Title of the Project: Hospital Cabin and ICU booking system

Group Number:02

Group Members:

Student ID	Student Name
18301221	MD. Abdul Kahhar Siddiki Shan
18301089	Sugata Saha
18321004	Jawad Bin Jalil

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Contribution of Group members:

Name	ID	Activity
MD. Abdul Kahhar Siddiki Shan	18301221	Motivation, System request(Business values), Requirement Analysis, Sequence diagram (admin), State Machine diagram(admin), Data Flow diagram.
Sugata Saha	18301089	Introduction, System request(Business requirements), Use Case diagram, Activity diagram.
Jawad Bin Jalil	18321004	System request(Business need, Special issues and constrains), Sequence diagram (user), State Machine diagram(user), Windows Navigation diagram, Conclusion

Introduction

The Online Hospital Cabin and ICU Booking System is intended to provide easiness and comfort for not only hospital management committee but also patients and their relatives through a single application using the internet as the only medium. Through this, patients or their relatives will be able to book cabin and ICU bed from home.

Even if consider the current Covid-19 pandemic situation, this system can help to save many lives who are in emergency conditions. Many people are dying nowadays because of not getting proper treatment in time. If the system becomes more and more popular among users, we will provide more functionalities within our system. For example, we will provide air ambulance service. Again, we would like to contact with many pharmacies to collect necessary medicines and give to the customers. This system will maximize the possibility of patients and their relatives to book beds and cabins by staying in home in serious case.

The sponsoring corporation will reserve all the rights of the system and manage it within their administrative panel. The panel will control the online booking from all the hospitals and customers as well as modify several aspects throughout the system. We are determent to follow the Data Protection Act to keep personal information.

Motivation

Bangladesh is a densely populated country. But, the health care condition in this country is very poor. According to WHO, Bangladesh suffers from both a shortage of and geographic mal-distribution of HRH. There is a severe gap between sanctioned and filled health workers positions. In addition, although 70% of the populations lives in the rural areas, health workers are concentrated in urban secondary and tertiary hospitals. That's why it is difficult for them to get the cabin and ICU because of insufficient amount of seat.

Furthermore, because of covid-19 pandemic, the situation is getting more worse. People are running from one hospital to another to get a cabin or ICU for their patients. But, most of the time they can not admit their patients in hospital. But, hospital cabin and ICU cabin booking system can solve this problem. By using this system, people can get the available seat status of every hospital and they can book their seat by online which will save their time and money. Moreover, they can get ambulance service from this system. Finally, this system can save a lot of lives and it will remove people's suffering to get cabin and ICU for their patients.

System Description:
System request:

Project Sponsor:

- Jawad Bin Jalil
- Sugata Saha
- MD. Abdul Kahhar Siddiki Shan

Business need:

This is website and app based on online project where anyone can get their medical facilities by sitting at home. People can see the updates of the information about nearest hospitals and also can book cabin, ICU, CCU to nearest hospital by using this app and website.

Business requirements:

BY using this app and website people can book hospital's cabin, ICU, CCU. The functionality of this business requirements should be listed below:

- If anyone login to this app and turn on GPS it will show every hospital name nearby.
- User can see the database about the hospitals like which services and departments are available in that hospital and also how many cabins, ICU and CCUs are available.
- This system will also store information about which vaccines are available in that hospital.
- This app will contain online payment system through Visa card, Master card, Bkash, Nagad and so on.
- After getting discharged from hospital the user can give a review about the service of the hospital.

Business values:

Cabin and ICU booking management is not an easy work. Besides, it is a humanitarian activity. For this reason, we can make profit from it. This management system can save a lot of lives. As it will help to provide the information about nearest available cabin and ICU beds and customer can book cabin and ICU beds according their will, we can generate revenue by getting a percentage from booked cabin, ICU beds by signing contract with those hospitals. Besides, ambulance is necessary in many critical situations. We can also make profit from it by taking a percentage from the ambulances which will be booked from our website. There would be options for digital payment system and this is also a great way of revenue by signing contract with these companies. We can also make revenue from advertisements which will be shown in our website. Besides, we have a system where clients will provide

reviews after receiving our services. This will be very much helpful for expanding our business. This will help us to make our website more popular to general people. Many hospitals and care services will be encouraged also to make contract with us. Ultimately, this approach will help us bring more and more clients. More clients mean more revenue.

Estimated Tangible Values:

- Will charge 2% from every booking.
- Will have income from advertisement.
- Profit will be 400,000 per year.

Intangible values:

- Customer review will ensure our quality.
- A good maintenance of the app and website will make our position strong in the market.

Special issues and constrains:

- If anything unexpected occur, this system will immediately notify the user about this problem.
- We will follow the government rules strictly
- As soon as possible we will expand our service all over Bangladesh.

Requirement analysis:

We tried to build a user-friendly website and app so that our consumers can easily access their services. According to what we will start working for that we added some features. They are given below:

- **Functional Requirement:**

1. **Log In Database:**
   - User can log in.
   - User can verify themselves
   - User can change the password
   - User can change the user name

2. **Admin:**
   - Approve the order
   - Approve payment for any services.
   - Add extra services for customer.

- Update the system.

