

# APU Online Exam Docket System

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## Article Info

Volume 83

Page Number: 195 - 201

Publication Issue:

March - April 2020

## Abstract

Quick Response Code, which also known as QR Code are becoming more common among youngsters especially students in tertiary education as it has been implemented on various areas for different purposes. Furthermore, the evolving of e-wallet in Malaysia has made the society more understanding about the functionality of QR Code. Thus, it would be great to implement an online system that utilize QR Code in Asia Pacific University (APU) Exam Docket System so that it can save the time for overall process of distribution and collection of exam docket. Through the proposed system, the management of the university able to generate exam docket to the students and the attendance of the candidate will be updated once the QR Code is being scanned at the exam hall. As a result, this paper will discuss about the problems of the current system in introduction and methodology that will used to collect requirement of the system in the following section. All the results collected will be discussed in result and discussion section. Lastly, the researcher will talk about technical research and limitation as well as recommendation of the system before ending this research.

**Keywords:** Exam Docket System, Exam Hall Management System, QR Code.

## Article History

Article Received: 24 July 2019

Revised: 12 September 2019

Accepted: 15 February 2020

Publication: 12 March 2020

## I. INTRODUCTION

Asia Pacific University of Technology and Innovation (APU) is one of the tertiary educations that is provided by APIIT Education Group, which is one of the education group in Malaysia that provide all level of education and this university was originally established as the Asia Pacific Institute of Information Technology (APIIT) in 1993 and then diversify into Asia Pacific University College of Technology and Innovation (UCTI) in 2004. This institute offers various programme to the student which include Computing, Technology and Games Development, Engineering, Business, Accounting, Banking and Finance.

Since APU is a tertiary education institute, the students of the university will have assignment, project as well as exam throughout their course. The main purpose of these elements is used to determine the skills, knowledge and ability of a student in the subject that have been learned throughout the course. For the exam, it will be

conducted at the end of the semester in the exam hall of the institute itself. However, the university is still using paper-based system, where the administrative staff need to verify the student manually before issue the relevant document to the candidates and verify the candidates manually at the exam hall.

Few weeks before the exam, the administrative staff will issue a ticket to the candidates, which is also known as exam docket so that the candidates can use this exam docket to prove that he or she is eligible to attend for the exam. In addition, the exam docket will be served as attendance purposes and the only document to prove the identity of the candidates in the exam hall. Before the exam docket is issued to the students, the administrative staff need to check the attendance summary of the student as well as the outstanding fees of the student manually, which had increased the workload of a staff. Students need to ensure they have obtained 80% on their overall attendance for each module and do not have any outstanding fees

in order to obtain their exam docket. The administrative staff will also notify the students regarding the time and location of the exam docket collection or the staff will go into classes to distribute the exam docket to the student.

During the exam, the invigilators in the exam hall need to validate the identity of the candidates before allowing the candidates enter the exam hall. They also need to take the attendance of the candidates manually during the examination is conducted, where it will disturb the candidates. Moreover, the attendance will be taken on a piece of paper since the institute is still using a paper-based system. Hence, a few problems will need to be addressed in this research based on the current system that have been implemented in the university.

## II. METHODOLOGY

The researcher will perform qualitative research and quantitative research to collect the requirement from the user involved in this proposed system, which are administrative staff and students of APU. For quantitative research, the researcher conducts online questionnaire towards the student of APU in order to understand the requirements and gain some opinions on the proposed system from the students, but interview will be conducted towards the staff and students of APU to clarify the process of the current systems and expectation towards the proposed system. The researcher will conduct online questionnaire towards 50 students of APU that have experience exam in the exam hall before such as bachelor's degrees student, while 5 respondents will be selected for each interview conducted. The reason of the researcher targets small number of respondents during interview is because the researcher only wants to clarify the process of the current system as well as user expectation towards the system.

## III. CORE FEATURES OF THE SYSTEM

Based on the problems that mentioned in the introduction, the researcher has come out with features that should include in the system for students and staffs which will be shown in the Figure 1 and Figure 2. Some core features of the proposed system will be explained in detail in the section below.

### • Manage Attendance

This feature is only allowed to be accessed by staff as this module related to the student's attendance, which considered as restricted information. The user is required to add student into the class before they are allowed to modify the attendance or generate exam docket to the students. They also need to make sure that class is being created and remain as active before adding students into the class. In addition, the user can view the attendance of the class as well as update attendance of the class.

