Resort management system

by

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A Project submitted to the Department of Computer Science and Engineering in partial fulfillment of the requirements for the degree of Master of Engineering in computer science and Engineering

Department of Computer Science and Engineering Brac University September 2022

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Declaration

It is hereby declared that

- 1. The Project submitted is my/our own original work while completing degree at Brac University.
- 2. The Project does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
- 3. The Project does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
- 4. We have acknowledged all main sources of help.

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Approval

Approval

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of Summer, 2022 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Master of Engineering in Computer Science and Engineering on September 9, 2022.

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Introduction

Resort management system is made for those clients who wants to pass their leisure time in resort and staff who works there. They can use an automatic system which can send them information about their booking rooms and room type, availability of rooms and booking room type, availability of rooms and number of availability of rooms and most importantly the ordering menus of food, and food price. In addition to that a person can know his food, room bills, when he/she check out from resort. At last he/she gets a bill of summary by which he/she can pay bill. Resort management system is one of them. Resort management system is designed for Bangladeshi people. Resort management system can be replaced at Coxs-bazar, Sundarbans, Sylhet. Because this management system can be helpful in those picnic spot. In addition to that, resort management system is basically used for maintaining staff in the hotel, providing good customer service to clients, keeping track of money information of check in and check out customer. In addition to that, Resort management system contributing by the way that, resort manager can view the customer ordered food and food list which he/she has ordered. Resort management system is a customized system where admin can give input data and collect data as output. Resort management system is well organized by admin and have many features within low cost.

Software Engineering Lifecycle Business goals

2.1 SDLC Life cycle:

- Waterfall Model:Resort management system project has been done by maintaining SDLC life cycle. The waterfall model is the earliest SDLC approach that was used for software development/The waterfall model illustrates the software engineering process in a linear sequential flow. This means that any phase in the development process begins only if the previous phase is complete.
- Requirement Analysis: All possible requirement of the system to be developed are captured in this phase and documented in a requirement specification document. For example, the need for food, food item quantity, room availability, room vacancy, booked room lists all are collected from user, stakeholders.
- System design coding: We have to consider the front end and back end part of this system. We have separated module into single unit and finally integrated all components
- Implementation: With inputs from the system design, the system is first designed and developed in small programmed units like booking, order, checkout then it is converted into large programmed units.
- Integration and testing: All units are developed in the implementation phase are integrated into a system after testing of each unit. Post integration the entire system is tested for any faults and failures.
- **Deployment of a system:**Once the functional and non-functional testing is done; the product is deployed in the customer environment or released into market.
- Maintenance: To fix issues, patches are released. Also to enhance product some better visions are released. Maintenance is done to deliver these changes in the customer environment. For example, before maintenance everything was based on java based software. I have intention to make it web based software

2.2 System Request:

Table 2.1: System Request

Project name	Project values
Project business need:	The primary motivation of this project is deploying resort management sy
Business Requirement:	Different type of user management with their privileges
Dusmess Requirement.	Create contents
	Approval process to make the contents available in online
	Contact with stakeholder of resort management system
	Other relevant information
Business values:	Centralize repository to store all kind of data
Dusiness varues:	Create contents
	Approval process to make the contents available in online
	Interacting with user of resort and admin
	Set goals of the project of resort management system
	Avoiding error so that the project may be successful
Constraints:	Shortage of the time to complete this project

2.3 Cost of System

• Model- Cocomo model:

E=A(KLOC)math. Pow(b)*EAF Time= c(effort)math. Pow(d) Person required=effort/time

this effort is measured in Person-Months and as evident from the formula is dependent on kilo lines of code. This formula is a rough estimation. We should care on following topics like basic model calculation, as not much consideration of different factors such as reliability, expertise is taken into account. Here Eaf is used for intermediate model and effort adjustment factor for organic system. Organic means the software project is said to be organic if the team size required is adequately small, the problem is well understood and has been solved in the past and also team member have a nominal experience regarding the problem.

