SYSTEM ANALYSIS AND DESIGN

Online Hotel Reservation & Delivery System

Group Assignment

Faculty of Computing

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VILLA HAPPY HOURS RESTAURANT

"Our mission is to exceed our customer's expectations by providing genuine hospitality, a valued experience, and a commitment to continuous improvement."

Executive summary

Problem

The owner had a serious problem with the food delivery aspect of the business. Also, around this area, there are many compilers as well. One of the primary issues here is that consumers are not able to easily order and have food delivered. Sometimes when rooms are booked, some may book by phone, and maintaining an ID for our client is practically impossible. Due to the time differences between countries, foreign travelers may face difficulties in booking rooms. Many local and foreign tourists have been inconvenienced due to the lack of online payment. Also, when reserving tables for special occasions, the customers face many difficulties due to the manual process.

Solution

In our solution, this website will be used to support the increasing number of foreign and local customers booking and checking room availability, price rate, table reservations, food order & delivery and secure booking with online payment and also, we add a forum is an online discussion board that allows users to run conversations in the form of posted messages. To stay competitive in the market by providing information and latest updates with new features. Local and foreign customers can easily keep updated with the new tourist places, unique offers, and discounts by using this website.

Value proposition

This system primarily aims to facilitate communication between the business and the customer in a reliable and efficient manner. Also, this system was created with the aim of making profits for the business and promoting the business among local and foreign customers and maintaining its market by competing with other restaurants at that level. The system allows the customer to get all the required information easily and accurately.

Conclusion

Given the client's current situation, we believe this website is timely. People can easily check for room availability, table reservations, food order & delivery, and secure payment transactions with a proper online reservation system.

Business Objectives

Why are you proposing this particular system?

In our solution, this system will be used to support the increasing number of foreign and local customers booking and checking room availability, price rate, table reservations, and secure booking with online transactions.

What approach will you adopt to reach this desired goal?

The approach will be to conduct a feasibility study for the system, and if all of the resources are available to complete the project within the specified timeline, we will create a work plan and proceed to develop the system.

When will you conducts a particular project?

When the basic elements and resources are available on time, the system can be designed by referring to the feasibility study during the period.

Where will you implement this project?

Initially, our project will be implemented with customers in Sri Lanka, but we hope to implement it in countries where many foreign tourists visit our country, and then we hope to gradually expand to customers from all over the world.

Who will be the primary stakeholders?

The management board will regularly update this system and the restaurant to make it easier for customers to use. In addition, a live chat facility will be maintained to provide additional information to foreign tourists.

Background of the system

This Villa Happy Hours hotel & restaurant is a middle-level business. It's still growing for the industry of hotels and restaurants. Vila Happy Hours Hotel & Restaurant has hotel rooms with different types of quality. They also have a food delivery service around Anuradhapura city. They have a special reservation area for special meetings, dinners, family gatherings, or birthday parties.

The servicers that you mention are currently running on manual ways due to the fuel problem and COVID-19 problem. The customers are looking for a simple and easy method for their work. The owner also had a serious problem with the food delivery aspect of the business. Also, around this area, there are many compilers as well. Sometimes when rooms are booked, some may book by phone, and maintaining an ID for our client is practically impossible. Due to time differences between countries, foreign travelers may face difficulties in booking rooms. Many local and foreign tourists have been inconvenienced due to the lack of online transactions. Therefore, we research and plan to build a system for local and foreign customers to make their bookings for rooms, food order & delivery, table reservations, and other facilities. We add a special feature of this system, it is a Discussion Forum. In this feature mainly focus on customer feedback including opinions and comments.
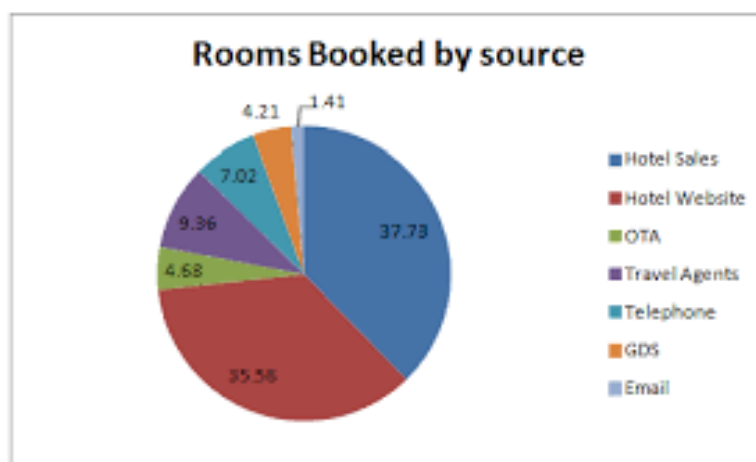
Feasibility Analysis

Technical Feasibility

Implementing the online reservation system can solve plenty of problems. Before the organization implemented the hotel booking system, most of the customers faced difficulties booking hotel rooms because they had to walk-in or make phone calls for reservations to get the room. Many problems faced by organizations as well as customers can be solved by implementing a hotel reservation system. The whole purpose of computerizing the hotel reservation system is to handle the work much more accurately and efficiently.

First stage we decide which infrastructure and technical skills we need to have develop this system. These requirements are directly affected to the success of the system. We have talented developers' team, skillful team members with having well knowledge, latest web browsers, laptops /Mobile with the support of modern web applications with having strong internet connections.

We have enough technical resources to develop this system successfully. Just because we take this step to develop our system well.

Tips for optimizing hotel website for maximum booking and Revenue.

Rooms Booked by source

- Hotel Sales — 37.73
- Hotel Website — 35.58
- OTA — 4.68
- Travel Agents — 9.36
- Telephone — 7.02
- GDS — 4.21
- Email — 1.41

Operational Feasibility

The operational feasibility of a solution is a measure of how well it will work in the organization. When a proposed system is transformed into an information system that meets an organization's operational needs, it is beneficial. This feasibility test determines whether the system will function properly after it has been installed and developed.

Implementing the system can solve plenty of problems. Most customers are having difficulty booking hotel rooms because they have to walk-in or call for reservations to get the room. It is so inconvenient for some customers. This is research of how customers and stakeholders perceive the framework that meets their needs. The main stakeholders in this Online Reservation and Delivery System are, Clients Administration, Suppliers, local and foreign customers

Clients, as known as the customers are the main role of the system. Because the business is existing on them. So, always need to fulfill their requirements and expectations. Therefore, administration is responsible of using an attractive user interface, make facilities to use discussion forum to help customers, review feedbacks. update the Administrators are both developers and business owners. They consider the client movement data, backend data, and stated responsibilities, as well as the project's set of circumstances and updates. According to the Operational Feasibility Analysis, the Online reservation delivery system is acceptable to get started.

Scheduled Feasibility

According to the project proposal, we have one month to deliver this hotel reservation system. The team consists of skilled designers, analysts, and project managers. The workload is distributed across all the members. We have enough time to distribute our project before the deadline Because of that, the project has the required time feasibility.

Economic Feasibility

The system is focused on all the local and foreign customers to obtain information about booking rooms, food delivery, and table reservations. According to our cost benefits analysis . The estimated cost is enough to finish this system, and we can also do this project without any other additional charges. This system will be used to support the increasing number of foreign and local customers. When the customer base increases, we assume integrated travel ads to manage the additional cost of system maintenance and hosting.

