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JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

DEPARTMENT OF INFORMATION TECHNOLOGY AND COMMUNICATION

DIPLOMA IN INFORMATION TECHNOLOGY (DIGITAL TECHNOLOGY)

EVENT ATTENDANCE SYSTEM

GROUP MEMBERS:

SITI AISYAH BINTI ROSLAN	**10DDT20F2013**
NUR SYAFIQAH BINTI WAHAYU	**10DDT20F2024**
SITI NUR AZRINA BINTI AZIMAN	**10DDT20F2026**

SUPERVISOR:

PUAN AZILAH BINTI ABD RAHIM

SESSION 1 2022/2023

DECLARATION

We hereby declare that the technical report entitled “Event Attendance System” is based on original work under supervision and guidance of Puan Azilah Binti Abd Rahim except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted of any other diploma or award at Polytechnic or other institutions.

1. Signature : 
   Name : SITI AISYAH BINTI ROSLAN
   Registration : 10DDT20F2013
   Date : 19/12/2022

2. Signature : 
   Name : NUR SYAFIQAH BINTI WAHAYU
   Registration : 10DDT20F2024
   Date : 19/12/2022

3. Signature : 
   Name : SITI NUR AZRINA BINTI AZIMAN
   Registration : 10DDT20F2026
   Date : 19/12/2022

APPROVAL FOR SUBMISSION

Project Title : EVENT ATTENDANCE SYSTEM

Session : 1 2022/2023

Submitted by : 1. SITI AISYAH BINTI ROSLAN (10DDT20F2013)
: 2. NUR SYAFIQAH BINTI WAHAYU (10DDT20F2024)
: 3. SITI NUR AZRINA BINTI AZIMAN (10DDT20F2026)

"This technical report has been read, checked and approved in term of scope and quality for the award of Diploma in Information Technology (Digital Technology)."

Checked by:

Supervisor's Signature :

Supervisor's Name : PUAN AZILAH BINTI ABD RAHIM

Date : 19/12/2022

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ABSTRACT

This project is a web-based system where a user can use this system through all web browsers either through a personal computer web browser or through a mobile device web browser. The objective of this project is to record staff attendance during events in the department of information and communication technology, Seberang Perai Polytechnic. In addition, this system also makes it easier for the organizers to notify the staff on duty by just using WhatsApp. In addition, this system is also to make it easier for each individual when they want to take attendance by just using their own QR code. This will reduce the use of time and will reduce the use of a lot of paper. The organizers of the event only need to scan the QR code of each user before the event starts. The development of this system is done through methodological studies and is assisted by flow charts, data flow diagrams, interface prototypes for all users and has conceptual modeling. All processes in this system are to reduce the use of time, the use of physical tools and develop an efficient system to facilitate work without having to do a lot of work.

1.0 PROJECT PLAN

1.1 INTRODUCTION

The meaning of attendance is closely related to the frequency and consistency of a person when attending an event or place such as school or work. Attendance can be classified for several purposes. However, the word ‘attendance’ is usually associated with being present somewhere, such as in classes, gatherings, events, and so on. to take attendance for events involving many participants will usually use biometric system, proximity cards and badges, manual timekeeping systems like excel and time clock system (Marina Timchenko, Alla Chernets, 2021)

Nowadays, the method of using QR has been widely used to take attendance. QR code stands for Quick Response code. QR code is a type of code that can be read or scanned using smartphones or with specific scanners for QR codes. QR Code has a pattern representing black modules displayed in a square grid on a white background, QR codes are similar to barcodes. Although a QR Code typically links to a website or application, the data it contains can also be used for other things like saving contact information and sharing social media updates (Robert Kogoi, 2022).

With the rapid development of technology, various things can be done easily such as creating a certificate online. An electronic certificate is a collection of data that enables the identification of the certificate's holder, secure information interchange with other people and organizations, and electronic signing of data supplied in a way that makes it possible to verify its integrity and origin. Digital certificates can be used for electronic document signing as well as user identification in secure email. Emails are digitally signed by the sender and verified by the recipient. To cryptographically link the owner of a public key with the entity that owns it, a digital certificate, also known as a public key certificate, is used. Public keys for encryption and authentication can be exchanged with the aid of digital certificates (Mary E.Shacklett, 2021).With this sophisticated technology, it can connect one application to another by using Application Programming Interface(API) technology. Any software with a specific function is referred to as an application when discussing APIs. Interface can be compared to a service agreement between two programmes. This agreement specifies the requests and responses that the two parties will use to communicate. Developers can find instructions in their API documentation on how to format those requests and responses (Amazon Web Services, Inc. ,2022)

1.2 **PROBLEM STATEMENT**

Based on the interview in appendix 1 that have been, the use of QR codes that need to be scanned by staff will cause some major problems. Among them, is sharing QR codes between staff. This can happen when staff take a screenshot or take a picture of the QR code from their mobile phone screen and then share it with other staff. In addition, staff can also scan the QR code and fill in the information of other staff as representatives. This will cause identity falsification where the staff is not present, but attendance is still taken.

As far as we are aware, most people still take attendance by printing a list of names on paper. We can see that using paper, which is readily misplaced, will result in data loss. Finding information will take longer if attendance is taken on paper. For instance, we must go through a mountain of paperwork to identify a staff member's name so we can track their attendance. This may cause delays and time wastage.

The issue of delay in printing the participation certificate often occurs. This is because the program manager needs to collect the data of the participants who attend. The process to print the certificate will also take a long time if there are many certificates, not to mention if there is damage to the printer or running out of ink which will affect the quality of the certificate. In addition, the cost to print each certificate is high because it uses paper that has a good quality.

1.3 OBJECTIVE

Objectives for this project are:

i. to develop an attendance system using Quick Response (QR) code.
ii. to send generated unique QR code to the staff through WhatsApp Application Programming Interface.
iii. to generate e-certificate base on attendance.

1.4 SCOPE

This project was built for the staff of Information & Communication Technology Department Politeknik Seberang Perai (PSP)

1.4.1 User Scope

This system has three user which are Event Manager, Staff and Head of Department who will use this system. Here are the things they can do in this system.

1.4.2 Event manager

In the event manager's user scope, there are seven activities that will be performed by the event manager:

i. Login as staff and change to event manager when create the event.
ii. Event manager will create events such as entering event information.
iii. Event manager will also select the names of the staff involved according to the department.
iv. The QR code is scanned by the event manager to confirm the presence of the staff involved.
v. Event manager will print the attendance in pdf or excel.
vi. Event manager will choose and create e-certificate.
vii. If the staff attendance is sufficient the event manager will send the attendance to the director to sign the certificate to be given.

1.4.3 Staff

There are three activities that the staff will be able to do in this system such as:

i. Account registration will be done by the event manager himself, so staff only need to log in using the IC as a username and password.
ii. The staff will log into the system to check the event they participated in.
iii. The e-certificate can be viewed by staff who have enough attendance throughout the program.

1.4.4 System Scope

The systems scope for this system are divided by four module which is:

1.4.4.1 Event registration module

In this module there are three processes that will be implemented which is:

i. In this module, every staff data involved will be stored in the database

ii. Event manager will create an event to be carried out by filling in the event name, date, time, and place

iii. Each QR code will be generated based on each event using data stored in the database.

1.4.4.2 QR code capture module

There are two functions in this module which are as follows:

i. This module works so that the event manager can scan the QR of each staff member during the event.

ii. After the QR code is scanned, attendance will be updated as proof of staff attendance.

1.4.4.3 Application Programming Interface (API) through WhatsApp

This system uses the Application Programming Interface module to perform processes such as:

i. Application Programming Interface (API) is applied to this system to make it easier to send QR codes to staff via WhatsApp.

1.4.4.4 E-certificate module

This module works to make it easier for event managers and staff to carry out the following processes:

i. If the staff successfully attend the event, the event manager can generate an e-certificate.

ii. Staff can view e-certificate for each event they are involved in if they have full attendance

1.5 LITERATURE REVIEW

Studies have been made to ensure that this system can be built successfully. This system has been compared with other systems or applications as part of the study. This work has contributed to further increase the effectiveness of this system.

1.5.1 Existing System

To produce a system that can function well, research into a system that has almost the same function as this system has been carried out. The following is information obtained based on research conducted on three systems.

1.5.1.1 School Attendance Management System (Sams)

School Attendance Management System is a system that can store student data systematically. This system has several functions such as adding student names and collecting student attendance.

A mobile computing system called the School Attendance Management System can be used to gather information about student attendance at school. This system must carry out all fundamental operations like adding the student's name and counting the number of attendees. The system offers a high level of capacity for storing student names in databases, which will be kept in a more orderly fashion (Farah Syahirah, 2018).

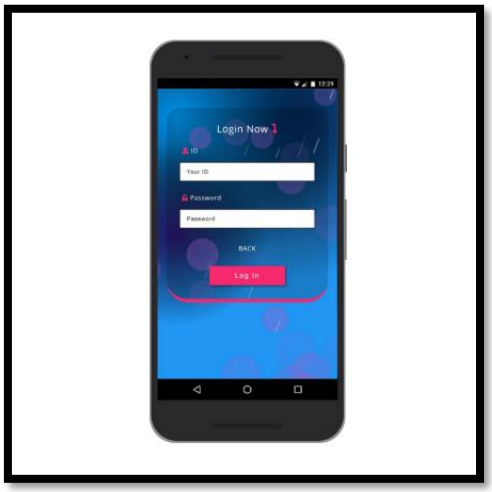

Figure 1.1 Sams login interface.

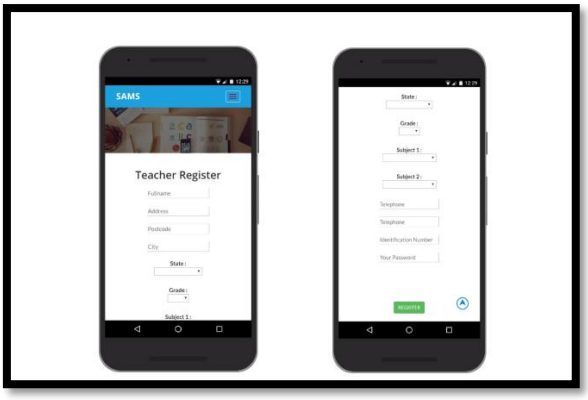

Figure 1.2 Teacher register interface.

1.5.1.2 Student Attendance System Based on QR Code with Unique Identification Capturing

To track attendance in class or at events, students will use mobile devices to scan QR codes. The effectiveness and efficiency of taking student attendance will be improved through an attendance monitoring system based on QR codes. It will address the problems of calling out names and paper recording that have plagued traditional attendance taking.

The goal of this project is to create a QR code-based attendance system that will use mobile devices to scan QR codes to track attendance in classes or other events. The QR code system is a collection of android programmes designed to capture and store attendance data in the cloud. It will address the problems that those traditional attendance-taking techniques, like calling out names and paper recording, have had. These traditional attendance systems used a lot of labour and resources while being ineffective (Ng Sam Kee, 2021)

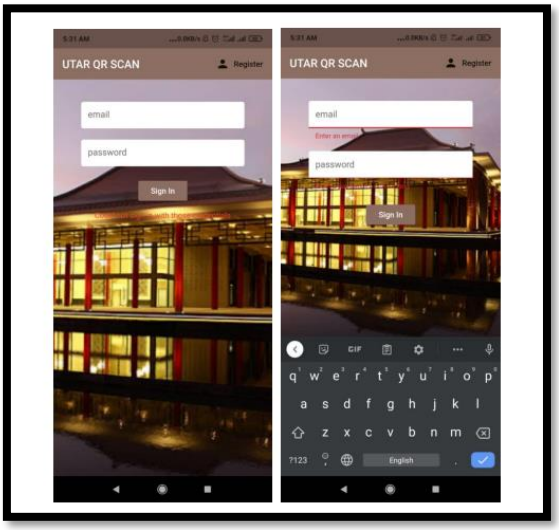

Figure 1.3 Login page interface.

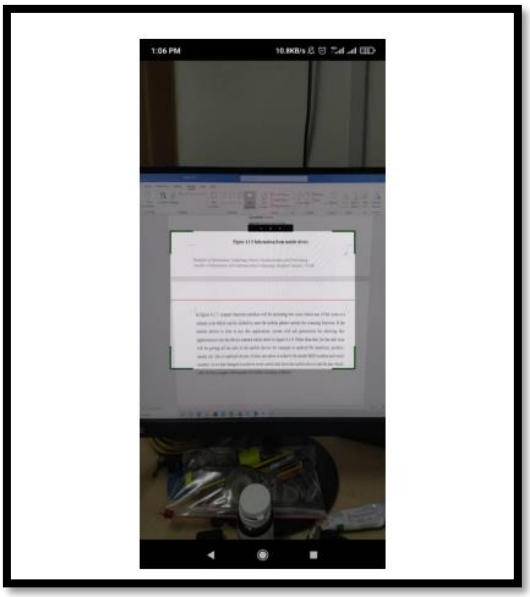

Figure 1.4 QR Scanner.

1.5.1.3 Event Attendance Application Using QR Code

A web-based system for tracking attendance at events is called the Event Attendance application using QR code. The system creates the QR code with the event details. A QR code will be displayed during the event on the LCD screen or printed and stuck to the wall. Then, tables are created as reports of those who attended the event.

The main objective of this system is to create a quick and effective attendance system using a QR code. To validate their attendance at an event, students must scan the code. Student information will be automatically added to the database after a student scans the code. The program's effectiveness will rise because of the organizer's ability to take attendance more quickly (Muhammad Shazmil, 2019).

System Name	School Attendance Management System (Sams)	Student Attendance System Based on QR Code with Unique Identification Capturing	Event Attendance Application Using QR Code
Objective	i) To design a management school attendance system that can make via online. ii) To implement the mobile computing in the system.	i) To develop an application which can scan QR code on mobile devices. ii) To create an UI which can easily retrieve and tracking the accurate attendance record.	i) To design QR Code Event attendance mobile application that is easy to use and efficient in terms of recording attendance. ii) To develop mobile application that can generates and scan QR.
Weakness	This system is limited to taking the attendance of absent students only. So, the report that can be seen is only the report of absent students.	This system can only be accessed by using android only. This is because this system cannot be supported on iOS devices.	The QR code is valid for only 1 minutes, after that a new QR code will be created.
Strength	Easy to use to collect data and more systematic.	Make it easy for users to take attendance by simply scanning the QR code.	User friendly and easily to use.

Table 1: Comparison table

Based on the comparison between this system with the existing system, there is some differences between this system and the existing system. The difference between this project and the existing project is that the system that will be build will include a QR code generated specifically for each participant. Then, using an application programming interface (API), QR code will be send to each participant via the WhatsApp application. Finally, the event manager can directly issue e-certificates to the participants.

1.6 METHODOLOGY

The methodology used to develop this system is the Agile methodology as in Figure 1.5. This methodology is used because it has high flexibility for projects and the ability to adopt projects frequently. Agile techniques were used in the creation of this system. This methodology is used because it allows frequent use of projects and offers great project flexibility. This method can also provide high customer satisfaction over the development process because it can provide good quality to the customer.