Effort=14 person-month. Development time=8-month Average staff required=1

2.4 Result

For login to the system using xampp server and application. Open xampp server and press start Apache and mysql. Open phpmyadmin by pressing admin. Giving database name and table name, table type, table length and value. Now go to url and putting localhost:/resort. Log in using username admin and password admin. Go to dashboard it will show room number total, reserved room, staff number, complaints, booked room, available room, checked in room number and total number of

pending payments room. Go to reservation choose Room type, Room no, checked in date, checked out date, putting customer details in the customer information form such as First name, Last name, Email Address, ID card type, Selected id card number, Residential address and press submit. Go to manage room and manager can add room from this panel. Admin or manager can edit, delete operation from this panel. Resort manager can bookroom for customer, check in customer in resort and checkout through this panel. Resort manager also can add new room in this panel. Resort manager can see employee details from staff section and edit their changing shift from this panel resort manager also can add employee of hotel through this panel. Manage complain section actually fills complaint name, complaint type, complain description, submitting application. Admin can view the complaint through Manage complaint panel. Statistics panel shows employees according to positions and hotel expenses through this panel. Resort manager can manage food and view order by searching date as well as order food from their inventory management system.

2.5 Interface

Our project is based on gui based interface; by which we can give command on the software and we can view this result also. The interface has been designed with html, css and javascript

Project Description

3.1 Benefits And Drawbacks

Resort management system has some benefits and drawbacks

3.1.1 Benefits

- Admin can know customer information without any hassle
- Resort manager can offer the service to others so that they can easily handle the info
- Resort manager can offer this service to anyone.

3.1.2 Drawbacks

- We have customized some parts of the software1.
- There is limited scope. We had not kept the option of online payment system here

• We have not used any framework for software security as we don't have payment system or es

• No micro service is used

3.2 Hardware and Software Requirement

3.2.1 Hardware Requirement

• Processor: Intel core i5

• Ram: 512 MB

• PC:1

• OS: Windows 64 bit

3.2.2 Software Requirement

- PHP
- Javascript
- Jquery library
- Database: Mysql
- Style sheet design: CSS
- Form Design: HTML
- Editor: Sublime text

3.3 Project analysis:

This project is designed for everyone involved in resort management. For example, a client in resort and everyone involved in resort.

3.4 Feasibility report:

3.4.1 Economic

- Reduce organization budget on manpower
- Reduction of manpower so that costing is reduced
- Reduce the labors cost

3.4.2 Technical

- It helps to order food technically
- It helps to book room automatically
- It helps to check out resort automatically
- It helps to know all information automatically

3.5 Modules

Some important modules of projects are given below

- Booking room
- Order food
- Checkout
- Add Employee
- View staffs
- Manage complaints

Model Description

4.1 Use case Diagram

• Primary actor: Resort manager

• System name : Resort management system

In the use case diagram there are system boundary, actions, actor many things. System boundary here is resort management system. Here there are no secondary actor. Primary actor is resort manager. Resort manager here works as a primary and secondary both actor. Resort manager has power of attorney of implementing an action.

UML Diagram: Round box indicates action; arrow indicates action towards. A use case Diagram of resort management system is given on the next page for example of learning User Model View:

a. This view represents the system from the users perspective.

b. The analysis representation describes a usage scenario from the end-users perspective.

Structural model view:

In this model the data and functionality are arrived from inside the system.

Behavioral Model View:

It represents the dynamic of behavioral as parts of the system, depicting the interactions of collection between various structural elements described in the user model and structural model view.

Implementation Model View:

In this the structural and behavioral as parts of the system are represented as they are to be built.

Environmental Model View:

In this the structural and behavioral aspects of the environment in which the system is to be implemented are represented.

Round box indicates action, line towards round box indicates action created by actor. Rectangle box is system boundary. Here Resort manager entered customer information into resort in the round box entered into resort. Resort manager is now typing customer information into resort management system indicates in round box providing information. Resort manager is now booked room for customer and resort manager has ordered food for customer by putting customer information which is denoted by round box booking room and order food respectively. Lastly when a customer checkout resort manager gets all bill which is denoted by Manage bills. Resort manager can add room, Manage employee, order food and view order for customer also.

