UNIVERSITI TEKNIKAL MALAYSIA MELAKA

FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI

W O R K S H O P 1
R E P O R T

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EXECUTIVE SUMMARY

Event Management System is designed for admin and customer by providing an efficienct, user friendly, and centralized platform to enhance the overall of customer process

The system that being developed to address several issues contributing to the customers buying process.Currently, the problems are customer manually bought the tickets in the event and need to queing a long time in order to get the tickets which is cause inconvenient and time consuming.This will cause volunteer and admin in trouble to control the event because there is no centralized system that manages and control all the data through a single central database. Furthermore, no digital reports and logs are available for data analysis, retrieval, and sharing for reference purposes for project management/property owner/developer's future strategies.

The objectives of the Event Management System are improve the efficiency of the efficiency of participant process and storing all data in a centralized database, enable an automated process of admin as well as participant joining the event and provide a data analysis

The EMS has two target users, and admin (the one who create an event) and participant (people who joining the event). The system compromise several modules, which is Registration Module, Login Module, admin Module,

Implementing the system will undoubtedly bring the several benefits to concerned parties.Firstly, the system imporves efficiency through the automation of the participant process. It also enables admin management/company/developer to formulate future strategies and make informed decisions through detailed reports obtained from data analysis.The system also enhanced participant experience through buying a tickets and attending the event also admin able to handle the program well without any issue occurs.Lastly, the system could improve the overall experience so the event will be held in smooth condition.

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Nowadays, there is a lot of events has been held in one day, with many factors contributing to its popularity. One of the reasons is entertainment. Event often being held because people interested to the event, the popularity of the event and event affordable. However, the high popularity of events often means that the administration has to put in considerable effort to ensure that the event is organized efficiently and remains balanced. Managing large-scale events with diverse participants and stakeholders requires extensive coordination, attention to detail, and significant resources. Admins need to ensure that logistical tasks such as venue management, scheduling, marketing, ticket sales, and security are handled seamlessly. At the same time, the event must meet the expectations of attendees and provide a memorable experience. As more events are organized, the administrative burden also increases, with organizers having to deal with larger crowds, more complex schedules, and demands from participants.

The Event Management System (EMS) is designed to address these challenges. The system aims to provide a centralized platform that facilitates interaction and communication between administrators, volunteers, and participants, streamlining the entire event management process. For administrators, the system offers a comprehensive solution to manage various aspects of the event, including registration, ticket sales, attendee tracking, and feedback collection. Volunteers can easily access their tasks and responsibilities, while participants benefit from a more user-friendly experience when registering for events and receiving updates

In conclusion, Event Management System plays a important role in facilitating the buying process for participants and helping administrators manage the logistics of holding an event. By ensures that events can be executed efficiently and professionally, while keeping the experience enjoyable and accessible for all involved.

1.2 Problem Statement

1. Manual participant buying tickets process.

   Right now, participants have to go through a manual process to buy tickets, which means filling out forms or making cash payments. This can be frustrating for everyone involved, especially when there are a lot of people attending. Long queues, missed payments, and paperwork errors can create confusion and delays. For participants, it's not a smooth experience, and for administrators, it's a lot of extra work—keeping track of who's paid, how many tickets are left, and updating records can quickly become overwhelming.

2. No digital report for easy data analysis and data sharing for the admin

   At the moment, there's no digital system in place to automatically generate reports, which means that admins are stuck with piles of paper or scattered files. This makes it harder to analyze data efficiently and share it with the team. For instance, if an admin needs to look at ticket sales, budget information, or participant lists, they have to sift through everything manually, which can be time-consuming and prone to mistakes. This lack of digital reports also makes it difficult to make quick decisions based on real-time data.

3. No centralized data store and management.

   Without a centralized data store, important event information is scattered across different files, systems, or even physical paperwork. This lack of organization can make it difficult for admins to get a full picture of the event at a glance. It also means that data isn't easily accessible or updated in real time, leading to confusion and missed opportunities. For example, if multiple people need to access the same attendee list or track payments, they might end up working with outdated or incomplete information. It's a lot of effort to maintain order when everything is spread out.

1.3 Objective (s) of the project

This project embarks on the following objectives:

1. To develop an automated system for the participant joining the event.
   We aim to create an automated system that simplifies the process for participants to sign up for events. Instead of dealing with paperwork or waiting in long lines, participants will be able to register and purchase tickets online with just a few clicks. This makes everything faster, easier, and more convenient for them, while also saving time for the organizers. It's all about making the whole experience smoother and more enjoyable for everyone involved.

2. To allow admin to anaylse data from the report for future strategy quickly.
   Our goal is to provide a system that helps admins analyze event data quickly and efficiently. By having real-time reports and insights, they can easily see what's working and what needs improvement, all in one place. This means they won't have to waste time digging through spreadsheets or paper reports. Instead, they can make smarter, faster decisions to improve future events and strategies, ensuring everything runs more smoothly next time.

3. To develop and design a centralized system that store and manage all the data.
   We want to create a centralized platform that securely stores and organizes all event-related data in one place. This means all the important information—from ticket sales and participant details to event schedules—will be easily accessible and updated in real-time. No more scattered files or confusion. Everything will be managed efficiently, so admins can quickly find what they need and make decisions based on accurate, up-to-date data. This will make managing events much easier and less stressful.

1.4 Scope

1.4.1 Module to be developed

a) **Participant Module**
   - **View information of the account**
     Access and manage their personal details, such as contact information and past event participation.
   - **Choose a event package**
     Browse through available event packages, including pricing and benefits, to select the one that best suits their needs.
   - **Book and buy the event**
     Complete the registration and payment process seamlessly to secure their spot at the event.
   - **View event information**
     Get detailed information about the event they've registered for, such as schedules, speakers, or performers, ensuring they are well-prepared for the event.

b) **Volunteer Module**
   - **View information of the account**
     Manage their personal profile and update their contact or availability details.
   - **View job scope of the volunteer**
     Access a clear outline of their tasks and responsibilities, ensuring they know exactly what is expected of them.
   - **View information of the job**
     Get detailed information about the specific volunteer job they have been assigned, including timelines, duties, and any event-specific instructions.

c) **Admin module**
   - **Create, Read, or Delete event when necessary**
     Set up new events, access existing events, and remove events that are no longer relevant.
   - **Manage and access to the event**
     Manage all aspects of the event, including monitoring the progress and ensuring everything runs smoothly
   - **Give a jobs to the volunteer**
     Assign specific tasks and responsibilities to volunteers, ensuring that everyone knows their role and when to perform it.
   - **View all history logs**
     Keep track of all actions taken within the system, providing a clear record of past activities for accountability and transparency.
   - **Generate reports**
     Produce detailed reports about various aspects of the event, such as ticket sales, participant numbers, or volunteer performance.

- **Add, edit or delete job scope or information of the job**
  Modify volunteer tasks or update job descriptions to reflect any changes that occur during the event.
- **Data analysis**
  Analyze event data to make informed decisions for future events, such as identifying trends, understanding participant behavior, and optimizing resource allocation.

1.4.2 Target User

- Admin
- Participant
- Volunteer

1.5 Project Significance

1. Improved participants registration process efficiency through automation
   - Process the participant registration faster
   - Reduce errors

2. Improved participant experience
   - Provide a seamless check-in process and ensure a warm

3. Data Analysis
   - Generate valuable data that can be analyzed to gain participants experience through feedback and data management
   - This data can inform decisions-making process such as if the event goes well, facility management strategies and staff adjustments

1.6 Gantt Chart of Project Activities

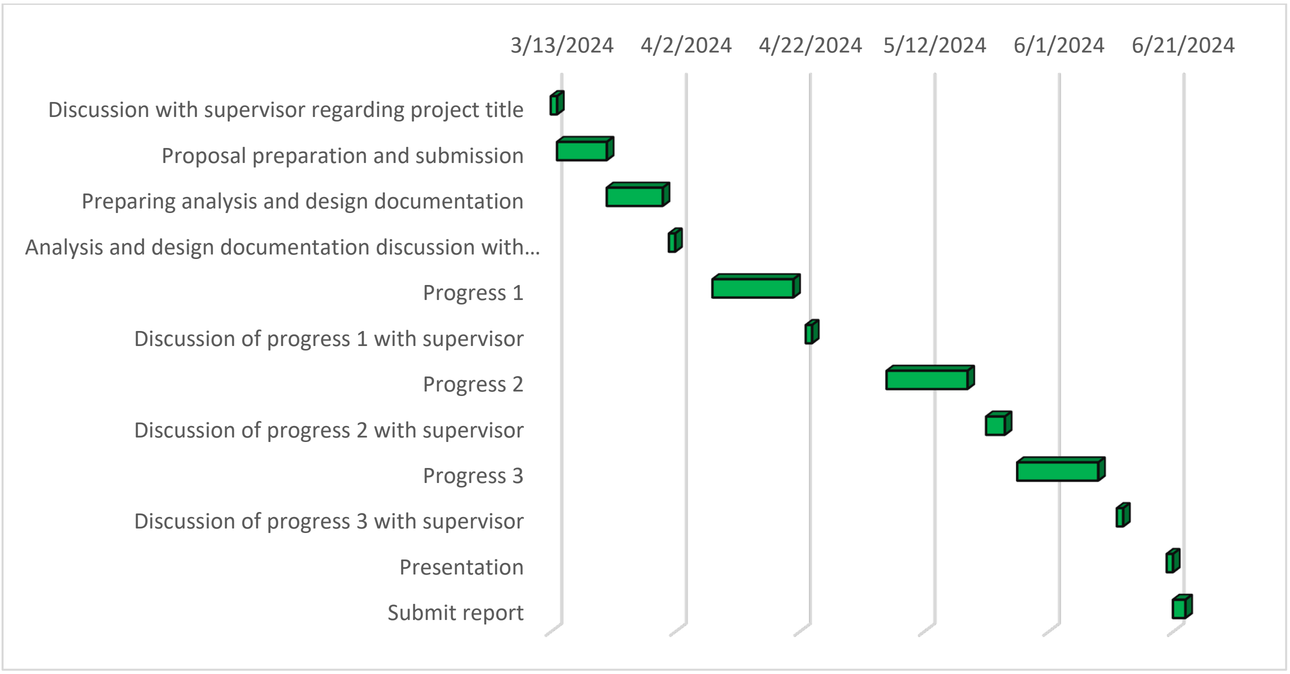


Figure 1.1.: Gantt Chart

Tasks	Start Date	End Date	Duration (days)
Discussion with supervisor regarding project title	13/3/2024	14/3/2024	1
Proposal preparation and submission	14/3/2024	22/3/2024	8
Preparing analysis and design documentation	22/3/2024	31/3/2024	9
Analysis and design documentation discussion with supervisor	1/4/2024	2/4/2024	1
Progress 1	8/4/2024	21/4/2024	13
Discussion of progress 1 with supervisor	23/4/2024	24/4/2024	1
Progress 2	6/5/2024	19/5/2024	13
Discussion of progress 2 with supervisor	22/5/2024	25/5/2024	3
Progress 3	27/5/2024	9/6/2024	13
Discussion of progress 3 with supervisor	12/6/2024	13/6/2024	1
Presentation	20/6/2024	21/6/2024	1
Submit report	21/6/2024	23/6/2024	2

Table 1.1: Gantt Chart Data (for reference)

CHAPTER 2: ANALYSIS OF PROBLEM

2.1 Problem Decomposition Description

a) Manual participants buying tickets process

Steps to Solve

1. **Requirement Analysis:**
   - **Understand the problem:** The manual process is inefficient will leads to many errors and cost a lot if errors happen
   - **Identify the specific requirements:** create a automates tickets sales,reduces errors and improves efficiency, also data needs to be collected (e.g., user name, contact details, tickets buy).
   - **Determine resources and budget:** Assess the required technologies, time, and personnel for the system
2. **System Design:**
   - **Design an online participant to buy a ticket:** create buying tickets process that can be accessed via web or mobile devices.
   - **Ensure the form is intuitive and user-friendly:** buying tickets process needs to be easier and understand for participants to fill the form, it must with mandatory fields and validation checks.
3. **Database Design:**
   - **Create a database table:** used to storing user (participants,volunteer) information and define fields like userid (Primary Key), name, ic no, username,

password, etc.

- **Define system requirements :** Determine the functional and non functional requirements for the ticket buying sytem.

4. **Implementation:**

   - **Coding:** Begin the actual coding of the system to automate the ticket buying process by using appropriate technologies (e.g. C++, for the database like MySQL)
   - **Integration:** Integrate payment gateways and other external systems(tickets receipt and email notification)

5. **Testing:**

   - **System testing:** Test the complete system (end to end) to check if it meets the requirements
   - **Security testing:** Ensure the system us secure regarding personal data and payment transactions
   - **User acceptance testing (UAT):** Test the system in real world conditions

6. **Deployment and Training:**

   - **Deploy the system:** the participants buying tickets and the system and make sure that it's easier to user to understand the system
   - No digital report for easy data analysis and data sharing for the Admin.

Steps to Solve

1. **Requirement Analysis:**

   - **Identify types of reports:** Reports that needed **(**such as participants purchase logs, volunteer assign job logs, total event, total ticket sales, etc)

- **Determine what important in reports:** determine key metric and data points to be included in the reports

2. **System Design:**
   - **Design a reporting module:** included data report and data visualization such graph that allows admins to view various reports
   - **Include a feature for reports:** Design a feature that make admins easy to check the reports and able to analyse it quickly
3. **Database Design:**
   - **Ensure following database schema:** should be supports efficient querying and report generation
   - **Interface Design :** Create a user-friendly dashboard for adminad to generate and view reports
4. **Implementation:**
   - **Backend Development:** Use SQL queries to retrieve data for reports
   - **Frontend Development:** Implement graph or data analysis
5. **Testing:**
   - **Testing reports:** verify all reports generate correctly with accurate data
   - **User acceptance testing (UAT):** Test the report feature with supervisor and gather feedback
6. **Deployment and Training:**
   - **Deploy reporting tool:** Deploy the reporting system, ingrate it into the main application and trains admin to check the reports

c) No centralized data store and management.**Steps to Solve**

1. **Requirement Analysis:**

- **Data Fragmentation:** Make sure data being centralize and lacks of single truth leading to inefficiency
- **Data sources: Identify the data sources**
- **Determine what important in reports:** determine key metric and data points to be included in the reports

2. **System Design:**
   - **Design a centralized data:** Centralized the database schema that consolidate all relevant data
   - **Design the database design:** Define relationhips between differenct entities(participant,volunteer, and admins)
3. **Database Design:**
   - **Create a normalized database:** By eliminate edundancy and ensure data integrity
   - **Define database table and relationship :** Define primary and foreign keys to establish relationship between .
4. **Implementation:**
   - **Set up a centralized database:** centralized database used to save all the data (e.g. MySQL)
   - **Implement data management module:** Implement the module such as adding, updating and deleting records
5. **Testing:**
   - **Testing data migration:** Ensure all data is correctly transferred to the new system
   - **Validate data:** Make sure data integrity and consistency in the centralized database

- **User acceptance testing (UAT):** Allow users to interact with the system and ensure data is managed

6. **Deployment and Training:**

   - **Deploy the data:** Display the centralized database and associated data management modules
   - **Train:** Train the admin to access and manage data in the centralized system