3. **Users:**
   - Search the hospital
   - Will show the nearest hospital list
   - Can check available ICU and Cabin status with their price
   - Online payment system
   - Emergency ambulance service

4. **Rating system:**
   - Rate the service
   - Suggestion to improve the service

- **Non-Functional Requirement:**

1. **Operational:**
   - Can work online.
   - Can get the access from any kind of device.

2. **Performance:**
   - The system will provide any kind of update through notification.
   - The system will response within five seconds.
   - The pdf file storage capacity cannot be more than 100 MB.

3. **Security:**
   - One user can not access another user account or information.
   - Two phase Log In system.
   - Only admin can approve the customer order and discount.
   - Payment security will be handled strictly.

4. **Cultural and Political:**
   - This app and website will follow all country law.
   - Customers personal information will be protected with Digital Data Act.

Design diagram:

Use Case diagram:

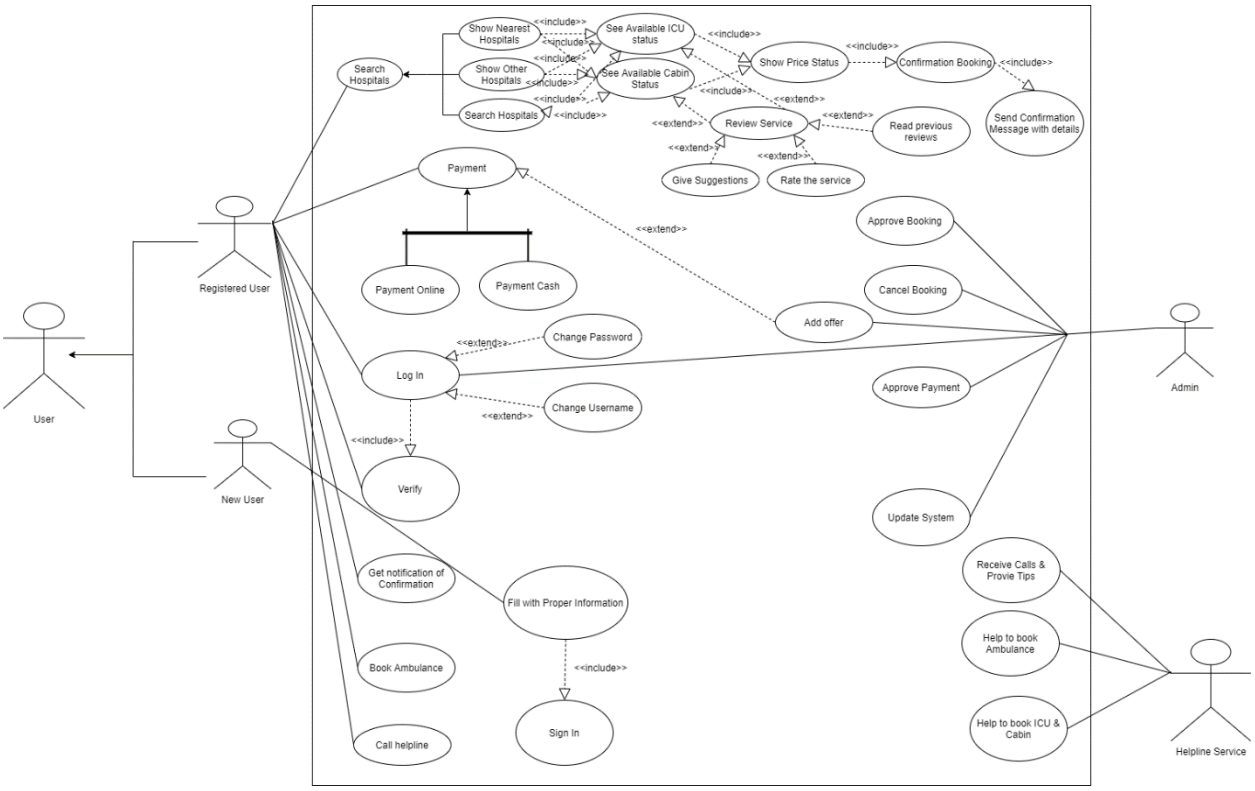
Use Case Diagram Description:

There are two kinds of users. They are new users and registered users.

For registered users, they need to log in with proper email and password first with verification. Registered users can search hospitals. They can see their nearest hospitals at first. They can also search hospitals. Along with hospitals, they can see available ICU and Cabin status as well as their price status. We also provide a review service and 24*7 helpline service. They can also book ambulance.

New users need to register first to get all these services. That is why they need to provide correct email and password and get approval from admin panel. They will get confirmation message from admin after registration.

Admin can approve or cancel any booking. Admin can also add any offer. He/she can update system and database. However, admin also need to log in from performing all the mentioned tasks.



