RESORT MANAGEMENT SYSTEM (Mountain Mirage Resort)

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Table of Contents

Table of Contents

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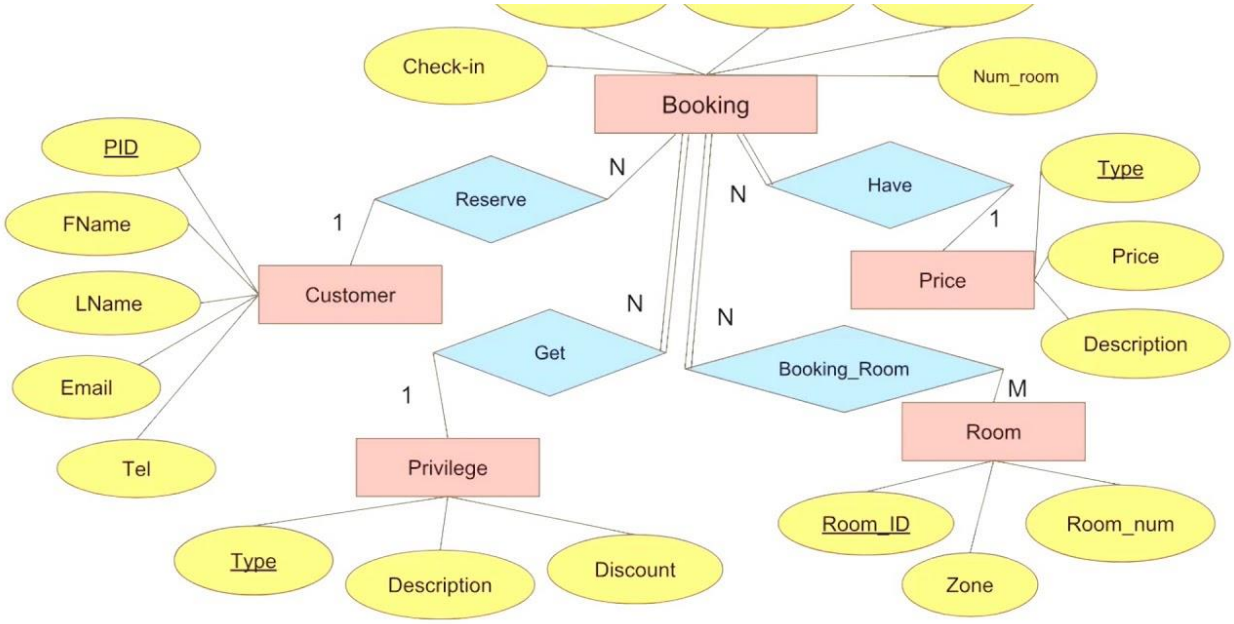
Introduction

It is a software solution that is very helpful for resort to manage and handle their customers and operate their daily activities. The system gives many functionalities including room availability, room booking, bill and payment, customer management, etc. The system is built by the use of modern technologies and it allows users to use various facilities. The system is also build with strong security, confirming that private information is protected. Example of resort management system is given in figure 1.

Figure 1:

ER DIAGRAM FOR RESORT MANAGEMENT SYSTEM

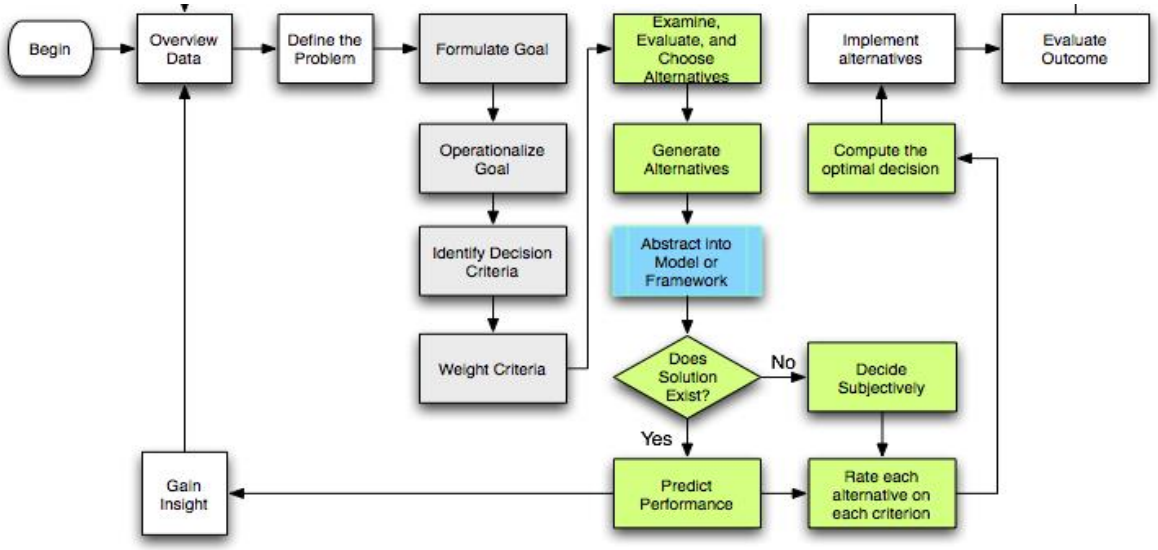


The project is made with security in mind. The software uses strong encryption to protect private and sensitive information including customer details and billing records. Use of the system is also restricted using a login page, and only authorized individuals and the user who have valid credentials only can access the system. The project has the features such as room availability status, room booking, billing and payment section, notification and customer service management. The main objective to build this project is to give a best platform to manage and automate resort operations, which give the efficiency and profitability for the resort.

Figure 2 explains the process for resort management system.

Figure 3:

process



This system works on the principle of CRUD(Create-Read-Update-Delete). The database stores all the information of users login details for authentication, room details, customer records and billing details. The recorded data can be updated ,retrieved and modified.

Aim

The aim of the project is to give a software solution that allows managers and staff to manage and operate their daily activities. It provides a platform to handle many functionalities including room status, room management, room booking, customer management, billing and invoice and customer service.

Objectives

Objectives of the project to build this system is given below.

- To operate the booking process for customers, to simplify the room reservation process.
- To manage room status: to maintain an inventory of available room status and view occupied rooms.
- To facilitate billing and transaction processes: to view check in and check out procedures.
- To manage customer records.
- To manage staffs and resources.
- To manage security information.
- To maintain guest request, report and preferences.
- To provide the best experience for customer and make them happy in context of room booking and check out process.
- To improve operational efficiency by the manual process, decreasing errors and in increment of productivity and profitability.
- To provide communication between guest and managers.
- To facilitate analytics into various aspects of the resorts operations.
- To give the platform for guest to give their complaint and feedback.

Features

Features for the project are given below.

- Easy to use interface
- Security and access management
- Room booking management
- Room inventory management
- Customer management
- Billing and payment management
- Guest account management
- Staff management
- Reporting and feedbacks
- Communication and messaging management
- Maintenance
- Integration
- Easy to close the system by logging out

Problem statement

The problem statement for a resort management system project is to design and develop a effective system to automate the room booking, room availability, room allocation, payment, room inventory management, and customer management operation of a resort. The system should enable the easy booing process, view room availability status. The system should allow staff members and managers to view and manage room status, assign rooms to customers, operate payments, view customer records and update customer information. The system must generate reports, customer feedback and request. .The main aim is to improve the effectiveness for resort to operate their operations and increase the overall customer experience.

Functional Requirements

Functional requirements for resort management system project is given below.

- Room booking
- Room availability
- Payment processing
- Billing and transaction
- Room allocation
- Room inventory management
- Customer records
- Guest request
- Room tracking
- Reporting and feedbacks
- notifications

Non-Functional Requirements

- Usability The system should be user-friendly.
- Performance: The software should be fast and responsive, able to handle all situation.
- Availability: The system should be available anytime.
- Security: The system must be secure to protect all the data and information of guest from unauthorized access.
- Reliability: : The system must be reliable that is very responsible for the resort operations
- Scalability: The system need to be scalable and be able to adapt all the changing need and the number of guests and rooms.
- Flexibility: The system should be flexible in the context of customization and configuration.
- Accessibility: The system must be accessible with support for technologies and compliance with standards.
- Supportive:
- Privacy:
- System Monitoring:
- Compatibility:
- Data Integrity

Scope

Scope is defined by understanding and viewing all the topics of objectives, aims, problem statement, features, functional requirements and non-functional requirements. The main scope of the project are as follows;

- Simple GUI
- Room reservation management
- Billing and transaction
- Room inventory management
- Reporting and Analytics
- Staff Management
- Security and access control system
- Customer management