WBS of VHH

```
                        Online Hotel
                        Reservation &
                          Delivery
                           System
     ┌──────────────┬──────────────┼──────────────┬──────────────┐
     │              │              │              │              │
 Initiation     Planning       Execation      Control        Closure
   1.1            1.2            1.3            1.4            1.5
     │              │              │              │              │
 Group          Scope study   User Requirement  Specification  SRS
 Discussion       1.2.1       gathering &       software &     documentation
   1.1.1                      analyzing         hardware         1.5.1
                                1.3.1            1.4.1
     │              │              │                             │
 Research &      Feasibility   Graphical                      Final discussion
 client          Analysis      illutration &                    1.5.2
 Background       1.2.2         diagrams
   1.1.2                         1.3.2
                    │              │                             │
                 Project Team   Screen layouts                Submit SRS
                 Meeting          1.3.3                        documentation
                   1.2.3                                         1.5.3
                    │              │
                 Submit Project  Database design
                 Proposal          1.3.4
                   1.2.4            │
                                System
                                architecture
                                design
                                  1.3.5
```

User Requirements Analysis.

- We conducted an online discussion with the client to collect the requirements of the business.
- We contacted the restaurant owner and several customers for the necessary details for the system.
- The customer must provide the required data before making online room, table, or food orders.
- According to the needs of the businessmen, their customers can make their payments securely and efficiently through online transactions. Local and foreign customers are provided with facilities to choose PayPal, Master, and Visa according to their wishes.
- Customers can give feedback about the restaurant. When a customer enters the system, it is also possible to read the feedback about the restaurant. For customer convenience, food delivery, table reservation, and room booking are divided into three parts.
- Users can make post discussion in the system.
- Users can respond to the system's posted discussion.
- User can vote (up-vote, down-vote), flag questions and answers, if they like any question or answer or if any answer is correct, they can up-vote it. If they do not like any question or answer or if any answer is incorrect, they can down-vote it.
- User should log in to the system before starting the discussion.
- Users can create an account by entering a username, email address, and password into the 'sign up' form, after which they will receive an email with logging information.
- If the user already has an account, they can log in to the system by entering their username/email and password into the 'log in' function.
- The customer can book the room according to their wishes.
- Customers can book rooms for their convenience. The rooms with different packages are listed so that the prices vary, and they can choose from them according to their needs.
- According to the needs of the owner and customers, this restaurant has a smart lock facility.
- The four-digit password required to open the rooms with a smart lock facility is given to the customer through an email.
- Tourists can book a guide through the restaurant and go on a tour.
- A customer can place an online food order.
- Customers can pay the bill using online payment methods.
- Customers can book a table according to their needs, such as spending a day at a business meeting or small parties like birthday celebrations or family gatherings.

Use Case Diagram

1. **Login Function**

1. **Name:** Login

2. **Brief Description:** This use case provides users to login into the system to access the relevant function.

3. **Triggers:** Identify the users' details and behaviors on the system.

4. **Actors:** User

5. **Basic Flow:**

   i.   The user entered their username and password and clicked the submit button.
   ii.   The system validates the username or email password.
   iii.   The system verifies the user/email and password.
   iv.   The system lets them access bookings, reservations, and deliveries.

6. **Alternative Flows:**

   a. Missing username or password (display wrong and it will redirect to the login page)

The user does not have an account (the user must check the sign in and enter email and password to finish the process).

7. **Pre-Conditions:**

   i.   User should stay in the VHH website.
   ii.   User must have valid account.

8. **Post conditions:**

   i.   The system displays the home page.
   ii.   The server will store login history of each user it will indicate the login & logged out time.

9. **Other Stakeholders:**

   i.   Moderators

2. **Room Reservation function**

1. **Name:** Room Reservation

2. **Brief Description:** This use case allows users to login into the system to book the room as needed.

3. **Triggers:** Allow the user to book the rooms.

4. **Actors:** Users, Admin

5. **Basic Flow:**

   i.   The user can enter the date and can check the availability.
   ii.   Users can select the room and can insert the data (name, number of people, beds, children's)
   iii.   The system verifies the availability of users' needs.
   iv.   The system let me make the payment and conformation.
   v.   The user submits the payment transition.
   vi.   The system generates the mail with a verification code and updates the DB.
   vii.   The System Send the verification to the IOT Smart Lock and Admin.

6. **Alternative Flows:**

   i.   A user can cancel the booking within 12 hours of the entire transaction.
   ii.   A user can update the booking details.
   iii. Change the date to a new one.

7. **Pre-Conditions:**

   i.   User should stay in the VHH website.
   ii.   User must have valid account.

8. **Post conditions:**

   i.   Users can reserve the room which are available according to their needs.
   ii.   The user can change modify their room reservations.
   iii. The user logged outs on their accounts.

9.**Other Stakeholders:**

 i.   Moderators.

3. Food delivery function

1. **Name:** Food delivery

2. **Brief Description:** The user can select the food and it can be delivered to them home (within Anuradhapura).

3. **Triggers:** Allow the user to order food and have it delivered to their location.

4. **Actors:** Users, Admin, Deliver

5. **Basic Flow:**

   i.   The user can select the food by looking at the menu and can check the availability.
   ii.   The user can enter information such as their address and phone number (this service is only available in Anuradhapura).
   iii.   The system lets the user enter payment details.
   iv.   Users can make the online transactions by providing the necessary details.
   v.   The system asks to confirm the delivery.
   vi.   The system sends the order to the admin and delivery person.
   vii.   The user receives an e-mail to send the order details.
   viii.   Once the order transport user receives the conformation mail, the order is confirmed.

6. **Alternative Flows:**

   i.   The user can cancel the order before the transaction is done.
   ii.   A user can update the order and can change it.

7. **Pre-conditions:**

   i.   User should stay in the VHH website.
   ii.   User must have valid account.

