MACHAKOS FUNERAL HOME MORGUE MANAGEMENT SYSTEM

PRESENTED BY : CATHERINE MUTIO KYALO

INDEX : 3017010005

INSTITUTE : MACHAKOS UNIVERSITY

CENTER CODE: 301701

COURSE NAME : INFORMATION COMMUNICATION TECHNOLOGY

SUPERVISED BY : MR KELVIN MBITHI

PRESENTED TO KENYA NATIONAL EXAMINATION COUNCIL IN PARTIAL FULFILMENT OF THE AWARD OF DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

SERIES : JULY 2025

DECLARATION

I hereby declare that this is my original work and it has not been presented to Kenya National Examination Council or other institution

Name : CATHERINE MUTIO KYALO

Signature

Date : 25/6/2025

Index : 3017010005

The project is to be presented to Kenya National Examination Council with the approval of my supervisor

MR KELVIN MBITHI

Signature

Date

ACKNOWLEDGEMENT

All thanks to the Almighty for the health and strong physical effort through the course.

I would like to thank Machakos University Institution for giving me the opportunity to express my knowledgeable idea and skills through the morgue management system project. I thank my teacher for the advice, guidance and support that I received from him through the entire project.

I would also thank my parents and friends for the support, encouragement and the financial support aided for the success of this project.

DEDICATION

I dedicate this project to my loving family, friends, relatives and my teacher for the financial and material support all through. May the Almighty give them more years on this earth.

Abbreviations

Html – Hypertext markup language

CSS – Cascaded styling sheet

Php – Hypertext preprocessor

MYSQL – My Structured Query Language

CRUD – Create, read, update and delete

INT – Integer

VARCHAR – Variable Character

DEFINITION OF TERMS

- **Morgue Management System** – A computerized system used to manage the operations of a funeral home's mortuary, including storage, billing, and recordkeeping.
- **Deceased** – A person who has passed away and is being stored in the funeral home’s morgue.
- **Slot** – A storage space in the morgue used to hold the body of a deceased person. Each slot can either be available or occupied.
- **Invoice** – A bill generated by the system that shows the total charges for morgue services based on duration of stay.
- **Retrieval Log** – A record that shows when a deceased person is collected from the morgue and the name of the person who collected them.
- **User** – A staff member, such as a receptionist or morgue attendant, who logs into the system to perform tasks like adding details or generating invoices.
- **Admin** – A person with full access to the system, responsible for managing users and overseeing overall system activities.
- **Database** – A structured collection of data that stores information such as deceased records, user accounts, invoices, and slot availability.
- **Login** – The process of entering a username and password to gain access to the system.
- **Billing** – The calculation of charges for services based on the number of days a deceased person stays in the morgue.
- **CRUD Operations** – The basic functions in any system: Create, Read, Update, and Delete data from the database.
- **Web-Based System** – A system that runs in a web browser and can be accessed over a local network or the internet.
- **Session** – A user’s active period in the system from the time they log in to when they log out, used to track their actions.

- **Normalization** – A database design process that organizes data to eliminate duplication and improve efficiency.

ABSTRACT / EXECUTIVE SUMMARY

This project is about creating a web-based system to help Machakos Funeral Home manage its morgue services better. The system was made to solve problems like keeping paper records, calculating bills manually, and not knowing which storage slots are available. With the help of tools like HTML, CSS, JavaScript, PHP, and MySQL, the system now makes it easier to record details of the deceased, track available storage slots, calculate bills automatically, and generate reports. It also has separate login areas for users and the admin to improve security and control. The system helps save time, reduce mistakes, and make the work of managing the morgue more organized and efficient.

Contents

MORGUE MANAGEMENT SYSTEM

CHAPTER 1: INTRODUCTION

Background Of The Study

This system aims to address the challenges of traditional, manual method of managing morgue processes, which are often prone to errors, inefficiencies and delay in service delivery.

The project is designed to improve the tracking, record keeping and retrieval of bodies stored in the morgue.

This research organization will be Machakos Funeral Home located at Machakos County along Machakos – Nairobi road.

Machakos Funeral Home is responsible for providing critical services related to storing dead bodies for identification, removal for autopsy, cremation or other methods of disposal and transportation of deceased individuals.

Problem Definition

Currently, Machakos Funeral Home relies on manual database to manage its morgue services, which leads to several operational inefficiencies:

These problems include;

1. Manual record - keeping all records related to the deceased including identification detail storage, location and condition are documented manually. This method is prone to human error, leading to misplaced or inaccurate records.
2. Data security - paper based system are prone to manipulation. Sensitive information about the deceased is not adequately protected against unauthorized access
3. Inefficiency in data retrieval - in case of urgent need for retrieving specific

information about a deceased, staff may experience delays due to search through paper records which result in longer wait times for families and clients.

objectives of the research

This proposed research aims at solving the current problems by developing a computerized system which is going to:

1. capture data - ensuring that all records related to the deceased are accurate, up-to date and easily accessible.
2. Calculate bills automatically – the system will be able to accurately calculate bills for the mortuary bills of a deceased person.
3. Automated tracking system – the system will be able to track available storage slots.
4. Generate billing report – it will be enabling the staff to obtain a bailing report for a deceased person.

significance of the study

Researchers and Academics

- **Data Collection for Studies:** Facilitates studies on mortality rates, causes of death, and forensic research.
- **Improvement of Systems:** Helps in developing better strategies for morgue management

Morgue staff (Administrators, Technicians, and Attendants)

- **Efficient Workflow:** Automates record-keeping, reducing paperwork and errors.
- **Easy Body Tracking:** Ensures proper documentation of incoming and outgoing bodies.
- **Improved Accountability:** Minimizes misplacement of bodies and

misidentification.

Hospital and Morgue Management

- **Enhanced Operational Efficiency:** Reduces manual work and ensures smooth management.
- **Better Data Management:** Keeps proper records of deceased individuals, including autopsy reports and storage details.

Government and Health Authorities

Public Health Monitoring: Supports research on disease outbreaks and mortality trends.

Bereaved Families and the Public

- **Transparent Billing System:** Helps families understand and track morgue-related costs.

Funeral Homes and Insurance Companies

- **Reliable Documentation:** Provides necessary paperwork for insurance claims and death certificates.

Limitation of Study

1. Time constraints – research project often consumes a lot of time and the process involved in obtaining approvals, accessing data and conducting analysis and still balance studies.

2. Access restriction – morgue have strict access protocol due to the sensitive nature of the environment.

3. Language barrier – irrelevant response from respondents.

4. Costly – transport expenses to the organization of study and access to internet requires a lot of money.

scope of study

The proposed research organization will be a comprehensive, user-friendly tool designed to enhance the management and operation of Machakos Funeral Home. It will cover all aspects of funeral service provision from client management and service scheduling to inventory and financial tracking. The study will focus on developing and implementing this system, ensuring that it meets the need of both staff and clients while achieving operational processes.

CHAPTER 2: LITERATURE REVIEW

Discussion of existing design/literature

Machakos Funeral Home currently operates using a manual record keeping system with minimal technological integration. This system includes the following;

1. Manual Registration – Deceased bodies details such as name, date of arrival and next of kin are recorded in physical logbooks upon arrival.

2. Storage and Tracking – bodies are placed in refrigerated compartments, and their positions are manually assigned in a register. There is no automated tracking system.

3. Manual bailing – clients make cash payment or use of mobile money service, but receipts and financial records are maintained manually.

4. Service coordination – requests for embalming, viewing, and transportation are noted down on paper, and communication is done verbally or through handwritten instructions.

Critique of existing design

The manual database presents several challenges which include:

1. Prone to error and mismanagement – manual record keeping increase the risk of misplacing or misrecording critical information leading to confusion and inefficiencies.
2. Time consuming and slow processes – retrieving records, processing payments and coordinating services take longer due to lack of an automated system.
3. Lack of real time updates – since storage space is managed manually, it is difficult to track available slots in real time, leading to poor utilization.
4. Financial mismanagement risks – the absence of automated system to calculate financial bills and invoicing system makes financial tracking difficult, increasing the risk of fraud and miscalculation.
5. Limited Accessibility of records – since records are only available in physical form, retrieving historical data or checking body status remotely is not possible.