2.2 Structured Chart

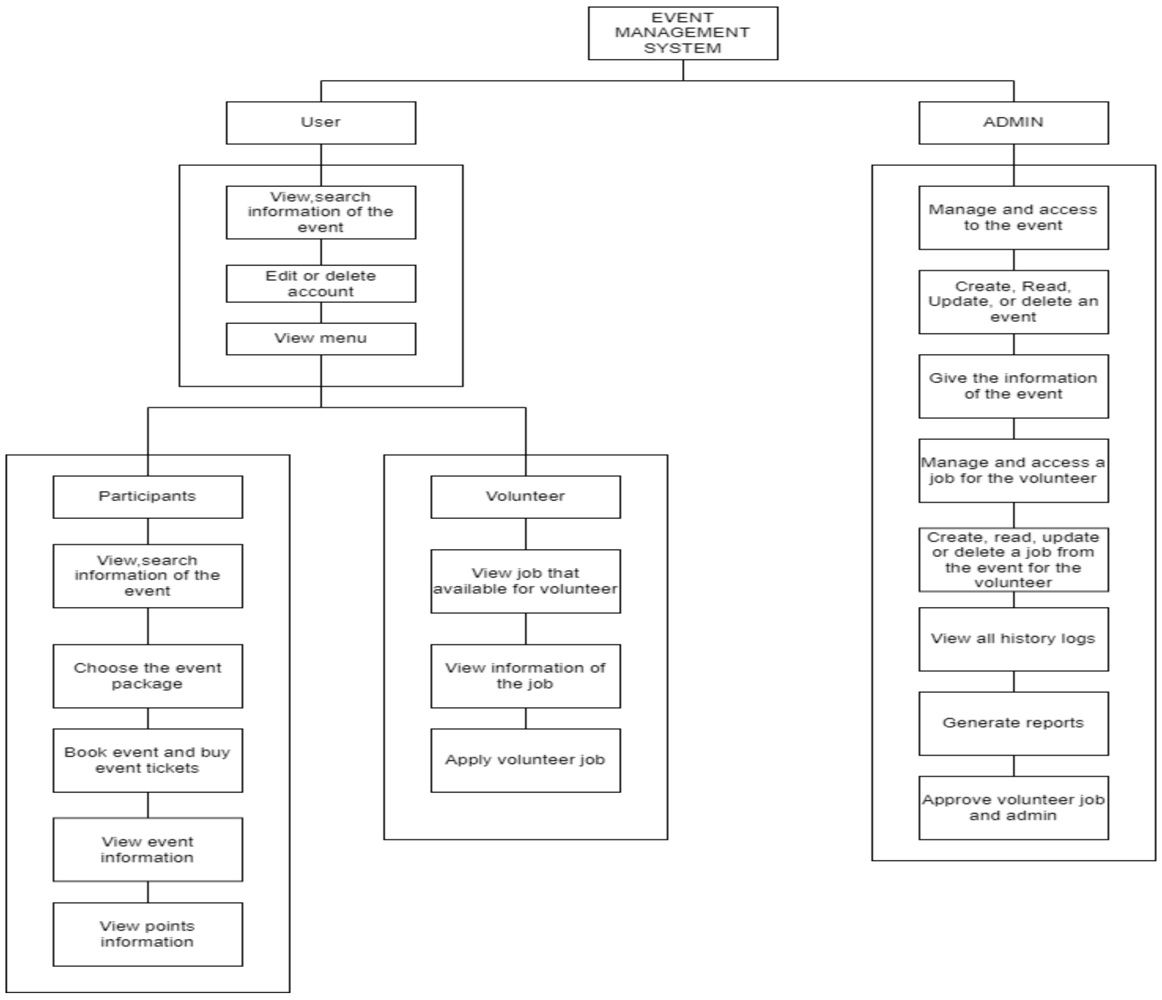

EVENT MANAGEMENT SYSTEM
User
ADMIN
View,search information of the event
Edit or delete account
View menu
Participants
View,search information of the event
Choose the event package
Book event and buy event tickets
View event information
View points information
Volunteer
View job that available for volunteer
View information of the job
Apply volunteer job
Manage and access to the event
Create, Read, Update, or delete an event
Give the information of the event
Manage and access a job for the volunteer
Create, read, update or delete a job from the event for the volunteer
View all history logs
Generate reports
Approve volunteer job and admin

Figure 2.1:Structured Chart

CHAPTER 3: DESIGN

3.1 Flowchart

3.1.1 User

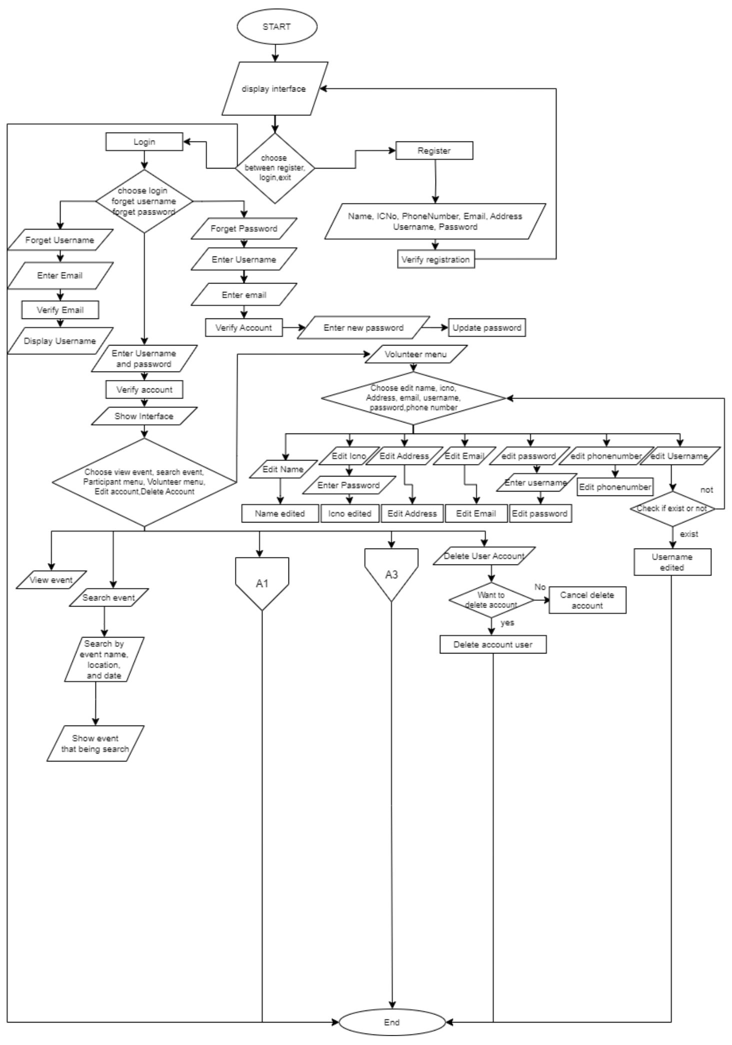


Figure 3. 3.1: User

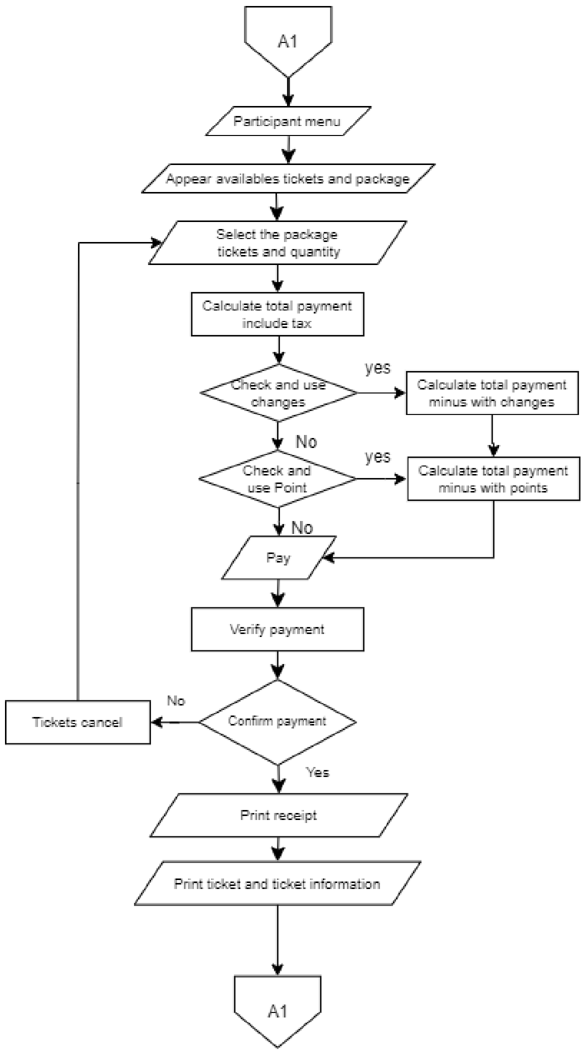

A1
Participant menu
Appear availables tickets and package
Select the package tickets and quantity
Calculate total payment include tax
Check and use changes
yes
Calculate total payment minus with changes
No
Check and use Point
yes
Calculate total payment minus with points
No
Pay
Verify payment
Confirm payment
No
Tickets cancel
Yes
Print receipt
Print ticket and ticket information
A1