Development Methodology

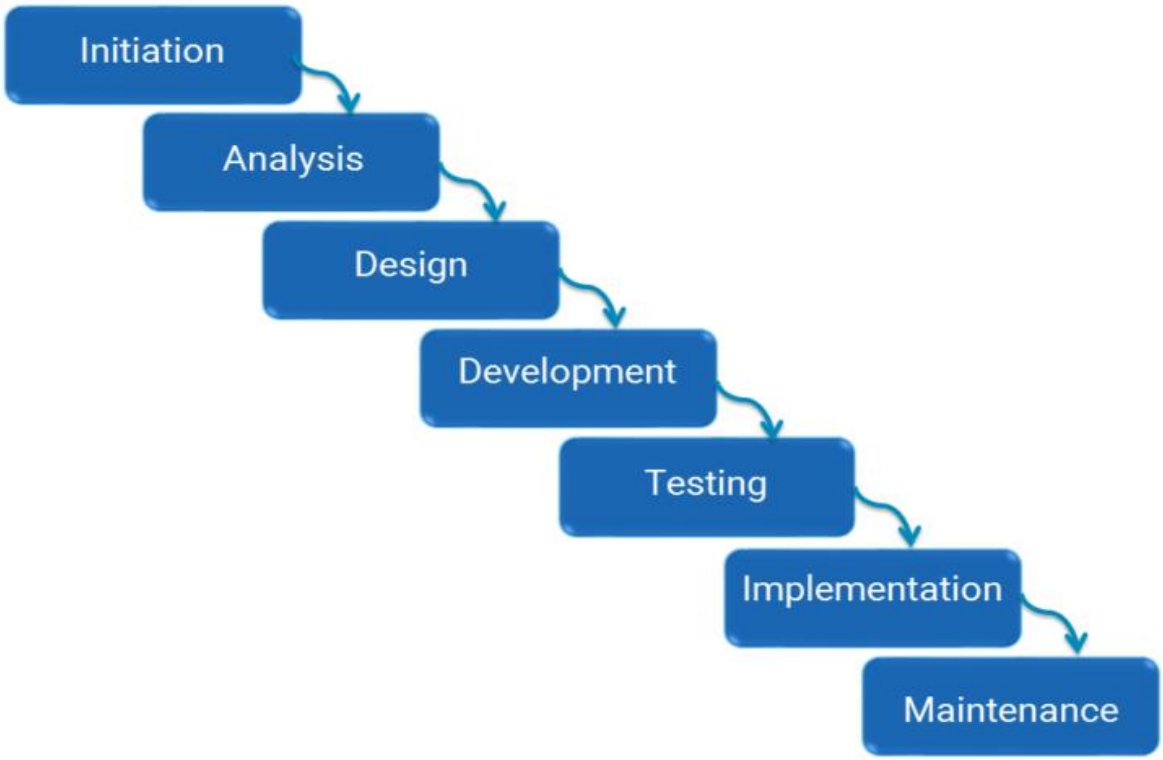
Development methodology means software development life cycle(SDLC) which gives the easy steps for the development of software from scratch.

Methodology

Modern waterfall model (iterative model) is used for the development of this system. It is utilized because of its simplicity and easy procedure. This process is suitable for beginner developers who is going to develop the system. Figure 3 represents all the steps in this model.

Figure 5:

Waterfall Model



Tools and Technologies

Many tools and technologies were used in the all SDLC. They are;

- Windows as working platforms.
- MSWORD for feasibility study and requirement analysis.
- Canva, Figma and adove photoshop for design phase.
- Python with Tkinter tools and VS code for coding in development phase.
- Sqlite3 for database connection.
- Git and Github for version control.
- Teams, viber for feedback and discussion.
- Google as search engine.
- MS excel.