Evaluation of proposed design

To address these challenges a digital morgue management is proposed. The system will incorporate the following features;

1. Automated registration system – a digital platform for recording details of deceased individuals, reducing errors and ensuring accessibility.
2. Real time storage and tracking system – each body will be assigned a unique number, allowing real time tracking of storage slots.
3. Integrated calculation module – billing amount of a deceased person will be

calculated automatically to improve accuracy in calculation of finance.

Summary of gaps identified

Through the analysis of the existing system, several gaps have been identified;

1. Inefficient Communication – Lack of an integrated communication system makes coordination between staff, families, and relevant authorities slow and ineffective.
2. Inadequate Security of Records – Physical records are prone to loss, unauthorized access, or damage, leading to confidentiality risks and non-compliance with data protection regulations.
3. Absence of an Online Portal – Families and stakeholders do not have access to an online platform where they can make inquiries, book services, or access necessary documentation remotely.
4. Limited Reporting and Analytics – The funeral home lacks a structured system for generating reports on operations, trends, and resource utilization, which affects decision-making.

CHAPTER 3: RESEARCH METHODOLOGY

Research Questions

The study seeks to answer the following research questions:

1. What are the current challenges in managing funeral home operations in Machakos funeral home?
2. How can a digital system improve the efficiency of record-keeping and body tracking in the funeral home?
3. What are the key system features required for effective funeral home management?
4. How can automation enhance communication between funeral homes, families,

and relevant authorities?

Research Techniques/Methods Adopted/used

To gather relevant data and insights, the following research methods were used:

Primary Data Collection Methods

1. Interviews – Conducted with funeral home administrators, employees, and clients to understand their challenges and needs.
2. Questionnaires – Distributed to staff and users to collect information on current processes, limitations, and expectations.
3. Observations – Directly observed funeral home operations to identify workflow inefficiencies and areas needing automation.

Secondary Data Collection Methods

1. Literature Review – Reviewed existing studies, reports, and related funeral management systems to understand best practices.
2. Document Analysis – Analyzed existing funeral home records, policies, and government regulations to ensure compliance.

System Development Methodology

Agile Methodology Overview

Agile is an iterative software development methodology that focuses on incremental progress, continuous feedback, and user collaboration. It divides the project into small manageable iterations known as sprints, ensuring that functional components are developed, tested, and refined before progressing to the next phase.

Strengths of Agile Methodology

1. Flexibility and Adaptability **-** Agile accommodates changes throughout development, ensuring the system meets emerging needs.
2. Customer Involvement **-** Continuous feedback from morgue administrators, hospital staff, and other stakeholders ensures the system aligns with real-world requirements.
3. Faster Delivery **-** Iterative releases enable quicker implementation of working features, allowing early testing and adjustments.
4. Enhanced Collaboration **-** Developers, testers, and users work closely, reducing communication gaps and improving system efficiency.
5. Risk Reduction **-** Frequent testing and feedback cycles minimize risks of errors or system failure.

Limitations of Agile Methodology

1. Requires Constant User Involvement **-** Continuous stakeholder engagement may be difficult, especially in a hospital/morgue environment with busy schedules.
2. Difficult to Predict Costs and Time **-** Agile's iterative nature makes it challenging to estimate total project costs and duration.
3. Complex Documentation Management **-** Since Agile focuses on working software over comprehensive documentation, some critical records may be overlooked.

Waterfall Methodology

Strengths:

- Well-structured and sequential, making it easier to plan and document.
- Clear requirements from the start prevent scope creep.

Limitations:

- Inflexible to changes, making it difficult to accommodate new morgue management needs.
- Late testing phases may result in significant rework if errors are found.

Rapid Application Development (RAD)

Strengths:

- Speeds up development through prototyping and iterative feedback.
- Encourages user involvement, improving usability.

Limitations:

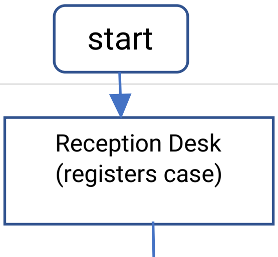
- Requires high user availability, which may be challenging for morgue staff.
- Not suitable for large-scale systems requiring extensive planning and documentation.

CHAPTER 4: SYATEM ANALYSIS

CURRENT SYSTEM DESIGN

The existing system relies heavily on manual processes, paperwork, and limited digital support. Below is a flowchart representing the current system operations:

Flowchart of Current System Operations



Flaws in the current system

- High Risk of Data Loss - Paper records can be misplaced, damaged, or lost.
- Inefficiency - The manual process is slow and prone to errors.
- Billing Discrepancies - Lack of automated tracking can lead to incorrect charges.
- Limited Accessibility - Staff must physically check logbooks for information.
- Security Issues - Unauthorized access to records is easier with manual logbooks.

PROPOSED SOLUTION

The proposed system will enhance service delivery, reduce inefficiencies, and improve record management for the Machakos Funeral Home. By transitioning from manual to digital operations, the funeral home will ensure a smoother and more transparent process for both staff and clients. The following are the possible solutions:

- Online Registration & Database Management - Clients' details stored in a secure digital system.
- Automated Record Keeping - Eliminating the need for manual logbooks.
- Digital Billing System - Ensuring transparency and easy tracking of payments
- Automated tracking system – Enhance easy tracking of available storage place for the deceased body.

This is how the above solutions will help solve some of the traditional database problems.

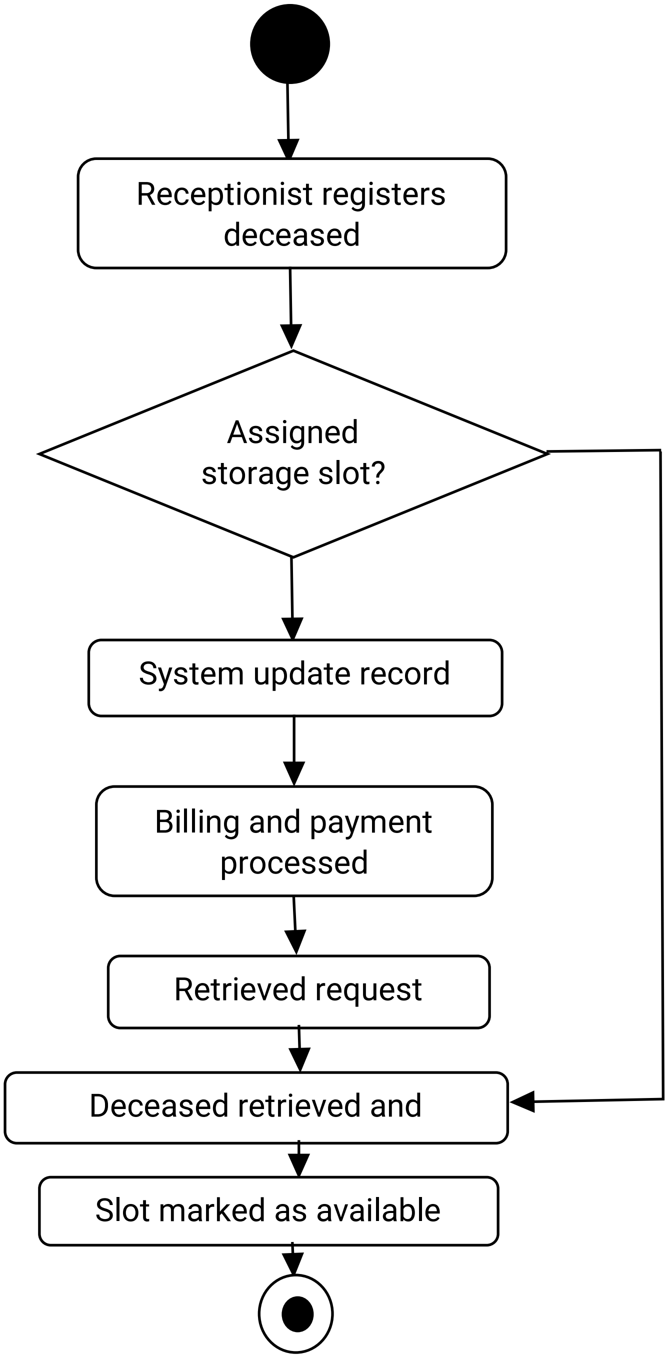
- Enhanced Efficiency -Reduced paperwork and faster service delivery.
- Improved Data Security - Digital records are protected from unauthorized access and physical damage.
- Better Financial Tracking - Minimized errors in billing and payment processing.
- Easier Information Retrieval - Staff can quickly access and update records.

