

# Amandla High School Locker Booking System

Portfolio

Portfolio

November 2025

Module ICT3715

## INFORMATION AND COMMUNICATION TECHNOLOGY PROJECT

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This Portfolio consists of 38 pages

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Authors: Carlos Coronell and Steven Morris.
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Author: Jan L. Harrington.
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14. <https://www.w3schools.com>

15. <https://app.diagrams.net/>
  16. <https://www.visual-paradigm.com/>
  17. <http://intranet.sita.co.za> Fellow Senior Software Development Colleague.  
Wellington Molemane (Application Development and Maintenance-ADM)
  18. <http://www.dod.mil.za/> Fellow Software Development Colleague. Sharon  
Seroka (ADM) DOD Unique
  19. <https://learn.microsoft.com/en-us/training/browse/>
  20. <http://intranet.sita.co.za> Irene Kgokane-Project Manager DOD client.
  21. <http://intranet.sita.co.za> Linky Tabane-Database Administrator DOD.
-

## Table of Contents

|  |    |
|--|----|
| 1. User Guide .....                                  | 6  |
| Introduction .....                                   | 9  |
| Scope and Purpose .....                              | 9  |
| Quick Start Guide .....                              | 10 |
| Process Parent Registration and Login .....          | 11 |
| Steps of Process Parent Registration and Login ..... | 12 |
| Process Administrator Login .....                    | 12 |
| Steps of Process Administrator Login .....           | 12 |
| 2. Business Plan .....                               | 13 |
| System Overview .....                                | 14 |
| Technology requirements .....                        | 15 |
| Hardware .....                                       | 15 |
| Software .....                                       | 16 |
| Obstacles .....                                      | 16 |
| Deployment .....                                     | 16 |
| Installation .....                                   | 16 |
| Training .....                                       | 17 |
| Testing .....  | 17 |
| Backup and recovery .....                            | 17 |
| Documentation .....                                  | 18 |
| Reporting .....                                      | 18 |
| Evidence .....                                       | 18 |
| 3. Assessment 3 .....                                | 21 |
| 4. Assessment 2 .....                                | 29 |
| 5. Assessment 1 .....                                | 37 |

## 1. User Guide

# User Guide for Amandla High School Locker Booking System

**November 2025**

**Instructions:**

- ❖ Change everything that is in brackets []
- ❖ Add your practical system content to the document.
- ❖ Make sure that your Table of Content is updated.
- ❖ Update the document revision table.
- ❖ Complete all the Process and Process Steps for your practical system in this document

**Document Revisions**

| <b>Date</b> | <b>Version Number</b> | <b>Document Changes</b>      |
|-------------|-----------------------|------------------------------|
| 01/07/2025  | 0.1                   | Initial Draft                |
| 06/08/2025  | 0.2                   | Updated Installation process |
| 09/09/2025  | 0.3                   | Added reports                |
| 03/10/2025  | 0.4                   | Updated Business plan        |
| 07/10/2025  | 0.5                   | Final version                |
|             |                       |                              |
|             |                       |                              |
|             |                       |                              |
|             |                       |                              |



## Introduction

### Scope and Purpose

#### ❖ Introduce the practical system and its purpose.

**Amandla High School Locker Booking System** is a digital solution designed to simplify and improve the process of applying or registering, assigning and managing student lockers at Amandla High School. Its main purpose are:

- Eliminate manual paperwork and reduce administrative workload, that is efficiency.
- Prevent double booking of lockers.
- Maintain accurate and up-to-date locker assignment records.
- To ensure that all data on the system is accurate and secured.

#### ❖ Highlighting key features and benefits.

- **User Authentication:** Secure login for both parents and administrators to protect user data and ensure authorized access only.
- **Administrative Dashboard:** Administrator can manage all bookings, approve or deny requests, and monitor locker usage through a centralized system.
- **Parent Dashboard:** Parent can be able to apply for their student, submit proof of payment online or by replying to email from school. Also to apply for locker for their student.
- **Database Integration:** All locker, student, and booking information is stored in a secure database, ensuring data accuracy, quick retrieval, and easy updates.
- **Email Notification System:** Automated email notifications can be sent to parents upon successful booking, approval, or cancellation, keeping users informed. Also to inform them to make payment if booking/application is successful.
- **Search Options:** Enables quick searching of lockers or students, making it easier for administrator to manage records efficiently.

#### ❖ Introduce the purpose of the user guide.

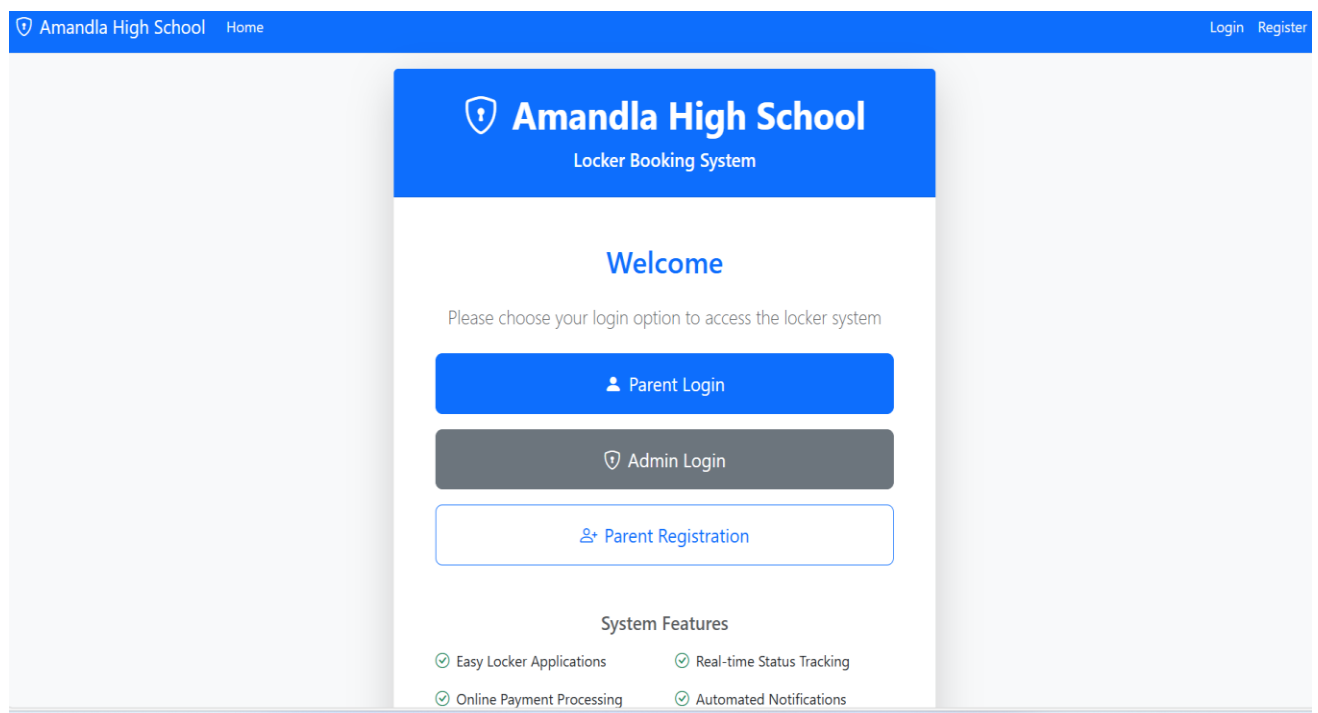
- The **purpose of the user guide** is to provide clear and detailed instructions for users of the **Amandla High School Locker Booking System**, ensuring that both parents and administrators can use the system effectively and efficiently.

## Quick Start Guide

**Provide an overview of the functionality of the practical system and how the user will interact with the practical system.**

The system provides main interfaces: for Parents and another for administrators, each tailored to their specific needs. However, Parents needs to first register on the system.

The user (Parent or Admin) will click on their respective login pages to access the system.