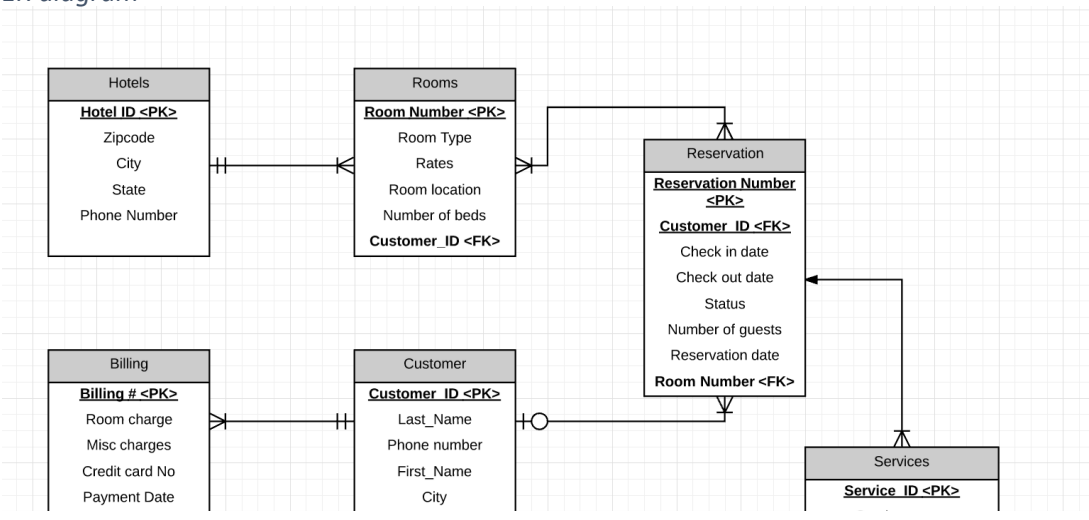
ER diagram

ER diagram consists of four entities names ‘Resort’, ‘room’, ‘reservation’, and ‘guest’. There is also a relationship between ‘payment’, ‘reservation’ and ‘guest’ entities. The ‘resort’ entity has ‘resort-id’, ‘name’, ‘address’, ‘phone’ and ‘email’ entities. They represent the unique identifier for the resort, its name, address, email address, contact number, etc. The ‘Room’ has attributes such as ‘room-id’, ‘room-number’, ‘room-category’ ‘price’, which represent the unique identifier of the room, its number, type, price. ‘Reservation’ represents the booking room at resort including attributes such as reservation number, check in and check out date and the guest number. ‘Room’ entity has different kinds of rooms available in resort including room-id, room type, room details and room price. ‘Service’ represents the different facilities and services provided by resort. It have service-id, service-name, price of service, etc attributes.

Figure 4 represents the ER diagram for resort management system.

Figure 7:

ER diagram



System Architecture

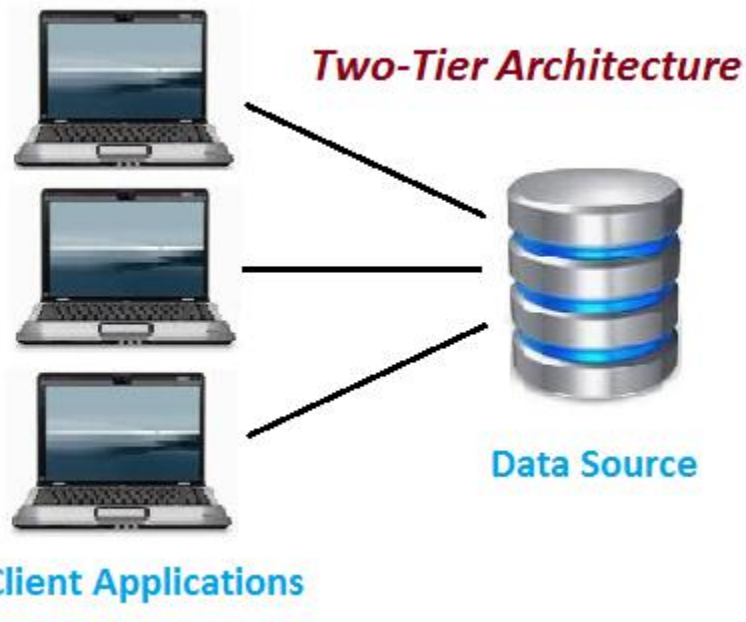
The system is based on the concept of two-tier architecture. In two-tier architecture, the client directly interacts with the server to operate tasks. In resort management system, two-tier architecture involve a client side application on users device that directly communicates with a server side application that manages the data processing and storage. Overall two-tier architecture contain client-side application, server side application, database and communication protocal.

A two-tier architecture of resort management system involve a client- side application on a device of users that directly with a server-side application running on a server-side application running on a server based platform. Server side application manages the processing of data and storage for the system, while the client-side application provide a interface for interacting with system.

Two Tier Architecture

Figure 9:

Two tier architecture



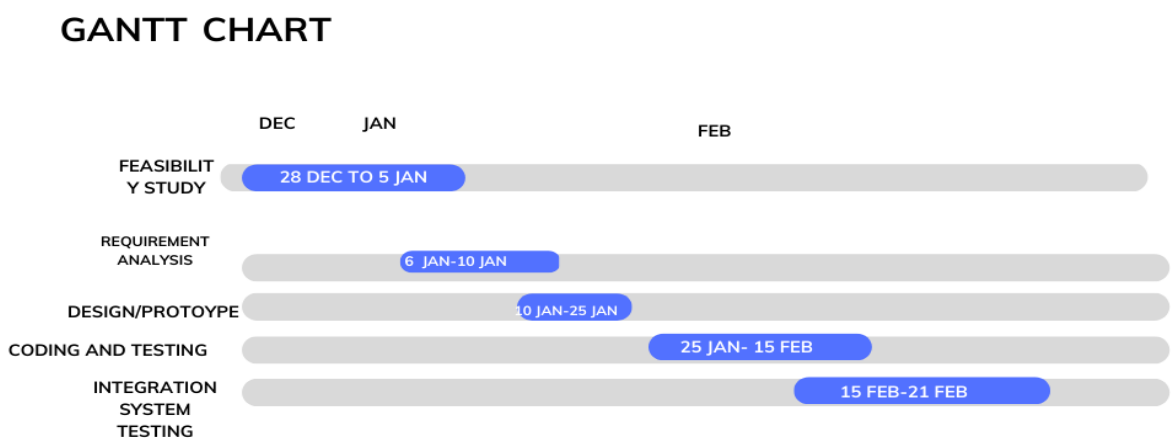
- It is based on client-server architecture.
- It includes direct communication.
- It runs faster

Project plan

A progress chart is important in software engineering to automate time, effort, struggle and progress for the software development. The team for the development recorded its progress report and plan by the use of Gannt Chart for all the steps of modern waterfall software development Life Cycle(SDLC) as informed in figure 6.