Figure 3. 3.2: Participant Menu

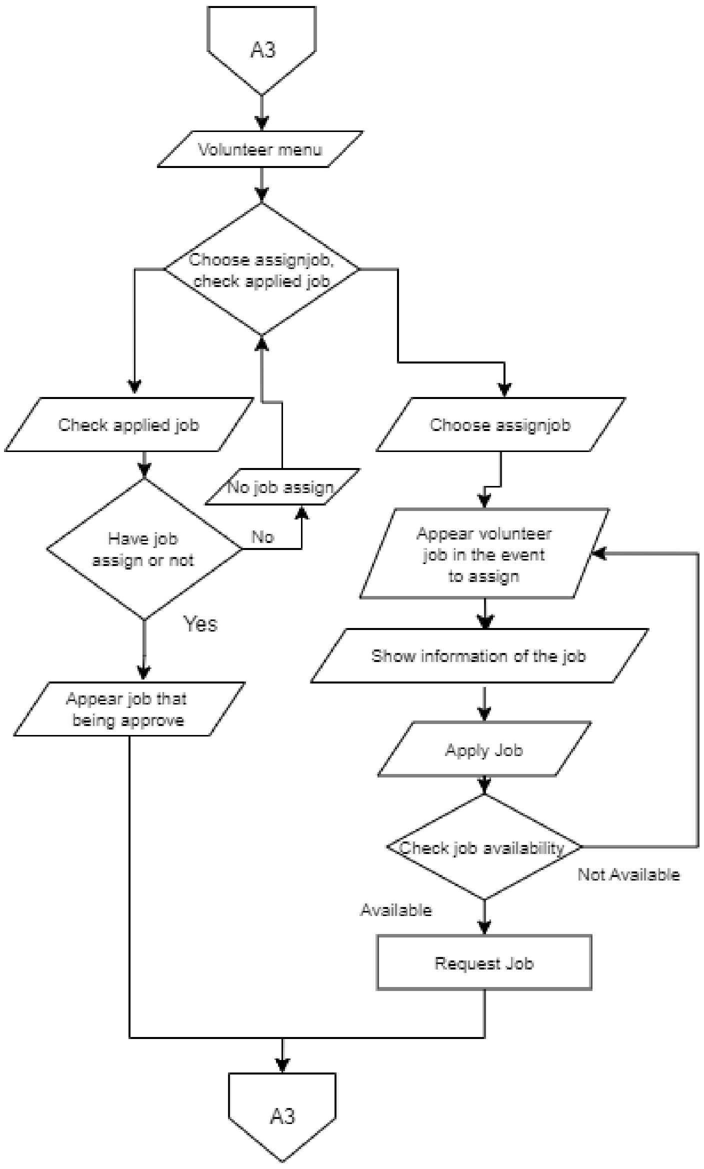


Figure 3.3: Volunteer Menu

3.1.2 Admin

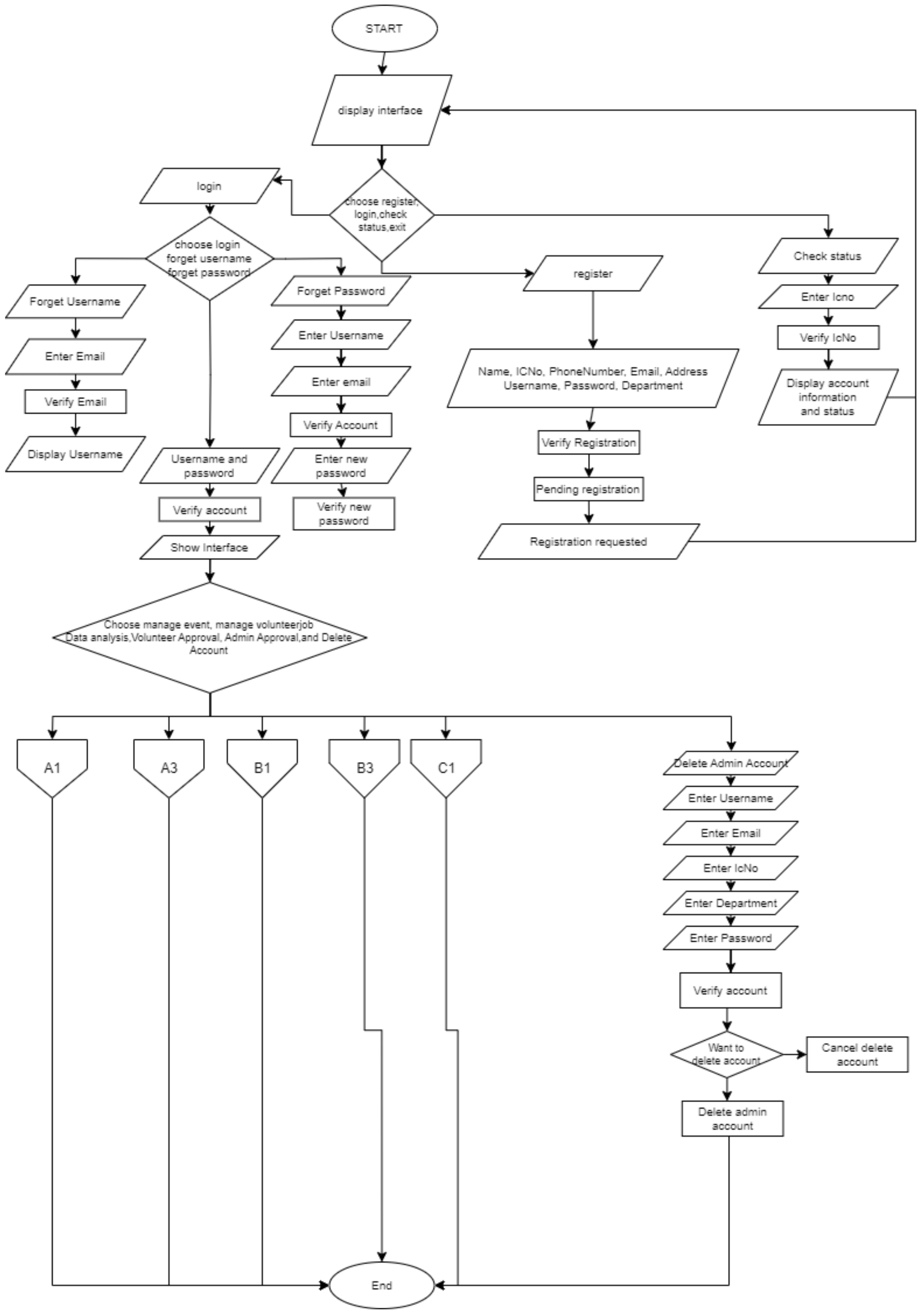


Figure 3.3 Admin Menu

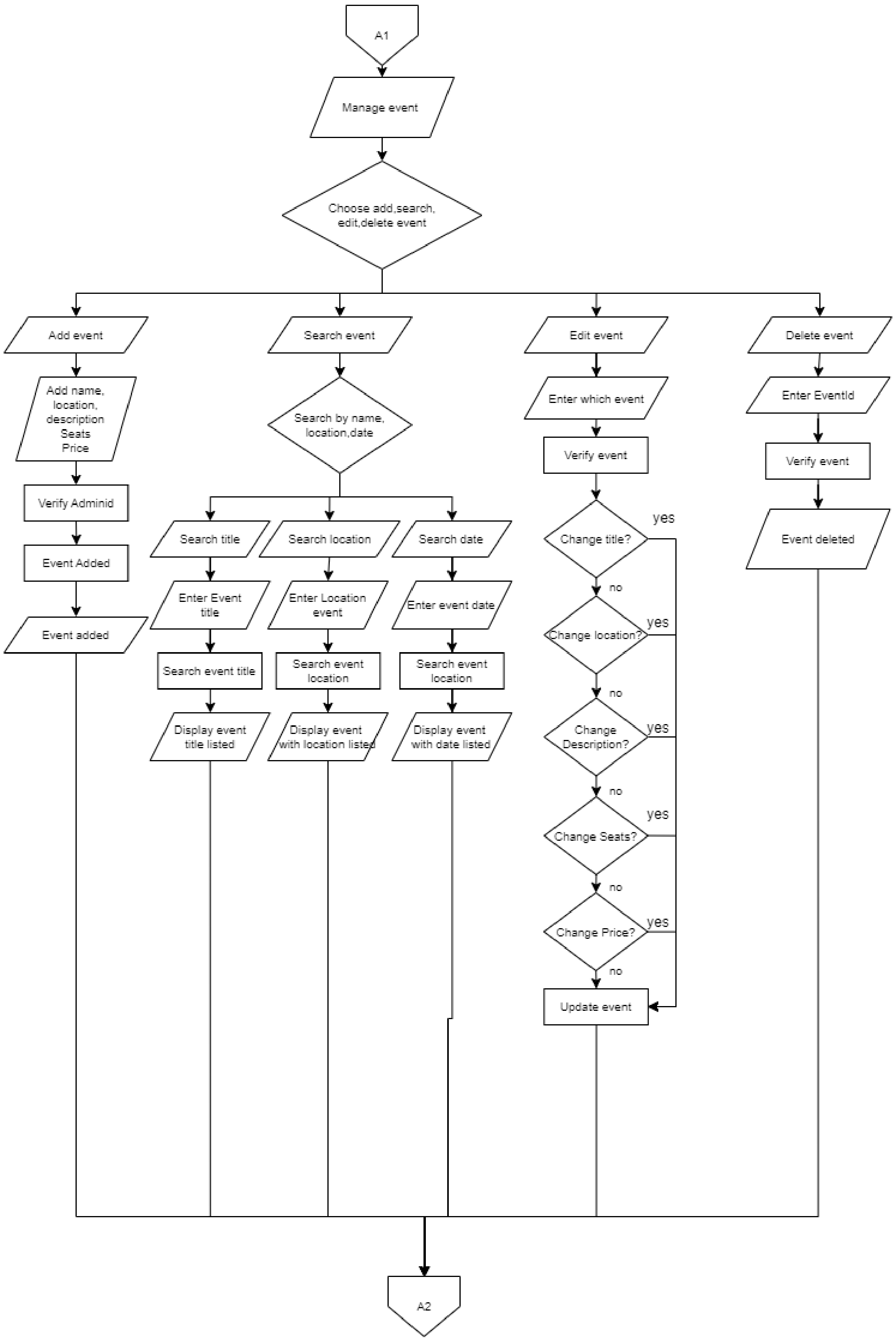


Figure 3.4 Manage Event

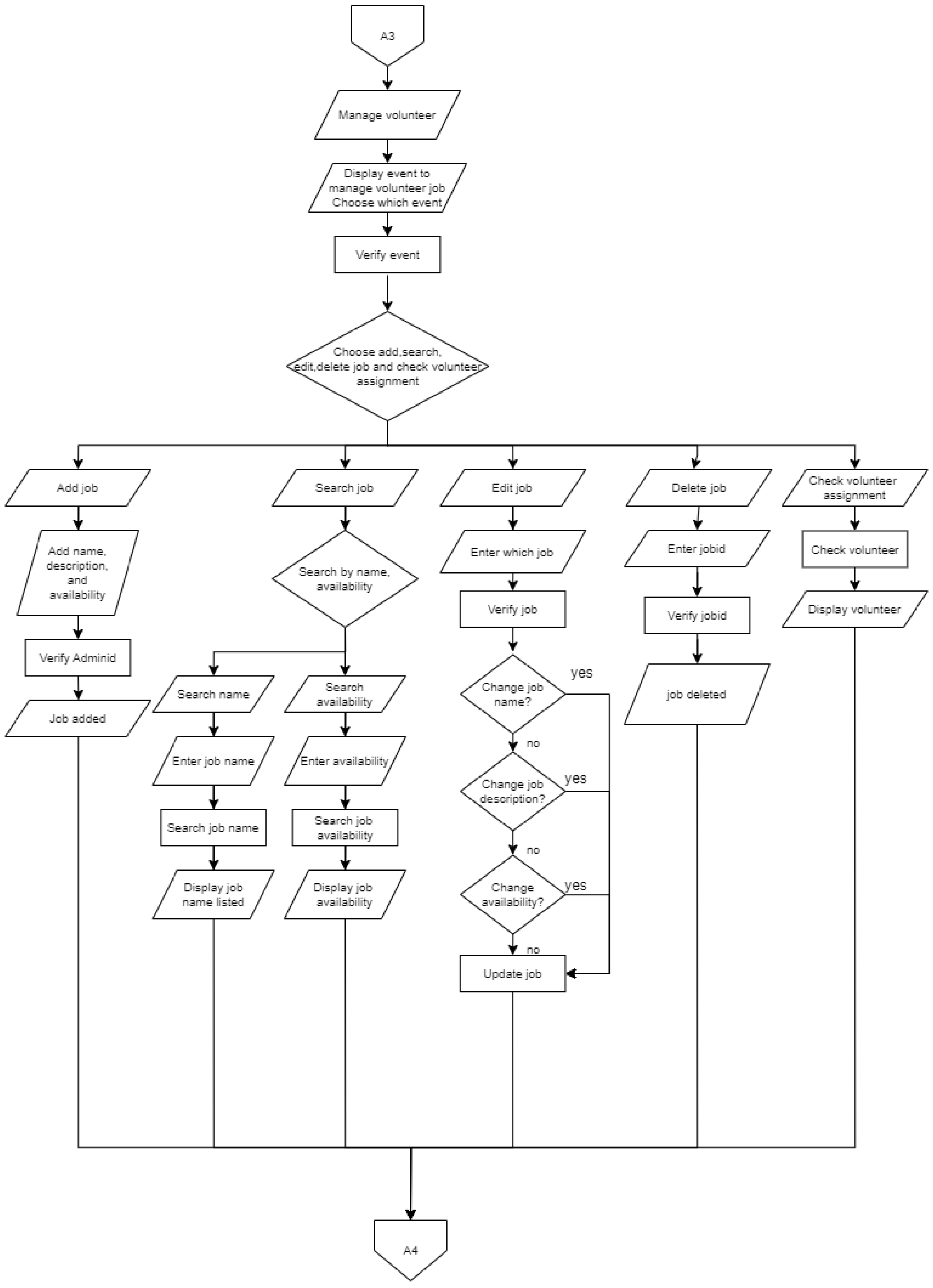


Figure 3.5 Manage Volunteer

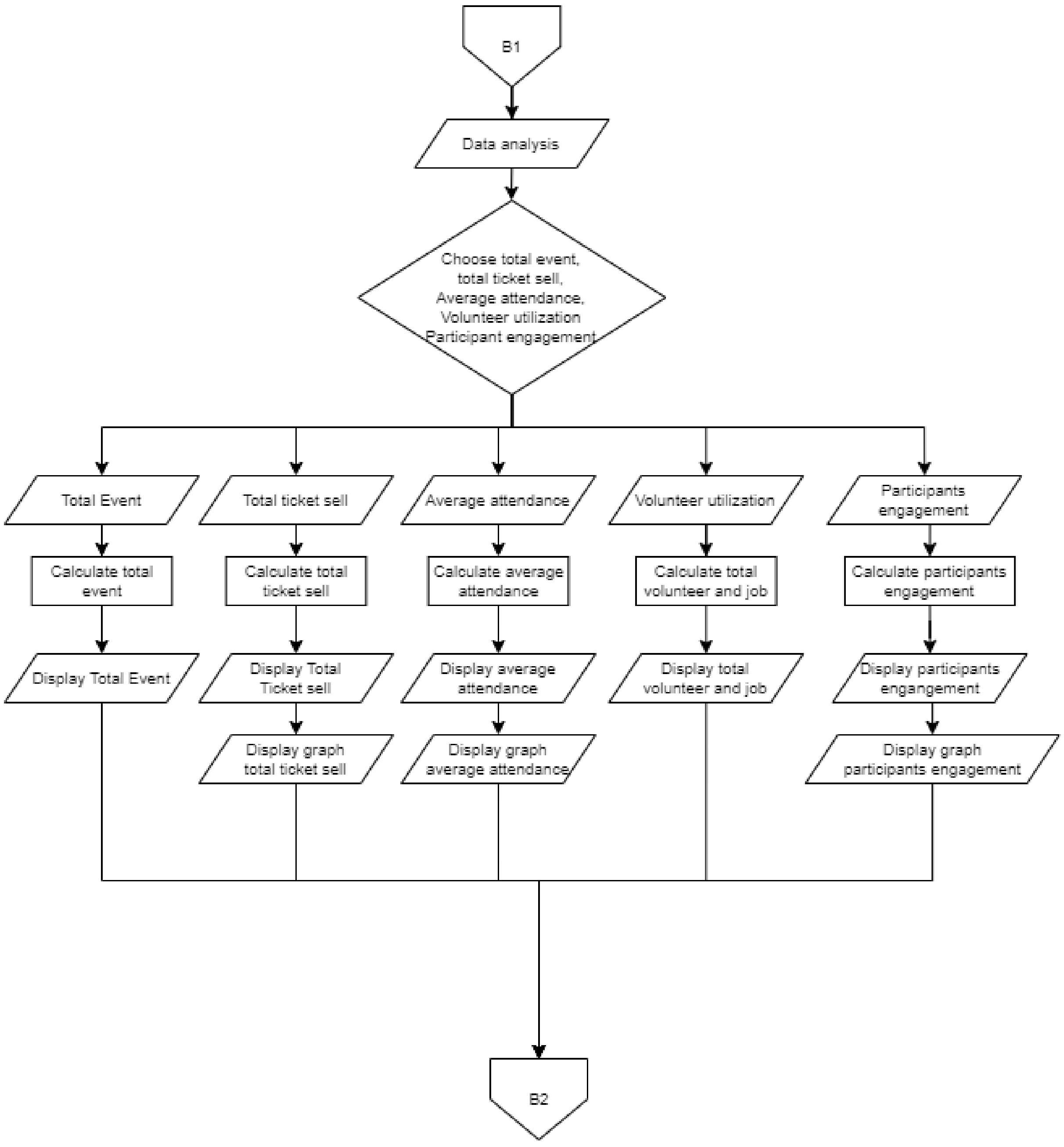

B1
Data analysis
Choose total event, total ticket sell, Average attendance, Volunteer utilization Participant engagement
Total Event
Total ticket sell
Average attendance
Volunteer utilization
Participants engagement
Calculate total event
Calculate total ticket sell
Calculate average attendance
Calculate total volunteer and job
Calculate participants engagement
Display Total Event
Display Total Ticket sell
Display average attendance
Display total volunteer and job
Display participants engangement
Display graph total ticket sell
Display graph average attendance
Display graph participants engagement
B2

Figure 3.6 Data analysis

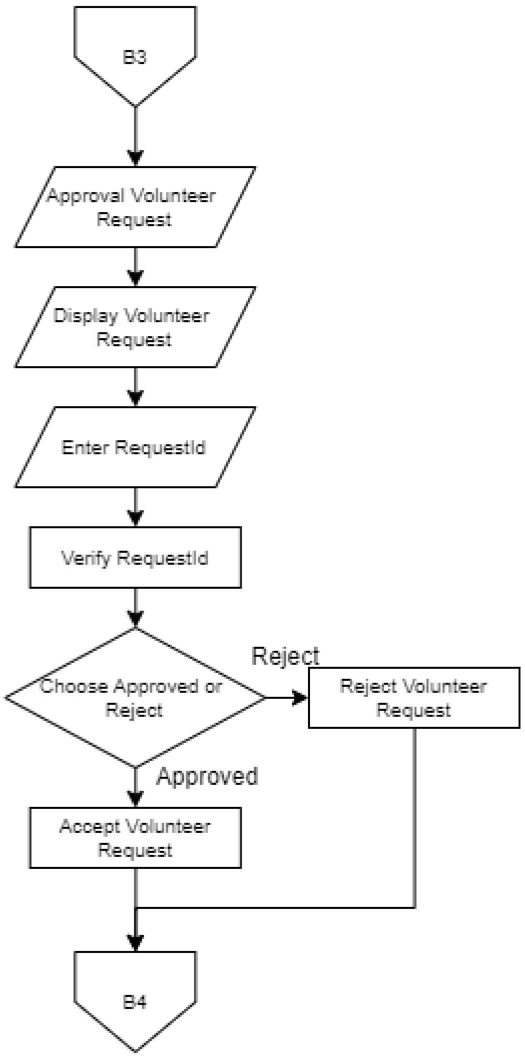


Figure 3.7 Approve Volunteer Request

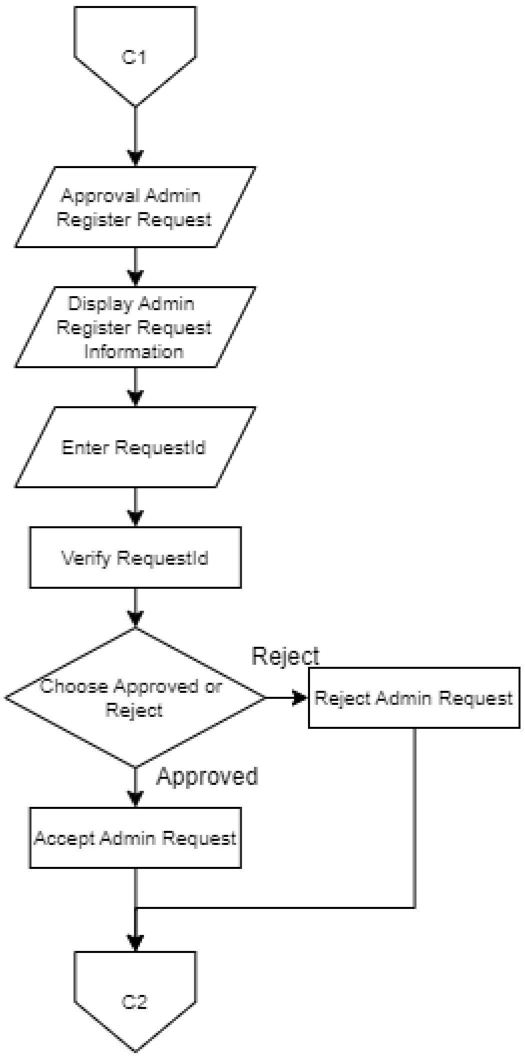

C1
Approval Admin Register Request
Display Admin Register Request Information
Enter RequestId
Verify RequestId
Choose Approved or Reject
Reject
Reject Admin Request
Approved
Accept Admin Request
C2