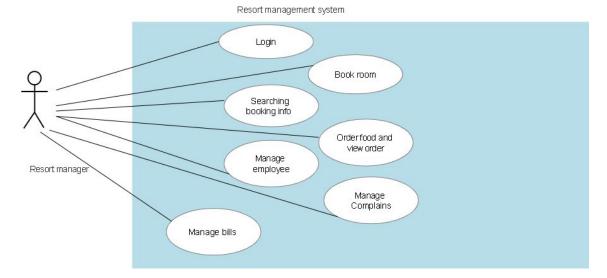


Figure 4.1: Use case Diagram

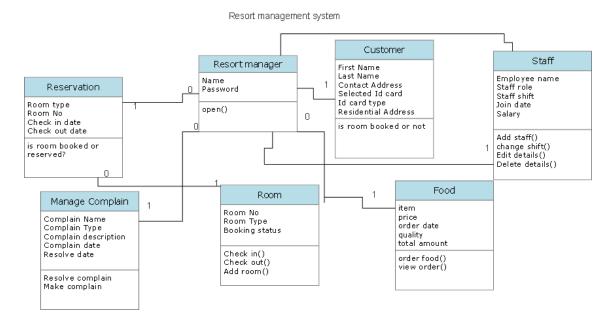
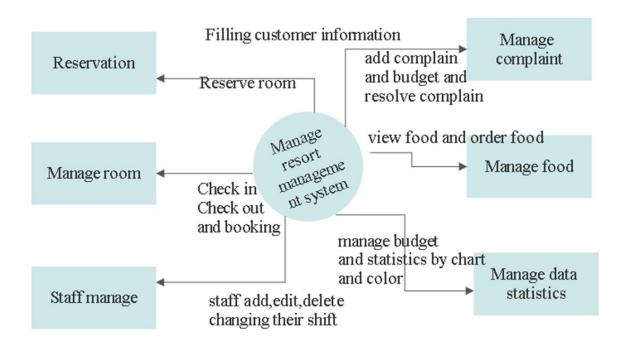


Figure 4.2: Class Diagram

4.2 Class Diagram

Class Diagram: Class diagram states graphical representation of the static view of the system and represents different aspect of application. A collection of class diagram represents the whole system. There I have put 7 box for 7 elements and each element and their relationship. Here normal line indicates generalization for Reservation, manage complain, book room, staff, food, customer record filling respectively. Resort manager has taken information from resort traveler. Here resort manager has attribute 0,1, n signifies the multiplicity. Which is the active logical association when the cardinality of a class in relation to other is being depicted. 1.. n means a person can give n number of orders as example.



one level DFD diagram for resort management system

Figure 4.3: Data flow diagram

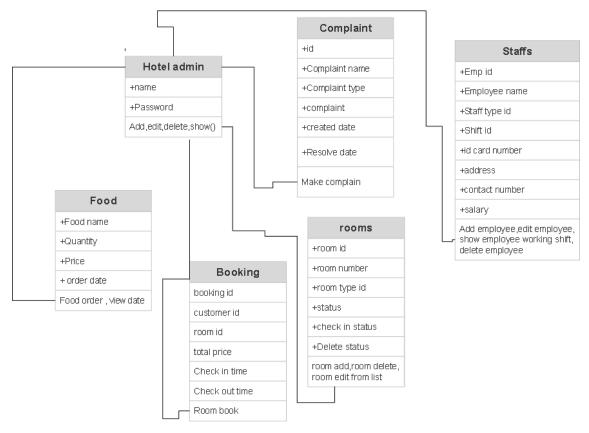
4.3 Data Flow Diagram

Data Flow Diagram: In this data flow diagram round box indicates process and rectangle box indicates external entity. Data flow diagram is signified with an arrow. There are 6 external entities and 1 process. The process is done by admin or resort manager that's why resort manager only can give input here and perform add, delete, edit, view operation.one level dfd means here a more detailed view has been described rather than 0 level dfd.

4.4 ERD Diagram

Here, there are by visualizing a database schema with an ERD you have a full picture of the entire database schema. By drawing ER diagram to visualize database design ideas anyone can have the idea of identifying the mistakes and design flaws. Here there are 6 entities. Those entities are

- Hotel admin
- Booking
- Rooms
- Food



ERD diagram of resort management system

Figure 4.4: ERD Diagram

- Staffs
- Complaint

+ symbols denoting the attributes in entities.id is basically the primary key. Arrow line denotes the relation. Here I have not shown cardinality of one to one, one to many, many to many relationships. Hotel admin manager to line towards customer and food signifies one to many relationship as one customer can order many food or one admin can book room for more customer. Here hotel admin towards room line signifies one to many relationships. ID, customer id, room id, emp id, booking id indicates primary key.