Activity Diagram:

Activity Diagram Description:

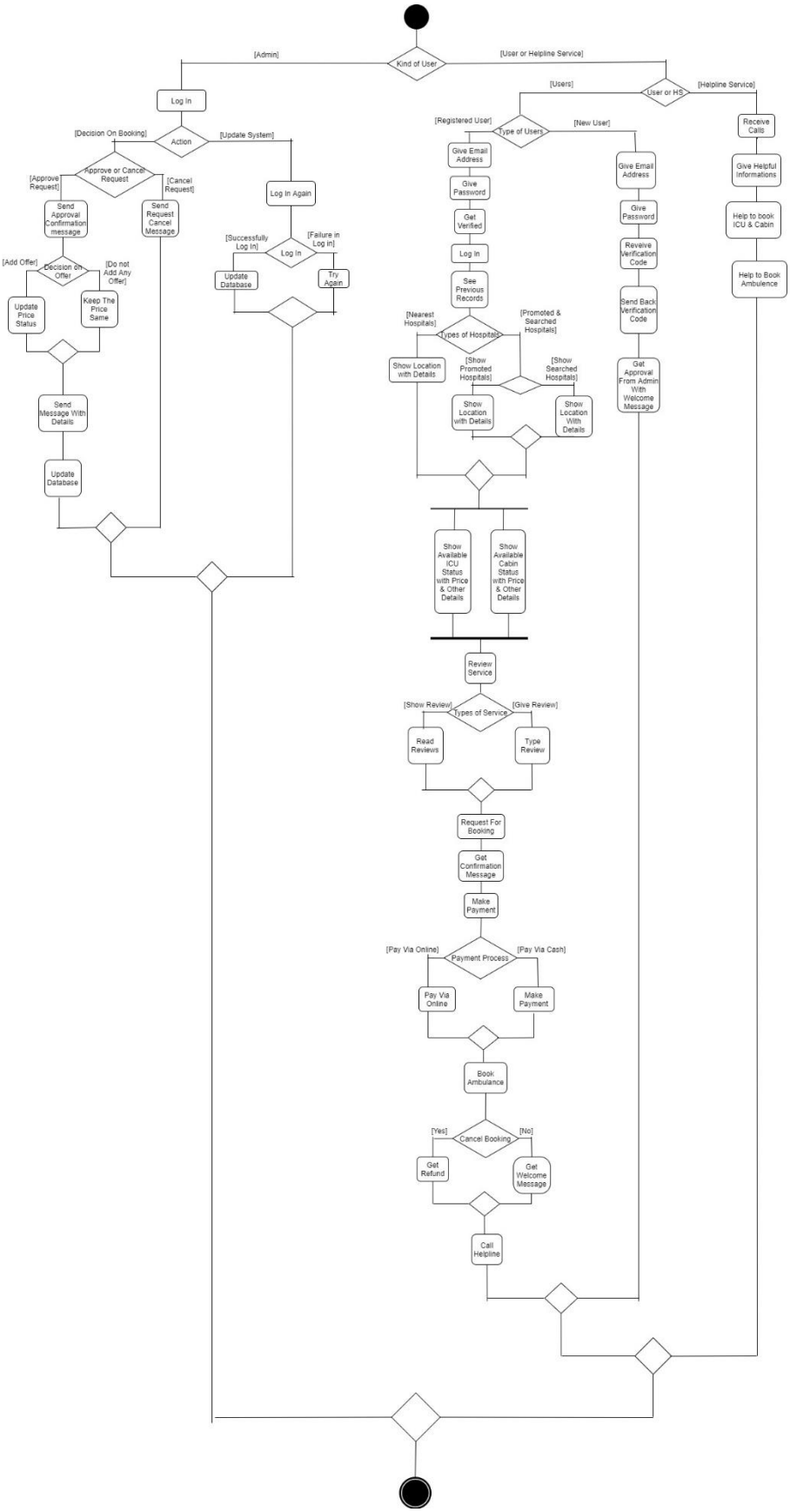
In this system, there are various kinds of users. There are admin, general user and helpline service.

Admin needs to log in with mail and password to enter the system. Admin can take decision on booking ICU and Cabin beds as well as updating the system. Admin can approve or cancel any booking. He/she can also add any offer to customers. He/she need to log in again to update the system.

For users, there are two type of users. Registered users and new users. New users need to register first. For registration, he/she needs to put correct mail and password. Then he/she needs to get verified with verification code. After getting approval from admin, he/she will receive a confirmation message.

For registered users, one must need to put correct mail and password in the provided space. After getting verified, he/she will get opportunity to enjoy all of our services. He/she can see the nearest hospitals. He/she can search hospitals also. With hospitals, they can see the available ICU and Cabin status as well as price status of the hospitals. We also provide review service where registered users can see previous reviews and give their reviews about their service and other issues. They can make payment via cash or online payment services. They can also cancel booking with refund. One registered user can also book ambulance from our service. They can see their previous records also.

Our helpline service provides 24*7 service. With help of this service, one can get useful tips. They also help to book ICU and Cabin as well as ambulance.