Figure 3.8 Approval Admin Register Request

3.2 ERD

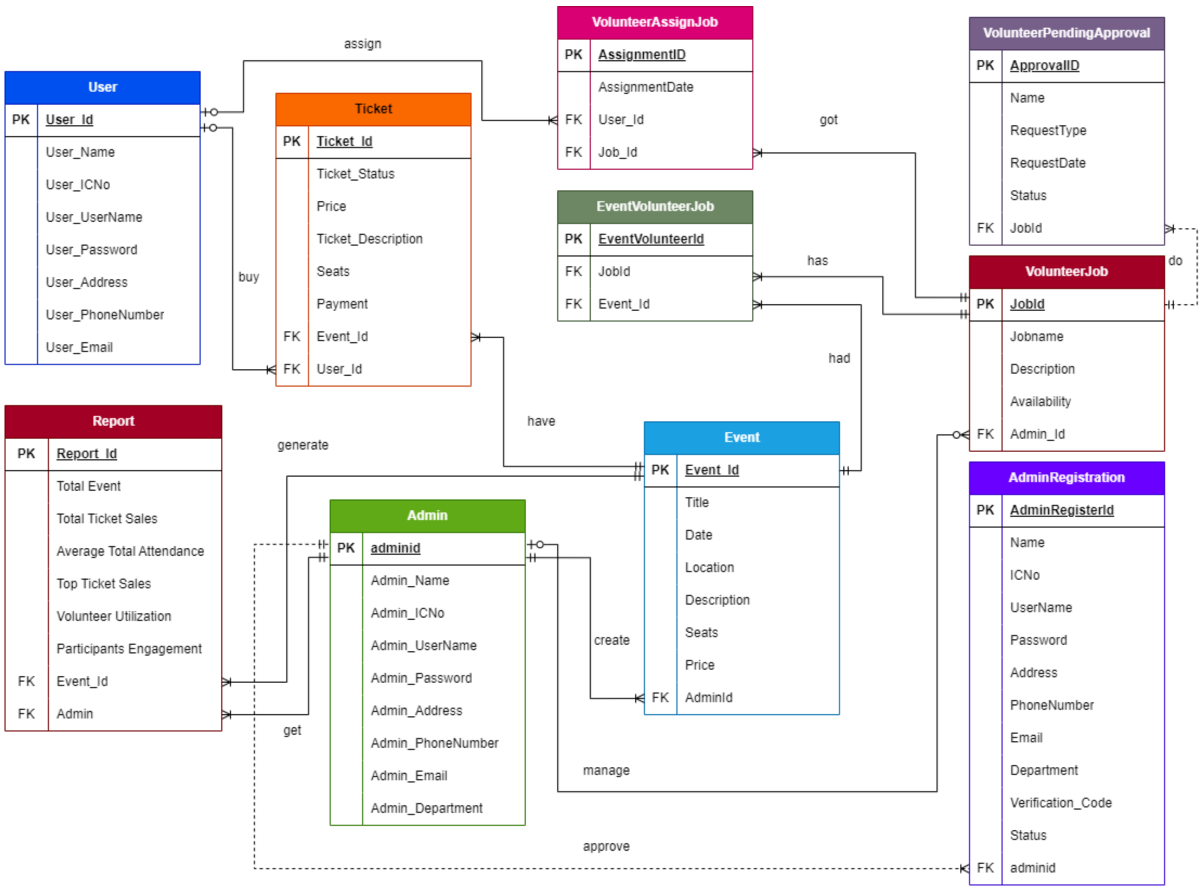


Figure 3.9 ERD

3.3 Data Dictionary

TABLE: User

Field Name	Data Type	Data Length	Constraint	Description
User_Id	INT		Primary Key	Unique indentifier for a participant's account
Name	CHAR	100	Not Null	Name of participant
IcNo	VARCHAR	12	Unique,Not Null	IcNo of participant
Username	VARCHAR	100	Unique,Not Null	Username for User account
Password	VARCHAR	18	Unique,Not Null	Password for User account
Address	VARCHAR	500	Not Null	Address Participant
PhoneNumber	INTEGER	20	Not Null	User's phone number
Email	VARCHAR	200	Unique,Not Null	User's email address
Points	INTEGER		Not Null	User points
Changes	Double		Not Null	User Changes

Table 2: User Data Dictionary

TABLE: Admin

Field Name	Data Type	Data Length	Constraint	Description
Admin_Id	INT		Primary Key	Unique indentifier for Admin's account
Name	CHAR	100	Not Null	Name of Admin
IcNo	VARCHAR	12	Unique,Not Null	IcNo of Admin
Adminname	VARCHAR	100	Unique,Not Null	Adminname for Admin account
Password	VARCHAR	18	Unique,Not Null	Password for Admin account
Address	VARCHAR	500	Not Null	Address Admin
PhoneNumber	INTEGER	20	Not Null	Admin's phone number
Email	VARCHAR	200	Unique,Not Null	Admin's email address
Department	VARCHAR	200	Not Null	Admin Department

Table 3: Admin Data Dictionary

TABLE: Admin registration

Field Name	Data Type	Data Length	Constraint	Description
AdminRegister_Id	INT		Primary Key	Unique indentifier for Admin Register account
Name	CHAR	100	Not Null	Name of Admin
IcNo	VARCHAR	12	Unique,Not Null	IcNo of Admin
Adminname	VARCHAR	100	Unique,Not Null	Adminname for Admin account
Password	VARCHAR	18	Unique,Not Null	Password for Admin account
Address	VARCHAR	500	Not Null	Address Admin
PhoneNumber	INTEGER	20	Not Null	Admin's phone number
Email	VARCHAR	200	Unique,Not Null	Admin's email address
Department	VARCHAR	200	Not Null	Admin Department
Status	VARCHAR	201	Not Null	Pending,Approve,or Reject for admin registration

Table 4: Admin Registration Data Dictionary

TABLE: Tickets

Field Name	Data Type	Data Length	Constraint	Description
Ticket_Id	INT		Primary Key	Unique indentifier for a Ticket
Ticket_Status	VARCHAR	500	Not Null	Location of the event in the tickets
Price	DOUBLE		Not Null	Price of the tickets
Ticket_Description	VARCHAR		Not Null	TicketInformation
Seats	VARCHAR		Not Null	How many seats in tickets
Payment	Double		Not Null	How it pay
User_Id	INT		Foreign Key	Unique indentifier for an User
Event_Id	INT		Foreign Key	Unique indentifier for an Event

Table 5: Tickets Table Data Dictionary

TABLE: Event

Field Name	Data Type	Data Length	Constraint	Description
Event_Id	INT		Primary Key	Unique indentifier for the event
Title	VARCHAR	100	NotNull	The title of the event
Location	VARCHAR	500	NotNull	Location of the event held
Date	DATE		NotNull	Date of the event held
Description	VARCHAR	10000	NotNull	Information of the event
Seats	INT	250	NotNull	Seats in the event
Print	Double		NotNull	Price of the event
Admin_Id	INT		Foreign Key	Unique indentifier for a Admin's account

Table 6: Event Data Dictionary

TABLE: Report

Field Name	Data Type	Data Length	Constraint	Description
Report_Id	INT		Primary Key	Unique indentifier for the Report
Total Event	VARCHAR		Not Null	Total of the event
Total Ticket Sales	VARCHAR		Not Null	Total ticket sales of the event
Average Total Attendance	VARCHAR		Not Null	Average participant+Volunteer
Top Tickets Sales	VARCHAR		Not Null	Top tickets sales
Volunteer Utilization	VARCHAR		Not Null	Volunteer Apply job and total jobs being applied
Participants Engagement	VARCHAR		Not Null	How many Participants buy the tickets
Event_Id	INT		Foreign Key	Unique indentifier for a event table
Admin	INT		Foreign Key	Unique indentifier for a Admin's account

Table 7: Report Data Dictionary

TABLE: Volunteer Job

Field Name	Data Type	Data Length	Constraint	Description
Job_Id	INT		Primary Key	Unique indentifier for the Job
Description	VARCHAR	1000	Not Null	Information of the job
Job_Name	VARCHAR	100	NotNull	Type of the job that being created
Admin_Id	INT		Foreign Key	Unique indentifier for the Admin

Table 8: Volunteer Job Data Dictionary

TABLE: Volunteer Assign Job

Field Name	Data Type	Data Length	Constraint	Description
AssignmentId	INT		Primary Key	Unique indentifier for the Assignment
AssignmentDate	TIMESTAMP		NotNull	Time assignment date
User_Id	VARCHAR		Foreign Key	Unique indentifier for an User
Job_Id	VARCHAR		Foreign Key	Unique indentifier for an Job

Table 9: Volunteer Assign Job Data Dictionary

TABLE: Volunteer Pending Approval

Field Name	Data Type	Data Length	Constraint	Description
ApprovalId	INT		Primary Key	Unique indentifier for the approval
Name	VARCHAR	1000	Not Null	Name of the volunteer
RequestType	VARCHAR	1000	Not Null	RequestType for the job
RequestDate	TIMESTAMP		NotNull	Date of the job request
Status	VARCHAR	500	Not Null	Pending,Approve,or Reject
JobId	INT		Foreign Key	Unique indentifier for an Job

Table 10: Volunteer Pending Approval Data Dictionary

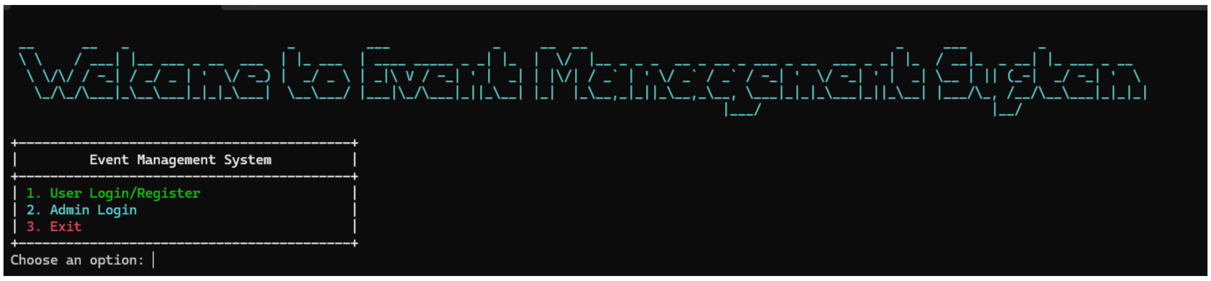
TABLE: Volunteer Job

Field Name	Data Type	Data Length	Constraint	Description
EventVolunteerId	INT		Primary Key	Unique indentifier for the EventId
JobId	INT		Foreign Key	Unique indentifier for an Job
EventId	INT		Foreign Key	Unique indentifier for an Event

Table 11: Volunteer Job Data Dictionary

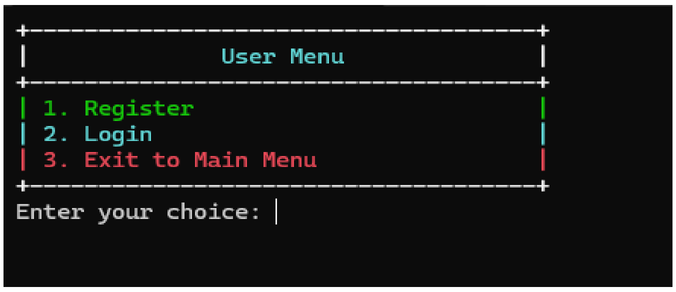
3.4 Interface Design

3.4.1 User



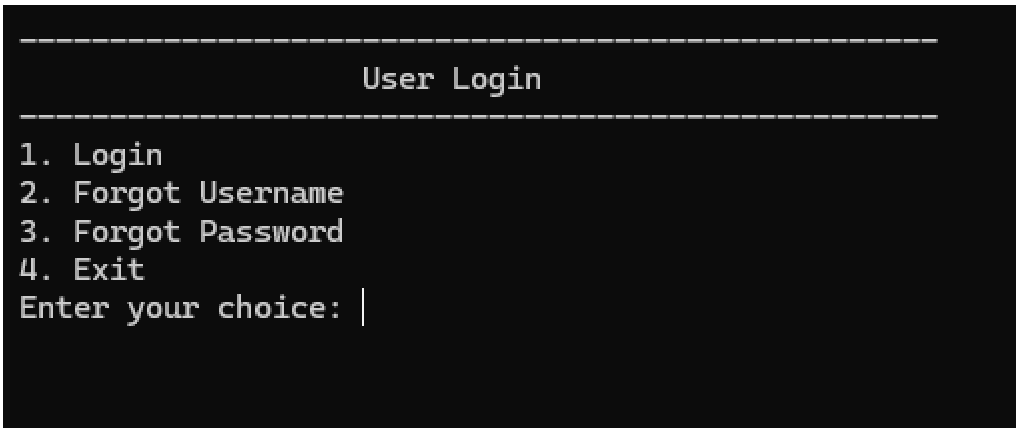
```
+--------------------------------------------+
|          Event Management System           |
+--------------------------------------------+
| 1. User Login/Register                     |
| 2. Admin Login                             |
| 3. Exit                                    |
+--------------------------------------------+
Choose an option:
```

Figure 3.10: Main Menu



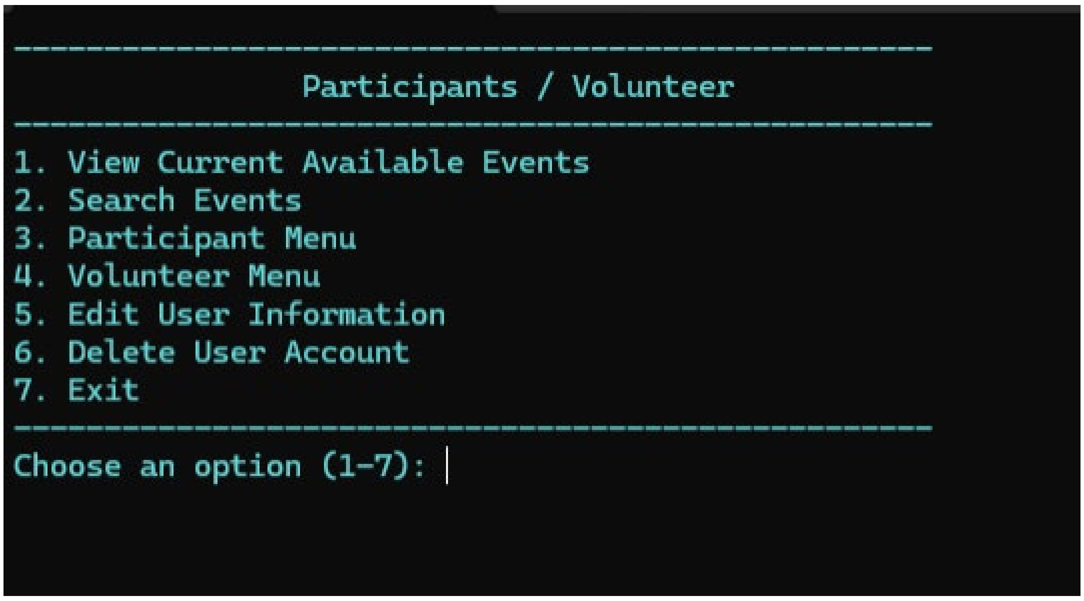
```
+--------------------------------------------+
|                User Menu                   |
+--------------------------------------------+
| 1. Register                                |
| 2. Login                                   |
| 3. Exit to Main Menu                       |
+--------------------------------------------+
Enter your choice:
```

Figure 3.11:User Register/Login menu



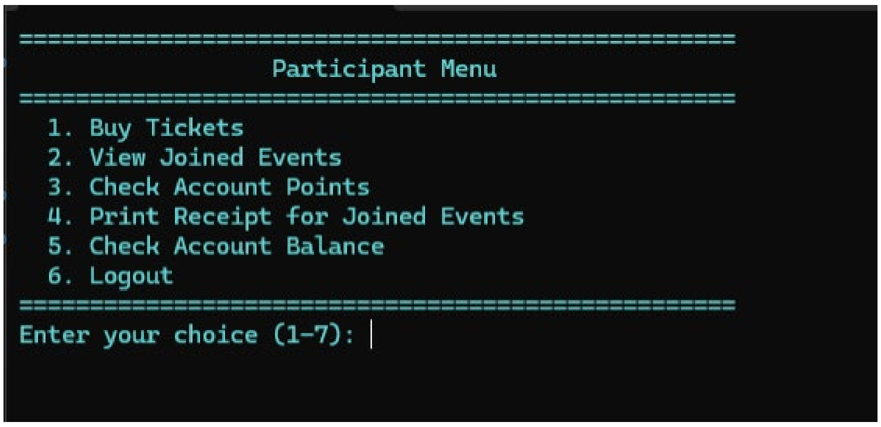
```
----------------------------------------------------
                    User Login
----------------------------------------------------
1. Login
2. Forgot Username
3. Forgot Password
4. Exit
Enter your choice:
```

