



**UNIVERSITI TEKNIKAL MALAYSIA MELAKA**

**DEVELOPMENT OF WEB BASED BOARDING  
SCHOOL OUTING SYSTEM**

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Electronic Engineering Technology (Telecommunication) with Honours.

اونيورسي تيكنيكل مليسيا ملاك by

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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2021

## DECLARATION

I hereby, declared this report entitled Development Of Web Based Boarding School Outing System is the results of my own research except as cited in references.

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15/01/2021



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APPROVAL

This report is submitted to the Faculty Of Electrical And Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Electronic Engineering Technology (Telecommunication) with Honours. The member of the supervisory is as follow:



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## ABSTRAK

*Sebilangan besar sekolah berasrama masih menggunakan kaedah manual kelulusan pelajar. Sebelum mereka dibenarkan keluar, mereka perlu mengisi kad tersebut. Selepas itu, mereka perlu menyerahkan kad tersebut dan warden akan menandatangani kad keluar untuk persetujuan. Sekiranya anda mengalami kecemasan, anda mesti pergi ke rumah warden untuk mendapatkan kebenaran mereka dengan menandatangani kad keluar. Dengan berbuat demikian, pelajar boleh mengganggu warden pada hujung minggu tetapi tidak mempunyai pilihan lain. Sekiranya tidak, pelajar akan keluar untuk pergi tanpa kebenaran warden. Di samping itu, pelajar sering kehilangan kad 'outing', atau kad mempunyai had untuk memohon 'outing' sehingga pelajar harus membeli kembali kad 'outing'. Sebilangan pelajar mungkin menghadapi masalah kewangan sehingga mereka tidak mempunyai wang untuk membelinya. Sistem keluar berasaskan web akan membantu menyelesaikan masalah ini. Sistem akan menggunakan pengimbas kod bar untuk mengimbas kod bar di bahagian belakang kad pengenalan mereka. Seterusnya, semua butiran pelajar akan dipaparkan secara automatik di komputer dan dimasukkan ke dalam pangkalan data untuk rakaman. Sistem ini akan menggunakan Microsoft Visual Studio 2019 untuk melaksanakan sistem, sistem pangkalan data, dan banyak lagi. Ciri sistem akan ditambah seperti aplikasi keluar dan status keluar. Warden dan pentadbiran boleh memeriksa pangkalan data. Sistem ini akan membantu warden untuk merekod dan mencetak kad sementara untuk pelajar, memudahkan mereka menggunakan pintu keluar.*

## ABSTRACT

Most boarding schools still using the manual methods of approval students' outing. Before they are allowing to go outing, they need to fill in the outing card. After that, they need to submit the outing card and the warden will stamp on the outing card as an approval to go outing. If you have an emergency thing, you have to go to the wardens' house to get permission from them by signature the outing card. By doing that, the student might be disturbing the warden on the weekend but there is no other choice. Otherwise, the students might be going out for outing without a warden's permission. Besides, the students always missing their outing card, or the outing card has limits to apply for an outing so the students need to repurchase a new outing card to go outing. Several of the students might be having a financial problem so they do not have financial to buy it. An outing system using web-based will help to overcome these problems. This system will be using a barcode scanner to scan the barcode at the back of their ID card. Next, all the details of the student will automatically display on the computer and insert in the database to record. This system will be using Microsoft Visual Studio 2019 to implement the system, database system, and so on. The features on the system will be added such as outing application and outing status. The warden and administration can check the database. This system will help the warden to record and stamp the outing card while for the students, it will be easier for them to apply the outing.

## DEDICATION

I dedicate this project to My Creator Allah S.W.T, my strong pillar, my source of inspiration, wisdom, knowledge and understanding. He has been the source of my strength throughout this project and on His wings only have I soared. I also dedicate this work to families; Abdul Rahman, my dad and Salamah, my mom, who has encouraged me all the way and whose encouragement has made sure that I give it all it takes to finish that which I have started. To my sisters, Norfarahdiana (Ayong), Fatin Nuraqilah (Akak), and my brother, Muhamad Luqman Hakim (Abang) who have been affected in every way possible by this quest. This project I also dedicate to my supervisor, Pn. Aziean Binti Mohd Azize for her help to manage me to the accomplishment of undertaking for my degree. Thank you. My love for you all can never be quantified. Allah bless you.

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I sincere appreciation also goes to all my lecturer in FTKEE for their invaluable assistance toward this project. It will never be regret to enrol myself into FTKEE. This will improve my skills and capabilities to related fields.

My utmost regard also goes to my parents, Abdul Rahman and Salamah and also my family members and friends. They always give me support and encourage me to finish this project and give my best for this project. They also supporting me either mental or finance while completing this project. The gift of Allah, unforgettable, to bless me with infinite knowledge, experience and confidence to meet these amazing people in my lives. By going through this journey, I strongly believe this may be the breakthrough of my next journey of life. It was impossible for me to complete this project without their support.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Introduction

This chapter will show an overview of this project regarding web based outing system using barcode in detail. It discusses about background, problem statement, objective and project scope.

### 1.2 Project Background

The project to be developed is a web-based application system which called Boarding School Outing System and it will apply in any boarding school. Nowadays, most of parents who are working full-time will send their children to boarding school. It will be easier to them to monitor their children about studies. Students in boarding school will have new friends, and be independent to take care of themselves.

Barcode is a method of representing data in machine-readable form. Next, barcode represented data by spacing of parallel line and width. (Singh and Sharma, 2015) mentioned that barcode is clearly defined dark bar and blank areas format. It enables continuous information to be gathered precisely and quickly. Connecting the barcode innovation with personal computer and application programming improves the execution, efficiency and beneficial. Barcodes are widely used such as supermarket because they were used to automate supermarket checkout system. It will speed up the process of checking out and can track the price of items. Barcodes can also be used to keep track of objects and people.



Commonly it referred to as linear or one-dimensional (1D) and can be scanned by barcode scanner. (Phaniteja and Tom, 2010) explained that there are several type of barcode reader such as laser scanner and Charge Coupled Device (CCD). Laser scanner use laser shaft as light source and commonly utilize either responding reflect or pivoting crystal to filter the laser bar to and fro over the barcode. For the charge coupled device, it uses an exhibit of several minuscule light sensors arranged in succession in the head of reader.

Nowadays, technology plays an important role to industries, healthcare and more. Example of technology that widely used is database system. Database is a collection of related data with certain task. Most of the companies or organization have their own system to manage data of people who are entering their premises. This invention has made it easy to manage data in database system and direct access to data. A database system is more secure to restrict users from accessing information. Only certain users can access this database system. By having this system in boarding school, it will be easier for the warden to approve and the students to apply for outing. This system will come with a database to keep and collect all the data time by time. This system will replace the manual application to manage the student outing. According to (Saeed, 2017), an organization that executes a database application to limit mistakes, and upgrade consistency is a significant idea for effective database-related applications.

### 1.3 Problem Statement

The outing system in boarding school is using manual system. There are some problems with the current manual outing system. The students' registration is being used to record all the details and movement in their outing cards. All students must have outing card to go for outing activity. It is very inefficient to control all the students in boarding school.

In addition, the students need to get permission by warden. If you have an emergency thing, you have to go to wardens' house to get permission from them by signature the outing card. The wardens do not have any privacy on weekend. They might be spending time with their family. By using this system, the warden can login the website and check the application. On weekend, the warden wants to get a good rest with their family, nevertheless they still need to work and check on the students who went out for outing activity. By having the system in boarding school, the wardens can check all the student's information, in and out time of outing application.

Furthermore, the outing card has limitation to apply to go for outing activity. They need to repurchase the outing card for the upcoming outing activity. The price for an outing card might be reasonable for them to purchase but they need to cut cost and save for other important things. Other than that, some of the students return to school on time but some of them are not.

The warden need to stay at the guard house from 6pm until 7pm to check the students who are not return yet on time. The students' outing card need to be hold by the warden for detention class as punishment. It might be difficult for the warden to stay at the guard house and check one by one outing cards. So, it is much easier for warden to check students' status through the outing system.

## 1.4 Objectives

The objectives have been identified after reviewing all the problems. There are specific objectives need to be achieved in the development of boarding school outing system using web based.

- I. . To design outing system through web based by using barcode scanner.
- II. To eliminate the impersonation of the warden's signature by the students to get permission for the outing
- III. To analyze the functionality of the system.

## 1.5 Project Scope

The scope of this project is to create a web based boarding school outing system using barcode scanner. This system will replace the manual outing system with web based outing system to check the movement of students. This project uses a barcode scanner that will construct with the personal computer. The functions of this system are to keep track the movement of the students on weekend and it will display database of each students' outing activity with exact time.

This system has three categories of users which are administration, warden and students. Web-based system will auto key-in the data of the students going out for outing. Web-based can be accessed by the administration, warden and students. The administration need to fill in the student detail. Other than that, the administration and warden can view the information of student and approval permission.

The students need to apply the outing permission before going out. In addition, the student need to show the student ID card at the guard house and scan the barcode at the back of the ID card. Once the scanning barcode done, all the details of student will display on the web.

## 1.6 Thesis Outline

This report is made up five chapters, which contents are summarized as follows:

- Chapter 1 contains project background, problem statement, objectives and project scopes.
- Chapter 2 contains literature review that summarized all the related project.
- Chapter 3 describes the methodology that has been developed the outing system.
- Chapter 4 contains result and discussion that obtained from the system implementation.
- Chapter 5 contains the conclusion and recommendation for future related project for improvement.

