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TOPIC: ONLINE TOURISM MANAGAMENT SYSTEM

CASE STUDY: MUSANZE DISTRICT

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Declaration

I, KAYITESI SYLVIE, hereby declare that this work entitled "Online Tourism Management System "Submitted in partial fulfilment of the requirement for the award of Bachelor's degree in computer science, is our original work and has not been presented for other University

Student Name.....

Date.....

Signature.....

Approval

This dissertation entitled “ONLINE TOURISM MANAGEMENT SYSTEM’’ has been done under my supervision and submitted for examination with my approval.

Supervisor Name: …….

Date: ……/……/…….

Signature: ……...

Dedication

With Genuine Gratitude,

We dedicate this Research Project

To Our parents and Siblings,

To the family of CLEVER,

To all our friends and relatives

To All Lecturers and our colleagues at ULK.

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KAYITESI SYLVIE

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ABBREVIATIONS AND ACRONYMS

CSS : Cascading Style Sheet

DBMS : Database Management System

GDPR : General Data Protection Regulation

HTML : Hyper Text Markup Language

ICTs : Information and communication technologies

IT : Information Technology

JS : JavaScript

OOAD : Object-Oriented Analysis and Design

OOM : Object Oriented Methodology

OOSADM : Object Oriented System Analysis and Design Methodology

PDF : Portable Document Format

PDF : Portable Document Format

RDB : Rwanda Development Board

SQL : Structured Query Language

SRS : Software requirements specifications

ULK : Kigali Independent University

UML : Unified Modeling Language

UP : Unified Process

UPI : Unique Parcel Identifier

ABSTRACT

The **Online Tourism Management System (OTMS)** is a comprehensive digital platform designed to streamline travel planning and management. It integrates essential functions such as booking accommodations, flights, and transportation, offering users a seamless experience for organizing their trips. With an intuitive interface, the OTMS caters to both tech-savvy and non-technical users, facilitating easy searches and bookings. Travel agencies benefit from its features by managing reservations and showcasing packages to a global audience. The system provides real-time availability, secure payment options, and personalized itinerary planning. User-generated reviews and recommendations enhance decision-making, while data analytics help providers tailor their offerings. The OTMS is accessible via mobile devices, ensuring travelers can manage their plans on the go. Robust security measures protect user data, and effective customer support is available to address any issues. Overall, the OTMS simplifies travel management, improves customer satisfaction, and supports efficient communication between users and service providers.

Key Word: Online, Tourism, Management, System.

CHAPTER 1: GENERAL INTRODUCTION

1.0 INTRODUCTION

An "Online Tourism Management System" is a web-based platform that helps users plan of visiting interested places and organize their travel experiences. Tourism is a rapidly growing industry in Rwanda, with the sector contributing significantly to the country's economy (Rwanda Development Board., 2020). The Northern Province, particularly Musanze, is a popular tourist destination known for its natural beauty, including the Volcanoes National Park and Lake Burera (Musanze District, n.d.). However, the management of tourism activities in the region is often manual and inefficient, leading to difficulties in booking and managing trips for both tourists and tour operators (I. Schanzel, 2021).

The advent of information and communication technologies (ICTs) has transformed the tourism industry, enabling the development of online platforms that facilitate trip planning, booking, and management (R. Buhalis, 2019). A web-based tourism management system can provide a convenient and accessible platform for tourists to explore available trips, create accounts, and book trips online (H. Sillitto and D. Mckinney, "What do we mean by ' system '? - System Beliefs and Worldviews in the INCOSE Community,", no. October, 2018.). Additionally, such a system can enable administrators to efficiently manage trip requests, confirm or deny bookings, and provide tourists with updates on their trip status (V. Tsiotsou, 2021).

This study aims to design and develop a web-based Tourism Management System for Musanze, Rwanda, with the goal of improving the efficiency and effectiveness of tourism management in the region.

The system will enable end-users to create accounts, view available trips, book trips online, and track their trip history through a personalized panel called "My Tour History".

The system will also provide administrators with a platform to manage trip requests, confirm or deny bookings, and provide updates to tourists.

1.1 BACKGROUND OF THE STUDY

Tourism has long been recognized as a vital component of Rwanda's economy, with the Northern Province, and particularly Musanze, playing a central role in attracting both domestic and international tourists. Musanze is renowned for its natural beauty, including the Volcanoes National Park, which is home to the critically endangered mountain gorillas. This region's unique offerings have made it a focal point for tourism development in Rwanda (H. Sillitto and D. Mckinney, “What do we mean by ‘ system ’? - System Beliefs and Worldviews in the INCOSE Community,” , no. October, 2018.). Despite the natural allure of Musanze, the tourism industry faces several challenges that hinder its full potential. One of the key issues is the lack of efficient and integrated management systems that cater to both tourists and service providers. Traditional methods of managing bookings and customer interactions are often cumbersome and prone to errors, leading to decreased customer satisfaction and operational inefficiencies.

The advent of digital technologies has transformed various sectors, including tourism, by providing innovative solutions to existing problems. The implementation of tourism management systems has been shown to significantly enhance the efficiency and effectiveness of tourism operations. These systems offer various functionalities such as online booking, customer relationship management, and real-time updates, which are essential for modern tourism businesses.

In Rwanda, the adoption of digital solutions in the tourism sector is still in its nascent stages.

However, the government's commitment to promoting ICT development and digital transformation provides a conducive environment for implementing such systems. The Rwanda Development Board (RDB) has been at the forefront of these efforts, encouraging the integration of technology to boost tourism growth and improve service delivery (RDB, 2023).

This study aims to address the gaps in the current tourism management practices in Musanze by developing a comprehensive and user-friendly tourism management system. The system will enable end users to browse available trips, create accounts, and book tours seamlessly. Additionally, it will provide administrators with tools to manage bookings effectively, ensuring that confirmations and denials are communicated promptly to users.

By leveraging modern web technologies, the proposed system seeks to enhance the overall tourist experience, reduce operational inefficiencies, and promote sustainable tourism practices. The successful implementation of this system could serve as a benchmark for other regions in Rwanda, contributing to the country's broader tourism development goals.

1.2 **Problem statement**

The tourism industry in Musanze, Rwanda's Northern Province is a key contributor to the region's economic development due to its rich natural attractions, such as the Volcanoes National Park. However, the current tourism management practices in Musanze are fraught with inefficiencies and limitations. These challenges include the reliance on traditional booking methods, lack of real-time updates for tourists, and inefficient communication between tourists and tourism service providers. These issues not only hinder the operational

efficiency of tourism businesses but also lead to a suboptimal tourist experience, which can affect the region's reputation as a premier tourist destination.

The absence of an integrated and user-friendly tourism management system exacerbates these problems. Tourists often face difficulties in accessing reliable information about available trips, booking tours, and receiving timely confirmations or denials of their booking requests. On the other hand, tourism service providers struggle to manage bookings efficiently, leading to potential overbooking, underutilization of resources, and customer dissatisfaction.

The need for a comprehensive solution is evident. A robust tourism management system that leverages modern web technologies can streamline the entire booking process, provide real-time updates, and enhance communication between tourists and service providers. Such a system can significantly improve operational efficiency, customer satisfaction, and ultimately, the sustainability of the tourism sector in Musanze.

This study seeks to address these challenges by developing a tourism management system specifically tailored for the Northern Province of Rwanda. The proposed system will enable end users to easily browse available trips, create accounts, and book tours. Administrators will have tools to manage and confirm or deny trip requests effectively, with users receiving timely updates on the status of their bookings through a dedicated 'My Tour History' panel. By implementing this system, the study aims to enhance the overall tourist experience, improve operational efficiency for service providers, and support the sustainable growth of tourism in Musanze.

1.3 Objectives

1.3.1 General objective

The general objective of this study is to design and implement a comprehensive tourism management system for Musanze, Northern Province, Rwanda, that enhances the efficiency and effectiveness of tourism operations and improves the overall tourist experience.

The system aims to provide a seamless platform for tourists to browse available trips, create accounts, book tours, and receive timely updates on the status of their bookings, while enabling administrators to manage bookings efficiently and effectively.

1.3.2. SPECIFIC OBJECTIVES

i. To create a database that will store information about tourists and places
ii. To create user-friendly interface to help the tourist to access information about places easily on the web base platform
iii. To create a web-based application that helps to advertise all possible tourist areas in Musanze district and allow tourists to make online bookings.
iv. To generate reports through the newly created application

1.4 Research Questions

i. How can we create a database that will hold information about tourists and places?
ii. how can we create a user-friendly interface that can help tourists to access information on the platform?
iii. how can we create a user-friendly interface that can help employees to manage information on the platform?
iv. How can we generate reports for the new applications that have been created?

1.5 Scope of the study

1.5.1 Content scope

This project focuses on developing a tourism management system specifically for Musanze, Northern Province, Rwanda. It encompasses the design and implementation of a web-based platform that enables tourists to browse and book trips, and allows administrators to manage these bookings effectively. Key areas of the project include creating user-friendly interfaces, integrating real-time updates and notifications, managing user and trip data with robust security measures, and evaluating system performance through testing and feedback. The aim is to streamline tourism operations, enhance user experience, and support efficient management for administrators.

1.5.2 Geographical scope

The online tourism management system will cover tourist activities, accommodations, and service providers within the geographical boundaries of Musanze District, Rwanda. Musanze District is located in the Northern Province of Rwanda.

1.5.3 Time scope

Over the past seven years, from 2018 to 2024, there has been a significant increase in tourists visiting Musanze Park in Rwanda, highlighting the need for an efficient and user-friendly online tourism management system for Musanze District. This system will streamline the process of booking tours, and providing detailed information about park attractions. It will enhance the visitor experience by offering seamless navigation, easy access to services, and

real-time updates. Additionally, it will support local businesses and contribute to the sustainable development of tourism in the region.

1.6 Significance of the study

1.6.1 Personal Interest

To increase the knowledge in I.C.T application Solving related problems for other businesses

Increase the skills of using websites or the internet in general.

1.6.2 Institutional Interest

The book will be placed in the school library to obtain marks in practical exams.

The book will be used in future research.

1.6.3 Public Interest

The system will provide a convenient and centralized platform to explore and book various activities, accommodations, and services in the region, streamlining the entire process

This system will address the current challenges faced by both tourists and tourism operators in effectively planning, marketing, and booking desired experiences

It will empower them with comprehensive information, personalized recommendations, and seamless booking capabilities, leading to an enhanced overall experience

1.7 Project methodology

1.7.1 Data collection techniques

- **Documentation**

The documentation for the Online Tourism Management System encompasses user manuals, technical specifications, and installation guides to aid users and administrators in understanding, operating, and deploying the system effectively.

It also includes training materials, support documentation, and compliance guidelines to ensure smooth implementation, user training, and adherence to regulatory requirements, fostering efficient tourism processes and enhancing.

- **Observation**

  Is a method of acquiring data by witnessing behavior, events, or noting physical traits in their natural contexts, and it might reveal some immediate needs for how to enhance a process. The observation will be important to collect data on the actual work.

1.7.2 Software Development Methodology

We have used Agile methodology. Agile methodology prioritizes iterative development, collaboration, and adaptability, enabling quick responses to changing requirements and delivering incremental value to stakeholders. It emphasizes close customer involvement, frequent iterations, and continuous feedback loops, fostering transparency and flexibility throughout the development process.

1.7.3 System Analysis and Design Method

The System Analysis and Design method involves understanding user requirements, defining system functionalities, and creating detailed specifications for implementation. It typically follows a structured approach, encompassing phases such as requirements gathering, system modeling, and prototyping. Object-Oriented Analysis and Design (OOAD) was employed,

depending on project needs. This process includes analyzing existing systems, identifying improvements, and designing solutions that align with organizational goals. It aims to ensure the developed system meets user needs efficiently, is scalable, and remains adaptable to future changes through thorough analysis and systematic design techniques.

1.8 Limitation of the project

While the project aims to provide a comprehensive platform for tourists and operators in Musanze District, Rwanda, it faces several limitations. These include geographical constraints limiting the initial scope to a specific region.

1.9 Organization of the Project

There are five chapters in the online tourism system recording and analysis research project:

● The first chapter contains a general introduction to the study, the study's background, The problem statement, the project's motivation objective, the methodology used and Requirements collection techniques, the scope of the project, and the expected results.

● The second chapter is the study's requirements analysis, which highlights in detail the Analysis of the existing information system's current position, the descriptions of the models, and the weaknesses of the existing system, as well as define the requirements of the new system, functional and non-functional requirements, use-case specifications, logical data model, system overview, and benefits of the proposed system.

● the third chapter describes the study's system design, high-level architecture, module Description, and solution design. Describing the new system's process model, physical data

Model, class diagram, use-case diagram, and user interface diagram.

● the fourth chapter discusses the study's system implementation, the technologies used

To develop the system, coding, and testing of the new system.

● Chapter finally contains the project's conclusion and recommendations

CHAPTER 2: LITERATURE REVIEW

2.0. Introduction

This chapter explains related theoretical work or references used to develop the Online Tourism Management System and a background of the system. It also expounds on technologies to be used with a view of providing an overview for the concept of the system's design.