8. **Post conditions:**

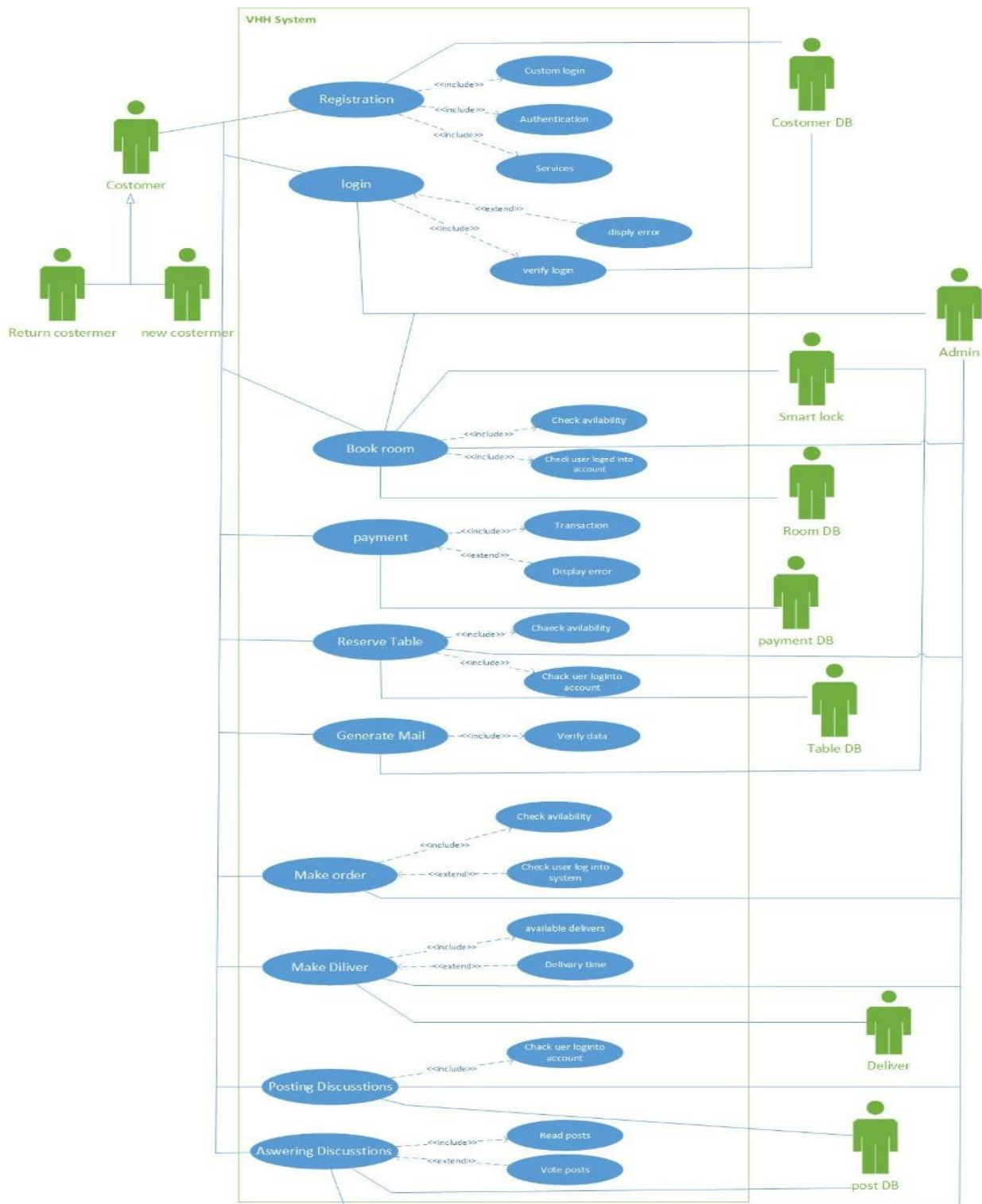   i.   The user is select the food menu according to their needs.
   ii.   The user made food order & delivery.
   iii.   The user is made any changes/ cancellation food order or delivery.
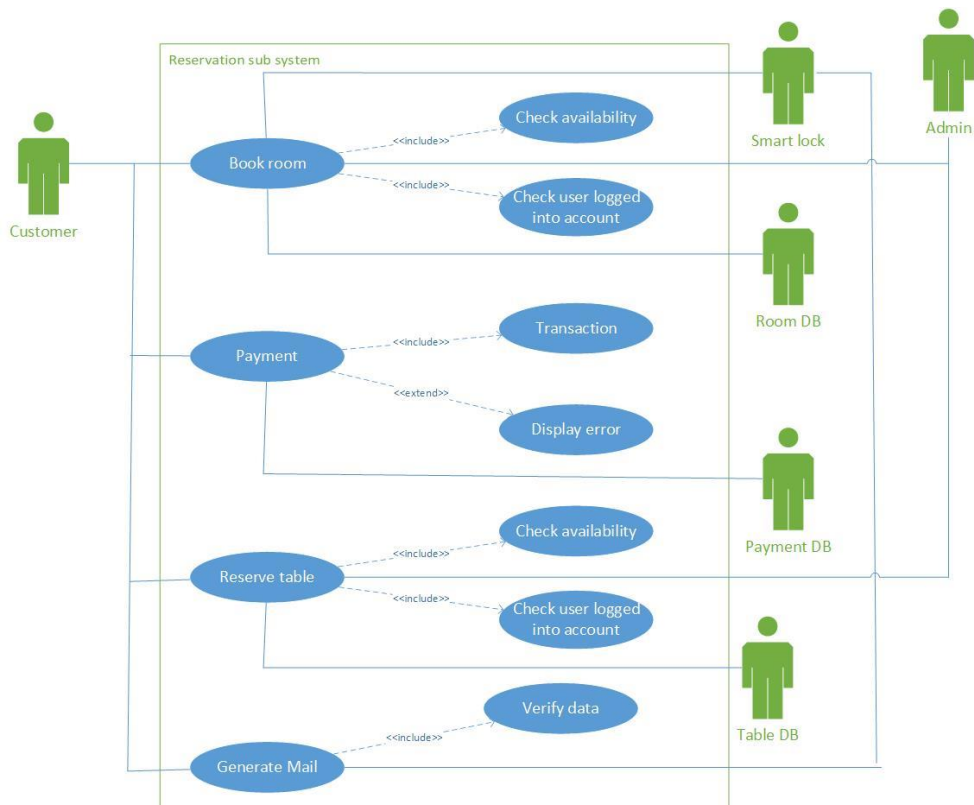   iv.   The user is logged out from their accounts.

9. **Other stakeholders:**

   i.   Moderators
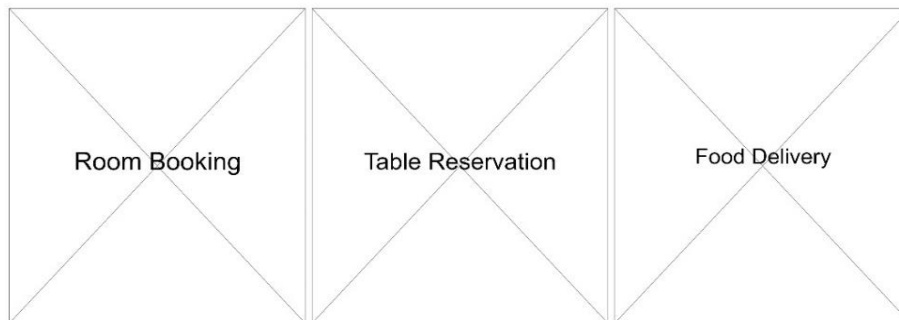
4. **Reservation of tables Function**

1. **Name:** Reservation of tables

2. **Brief Description:** This use case allows a user to receive a table from the special reservation area by using the system.

3. **Triggers:** Allow the user to receive the table.

4. **Actors:** Users, Admin.

5. **Basic Flow:**

   i.   The user can pick the data and time slot.
   ii.   The user can input the data for the receiver's information details (type, people, mobile, meal, time).
   iii. The system will check the quick availability of data.
   iv.   A user can pick the table.
   v.   The system will prompt you to choose a payment method (online/host).
   vi.   You can make the reservation.
   vii. The reservation email is generated by the system.
   viii. The system sends the reservation to the admin and updates the DB.

6. **Alternative Flow:**

   i.   The user can cancel the reservation.
   ii.   A user can change the time and date slots.
   iii. A user can update the details.

7. **Pre- conditions:**

   i.   User should stay in the VHH website.
   ii.   User must have valid account.

8. **Post Conditions:**

   i.   User is reserve any available table according to their needs.
   ii.   User is made any update, delete for previous reservations, or cancel reservations.
   iii. The user logged out from their account's logout.

9. **Other stakeholder**: Moderators

5. **Payment Function**

1.**Name:** Make Payment

2.**Brief Description:** This use case allows users to make their payment which are related to reservation.

3.**Triggers:** To make easy and fast payment.

4.**Actors:** Users (Customer)

5. **Basic Flow:**

   i.   After did the reservation users can see the payment window.
   ii.   They can enter the payment details according to their needs
   iii.   Then they can start make payment.
   iv.   They can confirm the payment to the system.
   v.   Then they will receive confirmation mail.