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## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter will discuss about literature review where the information about related project. It will summarize the idea based on the previous project as well as the theory to accomplish this project. This study is focus on web based system that used for this related project. Web-based application is useful to any user to develop, easier to install and manage it. Each web-based application has particular function according to the requirement. This web-based can accessed anytime through internet. In addition, barcode scanner can quickly analyze any printed barcode by sensor and send information to output. It can be connected to a personal computer by connecting the USB cable on the barcode scanner

#### 2.2 Related Researches

##### 2.2.1 Mobile Barcode Based Examination Attendance System

This project suggested an effective way to participate in the evaluation using mobile barcode. (Khan *et al.*, 2018) stated that innovation should be familiar with handling the framework for participating in exams. This framework can help the understudies keep the emphasis on the exam. The administrator who will keep up the online server guided this framework. The administrator will embed new objects, halls, timetables and venue for examination. Each lecturer has their own. So the lecturer can pick up their subjects and check the hall. Undergraduates need to check their student card prior to entering the examination

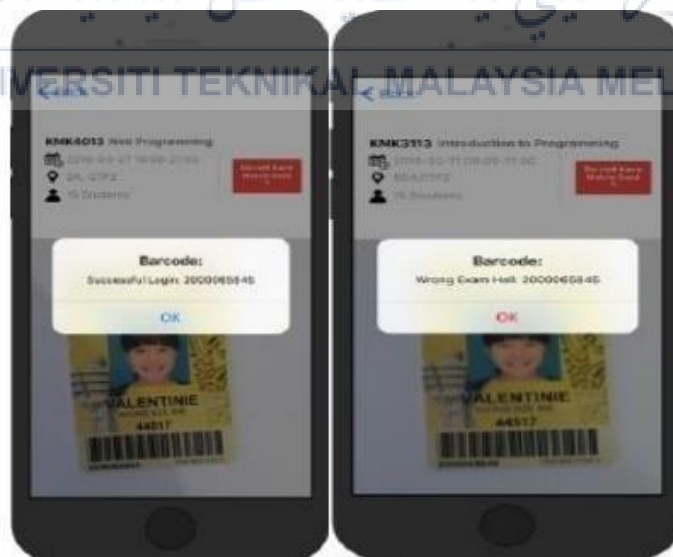
hall. They proposed the mobile barcode-based examination system outweighs the paper-based attendance framework by reducing the time and vitality utilization.





**Figure 1: Lecturer's login to the system.**

In addition, this framework uses smartphone that connects to Wi-Fi. The smartphones will communicate with the server. For the students who lost their student card, they need to enter matric number manually. The framework will check authority of student by comparing the number of the matric through database. At that point the student will get message of validation depending on the outcome.



**Figure 2: Students scanning matric card**

Other than that, the framework contains a few modules to deal with the rare instances of students. The primary module is a mobile application whereas the module that follows is a server module. For the first module, the tasks are lecturer login management, read barcode information on student matric card, and send the barcode information to an online database. Next, the task for the server module is to provide login approval to the lecturer, receiving barcode information from mobile module, confirm student attendance, stopping unregistered students from entering the exam hall, keep a record of attendance, provide dynamic reports, insert updating of exam schedule and maintain lecturer account. Moreover, Rapid Application Creation (RAD) has also been used to design the framework. This is well suited for a small group. They were preparing storyboards, screen format and the sub-set of authentic functional structure highlights. They built up a test at that stage, and perfected a prototype.





## 2.2.2 Boarding School Outing Management System

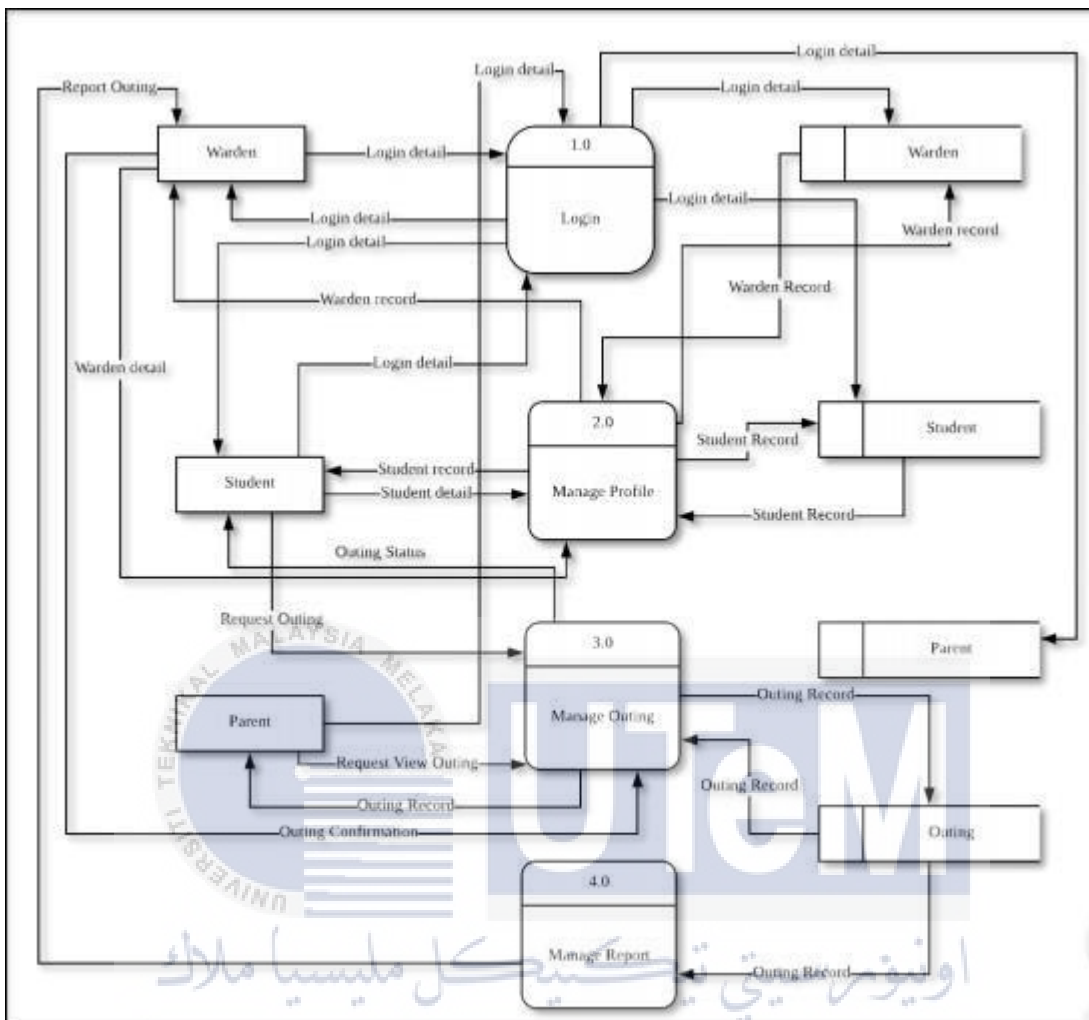
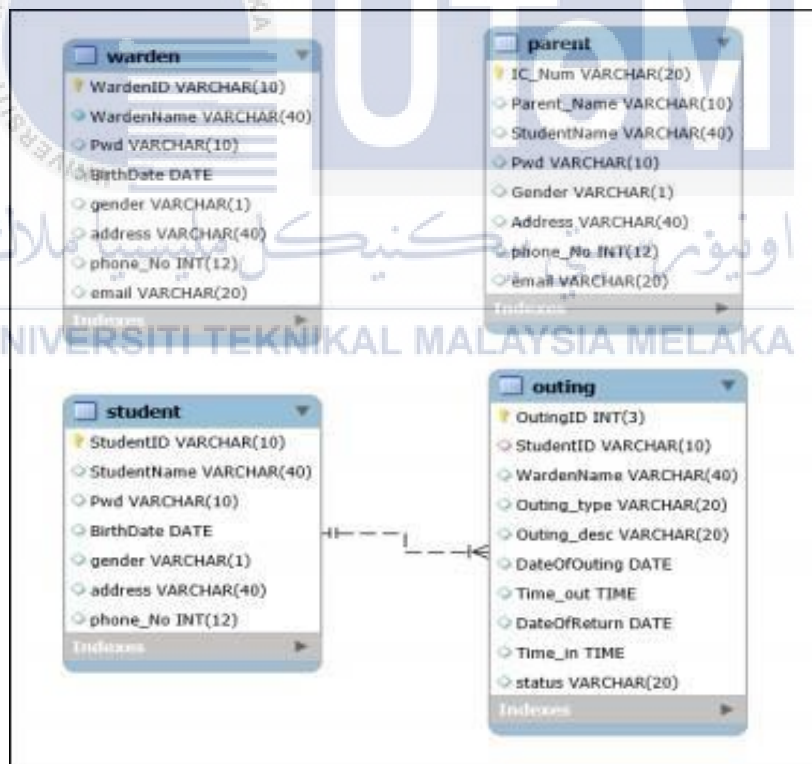


Figure 3: Data Flow Diagram (DFD) of this system.

(Abd Halim, 2018) proposed that the outing system provided for SMK Tembila's students known as Boarding School Outing Management System (BSOMS). The system is developed using PHP for web development while the database platform is MySQL. This system can be accessed only by warden, parents, and student who stays in the hostel. Besides, the requirement analysis is a detailed requirement for the system. For a system designed by using specific hardware and software to help to define the overall system. Then, the system was implemented and tested for its functionality.