CHAPTER 5: SYSTEM DESIGN

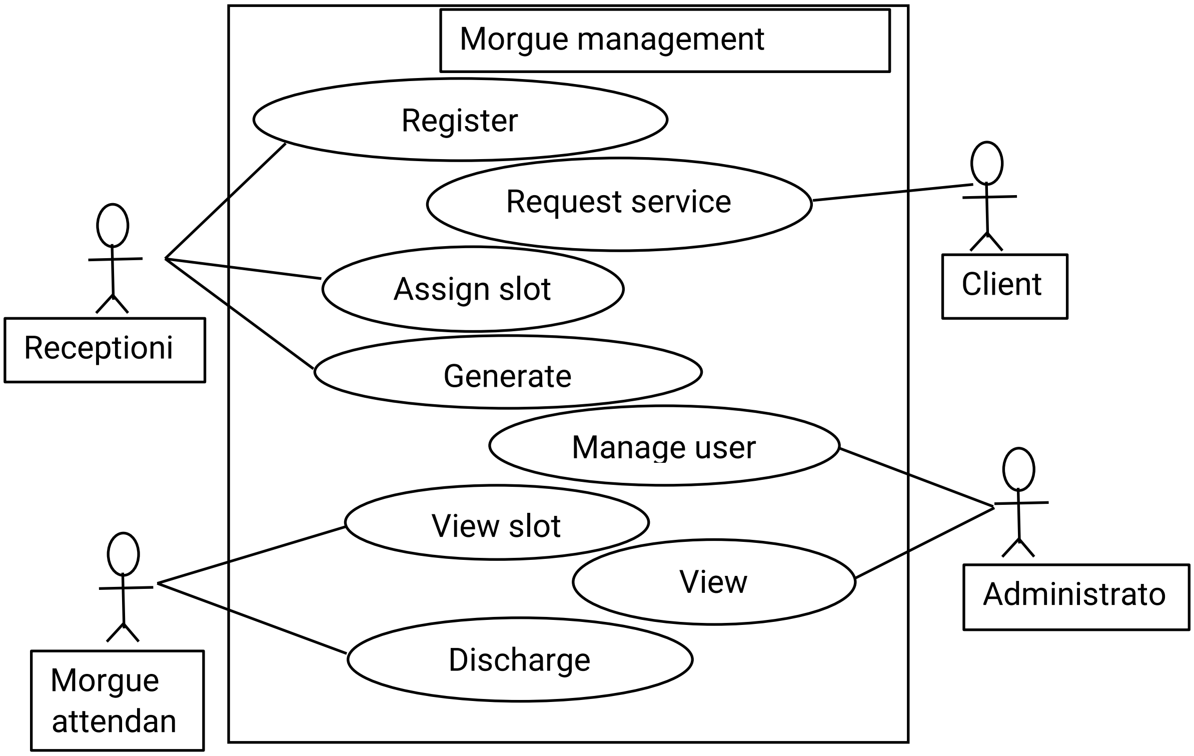
Design of proposed system

The proposed system aims to automate and streamline the operations at the Machakos Funeral Home, including the registration of deceased persons, tracking storage, managing retrieval, and billing. We can design the proposed system using the following diagrams:

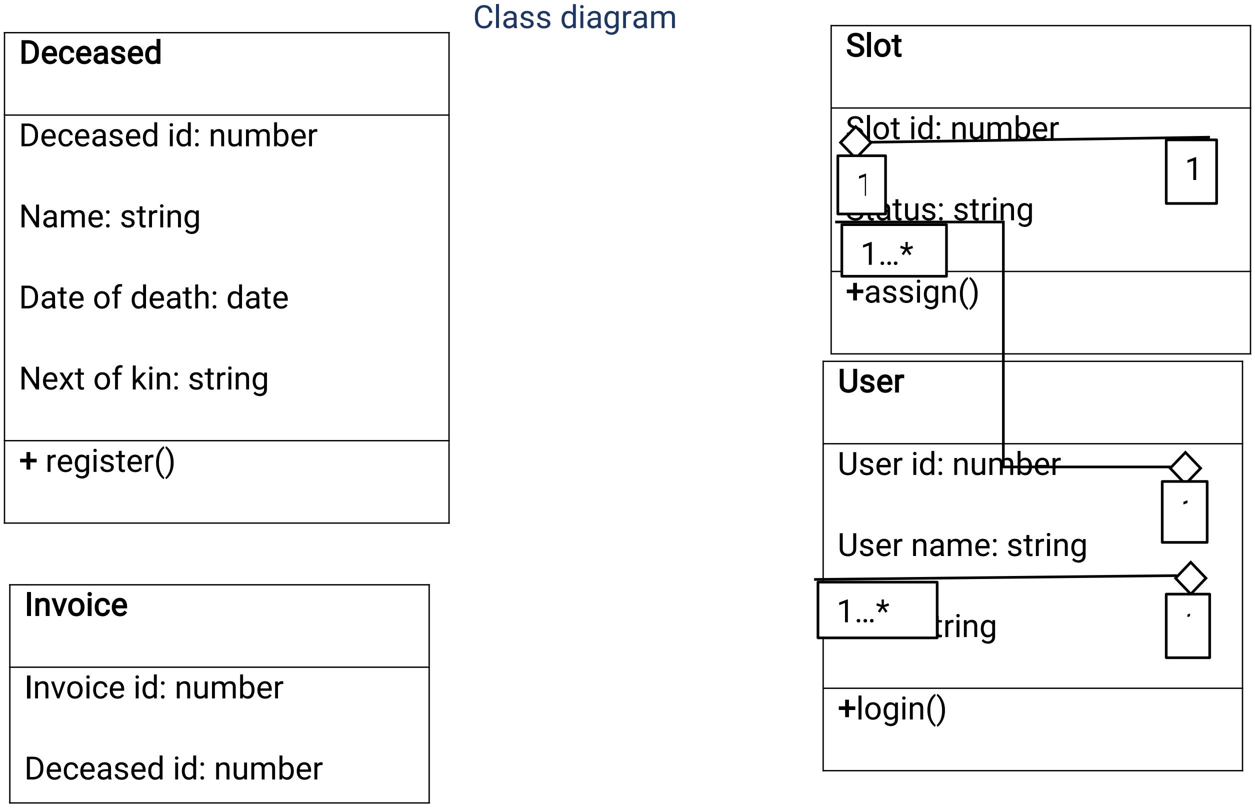
Activity diagram



Use case diagram



Class diagram



Amount: currency Status : string
+generate()

Normalization

Database normalization is a design technique used to organize a database into tables in such a way that it reduces redundancy and improves data integrity. It is a key process in system design to ensure that the database is efficient, consistent, and scalable.

In the Machakos Funeral Home Morgue Management System, normalization was applied to improve how deceased records, user accounts, storage slots, invoices, and retrieval logs are stored and managed.

Objectives of Normalization

- Eliminate redundant data (e.g., storing the same data in more than one table)
- Ensure data dependencies make sense
- Simplify data maintenance
- Enhance query performance

Normalization Example

Let’s take a sample unnormalized table that might exist before applying normalization.

Unnormalized Table (UNF)

DeceasedID	Name	DateOfDeath	NextOfKin	SlotID	SlotStatus	RetrievalDate	CollectedBy
1	John Mwangi	2024-06-01	Peter	12	Occupied	2024-06-10	Peter Mwangi
2	Jane Njeri	2024-06-02	Mercy	13	Available	-	-

This table contains multiple entities (deceased, slots, retrieval) — leading to data redundancy.

First Normal Form (1NF)

Goal: Eliminate repeating groups and ensure atomic (indivisible) values.

Table: Deceased

DeceasedID	Name	DateOfDeath	NextOfKin
1	John Mwangi	2024-06-01	Peter
2	Jane Njeri	2024-06-02	Mercy

Table: Slots

SlotID	SlotStatus

SlotID	SlotStatus
12	Occupied
13	Available

Table: Retrieval_Log

DeceasedID	RetrievalDate	CollectedBy
1	2024-06-10	Peter Mwangi

- Now, each table has only atomic fields, and data is separated logically.

Second Normal Form (2NF)

Goal: Remove partial dependencies (i.e., data that depends only on part of a composite primary key).

Let’s say we originally had a composite key of (DeceasedID, SlotID).

In 2NF, we ensure that all non-key attributes are fully dependent on the **entire** primary key — or we remove them.