## Parent Registration Process

The screenshot shows a web application interface for parent registration. At the top, a blue navigation bar contains the text 'Amandla High School' and a 'Home' link on the left, and 'Login' and 'Register' links on the right. The main content area features a central white registration form with a blue header. The form is titled 'Parent Registration' with a user icon and the subtitle 'Amandla High School Locker System'. It contains several input fields: 'Parent ID Number' (a single-line text box), 'First Name' and 'Surname' (two side-by-side text boxes), 'Mobile Number' (a single-line text box), 'Home Address' (a multi-line text area), 'Email Address' (a single-line text box), 'Password' (a single-line text box), and 'Confirm Password' (a single-line text box). Below these fields is a checkbox labeled 'I agree to the Terms and Conditions'. At the bottom of the form is a large blue button labeled 'Register Account' with a user icon. Below the button, there is a link that says 'Already have an account? Login here'.

Parent Registration  
Amandla High School Locker System

Parent ID Number  
Enter your ID number

First Name  
Enter your first name

Surname  
Enter your surname

Mobile Number  
Enter your mobile number

Home Address  
Enter your full home address

Email Address  
Enter your email address

Password  
Create a password

Confirm Password  
Confirm your password

☐ I agree to the [Terms and Conditions](#)

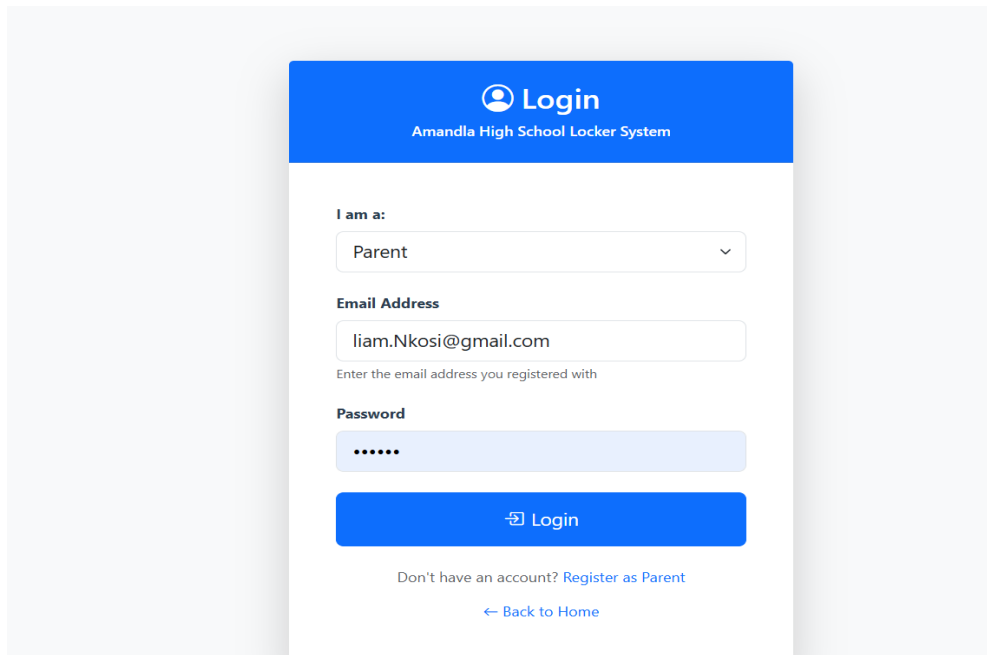
[Register Account](#)

[Already have an account? Login here](#)

## Steps of Parent Registration

- Parent ID number
- First Name and Surname
- Mobile number
- Home Address
- Email Address
- password and confirm password
- Lastly click Register.

## Process of Parent Login

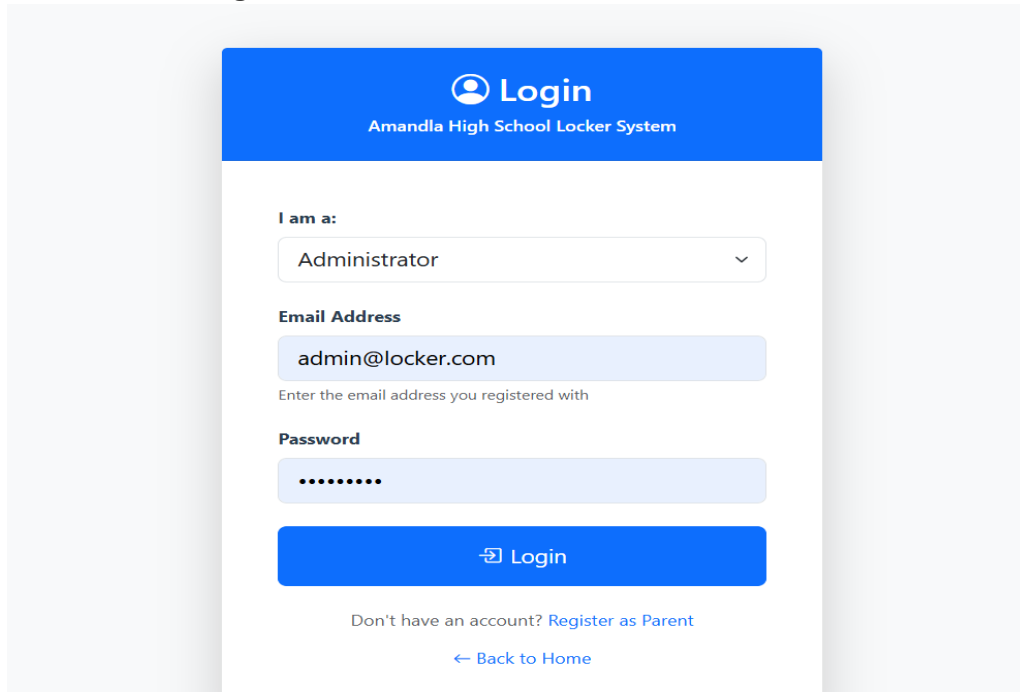


The screenshot shows a login form titled "Login" for the "Amandla High School Locker System". The form includes a dropdown menu labeled "I am a:" with "Parent" selected. Below this is an "Email Address" field containing "liam.Nkosi@gmail.com" with a subtext "Enter the email address you registered with". A "Password" field is shown with masked characters ".....". A blue "Login" button is at the bottom of the form. Below the button, there is a link "Don't have an account? Register as Parent" and a link "← Back to Home".

Steps of parent login:

- Sign in with the credentials you have registered with.  
e.g liam.Nkosi@gmail.com and Password. Parent dashboard will appear, and parent should be able to add their student and apply for locker for 2026 academic year.

## Administrator Login Process



The screenshot shows a login form titled "Login" for the "Amandla High School Locker System". The form includes a dropdown menu labeled "I am a:" with "Administrator" selected. Below this is an "Email Address" field containing "admin@locker.com" with a subtext "Enter the email address you registered with". A "Password" field is shown with masked characters ".....". A blue "Login" button is at the bottom of the form. Below the button, there is a link "Don't have an account? Register as Parent" and a link "← Back to Home".

Steps: Administrator username and password then login. once logged in will be able to see admin dashboard and manage students, lockers view reports etc.  
e.g admin@locker.com

## 2. Business Plan

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### **SOFTWARE DEVELOPMENT PROPOSAL | Business Plan**

**Prepared for:** Amandla High School

**Prepared by:** Matome Bernard Mogobu

**Student Number:** 42689724

**Date:** 05 November 2025

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Dear, Amandla High School

#### **RE: Enclosed Software Development Proposal**

My name is **Matome Bernard Mogobu**, a dedicated software developer with practical experience in designing and implementing database-driven systems using **C#** and **MySQL**. I am confident that my technical background and passion for software development uniquely qualify me to develop a reliable, scalable, and user-friendly system tailored to your school's needs.

This proposal outlines the development plan, technical design, and operational requirements for the software solution.

In summary, my technical background, analytical skills, and understanding of system development life cycles give me the expertise required to design and implement the **Amandla High School Locker Booking System** effectively.

Kind regards,

**Matome Bernard Mogobu**

**Student Number:** 42689724

## System Overview

The proposed system is a **Locker Management and Administration System** developed using **C# (Windows Forms)** for the front end and **MySQL** for the backend database. The primary aim of this system is to streamline and automate locker allocation, payment tracking, and management processes for administrators, students, and support staff.

### Aims

- To replace manual locker recordkeeping with a centralized digital system.
- To improve administrative efficiency and accuracy.
- To provide real-time reports for management decision-making.

### Scope

The system includes modules for:

- **Locker Management:** Add, update, delete, and assign lockers.
- **Student Management:** View and manage student profiles.
- **Payment Management:** Track locker fees and payment status.
- **Reports Dashboard:** Generate MIS reports (daily, weekly, and analytical).