Data Flow Diagram (DFD) and Entity Relationship Diagram (ERD) were used to develop this system. DFD explained the flow information of the system process. In addition, SMS-Gateway is a technique used to send SMS notification from the webserver to mobile phones. Moreover, for Entity Relationship Diagram (ERD) show the entity of the system and interaction of each table on the diagram. There is some software that has been used to develop the system. The software is XamppServer, Lucid, and UC Browser. XamppServer is used for connecting with MySQL database and support PHP programming. Then, Lucid is used for designing and draw diagrams, and UC Browser is to display the system. Database design will ensure the flow of data in the system saved and will display in the system. This system will help students to record their outing activity using the system. The warden and parent can check the student activities.



**Figure 4: Entity Relationship Diagram (ERD) of the system.**

### 2.2.3 Information System-Based Automated Tutor Attendance using Barcode Scanner

(Ilmiah and Fahmi, 2018) stated that this tutor attendance system is intended to monitor the tutor's activity which recaps the educating procedure. The institution needs the automated attendance system due to the amount of tutoring and tedious work that the staff have to do. Other than that, the system also incorporates the academic information system. A Barcode scanner is used for this system to provide a new quick and easy way of registering attendance. A Barcode scanner is used for this system to give another fast and simple method of enlisting attendance. In addition, this system of tutor's attendance is to improve the administration of education and created in the cascade model with MySQL database and PHP programming language. As mentioned above (Ilmiah and Fahmi, 2018), this system made with a cascade model which included system requirements, software requirements, analysis, program design, coding, testing, and operation. Windows Operating System, Brackets for a Text Editor, Xampp, MariaDB, and Perl and PHP programming language are the software used for designing this system. This program additionally incorporates linear barcode, pen-type readers and window-server computer.

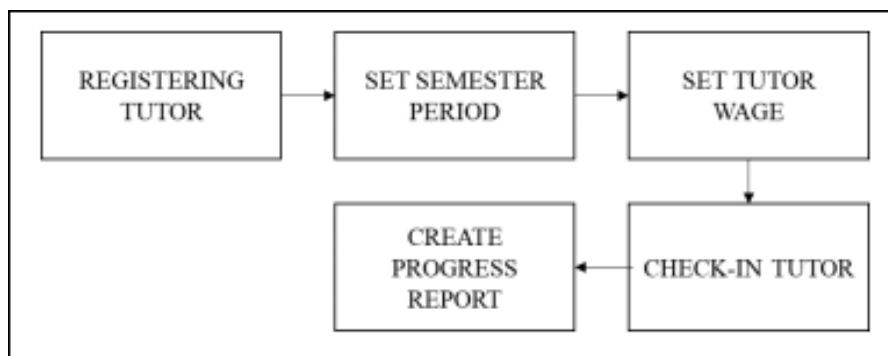


Figure 5: System's Implementation

Based on the diagram above, registering tutor, determine semester period, calculate the tutor's pay, keeps track of attendance of the tutor and report of progress made are the primary functions that required by the system. The staff can set the semester academic period and set tutor wages per day. This automated attendance system mostly conducted by the staff and tutor. The tutor can check information and students' attendance from the system. Furthermore, recapitulation errors can affect the amount of pay that institutions will spend so that the recapitulation can be saves in tables to keep the data. As mentioned before, the system made with Cascading Style Sheet (CSS with SQL database) using PHP and HTML language. The system's MySQL database will export to database. It is the easiest way to overview the data. The report of recapitulation will show the attendance in pdf format and can be printed out.

Tutor	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	T o t a l	F e e
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**Figure 6: Payment Recapitulation**

## 2.2.4 Attendance Management System using Barcode Identification on Students' Identity Cards.

(Saheed *et al.*, 2016) was mentioned that the existing method which is using paper sheets is not efficient and more time consume. The teachers for the most part need to ask that the students record their names or to go through the selected sheet and mark their names. The data will require some time to be transferred to data analysis system. Next, the lecturers can access easily the barcode system, and the reports can be generated in real-time. This barcode system is getting safer and more accurate.

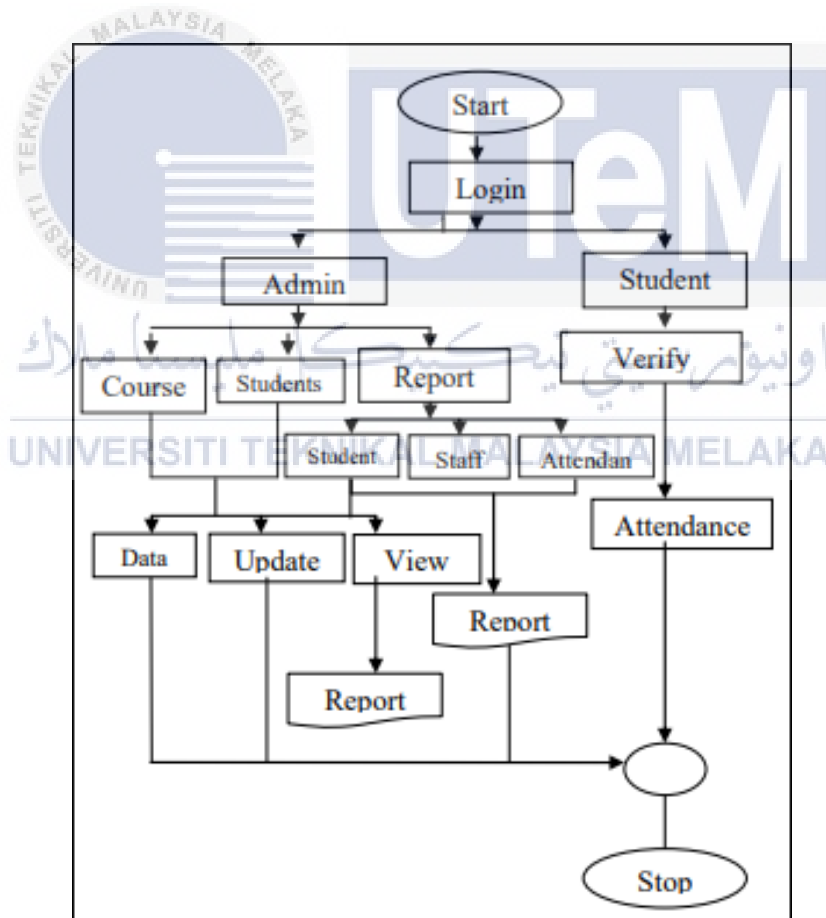


Figure 7: System Model

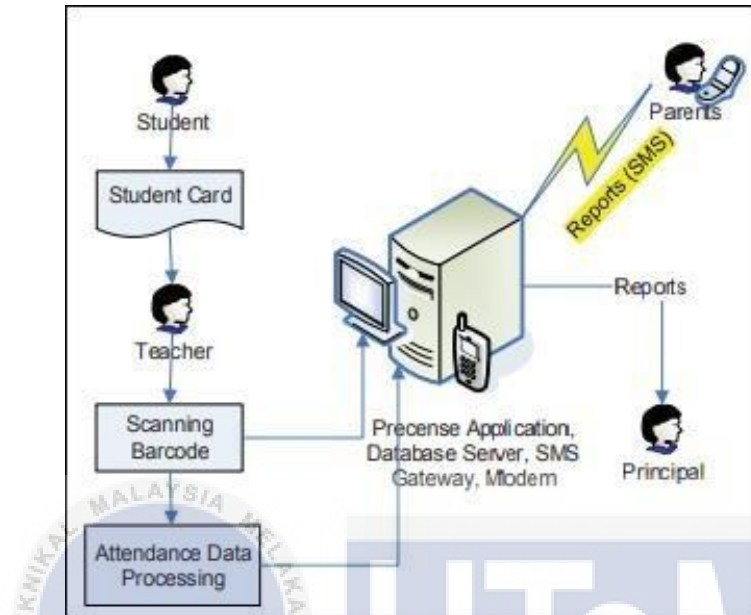
Besides, the code is uniquely associated with students' details for identification. At the back of each student's ID card, the barcodes will be attached and all the information would be embedded in the barcode. Students need to swipe their ID card through the barcode reader and the attendance information automatically recorded in the server. Thus, the data can be processed instantly automated. A server can monitor the students who are not attending class in order to inform the parents. Meanwhile, students can discipline themselves to bring their student ID card for attendance marking. There are two modules for this system function, the admin who has the right to create any new entry of faculty and students, and the other one is the user. The user is the one who is making attendance, and generate reports. Form design elaborates on the presentation of the data and the interface available to collect the details. The criteria to appear for examination is 70% of attendance required in a semester. By using this system, a report of students' attendance details helps the students to attend the examination.



### **2.2.5 SMS Gateway and Barcode Technology for Presence of Students in SMK Unggulan Terpadu PGII Bandung.**

According to (Benny Chaniago and Junaidi, 2016) was discussed that the lack of communication between school and parents related to students' attendance. Nowadays, students in Indonesia have been skipping classes. Build a gateway system for the Short Message Service (SMS) to ensure that students attend the classes. It printed the barcode on the ID card. The teacher on duty will scan the barcode and the data will be saved in the database automatically.

It will also be sent personally to their parents who have registered to receive information regarding the presence of their children. The data already saved into the computer then processed weekly and monthly reports from principle, management, and parents.