Figure 3.12:User login menu



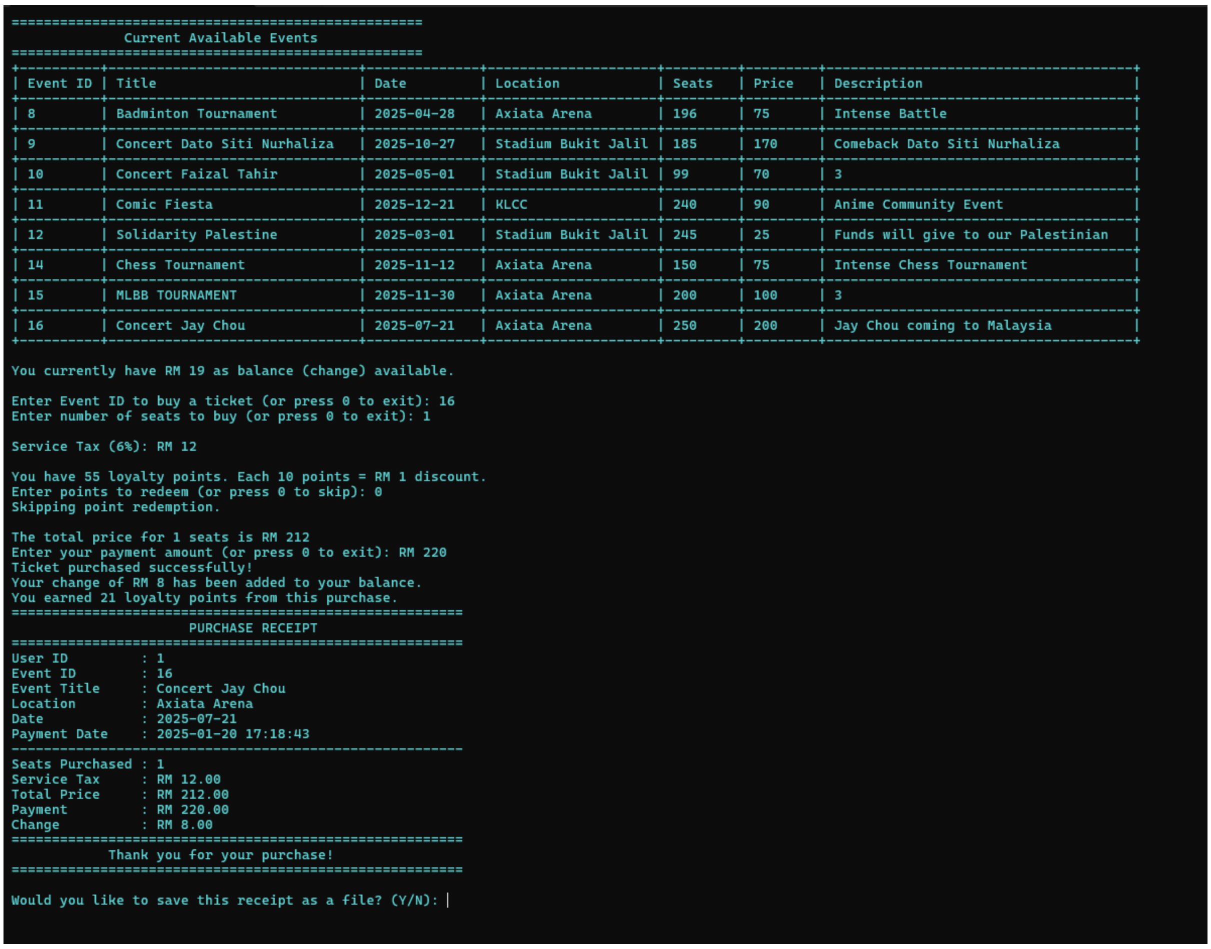
```
---------------------------------------------------
              Participants / Volunteer
---------------------------------------------------
1. View Current Available Events
2. Search Events
3. Participant Menu
4. Volunteer Menu
5. Edit User Information
6. Delete User Account
7. Exit
---------------------------------------------------
Choose an option (1-7): 
```

Figure 3.13:User Menu



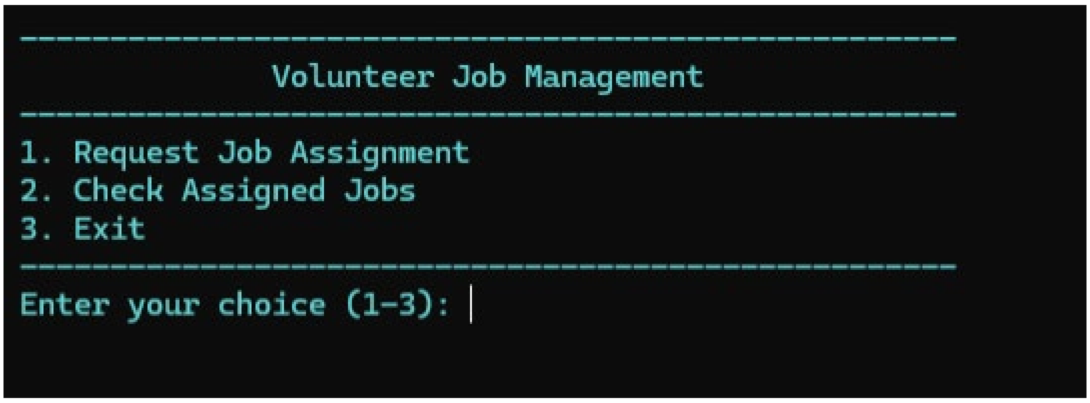
```
===================================================
                 Participant Menu
===================================================
  1. Buy Tickets
  2. View Joined Events
  3. Check Account Points
  4. Print Receipt for Joined Events
  5. Check Account Balance
  6. Logout
===================================================
Enter your choice (1-7): 
```

Figure 3.14:Participants Menu



```
=======================================================
              Current Available Events
=======================================================
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+
| Event ID | Title                           | Date          | Location             | Seats    | Price    | Description                             |
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+
| 8        | Badminton Tournament            | 2025-04-28    | Axiata Arena         | 196      | 75       | Intense Battle                          |
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+
| 9        | Concert Dato Siti Nurhaliza     | 2025-10-27    | Stadium Bukit Jalil  | 185      | 170      | Comeback Dato Siti Nurhaliza            |
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+
| 10       | Concert Faizal Tahir            | 2025-05-01    | Stadium Bukit Jalil  | 99       | 70       | 3                                       |
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+
| 11       | Comic Fiesta                    | 2025-12-21    | KLCC                 | 240      | 90       | Anime Community Event                   |
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+
| 12       | Solidarity Palestine            | 2025-03-01    | Stadium Bukit Jalil  | 245      | 25       | Funds will give to our Palestinian      |
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+
| 14       | Chess Tournament                | 2025-11-12    | Axiata Arena         | 150      | 75       | Intense Chess Tournament                |
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+
| 15       | MLBB TOURNAMENT                 | 2025-11-30    | Axiata Arena         | 200      | 100      | 3                                       |
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+
| 16       | Concert Jay Chou                | 2025-07-21    | Axiata Arena         | 250      | 200      | Jay Chou coming to Malaysia             |
+----------+---------------------------------+---------------+----------------------+----------+----------+-----------------------------------------+

You currently have RM 19 as balance (change) available.

Enter Event ID to buy a ticket (or press 0 to exit): 16
Enter number of seats to buy (or press 0 to exit): 1

Service Tax (6%): RM 12

You have 55 loyalty points. Each 10 points = RM 1 discount.
Enter points to redeem (or press 0 to skip): 0
Skipping point redemption.

The total price for 1 seats is RM 212
Enter your payment amount (or press 0 to exit): RM 220
Ticket purchased successfully!
Your change of RM 8 has been added to your balance.
You earned 21 loyalty points from this purchase.
========================================================
                      PURCHASE RECEIPT
========================================================
User ID         : 1
Event ID        : 16
Event Title     : Concert Jay Chou
Location        : Axiata Arena
Date            : 2025-07-21
Payment Date    : 2025-01-20 17:18:43
--------------------------------------------------------
Seats Purchased : 1
Service Tax     : RM 12.00
Total Price     : RM 212.00
Payment         : RM 220.00
Change          : RM 8.00
========================================================
            Thank you for your purchase!
========================================================

Would you like to save this receipt as a file? (Y/N):
```

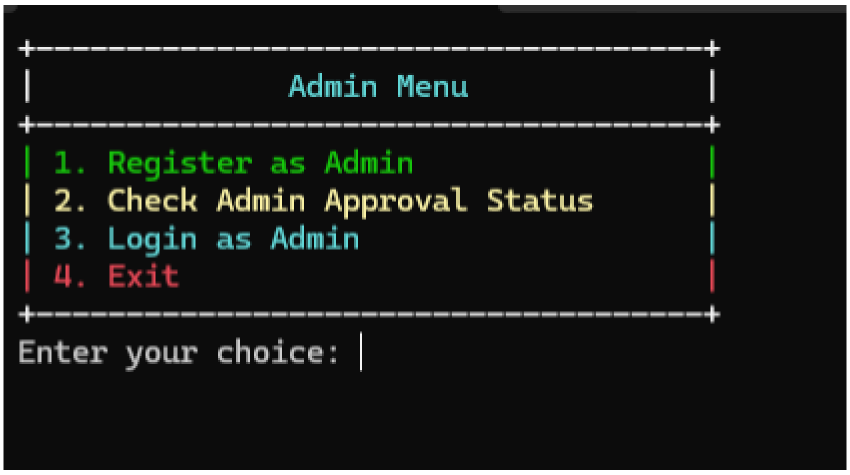
Figure 3.15:Participant Buy Menu



```
--------------------------------------------------
             Volunteer Job Management
--------------------------------------------------
1. Request Job Assignment
2. Check Assigned Jobs
3. Exit
--------------------------------------------------
Enter your choice (1-3):
```

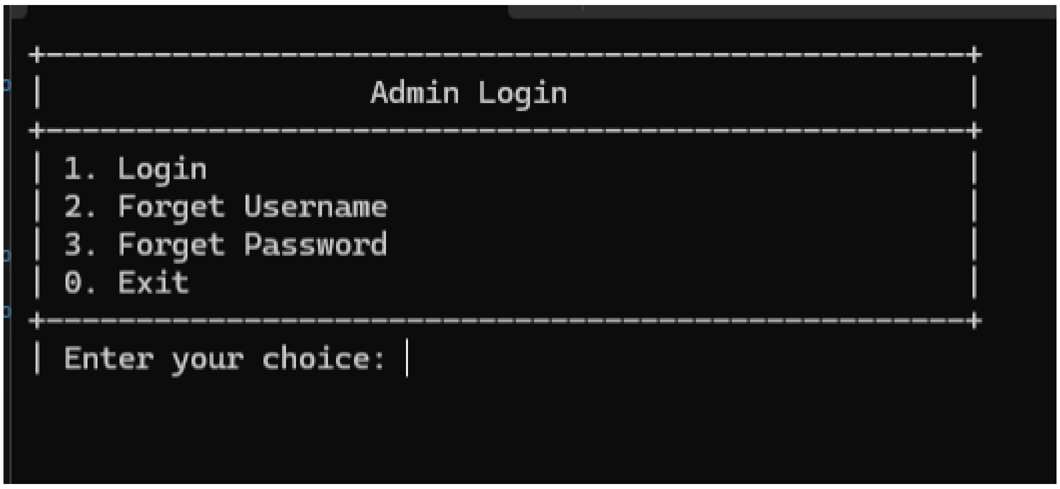
Figure 3.16:Volunteer Menu

3.4.2 Admin Page



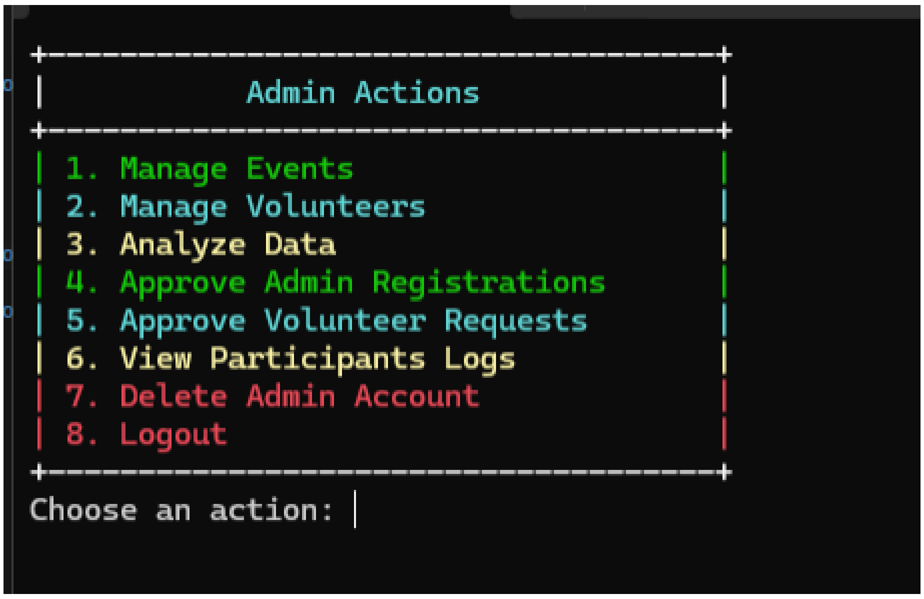
```
+---------------------------------------+
|              Admin Menu               |
+---------------------------------------+
| 1. Register as Admin                  |
| 2. Check Admin Approval Status        |
| 3. Login as Admin                     |
| 4. Exit                               |
+---------------------------------------+
Enter your choice: 
```

Figure 3.17: Admin Main Menu



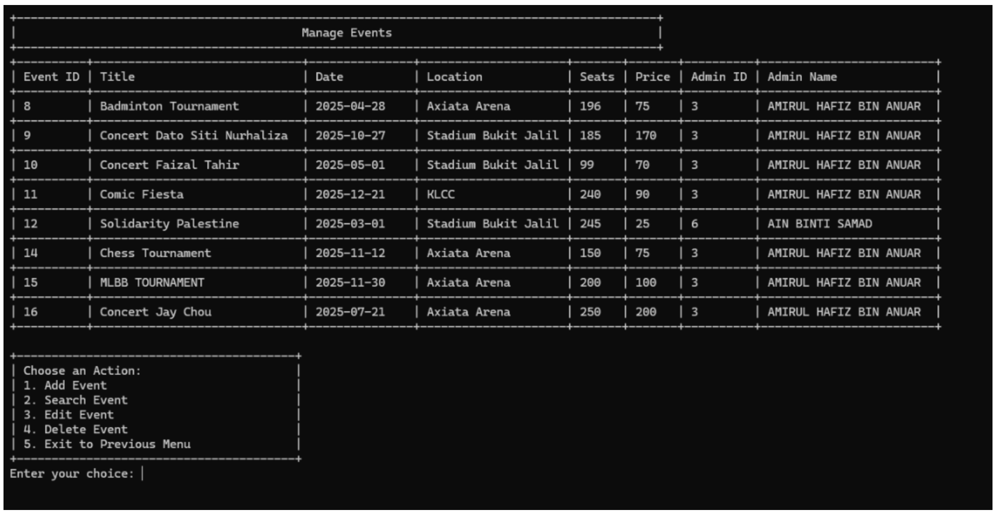
```
+---------------------------------------------------+
|                   Admin Login                     |
+---------------------------------------------------+
| 1. Login                                          |
| 2. Forget Username                                |
| 3. Forget Password                                |
| 0. Exit                                           |
+---------------------------------------------------+
| Enter your choice: 
```

Figure 3.18:Admin Login Menu



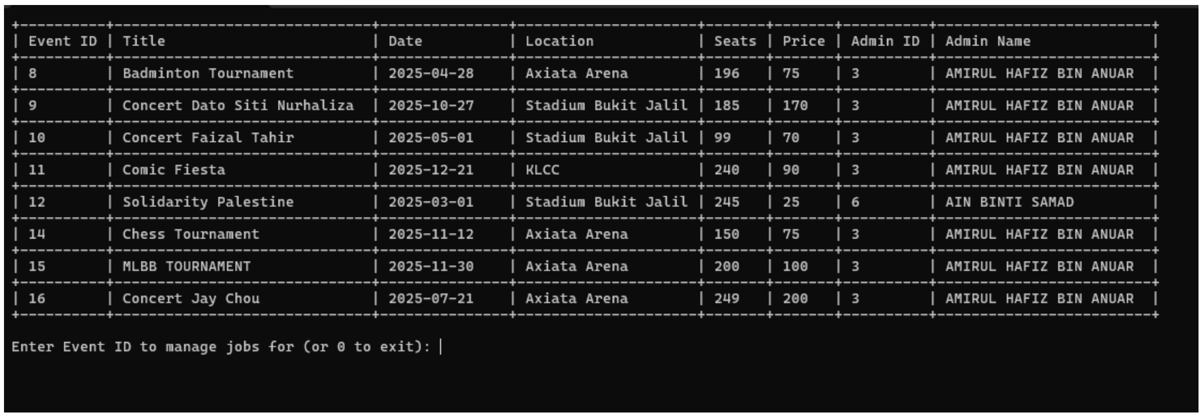
```
+---------------------------------------+
|             Admin Actions             |
+---------------------------------------+
| 1. Manage Events                      |
| 2. Manage Volunteers                  |
| 3. Analyze Data                       |
| 4. Approve Admin Registrations        |
| 5. Approve Volunteer Requests         |
| 6. View Participants Logs             |
| 7. Delete Admin Account               |
| 8. Logout                             |
+---------------------------------------+
Choose an action:
```