### System Operation

The system will be installed on the client's computers and connected to a central MySQL server database. Administrators can log in to manage records, generate reports, and confirm locker assignments. The system is designed to handle concurrent users securely.

### Design Process

The system follows the **Waterfall Model**, including phases of requirements analysis, system design, implementation, testing, and maintenance. The GUI is designed for simplicity and accessibility, with clear navigation menus and validation checks.

## Functionality

- Secure admin authentication.
- Locker CRUD (Create, Read, Update, Delete) operations.
- Waiting list and payment tracking.
- Automated report generation.

## Choice of Technology

- **Frontend:** C# (Windows Forms)
- **Backend:** MySQL
- **IDE:** Visual Studio 2022
- **Database Tool:** MySQL Workbench

## Distribution and Ownership

The software will be distributed to the client as an executable Windows application. Ownership of intellectual property and licensing rights will belong to the client after project completion and full payment.

## Testing, Support, and Warranties

Thorough testing (unit, integration, and user acceptance testing) will be conducted before deployment. Post-deployment support will be available for one month after handover, including bug fixes and basic system training.

---

## Technology Requirements

### Hardware

- The system will run on:
  - 32-bit and 64-bit Windows desktop systems (Windows 8, 10, and 11).
  - Minimum system requirements:
    - Intel i3 processor or higher
    - 4GB RAM
    - 500MB disk space
    - Stable internet/network connection (for database synchronization)

---

## Software

- **Programming Language:** C# (.NET Framework 8.0 or later)
- **Database Management System:** MySQL
- **Server:** MySQL Community Server 8.x
- **IDE:** Microsoft Visual Studio
- **Other Tools:** phpMyAdmin (optional for DB management), GitHub (version control)
- **XAMPP 8.2.12-0 installed**

---

## Obstacles

| POTENTIAL RISK                          | IMPACT   | MITIGATION STRATEGY  |
|---|----------|--|
| Integration issues between C# and MySQL | Moderate | Use MySQL Connector/NET and test database queries early      |
| Data security concerns                  | High     | Implement login authentication and role-based access control |
| User resistance to new system           | Moderate | Provide training and user-friendly documentation             |
| Power or network downtime               | Low      | Enable offline caching and local backups                     |

---

## Deployment

### Installation

The software will be delivered as an installer package (Setup.exe) along with a MySQL database script. Installation steps include:

1. Installing the application using the provided setup wizard.
2. Importing the database schema via MySQL Workbench or command line.
3. Configuring connection settings in app.config.

### Updates

Future updates will be distributed through downloadable update files or patches that can be installed without affecting existing data.



## Training and Support

Training will be provided to administrative users through:

- A **one-day on-site training session** covering system navigation, reporting, and backup procedures.
  - A **user manual** (digital PDF format).
- post-deployment support will be available for one month, with additional support available through service agreements.
- 

## Testing

Testing will include:

- **Unit Testing:** Each function tested for correctness.
- **Integration Testing:** Ensuring seamless connection between modules.
- **User Acceptance Testing (UAT):** The client verifies that system requirements are met.

The client's role in testing will include providing sample data and verifying system performance.

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## Backup and Recovery

The system will perform daily automated database backups. Backup files can be stored locally and or in a secure cloud environment (GitHub, Ms onedrive and or Google drive). Recovery will be handled by restoring the latest backup file into MySQL using SQL import commands.

---

## Documentation

The following documents will accompany the system:

- Installation Guide
- User Manual
- Technical Documentation (for administrators)
- Troubleshooting Guide
- System Design Document

All documents will be provided in **PDF format** and accessible from within the system's "Help" menu.

## Reporting

The system will include the following **Management Information System (MIS)** reports:

1. **Daily Reports:** Students on the waiting list and assigned lockers.
2. **Weekly Reports:** Total locker usage by grades
3. **Payment Tracking Reports:** Outstanding and completed payments.
4. **Locker Utilization Reports:** To show in percentage sign

## Evidence

Below are examples of developed user interfaces included in the current version of the system:

1. **Admin Dashboard:** Displays real-time locker and payment statistics.

**Amanda High School**  
Admin Portal  
Welcome, Admin

**Admin Dashboard** Refresh

| Category              | Count | Icon           |
|-----------------------|-------|----------------|
| Total Lockers         | 18    | Locker icon    |
| Assigned Lockers      | 13    | Checkmark icon |
| Waiting List          | 2     | List icon      |
| Pending Confirmations | 0     | Clock icon     |

**Recent System Activity**

| Activity  | Timestamp          |
|---|--------------------|
| <b>Admin login</b><br>Admin Admin logged in<br>By: Admin  | 08 Nov 2025, 08:53 |
| <b>New Locker Added</b><br>Locker 19 added at Block A, First Floor (Small) with status: Available<br>By: Admin  | 07 Nov 2025, 18:16 |
| <b>Locker assignment confirmed</b><br>Locker 18 assigned to student Forgive Johnson<br>By: Admin                | 07 Nov 2025, 17:59 |
| <b>Locker provisionally assigned</b><br>Locker 18 provisionally assigned to student 451645<br>By: System        | 07 Nov 2025, 17:48 |
| <b>New Locker Added</b><br>Locker 18 added at Block A, First Floor (Medium) with status: Available<br>By: Admin | 07 Nov 2025, 17:38 |

**Quick Actions**

- [Add New Locker](#)
- [View Waiting List](#)
- [Manage Students](#)
- [View Reports](#)

**System Information**

Logged in as: **Admin**  
Session started: **08:56:36**  
System version: **v2.0.0**

## 2. Locker Management Screen: Add, edit, and delete locker details.

**Amandla High School**  
Admin Portal  
Welcome,  
  
Dashboard  
**Manage Lockers**  
Waiting List  
Manage Students  
Reports  
Logout

### Manage Lockers

Add New Locker

**Locker Management**



















Total Lockers  
18

Assigned  
13

Available  
1

Maintenance  
2

Show 10 lockers per page
Search lockers:

| Locker ID | Location              | Size   | Status   | Assigned To              | Actions   |
|-----------|-----------------------|--------|----------|--------------------------|---|
| #1        | Block A, Ground Floor | Small  | Assigned | Olivia Wilson (110216)   |     |
| #10       | Near Library          | Small  | Assigned | Forgive Moatshe (420182) |     |
| #11       | Block C, Ground Floor | Small  | Assigned | Anekie Moatshe (386815)  |     |
| #12       | Block C, Ground Floor | Medium | Reserved | Not assigned             |     |
| #14       | Block D, Ground Floor | Small  | Assigned | Andisa Nkosi (638043)    |     |
| #15       | Block D, Ground Floor | Medium | Assigned | Dakalo Sesame (519818)   |     |
| #16       | Block A, Ground Floor | Small  | Assigned | Emmanuel Wilson (972595) |     |
| #17       | Block A, Ground Floor | Medium | Assigned | Olivia Johnson (617741)  |     |
| #18       | Block A, First Floor  | Medium | Assigned | Forgive Johnson (451645) |   |

## 3. Students List Screen: Displays student information linked to lock assignments.

**Amandla High School**  
Admin Portal  
Welcome,  
  
Dashboard  
Manage Lockers  
Waiting List  
**Manage Students**  
Reports  
Logout

### Manage Students

Search students...