Table: Deceased (Primary Key: DeceasedID)

DeceasedID	Name	DateOfDeath	NextOfKin
1	John Mwangi	2024-06-01	Peter

Table: Slots (Primary Key: SlotID)

SlotID	SlotStatus
12	Occupied

Table: Deceased_Slot (Links both)

DeceasedID	SlotID
1	12

Now we have removed partial dependency by isolating the SlotID in its own table.

Third Normal Form (3NF)

Goal: Remove transitive dependencies (i.e., non-key fields that depend on other non-key fields).

Suppose in the Deceased table we had this:

DeceasedID	Name	NextOfKin	KinPhone
1	John Mwangi	Peter	0712345678

Here, KinPhone depends on NextOfKin, not directly on DeceasedID — a transitive dependency.

Table: NextOfKin

KinID	KinName	KinPhone
1	Peter	0712345678

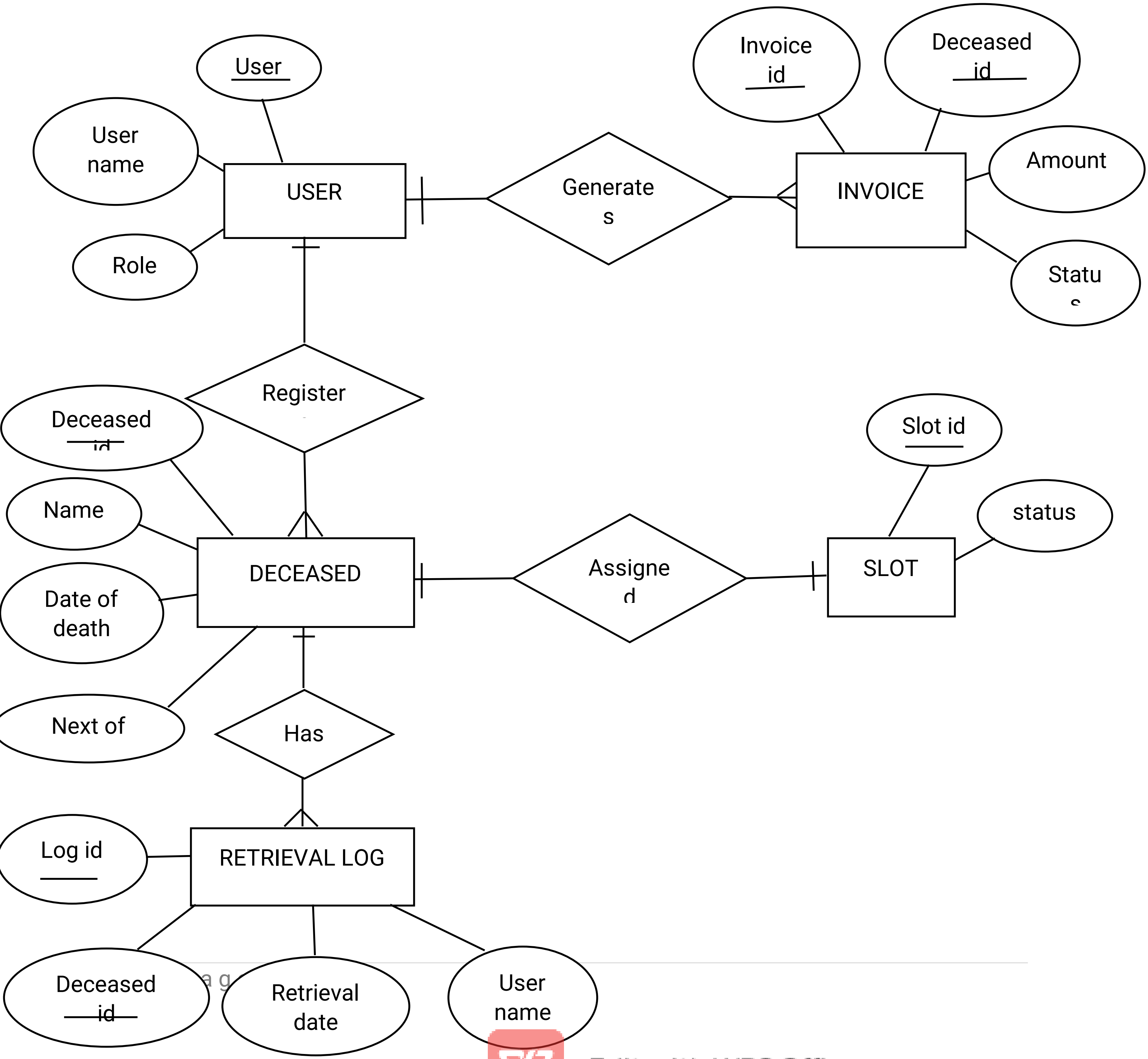
Table: Deceased

DeceasedID	Name	DateOfDeath	KinID
1	John Mwangi	2024-06-01	1

Now all non-key attributes depend **only on the primary key** — and not on other non-key fields.

ENTITY RELATIONSHIP DIAGRAM(ERD)

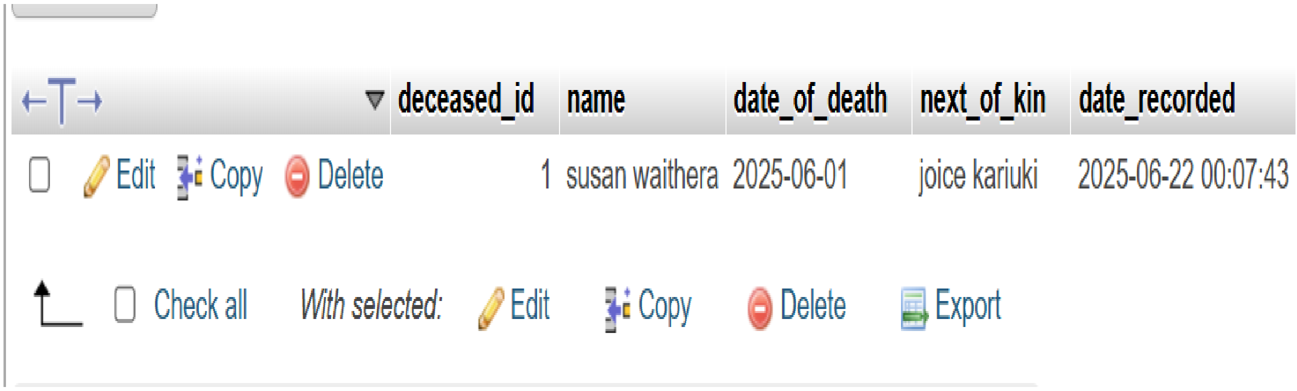
In the **Machakos Funeral Home Morgue Management System**, an **ERD (Entity-Relationship Diagram)** is used to visually represent how data is structured and how different parts of the system interact.



Tables:

Deceased

Field	Type	Size	Constrains
Deceased id	INT		Primary key,autoinc
Name	VARCHAR	100	NOT NULL
Date of death	DATE		NOT NULL
Next of kin	VARCHAR	100	
Date recorded	DATE		NOT NULL



	deceased_id	name	date_of_death	next_of_kin	date_recorded
□ Edit Copy Delete	1	susan waithera	2025-06-01	joice kariuki	2025-06-22 00:07:43

Slot

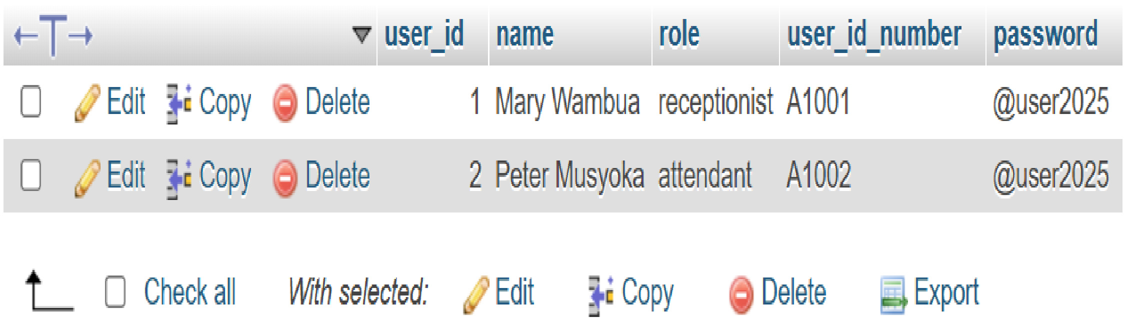
Field	Type	Size	Constraint
slot_id	INT		Primary Key, AutoInc
status	ENUM		(‘Available’, ‘Occupied’)
Deceased_id	INT		FK ’n Deceased