2.1 Definition of concepts

In the context of this project, the following key concepts related to online tourism management system are defined:

2.1.1 Tourism management

Tourism management involves planning and overseeing tourism activities to enhance visitor experiences and ensure sustainable growth. It includes managing attractions, accommodations, and services while balancing economic, environmental, and cultural impacts. Effective management improves destination competitiveness and supports long-term tourism development (Smith J. , 2019)

2.1.2 Tourism

Tourism, refers travel, accommodation, food, and entertainment, significantly contributes to global economies by generating revenue and creating jobs. the sectors include eco-tourism,

cultural tourism, and adventure tourism, but sustainable management is crucial for environmental preservation (Hall, 2018).

2.1.3 Management System

A management system is a process, and procedures used by an organization to achieve objectives, integrate quality, environmental, and safety management, and ensure compliance with regulatory requirements, enhancing efficiency and stakeholder satisfaction (system, n.d.).

2.1.4 Application Submission

Online tourism management systems facilitate digital application submission for permits, bookings, and registrations, requiring users to provide personal and payment details, track application status, and ensure data security and privacy (Sigala, igala, Digital transformation and tourism: The disruptive potential of online management systems., 2021).

2.1.5 Review and Approval

Use digital platforms for review and approval of applications, ensuring accuracy, consistency, and transparency. Automation features expedite the process, while real-time notifications and audit trails ensure accountability and compliance (Schwalbe, 2021). Progress in information technology and tourism management: 20 years on and 10 years after the Internet The state of tourism research (Buhalis D. , 2020).

2.1.6 Tracking and Monitoring

Tracking and monitoring are systematic data analysis processes used in various sectors like tourism management, environmental conservation, and logistics to evaluate performance, identify areas for improvement, and enhance accountability (M. Evans, 2018).

2.1.7 Communication and Collaboration

Online tourism management systems facilitate seamless communication and collaboration among stakeholders, facilitating itinerary planning, booking confirmations, and real-time travel updates, enhancing user experience and efficiency in destination management and tourist satisfaction (Sigala, Tourism innovation: technology, sustainability and creativity in tourism systems. , 2022).

2.1.8 Compliance and Reporting

Online tourism management systems ensure compliance with regulations, standards, and local laws, generating documentation and reporting functionalities. Automated features provide real time insights, enhancing decision-making for sustainable tourism management and monitoring performance (Organization, 2017).

2.2. Other Related Literature

2.2.1. Database Concepts

2.2.1.1 Database Management System

A Database Management System (DBMS) is a software system that is designed to manage and organize data in a structured manner. It allows users to create, modify, and query a database, as well as manage the security and access controls for that database (Silberschatz, 2020).DBMS provides an environment to store and retrieve the data in convenient and efficient manner.

2.2.1.2. Key Features of DBMS

Data modeling: A DBMS provides tools for creating and modifying data models, which define the structure and relationships of the data in a database (MongoDB, 2017).

- **Data storage and retrieval:** A DBMS is responsible for storing and retrieving data from the database, and can provide various methods for searching and querying the data.
- **Concurrency control:** A DBMS provides mechanisms for controlling concurrent access to the database, to ensure that multiple users can access the data without conflicting with each other.
- **Data integrity and security:** A DBMS provides tools for enforcing data integrity and security constraints, such as constraints on the values of data and access controls that restrict who can access the data.
- **Backup and recovery:** A DBMS provides mechanisms for backing up and recovering the data in the event of a system failure.
- **DBMS can be classified into two types**: Relational Database Management System (RDBMS) and Non-Relational Database Management System (NoSQL or Non-SQL)
- **RDBMS:** Data is organized in the form of tables and each table has a set of rows and columns. The data are related to each other through primary and foreign keys.
- **NoSQL:** Data is organized in the form of key-value pairs, documents, graphs, or column-based. These are designed to handle large-scale, high-performance scenarios.

A database is a collection of interrelated data which helps in the efficient retrieval, insertion, and deletion of data from the database and organizes the data in the form of tables, views, schemas, reports, etc. For Example, a university database organizes the data about students,

faculty, admin staff, etc. which helps in the efficient retrieval, insertion, and deletion of data from it (Cattell, 2018).

2.2.1.3. Several Types of DBMS

- **Relational DBMS (RDBMS):** An RDBMS stores data in tables with rows and columns, and uses SQL (Structured Query Language) to manipulate the data.
- **Object-Oriented DBMS (OODBMS):** An OODBMS stores data as objects, which can be manipulated using object-oriented programming languages (Ramakrishnan, 2019).
- **NoSQL DBMS**: A NoSQL DBMS stores data in non-relational data structures, such as key-value pairs, document-based models, or graph models. (geeksforgeeks.org, June 2024).

2.2.2.0 Database design

Database design is the process of creating a detailed plan for organizing and structuring data in a database to meet the needs of an organization or application. It involves defining the relationships between different data entities, determining the data types and formats, and establishing the rules for data integrity and consistency. A well-designed database should be able to store and manage large amounts of data efficiently, support multiple users and applications, and provide fast and reliable access to data. The design process typically involves several stages, including requirements gathering, conceptual modeling, logical modeling, physical modeling, and implementation, with the goal of creating a database that is scalable, maintainable, and meets the needs of its users (Rob, 2017).

2.2.2. **User-friendly and reliable interface concepts**

2.2.2.1 Minimalist Design

Minimalist design in the tourism management system emphasizes simplicity and clarity, focusing on essential elements and removing unnecessary features. This approach enhances user experience by providing a clean, intuitive interface that improves navigation and reduces cognitive load, making it easier for users to interact with the system effectively (Fogg, 2019).

2.2.2.2 **Responsive Design**

Responsive design ensures the tourism management system adjusts seamlessly to various screen sizes and devices, such as smartphones, tablets, and desktops. By using flexible layouts and media queries, this design approach enhances usability and accessibility, providing a consistent and optimized user experience across different platforms.

2.2.2.3 **Prioritize Information**

Prioritizing information involves organizing and presenting the most critical data and features prominently in the tourism management system. This approach ensures that users can quickly access essential information, such as booking statuses and trip details, while secondary or less urgent information is presented in a less intrusive manner. By focusing on key content, the system improves user efficiency and satisfaction (Wu, 2018).

2.2.2.4 Fast Load Times

Fast load times are crucial for the tourism management system to ensure a smooth and efficient user experience. Optimizing performance through techniques like image compression, efficient code practices, and caching reduces page load times and enhances responsiveness.

Quick access to information and features improves user satisfaction and engagement by minimizing delays and waiting periods (Singh, 2022).

2.2.3. Report generation Concepts

2.2.3.1 Data Sources

In the tourism management system, report generation relies on several key data sources to ensure comprehensive and accurate insights. These sources include booking data, which covers trip reservations, user details, and booking statuses; user accounts, encompassing registration information and historical bookings; and trip information, detailing trip descriptions, dates, and availability (Buhalis D. &., 2017). Additionally, feedback and reviews from users provide valuable insights into customer satisfaction, while system logs track user interactions and administrative activities for performance monitoring. Administrative data, including booking confirmations and cancellations, also plays a crucial role in evaluating administrative efficiency[16]. By integrating and analyzing these data sources, the system can generate detailed reports that support effective decision-making and operational management.

2.2.3.2 Report Types

The tourism management system generates various report types to provide comprehensive insights and support decision-making. These include booking reports, which detail reservation trends and statuses; user activity reports, tracking interactions and engagement; trip performance reports, analyzing the popularity and occupancy of different trips; financial reports, summarizing revenue and transactions; customer feedback reports, highlighting satisfaction levels and areas for improvement; and system performance reports, monitoring

system health and technical issues. Each report type is designed to offer actionable insights that enhance operational efficiency, user experience, and strategic planning (Xiang, 2019).

2.2.3.3 User-Friendly Dashboards

User-friendly dashboards are essential for the tourism management system, providing a visual and intuitive interface for users to interact with complex data. These dashboards display key metrics and reports in an easily digestible format, allowing users to quickly assess and understand the status of bookings, user activity, trip performance, and financial transactions. Features of effective dashboards include interactive charts, graphs, and tables that facilitate data exploration and insights. Customizable widgets and filters enable users to tailor the information to their specific needs and preferences. Additionally, real-time updates ensure that users have access to the most current information, enhancing decision-making and operational efficiency. By prioritizing user experience in dashboard design, the system can improve accessibility, usability, and overall satisfaction.

2.2.3.4 Data Security

Data security is a critical component of the tourism management system, ensuring the protection of sensitive user and transaction information. Key security measures include encryption protocols for data transmission and storage, secure authentication methods to prevent unauthorized access, and regular system audits to identify and address vulnerabilities. Implementing role-based access controls ensures that only authorized personnel can access specific data and functionalities, while data backup and recovery procedures safeguard against data loss or corruption. Additionally, compliance with data protection regulations, such as the General Data Protection Regulation (GDPR), is essential for maintaining user trust and legal compliance (Whitman, 2019). By integrating these security measures, the

system can effectively protect user data and maintain the integrity and confidentiality of information.

2.2.3.5 Efficient Queries

Efficient queries are crucial for optimizing the performance of the tourism management system, particularly when handling large volumes of data. Implementing well-designed database queries ensures quick retrieval and processing of information, which enhances system responsiveness and user experience. Techniques such as indexing, query optimization, and caching can significantly improve query performance by reducing data retrieval times and minimizing resource consumption. Proper database schema design and the use of efficient query languages, such as SQL, also play a vital role in achieving high performance. Regularly analyzing and tuning queries based on performance metrics helps maintain efficiency as data scales and user demands increase (Elmasri R. &., 2020). By focusing on efficient query design, the system can deliver timely and accurate information to users, supporting effective decision-making and operational efficiency.

2.3. Others

2.3.1 Webpage visiting data:

Webpage visiting (or browsing) data can help understand the online browsing behavior of visitors, e.g., how they find the website and how they interact with it, thereby improving online marketing in terms of adjusting the site's content and design. For example, based on regression models, investigated how new visits and return visits to tourism websites affect pages per visit, and how direct visits, reference sites visits and search engines visits affect returns visits (Kannan, 2017).

2.2.2 Online booking data:

Important information about online booking operations are recorded by hotel websites, and has proved to be useful for both hotel managers and investors.

For example, based on a nested logit model, analyzed the choice behavior of visitors by using the online booking data of major four hotels near Kyoto station, which were collected from a Japanese booking website by National Institute of Informatics (Nakagawa, 2021).

2.2.3 Consumer Cards data:

Consumer card data are captured when tourists make purchases and can help corporations study tourist purchasing behavior and design customized products. For instance, explored consumer card data (including credit card data, reward card data, and payment card data) to understand consumption-related behaviors and experiences within contained environments (Mark A. Schuster, 2020).

2.2.4 Attractions sales data:

The ticket sales data of attractions can improve destination management. For instance, estimated the influence of daily weather variations on daily ski lift ticket sales at two Michigan ski resorts, based on regression models (Smith L. J., 2018).

2.2.5 Highway traffic data:

The highway traffic data can accurately capture the spatial features of the visitors in a self-driving tour. For instance, based on the express highway data obtained from the Jiangsu Provincial Communication Department, measured the carbon emissions of self-driving tourism and the spatial relationship with scenic spots, via the network analysis and automatic classification modules of Arc (Li Chen, 2021).

CHAPTER 3: SYSTEM ANALYSIS AND DESIGN

3.0 Introduction

System analysis and design is a crucial phase in the development of a tourism management system, focusing on understanding user requirements and creating an effective, functional system architecture. This chapter delves into the process of analyzing the needs of stakeholders, defining system requirements, and designing the system architecture to meet these needs. It covers the methodologies used for gathering and analyzing requirements, including interviews, surveys, and observational studies. The design phase includes developing system specifications, creating data models, and designing user interfaces and system interactions. This approach ensures that the final system is both user-friendly and capable of handling the complexities of managing tourism activities, such as booking processes, user account management, and administrative functions. The goal is to create a robust, scalable, and efficient system that enhances the management of tourism operations and improves the overall user experience.

3.1 Analysis of the current system

The analysis of the current system involves a comprehensive evaluation of its existing processes, functionalities, and technologies. This includes understanding how the system manages trip bookings, user accounts, and administrative tasks. A thorough review of workflows and procedures helps identify inefficiencies and areas for improvement. Additionally, assessing the technology in use—such as software, hardware, and integration capabilities—reveals limitations or outdated components that may affect performance.

Performance metrics, including system speed, reliability, and scalability, are also evaluated to identify issues related to responsiveness and downtime. Understanding user requirements is a critical part of this analysis. Gathering feedback from stakeholders, including tourists, administrators, and service providers, provides insights into their needs and expectations.

This feedback helps identify gaps in the current system and areas where user experience can be enhanced. Security measures and compliance with relevant regulations are also reviewed to ensure data protection and user privacy. By addressing these aspects, the analysis aims to develop a more effective, user-friendly tourism management system.

3.2.1 Problem of the current system

The current tourism management system faces several issues that impact its efficiency and user satisfaction. Key problems include:

Inefficient Booking Process: The existing system has a cumbersome booking process, leading to user frustration and increased dropout rates. Complex navigation or lengthy forms can deter potential customers and result in lost sales.

- **Limited User Experience:** The user interface may not be intuitive or responsive, causing difficulties for users to access and manage their bookings. A lack of modern design elements or mobile compatibility can further exacerbate these issues.
- **Inadequate Data Management:** The system might struggle with handling large volumes of data, leading to slow performance or data inaccuracies. Issues with data integration and retrieval can hinder effective decision-making and reporting.
- **Security Concerns:** Insufficient security measures may expose sensitive user information to potential breaches. Weak data protection protocols or inadequate encryption can jeopardize user privacy and trust.
- **Lack of Real-Time Updates:** The current system may not provide real-time updates on booking statuses, trip availability, or user requests. This can result in miscommunication and delays in processing requests.