**Student Management**




























Total Students  
57

With Lockers  
5

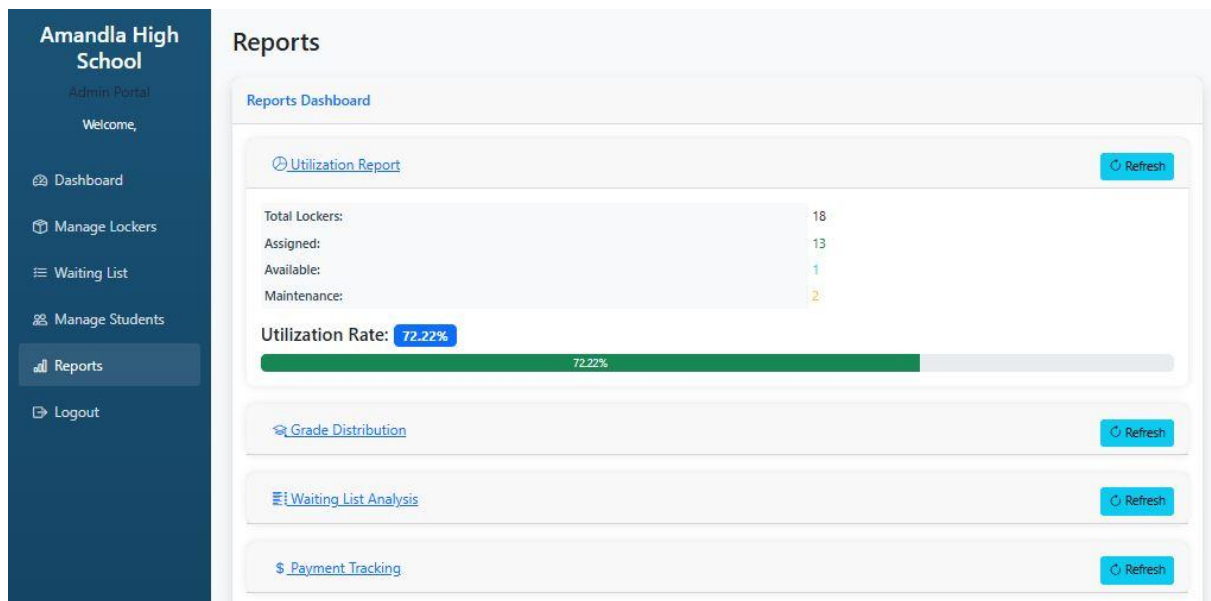
Waiting List  
1

No Locker  
52

Show 10 students per page
Search students:

| Student No | Name           | Grade  | Locker             | Parent           | Status    | Actions   |
|------------|----------------|--------|--------------------|------------------|-----------|---|
| 895067     | Alice Taylor   | Grade9 | No locker assigned | Jane Taylor      | No Locker |    |
| 407505     | Emily Anderson | Grade9 | No locker assigned | Liam Anderson    | No Locker |    |
| 51001      | Emma Smith     | Grade9 | No locker assigned | John Smith       | No Locker |    |
| 916977     | James Taylor   | Grade9 | No locker assigned | Robert Taylor    | No Locker |    |
| 390412     | James Wilson   | Grade9 | No locker assigned | Robert Wilson    | No Locker |    |
| 309568     | Jane Wilson    | Grade9 | No locker assigned | Ethan Wilson     | No Locker |    |
| 739637     | John Nkosi     | Grade9 | No locker assigned | John Nkosi       | No Locker |    |
| 366289     | Liam Anderson  | Grade9 | No locker assigned | Olivia Anderson  | No Locker |    |
| 878977     | Noah Anderson  | Grade9 | No locker assigned | Michael Anderson | No Locker |    |

#### 4. **Reports Module:** Generates PDF and on-screen MIS reports.



#### 5. **Payment Management Screen:** Track payment history and outstanding fees.

[Payment Tracking](#) [Refresh](#)

| Status    | Count | Total Amount |
|-----------|-------|--------------|
| confirmed | 6     | R 600.00     |
| pending   | 4     | R 400.00     |

Each GUI is designed for ease of use, clarity, and consistency, ensuring administrators can perform all operations efficiently.

**Prepared by:** Matome Bernard Mogobu

**Student Number:** 42689724

**Date:** 10 November 2025

**Signature:** 

### 3. Assessment 3

#### Question 1 [20]

##### Management Information Systems [MIS] Reports

##### Create the following MIS Reports

##### Refer to Task 10.

##### 1.1 Locker Usage by Grade Report (10)

##### 1.1.1 Locker usage for Grade 8 and Grade 11

```
String gradeQuery = ""
    SELECT s.grade_no AS grade, COUNT(s.locker_id) AS assigned
    FROM student s
    WHERE s.grade_no IN ('Grade8', 'Grade11') AND s.locker_id IS NOT NULL
    GROUP BY s.grade_no
    """;

List<Map<String, Object>> gradeData = jdbcTemplate.queryForList(gradeQuery);

// Total lockers
int totalLockers = jdbcTemplate.queryForObject(
    "SELECT COUNT(*) FROM locker", Integer.class);

return Map.of(
    "success", true,
    "data", Map.of(
        "gradeData", gradeData,
        "totalLockers", totalLockers
    ),
    "message", "Locker usage by grade report generated"
);
}
```

This report provides insights into locker allocation and utilization among students in **Grade 8 and Grade 11**.

##### Key Benefits for the School:

##### 1. Resource Allocation

- Helps administrators determine if there are enough lockers for students in these grades.
- Identifies if some grades have **overutilized** or **underutilized** lockers.

##### 2. Fair Distribution

- Ensures equitable access to lockers across different grades.

- Helps prevent situations where some students are left without lockers while others have spares.
- 3. **Future Planning**
  - If **Grade 8** has high demand, the school may need to **increase locker capacity** for incoming students.
  - If **Grade 11** has low usage, lockers could be **reallocated** to other grades.
- 4. **Conflict Resolution**
  - If locker shortages occur, the school can implement a **waiting list** or **priority system** based on grade needs.

## 1.2 Locker Booking Summary Report (10)

### 1.2.1 Summarize the number of lockers booked for period January 2026 to June 2026

```
@RequestParam(defaultValue = "2026-01-01") String startDate,
@RequestParam(defaultValue = "2026-06-30") String endDate) {
```

```
String query = ""
SELECT
    b.booking_id,
    CONCAT(s.name, ' ', s.surname) AS student_name,
    s.grade_no,
    l.locker_id,
    l.location,
    b.booking_date,
    b.status
FROM booking b
JOIN student s ON b.student_id = s.student_no
LEFT JOIN locker l ON b.locker_id = l.locker_id
WHERE b.booking_date BETWEEN ? AND ?
ORDER BY b.booking_date
""";
```

```
List<Map<String, Object>> bookings = jdbcTemplate.queryForList(
    query, startDate, endDate);
```

```
return Map.of(
    "success", true,
    "data", bookings,
    "message", "Booking summary report generated"
);
}
```

This report summarizes locker bookings over a **6-month period**, showing trends and demand patterns.

**Key Benefits for the School:**

**1. Demand Analysis**

- Identifies **peak booking periods** (e.g., start of the academic year).
- Helps predict future demand for lockers.

**2. Operational Efficiency**

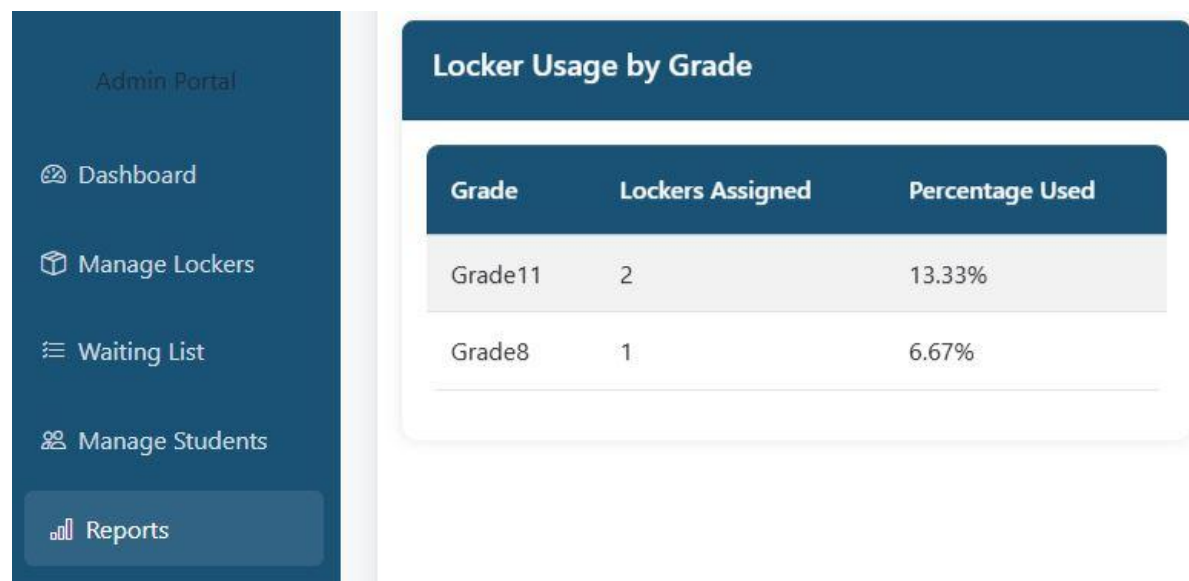
- Allows the school to **schedule maintenance** during low-usage periods.
- Helps in **staff allocation** (e.g., more admin support during high-demand months).