Figure 11:

Gantt chart



Prototypes

Prototypes are very important to build a GUI as per SRS. Many prototypes built before changing them into code format. Many initial throw-away prototype are responsible for subsequent designs.

Prototypes are given below

System testing

Black box testing was used for system testing when the code is completed for the checking of its functionality as per SRS manual as shown in figure. Outputs were recorded for the test cases.

Figure12:

login page

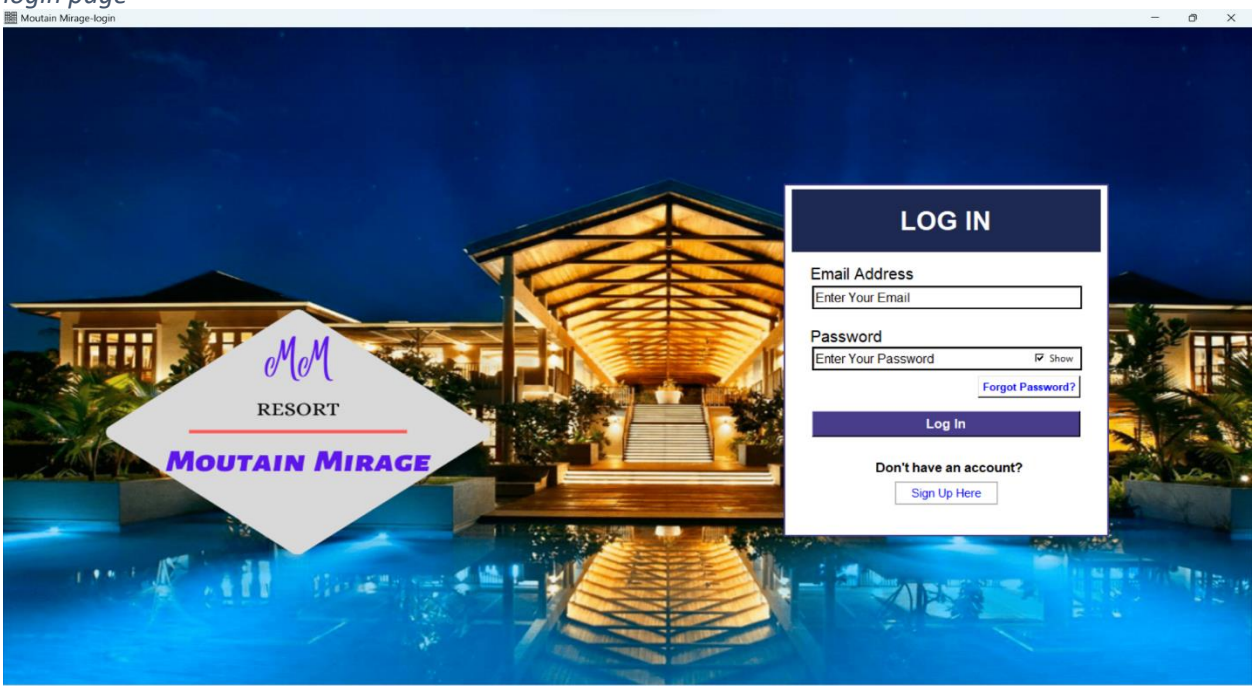


Figure 13:

signup page

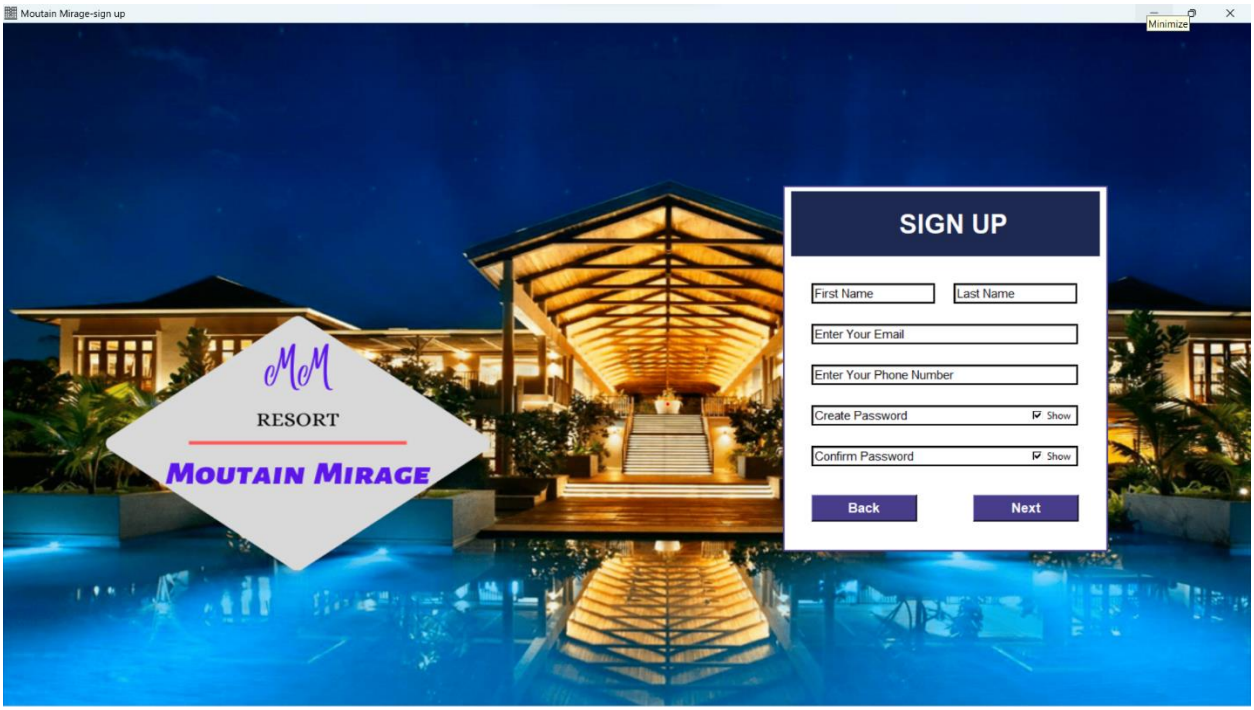


Figure 14:

Room availability

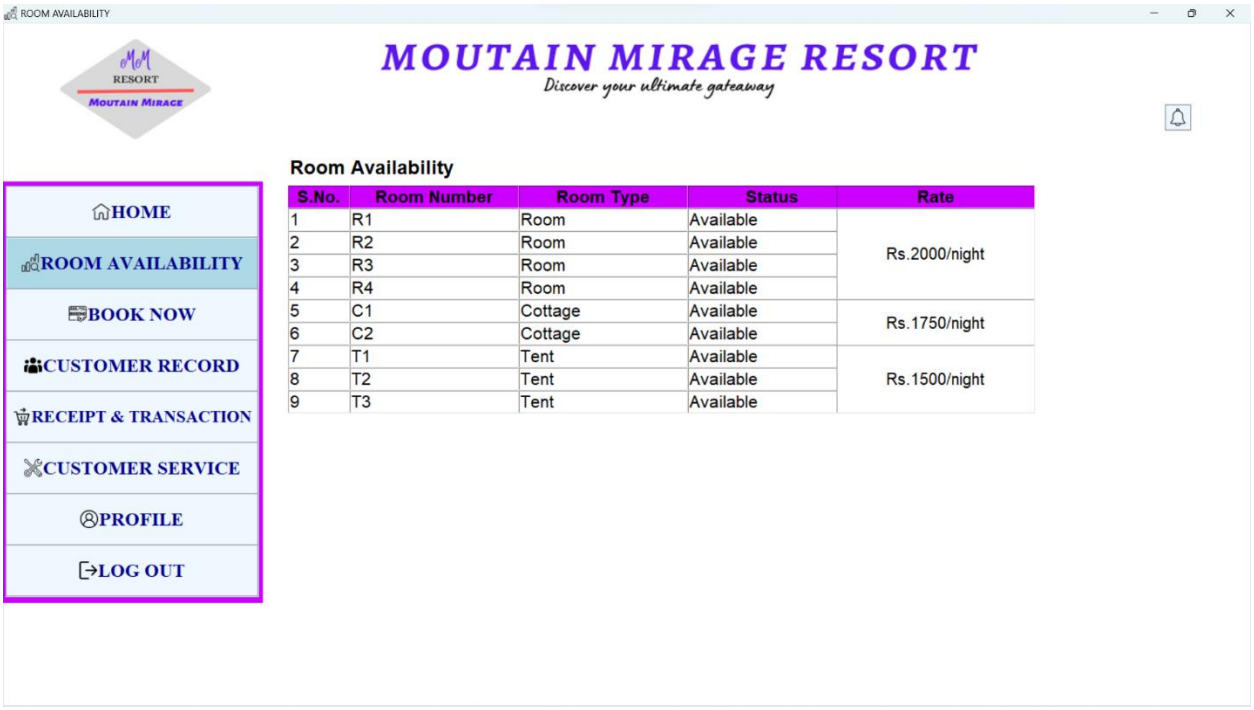


Figure 15

Customer Record

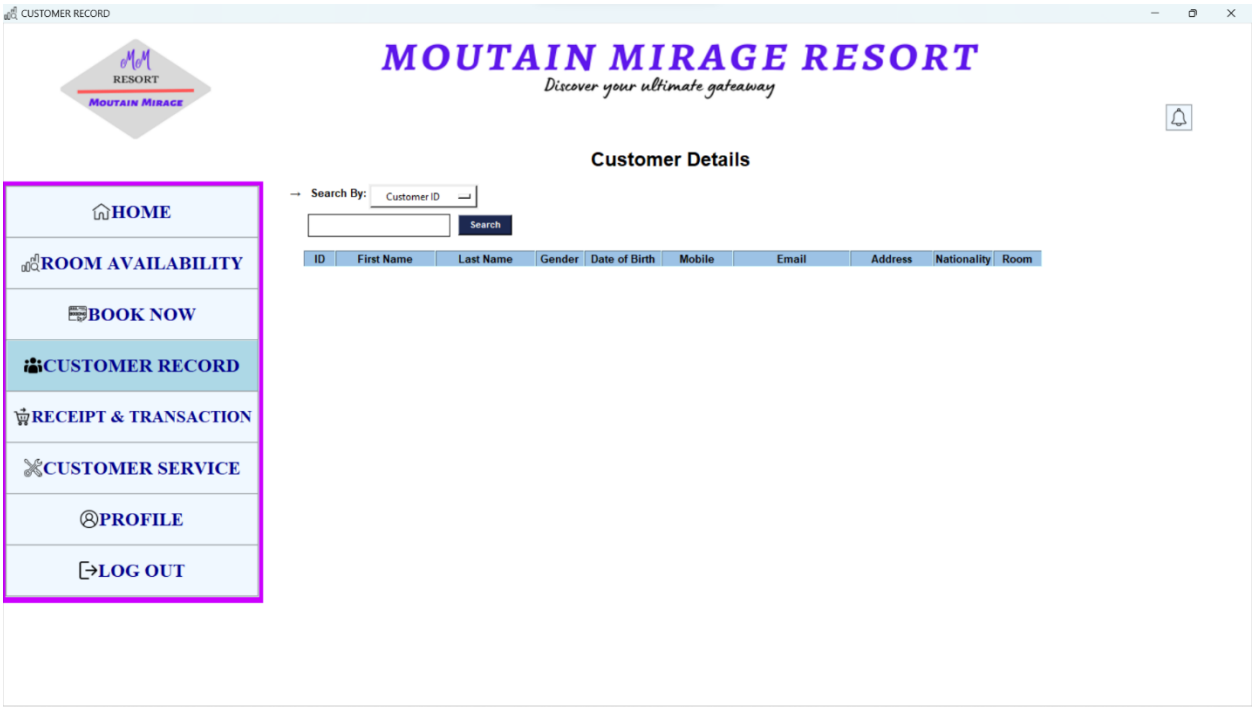
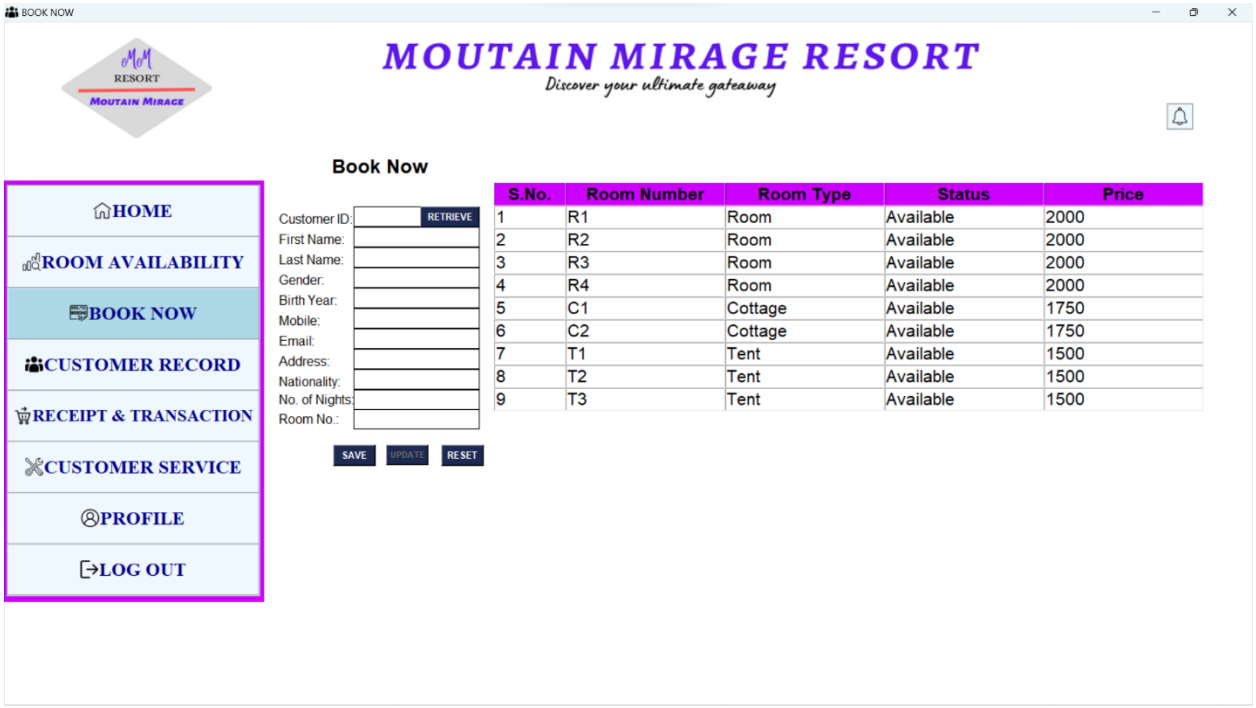


