Designing & Developing e-College (e-CRS) as a Web Based Application Tool

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Abstract: This paper discusses the designing and developing of the e-College System (e-CRS) as a web based application tool for registering student's room and fee payment at UiTM Machang campus. This system can replace manual registration and long queues, saving time and money. The System development Life Cycle (SDLC) is used as a methodology in order to have a clearer stage for each phase involved. The stages comprise of planning, analysis, design, implementation and maintenance. The College administration department can easily record the number of students by using this system, so it is easier for students to apply virtually. The administrative staff can also trace student records efficiently, making it easier for future reference. This online application tool is very important, especially in the times of the Covid-19 pandemic.
Keywords: e-college system, e-CRS, SDLC

INTRODUCTION

Nowadays, in each university, accommodation, such as rooms, is compulsory for students to stay in, especially for those who live far from their hometowns. The situation is very much the same for UiTM Machang Kelantan students. The E-College Registration System (e-CRS) is a useful system for students to enter college, so that they can follow their classes

more closely. The student is facilitated by this system in registering for college accomodation, finding out the results of their preferred room and making the payment for the college fees. Students do not need to queue at a crowded place such as the college office just to register and know their approval status, especially during this pandemic covid 19 outbreak, which first started in Wuhan, China in December 2019. On 11 March 2020, the World Health Organization (WHO) (2020) declared Covid-19 a global pandemic. This incident changed the landscape of every aspect of human life globally. This is supported by Gewin (2020) and Ciglaric & Vidmar (2014) where the education sector too was affected during the pandemic. As a result, national schools were closed and higher education institutions (HEIs) cancelled all their campus events. With the creation of this system, students only need to register for accommodation from home, subsequently protecting them from being infected with the Covid-19 virus.

This system can also store the data of students who have registered for college accommodation where it will be more organized and easier to trace compared to manual data storage. This can make it easier for the college administrative staff because it can save their time and energy. Without proper data management, it would be hard for a university to manage their students. Student Online admissions are a vital part of any university's running because students are what keeps a university alive. The student admission is one of the most important activities within universities as they cannot survive without students. A poor admissions system can mean fewer students being admitted into a university because of mistakes or the huge response time needed.

The university is one of the places which highly utilizes the computer system, where a systematic management is needed in their daily routine. Besides, people nowadays would prefer using computers to do their work or assignments because it is mobile, and tasks are accomplished in a shorter time and easier way (McKinsey and Company 2020 and Internet World Stats, 2020). Technology in the IR 4.0 era is vital, as mentioned by Park (2017) and it has changed the way people live with the introduction of new concepts in manufacturing processes. This includes the decentralizing and adopting of new systems based on the information and communications technologies opportunities in managing student records which then leads to

the reduction of paper use, as opposed to paper-based systems. The process of enrolling in a college and fee payment in UiTM Machang campus is currently carried out manually. Basically, the method used is not able to handle a large volume of data. The e-CRS system replaces the manual registration and long queuing up as practiced before. So, time and money can be saved as well. The college administration can also trace student records easily for current and future references.

BACKGROUND OF THE STUDY

This paper discusses the designing and developing of the e-College System (e-CRS) as a web based application tool for registering student's room and fee at UiTM Machang campus, Kelantan and will be used by the College Admissions' department.

2.1 Problem Statement

Currently in UiTM Machang, for college registration, students have to register manually at the college office to get a room. This also equates extensive queueing time. The registration process which includes payment for the room takes a long time to complete. The College Administrative staff cannot provide students with rooms unless they register with the college first. It is obvious then that the available data are not well organized, and this makes it difficult to trace student information. So, the e-CRS system was developed for the college unit in UiTM Machang, Kelantan for the purpose of registering student rooms together with the payment during the pandemic outbreak.

The e-CRS is proposed to assist the management of students at the college department. Through this system, students no longer need to fill up the hardcopy form and queue at a crowded place as practised before. This system enables students to fill up the information form online and the management can review and approve the requested information. The system will facilitate both the students and management. In addition, it will reduce time in managing particular information.