**3. Financial Planning**

- If bookings are declining, the school may need to **promote locker rentals**.
- If bookings are consistently high, the school could consider **expanding locker facilities**.

**4. Student Experience**

- Ensures students get lockers when they need them.
- Reduces complaints about **unavailability** or **long waiting times**.



| Locker Booking Summary |         |        |              |         |
|------------------------|---------|--------|--------------|---------|
| Student                | Grade   | Locker | Booking Date | Status  |
| Liam Nkosi             | Grade10 | 1      | Feb 5, 2026  | waiting |
| Olivia Wilson          | Grade11 | 3      | Jan 1, 2026  | waiting |

## Question 2 [20]

Graphical User Interfaces

**Create the following MIS Reports**

**Refer to Task 11.**

It is now time to start with the “coding” and create the front-end Graphical User Interfaces (GUI).



1. Create a Graphical User Interface for the parent, or the administrator to login to the system.
2. When you are done, make a screenshot of the interface, and also provide the code for the GUI.

```
<!DOCTYPE html>
<html xmlns:th="http://www.thymeleaf.org">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Locker System Login</title>
  <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/css/bootstrap.min.css"
rel="stylesheet">
  <style>
    .login-container {
      display: flex;
      justify-content: center;
      align-items: center;
      min-height: 100vh;
      background-color: #f8f9fa;
    }

    .login-card {
      width: 400px;
      padding: 30px;
      background: white;
      border-radius: 8px;
      box-shadow: 0 0 20px rgba(0,0,0,0.1);
    }

    .login-card h2 {
      text-align: center;
      margin-bottom: 20px;
      color: #343a40;
    }

    .form-group {
      margin-bottom: 15px;
    }

    .btn-login {
      width: 100%;
      padding: 10px;
      margin-top: 10px;
    }

    .nav-tabs {
```

---

```

        margin-bottom: 20px;
        border-bottom: 1px solid #dee2e6;
    }

    .nav-link {
        color: #495057;
    }

    .nav-link.active {
        font-weight: 500;
        color: #0d6efd;
    }
</style>
</head>
<body>
    <div class="login-container">
        <div class="login-card">
            <h2>Locker System Login</h2>

            <ul class="nav nav-tabs" id="loginTabs">
                <li class="nav-item">
                    <a class="nav-link active" data-bs-toggle="tab" href="#parent">Parent</a>
                </li>
                <li class="nav-item">
                    <a class="nav-link" data-bs-toggle="tab" href="#admin">Admin</a>
                </li>
            </ul>

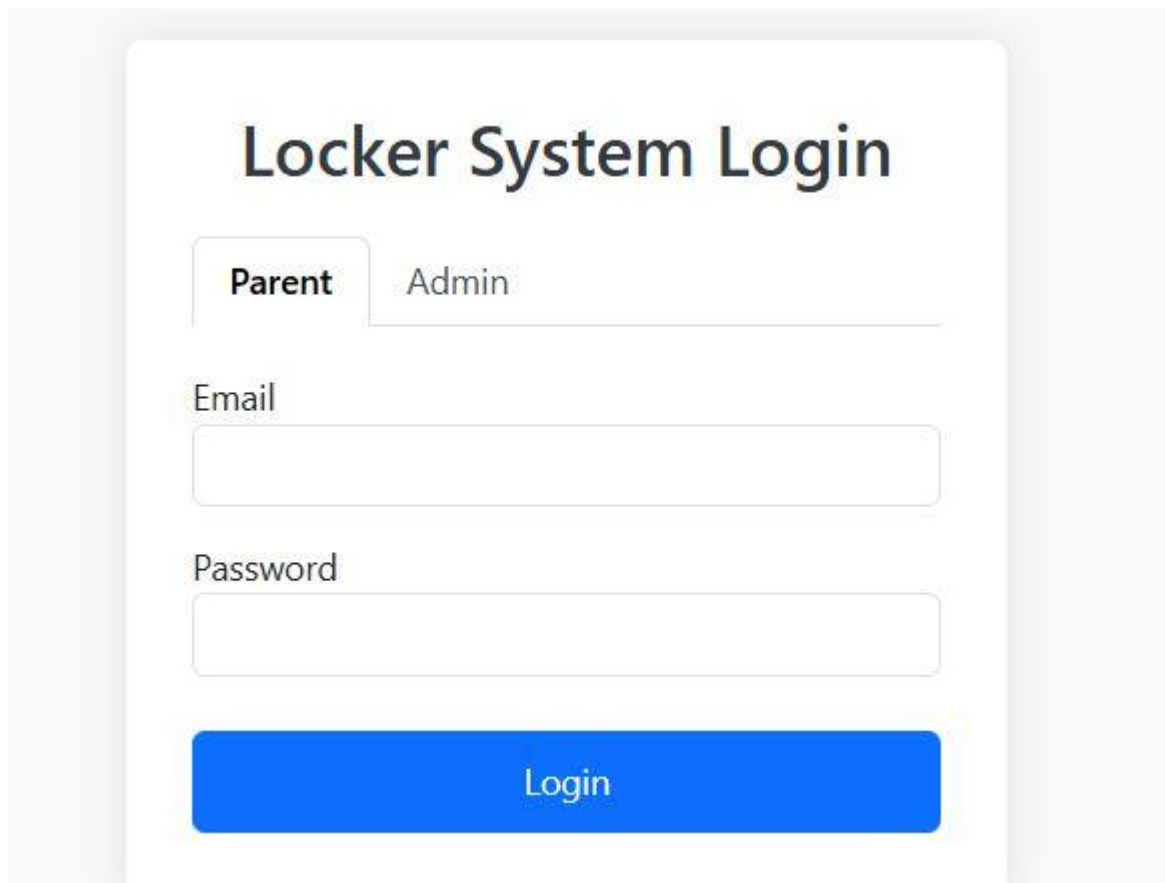
            <div class="tab-content">
                <div id="parent" class="tab-pane active">
                    <form th:action="@{/login}" method="post">
                        <input type="hidden" name="userType" value="parent">
                        <div class="form-group">
                            <label for="parentEmail">Email</label>
                            <input type="email" class="form-control" id="parentEmail" name="email"
required>
                        </div>
                        <div class="form-group">
                            <label for="parentPassword">Password</label>
                            <input type="password" class="form-control" id="parentPassword"
name="password" required>
                        </div>
                        <button type="submit" class="btn btn-primary btn-login">Login</button>
                    </form>
                </div>

                <div id="admin" class="tab-pane fade">

```

```
<form th:action="@{/login}" method="post">
  <input type="hidden" name="userType" value="admin">
  <div class="form-group">
    <label for="adminEmail">Email</label>
    <input type="email" class="form-control" id="adminEmail" name="email"
required>
  </div>
  <div class="form-group">
    <label for="adminPassword">Password</label>
    <input type="password" class="form-control" id="adminPassword"
name="password" required>
  </div>
  <button type="submit" class="btn btn-primary btn-login">Login</button>
</form>
</div>
</div>
</div>
</div>

<script
src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.0/dist/js/bootstrap.bundle.min.js"></
script>
</body>
</html>
```

A screenshot of a web form titled "Locker System Login". The form is white with rounded corners and a subtle shadow, set against a light gray background. At the top, the title "Locker System Login" is displayed in a large, bold, dark blue font. Below the title, there are two tabs: "Parent" and "Admin". The "Parent" tab is currently selected, indicated by a blue underline. Under the "Parent" tab, there are two input fields: "Email" and "Password". Both fields are empty and have a light gray border. Below the input fields, there is a prominent blue button with the text "Login" in white, centered on the button.

Locker System

Dashboard

Apply for Locker

My Students

Payments

Logout

## Parent Dashboard

Help

### Welcome

Welcome to the Amandla High School Locker Booking System.

From here you can:

- Apply for a locker for your student
- View locker assignments
- Make payments
- View your students' information

### Quick Actions

Apply for Locker

Make Payment

### Recent Notifications

Welcome to the system

Thank you for registering with the Amandla High School Locker Booking System.

Activate Windows

Go to Settings to activate Windows.

