Project Report

Resort Management System.

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Section: 6F

Course: Software Engineering

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Overview

Purpose:

"Resort Management System" is a web application, that is designed to conduct various operations for both client (and potential client) and admin. The system provides the user an easy to use interface, which will allow an increase in productivity and efficiency.

Intended Audience:

This document is intended for course instructors and professionals that belongs to the field of computer science or tourism.

Tools and Language:

Resort Management System is a three-tier system including a front-end, back-end and a database.

• Front End:

- 1. **HTML 5:** HTML stands for Hyper Text Markup Language, it is a standard markup language for creating web pages and defines a web page structure and produce web pages that include text, graphics and hyperlinks.
- 2. **CSS:** CSS stands for Cascading Style Sheets, it describes how HTML elements are to be displayed on screen.
- 3. **JavaScript:** JavaScript is one of the most popular programming language of the web. It is a lightweight, interpreted programming language, designed for creating network-centric applications. It is complimentary to and integrated with Java. JavaScript is very easy to implement because it is integrated with HTML. It is open and crossplatform.
- 4. **Bootstrap:** Bootstrap is a free and open-source CSS framework directed at responsive, mobile-first front-end web development. It contains HTML, CSS and JavaScript-based design templates for typography, forms, buttons, navigation, and other interface components.

• Back End:

1. **Node.Js:** Node.js is a back-end JavaScript runtime environment. Node.js runs on the V8 JavaScript Engine and executes JavaScript code outside a web browser. It is designed to build scalable network applications.

• Database:

1. **SupaBase:** Supabase is an open source Firebase alternative providing all the backend features that are required to build a product. It is a platform designed to help devs streamline the creation of modern apps. It covers, database, authentication and file storage.

Project Interfaces:

• Guest Interface:

Guest logs in on the website and carry various operations such as booking services, checking in/out, and ordering food.

• Admin Interface:

Managers have access to a separate interface when logging into their accounts, since some special tasks are only available to managers.

Operating Platforms and Applications Used

- Hardware:
 - **1.** 4GB RAM
 - 2. Intel core "i5 10th generation"
 - 3. 5MB disk space.

• Software:

- **1.** Windows 10 operating system
- 2. Visual Studio Code.
- **3.** Google Chrome (web browser).

Non-Functional Requirements

Performance Requirements

- System is designed to return results very quickly
- Higher workload will not have a negative impact on the performance

Portability and Compatibility Requirements

- System can work on any popular graphical or open source operating system like windows and Ubuntu
- System can work on any browser that support the use of tools and language mentioned above.

Usability Requirements

• It contains a relatively easy-to-use graphical user interface, which only requires a basic knowledge of English.

Security Requirements

- Supabase periodically takes data backup to secure it from accidental loss.
- Every log in session has a time out if there is not activity during a specific period.

Localization Requirements

• Date format used is DD/MM/YYYY

Application Features

Sign Up

User can create account by entering a valid email and setting a password.

Log In & Log Out

User can login using a registered e-mail and a valid password. System will redirect user to guest interface or admin interface according to their email domain.

After user click on log out button, they will be redirected to log in page and all cache will be cleared in the process.

Booking System

After logging in user can request to book following:

- Room
- Tour
- Vehicle
- Spa/ Massage appointment
- Pool slot
- Gym Slot
- Game Slot

To submit a request user have to enter start and end date of reservation, time and duration.

Room Service

User can order

- Food item that are available on menu.
- Laundry Service

Stock Management

Admin can **check count** of available stock and if the count is less than a set limit, more stock will be **ordered**, moreover chef can also send message to admin if a certain stock product is finished so it can be ordered.

Employee Management

After clicking "Manage Employees" button, admin can do the following:

- Add new employee, by inserting id, name, email, salary and role.
- Edit employee details by entering employee id and then change the attribute that needs an update.
- Delete an employee by entering their id.

Customer Complaint

- Customer can register complaint by entering it in designated text box, which can be found on guest dashboard.
- Admin can view the complaint by clicking "Read customer Complaints"

Wallet

Pre-paid service for customers that they can avail during their stay. Amount deposited will be deducted, if customer avail a service that requires payment.