Invoice

Field	Type	Size	Constraint
invoice_id	INT		Primary Key, AutoInc
deceased_id	INT		FK ’n Deceased
Date_admitted	DATE		NOT NULL
Date_retrieved	DATE		NOT NULL
Rate_per_day	DECIMAL		NOT NULL
Total_amount	DECIMAL		NOT NULL
Date_generated	VARCHAR	20	NOT NULL

User

Field	Type	Size	Constraint
user_id	INT		Primary Key, AutoInc
username	VARCHAR	50	UNIQUE
role	VARCHAR	20	
User_id_number	INT		FK
password	VARCHAR		



←T→ ▼	user_id	name	role	user_id_number	password
□ Edit Copy Delete	1	Mary Wambua	receptionist	A1001	@user2025
□ Edit Copy Delete	2	Peter Musyoka	attendant	A1002	@user2025

□ Check all *With selected:* Edit Copy Delete Export

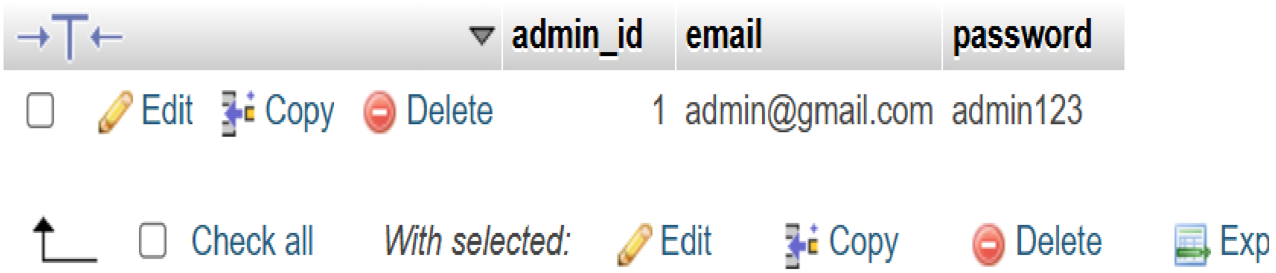
Retrieval log

Field	Type	Size	Constraint
retrieval_id	INT		Primary Key, AutoInc
deceased_id	INT		FK ʼn Deceased
retrieval_date	DATE		
retrieved_by	INT		FK ʼn User

ADMIN

Field	Type	Size	Constraint
Admin_id	INT		Primary key, Autoinc
email	VARCHAR	20	

password	VARCHAR	20	



admin_id	email	password
1	admin@gmail.com	admin123

Screenshot of a running database

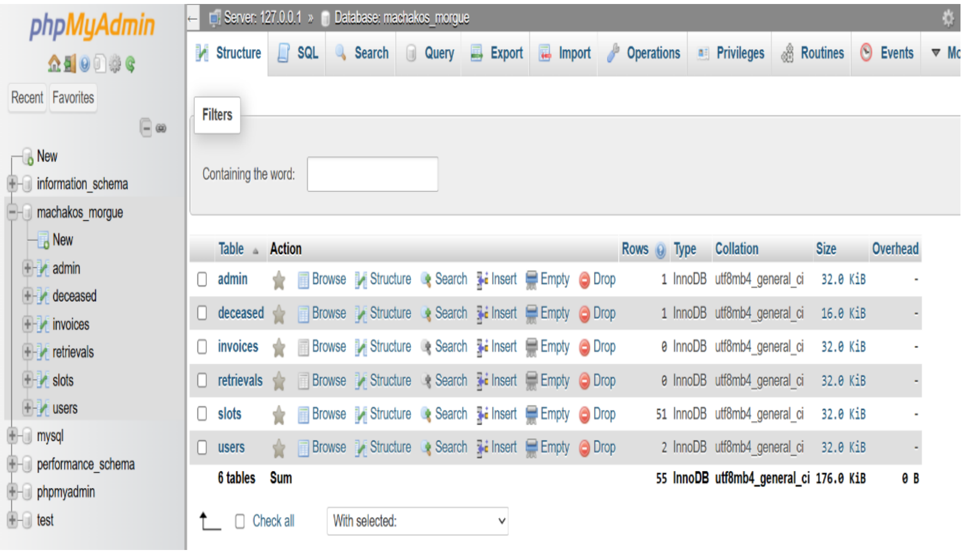


	Table	Action	Rows	Type	Collation	Size	Overhead
□	admin	☆ Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_general_ci	32.0 KiB	-
□	deceased	☆ Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_general_ci	16.0 KiB	-
□	invoices	☆ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	32.0 KiB	-
□	retrievals	☆ Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	32.0 KiB	-
□	slots	☆ Browse Structure Search Insert Empty Drop	51	InnoDB	utf8mb4_general_ci	32.0 KiB	-
□	users	☆ Browse Structure Search Insert Empty Drop	2	InnoDB	utf8mb4_general_ci	32.0 KiB	-
	6 tables	Sum	55	InnoDB	utf8mb4_general_ci	176.0 KiB	0 B

□ Check all   With selected:

CHAPTER 6 : SYSTEM DEVELOPMENT AND TASTING

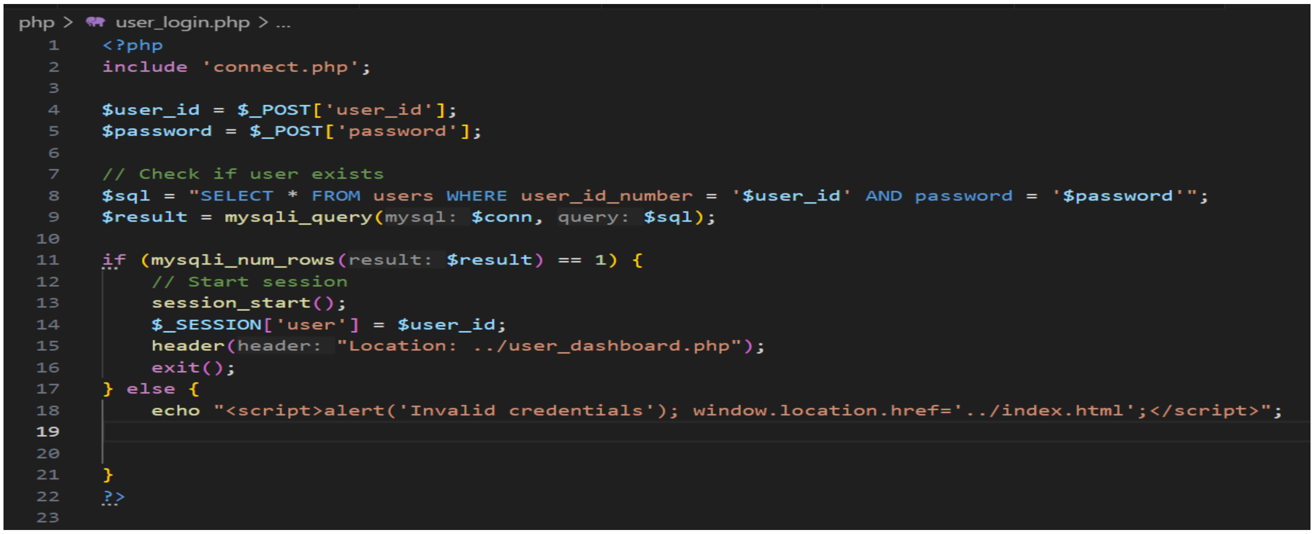
Introduction

This chapter presents the system development process and the testing techniques used to validate the effectiveness of the Machakos Funeral Home Morgue Management System. The chapter also discusses various testing strategies employed to ensure the system meets its functional requirements. It includes sample source code, user interface screenshots, and a test schedule for different system modules.

Coding

The system was developed using HTML, CSS, JavaScript, PHP, and MySQL. Each module was coded in PHP for backend functionality, HTML/CSS for the user interface, and MySQL for database management.