6.**Alternative Flow:**

   i.   User cancels the payment.
   ii.   User can update the payment.
   iii.   If user has not an account.
   iv.   Invalid username & password.

7.**Pre-Conditions:**

   i.   User should stay in the VHH website.
   ii.   User must have valid account.

8.**Post conditions:**

   i.   The user is made payment according to their need.
   ii.   User is made any modification or change to previous payment or cancel payment.
   iii.   User is logged out from their accounts.

9. **Other Stakeholders:**

   i.   Admin
   ii.   Moderators

6. **Discussion function**

1. **Name:** Discussion

2**. Brief Description**: This use case allows the user to post discussions and reply to

discussions.

3.**Triggers:** To post Discussions and reply.

4. **Actors:** Users, Admin.

5. **Basic Flow:**

    i.   After the login to website users can view home
    ii.   Then they can start discussion.
    iii.   They can write discussion and post
    iv.   They users can reply for discussion by using reply

6. **Alternative Flow:**

    i.   If user has not account, user must sign up with system to menu posts
    ii.   If any user wants to delete, they use post they can delete them by using delete option.
    iii.   If any user needs to react the post, then they user can do it by using the reactions.

7. **Pre – Conditions:**
    i.   User should stay in the VHH website.
    ii.   User must have valid account.

8. **Post Conditions:**

    i.   The user is posted any discussion, reply or canceled discussions.

    ii.   User is made any reactions for previous post reply or cancel reactions.

    iii.   The user logged out their accounts.

9. **Other Stakeholders:**

    i.   Moderators

Subsystem use case diagrams.

Deliver sub system

Customer — Make order
<<include>> Check availability
<<extend>> Check user logged into system

Admin

Make deliver
<<include>> Available delivers
<<extend>> Deliver time

Deliver

Reservation sub system

Customer — Book room
<<include>> Check availability
<<include>> Check user logged into account

Smart lock   Admin

Room DB

Payment
<<include>> Transaction
<<extend>> Display error

Payment DB

Reserve table
<<include>> Check availability
<<include>> Check user logged into account

Table DB

Generate Mail
<<include>> Verify data

Discussion sub system

Customer

Admin

Posting discussion

Check user logged into account

<<include>>

Answering discussion

Read posts

<<include>>

Vote posts

<<extend>>

Post DB

Wireframes.

LOGO

Link 01 Link 02 Link 03 Search SIGN UP

Calender

Nights :
− +

Rooms :
− +

Email :

Adult
− +

Children :
− +

Check Availability

Payment

Choose payment method below

P PayPal

amazon

Billing Info

FULL NAME

ADDRESS

CITY   ZIP CODE

Credit Card Info

CARD NUMBER
XXXX XXXX XXXX XXXX   VISA

CARDHOLDER NAME

EXPIRE DATE
MM / YY

CVV

PAY

LOGO

Link 01 Link 02 Link 03   Search   SIGN UP

General Information

Your Food Order

Name

Address

Email

Phone Number

Payment

Choose payment method below

P PayPal

amazon

Billing Info

FULL NAME

ADDRESS

CITY   ZIP CODE

Credit Card Info

CARD NUMBER

XXXX XXXX XXXX XXXX   VISA

CARDHOLDER NAME

EXPIRE DATE

MM / YY

CVV

Checkout

Order

Address   Edit

Phone Number   Edit

Price   Rs.

PAY

LOGO

Link 01 Link 02 Link 03   Search   SIGN UP

Your Email :