Figure 3.19:Admin Main Menu

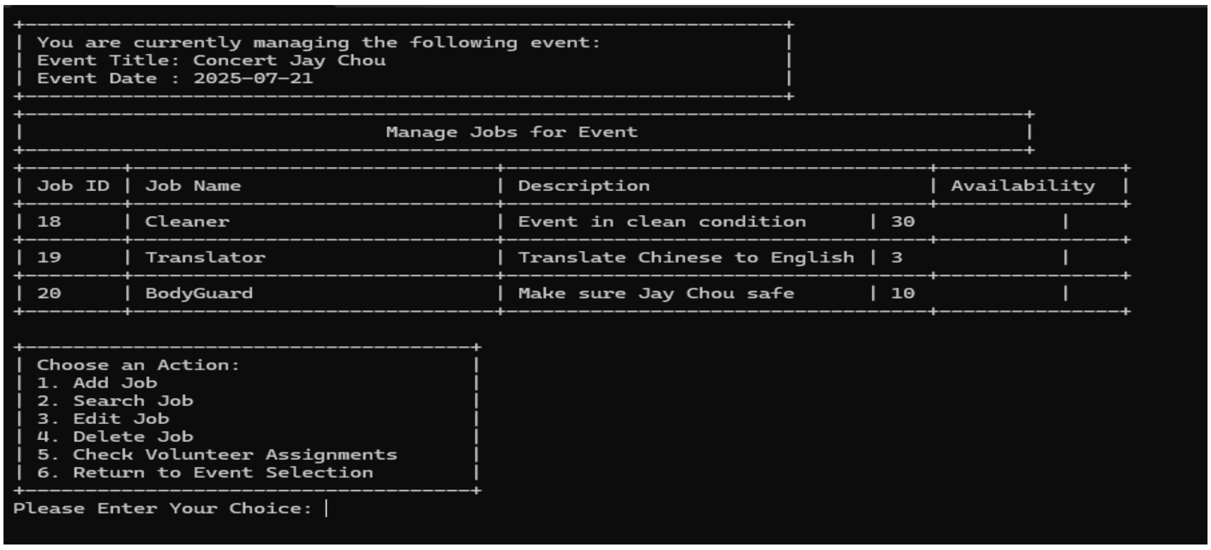


```
+--------------------------------------------------------------------------------------------+
|                                        Manage Events                                       |
+--------------------------------------------------------------------------------------------+
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+
| Event ID | Title                        | Date         | Location            | Seats | Price | Admin ID | Admin Name              |
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+
| 8        | Badminton Tournament         | 2025-04-28   | Axiata Arena        | 196   | 75    | 3        | AMIRUL HAFIZ BIN ANUAR  |
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+
| 9        | Concert Dato Siti Nurhaliza  | 2025-10-27   | Stadium Bukit Jalil | 185   | 170   | 3        | AMIRUL HAFIZ BIN ANUAR  |
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+
| 10       | Concert Faizal Tahir         | 2025-05-01   | Stadium Bukit Jalil | 99    | 70    | 3        | AMIRUL HAFIZ BIN ANUAR  |
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+
| 11       | Comic Fiesta                 | 2025-12-21   | KLCC                | 240   | 90    | 3        | AMIRUL HAFIZ BIN ANUAR  |
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+
| 12       | Solidarity Palestine         | 2025-03-01   | Stadium Bukit Jalil | 245   | 25    | 6        | AIN BINTI SAMAD         |
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+
| 14       | Chess Tournament             | 2025-11-12   | Axiata Arena        | 150   | 75    | 3        | AMIRUL HAFIZ BIN ANUAR  |
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+
| 15       | MLBB TOURNAMENT              | 2025-11-30   | Axiata Arena        | 200   | 100   | 3        | AMIRUL HAFIZ BIN ANUAR  |
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+
| 16       | Concert Jay Chou             | 2025-07-21   | Axiata Arena        | 250   | 200   | 3        | AMIRUL HAFIZ BIN ANUAR  |
+----------+------------------------------+--------------+---------------------+-------+-------+----------+-------------------------+

+---------------------------------------+
| Choose an Action:                     |
| 1. Add Event                          |
| 2. Search Event                       |
| 3. Edit Event                         |
| 4. Delete Event                       |
| 5. Exit to Previous Menu              |
+---------------------------------------+
Enter your choice:
```

Figure 3.20:Admin Manage Event Menu

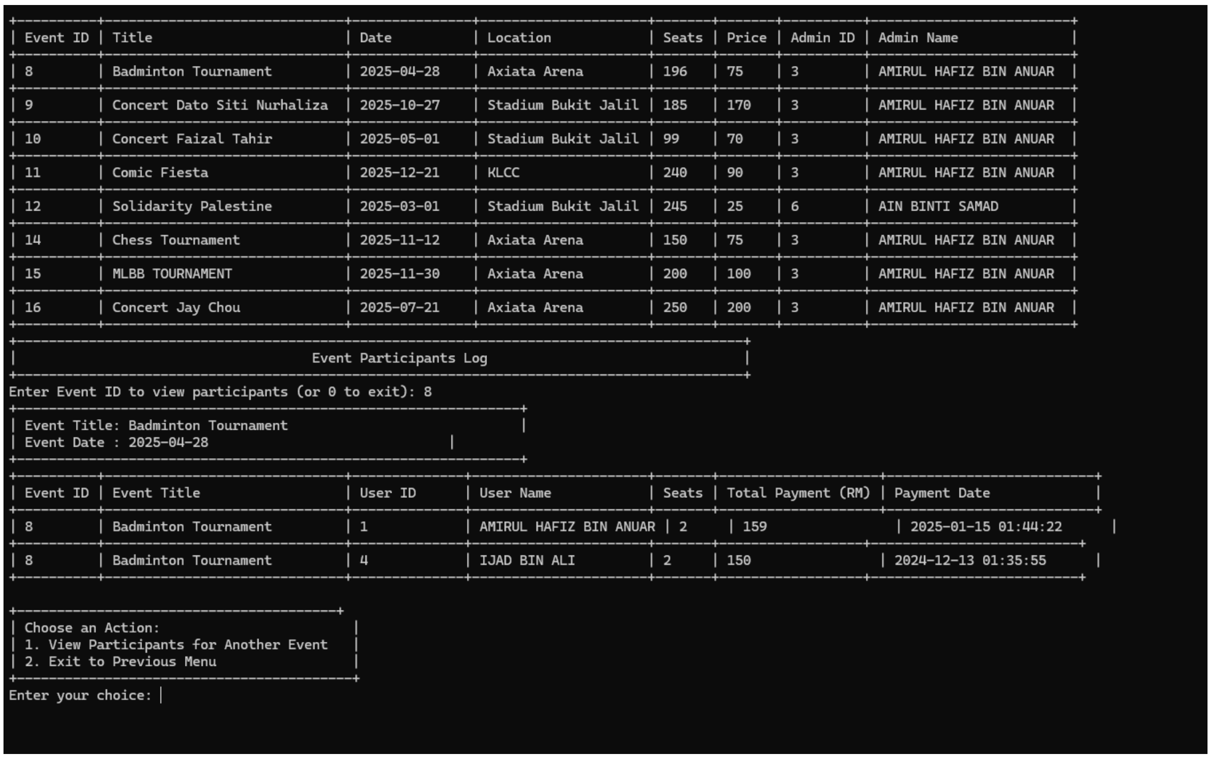


```
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+
| Event ID | Title                       | Date         | Location            | Seats | Price | Admin ID | Admin Name             |
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+
| 8        | Badminton Tournament        | 2025-04-28   | Axiata Arena        | 196   | 75    | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+
| 9        | Concert Dato Siti Nurhaliza | 2025-10-27   | Stadium Bukit Jalil | 185   | 170   | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+
| 10       | Concert Faizal Tahir        | 2025-05-01   | Stadium Bukit Jalil | 99    | 70    | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+
| 11       | Comic Fiesta                | 2025-12-21   | KLCC                | 240   | 90    | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+
| 12       | Solidarity Palestine        | 2025-03-01   | Stadium Bukit Jalil | 245   | 25    | 6        | AIN BINTI SAMAD        |
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+
| 14       | Chess Tournament            | 2025-11-12   | Axiata Arena        | 150   | 75    | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+
| 15       | MLBB TOURNAMENT             | 2025-11-30   | Axiata Arena        | 200   | 100   | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+
| 16       | Concert Jay Chou            | 2025-07-21   | Axiata Arena        | 249   | 200   | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-----------------------------+--------------+---------------------+-------+-------+----------+------------------------+

Enter Event ID to manage jobs for (or 0 to exit): |
```



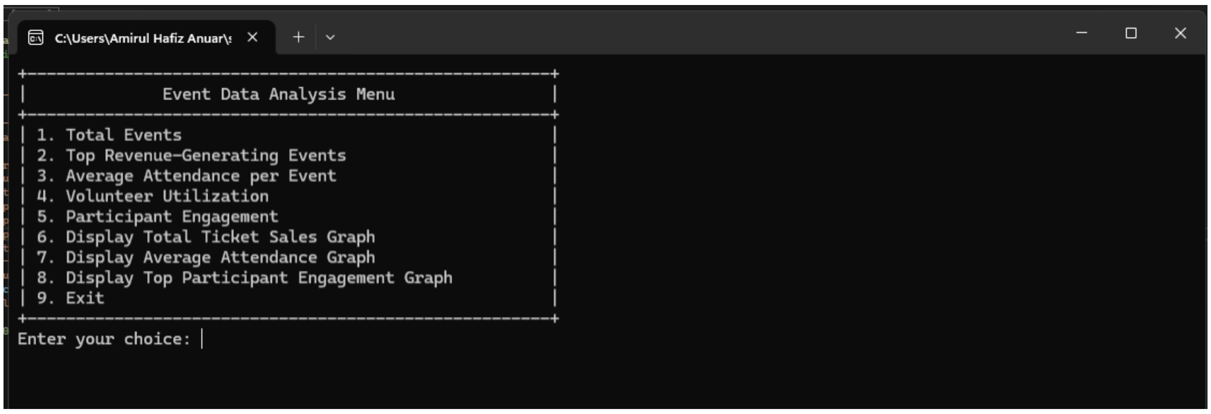
```
+-----------------------------------------------------------------+
| You are currently managing the following event:                 |
| Event Title: Concert Jay Chou                                   |
| Event Date : 2025-07-21                                         |
+-----------------------------------------------------------------+
+-------------------------------------------------------------------------------------+
|                             Manage Jobs for Event                                   |
+-------------------------------------------------------------------------------------+
+--------+-------------------------------+------------------------------------+---------------+
| Job ID | Job Name                      | Description                        | Availability  |
+--------+-------------------------------+------------------------------------+---------------+
| 18     | Cleaner                       | Event in clean condition      | 30             |
+--------+-------------------------------+------------------------------------+---------------+
| 19     | Translator                    | Translate Chinese to English  | 3              |
+--------+-------------------------------+------------------------------------+---------------+
| 20     | BodyGuard                     | Make sure Jay Chou safe       | 10             |
+--------+-------------------------------+------------------------------------+---------------+

+---------------------------------------+
| Choose an Action:                     |
| 1. Add Job                            |
| 2. Search Job                         |
| 3. Edit Job                           |
| 4. Delete Job                         |
| 5. Check Volunteer Assignments        |
| 6. Return to Event Selection          |
+---------------------------------------+
Please Enter Your Choice: |
```

Figure 3.21:Admin Manage Volunteer Menu



```
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
| Event ID | Title                         | Date          | Location            | Seats | Price | Admin ID | Admin Name             |
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
| 8        | Badminton Tournament          | 2025-04-28    | Axiata Arena        | 196   | 75    | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
| 9        | Concert Dato Siti Nurhaliza   | 2025-10-27    | Stadium Bukit Jalil | 185   | 170   | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
| 10       | Concert Faizal Tahir          | 2025-05-01    | Stadium Bukit Jalil | 99    | 70    | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
| 11       | Comic Fiesta                  | 2025-12-21    | KLCC                | 240   | 90    | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
| 12       | Solidarity Palestine          | 2025-03-01    | Stadium Bukit Jalil | 245   | 25    | 6        | AIN BINTI SAMAD        |
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
| 14       | Chess Tournament              | 2025-11-12    | Axiata Arena        | 150   | 75    | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
| 15       | MLBB TOURNAMENT               | 2025-11-30    | Axiata Arena        | 200   | 100   | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
| 16       | Concert Jay Chou              | 2025-07-21    | Axiata Arena        | 250   | 200   | 3        | AMIRUL HAFIZ BIN ANUAR |
+----------+-------------------------------+---------------+---------------------+-------+-------+----------+------------------------+
+-------------------------------------------------------------------------------------------+
|                                     Event Participants Log                                |
+-------------------------------------------------------------------------------------------+
Enter Event ID to view participants (or 0 to exit): 8
+-----------------------------------------------------------------+
| Event Title: Badminton Tournament                               |
| Event Date : 2025-04-28                              |
+-----------------------------------------------------------------+
+----------+-------------------------------+---------------+-----------------------+-------+--------------------+----------------------------+
| Event ID | Event Title                   | User ID       | User Name             | Seats | Total Payment (RM) | Payment Date               |
+----------+-------------------------------+---------------+-----------------------+-------+--------------------+----------------------------+
| 8        | Badminton Tournament          | 1             | AMIRUL HAFIZ BIN ANUAR | 2     | 159                | 2025-01-15 01:44:22        |
+----------+-------------------------------+---------------+-----------------------+-------+-------------------+--------------------------+
| 8        | Badminton Tournament          | 4             | IJAD BIN ALI          | 2     | 150                | 2024-12-13 01:35:55        |
+----------+-------------------------------+---------------+-----------------------+-------+-------------------+--------------------------+

+------------------------------------------+
| Choose an Action:                          |
| 1. View Participants for Another Event     |
| 2. Exit to Previous Menu                   |
+--------------------------------------------+
Enter your choice: |
```

Figure 3.22: Admin Participants Logs



```
+-----------------------------------------------------+
|                Event Data Analysis Menu             |
+-----------------------------------------------------+
| 1. Total Events                                     |
| 2. Top Revenue-Generating Events                    |
| 3. Average Attendance per Event                     |
| 4. Volunteer Utilization                            |
| 5. Participant Engagement                           |
| 6. Display Total Ticket Sales Graph                 |
| 7. Display Average Attendance Graph                 |
| 8. Display Top Participant Engagement Graph         |
| 9. Exit                                             |
+-----------------------------------------------------+
Enter your choice: |
```