User Login Class

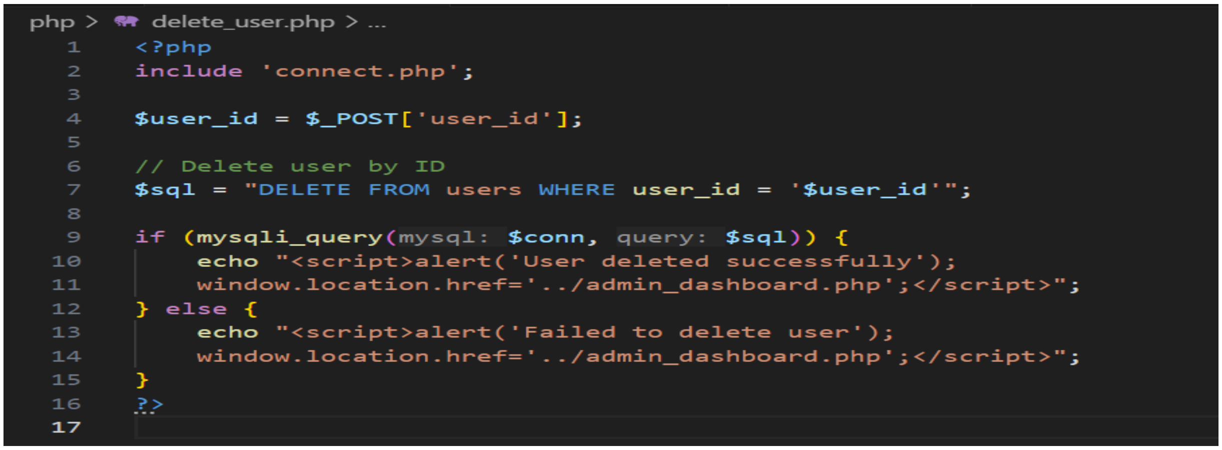


```php
<?php
include 'connect.php';

$user_id = $_POST['user_id'];
$password = $_POST['password'];

// Check if user exists
$sql = "SELECT * FROM users WHERE user_id_number = '$user_id' AND password = '$password'";
$result = mysqli_query(mysql: $conn, query: $sql);

if (mysqli_num_rows(result: $result) == 1) {
    // Start session
    session_start();
    $_SESSION['user'] = $user_id;
    header(header: "Location: ../user_dashboard.php");
    exit();
} else {
    echo "<script>alert('Invalid credentials'); window.location.href='../index.html';</script>";


}
?>

```

Functionality:

- Authenticates user credentials
- Redirects users to the dashboard on success

Admin Dashboard – Manage Users



```php
<?php
include 'connect.php';

$user_id = $_POST['user_id'];

// Delete user by ID
$sql = "DELETE FROM users WHERE user_id = '$user_id'";

if (mysqli_query(mysql: $conn, query: $sql)) {
    echo "<script>alert('User deleted successfully');
    window.location.href='../admin_dashboard.php';</script>";
} else {
    echo "<script>alert('Failed to delete user');
    window.location.href='../admin_dashboard.php';</script>";
}
?>

```

Functionality:

- Lists all users from the database
- Admin can delete a user account

Generate invoice

Functionality:

- Calculates the bill based on stay duration
- Stores billing information in the database

Testing

The system underwent several stages of testing to ensure accuracy, usability, performance, and reliability.

Testing Plan/Schedule

Module	Test Type	Description	Status
User Login	Unit, Integration	Validate login credentials	Passed
Admin Login	Unit	Check admin-specific access	Passed
Add/Delete User	Module, System	Test user CRUD	Passed
Slot Availability Tracker	Integration	Update & check slot usage	Passed
Invoice Generation	Unit, System	Calculate charges correctly	Passed
Retrieval Log	Unit	Log retrieval details	Passed
Report Generation	System, Acceptance	View billing and retrieval reports	Passed

Testing Strategies Used

Unit testing

- Individual scripts like login, invoice calculation, and deletion were tested separately.
- Ensured each PHP file returned the correct result for valid/invalid inputs.

Module Testing

- Grouped related functions like admin_dashboard or user_dashboard and tested them together.
- Verified data flow between pages.

Integration Testing

- Checked communication between PHP and MySQL.
- Verified that inserting, deleting, or updating data through forms reflected correctly in the database.

System Testing

- Full system was deployed on localhost with XAMPP.
- Tested navigation, login, logout, form submissions, and redirects.

Acceptance Testing

- Final testing was done by acting as an actual user (admin, receptionist).
- Verified if the system met the original objectives:
    1. Capturing deceased data
    2. Calculating bills

3. Tracking slots
4. Generating reports

Performance Testing (Basic)

- Conducted by inputting multiple records (deceased, users, invoices).
- System handled all without slowing down locally.

Justification for Testing Approaches

- **Unit Testing** was important to ensure every script file performs its function independently.
- **Integration Testing** ensured correct interaction between the frontend and backend.
- **System Testing** guaranteed the overall functionality worked as expected when used as a whole.
- **Acceptance Testing** was done to verify that the project fulfills its purpose.
- **Performance Testing** ensured the system could handle real-world usage (like managing 50+ records).

CHAPTER 7: SYSTEM IMPLEMENTATION

Introduction

System implementation is the phase in the system development life cycle (SDLC) where the designed system is installed, configured, tested, and made operational in the production environment. For the *Machakos Funeral Home Morgue Management System*, this phase involved installing the necessary hardware and software, data conversion, user training, and testing to ensure that the system functions as intended and meets user requirements.

The implementation aimed at improving morgue operations such as client registration, corpse tracking, report generation, billing, and overall management efficiency.

System Implementation Strategies

There are several strategies used to implement new systems:

- **Direct Changeover** – Immediate switch from the old system to the new system.
- **Parallel Changeover** – Both old and new systems run simultaneously for a period.
- **Phased Implementation** – System is implemented in stages or modules.
- **Pilot Implementation** – The new system is tested in a small part of the organization before a full-scale rollout.

Chosen Strategy: Phased Implementation

Justification:

- The system has multiple functional areas (e.g., corpse registration, storage management, billing, reporting).

- A phased approach allows each module to be deployed, tested, and adopted gradually.
- It minimizes risk, as each phase can be monitored and adjusted before moving on.
- Staff training and data migration were easier to manage in phases.

Conversion Plans

a. Hardware Installation

- Installed new desktop computers in the morgue reception and billing offices.
- Set up a local area network (LAN) for communication between workstations.
- Installed a secure power backup system (UPS and surge protectors).