Implementation methodology

5.1 Database Connection

db.php file actually indicates the database connection of this software.

```
$connection = mysqli_connect ("localhost", "root", "", " hotel")
```

indicating Localhost= server name, root=username, password=null of xampp control panel."hotel" indicates the database table name.

Data transfer through get and post between controller to server and server to controller and php files handling

Here I have used two common terms isset and include in this index.php page. If session start that means if the data is stored for individual user against a unique session ID. Session ID are normally sent to the browser via session cookies and the ID is used to retrieve session data. It actually creates a session or resumes the current one based on a session identifier passed via Get or POST request, or passed by a cookie.

Here I have used two common HTTP method Get and Post. Get is used to receive data from controller to server and post is used for sending data to server. We could use get to send data to server but in that a case there is a limitation of capacity data transfer is possible. include keyword has been used to embed php code from another file. include and require activities are almost same. isset function is checking the variable is declared or null.

\$userquery

is used to fetch data from database by userid. Here, user id is actually keeping track of login user name and password in this database. Here I have added 11 page by using include command.

```
$result =mysqli_query($connection,$userQuery)
```

Here it is maintained using procedural mode and according to this 1st argument inside parameter indicates connection and 2nd argument inside parameter indicates query. According to object oriented style 1st argument is query 2nd argument is result. Following there are some files which actually indicates files activities in different places.

5.2 Login to the system

In this login panel we have kept two attribute username and password. The mechanism is if user logged into the system only if username and password matches. I have putted Here

```
<link href="css/bootstrap.min.css rel="stylesheet">
```

```
actually taken bootstrap framework and
```

```
<link rel="stylesheet" href = \css/login.css"/>
```

indicates design of login page in a folder name css.div tag is used for section in an html document.form is a container for different types elements such as text fields, checkboxes, buttons. Submit button is used for submission of form data. Here script tag is used to define client side script (javascript). Javascript validator is used to validate Javascript code. jquerymin. js is used for jquery and bootstrap.min. js is used for bootstrap library design. Form tag is used for data submission in a separate post. If there are multiple form multiple data submission will happen. Here I have used required data error that means you must have to put username and password for login. If user does not put username and password and press login button

your submission will not work. If the form signed in or logged in then it will go to ajax.php class and in the new window and customer will see 7 panels Dashboard, Reservation, Manage Rooms, Staff section, manage complaints, Statistics, Manage food.

5.3 Managing window:

Resort manager or admin user can see many section after going from sign in window to new window. Dashboard, Reservation, Manage Rooms, Staff section, manage complaints, Statistics, manage food are those panels. I have used index.php file where I included all of these files so that I can get data from database using get command.

```
mysqli_fetch_assoc c
```

command is used to fetches a result row as an associative array.

include_once

means going from one php page to another php page.

Data transfer mechanism: in ajax.php there are many operations. If login email and password is posted to the server and both matches, then it will show new window. Here 7 methods have been used.

5.4 Add room in the resort

if someone post roomid and room no which is already in database then room is not inserted otherwise room is inserted with room type id and room no.

```
$query = "INSERT INTO room (room_type_id,room_no)
VALUES ('$room_type_id','$room_no')";
if
    $response ['done'] = true
room edition successfully
    else
    $response['done'] = false,
```

then please enter room no. message will be shown.

5.5 Sidebar:

I have kept menu option in window. Those menus are Dashboard, Reservation, manage rooms, Staff section, manage complaints, Statistics Manage food. admin can choose any option at a time.

5.6 Order food

Following function indicates a separate id based food burger is linked in the web page.berger will be clicked and inserted into the database.

```
<a href="foodOrder.php?foodName=Berger&foodId=101">
```

Following file foodOrder.php indicates foodorder resulting a fetching of all foods from database and inserted foodname,foodname,foodprice,foodquantity,total,foodsorderdate into a table.