- **Limited Reporting Capabilities:** The system may lack robust reporting tools to analyze booking trends, user behavior, and financial metrics. This limits the ability to make data-driven decisions and optimize operations.

3.3 Analysis of the new system

3.3.1 Introduction

The analysis of the new system involves evaluating the proposed improvements and features designed to address the deficiencies identified in the current system. This phase is critical for ensuring that the new system effectively meets the needs of users and stakeholders while enhancing overall functionality. The focus is on developing a solution that not only resolves existing issues but also introduces new capabilities to optimize tourism management.

Key aspects of this analysis include assessing the effectiveness of the new system's design, which aims to streamline booking processes, improve user experience with an intuitive interface, and enhance data management capabilities. Additionally, the new system will incorporate robust security measures to protect user information and ensure compliance with data protection regulations. Real-time updates and advanced reporting tools are also integrated to provide timely information and support data-driven decision-making. By thoroughly analyzing these elements, the goal is to ensure that the new system offers a significant improvement over the existing solution, driving operational efficiency and user satisfaction.

3.3.1.1 Features of new system

The new tourism management system is designed with several advanced features to address the shortcomings of the current system and enhance overall functionality:

- **Streamlined Booking Process:** Simplified and user-friendly booking interface that reduces the time and effort required to make reservations. This includes easy-to-navigate forms and clear steps for users to follow.
- **Intuitive User Interface:** Modern, responsive design that adapts to various devices, ensuring a seamless experience across desktops, tablets, and smartphones. Enhanced usability with a clean layout and easy access to key features.
- **Real-Time Updates:** Immediate updates on booking statuses, trip availability, and user requests, ensuring that users receive accurate and timely information.
- **Advanced Data Management:** Robust data handling capabilities with efficient storage, retrieval, and processing of large volumes of data. Improved integration with other systems to ensure data accuracy and consistency.
- **Enhanced Security Measures:** Strong data protection protocols, including encryption, secure authentication, and regular security audits to safeguard user information and comply with data protection regulations.
- **Comprehensive Reporting Tools:** Advanced analytics and reporting features that provide insights into booking trends, user behavior, and financial metrics. Customizable reports to support data-driven decision-making.
- **User Account Management:** Improved account management features allowing users to view and manage their bookings, update personal information, and track their trip history in a user-friendly panel.

3.3.2 System Requirements

3.3.2.1 Functional Requirements

Functional requirements define the specific functionalities that the new tourism management system must support to meet user needs and operational goals. Key functional requirements include:

- **User Registration and Authentication:** The system must provide secure user registration and login functionalities, allowing users to create and manage their accounts with personal information and secure passwords.
- **Booking Management:** Users should be able to search for, select, and book trips. The system must handle booking confirmations, cancellations, and modifications, with real-time updates to availability.
- **Trip Information Display:** The system must display detailed information about available trips, including descriptions, dates, prices, and images. Users should be able to view and compare different trip options.
- **Account Management:** Users should have access to a personal dashboard where they can view and manage their bookings, track their trip history, and update personal information.
- **Admin Functions:** Administrators must be able to manage trip listings, view and process booking requests, update trip availability, and handle user inquiries. Admins should also have access to tools for generating reports and analyzing system data.
- **Real-Time Notifications:** The system should send real-time notifications to users and administrators regarding booking confirmations, cancellations, or changes in trip status.

- **Data Security:** The system must implement robust security measures to protect user data, including encryption, secure authentication, and regular security updates.
- **Reporting and Analytics:** The system should offer comprehensive reporting and analytics tools for generating insights into booking trends, user behavior, and financial performance.

3.3.2.2 Non-Functional Requirements

Non-functional requirements define the attributes and constraints of the system that affect its performance and user experience, rather than its specific functionalities. Key non-functional requirements for the new tourism management system include:

- **Performance:** The system should handle a high volume of concurrent users and transactions with minimal latency. Page load times should be optimized to ensure a smooth user experience even during peak usage periods.
- **Scalability:** The system must be designed to scale efficiently with increasing user numbers and data volume. It should accommodate future growth without significant redesign or performance degradation.
- **Reliability:** The system should be highly reliable, with minimal downtime and robust mechanisms for error handling and recovery. Regular backups and failover procedures should be implemented to prevent data loss and ensure continuity of service.
- **Usability:** The user interface should be intuitive and easy to navigate, providing a seamless experience for users of all technical backgrounds. Accessibility features should be included to ensure that the system is usable by individuals with disabilities.
- **Security:** The system must adhere to industry standards for data protection and privacy. This includes implementing strong encryption, secure authentication

mechanisms, and regular security audits to protect sensitive information from breaches.

- **Compatibility:** The system should be compatible with various web browsers and devices, including desktops, tablets, and smartphones, to ensure broad accessibility and usability.

- **Maintainability:** The system should be designed for ease of maintenance and updates. Code should be well-documented, and modular design principles should be applied to facilitate future enhancements and bug fixes.
- **Compliance:** The system must comply with relevant legal and regulatory requirements, including data protection regulations such as GDPR, to ensure lawful and ethical handling of user information.

3.3.3 FUNCTIONAL DIAGRAM

A functional diagram visually represents the major components and interactions within the new tourism management system. It outlines how different functions of the system are interconnected and how data flows between various modules. Below is a description of a typical functional diagram for the tourism management system:

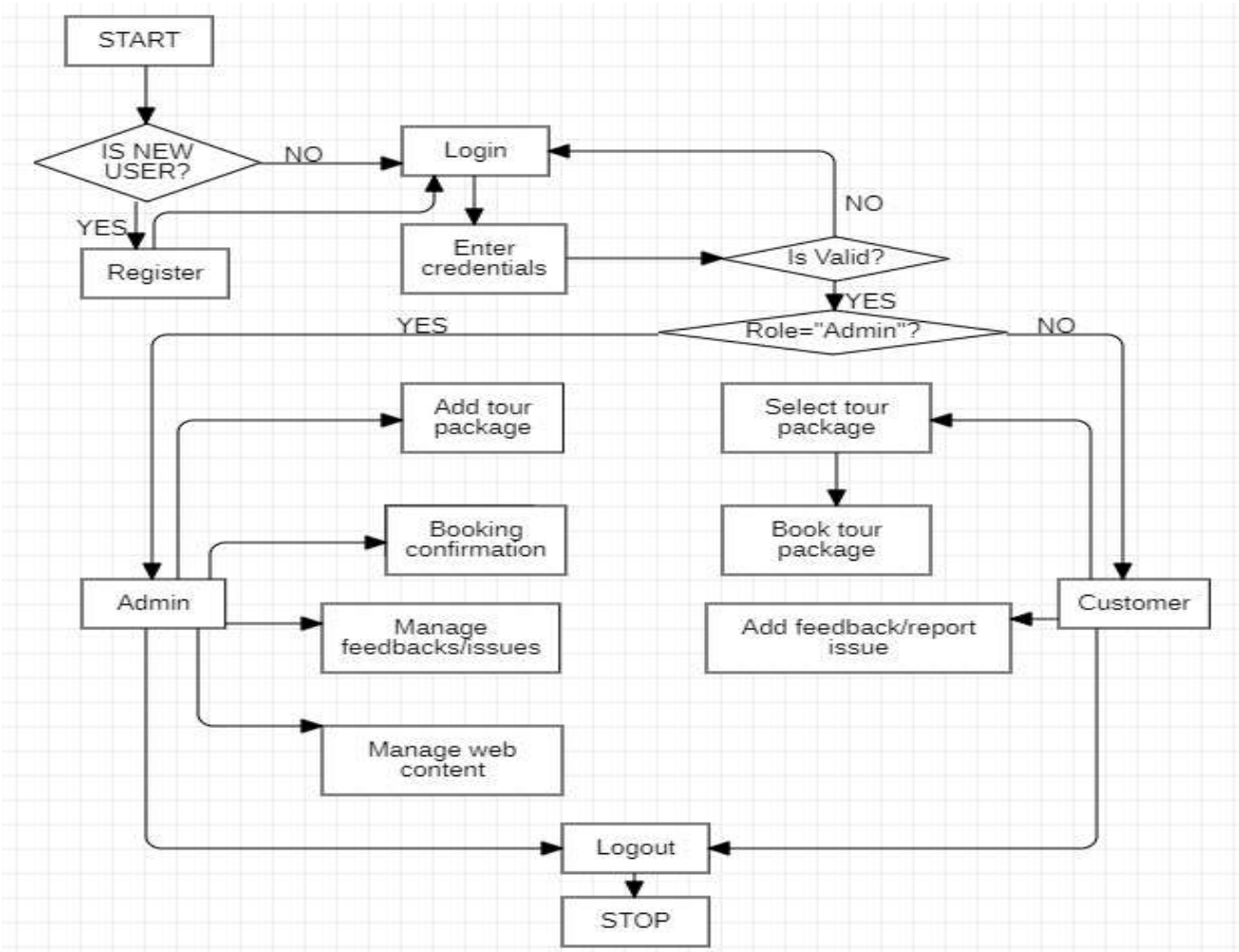

Figure 1: Functional Diagram of the System

3.3.4 Methodological Approach

3.3.4.1 Data collection techniques

The success, achievement, and accuracy of this project are dependent on the sincerity of data collected by this and with many data collection methods or techniques; in our project, we will collect data using the following techniques.

Observation

Observation is an action of attentively following up on phenomena without the desire to change them, thorough investigation, and appropriate study. Observation has been discovered as a tool that assists the researcher in knowing and gathering the true situation of the existing system. The researcher uses observation to see what is going on in the field with his or her own eyes.

Documentation

One of the data collection methods used in this project for written sources is documentation. Journals, the internet, libraries, and publications are some examples of these sources. The researcher uses books, other people's related research and reports, as well as internet sources during this research to compare, make a logical analysis, and come to pertinent conclusions. The internet assisted us in researching related tasks that had been completed and what the rest of the world thought about prisons. Visiting the website for the voting systems.

3.3.4.2 Software Development Methodology

The process of creating a software product by following structured, logical steps is known as the Software Development Life Cycle (SDLC). The SDLC encompasses several phases designed to address the specific issues that the current or future application aims to solve through programming. There are multiple models within the SDLC, each describing different approaches to the tasks and activities throughout the process.

For the development of the online tourism management system, I opted for the waterfall model. This model is a five-phase sequential approach that includes requirements, analysis, design, implementation, verification, and maintenance. I chose this model because it fulfilled all of my requirements (Maxim, 2021).

Agile Model

Agile is an iterative approach to software development that emphasizes flexibility, collaboration, and rapid delivery of working software. Rather than following a rigid, linear process, agile methodologies break projects into small increments called sprints, typically lasting 1-4 weeks. During each sprint, cross-functional teams work to deliver a potentially shippable product increment.

Key principles of agile include prioritizing customer satisfaction through early and continuous delivery, welcoming changing requirements even late in the process, and maintaining close, daily cooperation between developers and business stakeholders. Agile teams focus on delivering working software frequently, measuring progress primarily through functioning code rather than documentation or plans.

Agile methodologies promote sustainable development practices, technical excellence, simplicity, and self-organizing teams. Regular reflection on team effectiveness and continuous improvement are also core tenets. Popular agile frameworks include Scrum, Kanban, and Extreme Programming (XP), each offering specific practices and ceremonies to implement agile principles.

The phase of the agile model

Figure 2: Agile Model

- **System Design**

During this phase, the system design is developed, which involves reviewing the necessary specifications from the first phase. This phase facilitates determining the

overall system architecture as well as the hardware and system requirements (John W. Satzinger, 2021).

- **Implementation**

With input from the system design, the system is initially constructed as a collection of small programs known as units. These units are individually created and evaluated for functionality in a process called unit testing. In the subsequent phase, these units are combined to form the complete system (Johnson, 2020).

- **Testing**

After each unit produced during the implementation phase has been tested, the entire system is then merged. Following integration, the complete system is examined for any flaws and failures (Mall, 2018).

- **Deployment of the system**

  After undergoing functional and non-functional testing, the product is either made available for purchase or deployed in the customer's environment (Pfleeger, 2019).

- **Maintenance**

There may be some difficulties in the client environment. To address specific issues, patches are released. Additionally, improved versions of the product are also developed and released. Maintenance is carried out to implement these changes in the customer's environment (Pressman, 2021).

3.3.4.3 System Analysis and Design Methodology

We will use a structured approach to the phases and activities of the system development life cycle for the system analysis and design, based on the waterfall model and adopting a formal, systematic approach. Each phase's activities must be completed before moving on to the next phase. The abbreviation for "Structured System Analysis and Design" is commonly used in government computing projects in the UK (McBride, 2017). from the initial stages of system design through to the actual physical design of the application, SSADM employs a combination of text and diagrams. SSADM, which stands for Structured Systems Analysis and Design Method, is a waterfall method used to analyze and design information systems. It integrates three different approaches:

Logical Data Modeling: The system's data needs have been thoroughly analyzed, modeled, and documented, with clear definitions of the relationships between different data entities (Morris, 2020).