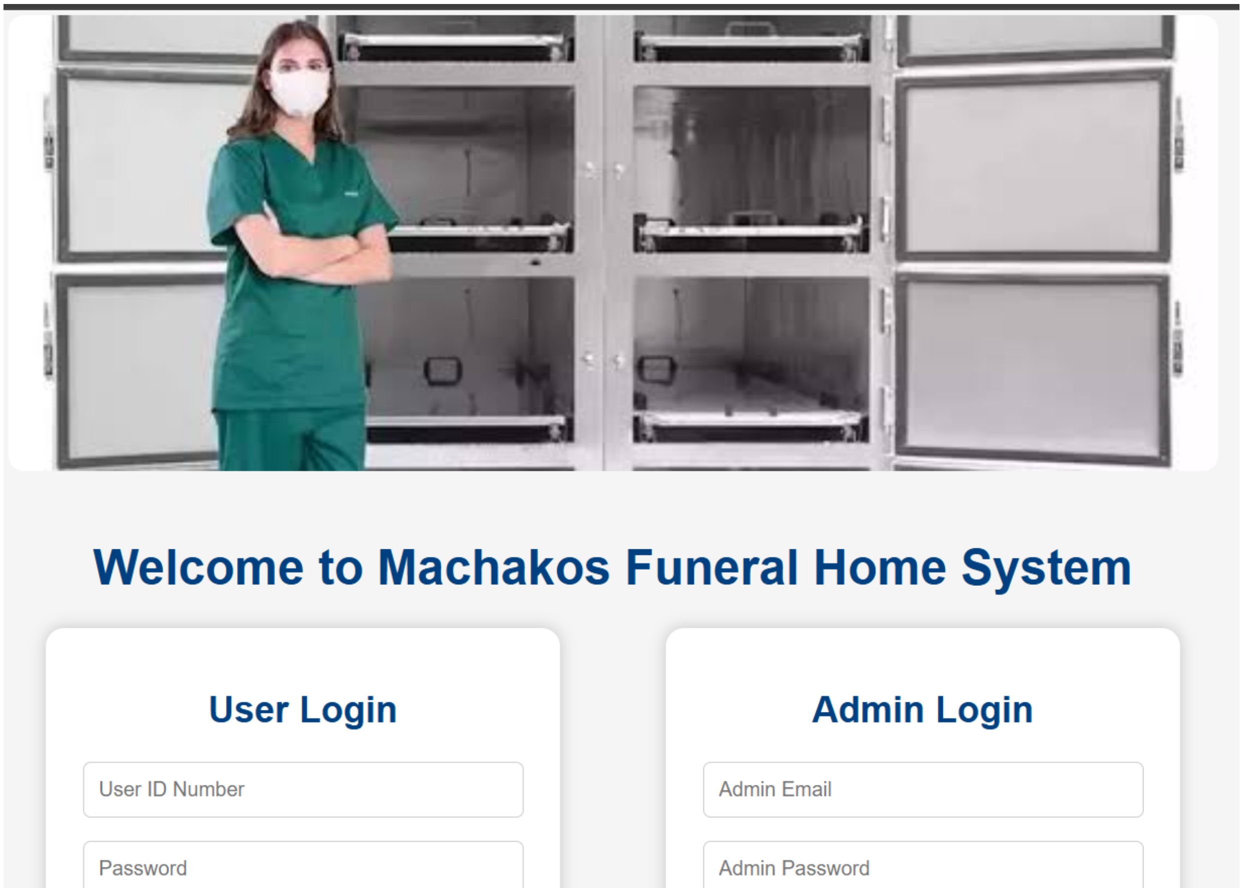
b. Software Installation

- Installed the developed *Morgue Management System* on each workstation.
- Installed supporting software: Windows OS, MySQL Server (back end), and web browser for access to the front end.
- Setup local server for database hosting.

c. Front-end and Back-end Installations

- **Front-end**: Developed using php, javascript and HTML/CSS.
- **Back-end**: MySQL database, containing tables for clients, corpses, billing, users, etc.

Screen shot of a running system after integration



Welcome to Machakos Funeral Home System

User Login

User ID Number

Password

Admin Login

Admin Email

Admin Password

CHAPTER 8: CONCLUSION

Objectives Met

- Developed a centralized system to handle all morgue operations.
- Automated corpse registration and storage tracking.
- Integrated billing and report generation modules.
- Implemented user access control for security.

Achievements Made

- Reduced manual workload and paper-based errors.
- Improved service delivery and response time.
- Enabled generation of accurate, real-time reports.
- Enhanced security and data integrity through user login systems.

Limitations/Shortcomings

- Limited access to high-end hardware constrained testing.
- Some users required extended training due to low IT literacy.
- Integration with online payment systems was not achieved due to budget constraints.

The Way Forward / Future Improvements

- Implement biometric access for improved security.
- Integrate mobile payment options (e.g., M-Pesa).
- Develop a cloud-based version for remote access and backups.
- Continuous training for staff on system use and troubleshooting.

References

Afolayan, A. T., & Adegbola, T. O. (2019). *Development of a web-based mortuary management system*. International Journal of Computer Applications, 178(10), 1–6. https://doi.org/10.5120/ijca2019918760

Kothari, C. R. (2004). *Research methodology: Methods and techniques* (2nd ed.). New Age International Publishers.

Laudon, K. C., & Laudon, J. P. (2020). *Management information systems: Managing the digital firm* (16th ed.). Pearson.

Mbuthia, D. W., & Waweru, M. (2021). Adoption of information systems in funeral homes in Kenya. *Journal of Emerging Trends in Computing and Information Sciences*, 12(5), 211–218.

Microsoft. (2024). *Database design basics*. Microsoft Support. https://support.microsoft.com/en-us/office/database-design-basics-5656e940-2a25-4d7b-92f6-5ffc1b0c4cde

Object Management Group. (2021). *Unified Modeling Language (UML) specification version 2.5.1*. https://www.omg.org/spec/UML/

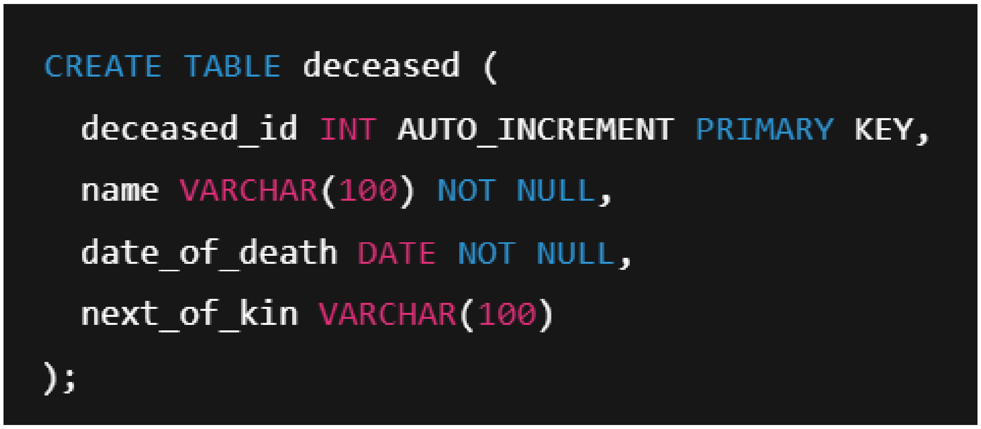
Sommerville, I. (2016). *Software engineering* (10th ed.). Pearson Education.

World Health Organization. (2020). *Guidelines for the management of dead bodies in disasters*. https://www.who.int/publications/i/item/guidelines-for-the-management-of-dead-bodies-in-disasters

APPENDIX

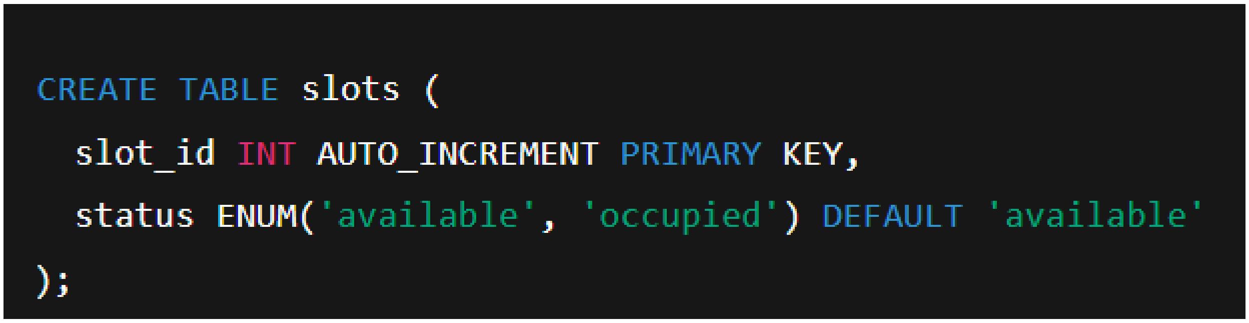
Appendix A: Database Tables

Deceased table



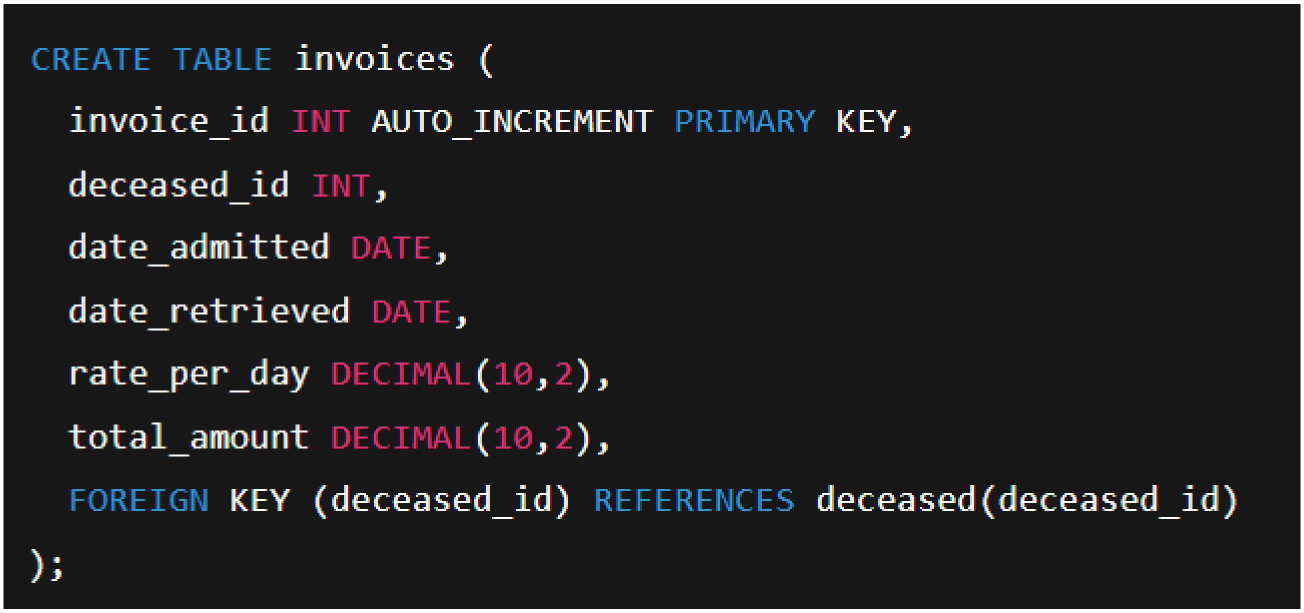
```sql
CREATE TABLE deceased (
  deceased_id INT AUTO_INCREMENT PRIMARY KEY,
  name VARCHAR(100) NOT NULL,
  date_of_death DATE NOT NULL,
  next_of_kin VARCHAR(100)
);
```