Reservation

- After booking request admin will check if the date/slot is already booked, if no then request will be accepted otherwise request will be denied.
- At customer request admin can also cancel reservations

Check Status

Customer can check status of their upcoming reservations and wallet amount.

Billing System

System will display bill after customer booking request is accepted. Payment can be done by deducting amount from wallet or adding credit.

Assumptions:

- To deposit amount in wallet, guest have to be physically present or they can do it by transferring money online.
- Amount of products and services will be set by management themselves.
- Complaints and issue will be resolved by Resort staff.

User Guidelines:

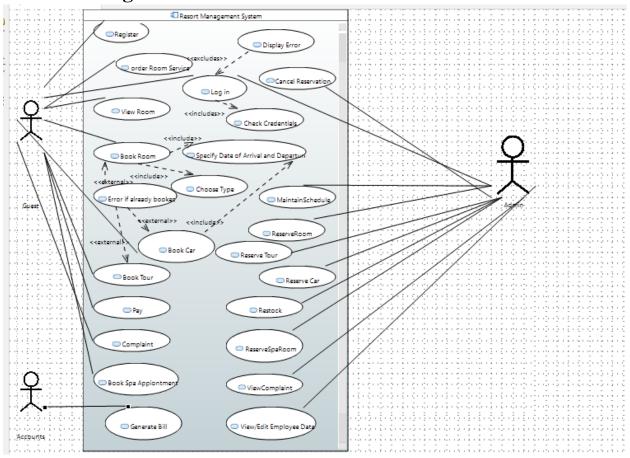
- User should know English Language.
- User should not share log in credentials, so any kind of malicious activity can be prevented.

UML Diagrams

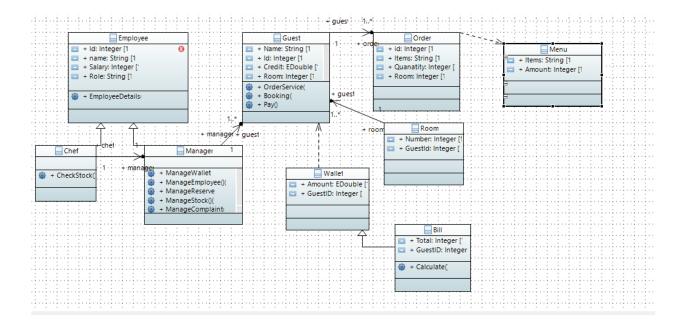
Following diagrams are presented below:

- Use Case Diagram
- Class Diagram
- Activity Diagrams
- Sequence Diagrams
- State Transition Diagram
- Component Diagram
- Timing Diagram
- Deployment Diagram