2.2 Objectives

The objectives of the system proposed are:
i. To shorten the the process of college registration as practised before.
ii. To properly organize the data stored by the college administrations for future reference as well as safekeeping.
iii. To develop a system that requires less face-to-face registration.

2.3 Scopes of the System

The targeted user for this system are students whereby they can register easily and can save their time without having to go to the college office. This is especially convenient for students who live a considerable distance from the university. They do not have to sacrifice time registering at the college office because with this system they only need to register from home and attend college when the semester starts. Besides, the college administration staff who are involved in this system will also have their own roles- they would be responsible in controlling the college approval process applied by each student and checking the college payment status.

METHODOLOGY

System development Life Cycle (SDLC) is used as a methodology in order to have a clearer stage for each phase involved. Based on the information by Hoffer, George & Valacich (2017), the stages comprise of planning, analysis, design, implementation and maintenance.We had evaluated a few existing systems to know the problem of the system in order to improvise to a new system that is much more user-friendly. Based on the current systems evaluation we could identify the pros and cons of the system, and areas that needed improvement. We could also see much clearer, the problems which occur from the current system. Moreover, for the e-CRS system we have included any software and hardware which are most suitable to use in building the system. Next, we collected the user requirements by using several methods such as interview. Individually interviewing people gives valuable information about the operation and issues of the current system and future systems' needs (Hoffer, George & Valacich 2017). The college staff were also observed at selected times to see how data are handled and

see what other information was needed by them to do their jobs, which would subsequently enable us to develop a better system that would be significant to the user (Rosman, 2010).

In the design phase, we chose to start with the data flow of the system that will describe more about the process of our system. Our system design is continued by designing and creating an Entity Relational Relationship Diagram (ERD) and Data Dictionary (Metadata) that will explain about the structure of the database system that will be conducted. We are also created an interface of the system such as input, output and dialog box to make it easier for the user to use, and understand it even faster. Besides, during this phase we had also created the interface of the systems to make sure the criteria of the systems is user friendly to users to interact (Tylor, 2015).

During the implementation phase, the project became clearer since coding and testing were done here. This phase entails the actual building of the project's outcome. This is the period during which the project becomes apparent to outsiders, who may believe the project has just begun. The implementation phase is the action phase, and it is critical to sustain momentum throughout this stage. Besides this, in this phase we use PHP programming language to code the system. According to Yabing & Chen (2017) the empirical study made use of publicly available data sets illustrating prominent open-source Web applications. Moreover, during the process of coding we also used a few functions for example, the 'Insert' and 'Update' function to make sure the students and the college administrator could update the system and insert their needed data. We also constructed buttons such as 'student profile updates' for the students to insert their additional information, 'college registration' for the students to register their college request, and 'college status' for the students to state their preference of the status of their registration - for example to know their approval status, number of room and their college name. Other buttons constructed were 'college payment', for the student to update their payment after receiving their status approval, and the 'contact us' as well as 'about us' buttons that show some information on the college administration. The administration account also contain a few buttons: for example, 'list of students', 'college student's status' and 'college payment', which enable the administrative staff to see the reports of all the students that have registered and made a request for college accomodation (Ciglaric & Vidmar, 2014 and McFarland, 2018) .

After the product is fully operational, the SDLC's maintenance phase begins. Software maintenance might involve software upgrades, repairs, and software patches if the software breaks (Ransom,2020 and Hoffer, George & Valacich (2017). During this phase, we have made the final alteration of the system, fixed a few problems that caused errors and also organized the design of the systems. Besides, we also presented the systems to the users, including administrative staff, for them to know the functions of the system and how the system operates.