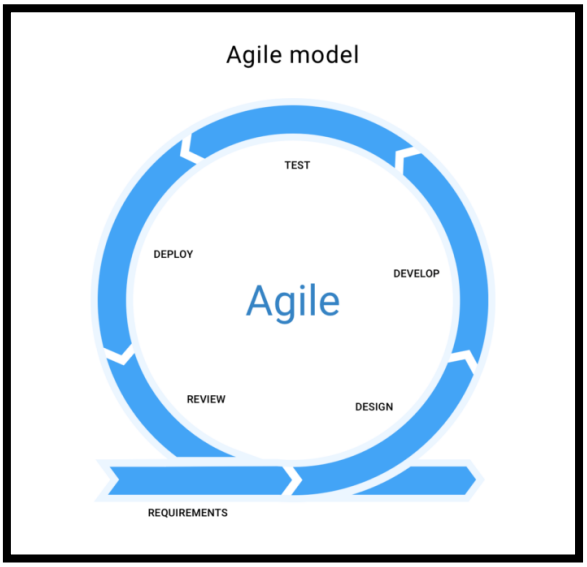

Figure 1.5 Agile Methodology (vintank, 2020)

1.6.1 Requirements

This is the most important phase in building an event attendance system. Brainstorming on the project title was carried out in this phase. Owner of this system have been interviewed to find out more about the system that will be built.

The problem has been analysed and the objectives have been determined based on the problem that has been analysed. User scope for this project has been found to know who will use this system. Functional and non-functional requirements have been determined in this phase. Where, how this system will work has been discussed. After that, a complete proposal has already been prepared based on the observations and research done.

1.6.2 Design

The design phase is no less important in building an Event Attendance System. This phase is to know how the design in this system will work and operate. A prototype for the system has been built in this phase. Make a flowchart, ERD, DFD to better understand each process that will be carried out by each different user category.

The design of this system is based on the problem statement and objectives that have been discussed. Free websites like Figma have been used to design the interface so that it can show the project owner how the system will work.

1.6.3 Develop

This phase we have turn the sketch in the design phase into reality. Coding have been started to be developed in this phase. This phase has taken a long time to complete a complete system with working functions.

We have used the programming language PHP to create the code necessary for this system to function. To create this system, we used software like Visual Studio Code and XAMPP to store the database.

There are for coding that are important to achieve the objectives in the construction of our project which is coding to generate QR code, coding for Application Programming Interface (API) , QR code scanner and coding to generate e-certificate

1.6.3.1 Generate QR Code

To generate QR code, we use looping statement which is for loop and while loop. Looping is chosen because, the selected data is more than one. The sql statement used is intended to take all the data in the table tbl_user and ‘where id’ means if the username in tbl_user is selected a QR code will be generated for each user.

The generated QR code has a unique data which is the ic number. While the generated QR code is in image format which is .png. The phone number is used to send the QR code to the participants

```php
<?php
include 'connection.php';
include 'phpqrcode/qrlib.php';

$id = $_POST['id_event'];
$eventM = $_SESSION['USER_NAME'];
$event = $_SESSION['EVENT'];
$checkbox1=$_POST['chk1'];
if (isset($_POST['submit'])){

for($i=0; $i<sizeof($checkbox1);$i++){
    $select_user = "SELECT * FROM tbl_user WHERE id = '".$checkbox1[$i]."'";
    $result = mysqli_query($conn,$select_user);

    while($row = $result->fetch_assoc()){

        $username = $row['ic_number'];
        $name = $row['name'];
        $phone_number = $row['phone_number'];

        $path = 'images/';
        $file = $path.uniqid().".png";

        $ecc = 'L';
        $pixel_Size = 5;
        $frame_Size = 5;

        QRcode::png($username, $file, $ecc, $pixel_Size, $frame_Size);
```

Figure 1.6 Generate QR Code Coding.

1.6.3.2 Application Programming Interface (API)

Coding API is used to act as an intermediary between the system and the user. The platform used is WhatsApp. WhatsApp is used to send QR codes to participants.

```php
    $sql = "SELECT * FROM tbl_participant WHERE event_name='$id'";

    $res = mysqli_query($conn,$sql);
    while($row = $res->fetch_assoc()) {
        $phone_number = $row['phone_number'];
        $qrimage = $row['qrimage'];

        $data = [
            'api_key' => '20223bcf1ec1ce61bb27d3f057d9c9c1',
            'sender'  => '60174523059',
            'number'  => $phone_number,
            'message' => 'This is your QR Code',
            'url' => 'http://poli.desariamedia.com/'.$qrimage
        ];

        $curl = curl_init();
        curl_setopt_array($curl, array(
        CURLOPT_URL => "https://whatsapp.desariamedia.com/app/api/send-media",
        CURLOPT_RETURNTRANSFER => true,
        CURLOPT_ENCODING => "",
        CURLOPT_MAXREDIRS => 10,
        CURLOPT_TIMEOUT => 0,
        CURLOPT_FOLLOWLOCATION => true,
        CURLOPT_HTTP_VERSION => CURL_HTTP_VERSION_1_1,
        CURLOPT_CUSTOMREQUEST => "POST",
        CURLOPT_POSTFIELDS => json_encode($data)
        );

        $response = curl_exec($curl);

        curl_close($curl);
```

Figure 1.7 QR Code Scanner Coding.

1.6.3.3 QR Code Scanner

Figure 1.8 shows the JavaScript coding for the QR code scanner to function

```html
<video id="preview"></video>
<script type="text/javascript">
  let scanner = new Instascan.Scanner({video: document.getElementById('preview')});
  Instascan.Camera.getCameras().then(function(cameras) {
    if (cameras.length > 0) {
      scanner.start(cameras[0]);
    } else {
      alert('No cameras found.');
    }
  }).catch(function(e) {
    console.error(e);
  });

  scanner.addListener('scan',function(c) {
    document.getElementById('text').value=c;
    document.forms[0].submit();
  });
</script>
```

Figure 1.8 QR Code Scanner Coding.

1.6.3.4 Generate E-Certificate

Figure 1.9 is the coding to generate e-certificate. When the participant scans the QR code during the event day attendance will be recorded, eventManager can create a certificate based on the recorded attendance

```php
<?php
    if (isset($_GET['id'])) {
    $name = $_GET['id'];

    $select = "SELECT * FROM tbl_participant INNER JOIN tbl_qr ON tbl_participant.username = tbl_qr.username WHERE tbl_participant.name='$name'";
    $result = mysqli_query($conn,$select);

    while($row = $result-> fetch_assoc()){

        $event_name = $row['event_name'];
        $icnum = $row['username'];
        $time = $row['time'];

        $image = "sijil.png";

        $createimage = imagecreatefrompng($image);

        $output = "certificate/".rand().".png";

        $white = imagecolorallocate($createimage, 205, 245, 255);
        $black = imagecolorallocate($createimage, 0, 0, 0);

        $rotation = 0;

        $origin_x = 650;
        $origin_y=770;

        $origin_x1 = 650;
        $origin_y1=950;

        $origin_x2 = 650;
        $origin_y2=1150;

        $font_size = 80;
        $font_size1 = 50;
        $font_size2 = 50;

        $participant_name = $name;
        $ev_name = $event_name;
        $ev_time = $time;

        $drFont = "fpdf/calibri.ttf";

        $text1 = imagettftext($createimage, $font_size, $rotation, $origin_x, $origin_y, $black, $drFont,$participant_name);
        $text2 = imagettftext($createimage, $font_size1, $rotation, $origin_x1, $origin_y1, $black, $drFont, $ev_name);
        $text3 = imagettftext($createimage, $font_size2, $rotation, $origin_x2, $origin_y2, $black, $drFont, $ev_time);

        imagepng($createimage,$output,3);
```

Figure 1.9 Generate E-Certificate Coding.

1.6.3.4 QR Scanner Exception Handling

To further tighten the security of this system, exception handling has been applied to this system. Among them are checking whether the participant did not scan the QR code twice, checking whether the participant who scanned the QR code was listed in the participant's name or not.

i. **Check QR Code Has been scanned or not.**

This code is used to determine whether the user has been scanned. To prevent the formation of duplicate data issues, this coding is necessary.

```
$sql_check = "SELECT * FROM tbl_qr WHERE username='$text' AND event_id='$id'";
$result = mysqli_query($conn,$sql_check);
//nak tau sama ada user dah pernah scan atau belum
if($result->num_rows) {
  echo "<div class='alert alert-danger'>Your attendance has exist!</div>";
  $sql ="SELECT id,username,time FROM tbl_qr WHERE event_id = '$id'";
    $query = $conn->query($sql);

    $i=1;
    while ($row = $query->fetch_assoc()){
    ?>
      <tr>
        <td><?php echo $i;?></td>
        <td><?php echo $row['username'];?></td>
        <td><?php echo date('d/m/Y H:i A',strtotime($row['time']));?></td>
      </tr>
    <?php
    $i++;
    }
```

Figure 1.10 Check QR Code Coding.

ii. **Check whether the user is invited.**

In Figure 1.11, if else statement is used to determine whether the user's name appears on the list of participants. When the QR code is scanned, data is entered into the database tbl_qr and an alert message indicating that attendance has been successfully captured appears if the user is a participant.

```php
//check sama ada user tu ada dalam jemputan
  $sql_checking = "SELECT * FROM tbl_participant WHERE username='$text' AND event_id='$id'";
  $result_checking = mysqli_query($conn,$sql_checking);
//kalau user dijemput baru data tu di insert
  if($result_checking->num_rows){
    $date = date('Y-m-d H:i:s');
    $sql = "INSERT INTO tbl_qr (username,time,event_name,event_id) VALUES ('$text','$date','$event','$id')";
    if (mysqli_query($conn,$sql)) {
          echo "<div class='alert alert-success'>Your attendance has been successfully taken!</div>";
          if($conn->connect_error){
            die("Connection failed" .$conn->connect_error);
          }
```

Figure 1.11 Check QR Code Coding.

1.6.3.5 Error Handling

Apart from exception handling, there is also error handling that is applied to this system. This error handling works to inform the user if there is any error when doing a process on this system.

i. Alert message for uninvited participant.

An alert message telling the eventManager that the user's name is not in the participant list for the event will be presented if it does not appear in the participant list.

```php
    } else {
      echo "Error: " . $sql . "<br>" . mysqli_error($conn);
    }
  }else{
    //condition kalau nama tak da dalam list participant
    echo "<div class='alert alert-danger'>Your name is not listed!</div>";
```

Figure 1.12 Alert message for uninvited participant.

ii. **Alert message for scan more than once**.

In Figure 1.13, error handling is written to avoid the occurrence of redundant data in taking the attendance of participants in an event. If the participant has scanned the QR code for the first time, the data will be recorded into the database, but if the participant has scanned the QR code for the second time, an alert message will appear informing them that attendance has been taken.

```
if($result->num_rows) {
  echo "<div class='alert alert-danger'>Your attendance has exist!</div>";
  $sql ="SELECT id,username,time FROM tbl_qr WHERE event_id = '$id'";
    $query = $conn->query($sql);
```

Figure 1.13 Alert message for scan more than once.

iii. Incorrect password or username.

The Login page has this error handling. The purpose of this coding is to alert the user when their login or password is incorrect.

```
    }else{
        $warning='<p class="alert alert-danger">Password enter valid details!</p>';
    }
}
```

Figure 1.14 Incorrect password or username.

1.6.4 Testing

The testing phase is a phase to ensure the system developed without any problems in design and coding. In this phase, what needs to be modified or added in this system can be known after running this system. This phase is also done to maintain the stability of the system. This is so that users can use the system without any problems or disturbance.

In this phase, there are three categories of testing that will be done. That is:

i. Unit Testing - In unit testing, a section of coding related to the interface have been tested to ensure whether it can work properly or not.

ii. Functional Testing - In functional testing, database, Application Programming Interface (API), Client-server Communication have been tested whether it works or not.

iii. User Acceptance Testing - In this testing, the system has been tested by the user to find out whether the built system can work according to the user's suitability. This is to find

out if it meets the user's expectations. It is also to ensure if the user feels comfortable or not with the way this system works.

1.6.5 Deploy

In this phase, the system has been deployed. This system has been uploaded using web hosting to make it easier for users to use it. The system was given to the users so that they can try the system to find out if the system works well or not. This phase is done so that any problems or error can be detected and fixed it.

1.6.6 Review

In this last phase, the team have received the feedback from users and fix every problem found by users. This phase is also done to maintain the stability of the system. This is so that users can use the system without any problems or interruptions.

1.7 GANTT CHART

This project is implemented for fourteen weeks. In a period of two weeks, we have implemented several phases, namely the requirement and design phase. Appendix 2 is the time planning in the remaining twelve weeks to complete a functional system.

2.0 REQUIREMENTS SPECIFICATION

There are six specification requirements on this system. Among them are functional requirements, non-functional requirements, hardware requirements, software requirements, system configurations and security requirements.

2.1 FUNCTIONAL REQUIREMENT

There are two functional requirements, namely the event manager and the user.

2.1.1 Event Manager

In this system there are seven processes that can be done by the event manager.

i. By using this system, event managers can log in to the system using IC number as username and password.

ii. Before entering the profile page. Event Manager needs to choose a position either as user or event manager.

iii. Event Manager can change the account password to ensure the account is more secure.

iv. After that, the event manager can create events and select users for each event.

v. Next, the event manager will generate a QR code according to the individual and send it to each user's WhatsApp.

vi. In addition, the event manager needs to scan the QR code given on WhatsApp on the day of the event

vii. Finally, the event manager can generate an e-certificate for the presence of each user present.

2.1.2 User

There are three functional processes that can be performed by the user.

i. Users will log in and be sent to a screen that displays their information. When the user clicks on the view event page, they may go back and look at previous or upcoming events. When users hit the view button, they may see the event in further detail.

ii. Following that, users may view the e-certificate for the event in which they participated. Additionally, users may view their attendance for each event.

iii. If users are concerned about the security of their existing password, they can change it at the change password page.

2.2 NON-FUNCTIONAL REQUIREMENT

In this system, there are three non-functional requirements that can be found as stated below:

Non-Functional Requirement	Explanation
Security	There are security features built into this system. One of them is the fact that each user receives a unique QR code from this system for each event. As a result, it provides greater security for attendance since it can stop attendance fraud.
Compatibility	This established system is accessible via multiple platforms or devices such as smartphone, laptops, and PCs. This system is easily accessible via any search engine by just clicking on the link.
Performance	It does not take long for this system to load from one page to the next. This approach will not take long to send a QR code to each phone number. Each QR code will be scanned quickly by the QR scanner.

Table 2: Non-Functional requirements

2.3 HARDWARE REQUIREMENTS

The development of this system is assisted by hardware with the following specifications:

Hardware	**Description**
Device Name	LAPTOP-QC1H2S62
Processor	AMD Ryzen 3 3300U with Radeon Vega Mobile Gfx 2.10 GHz
Installed RAM	4.00 GB
System Type	64-bit operating system, x64-based processor
Hard Disk Space	237GB
Others	Standard computer like keyboard and mouse.

Table 3: Hardware requirements

2.4 SOFTWARE REQUIREMENTS

The following software is required to develop this system.

Software	Description
Client Environment	
Internet Browser	Google Chrome
Server Environment	
Operating System	Windows 11
Programming Tools	Visual Studio Code
Language	PHP (PHP Hypertext Processor)
Database Server	XAMPP Control Panel v3.3.0
Live Server	poli.desariamedia.com

Table 4: Software requirements

2.5 SYSTEM CONFIGURATION

i. First, users can access the system through a web hosting link. Figure 2.1 is the interface for the login page.