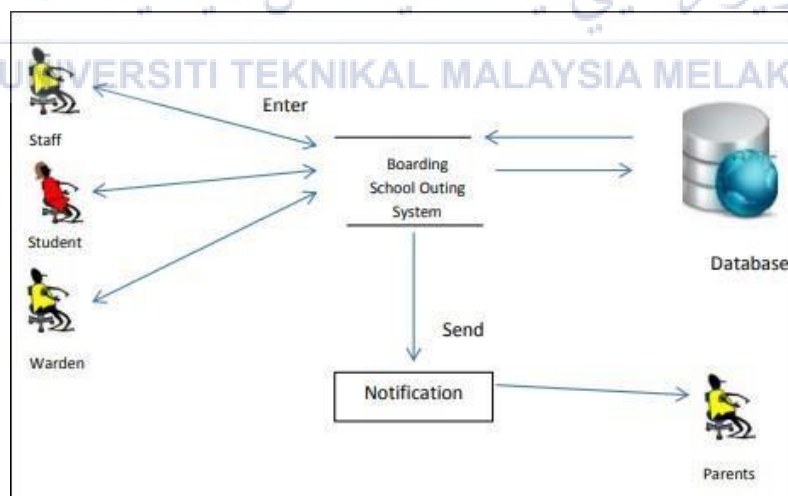


**Figure 8: SMS Gateway for Student Presence.**

Likewise, to encourage the conference chat service, Smart Gateway will associate SMS users to Internet users. This service is implemented principally to energize on-line dialog in a teacher learning condition. The current system was not yet manual, nor computerized. Simultaneously, information on student participation is compiled into a report on student participation which can be downloaded in excel format. Creating this system into hardware and software specifications. Required hardware are Intel Premium 4, 1 GB of RAM, hard drive, 1 GB for the server, barcode scanner, and GSM modem or GSM telephone. The GSM broadcast communications operator enables the SMS service which empowers messages to be sent and received. Apart from that, for required software are PHP script as a programming language, Macromedia Dreamweaver 8 used for display design, and MySQL for the database.

## 2.2.6 Boarding School Outing System.

This research has proposed to use outing system in MRSM Lenggong which is boarding school. Based on (Nurshaza, 2015), the system designed to ease replaced the manual procedures managing students outing. Some of the students cheated on their outing details and some of them lied about their friends who are actually not present. This project will create an efficient outing system that can give peace of mind to parents as they will be informed of the whereabouts of their children. The manual system requires a huge amount of effort and time and it is unreliable. Whenever the students are endorsed to go out on an outing, they need to wait for their turn to write information and get the signature of the warden in the logbook. Another function will be added to it by using the outing system which sends notifications to parents by means of email. This system used Snapshots of Xampp, Notepad++, MySQL, Bootstrap structure and programming language; PHP, HTML, CSS, and JavaScript.



**Figure 9: System Architecture**



Based on the figure above, this system used MySQL to keep and save all information. All three users can access the system. In addition, the staff will generate a report of students' profiles and report while the warden will accept all the outing applications send by the students. The students can only access to apply their outing applications and view results along with student profiles.

### **2.2.7 Easy Access Attendance Management System.**

As indicated by (Sulaiman *et al.*, 2015) barcode scanner was used to analyze an attendance record process. This program can diminish the risk of students cheating their participation. Other than that, the attendance procedure will be quicker than previously. The students essentially need to check the barcode at the back of the students' cards. In addition, this project uses the Human Interface Device (HID) Keyboard Emulation barcode scanner. This barcode scanner has its own element which can examine pictures and export them to the use of bitmap and multi-code scanning.



**Figure 10: Barcode Scanner**

Using Visual Studio 2012 the graphical user interface ( GUI) was designed for the software features. There are several features that are embedded in the given software such as wholeData used for database. Additionally, data from the analysis can be sent out to Microsoft Excel for inspecting by the staff. The administration staff can see the percentage of students attending or absent from the report. Having this system it gives the students and administration a positive impact. The attendance record is going to be quicker than before. It will also minimize students cheating on their attendance. Other than that, there would be no interminable work of the administration staff on attendance of the students.



### 2.3 Summary Table

Table 1 Summary Table regarding to previous related work

No.	Title of Project	Method	Application
1.	(Khan <i>et al.</i> , 2018)	<ul style="list-style-type: none"> <li>• Personal Computer</li> <li>• Mobile Barcode</li> <li>• Smartphone</li> <li>• Rapid Application Development (RAD)</li> </ul>	Students Examination Attendance
2.	(Abd Halim, 2018)	<ul style="list-style-type: none"> <li>• MySQL</li> <li>• PHP</li> <li>• Xampp Server</li> <li>• Lucid</li> <li>• UC Browser</li> </ul>	Boarding School Outing Management in SMK Tembila
3.	(Ilmiah and Fahmi, 2018)	<ul style="list-style-type: none"> <li>• Barcode Scanner</li> <li>• MySQL</li> <li>• PHP</li> <li>• Xampp Server</li> <li>• MariaDB</li> <li>• Perl</li> <li>• Cascading Style Sheet (CSS)</li> </ul>	Tutor Attendance

No.	Title of Project	Method	Application
4.	(Saheed <i>et al.</i> , 2016)	<ul style="list-style-type: none"> <li>• Student's ID Card</li> </ul>	Students Attendance Management
5.	(Benny Chaniago and Junaidi, 2016)	<ul style="list-style-type: none"> <li>• MySQL</li> <li>• PHP</li> <li>• Macromedia Dreamweaver 8</li> <li>• Barcode Scanner</li> <li>• GSM Modem</li> <li>• GSM phone</li> <li>• RAM Hard drive</li> <li>• Intel Premium 4</li> </ul>	Students Attendance in SMK Unggulan Terpadu
6.	(Nurshaza, 2015)	<ul style="list-style-type: none"> <li>• Xampp Server</li> <li>• Notepad++</li> <li>• MySQL</li> <li>• Bootstrap Framework</li> <li>• PHP</li> <li>• Cascading Style Sheet (CSS)</li> <li>• JavaScript Snapshots</li> </ul>	Boarding School Outing System in MRSMLenggong
7.	(Sulaiman <i>et al.</i> , 2015)	<ul style="list-style-type: none"> <li>• Visual Studio 2012</li> <li>• Student's ID card</li> <li>• Barcode Scanner</li> </ul>	Students Attendance

## CHAPTER 3

### METHODOLOGY

#### 3.1 Introduction

This chapter is to reinforce the specific method of how the project is to be carried out and the process of implementing the analysis to make this project a reality. In addition, the method is used to achieve the objective of the project that will accomplish a perfect result. In order to achieve the objective of this project, some research had been done. In this part, it involves the flow chart of the process and design.

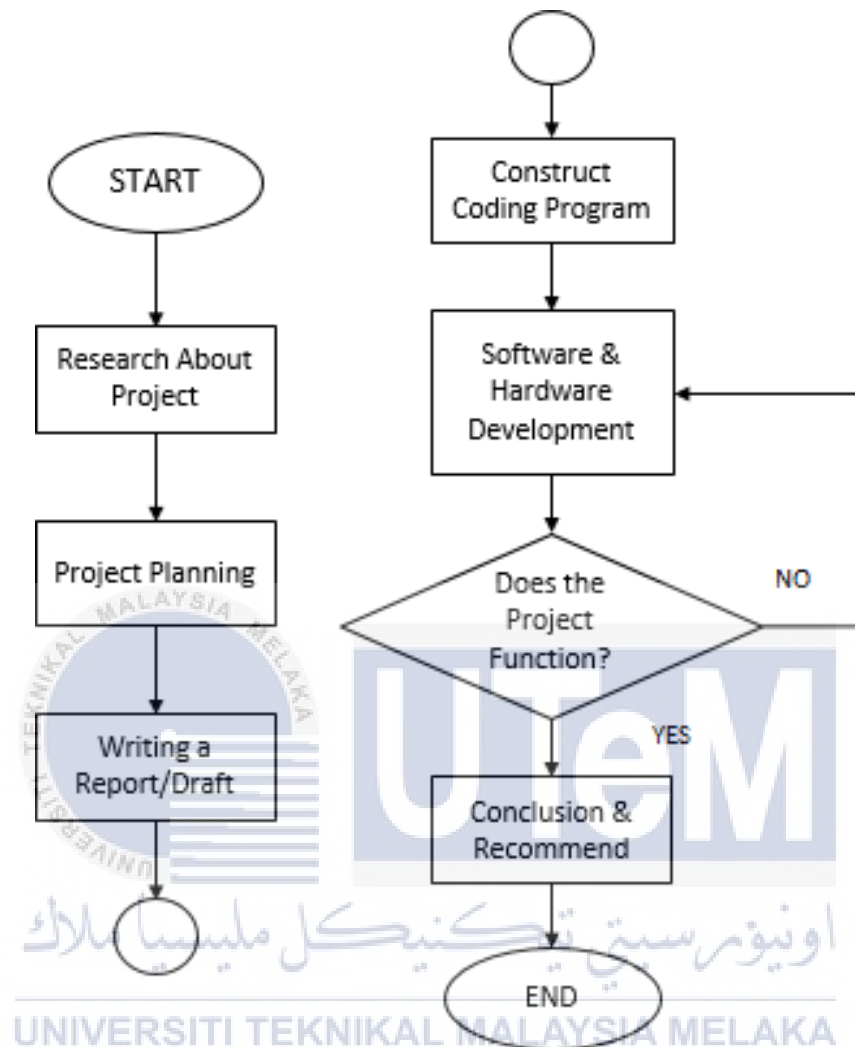
#### 3.2 Research Design

First and foremost, some research had been done on some resources. The project will begin with literature review by gaining all the information about web-based outing system using barcode scanner, how the system works and what applications used for this project. The analysis obtained the information required for this project to be implemented. Besides, this system develop using a web application in order to be accessed and fill in details by students, teachers and administrations. It will be easier for students to apply weekend outing from the warden in charge.