5.7 View food order:

There are view food order by search date which is implemented in orderview.php file

5.8 Add employee:

Following there are commands to select staff.Below command we have used to select staff id.in the following way we can also find staff type, First name, Last name, ID card type, Contact Number, Salary, Residential address.

```
<select class="form-control" id="staff_type" name="staff_type_id"</pre>
required>
<option selected disabled>Select Staff Type</option>
$query = "SELECT * FROM staff_type";
$result = mysqli_query($connection, $query);
if (mysqli_num_rows($result) > 0) {
while ($staff = mysqli_fetch_assoc($result))
// echo '<option value=" ' . $staff['staff_type_id'] . ' " selected >' .
$staff['staff_type'] . '</option>';
echo '<option value="' . $staff['staff_type_id'] . '" ' . (($staff['staff_type_id']
 == $staffGlobal['staff_type_id']) ? 'selected="selected"' : "") . '>' .
$staff['staff_type'] . '</option>';
}
}
?>
</select>
```

5.9 Employee history show:

The following method we are using to show employee history

```
<?php
if(isset($_GET['empid'])){
$emp_id = $_GET['empid'];
}else{
header('Location:404.php');
}
$emp = "SELECT * FROM staff WHERE emp_id='$emp_id'";
$emp_result = mysqli_query($connection,$emp);
$employee = mysqli_fetch_assoc($emp_result);
?>
<b>Employee Name: </b> <?php echo $employee['emp_name']; ?>
<b>Employee Salary: </b> <?php echo $employee['salary'].'/-'; ?>
```

```
<thead>

Sr. No
Shift
From Date
To Date
```

Data is fetching out from staff table and stored in the container employee. Then we are getting values of shift no, serial no, from date, to date, Employee salary, Employee name in the table .th indicates table header and td indicates table data.

5.10 Reservation:

Following codes are written for reservation. Following codes search room information from room table through room database. I have fetched out room data like id, type, no, price from room table and filled those into a container

Above room information table select room type, room no, check in date, check out date and calculate total days multiplying with price and set a total amount. Customer details include customer information, first name, last name, contact number, id card type, selected id card number residential address and take input into database.

5.11 Login password security and logout:

Here, I have used login password security with md5 encryption. Logout. Login instruction has been made by admin and password falls in database in encrypted

way. As there is no payment system we have not integrated api based work in this project. That's why we have not considered the use of payment module integration in this project.

5.12 Header part:

In the header part there are two option the title of system and a log out button for log out. When session start it will show admin dashboard and when session destroy it will go to the login page again.

5.13 Manage room:

Here there are two types of status room status and check in status. Room status means room is booked or unbooked. If booked room status is 0 if it is unbooked room status is 1. Check in status 0 means room is checked and paid with an amount of advance and checked in status 1 means room is not checked in.

5.14 Front-end development:

Here, we have designed front end with css ,html,javascript.In css we have used external style sheet so that it can make a good pattern in design.We have used color,pixel,position of textbox,button,menubar,pop up window,drop down ,icon ,message box in the front end to design the system.

5.15 Statistical view presentation:

Following drawchart javascript method can show employee count, manager count, total cleaner count, total receptionist count, total cook count. This method is being implemented for showing chart percentage of different categories in a separate pie chart using google api.

```
function drawChart() {
  var data = google.visualization.arrayToDataTable([ ['Employee', 'Count'],
  ['Manager',2],

['Cleaning',14],
  ['Reception', 4],
  ['Cook', 5],
```

Following method is used to show the current expense in different categories with percentage with designed by different color.

```
function drawChart() {
var data = google.visualization.arrayToDataTable
```

```
([["Type", "Expense", { role: "style" } ],
["Maintanence", 8.94, "#b87333"],
["Salary", 10.49, "silver"],
["Electric Bills", 19.30, "gold"],
["External Services", 21.45, "color: #e5e4e2"]
]);
```

Following method is used to show the upcoming bookings in next month and upcoming days. The manager can look the slot of booking day is empty or not in a statistical calendar. Here google charts loaded google calendar days, month, year.

```
function drawChart() {
  var dataTable = new google.visualization.DataTable();

dataTable.addColumn({ type: 'date', id: 'Date' });

dataTable.addColumn({ type: 'number', id:
  'Room Booked' }); dataTable.addRows([
  [ new Date(2022, 9, 13), 6  ],
  [ new Date(2022, 9, 17), 3  ],
  var chart = new google.visualization.Calendar
  (document.getElementById('calendar_basic'));
  var options = {
  title: "Reserved Room on Different Day", height: 350,
  };
  chart.draw(dataTable, options);
}
</script>
```

5.16 Reservation room:

admin can reserve the room by pressing room type, room no, check in, check out, total payment, payment status, first name, last name, contact number, email address filling in the form

System Installation and Testing

6.1 Environmental Setup

The software is used by php. I have used sublime text for writing code. I have installed xampp and selected C dive for location. I have pasted sublime text files inside the htdocs folder of xampp. Inside resort folder there are codes, JavaScript files and css files

6.2 Instruction

Go to Resort Management System pasted in xampp by localhost/resort pasting in url. Give login name and password you will get into the system.