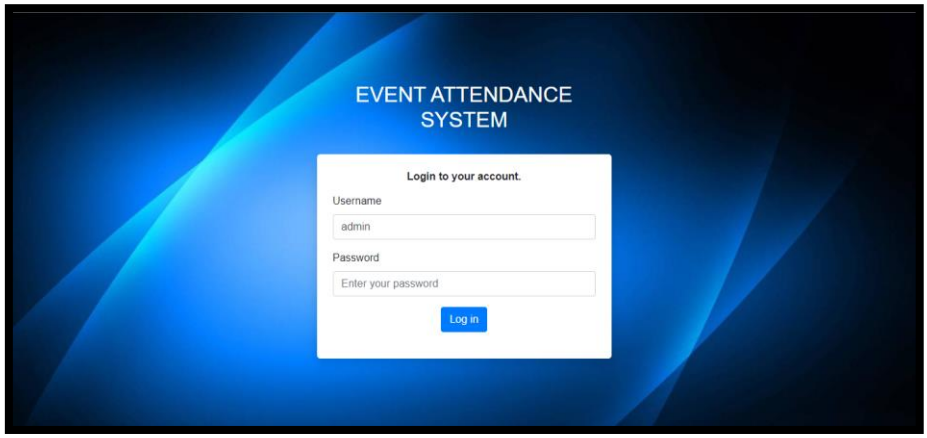

Figure 2.1 Login.

ii. Next, the user will go to the select position page as in Figure 2.2. If the user is an event manager, the event manager needs to tick the checkbox and press the ok button.

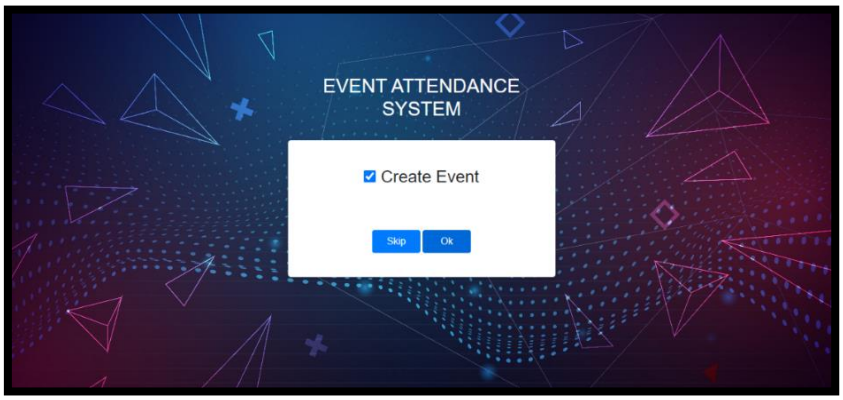

Figure 2.2 Event Manager Select Position.

iii. Event manager can now access the system. Figure 2.3 is an interface that will display the logged in user information.

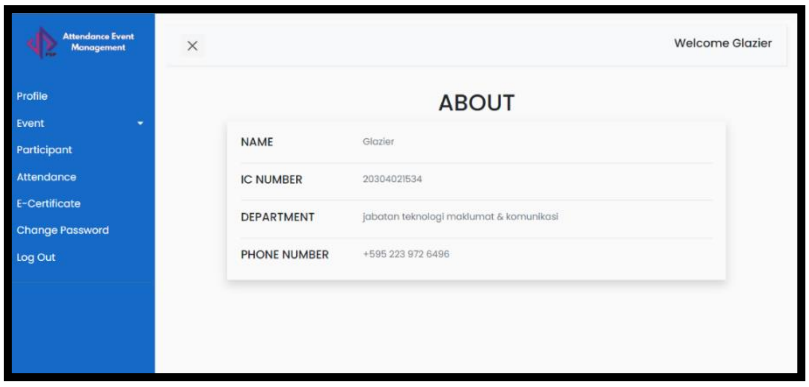

Figure 2.3 Event Manager Profile Page.

iv. If the user who logs in is a normal user, then the user does not need to tick the checkbox and then they need to click skip.

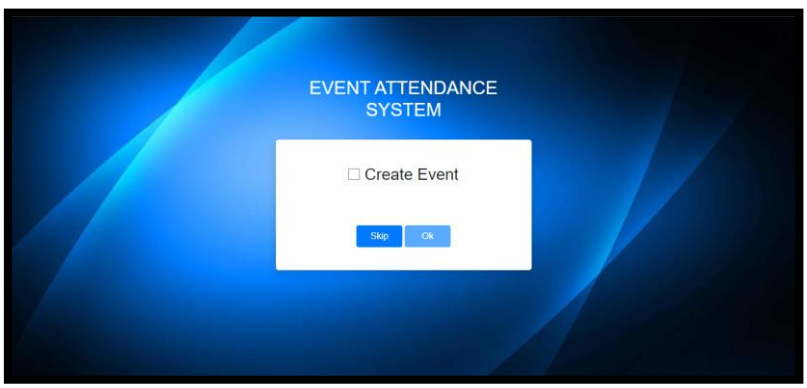

Figure 2.4 User's Select Position.

v. Normal users can now access the system.

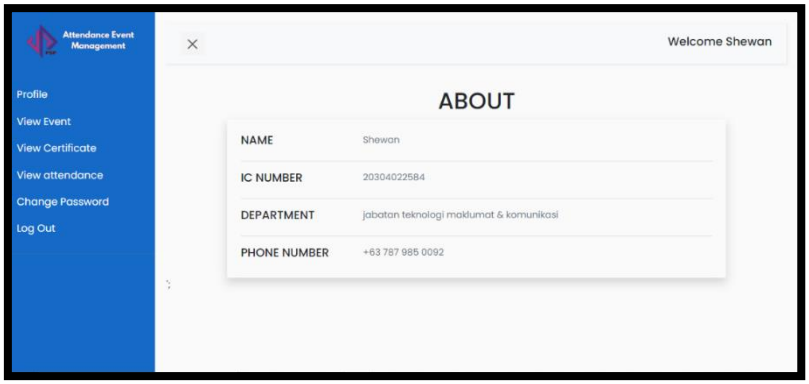

Figure 2.5 User Profile Page.

vi. This system has exception handling where if the user enters the wrong username or password, an error message will be displayed.

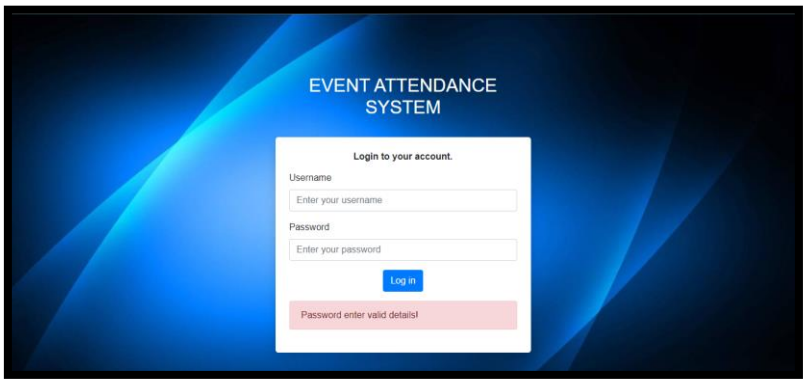

Figure 2.6 Login error handling.

2.6 SECURITY REQUIREMENTS

Security requirements have been implemented in this system to further tighten security**.**

2.6.1 Login Page

This system can only be used by Users and Event Managers who want to create internal events. It has a login page where users can use their registered IC number as their username and password. If the user is a user, then the system will direct the user to their own interface while the event manager will go to the profile page and have an event creation page.

2.6.2 QR Code

QR code will be given via WhatsApp and the QR code is generated only for one user because the data stored in the QR code is the IC number of each user.

2.6.3 Exception Handling-Error Message

When each user wants to log into the system. The system will check if the username and password match. if it doesn't match, an error message will appear in the login area.

3.0 FLOWCHART

One of the logical designs is the flow chart and each user will be shown. Users in this system are regular Users and event Managers. Flowcharts convey the steps in the process very effectively and efficiently. Flowcharts can describe a process from start to finish.

3.1 USER

Figure 3.1 show the flowchart for the user in this system. The user needs to login to the system with the valid username and password to enter Home. Only events and certificates that the user joins will be displayed when the user clicks on view event and view certificate

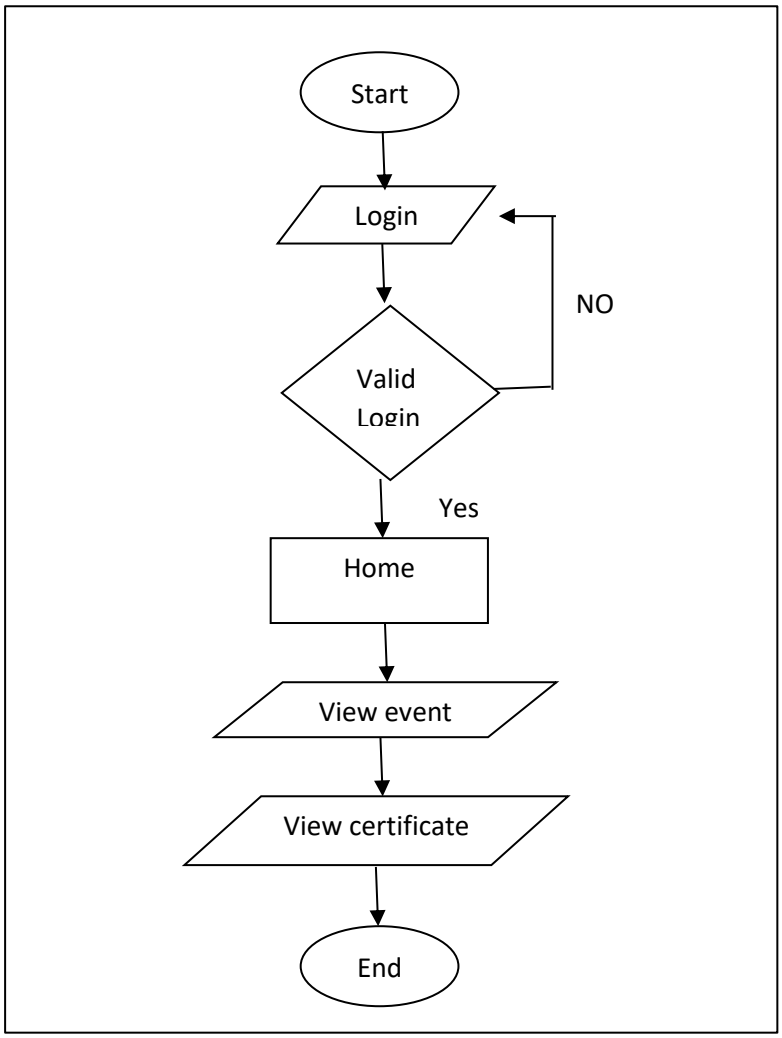

Figure 3.1 User flow chart.

3.2 EVENT MANAGER

Figure 3.2 show the flowchart for Event Manager in this system. The event manager needs to login to the system with the valid username and password to enter Home. Event manager will create an event and select the participant for the event and generate the QR code. After that event manager will send the QR code to all the participant and event manager will scan the QR code on the day of the event.

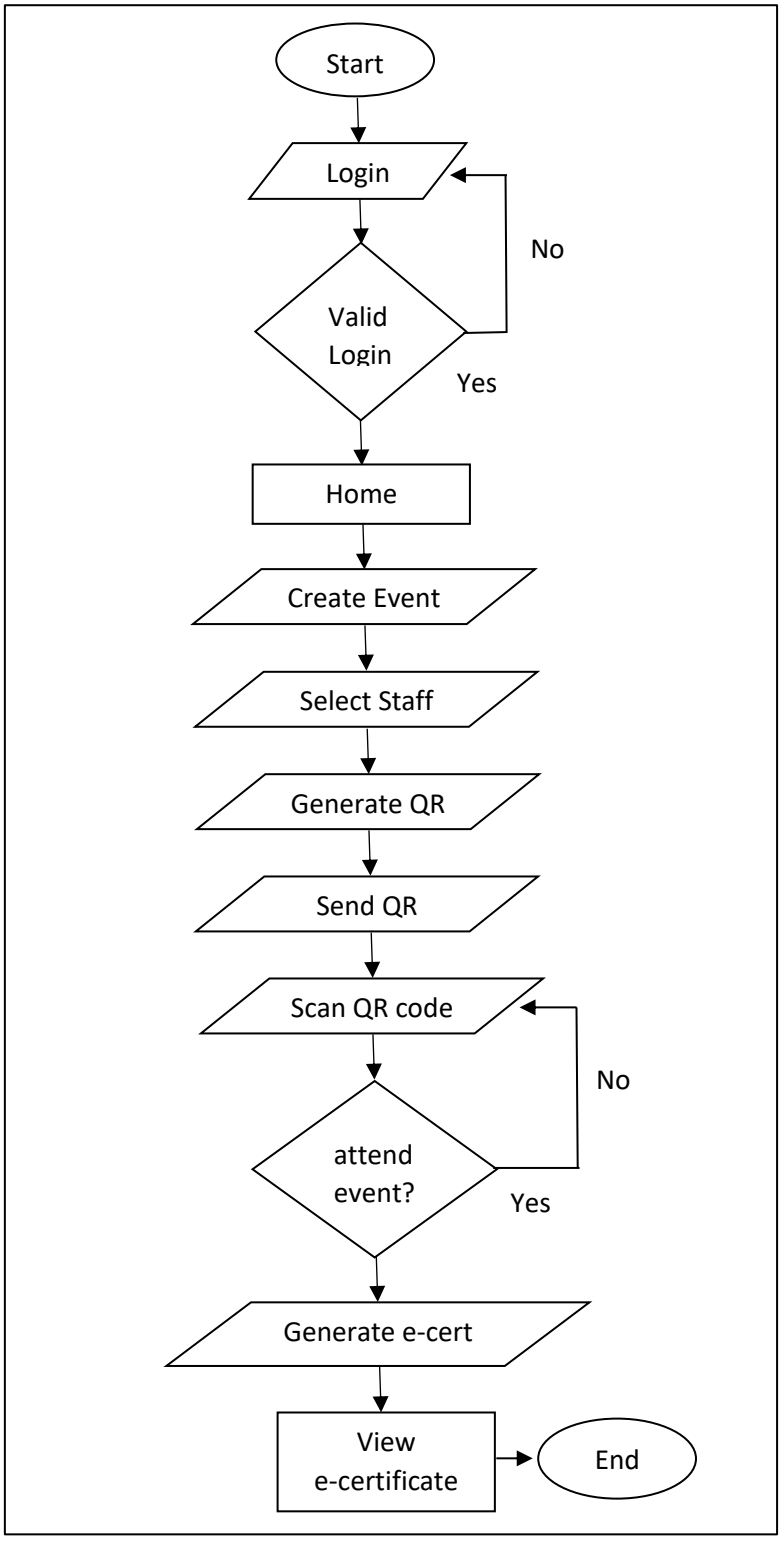

Figure 3.2 Event manager flow chart.

3.3 CONTEXT DIAGRAM

The diagram below depicts how external entities will interact with the internal system.