- **Data Flow Modeling:** A comprehensive review of the information system's data flow is undertaken, scrutinizing the relationships between internal and external entities, processes, data repositories, and data flows to identify potential issues.
- **Entity Behavior Modeling**: Identifying, modeling, and documenting the key events that affect the system's entities, as well as the order in which these events occur, to gain a deeper understanding of the system's behavior and workflow (Satzinger, 2020).

Consequently, there are three key components of SSADM:

Describe the stages and phases' structures, as well as their inputs and outputs.

- **Techniques:** specify the procedures and tasks to be completed**.**

- **Documentation** specifies the presentation of the step products.

A structured method for developing software is called the Structured Systems Analysis and Design Method, or SSADM.

Application development projects are split into five modules or stages according to SSADM, and they are then further subdivided into a hierarchy of activities, steps, and stages. The following is a synopsis of the five SSADM modules:

- **Feasibility Study**: To determine if it is cost-effective and feasible to deploy the system (Dennis, Systems Analysis and Design: An Object-Oriented Approach with UML , 2018).
- **Requirements Analysis**: identifying the needs and requirements of the system and modeling those requirements in terms of the operating procedures.
- **Requirements Specification**: In the requirements specification, the functional and non-functional criteria are mentioned in detail (Wiegers, 2019).
- **Logical System Specification**: Technical system possibilities are developed in tandem with the system's logical design. This includes the design of query and update processing (Avison, 2019).
- **Physical Design**: The logical system specification and technical system specification are used in the construction of a physical database and a set of program requirements (Elmasri R. &., 2017).

SSDAM's objectives are to:

- Make sure projects can continue effectively in the event of a staffing reduction without negatively impacting the project.
- Develop systems that are of higher quality overall.
- Simplify project control and management.
- Facilitate the growth and improved utilization of both skilled and unskilled personnel;

- Permit the application of computer-based technologies, including computer-aided software engineering systems, to assist with projects
- Assure improved communication between project members to create a functional framework.

3.3.4.4 DATA Flow Diagram

Data-flow diagrams (DFD) provide a clear comprehension of a system's information transportation and processing activities to both specialized and non-specialized users. These visual aids ensure straightforward and unambiguous concepts while promoting efficient communication between users, clients, and software developers. Data-flow modeling is essential for efficient requirement definition and analysis (Dennis, Systems Analysis and Design, 2018).

They consist of four major components: entities, processes, data stores, and data flow.