Use Case Diagram

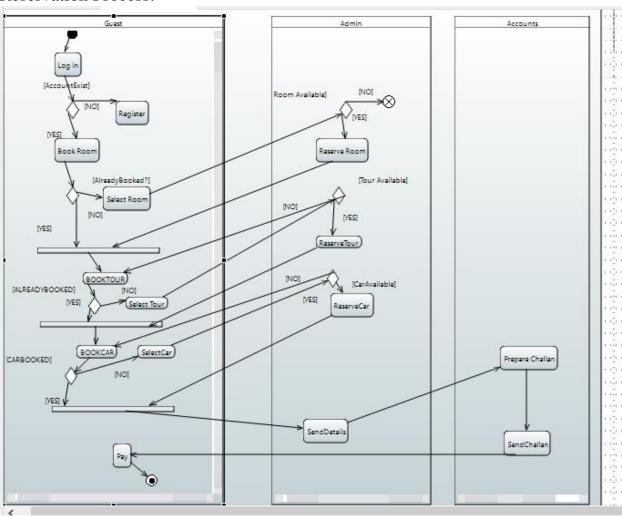


Class Diagram

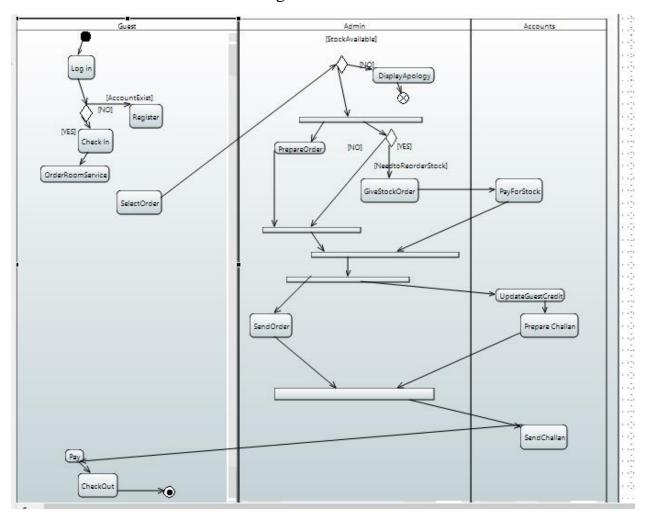


Activity Diagram.

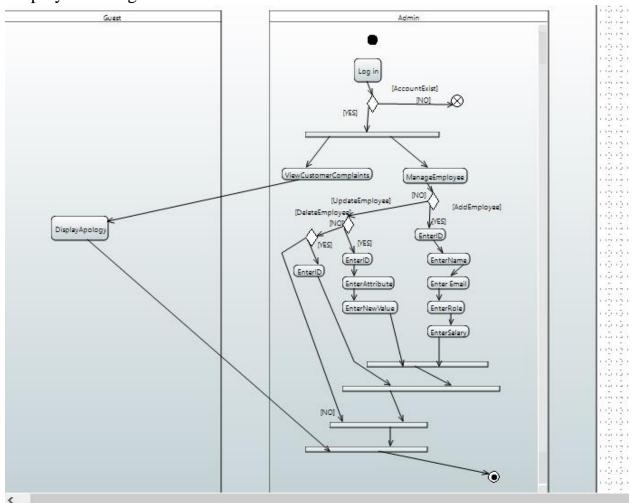
• Reservation Process:



• Room Service and Restocking

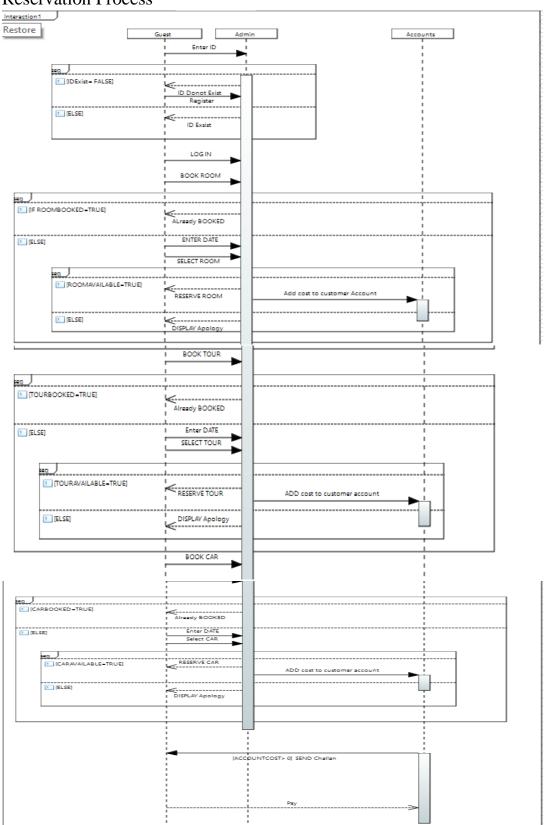


• Employee Management and Customer Service

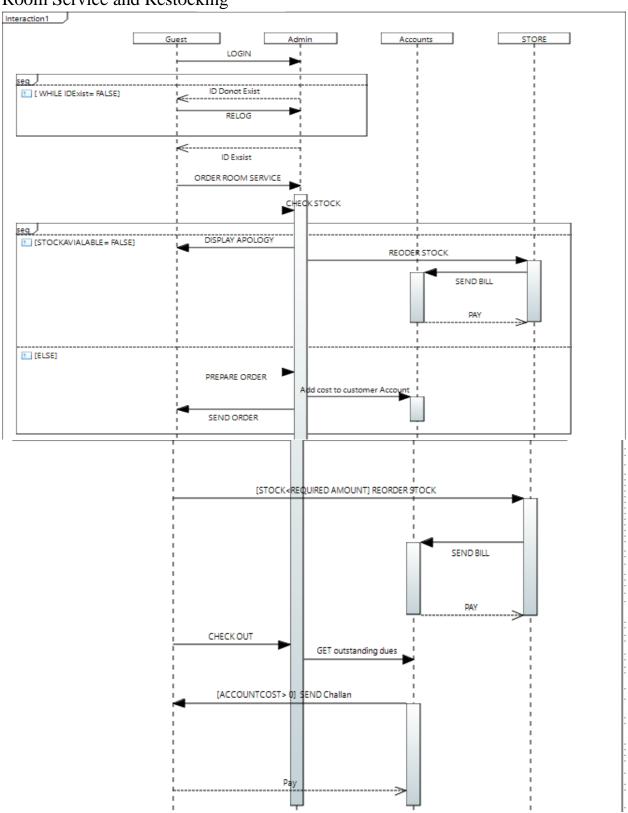


Sequence Diagram.

• Reservation Process

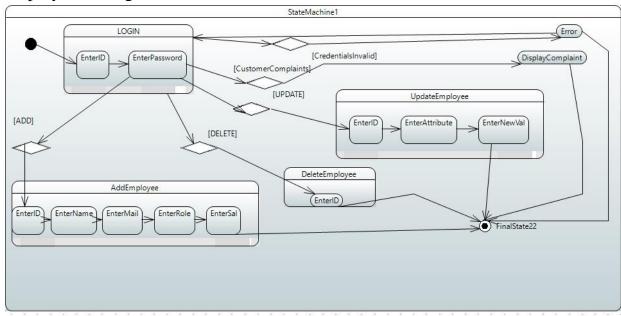


Room Service and Restocking

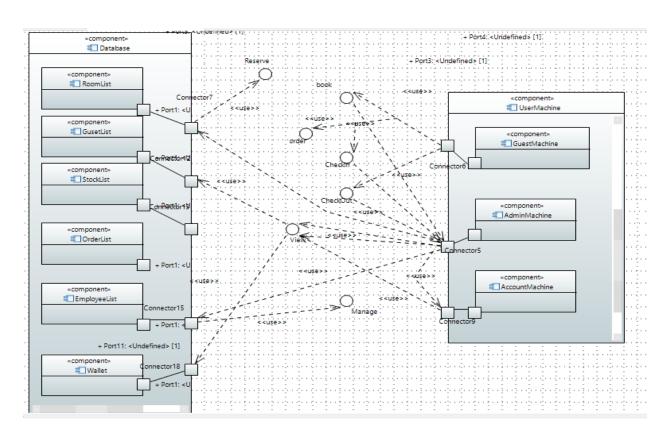


State Transition Diagram

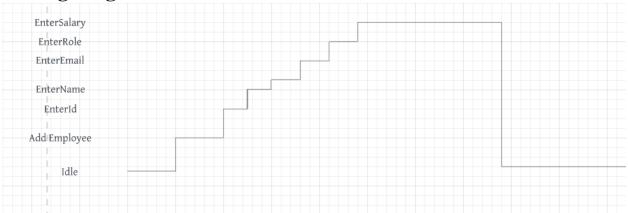
• Employee Management and Customer Service