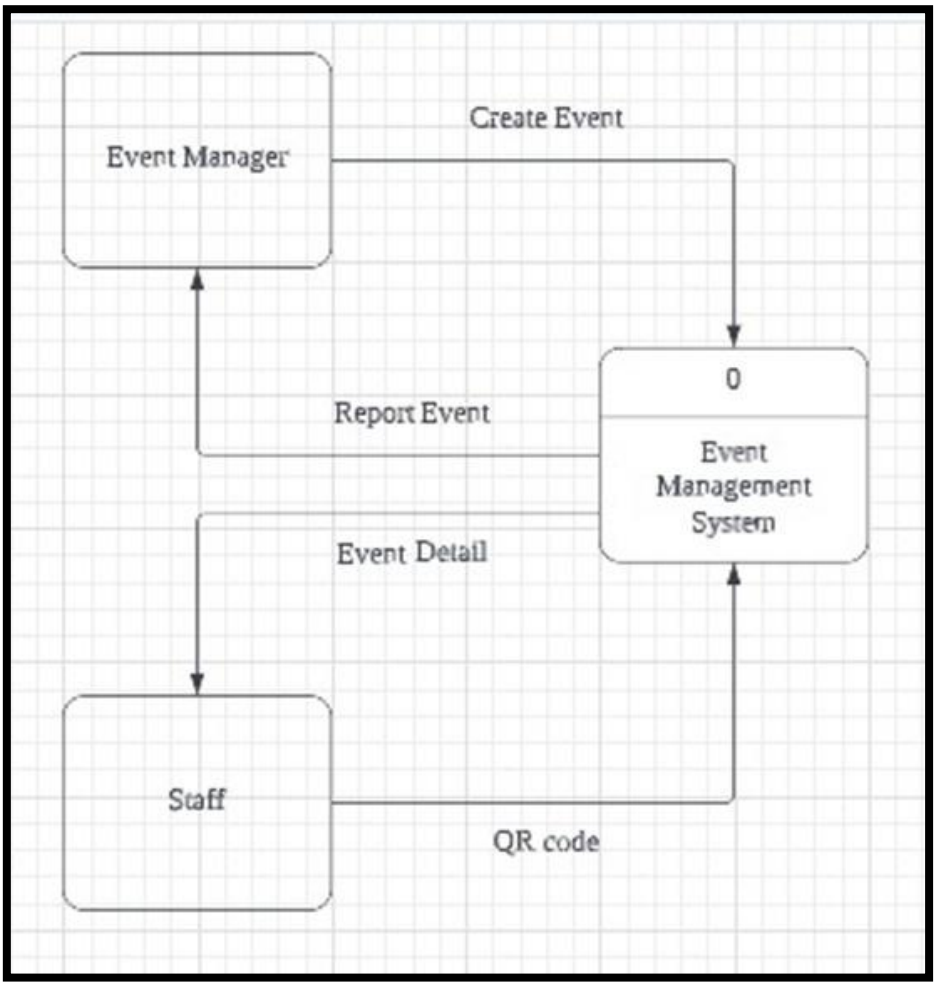

Figure 3.3 Context Diagram

3.4 DATA FLOW DIAGRAM

The flow of this system is depicted in the diagram below. Where a normal user logs in and their login information is displayed. The user can also view the event, their attendance at each event, and their e-certificate.

After logging in, event managers can access their details. Event managers can also create events and pick participants for each one. QR Codes can be sent over WhatsApp once the event manager selects a participant. When the event manager selects a participant, the QR Code is automatically generated and stored in the database. During the event, the event manager can scan each participant's QR code to record their attendance.

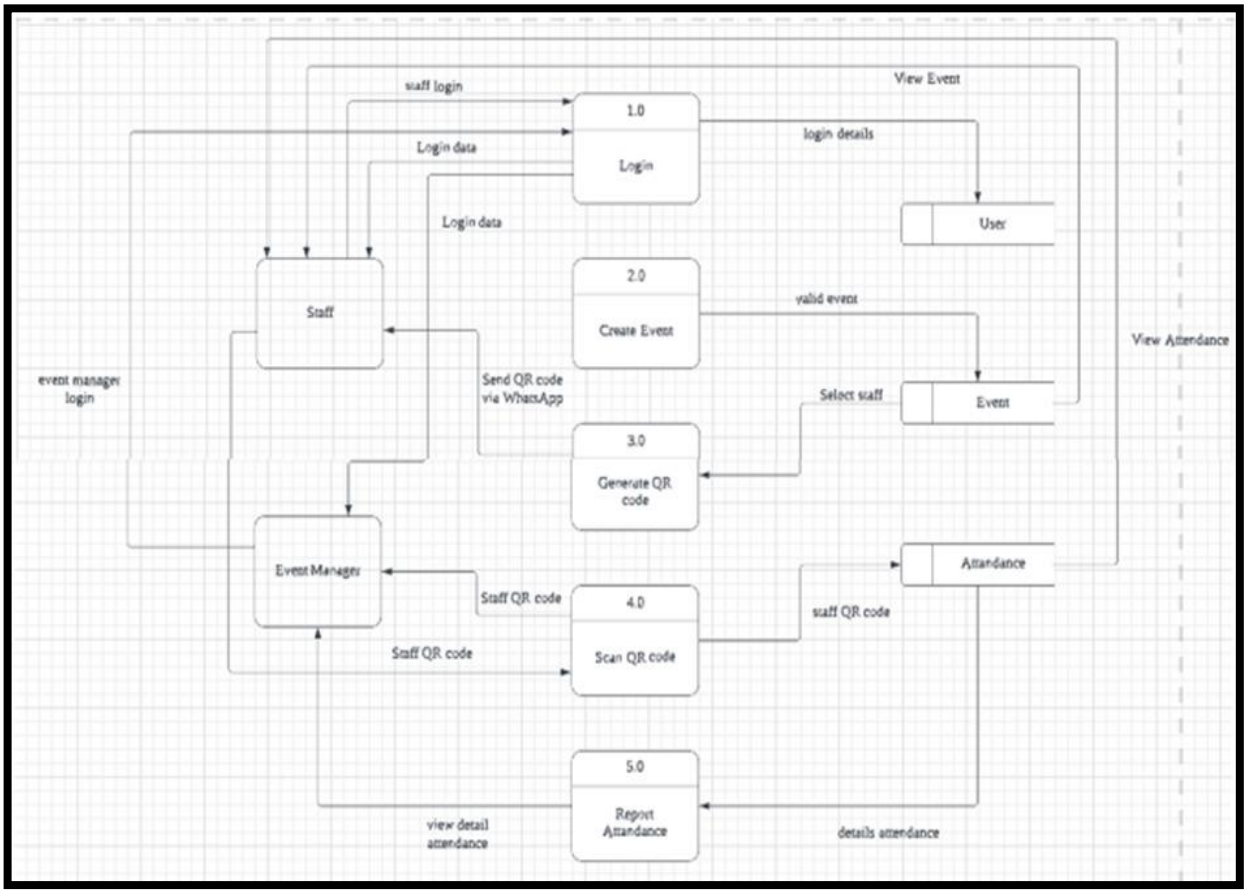

Figure 3.4 Data Flow Diagram

3.5 DATA FLOW DIAGRAM LEVEL 1

There are five data flow diagrams that can be formed through this system.

3.5.1 Login

Figure 3.5 is the flow when the user logs into this system.

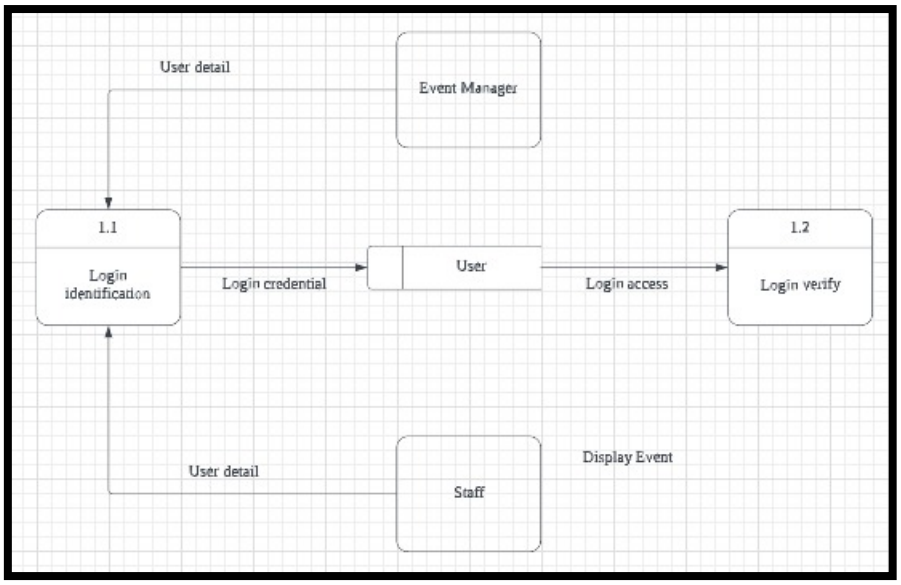

Figure 3.5 Data Flow Diagram Level 1 (Login)

3.5.2 Create Event

Figure 3.6 is a Data Flow Diagram when the event manager creates an event.

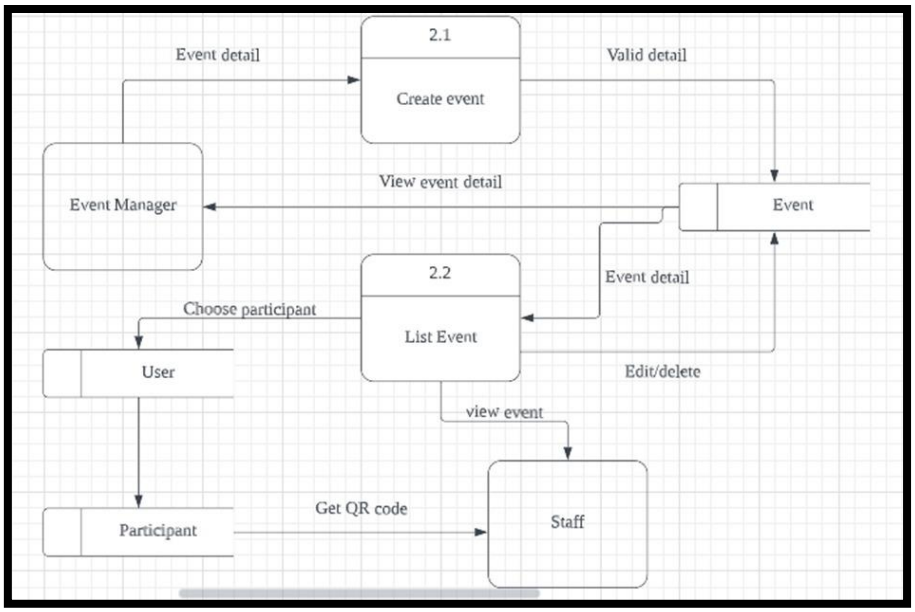

Figure 3.6 Data Flow Diagram Level 1 (Create Event)

3.5.3 Generate QR Code

Figure 3.7 shows the process that will occur when the event manager needs to select the participants involved to generate a QR Code and then send it to each participant.

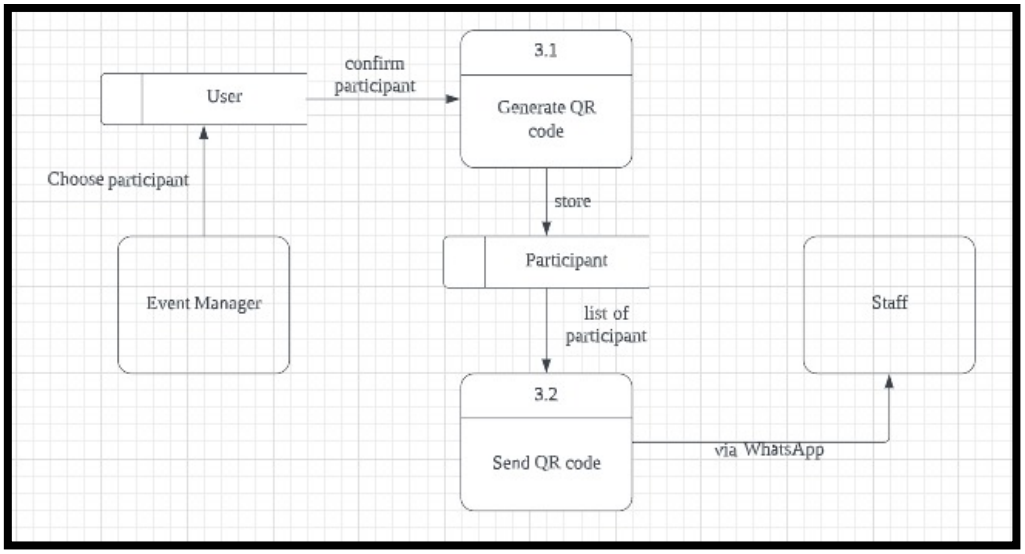

Figure 3.7 Data Flow Diagram Level 1 (Generate QR Code)

3.5.4 Scan QR Code

Figure 3.8 shows the flow when the event manager scans the QR code.

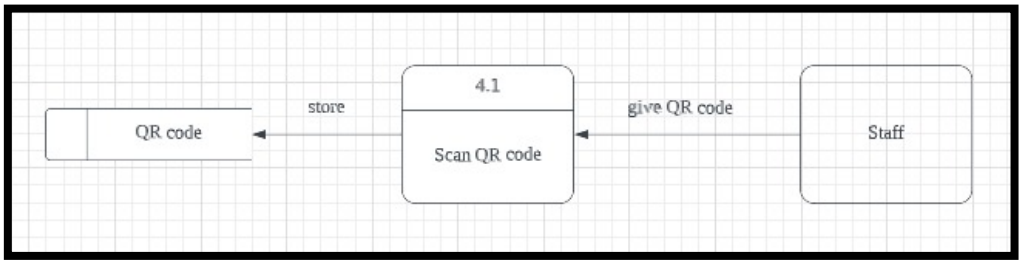

Figure 3.8 Data Flow Diagram Level 1 (Scan QR Code)

3.5.5 Attendance

Figure 3.9 is a data flow diagram that shows that after the QR code is scanned, the event manager can obtain an attendance report and generate an e-certificate.

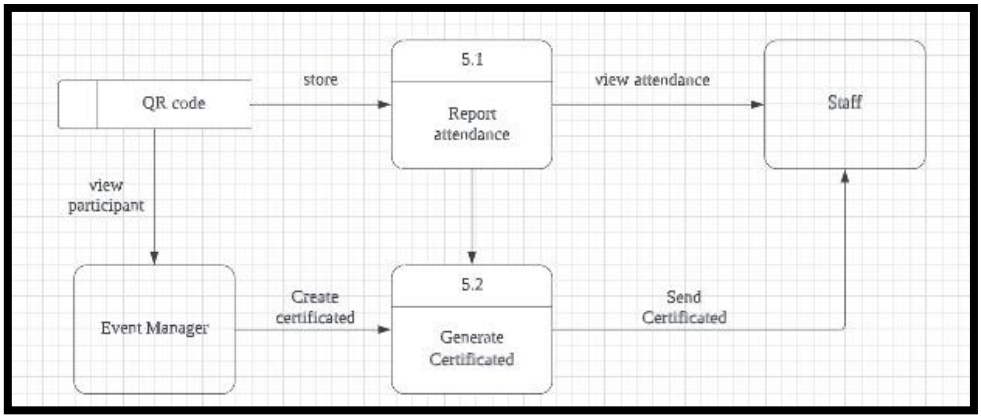

Figure 3.9 Data Flow Diagram Level 1 (Attendance)

3.6 ENTITY RELATIONSHIP DIAGRAM

An Entity Relationship Diagram (ERD) shows the relationships between tables in Event Management System database. Crow's Foot notation was chosen to be used for the ERD.