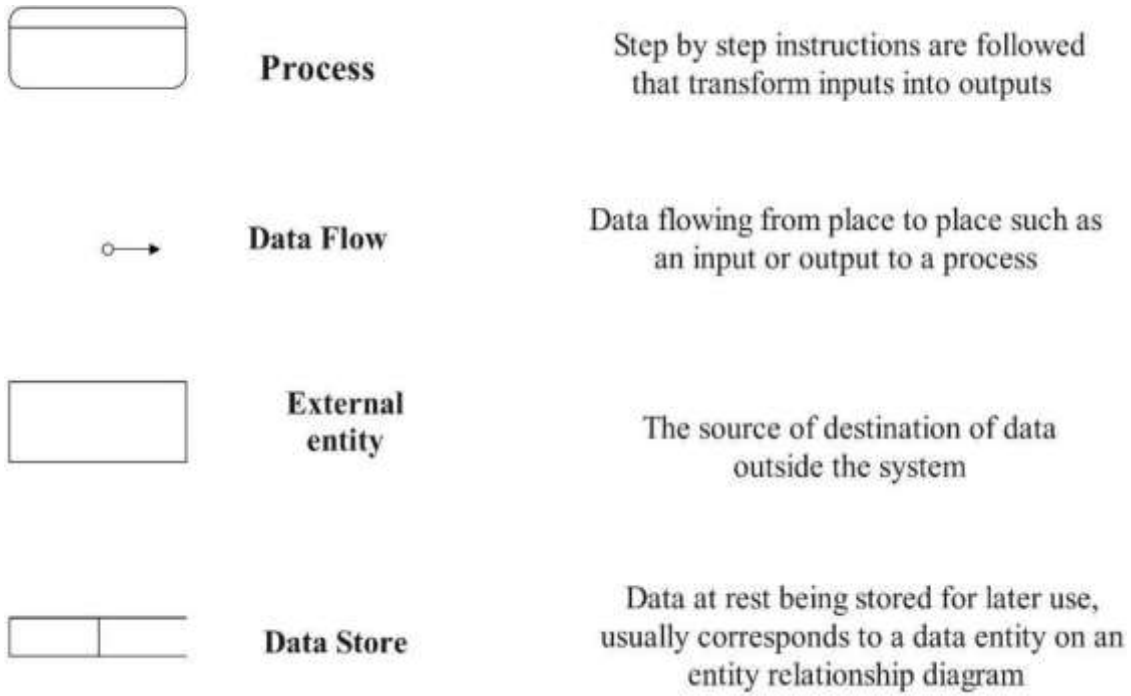

Figure 3: Data Flow Diagram Components

3.3.4.5 Data Flow Diagram Levels

Level 0

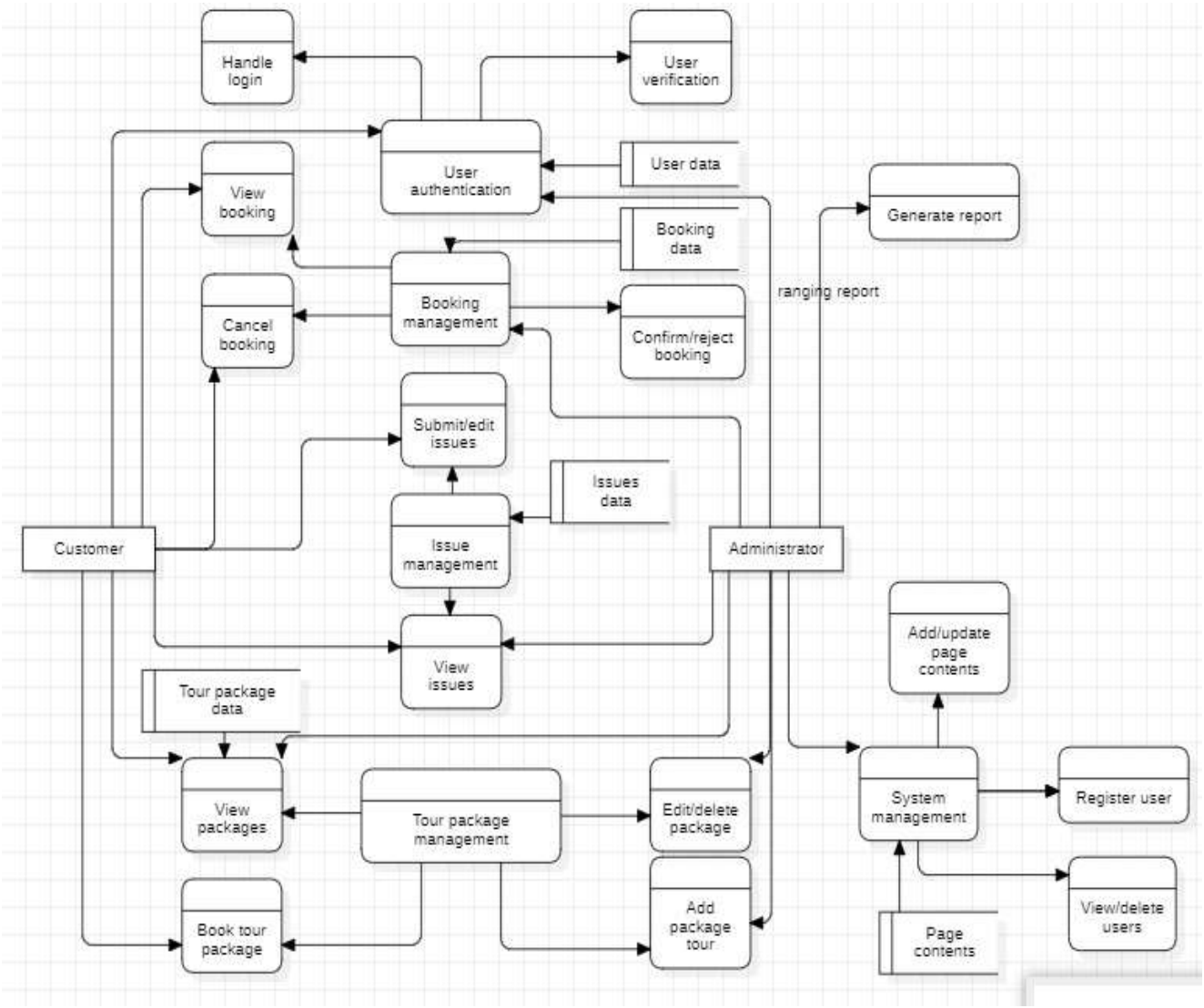

Figure 4: Level 0

Level 1

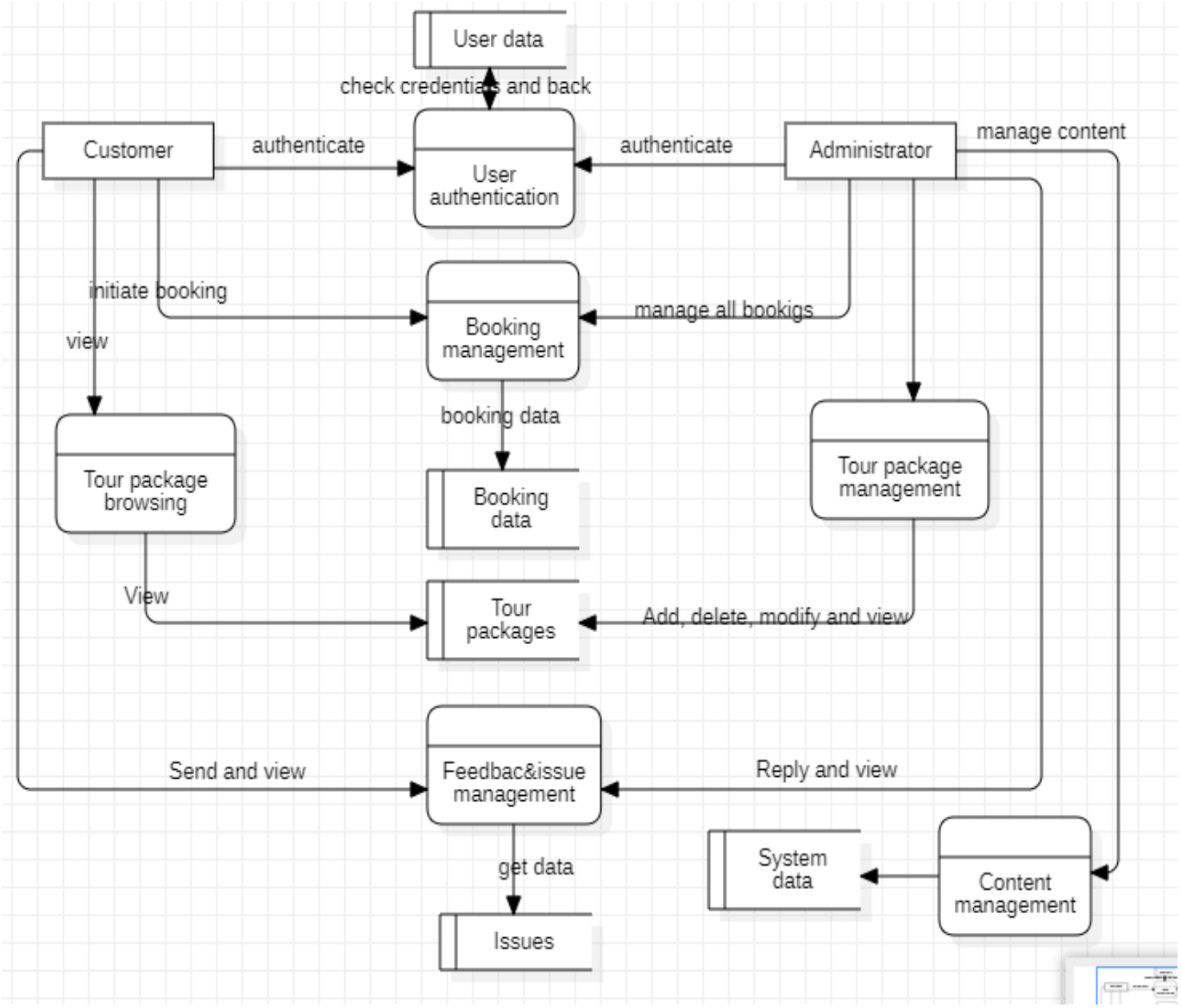

Figure 5: Level 1

3.3.4.2 Entity Relationship Diagram

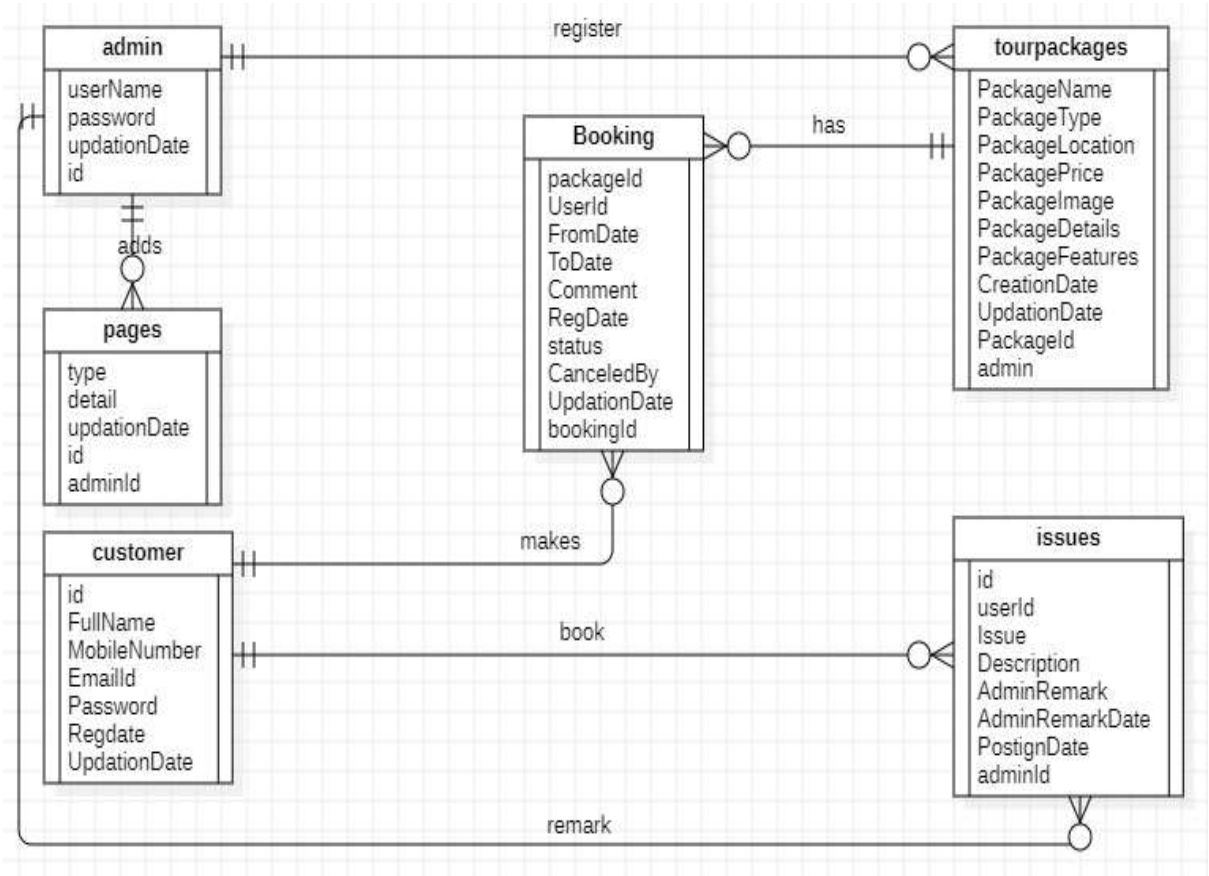

Figure 6: Entity Relationship Diagram

3.3.4.6 Data Dictionary

Table 1. Data dictionary for admin

Column Name	Data Type (Size)	Description
Id	INT	Primary key, unique identifier for each admin.
Username	VARCHAR(50)	Username for the admin.
Password	VARCHAR(60)	Password for the admin.
updationDate	DATETIME	The date and time when the record was last updated.

Table 2. Data dictionary for pages

Column Name	Data Type (Size)	Description
Id	INT	Primary key, unique identifier for each page.
Type	VARCHAR(40)	Type of the page.
Detail	TEXT	Detailed content of the page.
updationDate	DATETIME	The date and time when the record was last updated.
adminId	INT	Foreign key referencing the `admin` table.

Table 3. Data dictionary for customers

Column Name	Data Type (Size)	Description
Id	INT	Primary key, unique identifier for each user.
FullName	VARCHAR(100)	Full name of the user.
MobileNumber	VARCHAR(13)	Mobile number of the user.
EmailId	VARCHAR(100)	Email address of the user.
Password	VARCHAR(60)	Password for the user account.
Regdate	DATETIME	The date and time when the user registered.
UpdationDate	DATETIME	The date and time when the record was last

		updated.

Table 4. Data dictionary for Booking

Column Name	Data Type (Size)	Description
bookingId	INT	Primary key, unique identifier for each booking.
packageId	INT	Foreign key referencing the `tourpackages` table.
UserId	INT	Foreign key referencing the `users` table.
FromDate	DATETIME	Start date of the booking.
ToDate	DATETIME	End date of the booking.
Comment	TEXT	Comments provided by the user during booking.
RegDate	DATETIME	The date and time when the booking was made.
Status	VARCHAR(50)	Status of the booking (e.g., confirmed, pending, canceled).
CanceledBy	INT	ID of the user or admin who canceled the booking.
UpdationDate	DATETIME	The date and time when the booking was last updated.

Table 5. Data dictionary for tour packages

Column Name	Data Type (Size)	Description
PackageId	INT	Primary key, unique identifier for each tour package.
PackageName	VARCHAR(100)	Name of the tour package.
PackageType	VARCHAR(50)	Type of the tour package (e.g., adventure, cultural).
PackageLocation	VARCHAR(100)	Location covered by the tour package.
PackagePrice	DECIMAL(10,2)	Price of the tour package.
PackageImage	VARCHAR(100)	Image URL or path for the tour package.
PackageDetails	TEXT	Detailed description of the tour package.
PackageFeatures	TEXT	Key features of the tour package.
CreationDate	DATETIME	The date and time when the tour package was created.
UpdationDate	DATETIME	The date and time when the record was last updated.
adminId	INT	Foreign key referencing the `admin` table.

Table 6. Data dictionary for issues

Column Name	Data Type (Size)	Description
Id	INT	Primary key, unique identifier for each issue.
UserId	INT	Foreign key referencing the `users` table.
Issue	VARCHAR(255)	Short title or summary of the issue.
Description	TEXT	Detailed description of the issue.
AdminRemark	TEXT	Remarks or resolution notes added by the admin.
AdminRemarkDate	DATETIME	The date and time when the admin provided the remark.
PostingDate	DATETIME	The date and time when the issue was posted.
adminId	INT	Foreign key referencing the `admin` table.

CHAPTER 4: SYSTEM IMPLEMENTATION

4.1. Implementation and Coding

This chapter focuses on the practical aspect of bringing the system to life. It covers the implementation phase, where the design is translated into a functional system through coding. This chapter also describes the tools and technologies used during the development process.

4.1.1. Introduction

The implementation phase involves converting the system design into an operational system. This phase is crucial as it is where the theoretical design is transformed into working code, tested, and deployed. The primary goal of this stage is to develop a system that meets the user's requirements and is reliable, efficient, and easy to maintain. In this section, the coding practices followed during implementation are discussed, including the programming languages, frameworks, and other technologies utilized.

4.1.2. Description of Implementation Tools and Technology

1. Programming Language: PHP

PHP (Hypertext Preprocessor) is a widely-used open-source scripting language suited for web development. It is particularly chosen for this project due to its flexibility, ease of integration with databases, and extensive support community. PHP allows for the creation of dynamic web pages and provides robust functionalities that are essential for developing a tour management system.

2. Database Management System: MySQL

MySQL is a reliable and fast relational database management system (RDBMS) that is widely used in web applications. It is open-source, which makes it cost-effective, and it supports large databases, making it ideal for storing user data, booking records, and other crucial information in the tour management system.

3. Web Server: Apache

Apache HTTP Server is a powerful and flexible web server that is widely used to host websites. It is chosen for its compatibility with PHP and MySQL, as well as its stability and security features. Apache provides a reliable platform for deploying the web-based tour management system.

4. Development Environment: Visual Studio Code

Visual Studio Code (VS Code) is a lightweight but powerful source code editor that supports various programming languages. It is chosen for its rich extension ecosystem, which enhances coding efficiency and productivity. Features like syntax highlighting, debugging tools, and integrated terminal make it an ideal choice for PHP development.

5. Framework: Bootstrap

Bootstrap is a popular front-end framework used to develop responsive and mobile-first web pages. It simplifies the design process by providing pre-designed components such as buttons, forms, navigation bars, and other UI elements. Bootstrap ensures that the tour management system is user-friendly and accessible across different devices.

4.1.3. Screen shorts and source codes

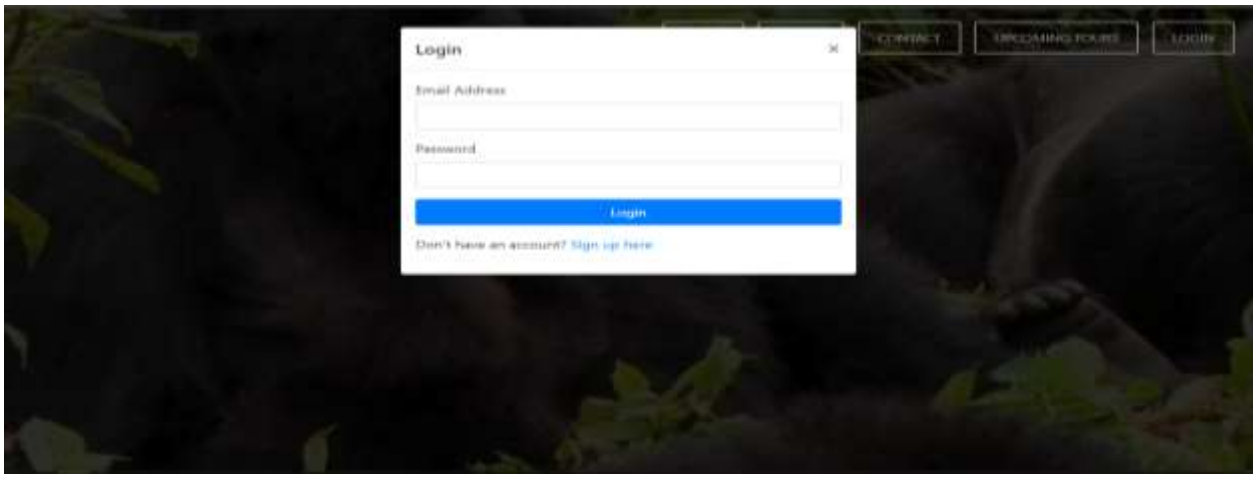

Figure 1: Login for both Customer and admin

Figure above is for login page for multiple users.

Figure 2: Customer creating account

Figure above shows image by creating account with live password verification.

Figure 3: Upcoming tours listing for before login

Image above is pop-up modal thet holds the upcoming tours on customer who's not yet logged in.

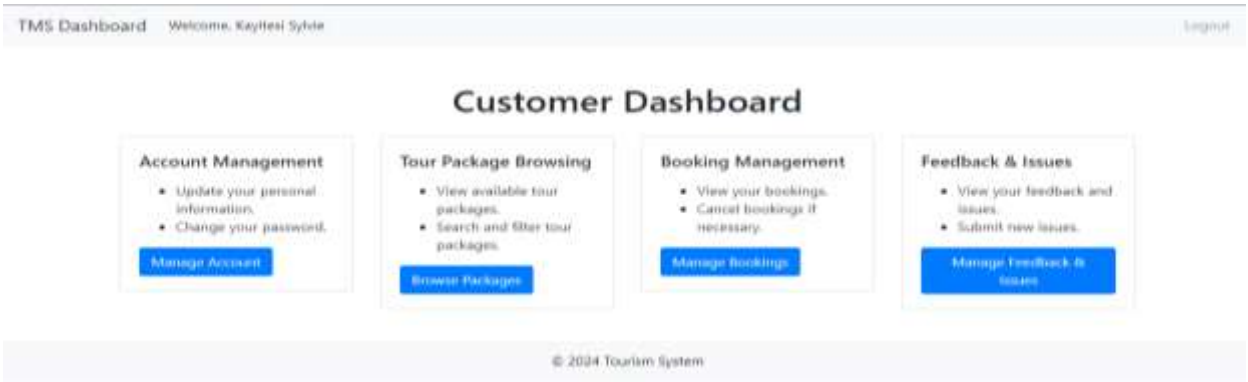

Figure 4: Dashboard for customer

The customer dashboard where all components and data are stored in modals. Means id is clicked it pops-up modal with that information.

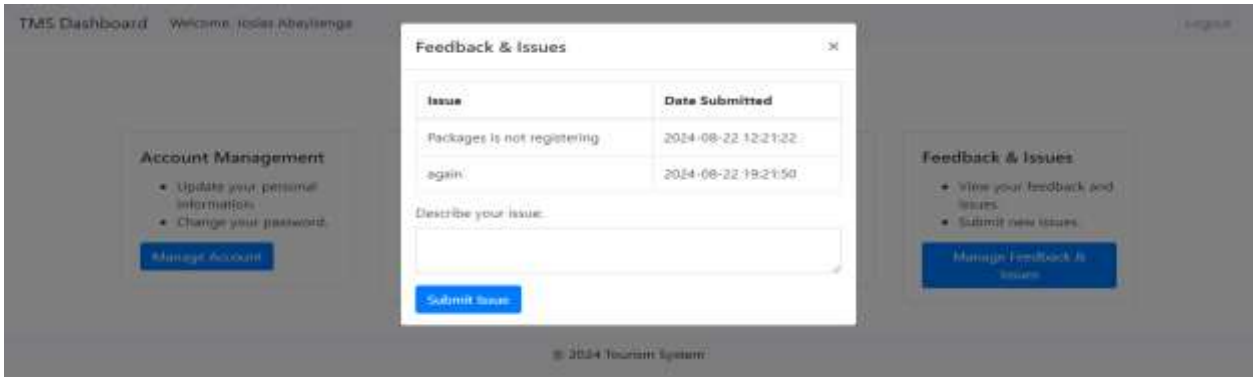

Figure 5: Issue/feedback submission and listing for particular user

Modal that holds to submit issues and view all issues you'd submitted on the system.