Number of People ⌄

Date ☰

Time 🕐

Number of Table ⌄

Food Menu ⌄

RESERVE

Payment

Choose payment method below

💳   **P** PayPal   amazon

Billing Info

FULL NAME

ADDRESS

CITY   ZIP CODE

Credit Card Info

CARD NUMBER

XXXX XXXX XXXX XXXX   VISA

CARDHOLDER NAME

EXPIRE DATE

MM / YY ⌄

CVV

PAY

UI/UX Design of Villa Happy Hours

Design of Home Page
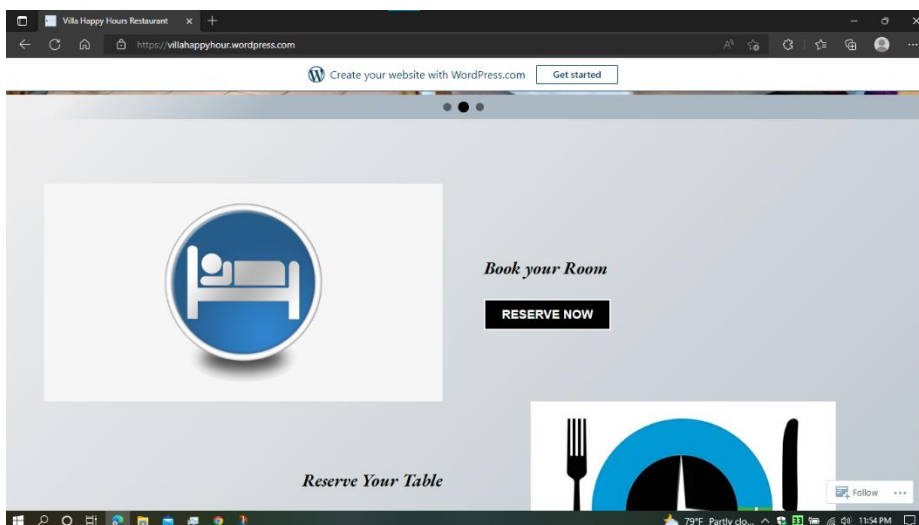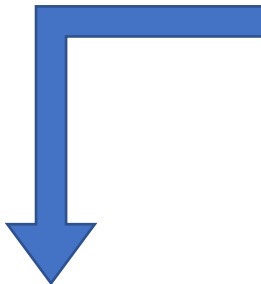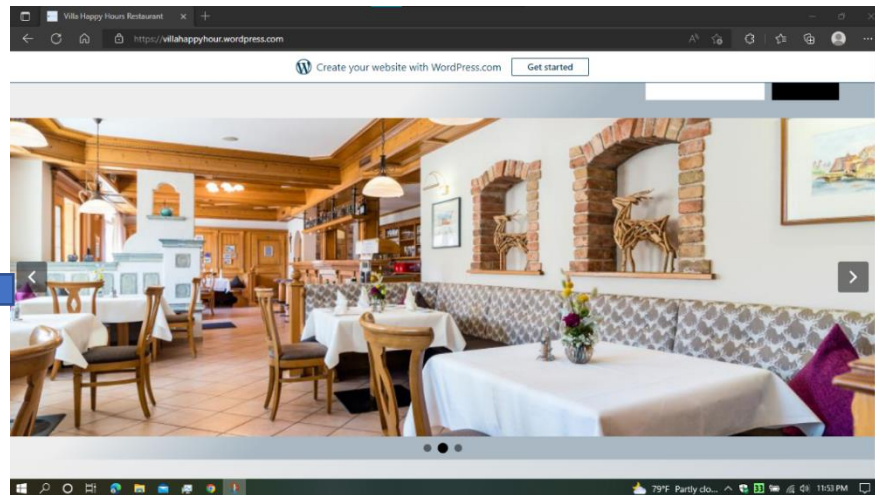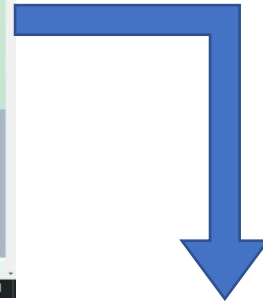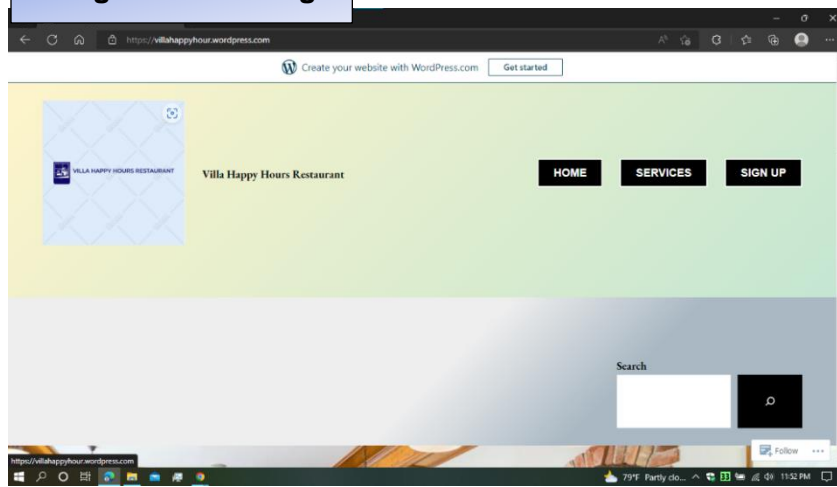