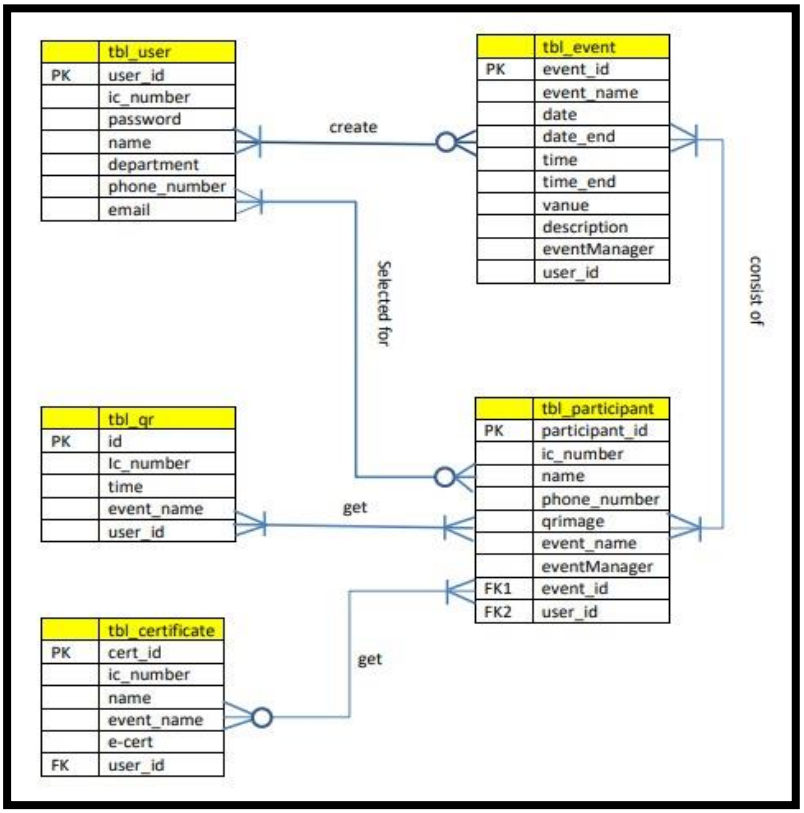

Figure 3.10 Entity Relationship Diagram (ERD).

Figure 3.10 shows the Entity Relationship Diagram (ERD) of Event Management System. The database is named as dbevent. In this database have five tables which are tbl_user, tbl_event, tbl_qr, tbl_participant and tbl_certificate.

In tbl_user has seven attributes namely user_id, ic_number, password, name, department, phone_number and email. In tbl_event also has ten attributes, namely event_id, event_name, date, date_end, time, time_end, vanue, description, eventManager and user_id. In tbl_participant has nine attributes. Among them are participant_id, ic_number, name, phone_number, qrimage, event_name, eventManager, event_id and user_id. There are five attributes in tbl_qr, namely id, ic_number, time, event_name and user_id. Finally, in tbl_certificate there are six attributes namely cert_id as primary key, ic_number, name, event_name, e-cert, and user_id.

The relationship for each table in this database is the first, one or more users can create zero or more events. While in one or many events there can be one or more participants. Next, one or many users can be selected to be a participant in an event. one or more participants will get one or more QR codes. Lastly, one or many participants can get zero or many certificates

3.7 USER INTERFACE DESIGN

Graphical user interface design is a physical design where the need to demonstrate a visual and functional balance is essential to maximize the user experience of the system. The design must not interfere with the user's view or be unattractive to use. In addition, feedback from the testing phase conducted by some users is needed for system improvements that will be made through user feedback. The design will be shown below.

3.7.1 Index Page

Figure 3.11, the index page is the main page of every website. While this website is being used, the index page will appear first. For the index page of the event attendance system, the login page for regular users and event managers will be displayed. User and Event Manager need to insert the valid data to go to the profile page.

Figure 3.11 Graphical Design for Login.

3.7.2 Select Position Page

Figure 3.12, Select position page is the page that will determine whether someone is a user or an event manager.

Figure 3.12 Graphical Design for Select Position.

3.7.3 Profile Page

Figure 3.13 shows the user profile page of the event attendance system in a web browser. Information details will be displayed on the profile page. There is a view event option for users to view the event. In addition, there are several other options such as view attendance and view certificate.

Figure 3.14 shows event manager profile page of the event attendance system in a web browser. Information details will be displayed on the profile page. In the profile page has same options as the user page but has more options like participants for attendance and QR scanner.

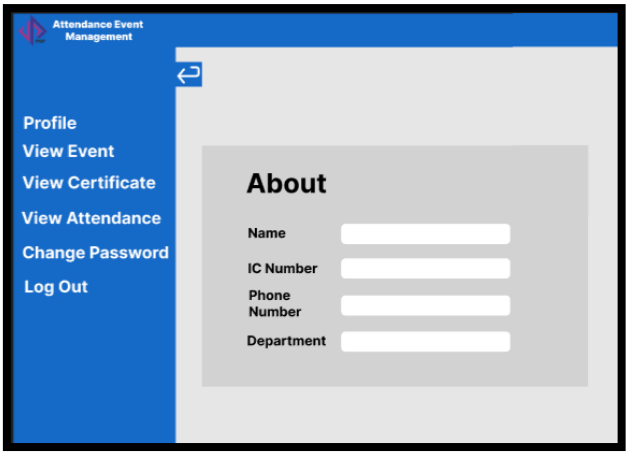

Figure 3.13 Graphical Design for User Profile.

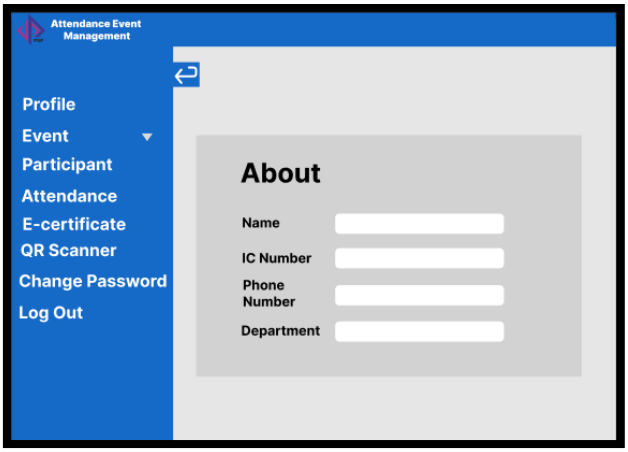

Figure 3.14 Graphical Design for Event Manager Profile.

3.7.4 Change Password Page

In this Figure 3.15, a page has been shown for users and event managers to change the account password to ensure the account is more secure.

Figure 3.15 Graphical Design for Change Password

3.7.5 Create Event Page

Figure 3.16 shows the create event page for event manager. This page for creating an event provided for the event manager. on this page the event manager needs to fill in all the details before selecting the user involved in the event.

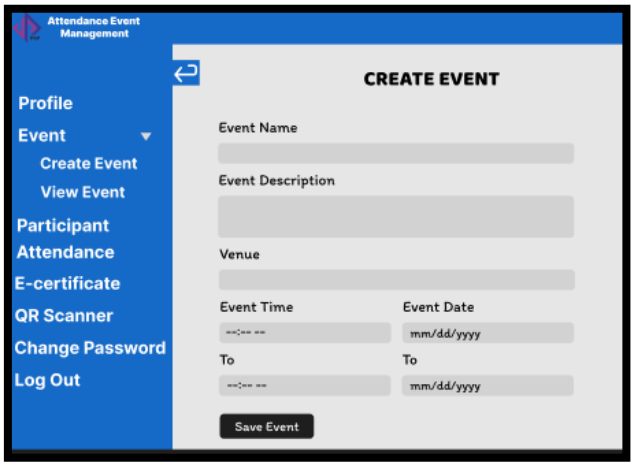

Figure 3.16 Graphical Design for Create Event.

3.7.6 List of Event Page

The Figure 3.17 below will appear after the event manager presses the save button on the create event page. On this page, the event manager can edit details about the event that has been created. In addition, the event manager can also delete events that have been created on this page.

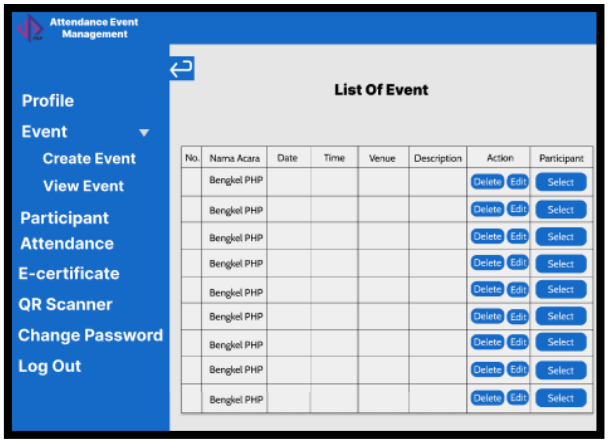

Figure 3.17 Graphical Design for List of Events.

3.7.7 Select Staff Page

The Figure 3.18 shows the Select Staff page for the event manager in the Event Attendance System. The page to select the staff involved during the event has been created by the event manager as shown below. On the displayed page, the event manager will only select the personnel involved.

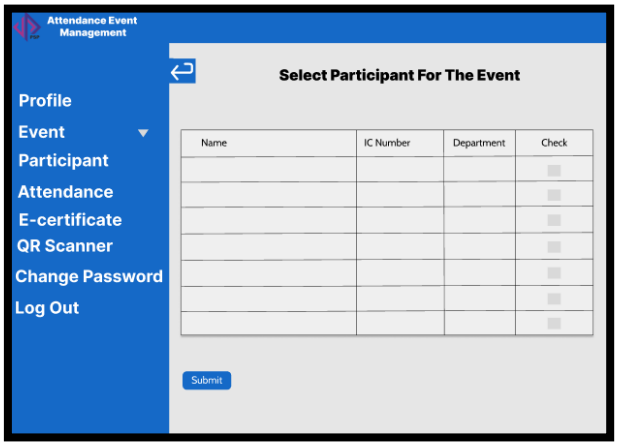

Figure 3.18 Graphical Design for Select Staff.

3.7.8 User's View Event Page

The Figure 3.19 below shows the page that will return to the user a list of events in which they will or have participated. Users can see more information about the event, such as the time, date, and description.

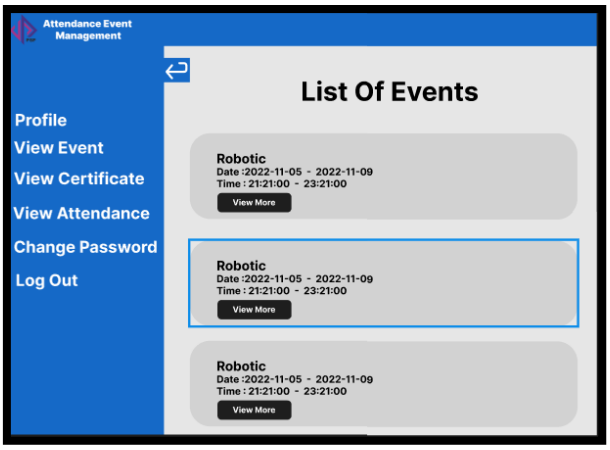

Figure 3.19 Graphical Design for User List of Event.

3.7.9 View Event Page

If the user wants to see what events he is involved in either past or upcoming. On the user page as shown in the Figure 3.20, users can click on the view event option, and it will display all the events involved.

Figure 3.20 Graphical Design for View Event.

3.7.10 Scan QR code Page

QR code scanner like the figure below will be used by the event manager on the day of the event to take the attendance of each user. Users need to use each QR code that has been given through the WhatsApp application.

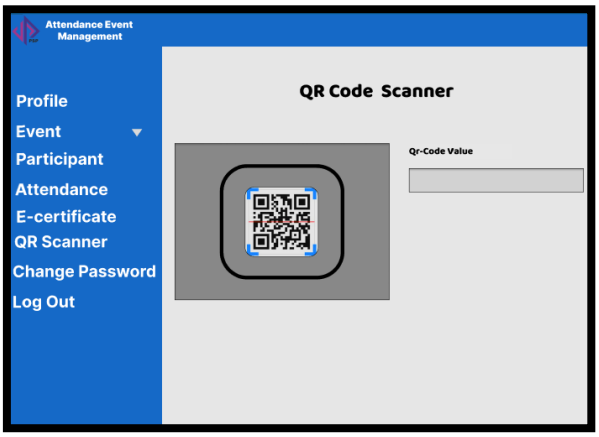

Figure 3.21 Graphical Design for Scan

3.7.11 View Attendance Page

On this page, the name of each event that has been created by the event manager will appear. In the Figure 3.22, if the event manager presses the view button. The attendance of all users will be taken and will be shown on this page.

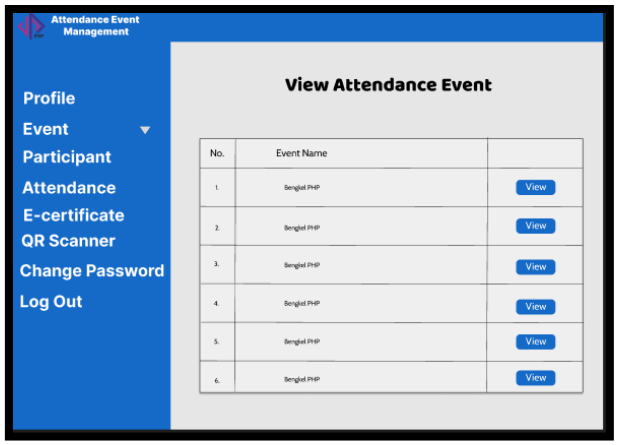

Figure 3.22 Graphical Design for View Attendance.

3.7.12 Create E-Certificate Page

After getting the attendance of all the participants, the event manager can continue with the process of creating an e-certificate for the event that has been completed. by simply pressing the create button like Figure 3.23 the event manager can directly generate an e-certificate for each individual present.

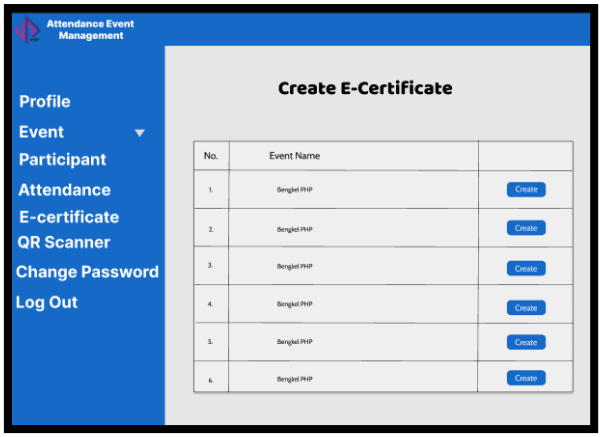

Figure 3.23 Graphical Design for Create E-Certificate.

3.7.13 View attendance and E-Certificate Page

After the end of the event, the user can log into the user account and see his presence, whether present or not. on that page also has a button for the user to press and see if they are eligible or not to receive the participation e-certificate like Figure 3.24.

Figure 3.24 Graphical Design for View Attendance and E-Certificate.

3.7.14 E-Certificate Page

In this Figure 3.25, if the user is eligible to receive a certificate, the user can press the certificate button and the user's participation certificate will be displayed and the user can print the certificate if he wants the certificate physically.

Figure 3.25 Graphical Design for E-Certificate.

4.0 TEST DESCRIPTION AND RESULTS

Several tests have been carried out on several pages in this system to identify whether it is successful or not**.**

4.1 UNIT TESTING

Unit testing has been divided into two, namely the user and the event manager. The goal of this unit testing is to confirm that the system can be used smoothly and then to troubleshoot any issues that arise.

4.1.1 User

Some tests have already been done on the part to ensure users can use this system without any problems.