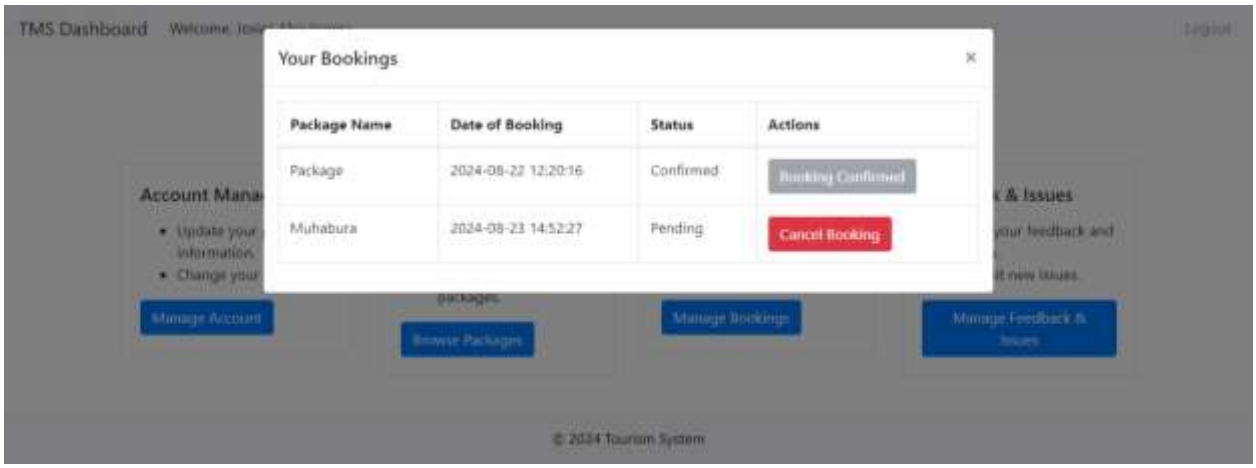

Figure 6: Booking history for customer

The figure above is modal for customer bookings and is able to cancel booking when admin is not yet confirmed your booking.

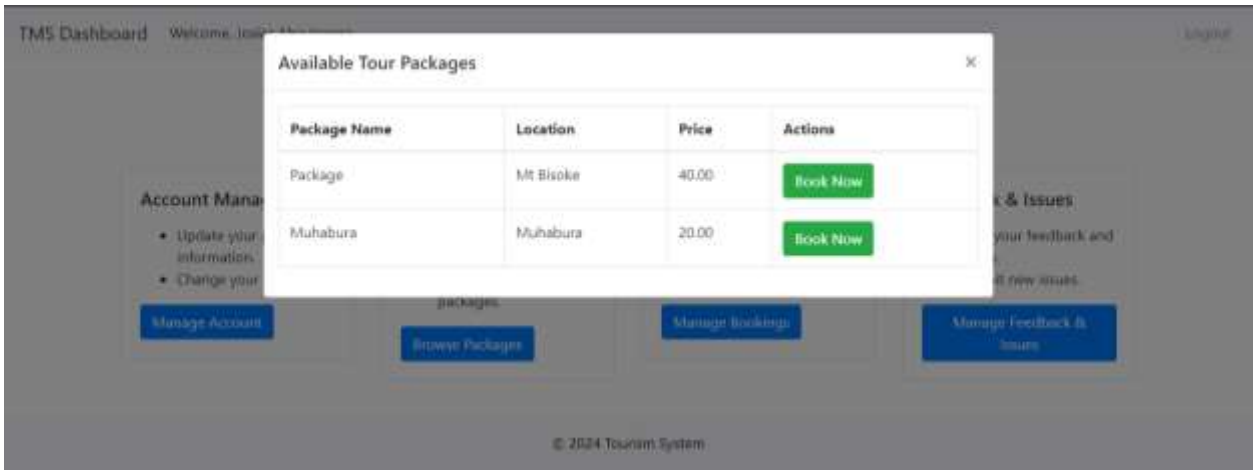

Figure7: Tours listing for logged in customer

The figure above is modal for available tours and their information with booking option.

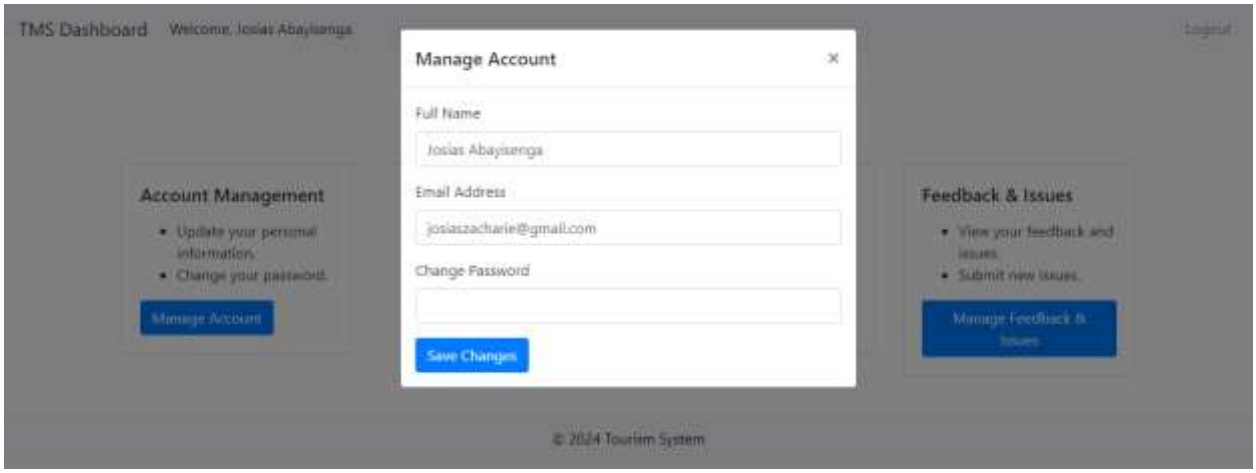

Figure 8: account management for customer

Figure above is modal that hold cutomer information that canbe changeable.

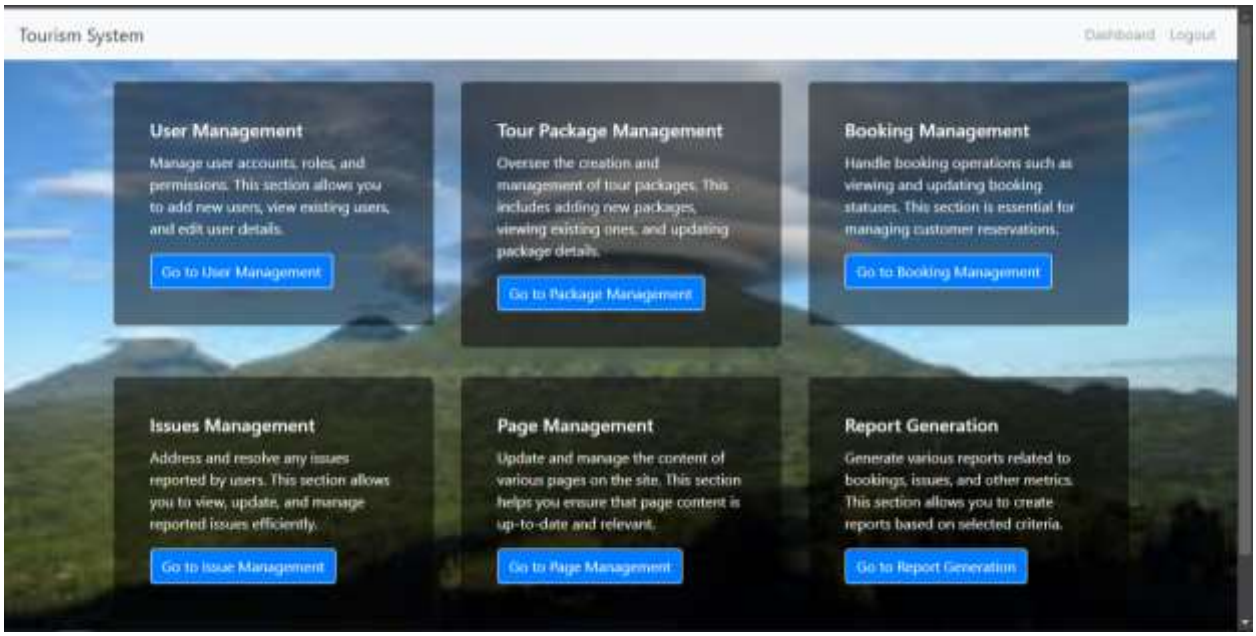

Figure 9: Dashboard page for admin

This dashboard for admin with all functionalities of the entire system.

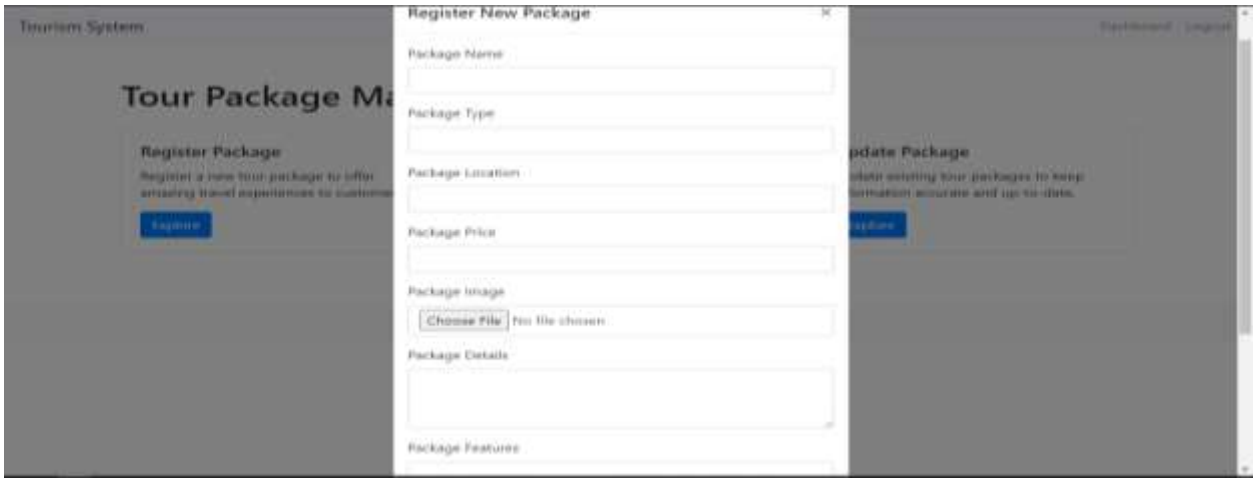

Figure 10: Admin register tour package

This page is dedicated for admin to add tour package and their details.

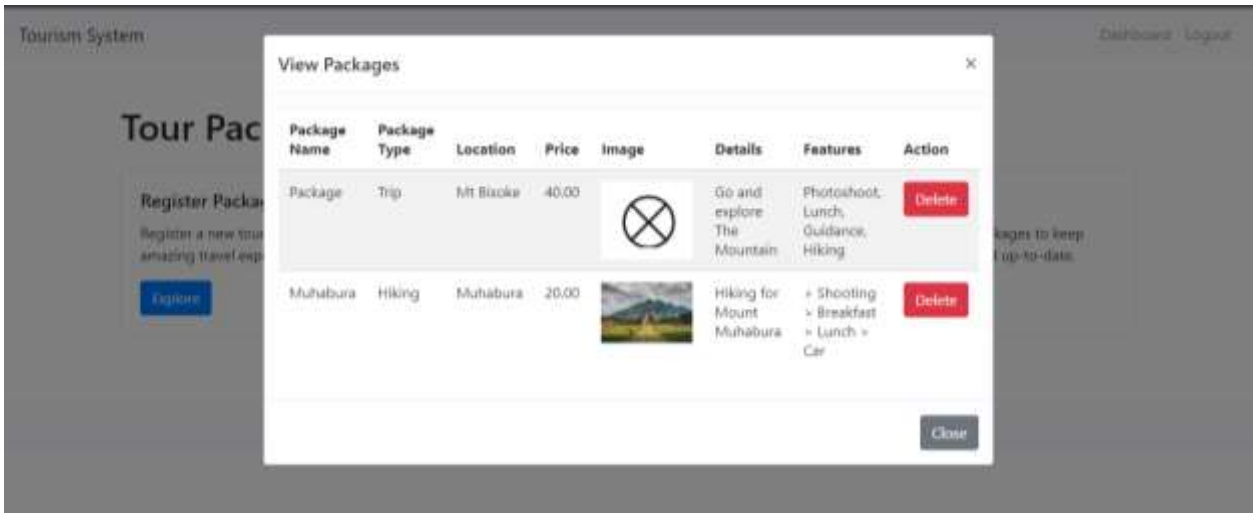

Figure 11: Admin Package listing

The image above is reserved for to view get listing of all available tour packages with option to delete.

