendance

b. Activity diagram for update attendance

Fig.3. Activity diagram of the system

d) *Domain Class Diagram*: DCD is formed of classes and associations between classes. The domain class is used to describe objects in the problem domain. The Domain Class Diagram is shown in Fig. 4. There are five entities: EMPLOYEES, PROGRAMS, MODULES, STUDENTS and ATTENDANCES.

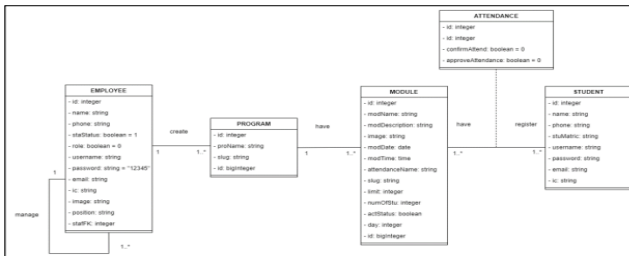


Fig.4. Domain class diagram of the system

### C. Implementation

In implementation phase, the user interface and coding are constructed. Fig. 5 shows a few user interfaces of the system, based on the main modules: register and attendance module.

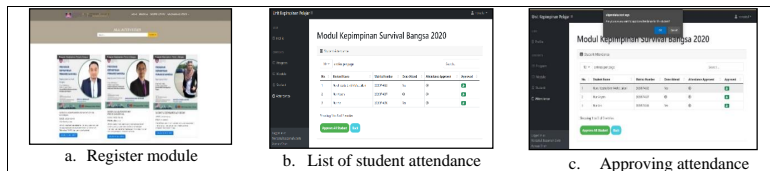


Fig.5. User Interface of the system

### D. Evaluation

In this study, functionality evaluation is performed, to verify the outcome for each use case module. Each module is evaluating so that it can identify whether it could generate the predicted outcome.

## IV. RESULTS AND FINDINGS

As a result, the outcomes of all 21 tests were successful. Table 1 shows the process that have been tested.

Table 1. Functionality Test of Student Leadership Program Management System

| Process |                           | Actual Result | Process |                                  | Actual Result |
|---------|---------------------------|---------------|---------|----------------------------------|---------------|
| 1.      | Create new program        | Successful    | 11.     | View list of employees           | Successful    |
| 2.      | Update existing program   | Successful    | 12.     | Edit employee details            | Successful    |
| 3.      | Delete program from list  | Successful    | 13.     | Update employee                  | Successful    |
| 4.      | View list of programs     | Successful    | 14.     | Create new student account       | Successful    |
| 5.      | Create new module         | Successful    | 15.     | View list of students per module | Successful    |
| 6.      | Update existing module    | Successful    | 16.     | Update student details           | Successful    |
| 7.      | Delete module from list   | Successful    | 17.     | Edit student detail              | Successful    |
| 8.      | View list of modules      | Successful    | 18.     | View attendance                  | Successful    |
| 9.      | Cancel to join the module | Successful    | 19.     | Update attendance                | Successful    |
| 10.     | Create employee account   | Successful    | 20.     | Approve student attendance       | Successful    |
|         |                           |               | 21.     | Generate certificate             | Successful    |

## V. CONCLUSIONS

The study aim is to develop a Student Leadership Program Management System for UKP UiTM Melaka branch, to overcome the problem in the current process of the UKP. As a result, the project has achieved its aim and objectives. The first objective has been achieved with the SRS deliverables, which all requirements were gathered and analyzed. The second objective has been achieved by requiring completion of all diagrams generated from the requirements with the SDD deliverables. Then, the third objective is achieved by programming the system with Visual Studio Code and the Laravel Framework. The database is created using phpMyAdmin and the migration functionality in Visual Studio Code. The migration feature of the SRS and SDD is followed in the development of the system. The system is created by referring to the SRS and SDD documents. Next, the functionality testing for this system was successfully done with UKP staffs. The system is in a process to get an intellectual property (IP) right, to turn this idea into UiTM assets.

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