UNIT TESTING PLAN (UTP): User					
NO	**Test Case Name**	**Test Procedure**	**Pre-Condition**	**Excepted Result**	**Result**
1.	Login Page	User can fill the username and password at the textfield given.	Who don't have an account cannot login to the system.	Successfully login to the system if user fill the valid data.	pass
2.	View Event Page	User can view event in their account.	User just can view the event that they have been selected.	The event detail will show on the page.	Pass
3.	View Attendance	User can view their attendance	User just can view the attendance that the have been attend.	The attendance detail will show on the page.	Pass
4.	View Certificate	User can view their certificate.	User can view the certificate if they join the event.	The certificate will display on the view certificate page.	Pass
5.	Change Password	The user can change their password when they successfully login.	Insert the valid current password to be able change the password.	Successfully change the password.	Pass

Table 5: Unit Testing Plan User

4.1.2 Event Manager

The event manager section has also been tested to ensure that each page works well without any problems.

UNIT TESTING PLAN (UTP): Event Manager					
NO	**Test Case Name**	**Test Procedure**	**Pre-Condition**	**Excepted Result**	**Result**
1.	Login Page	Event Manager can fill the username and password at the textfield given.	Who don't have an account cannot login to the system.	Successfully login to the system if user fill the valid data.	pass
2.	Create Event	Event Manager can create an event by fill all the requirement.	Only event manager can create the event in this page.	Events create successfully.	Pass
3.	Select staff	Event Manager can select specific individuals to attend the event.	Only selected participants will be notified.	A QR code will be generated according to the selected name.	**Pass**
4.	Generate QR code	QR code will be created after event manager click on button select staff.	QR code will be create by IC number	All the QR code for user will be display.	**Pass**
5.	Send QR code	Event managers need to click send on page QR code.	Users who are not selected will not receive a QR code.	QR code will be send to WhatsApp	**Pass**
6.	Scan QR code	Event manager will scan the QR code using QR scanner.	User without name in list cannot scan.	User data will display on QR scanner page.	**Pass**
7.	Generate e-certificate	The event manager will look at the data of the participants present to ensure the presence of the participants before generating the certificate	users who attend the ceremony will receive a cert	Certificate will display on certificate page.	**Pass**
8.	Change Password	The event manager can change their password when they successfully login.	Insert the valid current password to be able change the password.	Successfully change the password.	Pass

Table 6: Unit Testing Plan Event Manager

5.0 MAJOR FINDINGS AND DISCUSSIONS.

Users must have an internet connection to access this system and event managers must have a laptop equipped with a camera to be able to scan attendance are the only restrictions of this project.

5.1 USER

Users can perform several processes when using this system.

5.1.1 Index page

In Figure 5.1, below is the index page that has been modified according to the user's suitability. This page is the page where users and event managers will log in.

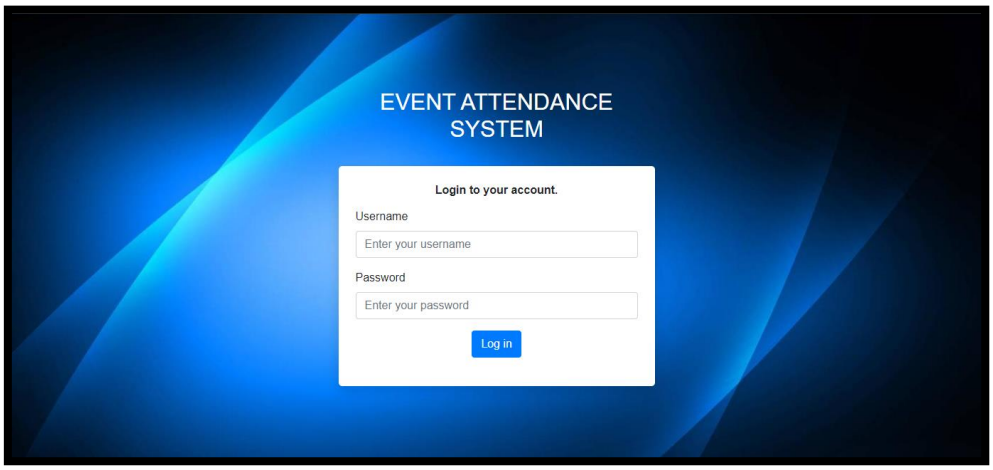

Figure 5.1 Index Page

5.1.2 User's Select Position Page

In Figure 5.2, to determine whether the user using this system is a normal user or an event manager. For normal user, just click the skip button.

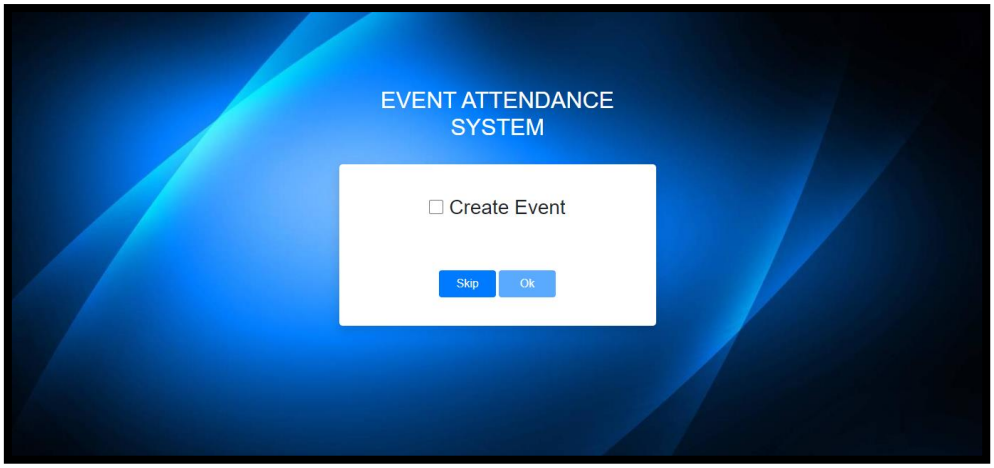

Figure 5.2 User's Select Position

5.1.3 User's Profile Page

Figure 5.3 shows the first page that the user will see after logging into this system. This page will display the user's personal information.

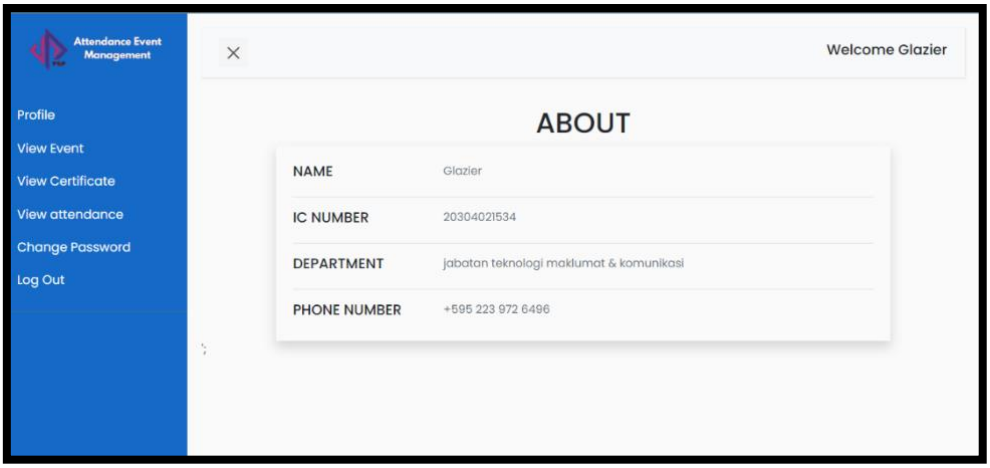

Figure 5.3 User's Profile Page

5.1.4 List of Events Page

Figure 5.4, this page will display to the user a list of events that the user is participating in. On this page, users can also see the QR code for the event they are participating in. The view button can be pressed by users to see event information in more detail.

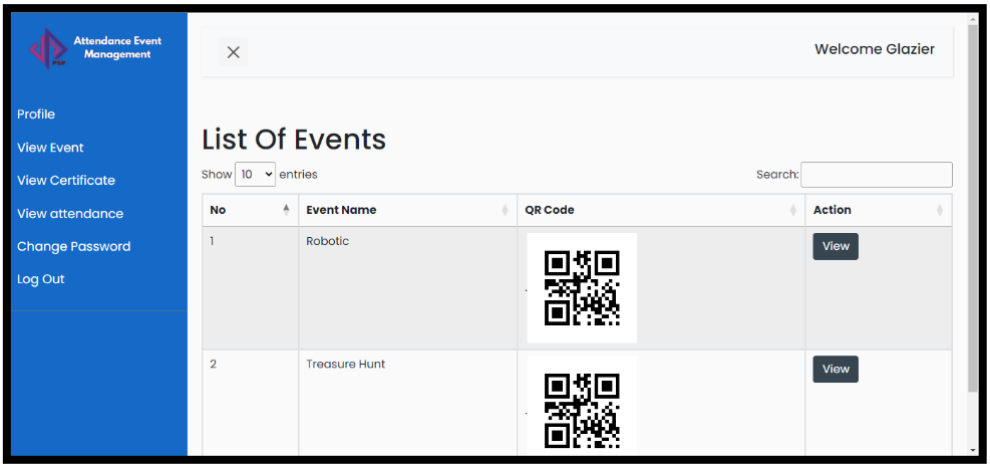

Figure 5.4 User's List of Event Page

5.1.5 Event Detail Page

Figure 5.5, after the user presses the view button, the user will be taken to this page. Where this page will display event information in more detail such as time, date, place, and description of the event.

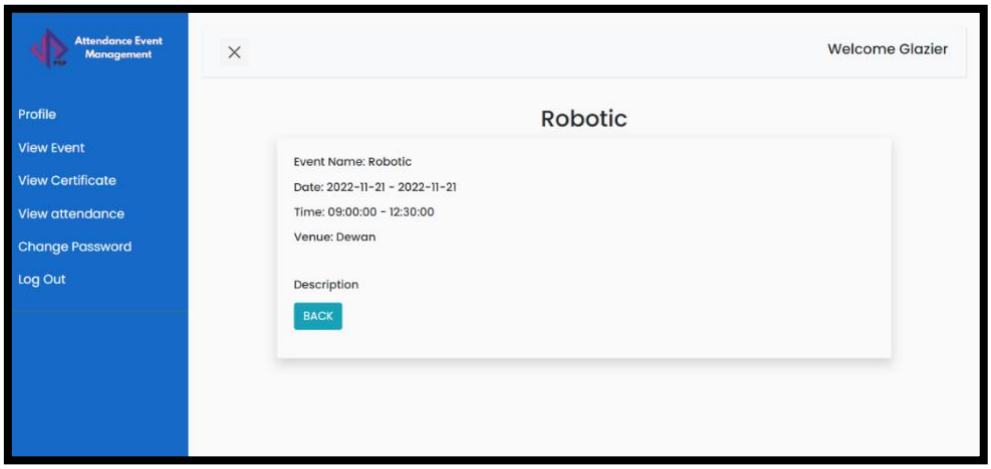

Figure 5.5 User's Event Detail Page

5.1.6 View Certificate Page

Figure 5.6, on this page, users can see the e-certificate for the event they have participated in. Figure 5.7. show the generated e-certificate to the user.

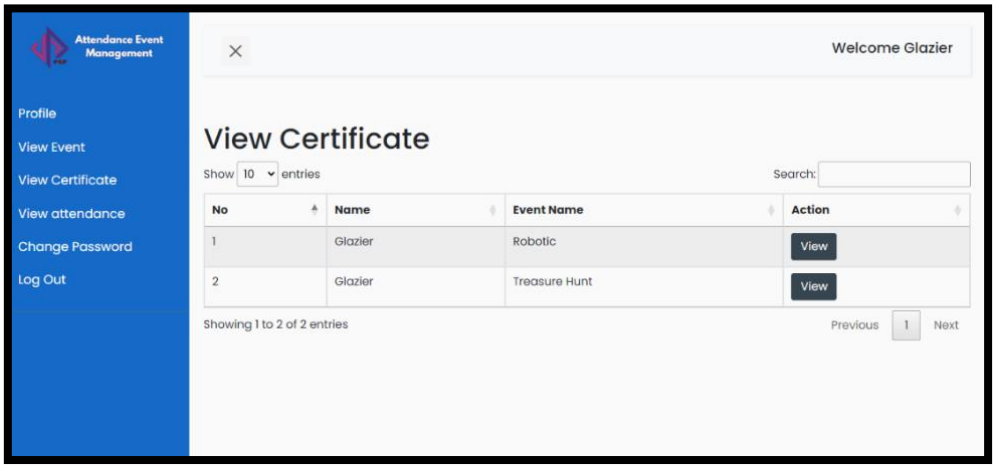

Figure 5.6 User's View Certificate Page

Figure 5.7 User's View Certificate

5.1.7 User's View Attendance Page

Figure 5.8, users can look back at their attendance that has been taken at each event. This page will display to the user their attendance information such as the name of the event as well as the time and date the user scans the QR code at each event.

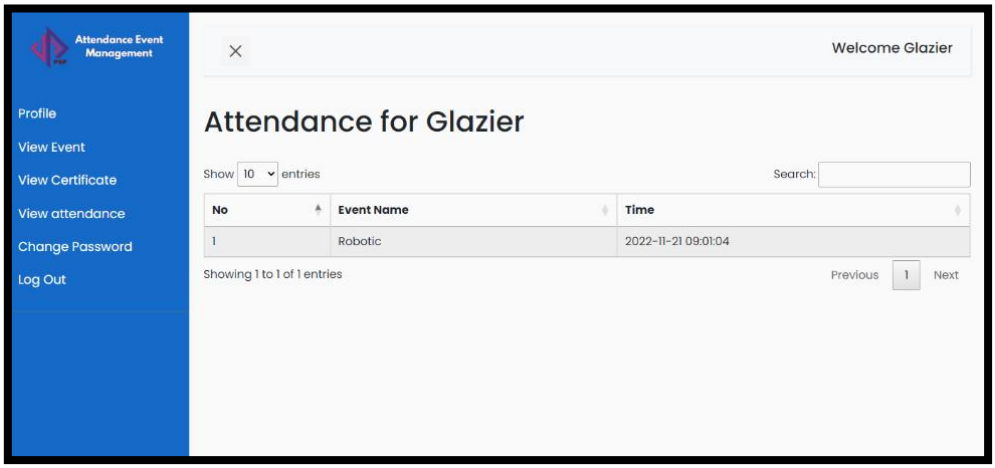

Figure 5.8 User's View Attendance Page

5.2 EVENT MANAGER

Through this system, the event manager will access the following pages.

5.2.1 Event Manager's Select Position Page

Figure 5.9 is a page to select a position. Where if the user is an event manager, then they need to tick the checkbox. The 'Ok' button that was previously disabled will be able to be pressed.

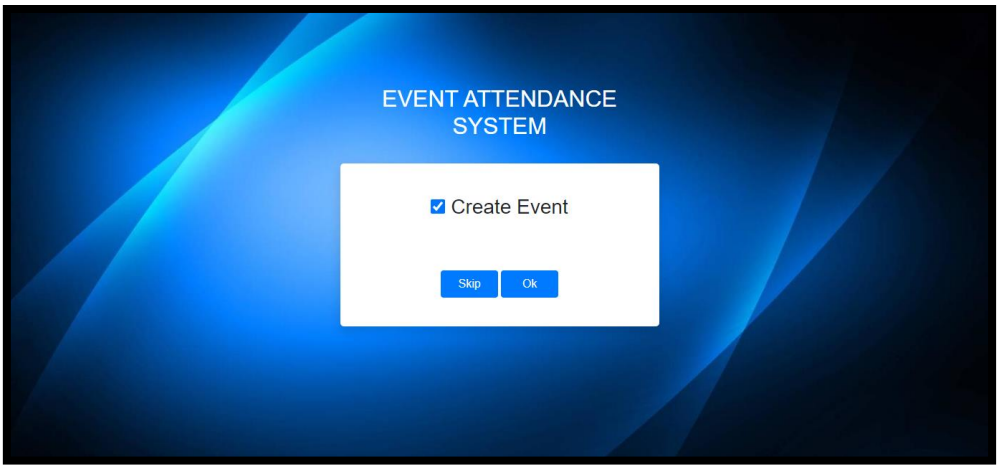

Figure 5.9 Event Manager Select Position Page

5.2.2 Event Manager's Profile Page

Figure 5.10, after the event manager clicks ok, they will be taken to the profile page that will attach information about themselves.