Design of Sign-up Page
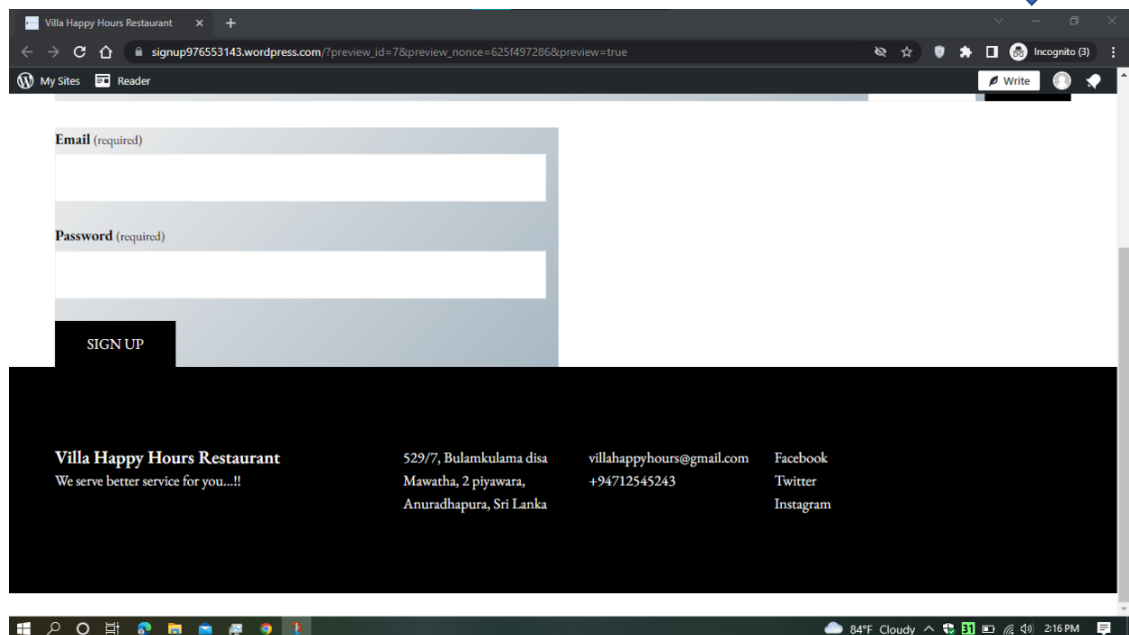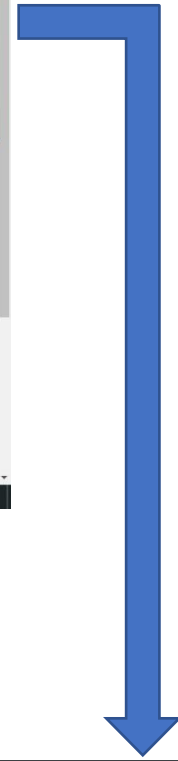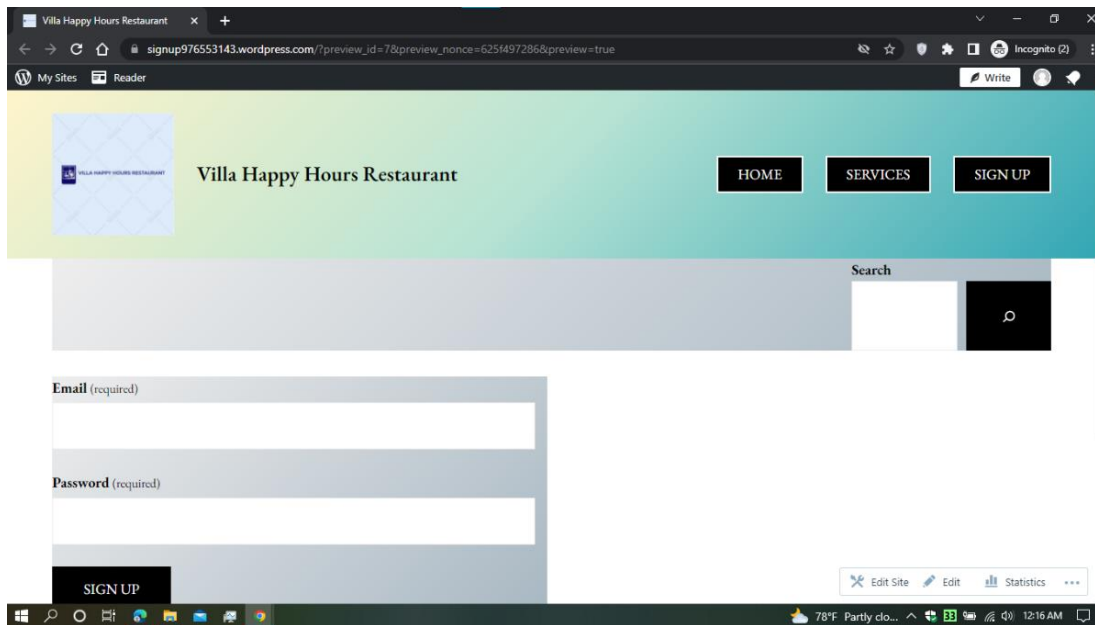
Design of Room Booking
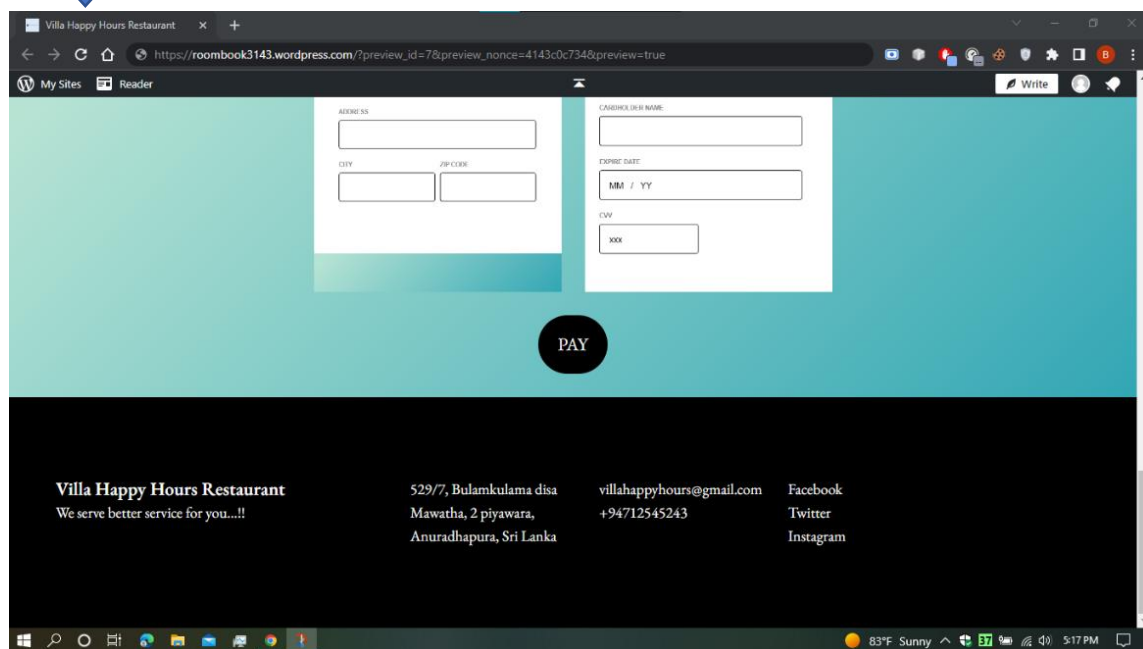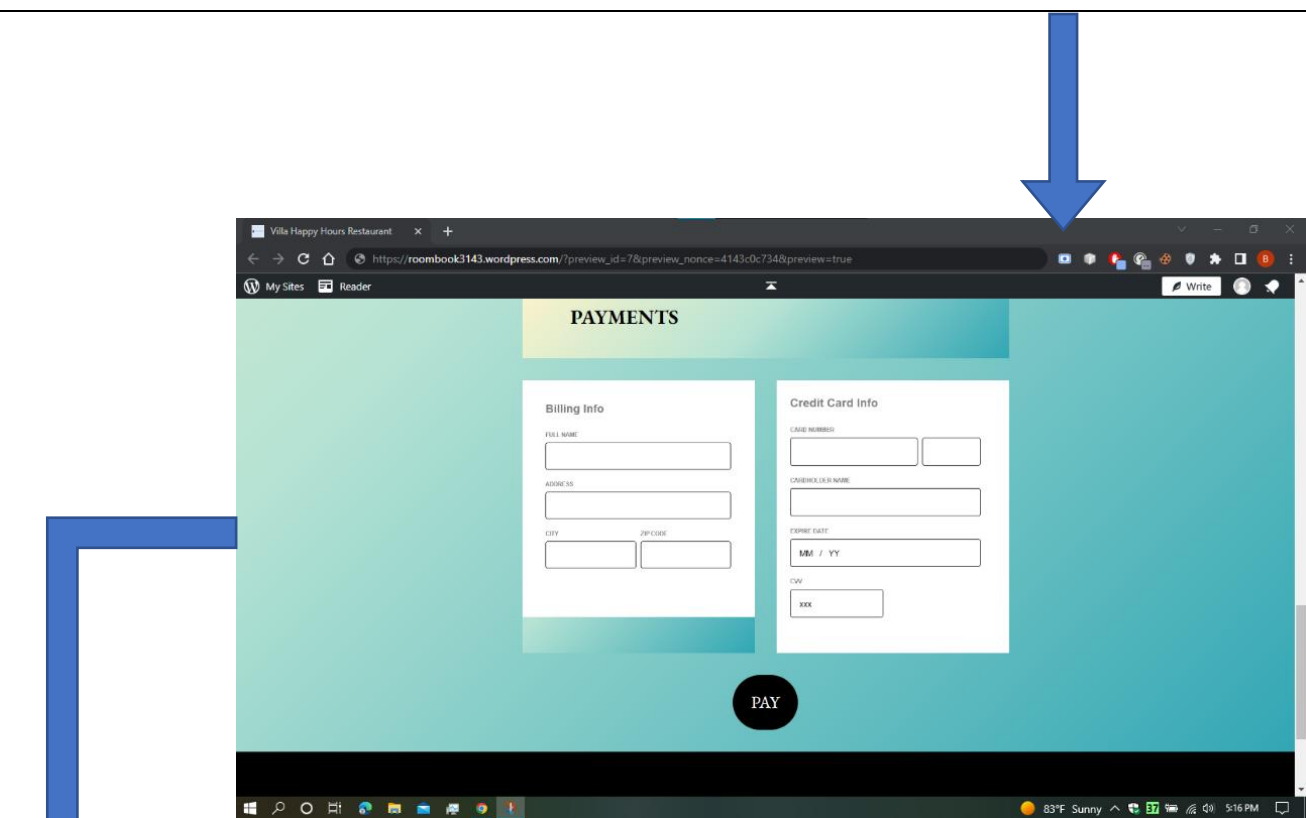
Design of Food Order Page
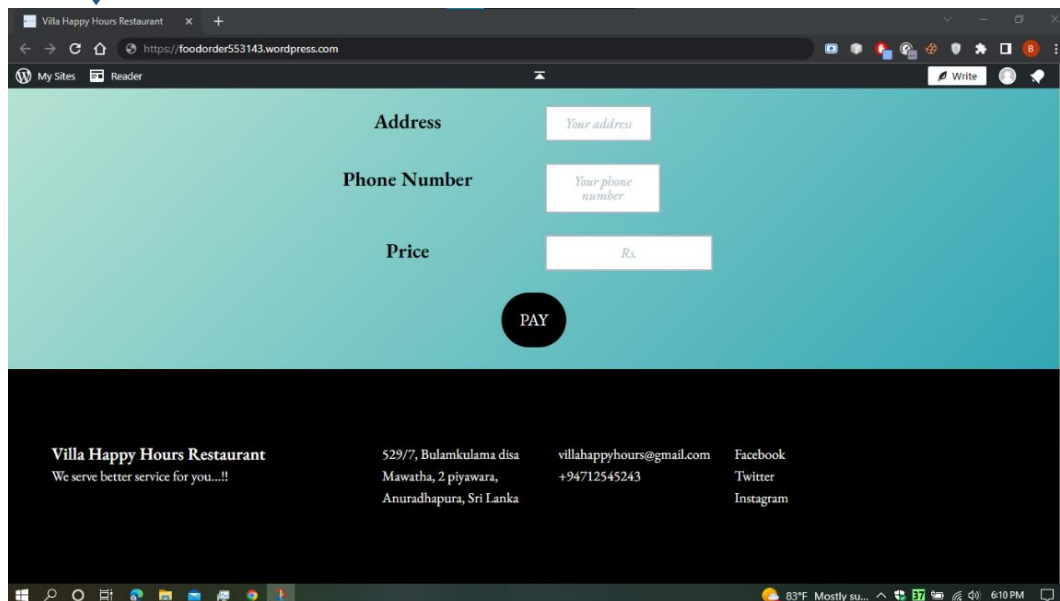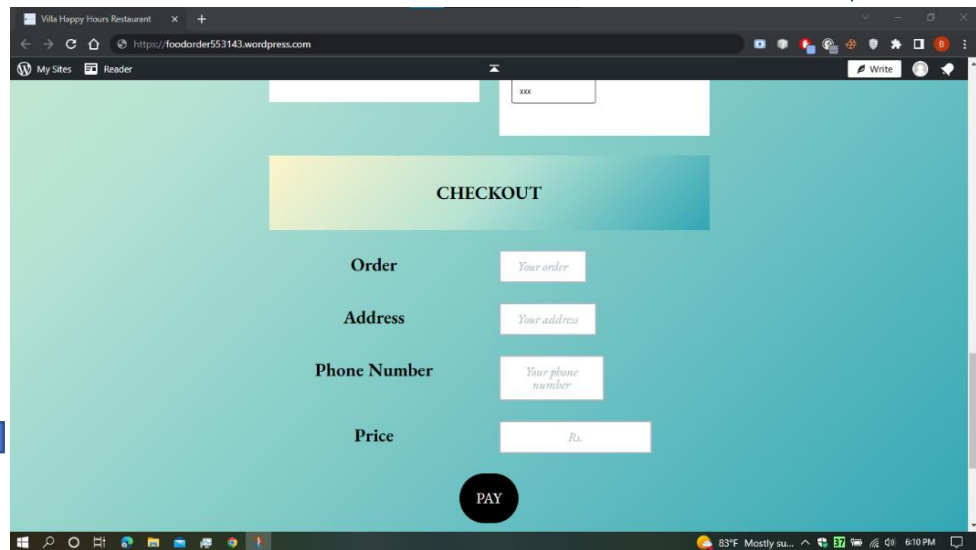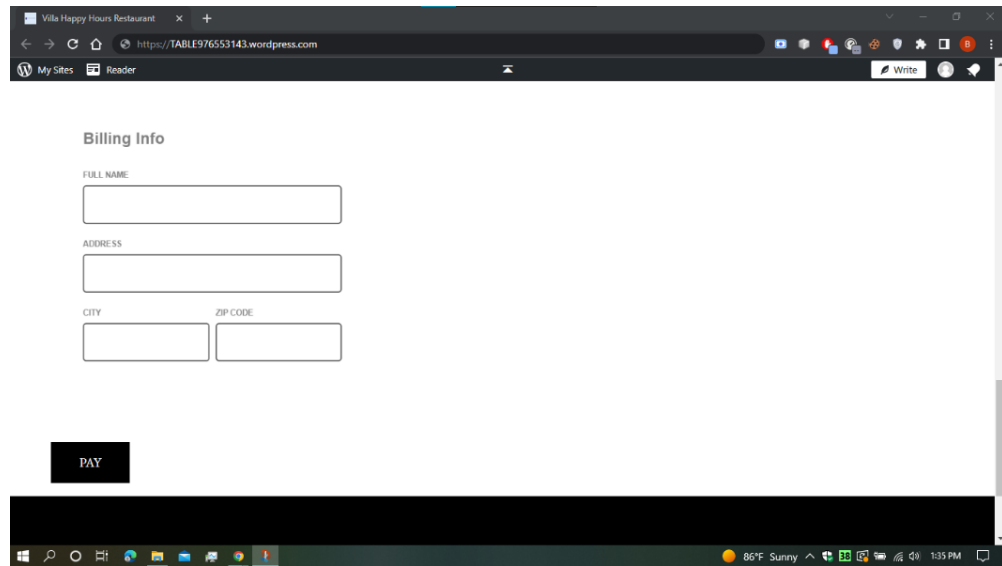
Design of Table Reservation Page