6.3 Binding of implementation methodology

We have not used any framework for designing this software. We have used raw php language and javascript for front end design. We also have another binding that this software has lacking of implementing a payment api.

6.4 Testing

In this software, I had maintained manual testing. There is no automation testing. We have used manual testing by pressing command and debugging. After every step done we had implemented testing. After final testing we had a few bug and error in this software. We erased bug, error by removing compile error and runtime error.

6.4.1 Types of testing

In this software there are functional testing, non functional testing, maintenance testing

6.4.2 Testing strategy

In this software there are unit testing, Integration testing, System Testing. Unit testing occur ed when we designed separated module and component testing occur ed when we designed an integrated module.

Manual testing

White box testing:Here,testing is done in a way we have observed the error and solved those errors and bugs thinking outside of the boundary

Gray Box testing:

Here we have designed a gray box where we have implemented technology but we have not observed this.

Black box testing:

Within the black box testing we had no idea of error inside the software but we had solved this.

Summaries

7.1 Limitation

The project is very effective but the limitation of this project are also given below. First limitation is the project has no part of entertaining for example resort has games, swimming pool features but this project does not have those features. In addition to that, we have intention of integrating payment gateway. This is also one of our limitation.

7.2 Future outcome

We will try to keep all possible functions and we will try to make these functions effective from the future. Govt. should also patronize startup companies to solve these type of problem.

7.3 Support and maintenance

Total software is supported by vendor who has the responsibility of installation, repair and business logic implementation knowledge that company will perform their duties in resort management system. Because resort manager may have lacking of that implementation knowledge + maintenance knowledge. Resort manager also can give support rights to any third party company.

Conclusion

This project is done by waterfall model and by this model we actually maintained software development process planning, requirement analysis, coding, testing, debugging and deployment. That's why this project is very attractive to everyone. Lastly I can say this project is a very essential and valuable project in tourism industry and resort industry and software industry. In addition to that we have intention of building a service from the user end and an app based system so that customer can use it. This system enhances the facilities of hotel because an online data integration and data manipulation process is done by this service. This system has been developed and deployed as requirements stated by the user it is found to be error free as per testing standards are implemented.