Figure 3.23:Analysis data menu

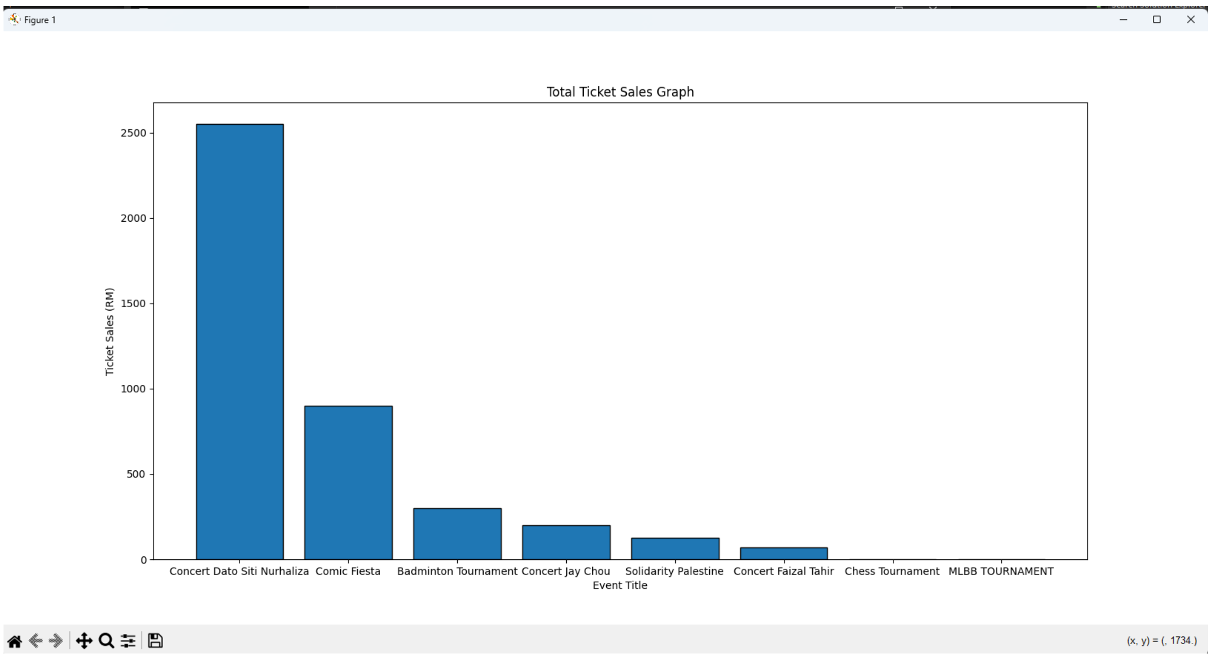


Figure 3.24:Total Ticket Sales Graph

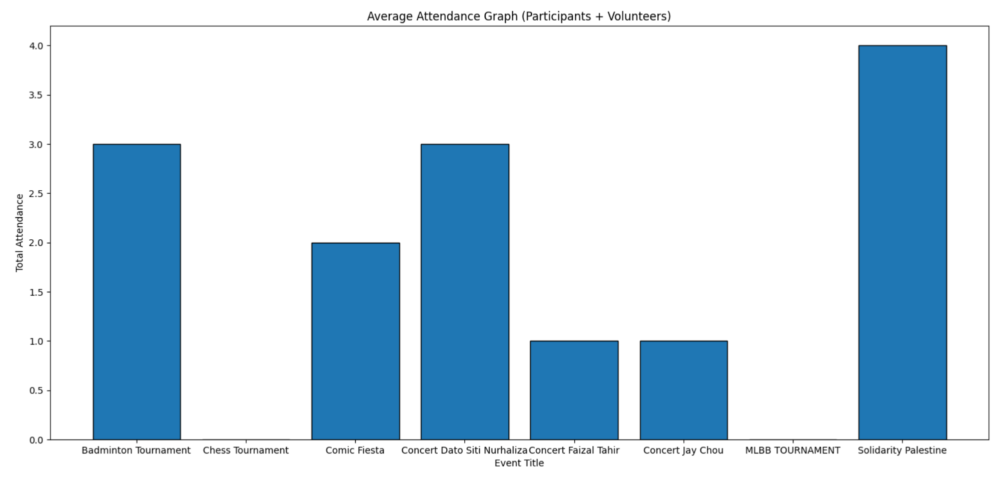


Figure 3.25:Average Attendance Graph (Participants+Volunteer)

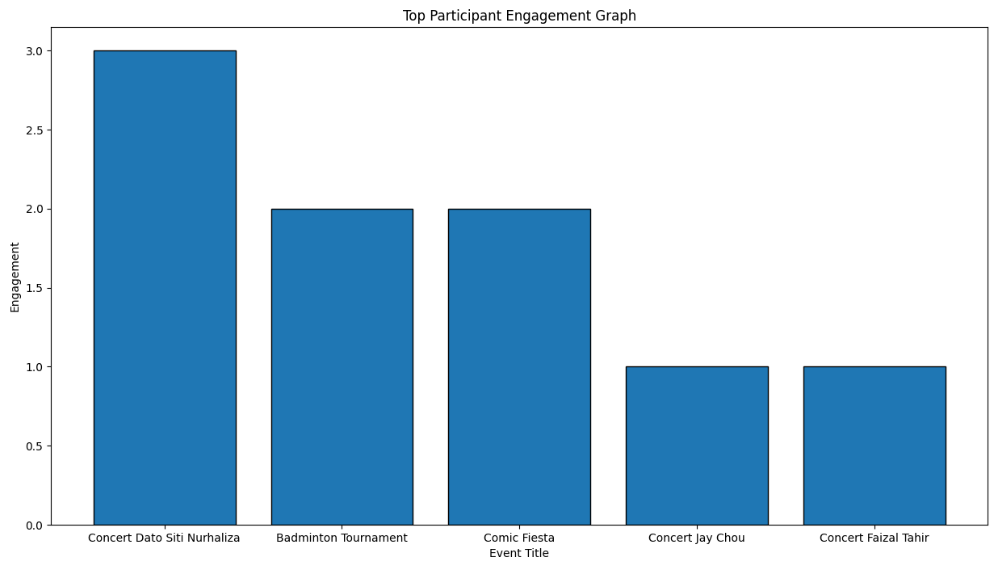
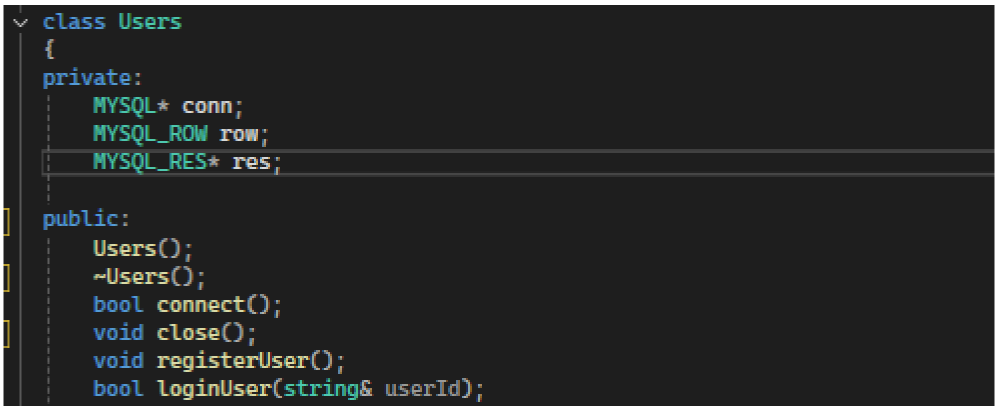


Figure 3.26:Top Participant Engagement Graph

CHAPTER 4: IMPLEMENTATION

4.1 Naming Convention



```
class Users
{
private:
    MYSQL* conn;
    MYSQL_ROW row;
    MYSQL_RES* res;

public:
    Users();
    ~Users();
    bool connect();
    void close();
    void registerUser();
    bool loginUser(string& userId);
```

Figure 4.1:Naming Convention use CamelCase

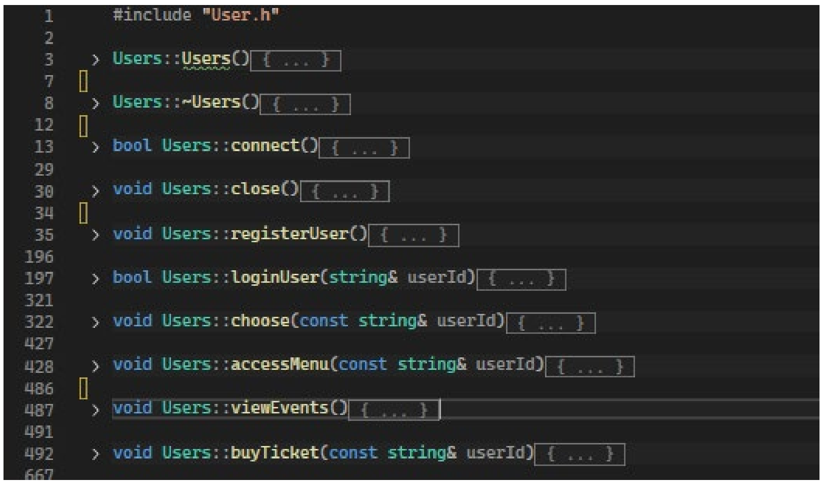
Naming conventions are important for making code readable, understandable, and maintainable. In C++, the standard is to use CamelCase for class and function names and snake_case for variable names in some situations. This ensures that anyone reading the code can understand its purpose just by reading the names.

Example

- Functions like registerUser() and loginUser() use CamelCase, making it clear what each function does.

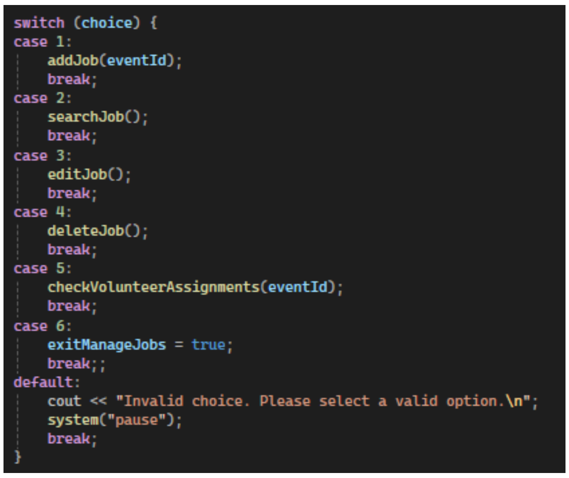
- The class Users uses PascalCase, which is the standard for class names

4.2 Function



```
#include "User.h"

Users::Users(){ ... }

Users::~Users(){ ... }

bool Users::connect(){ ... }

void Users::close(){ ... }

void Users::registerUser(){ ... }

bool Users::loginUser(string& userId){ ... }

void Users::choose(const string& userId){ ... }

void Users::accessMenu(const string& userId){ ... }

void Users::viewEvents(){ ... }

void Users::buyTicket(const string& userId){ ... }
```

Figure 4.2:Type of function

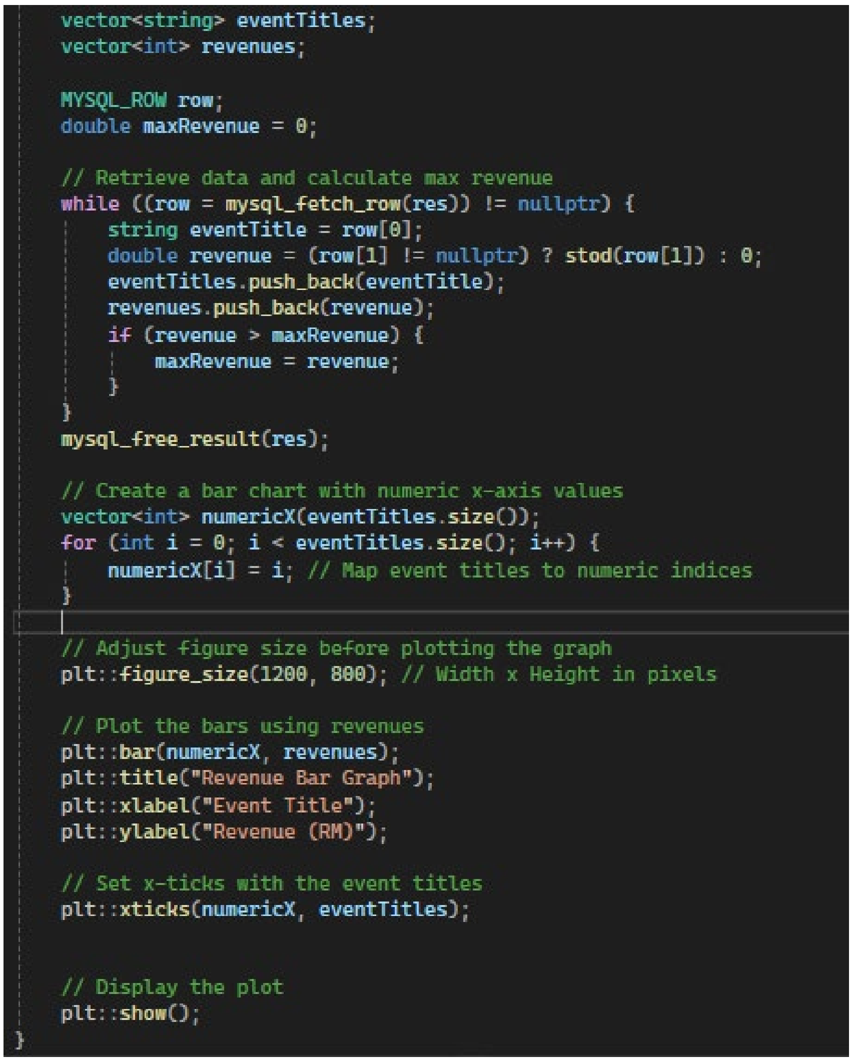


```
switch (choice) {
case 1:
    addJob(eventId);
    break;
case 2:
    searchJob();
    break;
case 3:
    editJob();
    break;
case 4:
    deleteJob();
    break;
case 5:
    checkVolunteerAssignments(eventId);
    break;
case 6:
    exitManageJobs = true;
    break;;
default:
    cout << "Invalid choice. Please select a valid option.\n";
    system("pause");
    break;
}
```

Figure 4.3:Function Used

Functions are blocks of code designed to perform specific tasks. They can take inputs (parameters), perform an action or computation, and return a value. Makes the code more modular and reusable. For example, the registerUser() function handles user registration and is independent of other parts of the program. Also each function performs a specific task, such as logging in the user (loginUser()), buying tickets (buyTicket()), or displaying events (viewEvents()).that interact with the database to add new resident's record by setting up the details acquired from the mutator functions and save it to the correspond table's attributes (based on the query).

4.3 Array

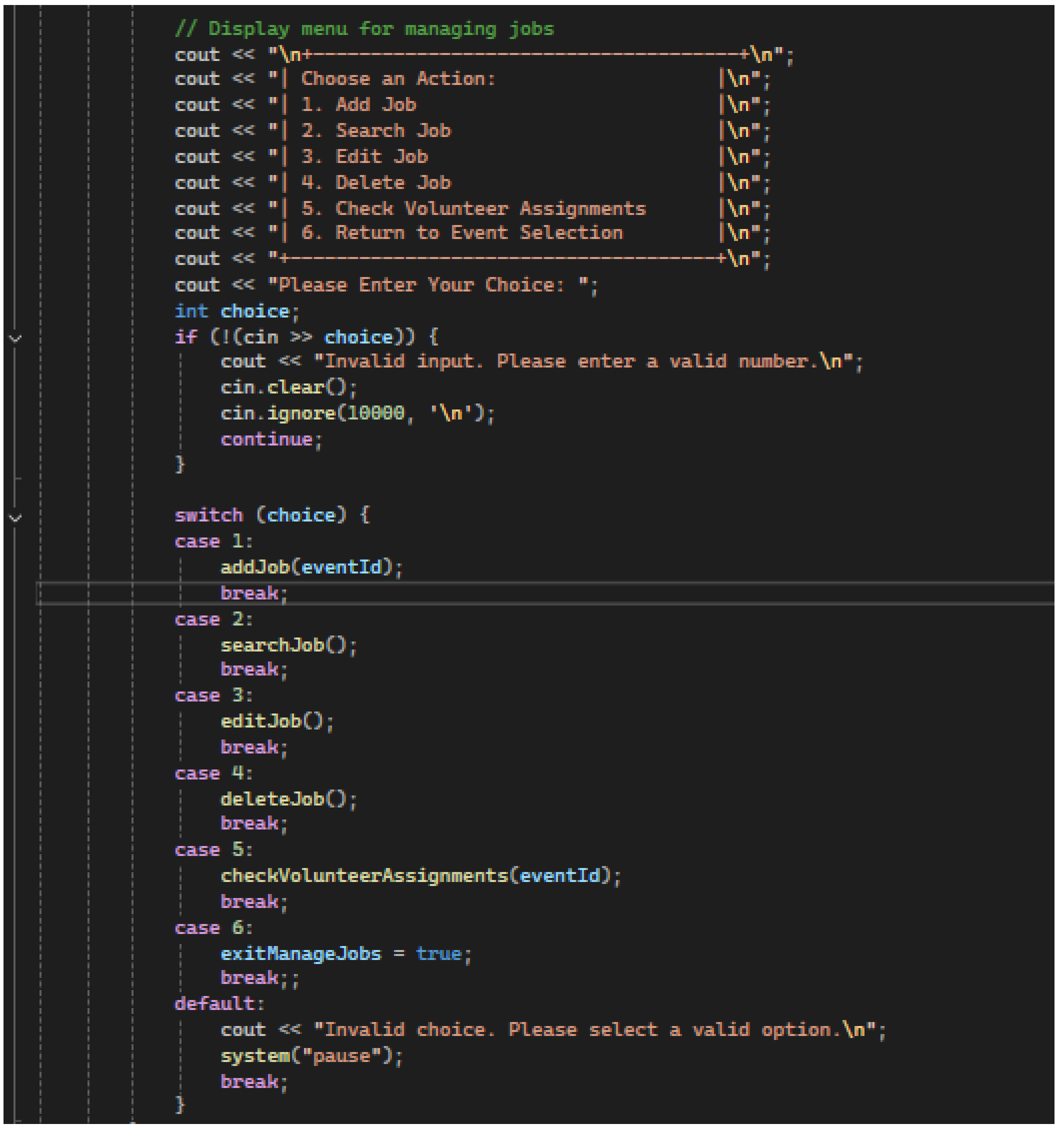


```cpp
    vector<string> eventTitles;
    vector<int> revenues;

    MYSQL_ROW row;
    double maxRevenue = 0;

    // Retrieve data and calculate max revenue
    while ((row = mysql_fetch_row(res)) != nullptr) {
        string eventTitle = row[0];
        double revenue = (row[1] != nullptr) ? stod(row[1]) : 0;
        eventTitles.push_back(eventTitle);
        revenues.push_back(revenue);
        if (revenue > maxRevenue) {
            maxRevenue = revenue;
        }
    }
    mysql_free_result(res);

    // Create a bar chart with numeric x-axis values
    vector<int> numericX(eventTitles.size());
    for (int i = 0; i < eventTitles.size(); i++) {
        numericX[i] = i; // Map event titles to numeric indices
    }

    // Adjust figure size before plotting the graph
    plt::figure_size(1200, 800); // Width x Height in pixels

    // Plot the bars using revenues
    plt::bar(numericX, revenues);
    plt::title("Revenue Bar Graph");
    plt::xlabel("Event Title");
    plt::ylabel("Revenue (RM)");

    // Set x-ticks with the event titles
    plt::xticks(numericX, eventTitles);


    // Display the plot
    plt::show();
}
```

Figure 4.4:Array in reporting function

An array useful when need to store a lot of similar things, like a list of names, numbers, or any data type that you want to group together. Instead of creating separate variables for each item, an array allows you to handle many values using a single name and access them by their position.For example,in displayRevenueGraph(), eventTitles and revenues are vectors used to store the titles of events and their corresponding revenue.Similarly, in displayAverageAttendanceGraph(), eventTitles and totalAttendance are vectors used to store the event names and the total attendance data.These vectors essentially function like dynamic arrays, allow to store multiple values and access them by index.