ER Diagram of VHH

Assumptions

- One customer can book multiple rooms and each room has one customer
- One customer can do several answer discussions and only one customer can do one answer discussion.
- One customer can make several post discussions and one customer can make one post discussion.
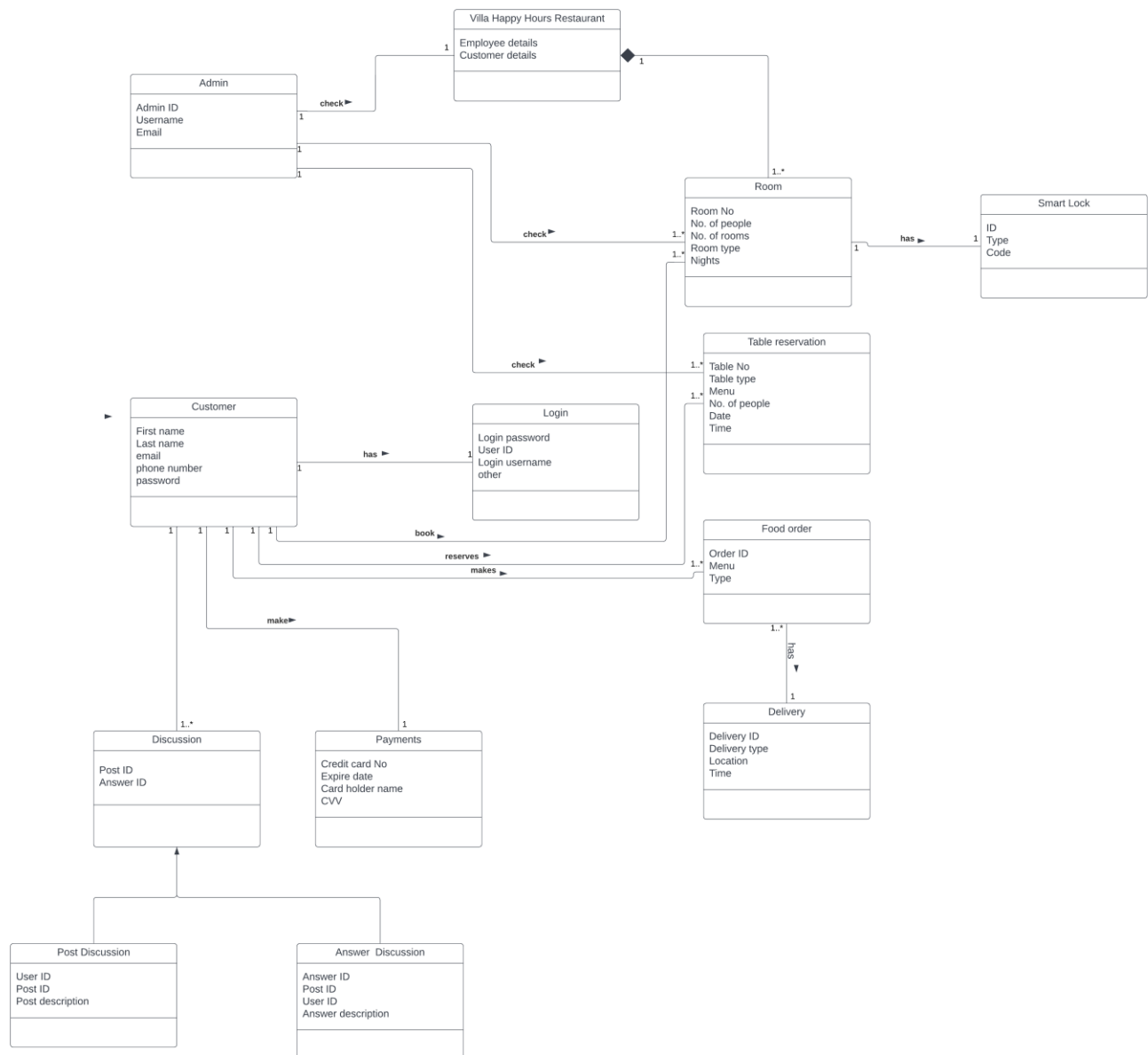- There can be multiple orders in one delivery and one order can be in one delivery
- One admin can check several rooms and one room is checked by one admin.
- One admin can check several food orders and one food order is checked by one admin.
- One admin can check several tables and one table is checked by one admin.