Figure 16:

Book Now

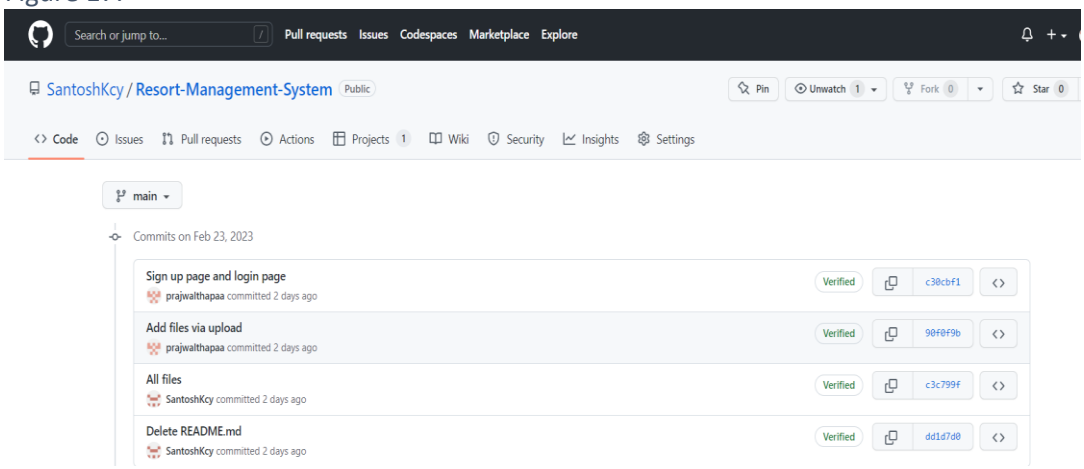


Version Control

Github: https://github.com/SantoshKcy/Resort-Management-System.git as shown in figure below.

Youtube: https://youtu.be/dCGHApdA1Z8

Figure 17:



Conclusion

The team developed the final product by analyzing the requirements of the user by using all the concepts learned in the courses including the Mathematics, Software Design and Programming and Algorithms. All the latest technologies and available technologies were used for the development of resort management system.

Our team successfully developed a system by the well use of python with tkinter. To create a user- friendly, ease, simple and efficient system that is very helpful for the resort staff and management team to manage their day to day operations is the main goal of our team. We tackled many problems, issues and challenges throughout the development phase such as creating perfect GUI and database, and implementing variety of functions of the system. By doing effective collaboration, communication and discussion, we are succeed to face all challenges and make the high-quality system that fulfills all requirements. The system allows managers to automate and manage customer booking, check room availability status, to check bill and transaction. The system is also useful for the staff manager to manage customers and view notifications, customer feedback and requests. Overall, we fully believe that the resort management system we have made is a significant tool for the resort to perform various activities. It offers various features such as better efficiency, accuracy, and organization. Our team believed that this system would serve as a useful tool for all resort management system. The team has obtained a great experience while developing system from scratch in first time. The desire to learn and gain knowledge and tackle new challenges is the best formula for the future project. There should be good and friendly relationship/environment between team members for the completion of this project. Our team promised that we will build the more project by constantly being disciplined and studying new technologies and understanding all the challenges and tackles for the upcoming future.

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