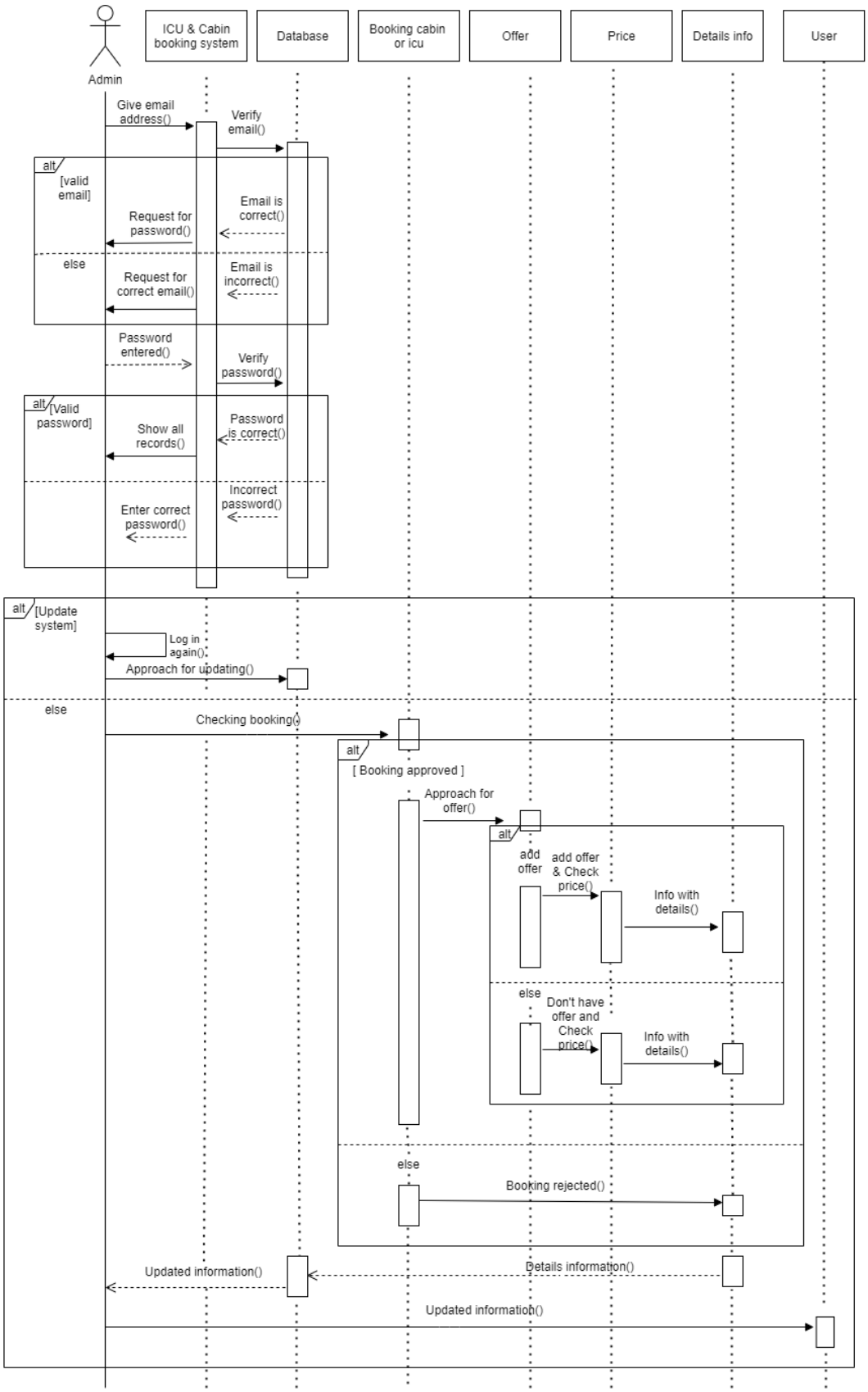

Kind of User
[Admin]
[User or Helpline Service]
Log In
Action
[Decision On Booking]
[Update System]
Approve or Cancel Request
[Approve Request]
[Cancel Request]
Send Approval Confirmation message
Send Request Cancel Message
Decision on Offer
[Add Offer]
[Do not Add Any Offer]
Update Price Status
Keep The Price Same
Send Message With Details
Update Database
Log In Again
Log In
[Successfully Log In]
[Failure in Log in]
Update Database
Try Again
User or HS
[Users]
[Helpline Service]
Type of Users
[Registered User]
[New User]
Give Email Address
Give Password
Get Verified
Log In
See Previous Records
Types of Hospitals
[Nearest Hospitals]
[Promoted & Searched Hospitals]
Show Location with Details
[Show Promoted Hospitals]
[Show Searched Hospitals]
Show Location with Details
Show Location With Details
Show Available ICU Status with Price & Other Details
Show Available Cabin Status with Price & Other Details
Review Service
Types of Service
[Show Review]
[Give Review]
Read Reviews
Type Review
Request For Booking
Get Confirmation Message
Make Payment
Payment Process
[Pay Via Online]
[Pay Via Cash]
Pay Via Online
Make Payment
Book Ambulance
Cancel Booking
[Yes]
[No]
Get Refund
Get Welcome Message
Call Helpline
Give Email Address
Give Password
Receive Verification Code
Send Back Verification Code
Get Approval From Admin With Welcome Message
Receive Calls
Give Helpful Informations
Help to book ICU & Cabin
Help to Book Ambulence

Sequence diagram:

Scenario of Admin:

Here, we have one actor and seven objects. They are admin, ICU and Cabin booking system, database, booking cabin or ICU, offer, price, details info and user. The scenario of their sequence diagram are given below**:**

In this sequence diagram, at first admin have to log in with valid credentials in order to access the ICU and Cabin booking system. There is a database in the system and admin can update it and while updating the system, admin have to log in again. After that, he can check the booking list. Admin can approve or reject any booking request. After approving the request, he can check that the request is eligible for offer or not. Then, it will calculate the price of the request and will send it to the details info. Next, details info sends those data to the database, database will update the data and will send it to the admin. Finally, admin will send the information to the user.