Class Diagram

Villa Happy Hours Restaurant
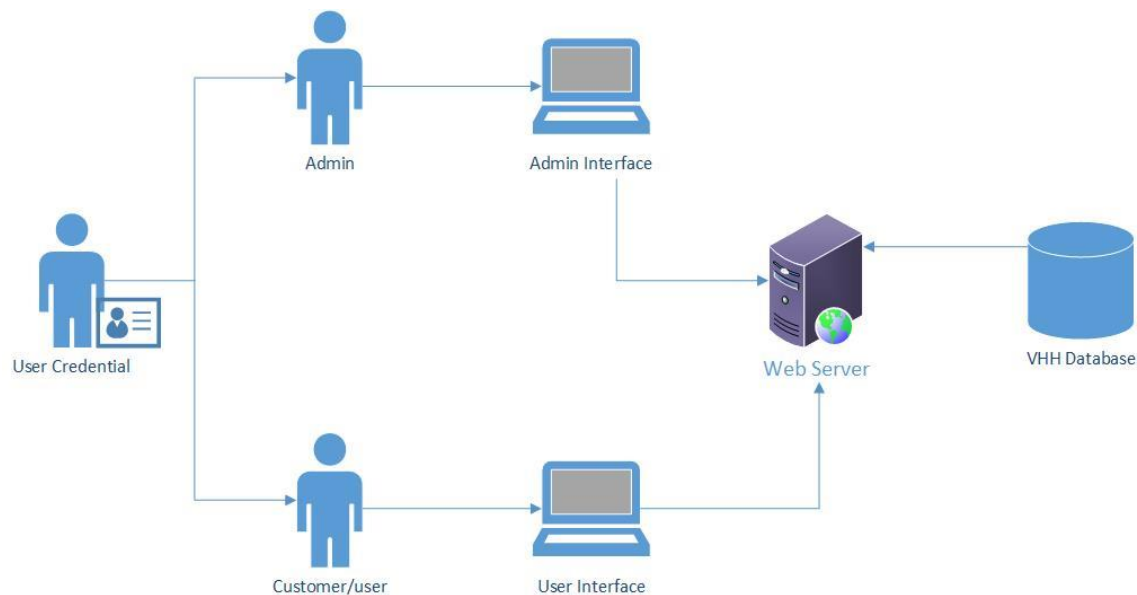Employee details
Customer details

Admin
Admin ID
Username
Email

check ▶

Room
Room No
No. of people
No. of rooms
Room type
Nights

has ▶

Smart Lock
ID
Type
Code

Table reservation
Table No
Table type
Menu
No. of people
Date
Time

Customer
First name
Last name
email
phone number
password

has ▶

Login
Login password
User ID
Login username
other

book ▶
reserves ▶
makes ▶

Food order
Order ID
Menu
Type

has

Delivery
Delivery ID
Delivery type
Location
Time

make ▶

Discussion
Post ID
Answer ID

Payments
Credit card No
Expire date
Card holder name
CVV

Post Discussion
User ID
Post ID
Post description

Answer Discussion
Answer ID
Post ID
User ID
Answer description

Data Flow Diagram(Level 0) Of VHH
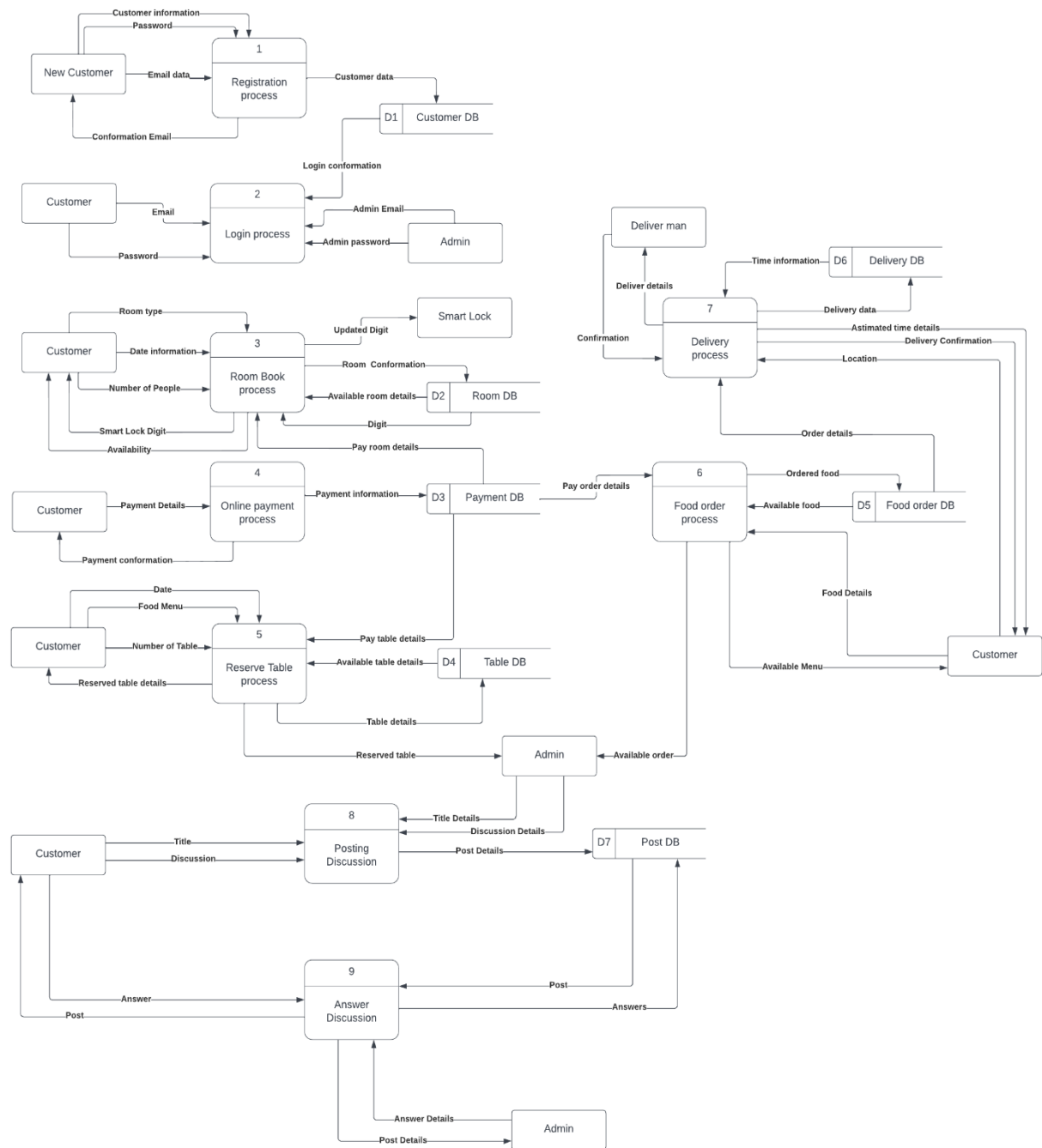
System Architecture Design

Hardware & Software Specification

Hardware and Software Specifications of Villa Happy Hours.

Hardware Requirement.

•   A laptop or computer/mobile device that can run modern web applications.

•   Internet/network communications

•   Input devices (keyboard, mouse).

•   Output devices (Monitor)

•   The Smart Lock is specially developed for managing the door lock with the system instructions.

 Software Requirement.

•   The latest version of the web browser

  Ex: Google Chrome, Firefox

•   design for the smart lock (software that runs in the smart lock).