**Figure 11: Steps in Methodology**

### 3.3 Flowchart of general flow of PSM



**Figure 12 : PSM Flowchart**

According to the flow chart shown in Figure 12, the first step is to do some research about the project. The information and idea were gather can generate on how the project works. By doing this step, it can determine the hardware and software used. Each hardware and software has advantages and disadvantages to implement the project. Next, project planning is important step. It is to make sure the flow chart of the system is works.

Then, start to write report for this project. It is very useful to know the objectives of this project and keep on track. The next process is construct the coding to use the software. This project need to display a database of the students' name and other features to be shown on the system. After that, implementation of hardware and software based on the project planning and designing process. The process of construct coding repeated until the system achieved the requirement and record the data. Lastly, complete the report writing for conclusion and recommendation for the future related project.



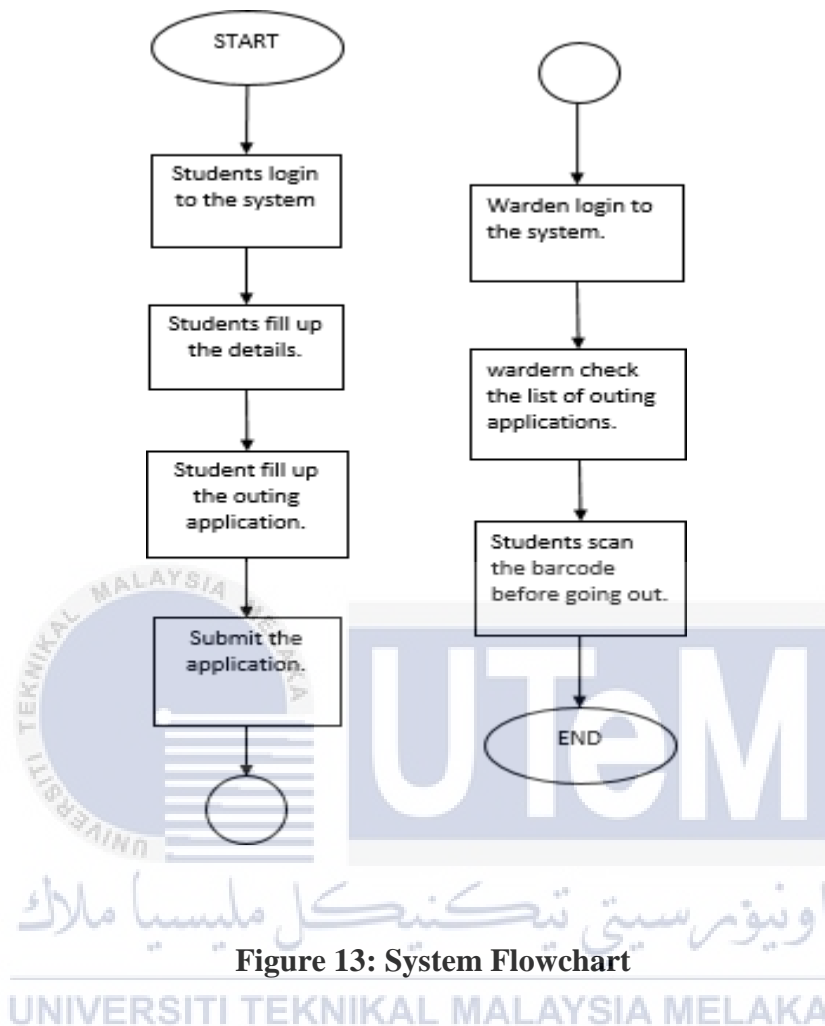


Figure 13: System Flowchart

These are the sequence steps of web based boarding school outing system as shown in Figure 13. First and foremost, the students need to login to the system and fill up the details. After that, the students can fill up the outing application and submit it. For warden part, they need to login to the system and check the list of name who applied. The student can check the status of application through the web based. Before the student going out for outing, they need to scan the barcode at the back of their ID card. All the details will display on the computer.



### 3.5 Gantt Chart of Progress

Project Activity\ Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Discuss Project Topic															
Research Articles															
Gather Information															
Chapter 1 Preparation															
Literature Review Preparation															
Methodology Preparation															
Study about Hardware & Software Used															
Construct Coding Program															
Construct Hardware & Software															
Analyze the Functionality															
Report Preparation															

### 3.6 Hardware Used

This part will explain the hardware used in this project to be implemented which is barcode scanner. This system used handheld barcode scanner and corded.

#### 3.6.1 Barcode Scanner

Barcode scanner is one of important things in this project. This barcode scanner will connect to the personal computer. It is used to scan the barcode at the back of students' ID card before going out or entering the school. All the barcode indicates information. By using barcode scanner, all the student details will appear at the computer so the security guard or warden can check if the student get a permission or not.



**Figure 14: Handheld Barcode Scanner**

There are several type of barcode scanner for example laser scanner, linear imager scanner and handheld scanner. Each barcode scanner has its specility in different situation. The most common used scanner is handheld scanner. It is usually use at the supermarket, healthcare and warehouse. The corded scanner is easy touse for transmitting data to the software and affordable. This barcode scanner is high-efficiency in scanning and improve the productivity.

### 3.7 Software Used

This part will explain the software used in this project which is Microsoft Visual Studio 2019.

#### 3.7.1 Microsoft Visual Studio 2019

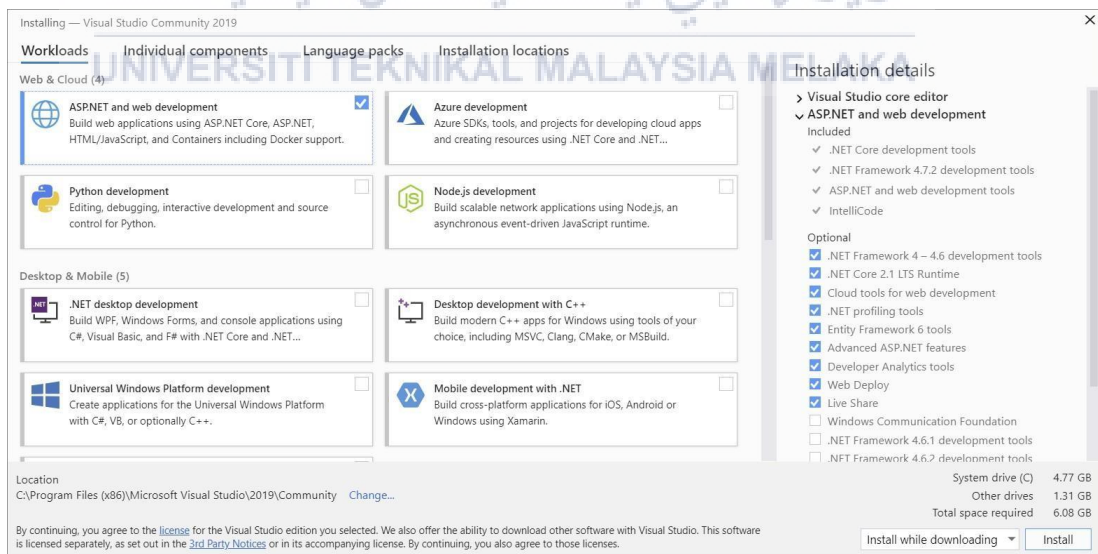
This system is using Microsoft Visual Studio. Graphical User Interface (GUI) was designed by the Microsoft Visual Studio. There are some features inserted in the software such as database. No internet required to run this software in computer. Other than that, it is used in the creation of websites, mobile applications and web services. Microsoft Visual Studio can supports 36 different programming languages as well as C++, C, HTML and JavaScript. By having Microsoft Visual Studio, provide Visual Studio Code as source code editor with Linux, Mac Os and Windows.

Furthermore, Microsoft Visual Studio support .net development. It is used for programming guidelines to develop a wide range of applications. This software supports code editing, design interface, management server, debug and analysis of performance.



**Figure 15: Microsoft Visual Studio 2019**

Once the installation done, it can customize the workload for the right development. It need to be install the workload before using it. Every workload contains features that required in the development. Microsoft Visual Studio is the integrated development environments (IDE). Other than that, it can change the programming language to the one preferable. It will be easier to write the coding.



**Figure 16: Workload displays on Microsoft Visual Studio**

### 3.7.2 Xampp

Xampp is a free and open-source cross-stage web laborer course of action stack bundle. Also, XAMPP is a truncation for cross-stage, Apache, MySQL, PHP and Perl, and it licenses you to build WordPress site detached, on a close by web specialist on your PC. XAMPP gives two fundamental sections to its establishments which are Apache and MySQL. MySQL is utilized as information base for site while Apache is utilized to make nearby worker.