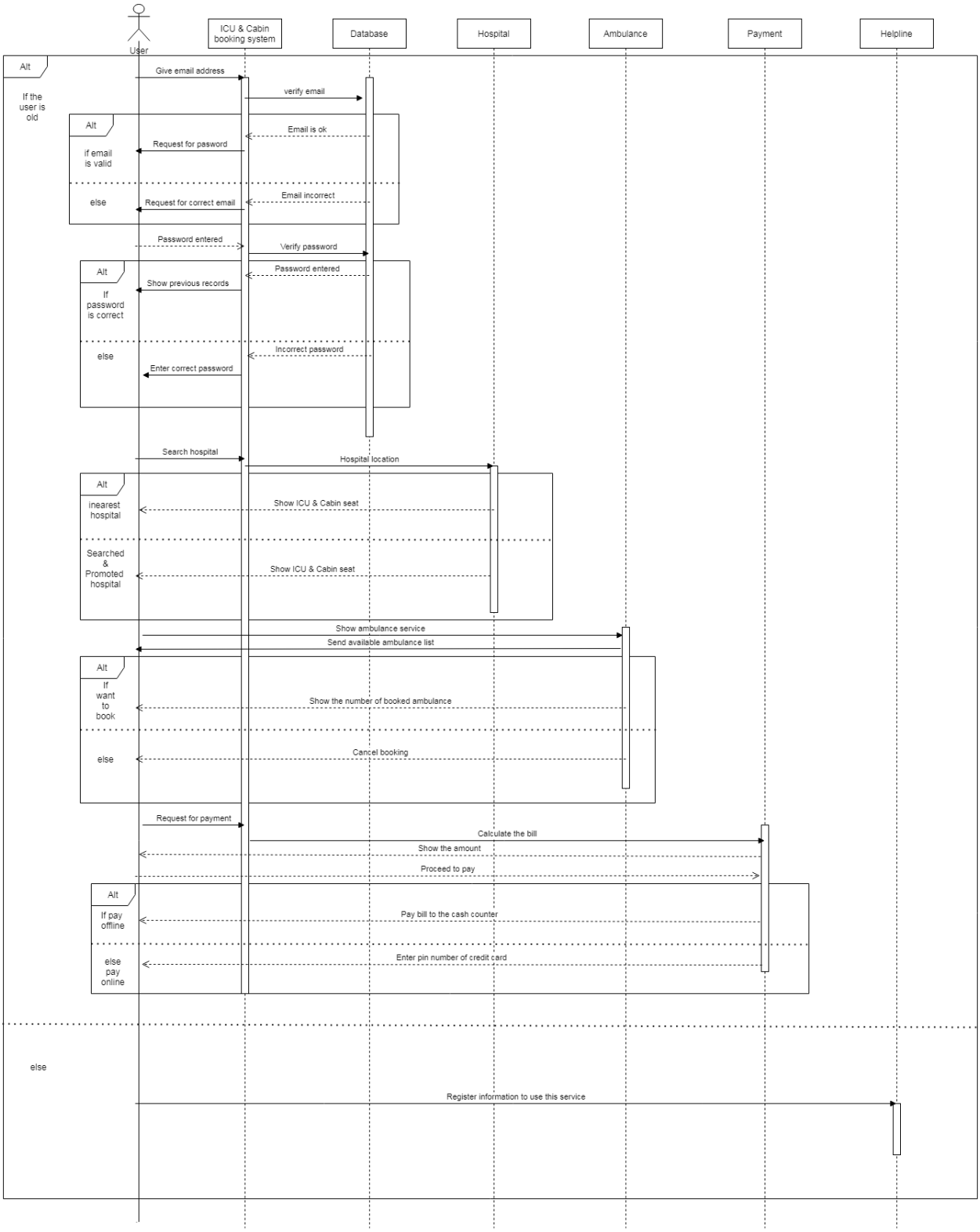

Admin
ICU & Cabin booking system
Database
Booking cabin or icu
Offer
Price
Details info
User
Give email address()
Verify email()
alt
[valid email]
Email is correct()
Request for password()
else
Email is incorrect()
Request for correct email()
Password entered()
Verify password()
alt
[Valid password]
Password is correct()
Show all records()
Incorrect password()
Enter correct password()
alt
[Update system]
Log in again()
Approach for updating()
else
Checking booking()
alt
[Booking approved]
Approach for offer()
alt
add offer
add offer & Check price()
Info with details()
else
Don't have offer and Check price()
Info with details()
else
Booking rejected()
Updated information()
Details information()
Updated information()

Scenario of User:

Here, in this diagram we have one user and six objects. They are USER, ICU & Cabin booking system, database, hospital, Ambulance, Payment and Helpline.