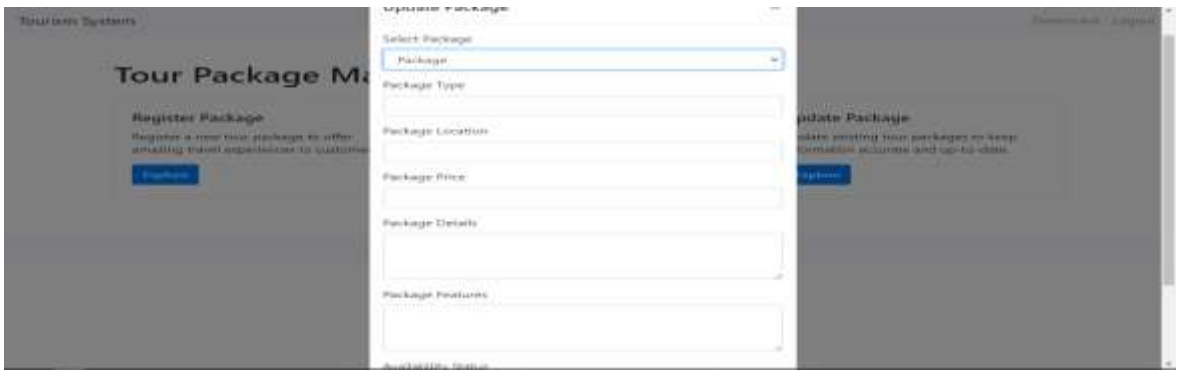

Figure 12: Admin update tour package details

Figure aove is for modifying details about the tour package information.

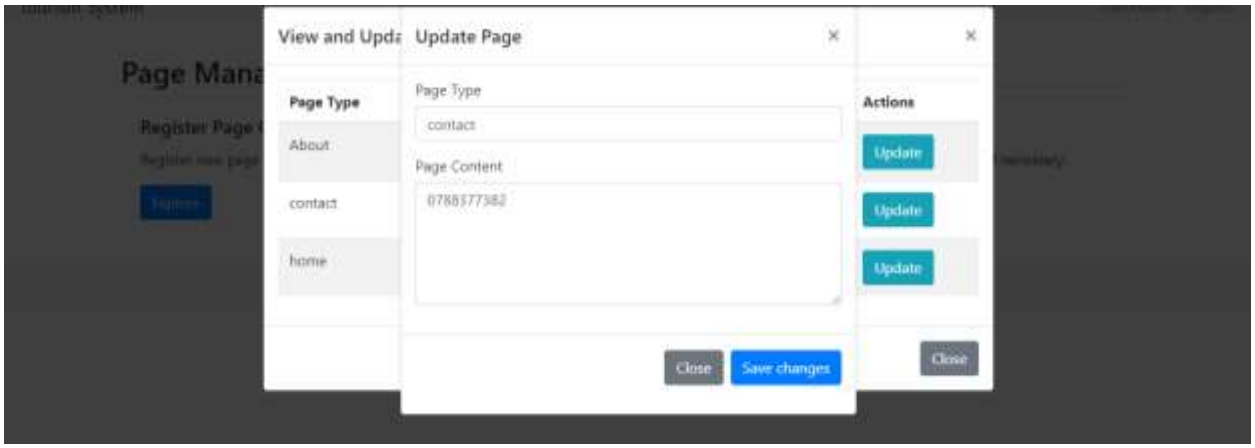

Figure 13: Modify page contents

Figure above is for modifying system dynamic component like contact, home, and about us

Figure 16: Admin issue/feedbacks listings

Figure above is listing of issues with option of updating.

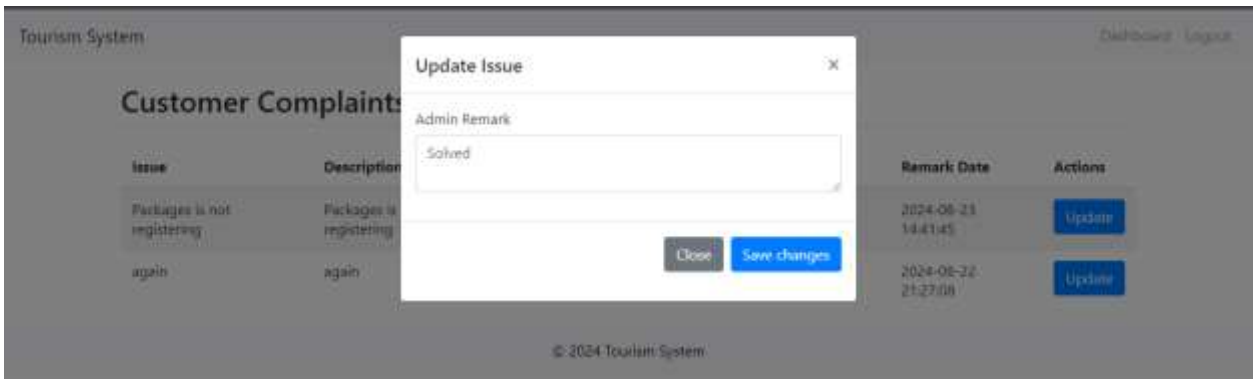

Figure 17: Admin set status of issue

Figure above is for updating status issues like solved or pending.

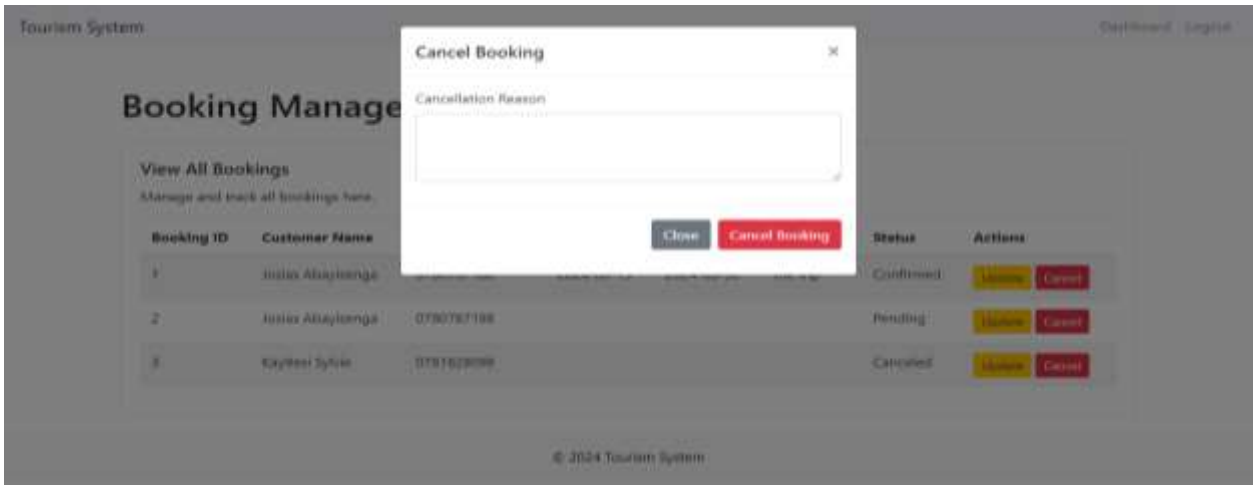

Figure 18: Admin cancel booking and set comment

If admin cancel the booking must set the remark about why is cancelled.

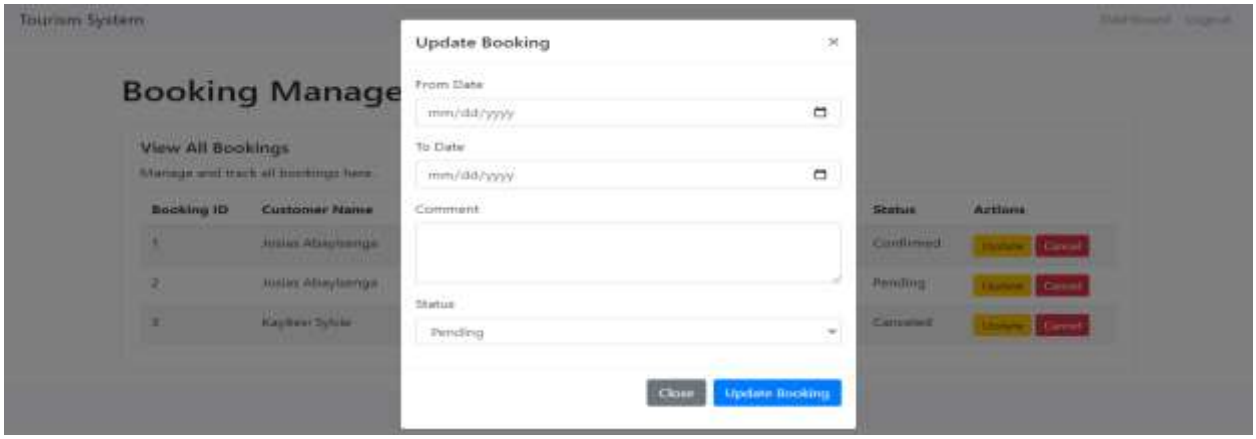

Figure 19: Admin, Booking modifications

Figure above is how admin schedule the trip date range for specified customer.

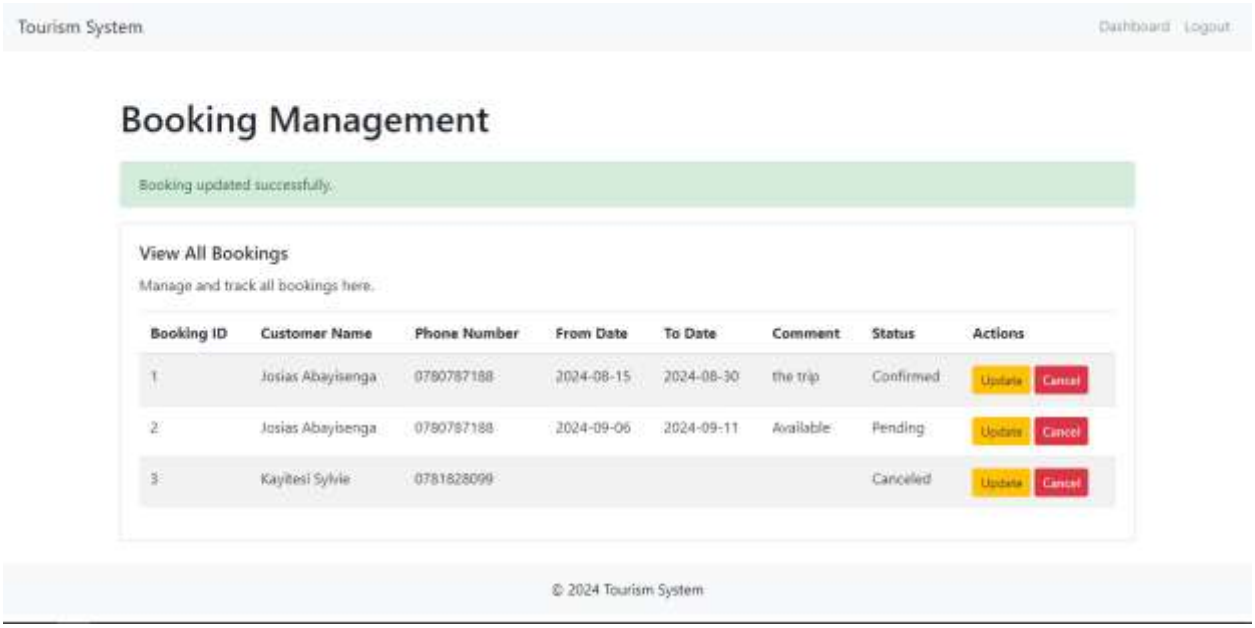

Figure 20: Admin Booking listing

Image above is where admin can get the list of all bookings made by customers with the option of confirm or cancel that booking.

4.2. Testing

Testing is a critical phase in the system implementation process, aimed at ensuring that the system operates correctly and meets the specified requirements. This section outlines the different types of testing performed, along with their results and implications.

4.2.1. Introduction

Testing involves evaluating the system to identify and resolve any defects or issues before deployment. It ensures that the system functions as intended, adheres to requirements, and delivers a satisfactory user experience. Various testing types are utilized to assess individual components, integration, functionality, and overall system performance.

4.2.2. Unit Testing

Unit testing focuses on validating individual components or units of code in isolation. Each unit is tested to confirm that it performs its intended function correctly.

Components Tested: Register account.

Outcomes: The module is totally working correctly here customer fill his/her information and passwords which live checked. If success the message below displayed.

4.2.3. Validation Testing

Validation testing ensures that the system meets its requirements and properly validates input data.

Validation Rules: Checked for correct enforcement of data types, required fields, and format constraints. The following is password policy validation.

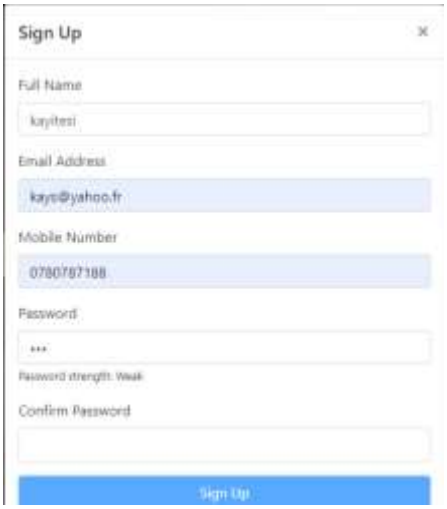

Figure 2: Password live validation.

4.2.4. Integration Testing

Integration testing examines the interaction between different components or systems to ensure they work together seamlessly.

Integrated Components: Verified the functionality of interconnected modules, such as database connectivity and session management.