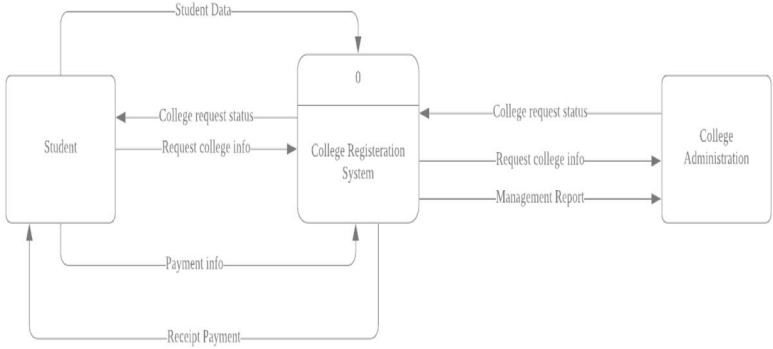

Fig. 1 Context Diagram for e-CRS

Figure 1 shows the context diagram of the e-CRS where we can see the entirety of this system involving both the students and the college administrative staff.

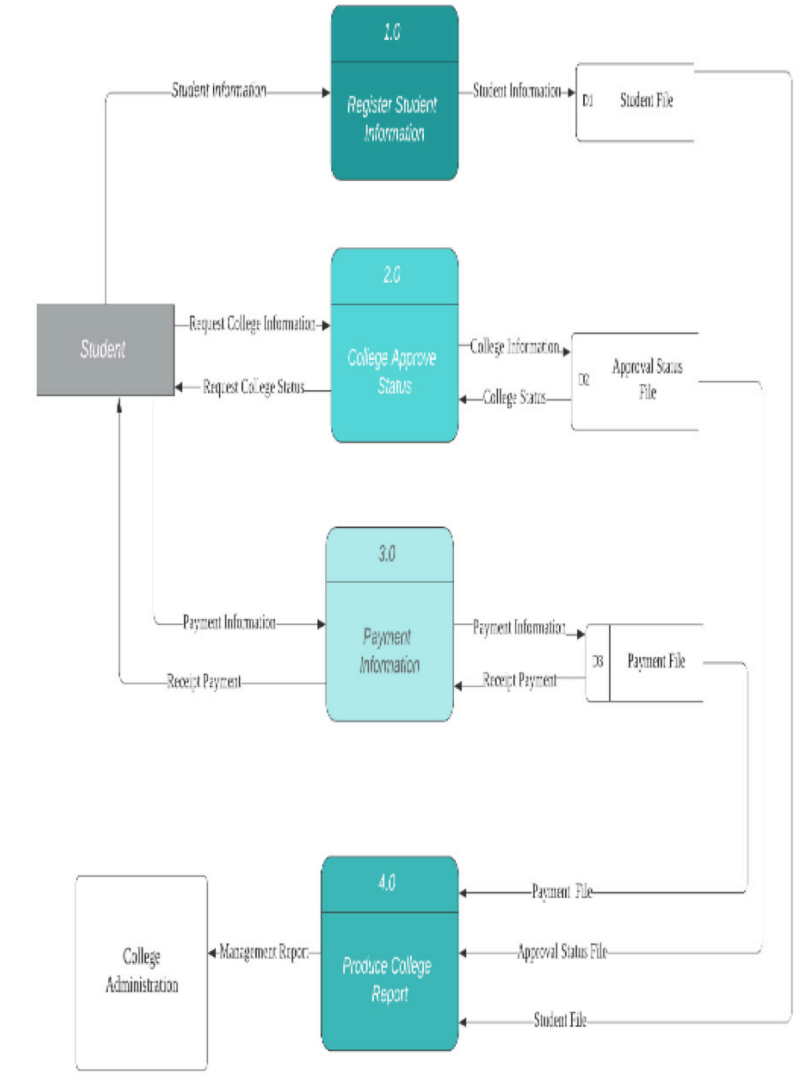

Fig. 2 Data Flow Diagram (DFD) for e-CRS

In figure 2, the flow of data within the system is clearer and more detailed.