### • Manage Feedback

Sometimes, there might some issues faced by student during retrieving exam docket process or need to seek for inquiry due to several issues. Thus, it would be great to have a feedback system in this proposed system so that the student able to solve their issues online. This feature allowed to be accessed by the student as well as the staff. For students, they are allowed to submit feedback or inquiry that they are facing, and the system will generate an acknowledgement email to the student. Information such as subject of the feedback and description is required to be provided. On the other hand, the staff will able to view the feedback summary that had been submitted by the students. They need to click on more detail hyperlink to view for the details of feedback and reply the students.

### • Generate Exam Docket

This function can be accessible on two pages, which are view attendance summary of the class and edit attendance of a student. For view attendance summary of the class, it will generate exam docket for the class selected and a summary of the result will be shown to the user. This could let the user knows how many students are eligible, how many students are not eligible and how many exam dockets had been generated. For edit attendance of a student, the system will basically generate exam docket to the specific student if he or she is eligible to receive exam docket. Students that are eligible and students that are not eligible will receive two different version of email notification regarding the exam docket.

- **Generate daily report**

This feature is used to generate daily report of the exam hall and is only available to the staff.

This could allow the staff to perform some other tasks through the report generated. The report will be filtered based on the exam date and module. It will then be generated into .xlsx format, which also known as Excel format for the staff. The report will include information such as student name, student TP number, attendance of the exam and some other relevant information.

- **Take attendance at exam hall**

Taking attendance at the exam hall has been performed manually during exam is being conducted. However, this system does provide feature that allows the staff to take attendance of the students before they are allowed to enter the exam hall. The staff just need to scan the QR code using QR code scanner at the designated place. Once the verification process is done by the staff, they need to click on the 'Update' button to update the attendance and the attendance will be updated immediately once the button is being clicked. Furthermore, the QR code is only allowed to be used once, which could prevent the student reuse the QR code to enter to the exam hall.

- **Retrieve Exam Docket**

This function is available for the student so that they would able to retrieve their exam docket after receiving notification on the exam docket. They just need to provide the module that have been notified and the system will generate the exam docket to them in PDF format. The student will then have option to either print it out or just bring the softcopy to the exam hall for verification purposes.

#### IV. RESULT AND DISCUSSION

Based on the questionnaire that have been conducted towards the students of APU, 44 out of 50 respondents, which is equals to 88% of the students prefer to download their exam docket through online and this indicate that the students wish to have a system that allows them to download their exam docket online compare with the current system. The result will be shown in Figure 3.

Besides that, most of the students does not satisfy with the speed of exam docket distribution in class as well as exam docket collection in administrative office. This is due to several reasons such as huge number of students as well as limited counter available at the administrative office, which have affected the speed of both processes.

For the interview towards students, the students have mentioned that they are familiar with QR Code technology as the interviewees provide numerous examples of the usage of QR code in daily life. Furthermore, the students agree with the proposed system as it could able to save their precious time to perform some other tasks.

On the other hand, the interview towards staff have provide a depth understanding on the researcher on the overall process of the current system. For example, the requirements for students to get exam docket is that the attendance rate of the module must be at least 80% or above and does not have any outstanding fees. Moreover, most of the respondents also mentioned that most of the process are conducted manually, which have increased their workload.

#### V. LIMITATION OF SIMILAR SYSTEM

There are some similar systems that are available in the market which serve different purposes. Therefore, a quick comparison will be made by the developer after understanding and browse through the system and a comparison table will be provided as well in the section below.

Table 1: Comparison table of similar system

Components	Online Exam Docket System	Online Ticketing System	Self Check-in System
Company/ Organization	SEGi University and Colleges	Terminal Bersepadu Selatan (TBS)	AirAsia
Main functionalities	Manage the exam docket in the university systematically	Allows riders to purchase their ticket online	Allows passengers to check-in in advance

Other functionalities	1. Able to reprint exam docket	1. Lodge complaint when the user face issues during ticket purchasing process 2. Edit profile 3. Change password 4. Able to reprint and trace back purchased ticket	None
Ease of use	Yes	Yes	Yes
Security level	Low	Medium	Medium
Paper work	Required	Depends on users	Required

Based on the comparison table, it clearly shows that the three similar system is ease of use for the users although the similar systems serve different functionalities. Anyhow, most of the similar systems still requires paper work and the security level of similar systems still need to improve to ensure the system is futureproof. As a result, the researcher will take not on the security level of the system as well as the overall process especially paper work, while ensuring the system is ease of use to the users. Some additional functionality should be addressed as well to ensure the proposed system contain some other functionalities that able to benefit the users.

## VI. DESIGN

The programming language chosen to develop the proposed system will be C# because this programming language have all the features of Java, Python, C++ and other languages since it evolved from C even though it is very case sensitive [9]. Furthermore, C# is certified as a standard

programming language by some agencies and expected to run faster due to the removal programming complexity [9]. Thus, developer would able to get use to C# programming language easily due to the features contained in C#. It also expected to run faster due when the end product is being released to the market, which could ensure the reliability and efficiency of the operation.