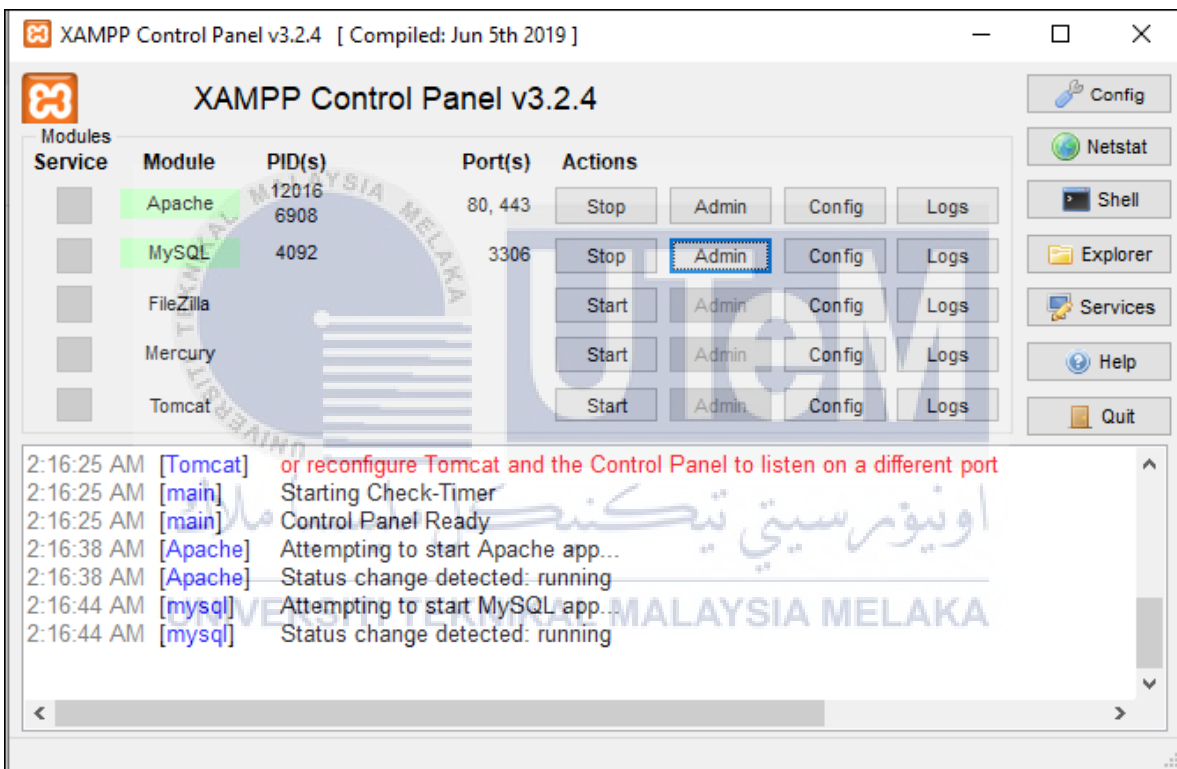


Figure 17: Xampp Control Panel.

### 3.7.3 MySQL Database

MySQL is a social data base organization system reliant on Structured Query Language (SQL). The application is used for a wide extent of purposes, including data warehousing, web business, and logging applications. The most broadly perceived use for MySQL nevertheless, is with the ultimate objective of a web data base. In relationship with a scripting language, for instance, PHP or Perl (both offered on our encouraging records), it is possible to make destinations that will discuss dynamically with a MySQL data base to rapidly show arranged and open information to a site customer.

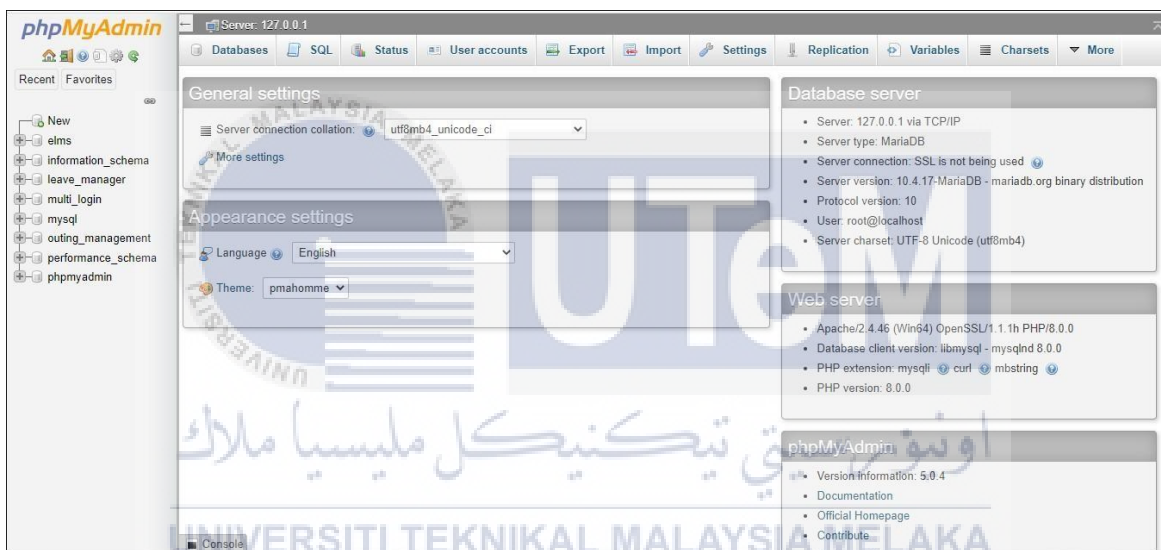


Figure 18: MySQL Database.

### 3.8 Implementation

The next step in methodology is implementation, after all the software and hardware have been confirmed. The implementation of this project is to make sure

that software and hardware running smoothly into this project. The objective must be achieved through out the implementation of this project which is design and implement the outing system through web based using barcode scanner. It is very important to review the outlines of the project implementation.

### 3.9 Summary

This chapter presents the proposed methodology to develop an effective outing system through web based using barcode scanner. Both hardware and software are very important and useful to develop this system. The following software used is Microsoft Visual Studio 2019. It has provided the programming language to run the application. It also provide the customization options to user needs. To produce a variety of data, programming language is needed in this development. Next, the hardware used is barcode scanner. To be more specific, handheld barcode scanner with corded is a great scanner. It is very high-efficiency in scanning and can improved the productivity.

UNIVERSITI TEKNIKAL MALAYSIA MELAKA

## CHAPTER 4

### RESULTS & DISCUSSION

#### 4.1 Introduction

This chapter will be discussing the expected result of this project, outing system using web-based. The result will be presented in diagram. The software implementation of this project will be detailed to obtain a better outcome. The project planning must be carried out successfully without any problem.

#### 4.2 Software Implementation

##### 4.2.1 Programming Language

In order to create a web page, programming is the main thing in this project.

This outing system website is written using HTML and PHP programming language. The graphical user interface (GUI) was designed by using Microsoft Visual Studio Code. There are several features inserted in this software. HTML is used to provide a specify information or content in the web page such as headings, paragraph and images. Other than that, Cascading Style Sheets (CSS) is used to control the web page's appearance. All the coding files were saved in PHP file. It also contains PHP programming language and HTML programming language. In order to create a webpage, programming is the main thing in this project.



```

1 <?php include('funtions.php') ?>
2 <!DOCTYPE html>
3 <html>
4 <head>
5 <title>Login</title>
6 <link rel="stylesheet" type="text/css" href="style.css">
7 </head>
8 <body>
9 <main>
10 <div class="header-img"></div>
11 </main>
12 <div class="header">
13 <h2>Login</h2>
14 </div>
15 <form method="post" action="login.php">
16 <?php echo display_error(); ?>
17 <div class="input-group">
18 <label>Username</label>
19 <input type="text" name="username" >
20 </div>
21 <div class="input-group">
22 <label>Password</label>
23 <input type="password" name="password">
24 </div>
25 <div class="input-group">
26 <button type="submit" class="btn" name="login_btn">Login</button>
27 </div>
28 <p>
29 Not yet a member? <a href="register.php">Sign up</a>
30 </p>
31 </form>
32 </body>
33 </html>

```

**Figure 19: Coding for Login Form.**

```

1 <?php include('funtions.php') ?>
2 <!DOCTYPE html>
3 <html>
4 <head>
5 <title>Register Form </title>
6 <link rel="stylesheet" href="style.css">
7 </head>
8 <body>
9 <main>
10 <div class="header-img"></div>
11 </main>
12 <div class="header">
13 <h2>Register</h2>
14 </div>
15 <form method="post" action="register.php">
16 <?php echo display_error(); ?>
17 <div class="input-group">
18 <label>Username</label>
19 <input type="text" name="username" value="<?php echo $username; ?>" >
20 </div>
21 <div class="input-group">
22 <label>Email</label>
23 <input type="email" name="email" value="<?php echo $email; ?>" >
24 </div>
25 <div class="input-group">
26 <label>Password</label>
27 <input type="password" name="password_1">
28 </div>
29 <div class="input-group">
30 <label>Confirm password</label>
31 <input type="password" name="password_2">
32 </div>
33 <div class="input-group">

```

**Figure 20: Coding for Registration Form**

By combining these two files, it will display a basic login and registration form.

To choose the preference background, CSS has been used for the whole web page.

Other than that, CSS used to display images and the exact place to put it. CSS also

can adjust the height and width for the images.