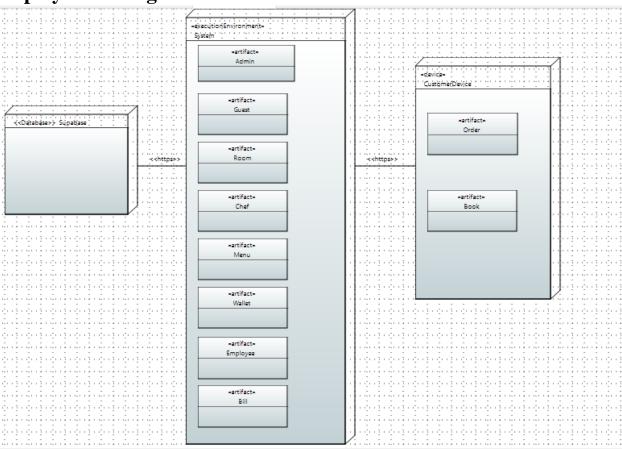
Component Diagram.







Deployment Diagram



Database Systems

- Structured Query Language (SQL) is a High Level Data manipulation language (DML) that specifies which data to retrieve not how to retrieve it. Also called Declarative Languages.
- Every Supabase project comes with a full **Postgres** database.
- Object-relational database system PostgreSQL is powerful and open source and uses and extends the SQL language with a number of features that allow it to safely store, process, and scale the most complex data sets.

Tables Created

Customer

<u>ld</u>	Name	Email	Bill	Complaint	Complaint	Wallet
					Status	

- **Id:** Unique id assigned to guest (Primary key)
- Name: Guest Name
- **Email:** Guest email address
- **Bill:** Guest bill amount
- Complaint: Complaint submitted by guest
- Complaint_Status: Check if there is any complaint registered by the guest.
- Wallet: Amount in Guest Wallet

Employee

Id First Name Email Role Salary

- **Id:** Unique Id assign to employee. (Primary key)
- **First_Name:** Employee first name
- **Email:** Employee email address
- Role: Employee Job
- Salary: Employee Salary
- Manager

 Id
 First Name
 Email
 Role desc

- **Id:** Unique Id assign to Manager. (Primary key)
- **Fisrt_Name:** Manager first name
- Email: Manager email address
- Role_Desc
- Room

Room id Cust_id

- Room Id: Room Number. (Primary key)
- Cust_id : Id of guest who have reserved the room. (Foreign Key from Customer table)

Massage

Massage id Cust_id

- Massage_id: Massage appointment unique id. (Primary Key).
- Cust_id: Id of guest who have an appointment. (Foreign Key from Customer table).
- Service

Token

Food_Stock

Item Name Qty

- **Item_Name:** Stock item name. (Primary Key).
- **Qty:** Stock item quantity.
- Gym

Gym_ld Cust_id

- **Gym_Id:** Gym room unique id. (Primary Key).
- Cust_id: Id of guest who have reserved the gym. (Foreign Key from Customer table)
- Car

Car Id Cust_id

- Car Id: Car registration number. (Primary Key).
- Cust_id: Id of guest who have reserved the Car. (Foreign Key from Customer table)
- Spa

Spa Id Cust_id

- **Spa_Id:** Spa appointment unique id. (Primary Key).
- Cust_id: Id of guest who have an appointment. (Foreign Key from Customer table)
- Game

Game Id Cust id

- **Game_Id:** Game room unique id. (Primary Key).
- Cust_id: Id of guest who have reserved the game room. (Foreign Key from Customer table)
- Pool

Pool Id Cust_id

- **Pool Id:** Pool unique id. (Primary Key).
- Cust_id: Id of guest who have reserved the pool. (Foreign Key from Customer table)