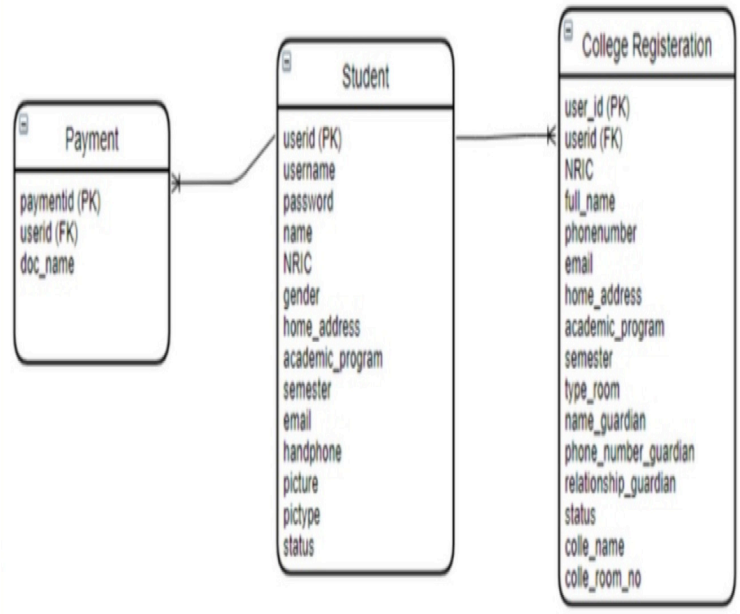

Fig. 3 Entity Relationship Diagram (ERD) for e-CRS

In figure 3, the relationship between tables is shown - it comprises of the payment, student and college registration table together with their attributes.

INTERFACE FOR E-CRS

Here are the main interfaces of the e-CRS, starting from the registration form (student's view).

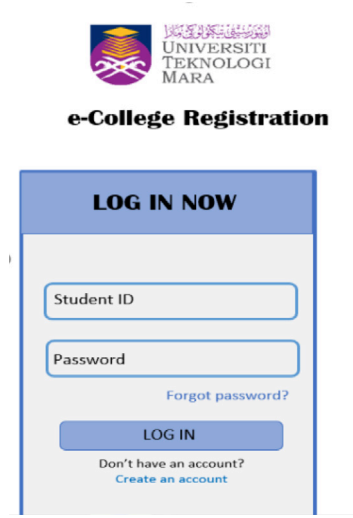

Fig. 4 Log in Page of the e-CRS

Figure 4 shows how students can log in by inserting their information, such as student ID.

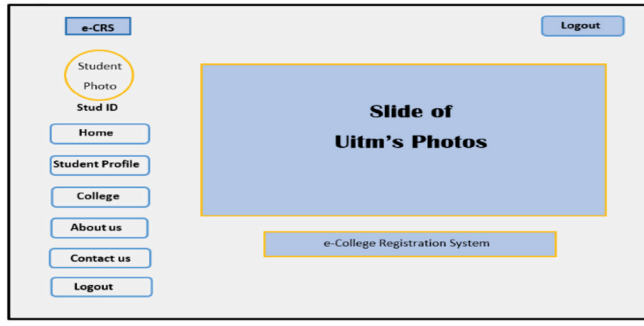

Fig. 5 Menu inside the e-CRS

Figure 5 shows the menu inside the e-CRS once the student logs on to the system. The menu contains buttons such as Home, Student Profile, College, About Us, Contact Us and Log out.