Chapter 9 Appendix

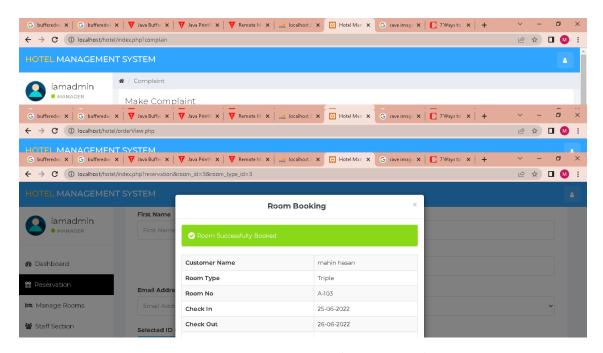


Figure 9.1: Reservation and Room Booking

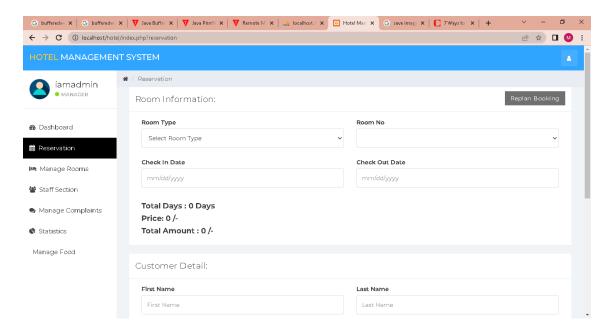


Figure 9.2: Reservation

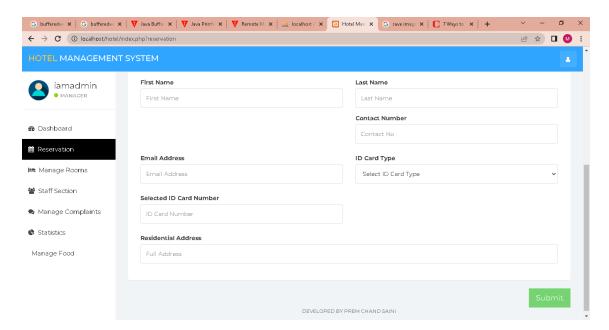


Figure 9.3: Reservation2

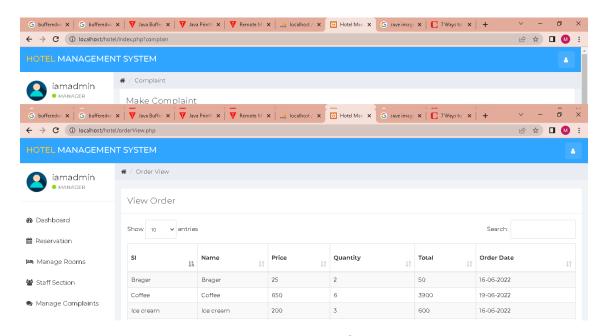


Figure 9.4: View Order

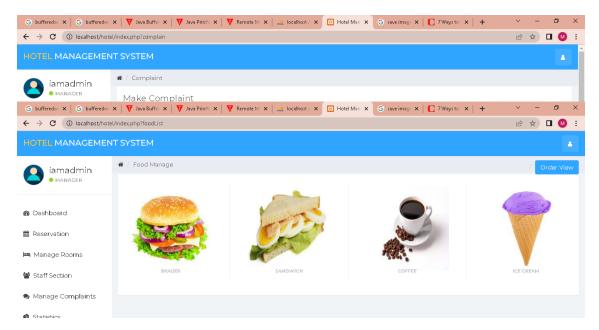


Figure 9.5: Food List

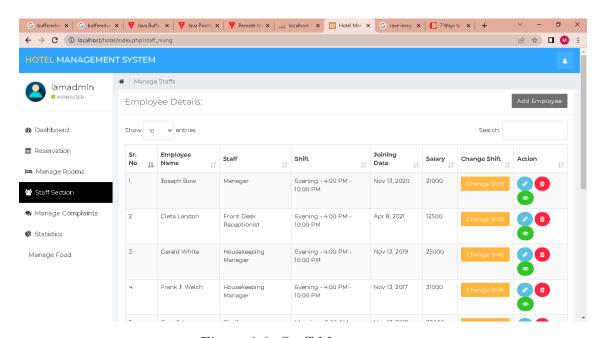


Figure 9.6: Staff Management

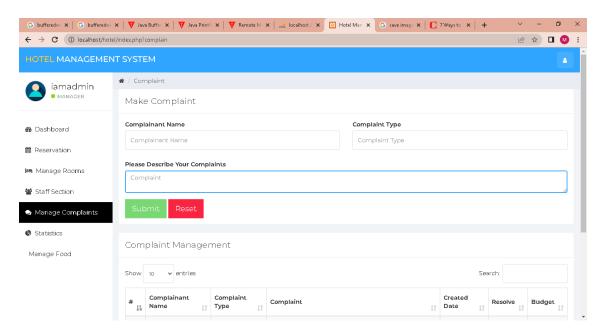