Today

## 4. Assessment 2

### Question 1 [10]

#### Cleaning the data

**1.1 Download the data file (Parent\_Student\_Data) from Additional Resources on the myModules 2025 Site.**

**Refer to Task 8 regarding cleaning data.**

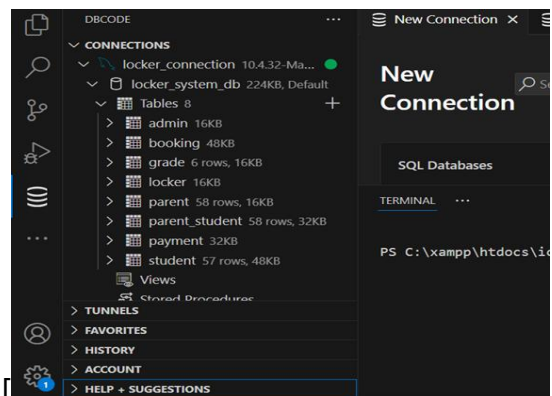
**1.2 Follow the process to clean the data. Attached the clean data file to the end of your assessment.**

### Question 2 [20]

#### Create the database

**2.1 Create the database structure and database tables for your system according to your ERD diagram.**

**2.2 Import the data from the data file into your database.**



[

The first screenshot shows the database structure of 'locker\_system\_db'. It includes tables like 'admin', 'booking', 'grade', 'locker', 'parent', 'parent\_student', 'payment', 'student', 'information\_schema', 'mysql', 'performance\_schema', 'phpmyadmin', and 'test'. The 'parent' table is selected, showing its columns: ParentID, Name, Surname, Email, MobileNo, and Address. The data for the 'parent' table is as follows:

| #  | ParentID      | Name    | Surname  | Email         | MobileNo   | Address          |
|----|---------------|---------|----------|---------------|------------|------------------|
| 1  | 1008113111123 | Ethan   | Wilson   | ethan.wilson_ | 0737248373 | 636 Cedar Street |
| 2  | 202019503196  | Jane    | Taylor   | jane.taylor@  | 0781998910 | 911 Ash Street   |
| 3  | 3018701182    | Mary    | Johnson  | mary.j@gmail  | 0832345678 | 456 Oak Ave      |
| 4  | 306052541142  | Emma    | Anderson | emma.anderso  | 0721206388 | 704 Willow Stre  |
| 5  | 4108192658003 | Olivia  | Anderson | olivia.ander  | 0714962168 | 404 Cedar Street |
| 6  | 4109137427178 | James   | Thomas   | james.thomas  | 0789012345 | 246 Redwood Cou  |
| 7  | 4204287904104 | Liam    | Nkosi    | liam.nkosi@   | 0744083306 | 433 Birch Street |
| 8  | 4207012946087 | Emma    | Smith    | emma.smith@   | 0749100605 | 718 Ash Street   |
| 9  | 4409125431129 | John    | Nkosi    | john.nkosi@   | 0799536039 | 436 Elm Street   |
| 10 | 4510283636054 | Noah    | White    | noah.white@   | 0777393801 | 604 Pine Street  |
| 11 | 4608148192183 | John    | Anderson | john.anderso  | 0777769694 | 789 Willow Stre  |
| 12 | 4609139102037 | Olivia  | Smith    | olivia.smith  | 0763380717 | 216 Oak Street   |
| 13 | 4708037500102 | Ethan   | Wilson   | ethan.wilson  | 0718425293 | 500 Birch Street |
| 14 | 4803233540087 | Ethan   | Nkosi    | ethan.nkosi@  | 0722944641 | 336 Willow Stre  |
| 15 | 4809018674075 | Robert  | Taylor   | robert.taylo  | 0743877000 | 162 Ash Street   |
| 16 | 4809209872196 | Robert  | Smith    | robert.smith  | 0768346836 | 757 Cedar Street |
| 17 | 4901218928125 | Michael | Thomas   | michael.thom  | 0711790361 | 104 Elm Street   |
| 18 | 5004038523192 | Linda   | Anderson | linda.anders  | 0778901234 | 135 Spruce Stre  |

The second screenshot shows the 'parent\_student' table structure and data. The columns are ParentID, StudentNo, Name, Surname, and LockerID. The data is as follows:

| #  | ParentID      | StudentNo | Name | Surname | LockerID |
|----|---------------|-----------|------|---------|----------|
| 1  | 1008113111123 | 647927    |      |         |          |
| 2  | 202019503196  | 895067    |      |         |          |
| 3  | 3018701182    | 357874    |      |         |          |
| 4  | 306052541142  | 528034    |      |         |          |
| 5  | 4108192658003 | 366289    |      |         |          |
| 6  | 4109137427178 | 910983    |      |         |          |
| 7  | 4204287904104 | 720053    |      |         |          |
| 8  | 4207012946087 | 558556    |      |         |          |
| 9  | 4409125431129 | 739637    |      |         |          |
| 10 | 4510283636054 | 801075    |      |         |          |
| 11 | 4608148192183 | 977032    |      |         |          |
| 12 | 4609139102037 | 801734    |      |         |          |
| 13 | 4708037500102 | 309568    |      |         |          |
| 14 | 4803233540087 | 382254    |      |         |          |
| 15 | 4809018674075 | 916977    |      |         |          |
| 16 | 4809209872196 | 271520    |      |         |          |
| 17 | 4901218928125 | 922628    |      |         |          |
| 18 | 5004038523192 | 200443    |      |         |          |

The third screenshot shows the 'student' table structure and data. The columns are StudentNo, GradeNo, Name, Surname, and LockerID. The data is as follows:

| #  | StudentNo | GradeNo | Name    | Surname  | LockerID |
|----|-----------|---------|---------|----------|----------|
| 1  | 110216    | Grade9  | Olivia  | Wilson   | (null)   |
| 2  | 163680    | Grade8  | Emma    | Wilson   | (null)   |
| 3  | 173463    | Grade9  | Michael | Anderson | (null)   |
| 4  | 200443    | Grade11 | Ava     | Anderson | (null)   |
| 5  | 217985    | Grade10 | Liam    | Johnson  | (null)   |
| 6  | 221375    | Grade11 | Ava     | Taylor   | (null)   |
| 7  | 248256    | Grade10 | Liam    | Nkosi    | (null)   |
| 8  | 264399    | Grade8  | Robert  | Thomas   | (null)   |
| 9  | 271520    | Grade8  | Alice   | Smith    | (null)   |
| 10 | 277788    | Grade10 | Olivia  | Nkosi    | (null)   |
| 11 | 287868    | Grade8  | David   | Nkosi    | (null)   |
| 12 | 309568    | Grade9  | Jane    | Wilson   | (null)   |
| 13 | 312754    | Grade10 | Liam    | Smith    | (null)   |
| 14 | 317750    | Grade10 | Ava     | Smith    | (null)   |
| 15 | 357874    | Grade8  | Liam    | Johnson  | (null)   |
| 16 | 366289    | Grade9  | Liam    | Anderson | (null)   |
| 17 | 382254    | Grade8  | Michael | Nkosi    | (null)   |
| 18 | 390412    | Grade9  | James   | Wilson   | (null)   |

]

[Please make sure that the screenshots is readable!]