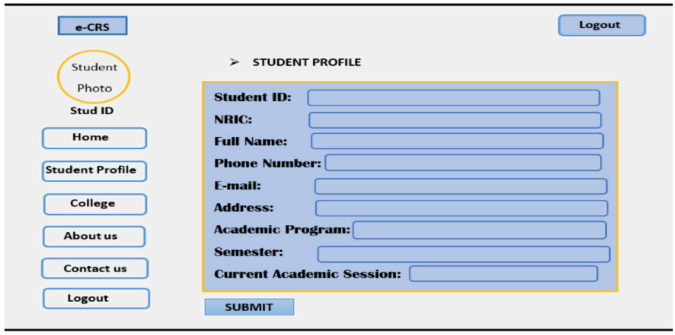

Fig. 6 Student's Information in the e-CRS

In Figure 6, the e-CRS asks for student detail information

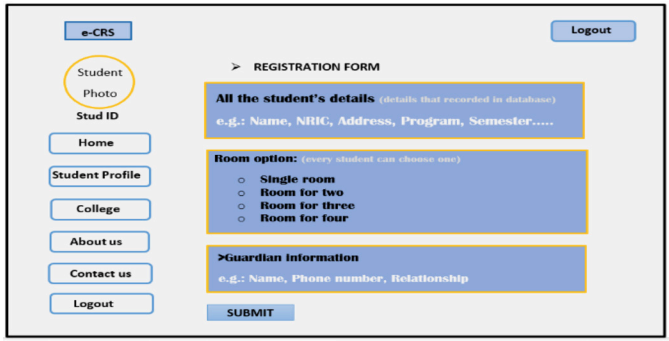

Fig. 7 Room option in the e-CRS

In Figure 7, there are choices for rooms available. Basically the students just need to click on the option needed.

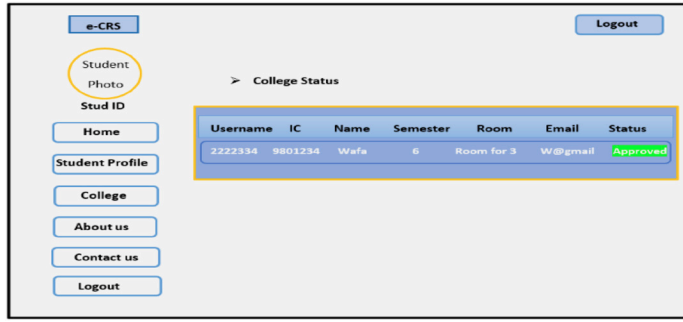

Fig. 8 College Status Information in the e-CRS

Later on in figure 8, the college status will be displayed.

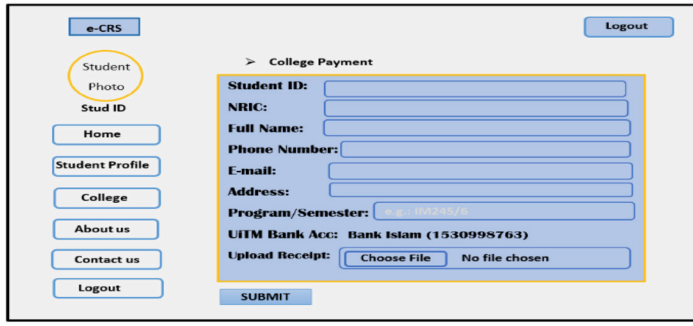

Fig. 9 College Payment Method in the e-CRS

Lastly, in figure 9 the college payment method is displayed in the e-CRS

CONCLUSION

The main purpose of this system is to develop a user-friendly college registration system for UiTM Machang, Kelantan students to use, subsequently helping them and university college departments to better and systematically conduct student data for future retrieval. The student information also can be traced and kept in a more organized manner. The system will help students learn about college availability, rooms, room types and college fees. In addition, this also helps the management to organize student information. It will also allow the university administration to track and manage student records. This registration system gives a lot of benefits, as compared to the old paper-based registration method. The most obvious benefit is associated with the fact that this system is a comprehensive online registration system which is convenient and fast. The online registration system eliminates the need to manually fill in paper forms which then have to be sent to the registration office. When using the online registration system, students only need to register at their convenience and the information is submitted immediately.

The information sent by the participants will be immediately loaded into the database. The online registration system is also highly secure because the form submission is done through a secure platform. The information collected by the database will also be stored on a highly secure server, leaving no space for unauthorized access and violations from third parties. Form submission and payment details will be completed through encryption methods. However, if paper is used, the information available on the paper form is vulnerable to leaks of confidential details. Paper forms need to be destroyed safely to prevent unnecessary information access. At last, there is a solution – the e-CRS, an online registration application system which can provide great benefits needed by the college staff and students in UiTM Machang.

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