Figure 9.7: Make Complaint

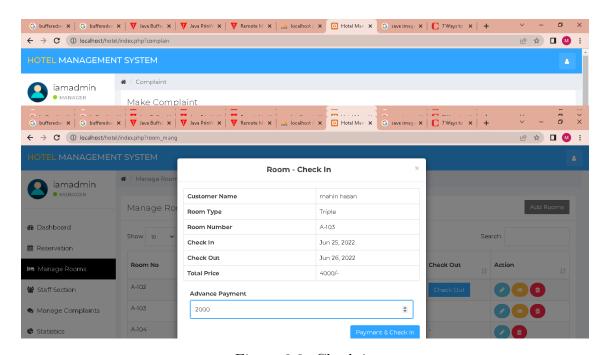


Figure 9.8: Check in

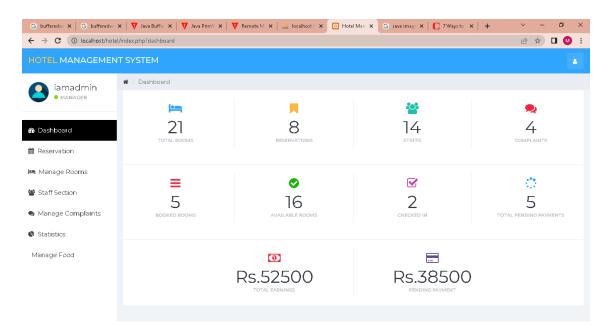


Figure 9.9: Dashboard

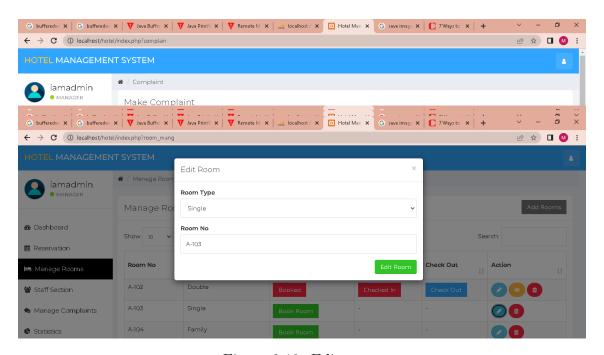


Figure 9.10: Edit room

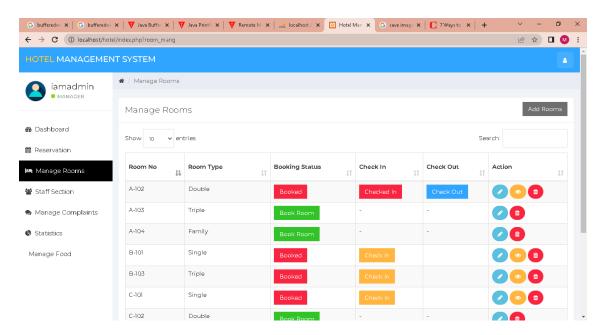


Figure 9.11: Room management

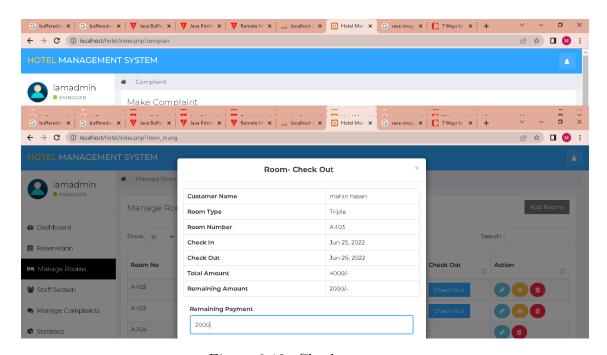


Figure 9.12: Checkout room

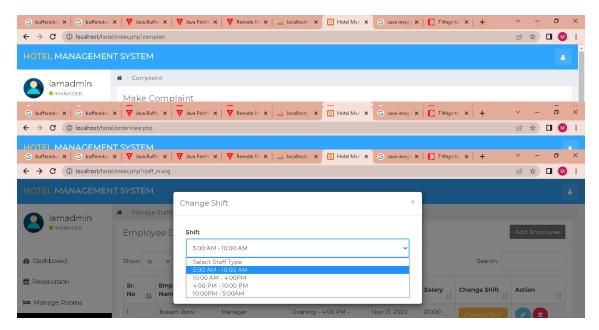


Figure 9.13: Change Shift

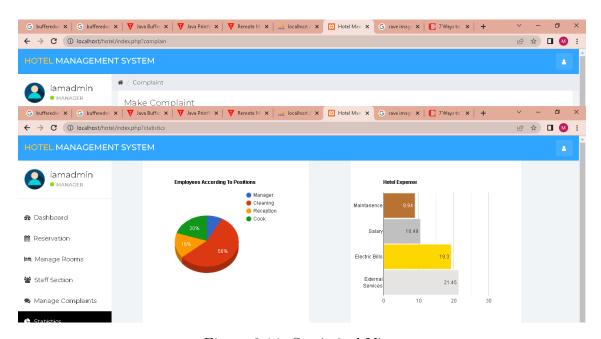


Figure 9.14: Statistical View