4.4 Selection

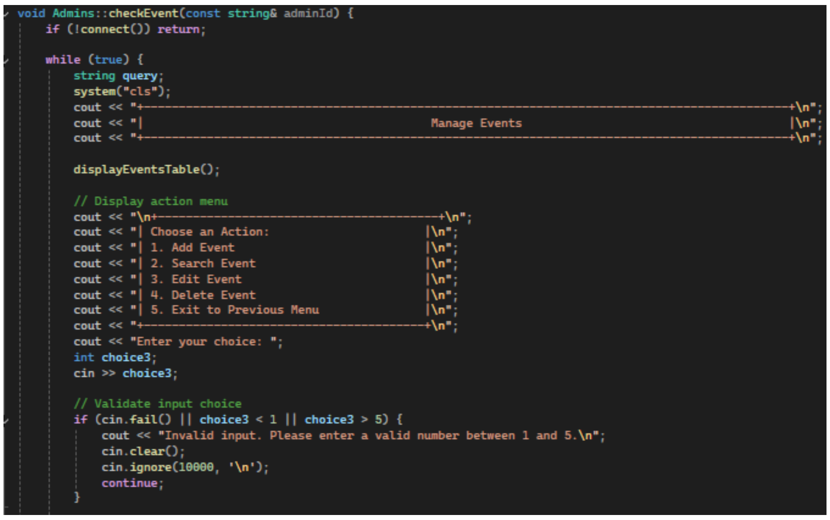


```
// Display menu for managing jobs
cout << "\n+-------------------------------------+\n";
cout << "| Choose an Action:                   |\n";
cout << "| 1. Add Job                          |\n";
cout << "| 2. Search Job                       |\n";
cout << "| 3. Edit Job                         |\n";
cout << "| 4. Delete Job                       |\n";
cout << "| 5. Check Volunteer Assignments      |\n";
cout << "| 6. Return to Event Selection        |\n";
cout << "+-------------------------------------+\n";
cout << "Please Enter Your Choice: ";
int choice;
if (!(cin >> choice)) {
    cout << "Invalid input. Please enter a valid number.\n";
    cin.clear();
    cin.ignore(10000, '\n');
    continue;
}

switch (choice) {
case 1:
    addJob(eventId);
    break;
case 2:
    searchJob();
    break;
case 3:
    editJob();
    break;
case 4:
    deleteJob();
    break;
case 5:
    checkVolunteerAssignments(eventId);
    break;
case 6:
    exitManageJobs = true;
    break;;
default:
    cout << "Invalid choice. Please select a valid option.\n";
    system("pause");
    break;
}
```

Figure 4.5:Selection Using Switch Case

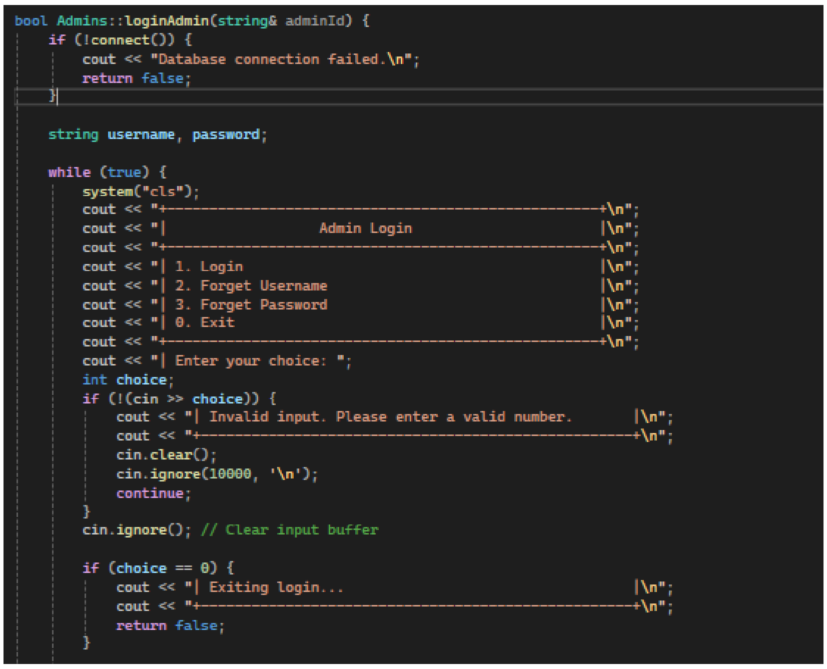
Selection is a way to make decisions in programming. It lets the program choose different actions based on whether certain conditions are true or false. For example switch case statement in managevolunteer(); function it allow the system to to check multiple conditions and compare it with the target,and the program will be executed if the conditions meet the target.

4.5 Control



```
void Admins::checkEvent(const string& adminId) {
    if (!connect()) return;

    while (true) {
        string query;
        system("cls");
        cout << "+--------------------------------------------------------------------------------------------------------------+\n";
        cout << "|                                                Manage Events                                                 |\n";
        cout << "+--------------------------------------------------------------------------------------------------------------+\n";

        displayEventsTable();

        // Display action menu
        cout << "\n+----------------------------------------+\n";
        cout << "| Choose an Action:                      |\n";
        cout << "| 1. Add Event                           |\n";
        cout << "| 2. Search Event                        |\n";
        cout << "| 3. Edit Event                          |\n";
        cout << "| 4. Delete Event                        |\n";
        cout << "| 5. Exit to Previous Menu               |\n";
        cout << "+----------------------------------------+\n";
        cout << "Enter your choice: ";
        int choice3;
        cin >> choice3;

        // Validate input choice
        if (cin.fail() || choice3 < 1 || choice3 > 5) {
            cout << "Invalid input. Please enter a valid number between 1 and 5.\n";
            cin.clear();
            cin.ignore(10000, '\n');
            continue;
        }
```

Figure 4.6:Loop in check event function

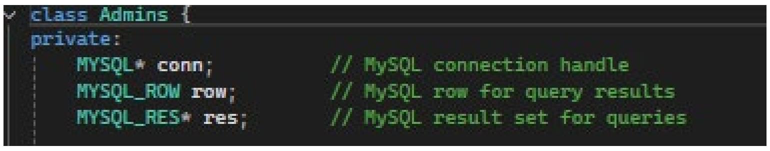


```
bool Admins::loginAdmin(string& adminId) {
    if (!connect()) {
        cout << "Database connection failed.\n";
        return false;
    }

    string username, password;

    while (true) {
        system("cls");
        cout << "+------------------------------------------------+\n";
        cout << "|                   Admin Login                  |\n";
        cout << "+------------------------------------------------+\n";
        cout << "| 1. Login                                       |\n";
        cout << "| 2. Forget Username                             |\n";
        cout << "| 3. Forget Password                             |\n";
        cout << "| 0. Exit                                        |\n";
        cout << "+------------------------------------------------+\n";
        cout << "| Enter your choice: ";
        int choice;
        if (!(cin >> choice)) {
            cout << "| Invalid input. Please enter a valid number.    |\n";
            cout << "+------------------------------------------------+\n";
            cin.clear();
            cin.ignore(10000, '\n');
            continue;
        }
        cin.ignore(); // Clear input buffer

        if (choice == 0) {
            cout << "| Exiting login...                               |\n";
            cout << "+------------------------------------------------+\n";
            return false;
        }
```

Figure 4.7:Loop in login admin function

Control structures in programming help direct the flow of execution. They decide what happens next based on conditions, loops, and user input. It's like having a set of instructions for the program to follow, ensuring that the program performs actions in the correct order. For example figure 4.5.1 and 4.5.2 while loops in checkevent(); and loginadmin(); functions will keep controlling the flow of the system until the loops break (exit)

4.6 Pointer

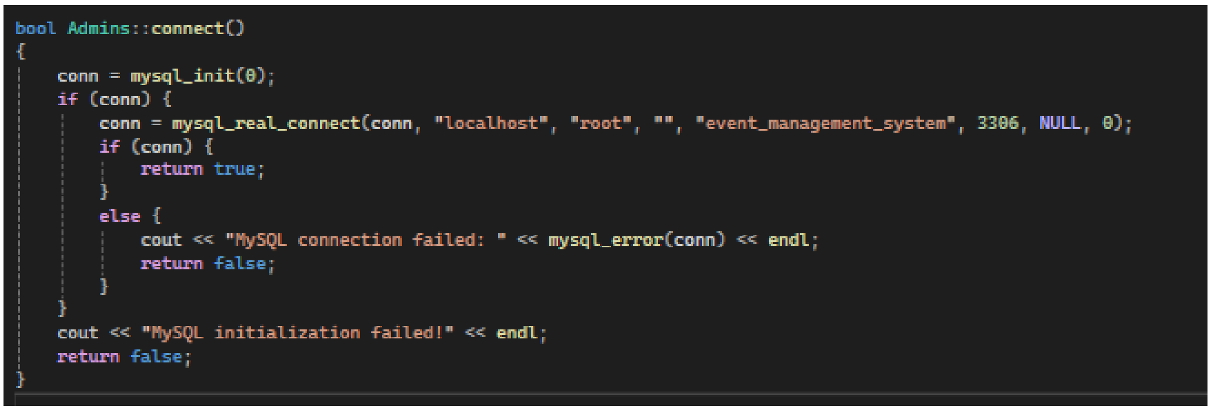


```
class Admins {
private:
    MYSQL* conn;            // MySQL connection handle
    MYSQL_ROW row;          // MySQL row for query results
    MYSQL_RES* res;         // MySQL result set for queries
```

Figure 4.8: Pointer use to initialize database

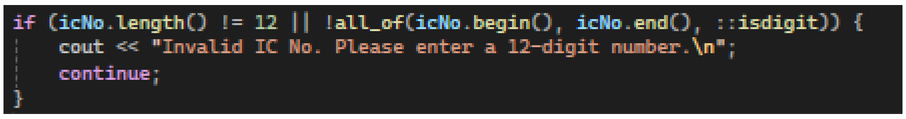
Pointers are variables that store the memory address of another variable instead of the actual value. They allow for direct access to memory locations and can be used to manipulate data more efficiently. It typically used when dealing with memory management, dynamic memory allocation, and accessing data indirectly. For example Figure 4.6.these pointer used to store and reference the connection to the MySQL database, a row of data retrieved from the database and a result set from the query.

4.7 Error Handling



```
bool Admins::connect()
{
    conn = mysql_init(0);
    if (conn) {
        conn = mysql_real_connect(conn, "localhost", "root", "", "event_management_system", 3306, NULL, 0);
        if (conn) {
            return true;
        }
        else {
            cout << "MySQL connection failed: " << mysql_error(conn) << endl;
            return false;
        }
    }
    cout << "MySQL initialization failed!" << endl;
    return false;
}
```

Figure 4.9:Error handling while connecting to database



```
if (icNo.length() != 12 || !all_of(icNo.begin(), icNo.end(), ::isdigit)) {
    cout << "Invalid IC No. Please enter a 12-digit number.\n";
    continue;
}
```

Figure 4.10:Error handling if IcNo not key in properly

Error handling is a programming practice that involves anticipating, detecting, and responding to runtime and logical errors in a program. The goal of error handling is to manage errors gracefully, ensuring that the program can either recover from them or terminate cleanly with appropriate messages or actions. Based on Figure 4.9, try-catch statement is used to ensure the program stability and make it easy for me as the developer to detect the problems that occurred when the database operation failed. The code will run as usual but in the event of error, it will catch the SQL exception error and display the message to the console to notify developer of its problem and address the issue. If statement also was used as error handling to improve user experience by showing them meaningful messages that help them understand what went wrong and what they can do next instead of showing cryptic error messages or stack traces. For example, based on the figure 11.1, if variable user_ICNum has the value of “false”, it will display message “IC Number must be 12 digit long!” to indicate that the user must enter 12-digit length for the IC Number input.

CHAPTER 5: CONCLUSION

5.1 Constraints

The current Event Management System (EMS) is not in its optimal form, as it still has many constraints and limitations that cannot be addressed during the development phase alone. Some issues only become apparent at the end of the testing phase. One major technical constraint is the unsatisfactory user interface, which can lead to a poor user experience. An intuitive and user-friendly interface is needed throughout the entire system, not just in some modules, to ensure users can navigate the system without any issues.

Additionally, time limitations for the development, testing, and quality assurance phases are significant. Extending the deadline for one phase often causes delays in subsequent phases, leading to a cascading effect on the overall project timeline.

Furthermore, there is a significant hardware constraint. The latest versions of the software needed to develop the system require substantial computing power. However, the hardware currently in use is not powerful enough to handle these heavy software requirements smoothly, posing a challenge to the development process.

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5.2 Future Improvements

To address the constraints and limitations of the current Event Management System (EMS), several future improvements are planned. First, enhancing the user interface across the entire system will be a priority. Comprehensive user research will be conducted to identify pain points, followed by a redesign to ensure an intuitive and user-friendly experience throughout all modules. This will involve iterative usability testing with real users to gather feedback and make necessary adjustments.

To tackle the time constraints, adopting an agile development methodology will be the key. This approach allows for iterative progress and continuous feedback, helping to manage and mitigate delays. Buffer time will be incorporated into the project schedule to accommodate unexpected issues, and prioritizing critical features will ensure that the most important aspects are completed on time. Parallel work streams will be utilized where possible to expedite the development process without compromising quality.

Addressing the hardware constraint is also crucial. Upgrading existing hardware components, such as adding more RAM, installing faster CPUs, and increasing storage capacity, will be considered. Additionally, upgrading to newer computers that meet the requirements of the development tools and software will be evaluated. To further alleviate hardware limitations, virtualization or cloud-based development platforms will be utilized, reducing the burden on local hardware. Optimizing the existing setup by removing unnecessary applications and ensuring all software and drivers are up to date will also be part of the plan.

By implementing these future improvements, the current constraints and limitations can be resolved, ensuring a more user-friendly and efficient Event Management System.

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