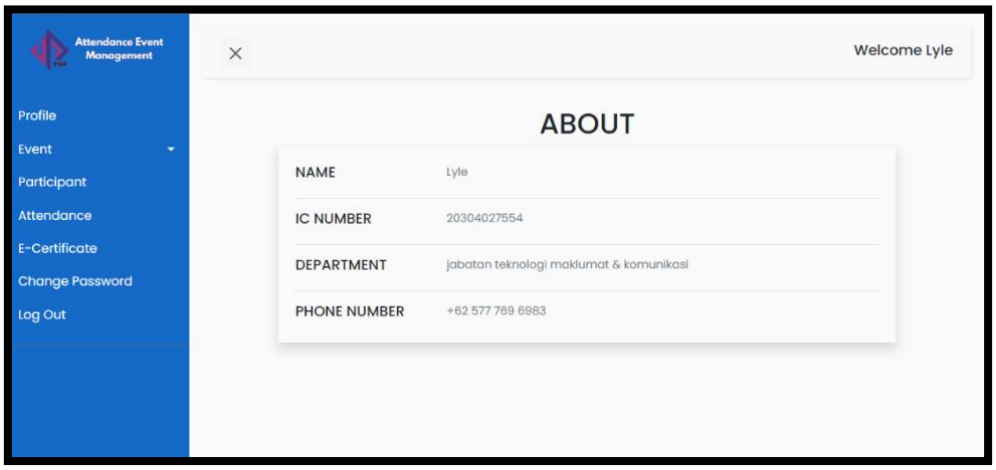

Figure 5.10 Event Manager Profile Page

5.2.3 Create Event Page

Figure 5.11, on this page, event managers can create events that they will organize. The event manager can fill in every detail requested on the form.

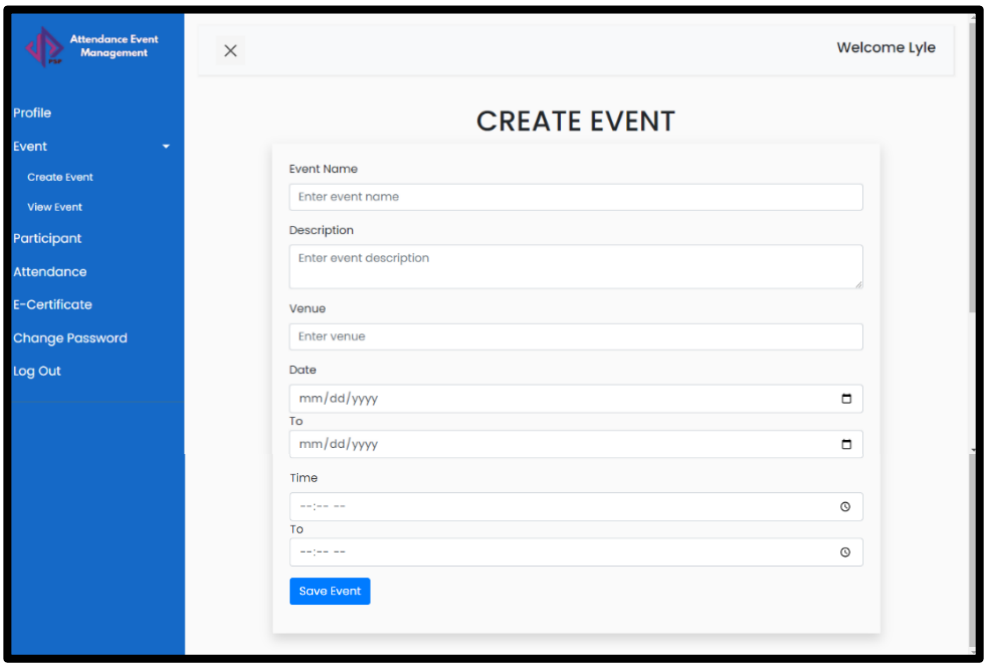

Figure 5.11 Event Manager Create Event Page

5.2.4 Event Manager's List of Event Page

Figure 5.12, when the event manager clicks save event, they will be taken to this page. This page will display the event that has been created by the event manager. Here, the event manager can delete, edit, select, and then scan the participant's attendance through the button provided.

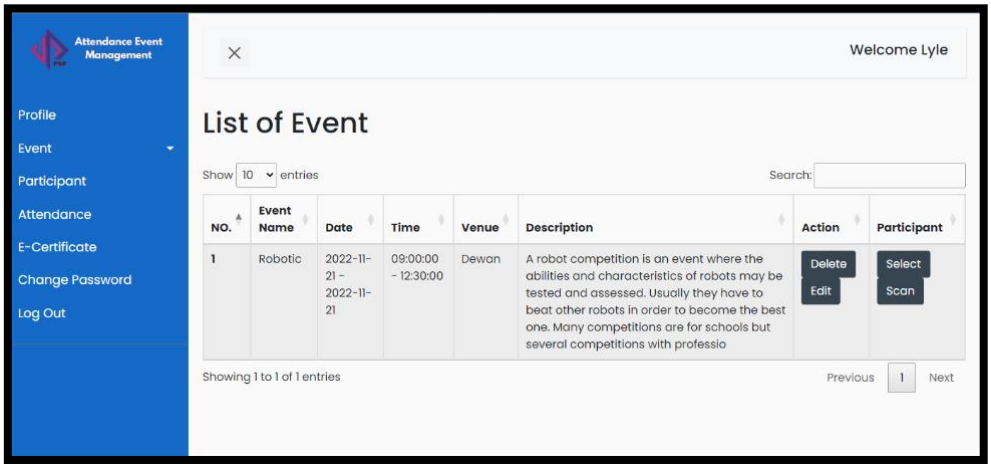

Figure 5.12 Event Manager List of Event Page

5.2.5 Update Event Page

Figure 5.13, the event manager can update or re-edit the event information that the event manager has entered.

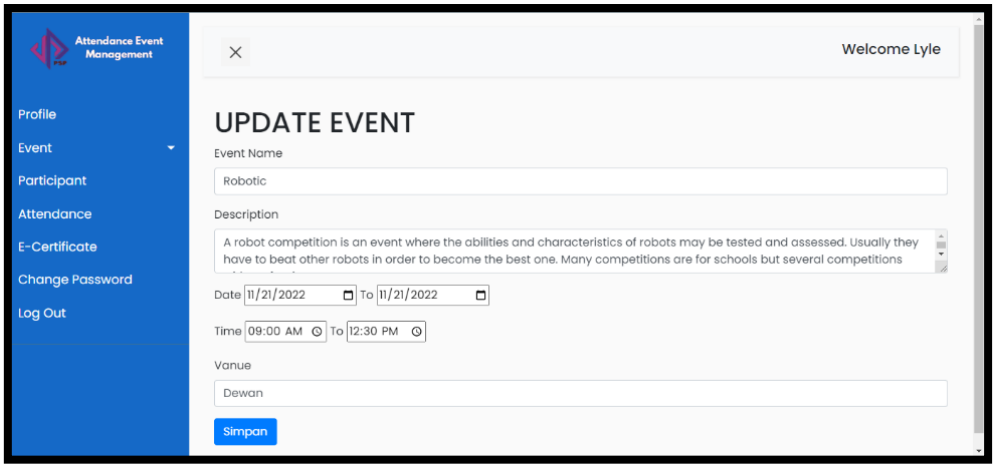

Figure 5.13 Update Event Page

5.2.6 Select Participant Page

Figure 5.14, here, the event manager can choose every participant they want for their event.

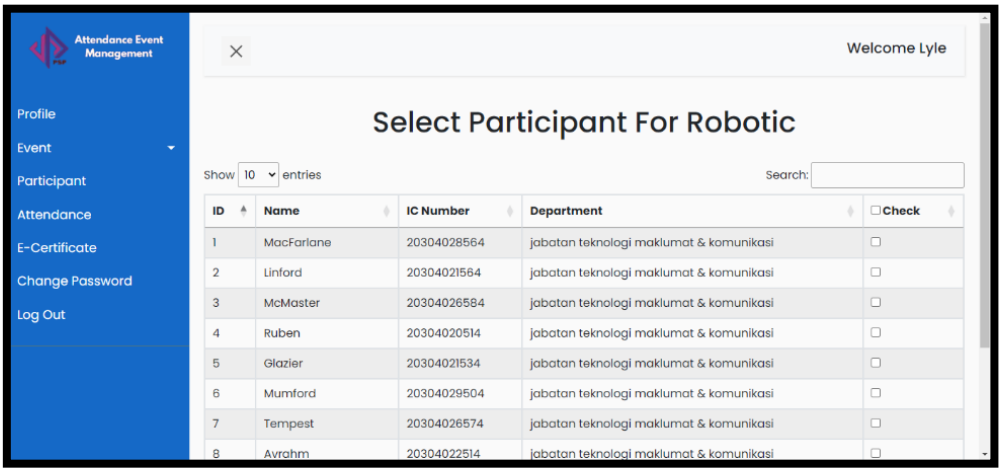

Figure 5.14 Select Participant Page

5.2.7 QR Code Scanner Page

Figure 5.15, for this page, users will scan their QR code on this scanner on the day of the event.

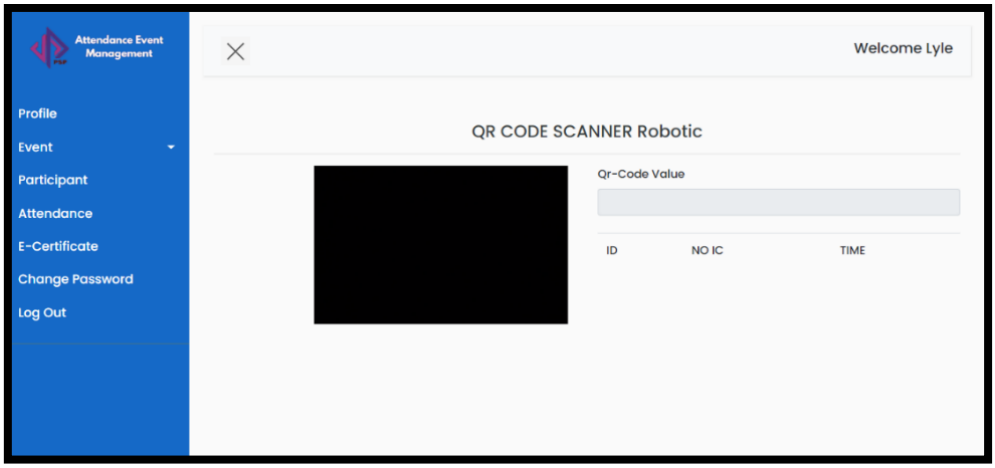

Figure 5.15 QR Code Scanner Page

5.2.8 List of Participant Page

Figure 5.16, this page will allow event managers to look back at the participants they have selected for each event they have created.

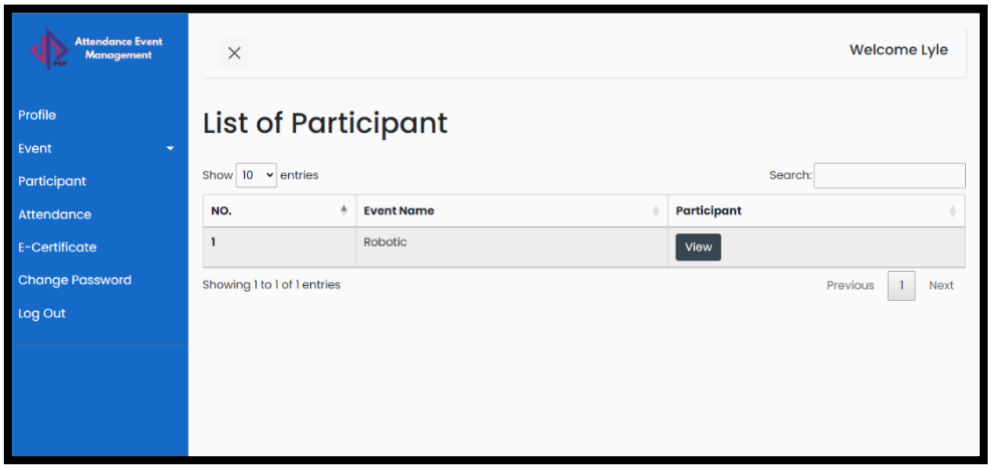

Figure 5.16 List of Participant Page

5.2.9 View Participant Page

Figure 5.17, when the event manager clicks view on the previous page, the event manager will be taken to this page. Where this page will display participant information such as name, phone number and QR code. Also on this page, the event manager can send a QR code via WhatsApp by pressing the 'SEND' button.

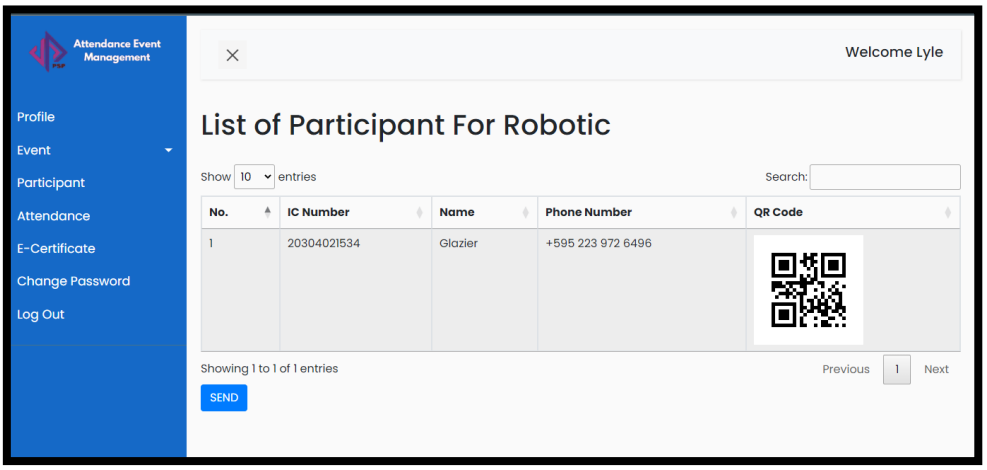

Figure 5.17 View Participant Page

5.2.10 View Attendance Event

Figure 5.18, this page will show the event manager the event they have created. To see attendance, the event manager needs to press the 'VIEW' button.