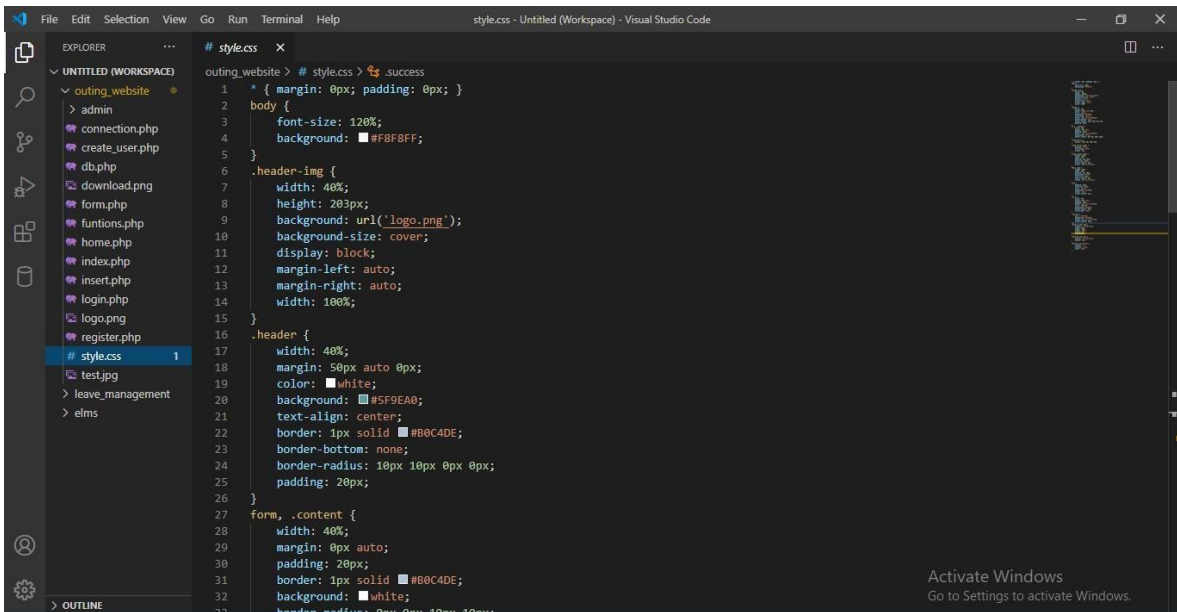


Figure 21: CSS coding

## 4.2.2 Programming Coding

In every PHP file that have been created in Microsoft Visual Studio Code using HTML and PHP programming language. To inserted the CSS file as our preference for the web page. The coding in figure below need to be inserted in every PHP file to create same web page preference. `<link>` tag used to link the external style sheets and `<href>` tag used to specify the link location of document.

```
6 <link rel="stylesheet" type="text/css" href="style.css">
```

Figure 22: Coding need to be inserted in every PHP file.

```

15 <form method="post" action="login.php">
16
17     <?php echo display_error(); ?>
18
19     <div class="input-group">
20         <label>Username</label>
21         <input type="text" name="username" >
22     </div>
23     <div class="input-group">
24         <label>Password</label>
25         <input type="password" name="password">
26     </div>
27     <div class="input-group">
28         <button type="submit" class="btn" name="login_btn">Login</button>
29     </div>
30     <p>
31         Not yet a member? <a href="register.php">Sign up</a>
32     </p>
33 </form>
34 </body>
35 </html>

```

Figure 23: Coding for setup the Login Form

```

120 function login(){
121     global $db, $username, $errors;
122
123     // grab form values
124     $username = e($_POST['username']);
125     $password = e($_POST['password']);
126
127     // make sure form is filled properly
128     if (empty($username)) {
129         array_push($errors, "Username is required");
130     }
131     if (empty($password)) {
132         array_push($errors, "Password is required");
133     }
134
135     // attempt login if no errors on form
136     if (count($errors) == 0) {
137         $password = md5($password);
138
139         $query = "SELECT * FROM users WHERE username='$username' AND password='$password' LIMIT 1";
140         $results = mysqli_query($db, $query);
141
142         if (mysqli_num_rows($results) == 1) { // user found
143             // check if user is admin or user
144             $logged_in_user = mysqli_fetch_assoc($results);
145             if ($logged_in_user['user_type'] == 'admin') {
146
147                 $_SESSION['user'] = $logged_in_user;
148                 $_SESSION['success'] = "You are now logged in";
149                 header('location: admin/home.php');

```

Figure 24: Coding for Login Form with database.

The function for the *function.php* file, to link the data when login to this web page. Then, it will synchronize the data with the MySQL database. This login web page can be log in by admin and student. Other than that, the data that have been inserted in *registration.php* web page will connect to the MySQL database.

```
1 <?php
2 session_start();
3
4 // connect to database
5 $db = mysqli_connect('localhost', 'root', '', 'multi_login');
6
```

**Figure 25: Coding for connection to database.**


```
24 <form method="post" action="create_user.php">
25
26 <?php echo display_error(); ?>
27
28 <div class="input-group">
29 <label>Username</label>
30 <input type="text" name="username" value="<?php echo $username; ?>">
31 </div>
32 <div class="input-group">
33 <label>Email</label>
34 <input type="email" name="email" value="<?php echo $email; ?>">
35 </div>
36 <div class="input-group">
37 <label>User type</label>
38 <select name="user_type" id="user_type" >
39 <option value=""></option>
40 <option value="admin">Admin</option>
41 <option value="user">User</option>
42 </select>
43 </div>
44 <div class="input-group">
45 <label>Password</label>
46 <input type="password" name="password_1">
47 </div>
48 <div class="input-group">
49 <label>Confirm password</label>
50 <input type="password" name="password_2">
51 </div>
52 <div class="input-group">
53 <button type="submit" class="btn" name="register_btn"> + Create user</button>
54 </div>
55 </form>
```

**Figure 26: Coding for create user by admin.**

This coding will let the admin to fill up the details of the user which is the students or admin. Other than the user itself register an account for this outing system, the admin also can register an account for them.

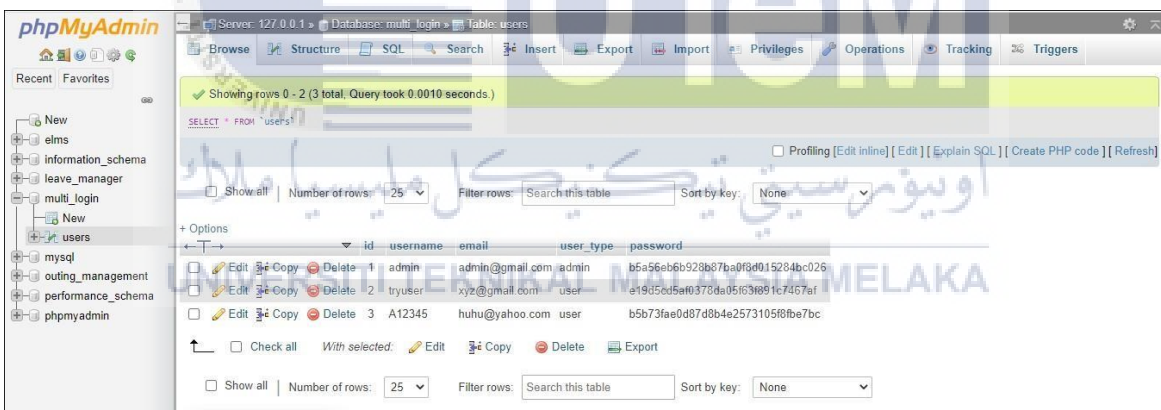
## 4.2.2 MySQL Database

PHP and MySQL runs in a computer without the needs of internet. The database created from a registration form for new user. The database will display the username, email and user type.



#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	id	int(10)			No	None			Change Drop More
2	username	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
3	email	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
4	user_type	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
5	password	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More

Figure 27: Table structure for new user.



id	username	email	user_type	password
1	admin	admin@gmail.com	admin	b5a56eb6b928b87ba0f9d015284bc026
2	tryuser	xyz@gmail.com	user	e1935ed15af0378da05f63f891c7457af
3	A12345	huhu@yahoo.com	user	b5b73fae0d87d8b4e2573105f8f7bc

Figure 28: List name of users in database

Once the registration form has been filled with all the data needed, all the data of new user will display on MySQL database named 'multi\_login' database. As new user, the first thing that need to do is to sign up as user. If not, the outing application cannot be access. Based on figure above, it shows the list of users that have been registered to this outing system.



#### 4.2.2.1 Microsoft Excel Database

```
outing_website > admin > excel.php
1  [?]php
2
3  $username=$_POST['username'];
4  $parents_name=$_POST['parents_name'];
5  $phone=$_POST['phone'];
6  $reg_plate=$_POST['reg_plate'];
7  $date=$_POST['date'];
8  $data=$username.", ".$parents_name.", ".$phone.", ".$reg_plate.", ".$date;
9
10 $file="file.csv";
11
12 file_put_contents($file, $data . PHP_EOL, FILE_APPEND);
13 print "<h1 align=center>Your outing form have been applied </h1>";
14
15
16 [?]
```

**Figure 29: Connection for outing form and database.**

The screenshot shows a web form titled "Apply for Outing" on the UTEM website. The form has the following fields: "Username", "Parents' Name", "Parents Phone Number", "Vehicle Registration Plates", and "Date". Below the "Date" field are two buttons: "Submit" (green) and "Back" (red). The background of the page features the UTEM logo and the text "UNIVERSITI TEKNIKAL MALAYSIA MELAKA". There is also a watermark in Arabic script and a Windows activation notice in the bottom right corner.

**Figure 29: Outing Application Form**

The figure above shows the outing application form. The user which is students need to fill in the form before they go out for an outing. The data that need to be fill are username, Parent's Name, Parent's Phone Number, Vehicle Registration Plate and date you want to go out. The information about parents need to be filled, the one that want to take the students out from school.

It is school responsibilities to know who want to take the students out from the school. Even though, it is their children, but when the parents send their children to the boarding school so it is school responsibilities.