For the Integrated Development Environment (IDE), the researcher will choose to use Visual Studio 2019 from Microsoft, which provide an environment that allows the developers to edit, debug, build code and publish it [35]. Moreover, this IDE provide many extra features compared with most of the IDE that provide standard editor and debugger functionality as well as support C# programming language that have been chosen earlier [35]. As a result, it will be an ideal IDE that can be used to develop the proposed system due to the findings mention above.

Besides that, the developer choses Microsoft SQL Server (MSSQL) as Database Management System (DBMS) to store the data of the proposed system. It is a relational database management system (RDBMS) that developed by Microsoft with various versions available in the market to cater different types of projects [10]. The reason why MSSQL is being chosen is because of the security level and compatibility that have been offered by Microsoft itself.

Lastly, the proposed system will be supported by several tools and libraries that will be determined during development phase by the developer itself.

## VII. CONCLUSION

In summary, APU Online Exam Docket System has bring a lot of benefits to the students as well as the staff of APU because it could eliminate issues that faced by the current system that have been implemented. Based on the research conducted above, it should allow the developer to develop a system that would able to fulfil the requirements and needs of the users. Furthermore, the system should also focus on security level, which have been set aside by the similar systems.



The researcher also come out with a few core features that must be developed in the proposed system after understanding the overall process and requirement of the users through the interview and questionnaire that have been conducted.

On the other hand, there are still a lot of future improvement and enhancement can be made once the system is being released in order to make sure the system is future proof. One of the improvements that can be made are Short Messaging Service (SMS) notifications, which will inform the user that the exam docket is ready through SMS as not every student will always beware of their email.

## FIGURES

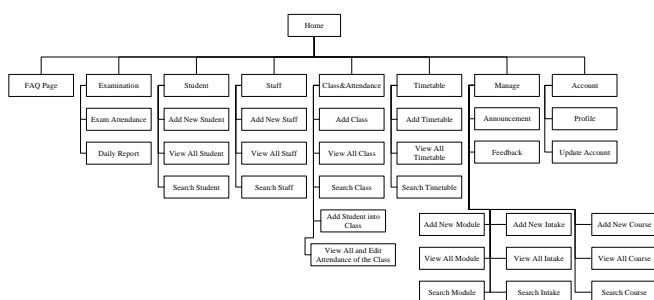


Figure 1: Staff's Website Map Structure

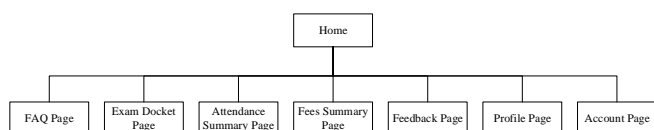


Figure 2: Student's Website Map Structure

What method do you prefer exam docket is given to you?  
50 responses

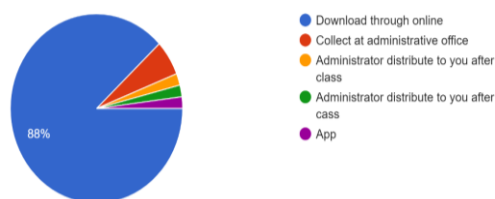


Figure 3: Result of method that student prefer exam docket is given

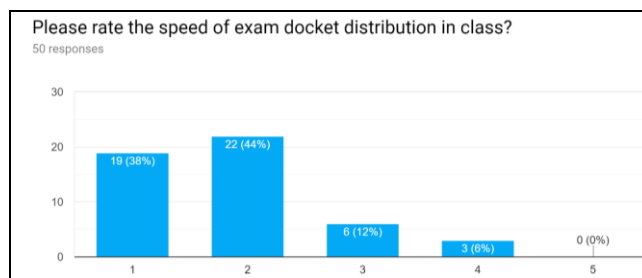


Figure 4: Result of speed of exam docket distribution in class

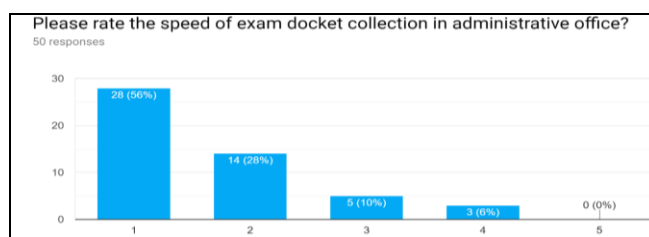


Figure 5: Result of speed of exam docket collection in administrative office

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