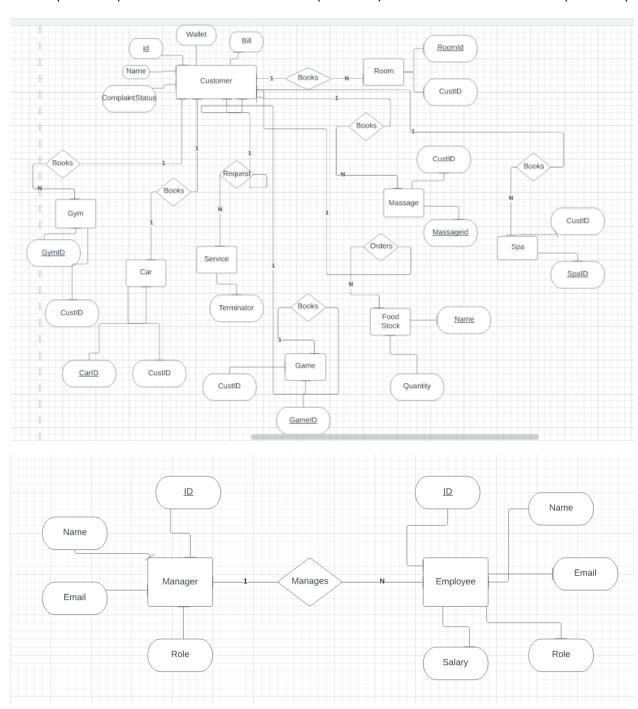
Schema Diagram

- The schema of a database defines how a relational database is logically configured.
- It is both a visual representation and a set of formulae known as integrity constraints that govern databases.
- These formulas are expressed in a data definition language, such as SQL.
- A database schema identifies how tables, views, stored procedures, and other entities in the database relate to one another.



ER Diagram

- Entity Relationship Diagrams (ERDs) illustrate how individuals, objects, or concepts relate to one another within a given system.
- Software engineers, business information systems professionals, educators, and researchers utilize ER diagrams to design or debug relational databases.



Implementation

Muhammad Anas (20K-0179)

• Js code for Sign Up:

```
const { data, error } = await _supabase.auth.signUp({
  email: email_1.value,
   password: password.value,
  });
```

• Js code for Log in:

```
const { data, error } = await _supabase.auth.signInWithPassword({
  email: loginEmail.value,
  password: loginPassword.value,
  });
```

• Js code for updating Customer database table :

• Js code for Updating Bill:

```
const upd_bill_deduct = async()=>{
```

```
curr_bill=curr_bill-500;
const { data, error } = await _supabase
.from('customer')
.update({ bill: curr_bill})
.eq('id', customer_id);
alert("Bill Updated!");
if (error) {
   alert("Not Updated, Try Again...");
   window.location.href = "/curr_status.html";
   console.log(error);
}}
```

• Js code for Delete Data:

```
const delete_data = async()=>{
  const { data, error } = await _supabase
  .from(entity)
  .update({ Cust_id: 0})
  .eq(entity.concat("_id"), selected);
  if (error) {
    alert("Unable to delete, Try Again");
    console.log(error);
  } else {
    upd_bill_deduct();
  }
}
```

• Js code for Fetching Data:

```
const upd_table_fetch = async()=>{
  const { data, error } = await _supabase
  .from(entity)
  .select(entity_id)
  .eq("Cust_id", 0)
  .limit(1);
  if (error) {
    console.log(error);
    alert(error);
  }
}
```

System Testing

- Software testing helps identify whether developed software is correct, complete, secure, and of high quality.
- The purpose of this is to find errors in a program by running it.
- It is an evaluation of a system or its components to determine whether it meets specified requirements.
- Software testing aims to find faults in existing software as well as to improve the software's efficiency, accuracy, and usability.

Testing Example Signing Up:

1. Create an account:

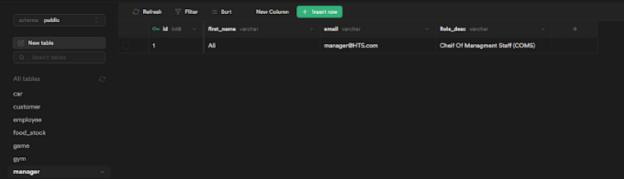


2. Check in Database if the account entered in the Customer Table:



Create Manager Account

Check if Manager Account entered in Manager Table



Testing Table

Username: johndoe, Password: 12345 Username: janedoe, Password: abcde Username: janedoe, Password: abcde Username: janedoe, Password: abcde Password: abcde Username: janedoe, Password: abcde Password: abcde Password: abcde Username: janedoe, Password: abcde Password: abcde Password: abcde Username: janedoe, Password: abcde Updates the database and reserves the slot for the customer All the Slots are at full booked All the Slots are at full capacity Payment Paid Amount is deducted from the wallet Payment Not Paid Insufficient Funds in the wallet Updates the database along with the manager Press Status Button Shows Current Status Petch data from database and displays Press Update Food Stock Button and input wrong code Press Update Food Stock Button and input wrong code Press Update Food Stock Button and input wrong code Press Whanage Employees Button but enter incorrect option Press Manage Employees Button but enter incorrect option Press Read Complaints button Updates the database if options to choose from but later gives error chandling prevents accidental changes in database Press Read Complaints button Updates the database Provents accidental changes in database	Case	Input	Output	Description
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Username: janedoe, Password: abcde				password combination
Username: janedoe, Password: abcde				allows the user to log
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Stock Button and input wrong code 11 Press Update Food Shows Stock for Updates the database accordingly 12 Press Manage Employees Button and enter correct option 13 Press Manage Employees Button but enter incorrect option 14 Press Read Complaints Shows list of options Error handling prevents accidental changes in database 15 Shows customer 16 Atabase accordingly Displays List of Stock and but does not update the database if options is right 17 Updates the database if option is right 18 Press Manage Shows list of options Error handling prevents accidental changes in database			Page	logged out
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enter correct option Press Manage Shows list of options Error handling to choose from but enter incorrect option later gives error changes in database Press Read Complaints Shows customer Fetch data from	12	Press Manage	Shows list of options	Updates the database
Press Manage Shows list of options Error handling to choose from but enter incorrect option later gives error changes in database Press Read Complaints Shows customer Fetch data from		Employees Button and	to choose from	if option is right
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enter incorrect option later gives error changes in database 14 Press Read Complaints Shows customer Fetch data from	13	•	Shows list of options	Error handling
enter incorrect option later gives error changes in database 14 Press Read Complaints Shows customer Fetch data from		Employees Button but	to choose from but	prevents accidental
' I I I I I I I I I I I I I I I I I I I			later gives error	changes in database
button complaints database	14	Press Read Complaints	Shows customer	Fetch data from
		button	complaints	database

15	Proce Undata	Displays "Successfully	Updates database for
13	Press Update Complaints button	updated!" message	the complaints section
	and input customer id	upuateu: message	the complaints section
	and details		
1.0	accordingly	Disaleus (Alet	Dana mat Hudata
16	Press Update	Displays "Not	Does not Update
	Complaints button	Updated!" message	database for the
	and input incorrect		complaints section
	customer id and		
	details		
17	Press update	Displays "Successfully	Updates database for
	Customer Wallet and	updated!" message	the wallet section
	select right options		
18	Press update	Displays "Not	Does not Update
	Customer Wallet and	Updated!" message	database for the
	select wrong options		wallet section
19	Press Delete Customer	Displays "Successfully	Updates database for
	Account Button and	updated!" message	the customer section
	select right options		
20	Press Delete Customer	Displays "Not	Does not Update
	Account Button and	Updated!" message	database for the
	select incorrect		customer section
	options		
21	Press Order Food from	Displays "Successfully	Updates database for
	Inventory button and	updated!" message	the quantity of food
	input valid amount		section
22	Press Order Food from	Displays "Not	Does not update
	Inventory button and	Updated!" message	database for the
	input invalid amount		quantity of food
	·		section
23	Enter Incorrect	Logins fails	Does not allow user to
	manager credentials		access manager
			account
24	Enter Incorrect chef	Logins fails	Does not allow user to
	credentials		access chef account

Project Snapshots

Enter your signup email: butchwalker@gmail.com	Enter your password: helloworld	Enter your name:	butch	Enter your id: 89	7
login account					
Log in page Enter your login email:		Enter your passw			Submit

Muhammad Anas (20K-0179)

• Customer Dashboard

HELLO

Book Room?

YES

Book Spa?

YES

Book Car?

YES

Book Games Slot?