	A	B	C	D	E
1	USERNAME	PARENTS_NAME	PHONE NUMBER	VEHICLE REG PLATES	DATE
2	tryuser	suha	012-3456789	VD 1110	12-02-21
3					

**Figure 30: Student's Information on Excel Database.**

The figure above shows the list name of students who applied the outing application form. The username is 'tryuser' and the parent's name is suha. Other than that, the phone number of the parents and vehicle registration plates and the date when the user want to go for an outing.

### 4.2.3 Boarding School Outing System

#### 4.2.3.1 User

The first thing that the user and admin need to do is to sign up an account. User and admin need to fill up all the data needed. In order to register successfully, the password need to be same as the confirm password. If the user or admin get it wrong, need to try another password and make sure both of them are same. Once the account successfully registered, all the data of the user or admin saved in the MySQL database. For the next visit, the user and admin does not need to register the account again, that is why this web page need a database to saved and stored all the data of user and admin.

**OUTING SYSTEM**

Register

Username

Email

Password

Confirm password

Register

Already a member? [Sign in](#)

Activate Windows  
Go to Settings to activate Windows.

**Figure 31: Registration Form**

Then, once the user or admin account has been registered, this web page will automatically show same as figure below. The figure below shows ‘B01234 (User)’, it means that the user already logged in to the system. Furthermore, for the user which is the students can choose either to ‘Log Out’ or to apply for outing, ‘Outing Application’. If the user chooses to log out, it will directly to the login page.

**OUTING SYSTEM**

Home Page

**You are now logged in**

B

**B01234** *(User)*

[Logout](#) [Outing Application](#)

Activate Windows  
Go to Settings to activate Windows.

**Figure 32: Home Page**



**Figure 33: Outing Application Page**

Based on figure 32, it shows the outing application page that the user need to fill up all the information before going outing. The username is B01234, the parent's name is Abdul and the parent's phone number is 012-2245678 and the vehicle registration plate is WCN 1212. The most important is to fill up the date, so this user choose to 23/02/2021. Once the user clicks the submit button, all the data will be saved in Microsoft Excel Database.

**Figure 34: Successfully applied the outing.**

### 4.2.3.2 Admin

The screenshot shows the login interface for the 'Outing System' at 'SEKOLAH MENENGAH SAINS HULU SELANGOR (SEMASHUR)'. The page header includes the school's logo and name. The main content area features a 'Login' form with a teal header. The form contains two input fields: 'Username' with the value 'admin' and 'Password' with masked characters. Below the fields is a teal 'Login' button and a link for 'Not yet a member? Sign up'.

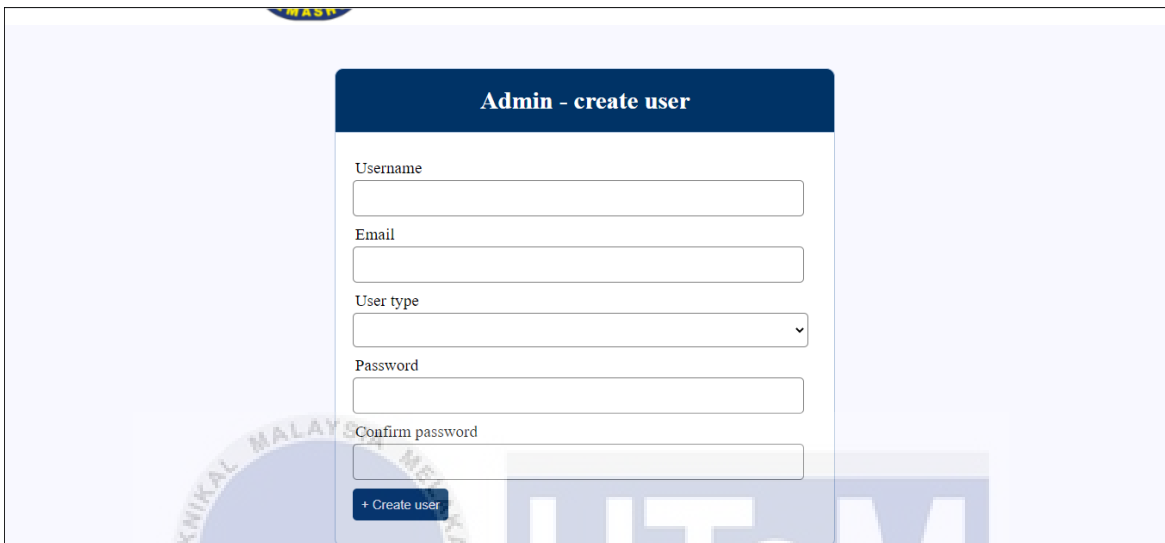
**Figure 35: Login Form for Admin**

The figure shows the login page for admin same as the user's. The username shown above is 'admin' and the password already typed. This web page same as the user's, once the login button clicked. It will show the home page for admin which you can add any user or admin and logout.

The screenshot displays the 'Admin - Home Page' for the 'Outing System' at 'SEKOLAH MENENGAH SAINS HULU SELANGOR (SEMASHUR)'. The page header includes the school's logo and name. The main content area features a dark blue header with the text 'Admin - Home Page'. Below the header is a green notification box stating 'You are now logged in'. Underneath, there is a user profile for 'admin (Admin)' with a circular icon and two links: 'Add User' and 'Logout'.

**Figure 36: Home Page for Admin.**

For new user, they can ask the admin to create an account for them. By clicking the 'Add User' button, all the data or information for the new user or admin. This page is only for admin, only the admin who the one help user or admin to register can identify either user or admin.



The image shows a web form titled "Admin - create user". The form is contained within a white box with a dark blue header. The header contains the text "Admin - create user" in white. Below the header, there are five input fields: "Username", "Email", "User type" (a dropdown menu), "Password", and "Confirm password". At the bottom of the form is a dark blue button with the text "+ Create user" in white. The background of the page is light blue and features a large, semi-transparent watermark of the UTeM logo and the text "UNIVERSITI TEKNIKAL MALAYSIA MELAKA".

**Figure 37: Add User page**

Once the admin successfully registered the new user or admin, it will save in the MySQL database named 'multi\_login'. For the next visit, the user and admin can access this web page without to create another account, all the data and information already saved in the MySQL database. This web page is very minimal and simple for user and admin. The user which is the student can easily apply the outing before go to outing. The admin will keep up date with the system and database. Admin know the one who applied the outing form.

#### 4.2.4 Barcode

Actually, barcode scanners are comprised of a progression of lines that differ in width and compare to different numeric, alphanumeric, or multicode designs which would then be able to be perused in by a laser barcode scanner. On the students' ID card, it shows barcode Code-128. The Code 128 standardized tag is a high-density straight symbology that encodes text, numbers, various capacities and the whole 128 ASCII character set. The most well-known strategy for perusing Code 128 standardized identifications is with a direct barcode scanner. Once the barcode scanned, it will display the time the student going out and going in after an outing.



**Figure 38: Barcode on student ID card.**

## CHAPTER 5

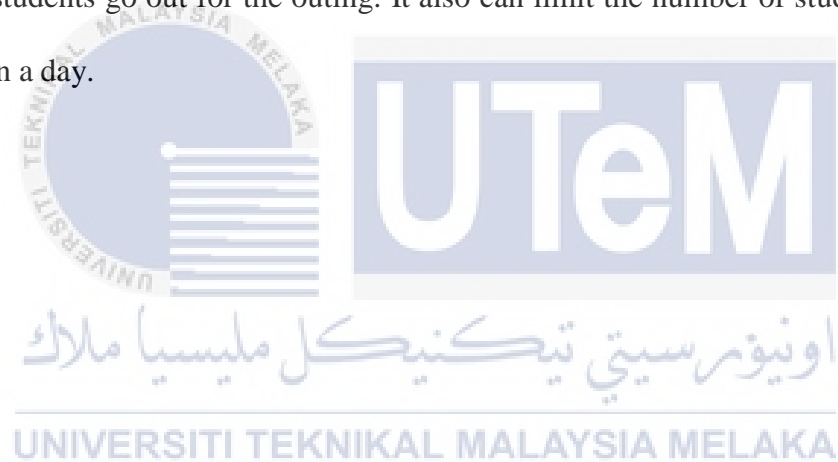
### CONCLUSION & RECOMMENDATION

#### 5.1 Conclusion

As a conclusion, the results obtained from this project which match with the objectives will be concluded in this chapter. The process and results for development of web based boarding school outing system are success. The first objective is about outing system is designed through web based. By using Microsoft Visual Studio Code as a streamlined code editor. Furthermore, by having this outing system for boarding school it will eliminate the impersonation of the warden's signature by the students to get permission for the outing. Other than that, the warden can still keep up date about the student who apply for the outing from PC. Moreover, this system is function very well with the barcode scanner. Every system must be having its own difficulties in developing it. The limitation of this project is the admin approval. If there is admin approval, it will be easier for the admin to approve and reject the outing application.

## 5.2 Recommendation

After a very efficient discussion with supervisor, there are several recommendations need to be made into this outing system. Firstly, the barcode can be replacing with RFID unique number. The RFID unique number of every students' ID card will be the reference to the ID Number. On the off chance that this should be possible, the standardized identification scanner can be replaced by an RFID reader which will make the outing system cycle quicker than the current project. In addition, this outing system need to make online database for the students' outing application. Other than that, this system can improve by adding some features which is the approval for admin. The admin need to approve the outing application before the students go out for the outing. It also can limit the number of students to go out for outing in a day.



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