In this diagram, firstly, the user have to login with valid email id and password. Then the user will see previous records of him. After that, the user can book cabin or ICU seat of the nearest hospital or his searched hospital. After booking cabin or ICU he/she can book ambulance also for his patient if want to. The user can pay the bill to the cash counter or through online by using credit card, Bkash and so on.

If the user is new then he have to communicate in the helpline service to register on this system.

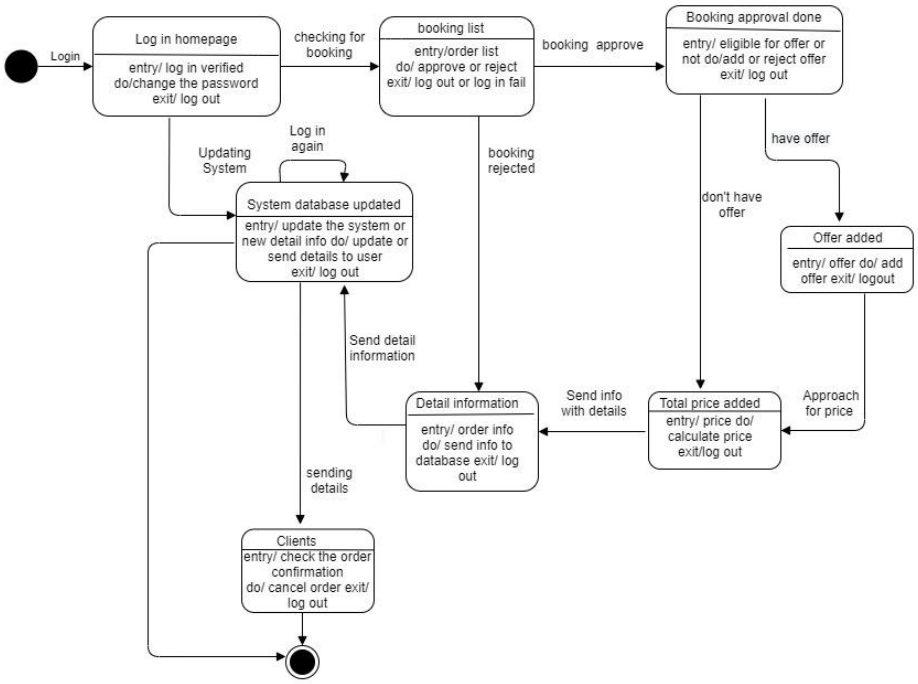

User
ICU & Cabin booking system
Database
Hospital
Ambulance
Payment
Helpline
Alt
If the user is old
Give email address
verify email
Alt
if email is valid
Email is ok
Request for pasword
else
Email incorrect
Request for correct email
Password entered
Verify password
Alt
If password is correct
Password entered
Show previous records
else
Incorrect password
Enter correct password
Search hospital
Hospital location
Alt
inearest hospital
Show ICU & Cabin seat
Searched & Promoted hospital
Show ICU & Cabin seat
Show ambulance service
Send available ambulance list
Alt
If want to book
Show the number of booked ambulance
else
Cancel booking
Request for payment
Calculate the bill
Show the amount
Proceed to pay
Alt
If pay offline
Pay bill to the cash counter
else pay online
Enter pin number of credit card
else
Register information to use this service

State machine diagram:

Scenario of Admin:

In this diagram the system has eight states and they are Logged in home page, system database updated, booking list, booking approval done, offer added, total price added, Detail information and Clients. The scenario of their state machine diagram are given below**:**

After log in to the system, admin can see the home page of the system. There, he can update the system which will be system database updated state or can check the booking list. After checking the list, he can approve or reject the request. If the request has offer, he will add it and send it for total price. If the request does not have offer, it will send it for total price. After that, the system will send information with details to the Detail information state. Finally, all information will go to database updated state and from there it will to the clients.