Slots table



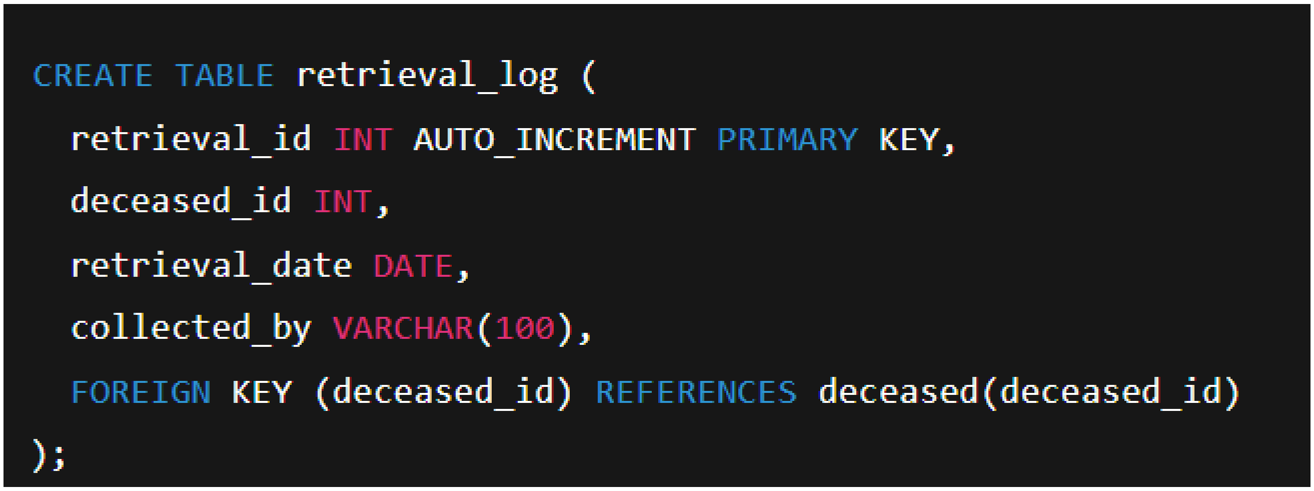
```sql
CREATE TABLE slots (
  slot_id INT AUTO_INCREMENT PRIMARY KEY,
  status ENUM('available', 'occupied') DEFAULT 'available'
);
```

Invoice table



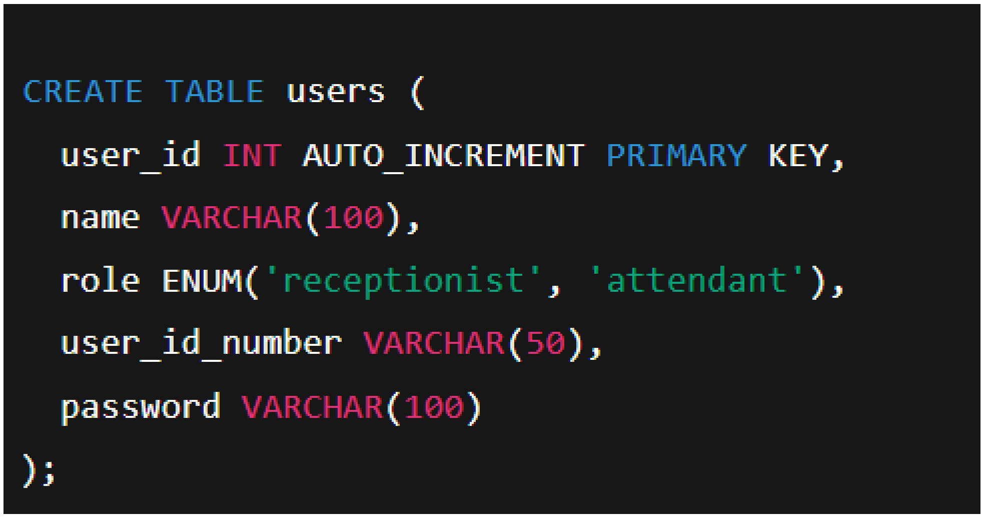
```sql
CREATE TABLE invoices (
  invoice_id INT AUTO_INCREMENT PRIMARY KEY,
  deceased_id INT,
  date_admitted DATE,
  date_retrieved DATE,
  rate_per_day DECIMAL(10,2),
  total_amount DECIMAL(10,2),
  FOREIGN KEY (deceased_id) REFERENCES deceased(deceased_id)
);
```

Retrieval log table



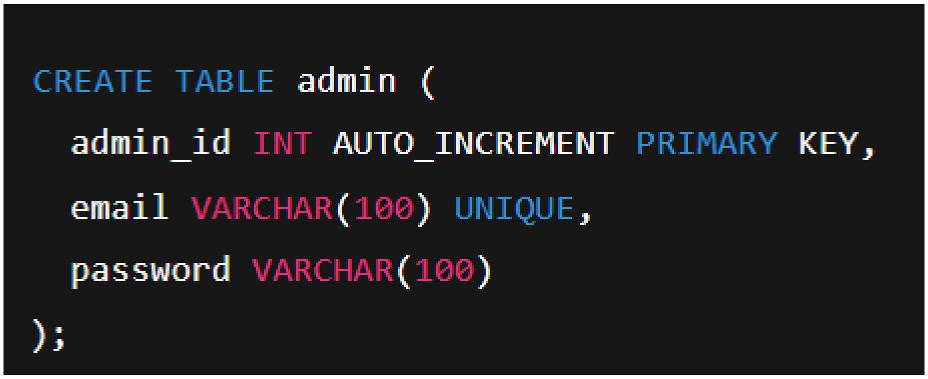
```
CREATE TABLE retrieval_log (
  retrieval_id INT AUTO_INCREMENT PRIMARY KEY,
  deceased_id INT,
  retrieval_date DATE,
  collected_by VARCHAR(100),
  FOREIGN KEY (deceased_id) REFERENCES deceased(deceased_id)
);
```

User table



```sql
CREATE TABLE users (
  user_id INT AUTO_INCREMENT PRIMARY KEY,
  name VARCHAR(100),
  role ENUM('receptionist', 'attendant'),
  user_id_number VARCHAR(50),
  password VARCHAR(100)
);
```

Admin table



```sql
CREATE TABLE admin (
  admin_id INT AUTO_INCREMENT PRIMARY KEY,
  email VARCHAR(100) UNIQUE,
  password VARCHAR(100)
);
```

Appendix B: Tools and Technologies Used

Tool/Technology	Purpose
HTML/CSS	Front-end structure and design
JavaScript	Form interactions and validation
PHP	Backend logic and form processing
MySQL	Database management
XAMPP	Local development environment
Visual Studio Code	Code editing

ITEMS	**COSTS**
Fare	4000
Computer	25000
Printer	14000
Ream paper	650
Internet	2500
Airtime	2000
Phone	15000
TOTAL	63150

Appendix C : Required resource/Budget

Appendix D: Project Schedule

PHASE	DURATION	TIMELINE
Requirement gathering and analysis	2 weeks	February 2025
System design	3 weeks	Feb – march 2025
Development	6 weeks	March – April 2025
Testing and debugging	3 weeks	April 2025
Implementation and training	2 weeks	May 2025
Final evaluation and reporting	1 week	May 2025