Outcomes: Successful integration with no significant issues reported. The following is integration between packages management and booking management.

Figure 3:Package option module

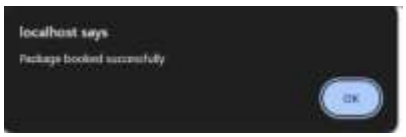

Figure 4: Booking package module

4.2.5. Functional and System Testing

Functional testing assesses specific functionalities of the system against the requirements, while system testing evaluates the system's overall behavior in an integrated environment.

Figure 5: The booking cancelation functionality testing

4.2.6. Acceptance Testing Report

Acceptance testing verifies that the system meets the end-users' needs and requirements. This is typically performed by the end-users or stakeholders.

Acceptance Criteria: Based on predefined user requirements and scenarios.

Outcomes: Positive feedback from end-users, with the system meeting all major requirements and being deemed ready for deployment.

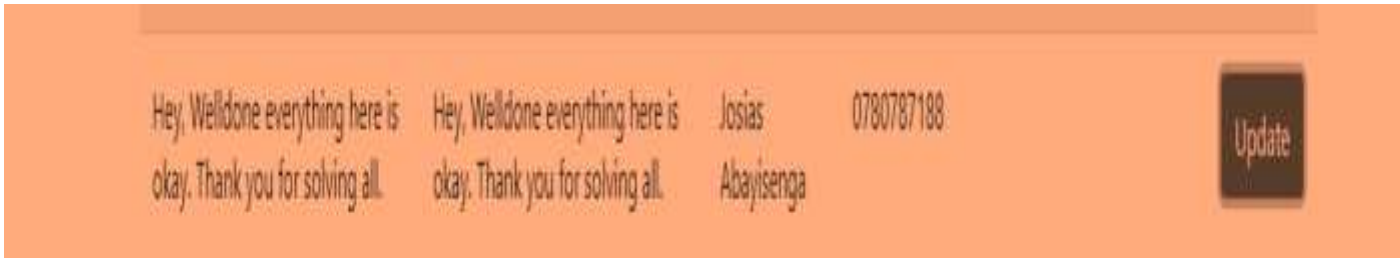

Figure 6: The feedback from users

CONCLUSION AND RECOMMENDATIONS

Conclusion

The implementation and testing of the system have been successfully completed, demonstrating that the system meets its design specifications and fulfills the intended requirements. The following key points summarize the outcome of the system development:

1. **Successful Implementation:** The system was developed using the specified tools and technologies, and all components were integrated as planned. The system's architecture and design were effectively translated into a working product.

2. **Thorough Testing:** A comprehensive testing process was carried out, including unit testing, validation testing, integration testing, functional and system testing, and acceptance testing. The system passed all test phases, confirming its functionality, reliability, and compliance with user requirements.

3. **User Acceptance:** The acceptance testing phase yielded positive feedback from end-users, affirming that the system meets their needs and expectations. The system's performance, usability, and feature set were well received, indicating a high level of user satisfaction.

4. **System Readiness:** The system is now fully operational and ready for deployment. It is anticipated to enhance efficiency, streamline processes, and provide a robust solution to the problems it was designed to address.

In conclusion, the project has achieved its objectives, delivering a functional and reliable system that aligns with the initial goals and specifications. The successful completion of all testing phases ensures that the system is prepared for real-world use and is expected to deliver significant benefits to its users.

Recommendations

1. **User Training and Support:** Provide comprehensive training for end-users to ensure they are familiar with the system's features and functionality. Ongoing support should be available to address any issues or questions that may arise post-deployment.

2. **Regular Maintenance:** Implement a regular maintenance schedule to address any potential issues and ensure the system remains up-to-date with the latest security patches and updates.

3. **Performance Monitoring:** Continuously monitor the system's performance to identify and resolve any emerging problems. This will help maintain optimal performance and user satisfaction.

4. **User Feedback:** Encourage users to provide feedback on their experience with the system. Use this feedback to make iterative improvements and enhancements.

5. **Future Enhancements:** Consider future upgrades or enhancements based on user needs and technological advancements. This will help keep the system relevant and effective in addressing evolving requirements.

6. **Documentation:** Ensure that all system documentation is kept up-to-date and readily accessible. This includes user manuals, technical documentation, and troubleshooting guides.

Recommendations

1. **User Training and Support:**

- **Training Programs:** Develop and conduct training sessions for users to familiarize them with the system’s features and functionality.

- **User Guides:** Provide comprehensive user manuals and online resources to assist users in navigating and utilizing the system effectively.

- **Support Channels:** Establish support channels, such as help desks or online support, to address user queries and issues promptly.

2. **Regular Maintenance and Updates:**

- **Maintenance Schedule:** Implement a regular maintenance schedule to ensure the system remains in optimal condition and to address any potential issues.
- **Updates:** Keep the system updated with the latest security patches, bug fixes, and feature enhancements to ensure continued performance and security.

3. **Performance Monitoring:**

- **Monitoring Tools:** Utilize performance monitoring tools to track system performance and identify any potential bottlenecks or issues.
- **Performance Reviews:** Conduct regular performance reviews to ensure the system meets user expectations and performs efficiently under various conditions.

4. **User Feedback and Continuous Improvement:**

- **Feedback Mechanism:** Implement mechanisms for users to provide feedback on their experiences with the system.
- **Iterative Improvements:** Use feedback to make iterative improvements and enhancements to the system, addressing any issues or adding features based on user needs.

5. **Documentation and Knowledge Management:**

- **Comprehensive Documentation:** Maintain detailed and up-to-date documentation, including user manuals, technical specifications, and troubleshooting guides.
- **Knowledge Base:** Create a knowledge base or FAQ section to provide quick answers to common questions and issues.

6. **Scalability and Future Enhancements:**

- **Scalability Planning:** Plan for future scalability to accommodate growth in users, data, and functionality.
- **Future Enhancements:** Regularly review and assess potential enhancements to keep the system aligned with emerging technologies and evolving user requirements.

7. **Security Measures:**

- **Security Audits:** Conduct periodic security audits to identify and mitigate any vulnerabilities.
- **Data Protection:** Implement robust data protection measures to safeguard sensitive information and ensure compliance with relevant regulations.

8. **Integration and Compatibility:**

- **Integration Testing:** Ensure the system integrates seamlessly with other existing systems or platforms as needed.
- **Compatibility Checks:** Regularly check for compatibility with new software or hardware to maintain system effectiveness.

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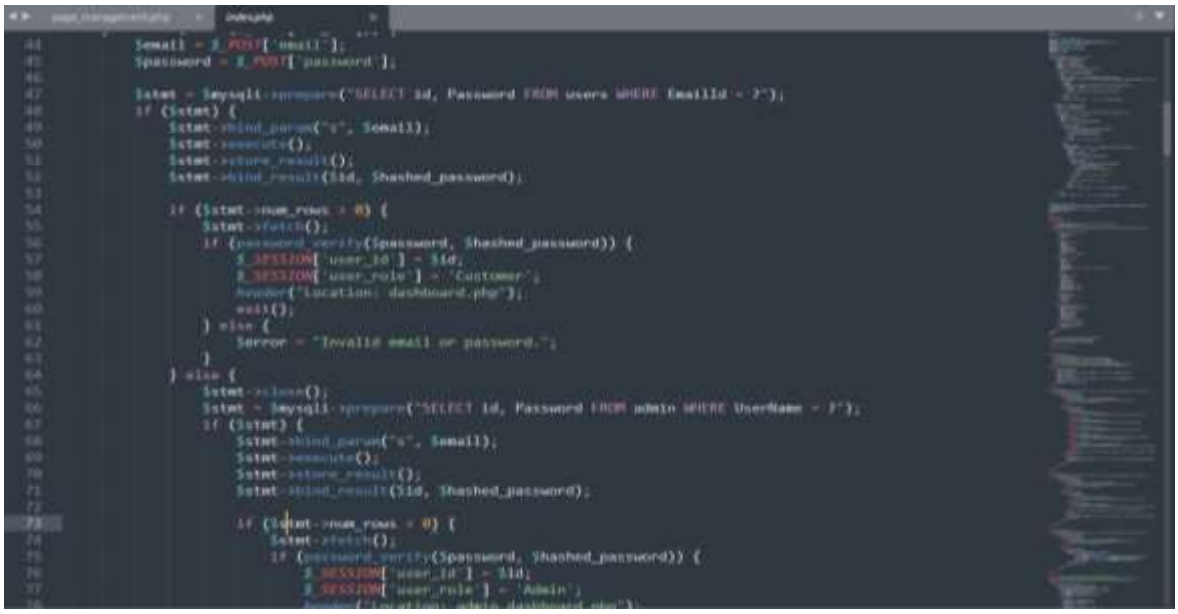
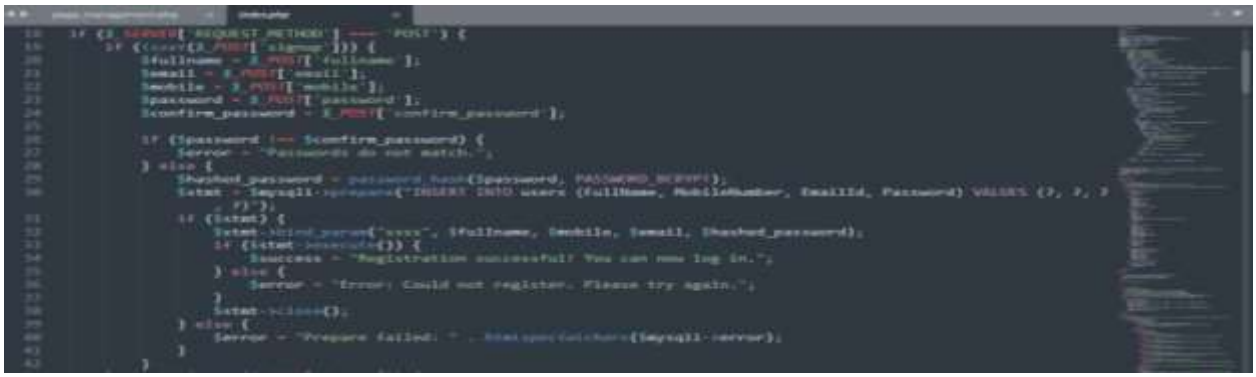
Appendix

Source of code



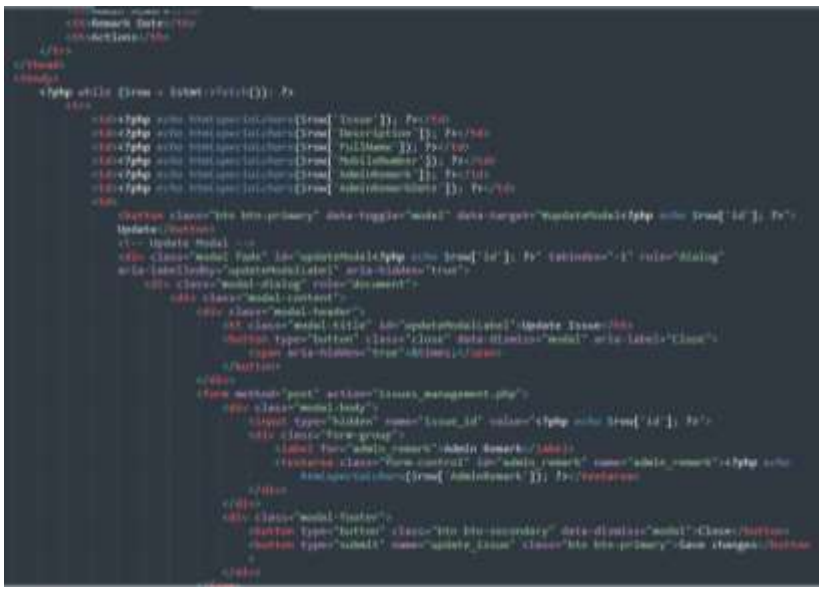
Login for both Customer and admin



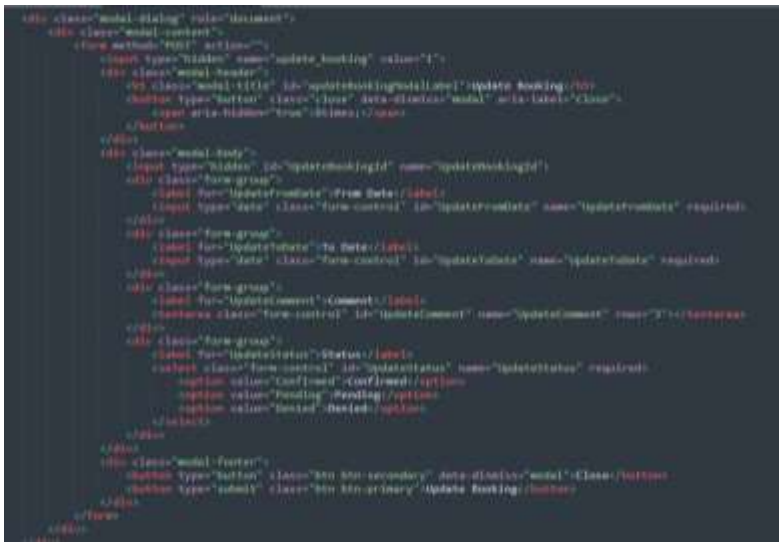
Customer creating account

Upcoming tours listing for before login

Dashboard page for admin



Handle and display issues



Admin, Booking modifications