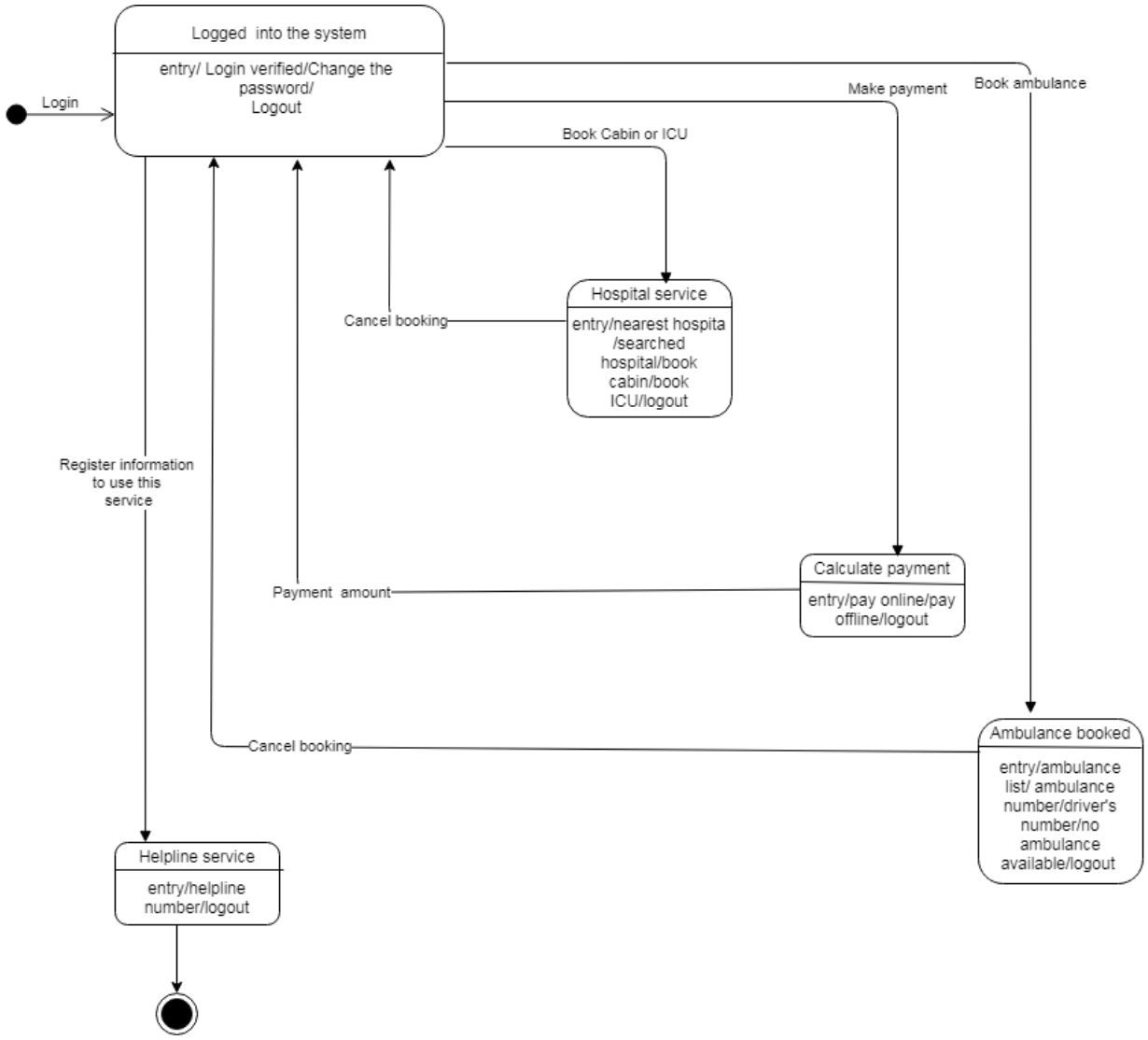


Scenario of User:

In his diagram, the system has five states and they are Logged into the system, Hospital service, Calculate payment amount, Ambulance booked and helpline service.

Here, firstly. After login to the system the user can see the homepage. Then the user can book cabin or ICU and also after booking he can cancel the booking. He can book ambulance and can pay bill of hospital. Every move of old user will be informed to the Logged into the system state.

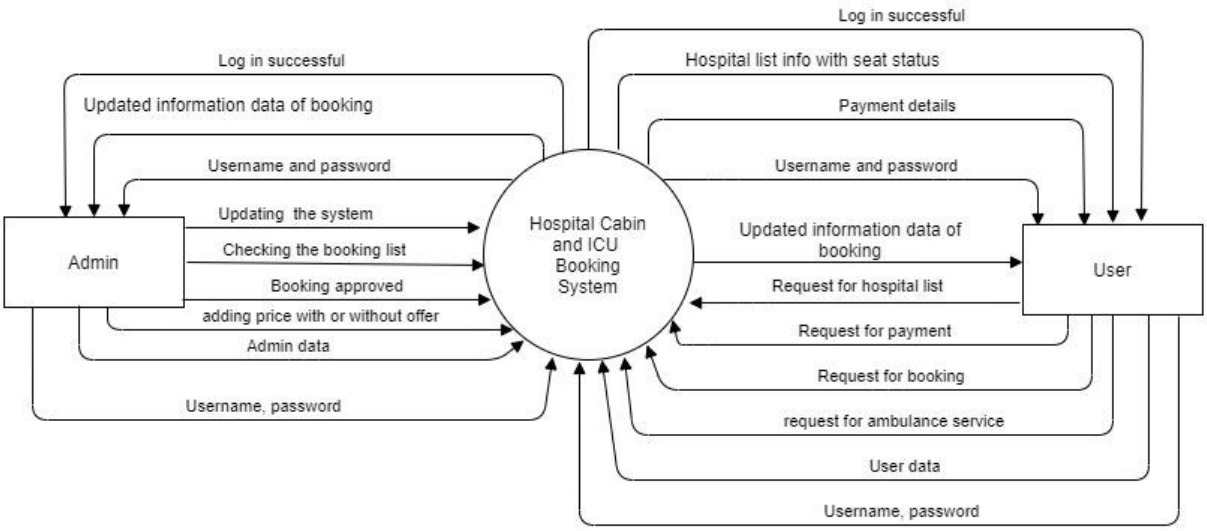
New user have to communicate to helpline for this service.