YES

Book Gym Slot?

YES

Book Pool Slot?

YES

Book Massage Slot?

YES

Request Service?

YES

Register Complaint

Manager Dashboard

Welcom

Delete Customer Appointments? Check Food Stock? Update Food Stock? Manage Employees? Read Customer Complaints? Update Customer Complaints? Update Customer Complaints? Update Customer Wallet

Gantt Chart

Task Names	Start Date	End Date	Duration (Border Days inclusive)	Dependencies	Milestones
Project Planning	Nov 1	Nov 1	0 days	None	Project Planning Complete
Website Design	Nov 1	Nov 3	3 days	Project Planning	Website Design Complete
Customer Registration & Login Function	Nov 4	Nov 5	2 days	Website Design	Customer Registration & Login Function Complete
Room Booking Function	Nov 6	Nov 7	2 days	Customer Registration & Login Function	Room Booking Function Complete
Spa Booking Function	Nov 6	Nov 7	2 days	Customer Registration & Login Function	Spa Booking Function Complete
Games Booking Function	Nov 6	Nov 7	2 days	Customer Registration & Login Function	Games Booking Function Complete
Service Booking Function	Nov 6	Nov 7	2 days	Customer Registration & Login Function	Service Booking Function Complete
Gym Booking	Nov 6	Nov 7	2 days	Customer Registration & Login Function	Gym Booking Function Complete
Massage Booking	Nov 6	Nov 7	2 days	Customer Registration & Login Function	Massage Booking Function Complete
Pool Booking	Nov 6	Nov 7	2 days	Customer Registration & Login Function	pool Booking Function Complete
Complaint Registration Function	Nov 8	Nov 8	1 days	Customer Registration & Login Function	Complaint Registration Function Complete

View Booking Status Function	Nov 9	Nov 9	1 days	Room Booking, Spa Booking, Games Booking, Service Booking, Pool Booking, Gym Booking, Massage Booking	View Booking Status Function Complete
Payment Gateway Integration	Nov 10	Nov 10	1 days	Room Booking, Spa Booking, Games Booking, Service Booking, Pool Booking, Gym Booking, Massage Booking	Payment Gateway Integration Complete
Manager Login Function	Nov 11	Nov 11	1 days	Website Design	Manager Login Function Complete
View and Update Complaints Function	Nov 12	Nov 12	1 days	Manager Login Function, Complaint Registration Function	View and Update Complaints Function Complete
Food Stock Management Function	Nov 13	Nov 13	1 days	Manager Login Function	Food Stock Management Function Complete
Delete Customer Appointments Function	Nov 14	Nov 14	1 days	Manager Login Function, Complaint Registration Function, Room Booking, Spa Booking, Games Booking, Service Booking, Pool Booking, Gym Booking, Massage Booking	Delete Customer Appointments Function Complete

Employee	Nov 15	Nov 15	1 days	Manager Login	Employee
Management				Function	Management
Function					Function
					Complete
Virtual Wallet	Nov 16	Nov 17	2 days	Manager Login	Virtual Wallet
Management				Function,	Management
Function				Payment	Function
				Gateway	Complete
				Integration	
Chef Login	Nov 18	Nov 19	2 days	Website	Chef Login
Function				Design	Function
					Complete
Food Ordering	Nov 20	Nov 20	1 days	Chef Login	Food
Function				Function, Food	Ordering
				Stock	Function
				Management	Complete
				Function	
Testing &	Nov 20	Nov 26	6 days	All Functions	Testing
Debugging				Complete	

Results

- User can create an account successfully.
- Guest and admin can successfully log in if they enter correct credentials.
- Guest can successfully submit booking requests and complaints.
- Guest can successfully order resort services.
- Guest can keep track of their wallet amount.
- Admin can grant reservations if certain conditions are met (mentioned in "application features" section).
- Admin can easily manage employee data and stock.

Future Improvements

- Create a better and more beautiful user interface.
- Enhance the payment system, by allowing payment via credit cards. .
- Create an online store where guests can purchase products from resort stores online

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