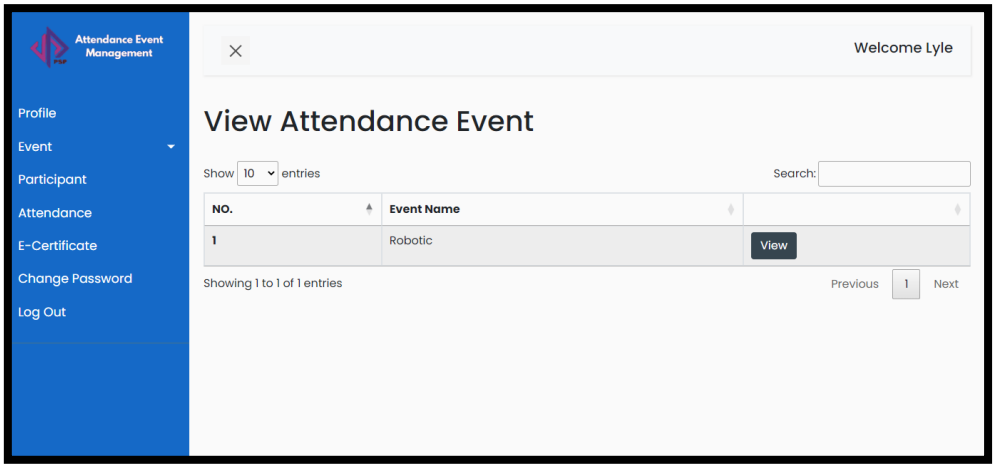

Figure 5.18 View Attendance Page

5.2.11 Attendance Page

Figure 5.19, after clicking the 'VIEW' button the list of participants' names will be displayed. Event managers can also download attendance in excel and pdf format.

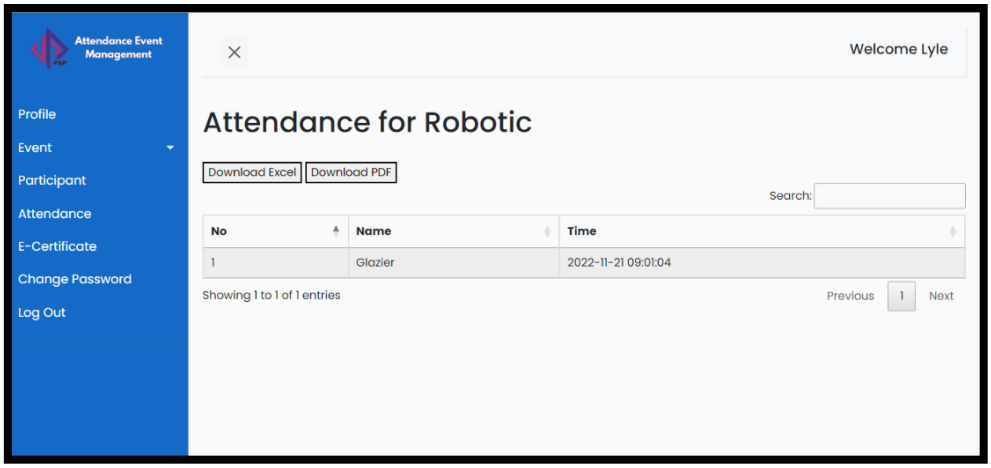

Figure 5.19 Attendance Page

5.2.12 E-Certificate Page

Figure 5.20, to make it simpler for event managers to choose events, this page will present the list of events.

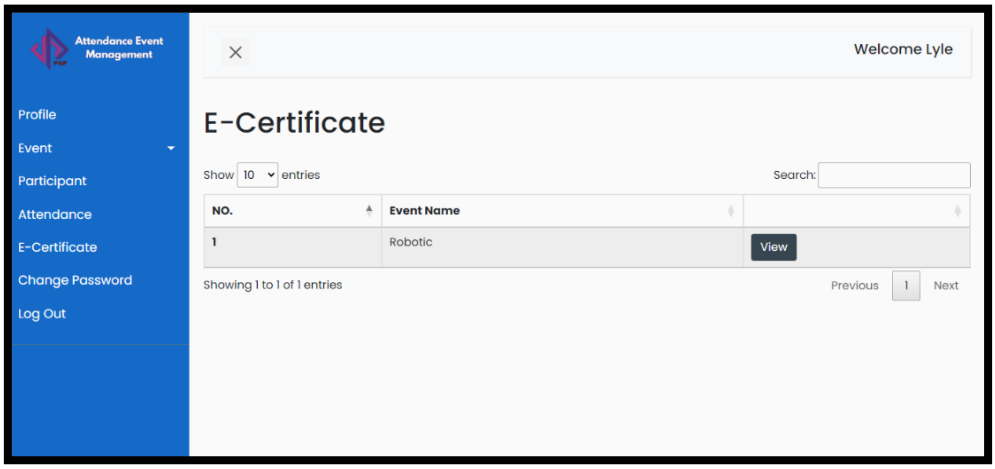

Figure 5.20 E-Certificate Page

5.2.13 Create E-Certificate Page

Figure 5.21, to generate an e-certificate for each participant, the event manager must click the create button.

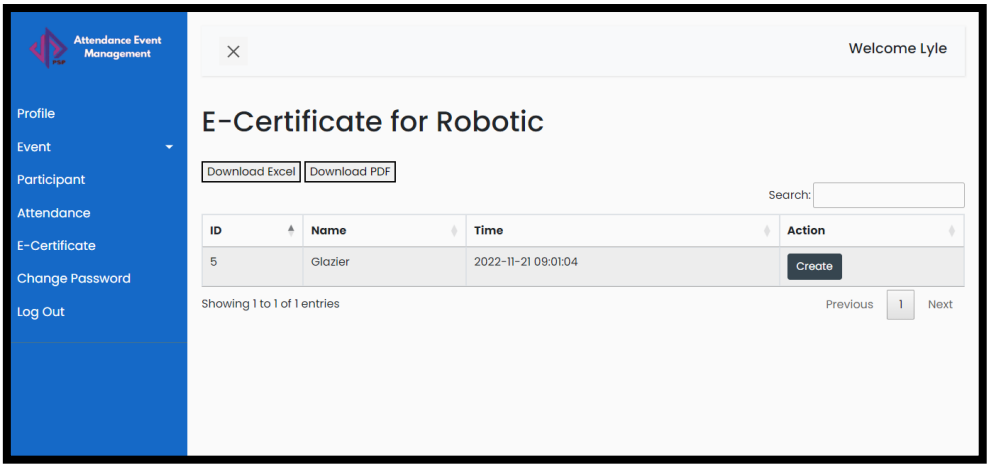

Figure 5.21 Create E-Certificate Page

5.2.14 Change Password Page

Figure 5.22, if the event manager is uncomfortable with their existing password, they may change it on this page.

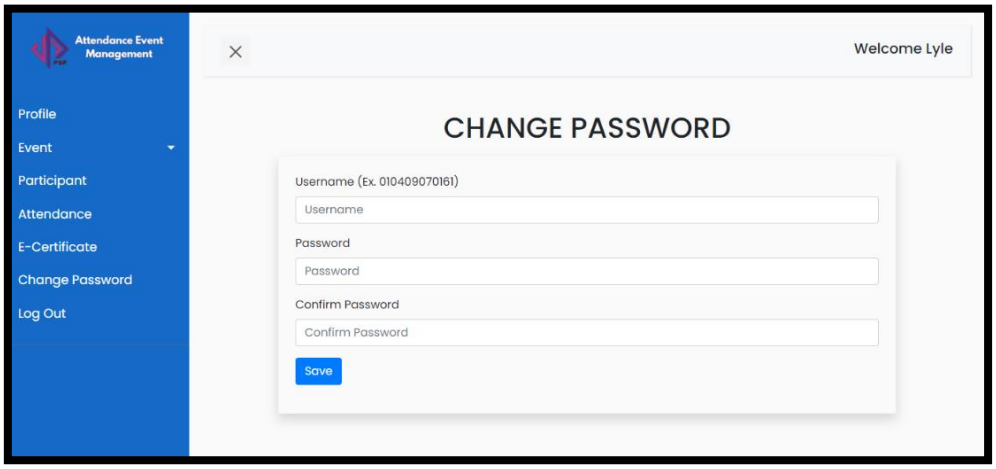

Figure 5.22 Change Password Page

6.0 CONCLUSIONS

In conclusion, as stated in the objective, this system provides many advantages such as registering attendance by using the QR code facility. In this age of rapidly developing technology, the use of paper to take attendance is no longer the main choice. This is said because the use of paper will result in risks such as data loss because paper is easily lost or torn. By using a QR code, the attendance will be directly stored in the database so there is no need to worry about losing data. This system is also complete with an Application Programming Interface (API) system, which is a system that will be built to be able to send notifications to WhatsApp staff who have registered in the registration system. So, the user will know that they have registered. In addition, this system will provide an e-certificate to each staff member who attends the event. As you know, if you want to print a certificate, it costs money because of the use of paper and ink. With the existence of e-certificates, there is no need to worry about the costs that need to be incurred because the e-certificates can be stored in various places such as PC, Pen Drive, Cloud and so on. So, if you lose the certificate, just need to reprint the e-certificate.

7.0 RECOMMENDATIONS

The project we built still needs improvement in terms of security, namely the page for forgot password. This is because, in this system, if the user forgets the password, the user needs to contact the admin to reset the password. Second added a page for the director to confirm the attendance of the participants to add a confirmation signature in the certificate of the event held.

8.0 REFERENCES

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Appendix 1

Q : What are some of the issues that arise when taking attendance?

A : The issue that always arises when recording attendance is when we do it on paper. As is well known, using paper to take attendance opens up a number of potential scenarios. One of them is paper, which is simple to misplace or drop and will result in data loss.

Q : Do you have any thoughts or ideas for how to make the attendance process easier?

A : Using a system with the right features will make taking attendance simpler. It will be simpler and quicker to use a system that can collect information about attendees without them having to write anything down or look up their names one at a time.

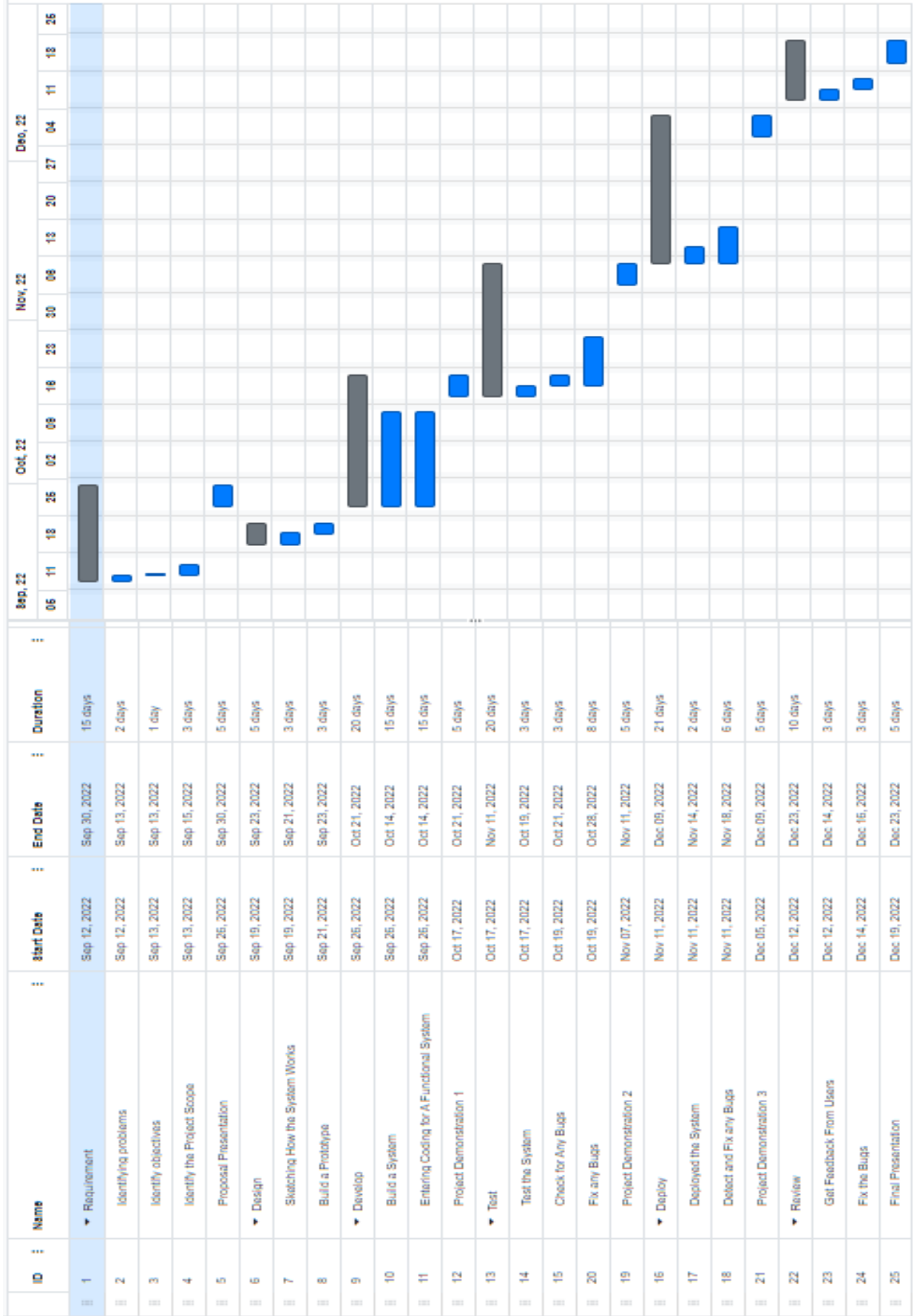
Q : What features should an attendance system have?

A : An attendance system must be secure in order to prevent any potential of attendance fabrication. Existing security must be one-of-a-kind, such as a QR code for each individual. Those present merely need to display their QR code while taking attendance.

Q : What style of design should an attendance system have?

A : Since it will be used for events, a minimalist and formal design is unquestionably appropriate. Additionally, it has a straightforward layout and is simple to use.

Appendix 2



ID	Name	Start Date	End Date	Duration
1	▾ Requirement	Sep 12, 2022	Sep 30, 2022	15 days
2	Identifying problems	Sep 12, 2022	Sep 13, 2022	2 days
3	Identify objectives	Sep 13, 2022	Sep 13, 2022	1 day
4	Identify the Project Scope	Sep 13, 2022	Sep 15, 2022	3 days
5	Proposal Presentation	Sep 26, 2022	Sep 30, 2022	5 days
6	▾ Design	Sep 19, 2022	Sep 23, 2022	5 days
7	Sketching How the System Works	Sep 19, 2022	Sep 21, 2022	3 days
8	Build a Prototype	Sep 21, 2022	Sep 23, 2022	3 days
9	▾ Develop	Sep 26, 2022	Oct 21, 2022	20 days
10	Build a System	Sep 26, 2022	Oct 14, 2022	15 days
11	Entering Coding for A Functional System	Sep 26, 2022	Oct 14, 2022	15 days
12	Project Demonstration 1	Oct 17, 2022	Oct 21, 2022	5 days
13	▾ Test	Oct 17, 2022	Nov 11, 2022	20 days
14	Test the System	Oct 17, 2022	Oct 19, 2022	3 days
15	Check for Any Bugs	Oct 19, 2022	Oct 21, 2022	3 days
20	Fix any Bugs	Oct 19, 2022	Oct 28, 2022	8 days
19	Project Demonstration 2	Nov 07, 2022	Nov 11, 2022	5 days
16	▾ Deploy	Nov 11, 2022	Dec 09, 2022	21 days
17	Deployed the System	Nov 11, 2022	Nov 14, 2022	2 days
18	Detect and Fix any Bugs	Nov 11, 2022	Nov 18, 2022	6 days
21	Project Demonstration 3	Dec 05, 2022	Dec 09, 2022	5 days
22	▾ Review	Dec 12, 2022	Dec 23, 2022	10 days
23	Get Feedback From Users	Dec 12, 2022	Dec 14, 2022	3 days
24	Fix the Bugs	Dec 14, 2022	Dec 16, 2022	3 days
25	Final Presentation	Dec 19, 2022	Dec 23, 2022	5 days