[  
 CREATE DATABASE locker\_system\_db;  
 USE locker\_system\_db;

```
CREATE TABLE Grade (  
    GradeNo VARCHAR(10) PRIMARY KEY  
);
```

```
CREATE TABLE Locker (  
    LockerID INT PRIMARY KEY,  
    Location VARCHAR(50),  
    Size VARCHAR(20),  
    Status VARCHAR(20)  
);
```

```
CREATE TABLE student (  
    StudentNo VARCHAR(10) PRIMARY KEY,  
    GradeNo VARCHAR(10),  
    Name VARCHAR(50),  
    Surname VARCHAR(50),  
    LockerID INT,  
    FOREIGN KEY (GradeNo) REFERENCES Grade(GradeNo),  
    FOREIGN KEY (LockerID) REFERENCES Locker(LockerID)  
);
```

```
CREATE TABLE parent (  
    ParentID VARCHAR(20) PRIMARY KEY,  
    Name VARCHAR(50),  
    Surname VARCHAR(50),  
    Email VARCHAR(100),  
    MobileNo VARCHAR(15),  
    Address TEXT  
);
```

```
CREATE TABLE Payment (  
    PaymentID INT AUTO_INCREMENT PRIMARY KEY,  
    ParentID VARCHAR(20),  
    Amount DECIMAL(10,2),  
    PaymentDate DATE,  
    ProofOfPayment VARCHAR(255),  
    FOREIGN KEY (ParentID) REFERENCES Parent(ParentID)  
);
```

```
CREATE TABLE Booking (  

```

```
BookingID INT AUTO_INCREMENT PRIMARY KEY,  
StudentID VARCHAR(10),  
LockerID INT,  
BookingDate DATE,  
Status VARCHAR(20),  
FOREIGN KEY (StudentID) REFERENCES Student(StudentNo),  
FOREIGN KEY (LockerID) REFERENCES Locker(LockerID)  
);
```

```
CREATE TABLE Admin (  
AdminID INT AUTO_INCREMENT PRIMARY KEY,  
Name VARCHAR(50),  
Email VARCHAR(100),  
Password VARCHAR(255)  
);
```

```
CREATE TABLE parent_student (  
ParentID VARCHAR(20),  
StudentNo VARCHAR(10),  
PRIMARY KEY (ParentID, StudentNo),  
FOREIGN KEY (ParentID) REFERENCES Parent(ParentID),  
FOREIGN KEY (StudentNo) REFERENCES Student(StudentNo)  
);...]
```



### **Cleaned Data:**



Cleaned\_Parent\_Student\_Data (1).csv

Please see below table its same as data inside excel spreadsheet attached.

| Parent Title | Parent ID Number | Parent Name | Parent Surname | Parent Email Address       | Parent Home Address | Phone Number | Student Number | Student Name | Student Surname | Student Grade |
|--------------|------------------|-------------|----------------|----------------------------|---------------------|--------------|----------------|--------------|-----------------|---------------|
| Mr           | 7110115033116    | John        | Smith          | john.smith@gmail.com       | 123 Maple Street    | 0821234567   | 331001         | Emma         | Smith           | Grade 9       |
| Mrs          | 3018701182689    | Mary        | Johnson        | mary.johnson@gmail.com     | 456 Oak Ave         | 0832345678   | 357874         | Liam         | Johnson         | Grade 8       |
| Ms           | 9504200125035    | Linda       | Brown          | linda.brown@gmail.com      | 789 Pine Rd         | 0843456789   | 550037         | Olivia       | Brown           | Grade 10      |
| MR           | 9411277787016    | David       | Johnson        | david.johnson@gmail.com    | 321 Maple Lane      | 0745678901   | 217985         | Liam         | Johnson         | Grade 10      |
| Mrs          | 9298654199864    | Emma        | Wilson         | emma.wilson@gmail.com      | 654 Cedar Drive     | 0756789012   | 110216         | Olivia       | Wilson          | Grade 9       |
| Dr           | 9212011817041    | Robert      | Taylor         | robert.taylor@gmail.com    | 987 Birch Boulevard | 0767890123   | 764982         | Noah         | Taylor          | Grade 8       |
| Ms           | 5004038523192    | Linda       | Anderson       | linda.anderson@gmail.com   | 135 Spruce Street   | 0778901234   | 200443         | Ava          | Anderson        | Grade 11      |
| Mr           | 4109137427178    | James       | Thomas         | james.thomas@gmail.com     | 246 Redwood Court   | 0789012345   | 910983         | Ethan        | Thomas          | Grade 10      |
| Mrs          | 5612226663035    | Robert      | Wilson         | robert.wilson@gmail.com    | 189 Pine Street     | 0735460310   | 390412         | James        | Wilson          | Grade 9       |
| Mr           | 9101735471758    | Michael     | Anderson       | michael.anderson@gmail.com | 702 Maple Street    | 0775510858   | 878977         | Noah         | Anderson        | Grade 9       |
| Ms           | 4207012946087    | Emma        | Smith          | emma.smith@gmail.com       | 718 Ash Street      | 0749100605   | 558556         | Liam         | Smith           | Grade 10      |
| Mrs          | 8305068147131    | Ava         | Smith          | ava.smith@gmail.com        | 599 Spruce Street   | 0783072551   | 317750         | Ava          | Smith           | Grade 10      |
| Mr           | 9505017498148    | Ava         | Hall           | ava.hall@gmail.com         | 332 Maple Street    | 0791798774   | 453633         | Emily        | Hall            | Grade 11      |
| Ms           | 6602050571067    | Liam        | White          | liam.white@gmail.com       | 842 Birch Street    | 0737988829   | 611784         | Jane         | White           | Grade 8       |
| Mrs          | 9012129123195    | Noah        | Hall           | noah.hall@gmail.com        | 190 Willow Street   | 0743682129   | 582349         | John         | Hall            | Grade 10      |
| Dr           | 3060525411428    | Emma        | Anderson       | emma.anderson@gmail.com    | 704 Willow Street   | 0721206388   | 528034         | Jane         | Anderson        | Grade 11      |
| Ms           | 9507203452020    | Robert      | Anderson       | robert.anderson@gmail.com  | 875 Maple Street    | 0739094911   | 173463         | Michael      | Anderson        | Grade 9       |
| Mr           | 6806020888197    | Michael     | Nkosi          | michael.Nkosi@gmail.com    | 897 Cedar Street    | 0798801632   | 287868         | David        | Nkosi           | Grade 8       |
| Dr           | 7807275046086    | Liam        | Brown          | liam.brown@gmail.com       | 492 Spruce Street   | 0786828544   | 908979         | Emily        | Brown           | Grade 10      |
| Dr           | 4809209872196    | Robert      | Smith          | robert.smith@gmail.com     | 757 Cedar Street    | 0768346836   | 271520         | Alice        | Smith           | Grade 8       |
| Mrs          | 4204287904104    | Liam        | Nkosi          | liam.Nkosi@gmail.com       | 433 Birch Street    | 0744083306   | 720053         | Jane         | Nkosi           | Grade 10      |
| Dr           | 6120643431829    | Ethan       | Nkosi          | ethan.Nkosi@gmail.com      | 852 Cedar Street    | 0752005034   | 761953         | Sophia       | Nkosi           | Grade 10      |
| Ms           | 4809018674075    | Robert      | Taylor         | robert.taylor@gmail.com    | 162 Ash Street      | 0743877000   | 916977         | James        | Taylor          | Grade 9       |
| Mr           | 5707284141112    | Liam        | Anderson       | liam.anderson@gmail.com    | 327 Redwood Street  | 0796115093   | 407505         | Emily        | Anderson        | Grade 9       |
| Mr           | 7009119979038    | Ava         | Wilson         | ava.wilson@gmail.com       | 911 Birch Street    | 0764281373   | 652308         | Michael      | Wilson          | Grade 10      |
| Mrs          | 5106123937064    | Alice       | Smith          | alice.smith@gmail.com      | 447 Birch Street    | 7597640456   | 312754         | Liam         | Smith           | Grade 10      |
| Dr           | 4510283636054    | Noah        | White          | noah.white@gmail.com       | 604 Pine Street     | 0777393801   | 801075         | Ava          | White           | Grade 11      |
| Ms           | 8502022675077    | Jane        | Anderson       | jane.anderson@gmail.com    | 431 Spruce Street   | 0758356276   | 825753         | Ethan        | Anderson        | Grade 8       |

|     |               |         |          |                           |                    |            |        |         |          |          |
|-----|---------------|---------|----------|---------------------------|--------------------|------------|--------|---------|----------|----------|
| Dr  | 4409125431129 | John    | Nkosi    | john.Nkosi@gmail.com      | 436 Elm Street     | 0799536039 | 739637 | John    | Nkosi    | Grade 9  |
| Ms  | 6305123394192 | Emma    | Johnson  | emma.johnson@gmail.com    | 715 Birch Street   | 0763177499 | 902543 | Alice   | Johnson  | Grade 11 |
| Mr  | 5912127358130 | Michael | White    | michael.white@gmail.com   | 238 Oak Street     | 0743043868 | 749847 | Robert  | White    | Grade 9  |
| Mrs | 6603287420165 | Sophia  | Hall     | sophia.hall@gmail.com     | 776 Cedar Street   | 0778621486 | 611591 | Liam    | Hall     | Grade 8  |
| Mr  | 6012217265129 | John    | Nkosi    | john.Nkosi@gmail.com      | 600 Elm Street     | 0728680821 | 899951 | Liam    | Nkosi    | Grade 8  |
| Ms  | 9602046538016 | Ava     | Thomas   | ava.thomas@gmail.com      | 446 Redwood Street | 0711846135 | 264399 | Robert  | Thomas   | Grade 8  |
| Dr  | 7303154126003 | Ethan   | Taylor   | ethan.taylor@gmail.com    | 404 Oak Street     | 0799314784 | 509342 | Olivia  | Taylor   | Grade 8  |
| Ms  | 2020195031966 | Jane    | Taylor   | jane.taylor@gmail.com     | 911 Ash Street     | 0781998910 | 895067 | Alice   | Taylor   | Grade 9  |
| Mrs | 5512102556093 | Liam    | Wilson   | liam.wilson@gmail.com     | 413 Ash Street     | 0748585981 | 828859 | Ethan   | Wilson   | Grade 12 |
| Mr  | 9309202925129 | Liam    | Smith    | liam.smith@gmail.com      | 310 Maple Street   | 0742749180 | 628670 | Ethan   | Smith    | Grade 10 |
| Mrs | 8090359780987 | John    | Smith    | john.smith@gmail.com      | 140 Maple Street   | 0775223322 | 508534 | Emma    | Smith    | Grade 10 |
| Ms  | 9912089374198 | Sophia  | Hall     | sophia.hall@gmail.com     | 661 Maple Street   | 0777667807 | 773539 | John    | Hall     | Grade 8  |
| Dr  | 6705260699127 | David   | Johnson  | david.johnson@gmail.com   | 473 Birch Street   | 0784780625 | 617741 | Olivia  | Johnson  | Grade 12 |
| Mr  | 1008113111123 | Ethan   | Wilson   | ethan.wilson@gmail.com    | 636 Cedar Street   | 0737248373 | 647927 | Alice   | Wilson   | Grade 12 |
| Mr  | 9122667840153 | Noah    | Nkosi    | noah.Nkosi@gmail.com      | 353 Oak Street     | 0763407066 | 277788 | Olivia  | Nkosi    | Grade 10 |
| Mrs | 4803233540087 | Ethan   | Nkosi    | ethan.Nkosi@gmail.com     | 336 Willow Street  | 0722944641 | 382254 | Michael | Nkosi    | Grade 8  |
| Mr  | 9501303848045 | Ava     | Wilson   | ava.wilson@gmail.com      | 487 Spruce Street  | 0714946067 | 163680 | Emma    | Wilson   | Grade 8  |
| Mr  | 6711189204048 | Ethan   | Nkosi    | ethan.Nkosi@gmail.com     | 382 Elm Street     | 0738510987 | 248256 | Liam    | Nkosi    | Grade 10 |
| Mrs | 6301209154077 | Olivia  | Hall     | olivia.hall@gmail.com     | 864 Cedar Street   | 0717403055 | 582349 | James   | Hall     | Grade 8  |
| Mrs | 7811225151184 | Emma    | Johnson  | emma.johnson@gmail.com    | 483 Oak Street     | 0787978403 | 567866 | Olivia  | Johnson  | Grade 9  |
| Dr  | 4608148192183 | John    | Anderson | john.anderson@gmail.com   | 789 Willow Street  | 0777769694 | 977032 | James   | Anderson | Grade 11 |
| Mr  | 6204032653193 | Michael | Taylor   | michael.taylor@gmail.com  | 701 Spruce Street  | 0721216884 | 762563 | John    | Taylor   | Grade 11 |
| Dr  | 4901218928125 | Michael | Thomas   | michael.thomas@gmail.com  | 104 Elm Street     | 0711790361 | 922628 | Sophia  | Thomas   | Grade 9  |
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| Mr  | 4108192658003 | Olivia  | Anderson | olivia.anderson@gmail.com | 404 Cedar Street   | 0714962168 | 366289 | Liam    | Anderson | Grade 9  |

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|    |               |      |          |                         |                    |            |        |        |          |         |
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## 5. Assessment 1

### Programming Languages (3)

Identified the programming languages that you will use to develop your system.

- **C#** (.Net backend Framework)
- **Blazor/HTML** (frontend templating)
- **Entity Framework**(ORM for MySQL)

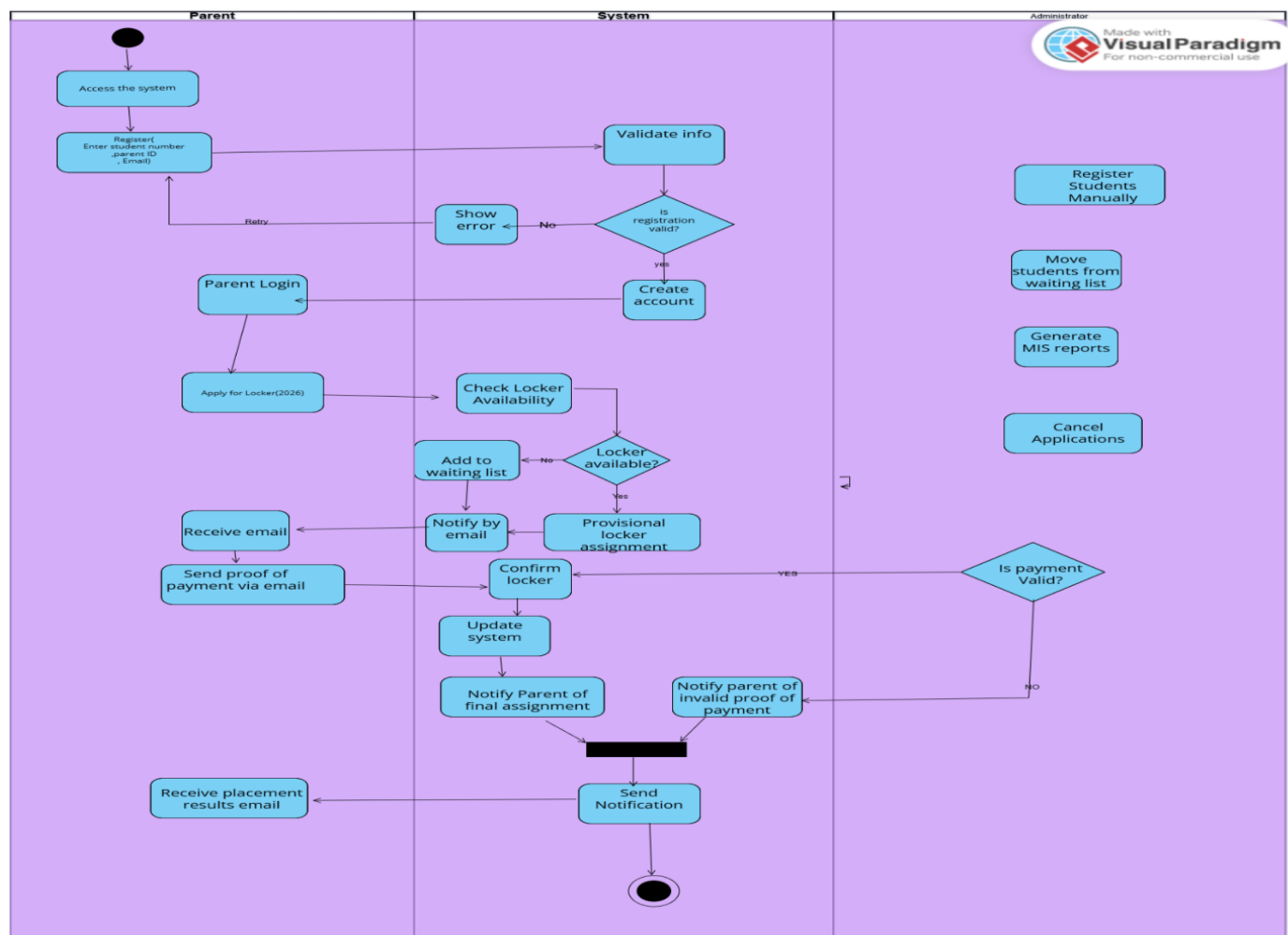
### Database Software (1)

Identified the database software that you will use to develop your database.

- **MySQL** (configured in application.properties).

### Question 2 [20]

Start by designing your system by completing an Activity Diagram for your system.



## Question 3 [20]

Start by designing your database by completing an ERD Diagram for your database.