Data Flow Diagram

Level 0:

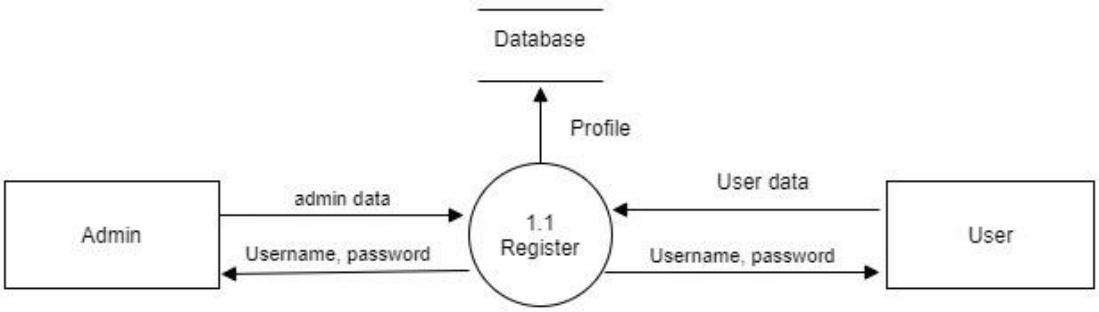
This is the level-0 of data flow diagram of our Hospital Cabin and ICU booking system. In this diagram, we have showed the very basic concept of our whole system. Since, it is level-0 diagram, we have used only one process called Hospital Cabin and ICU booking system and this process have multiple data flow with different external agents. Here, we have two external agents and they are admin and user. To access the system, both admin and user have to provide username and password. Admin can do several tasks to the system like updating the system, checking booking list, booking approval, adding price. In addition, user can do several tasks like request for hospital list, request for payment, request for ambulance services.



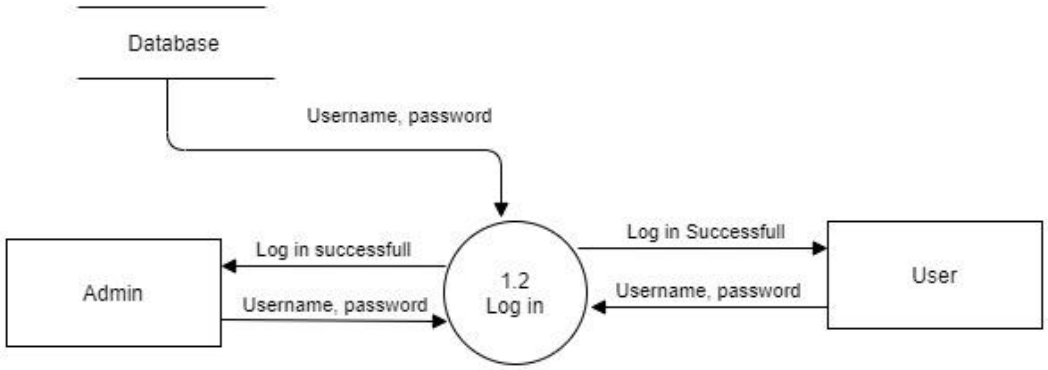
Level 1:

This is the level-1 diagram of our previous data flow diagram. Here, we have decomposed our previous process into five (9) other processes. In our previous diagram, we had only one process but after decomposing the process in level-1 we have different processes called register, log in, update, request and approve. The number of external agents and database will be same as it was int the lebel-0 diagram. We can only add more process in decomposition

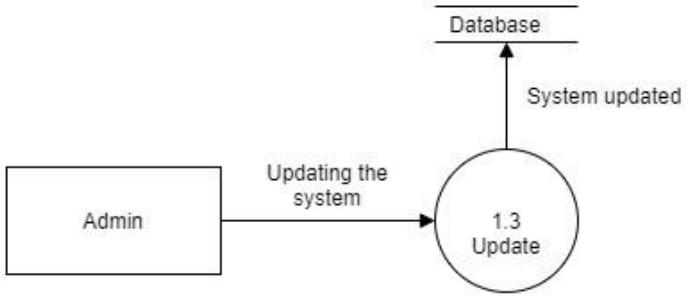
DFD Level 1 of Register

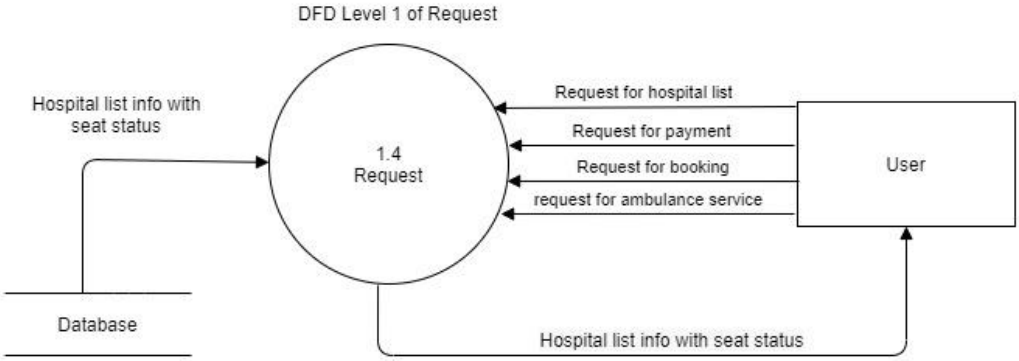


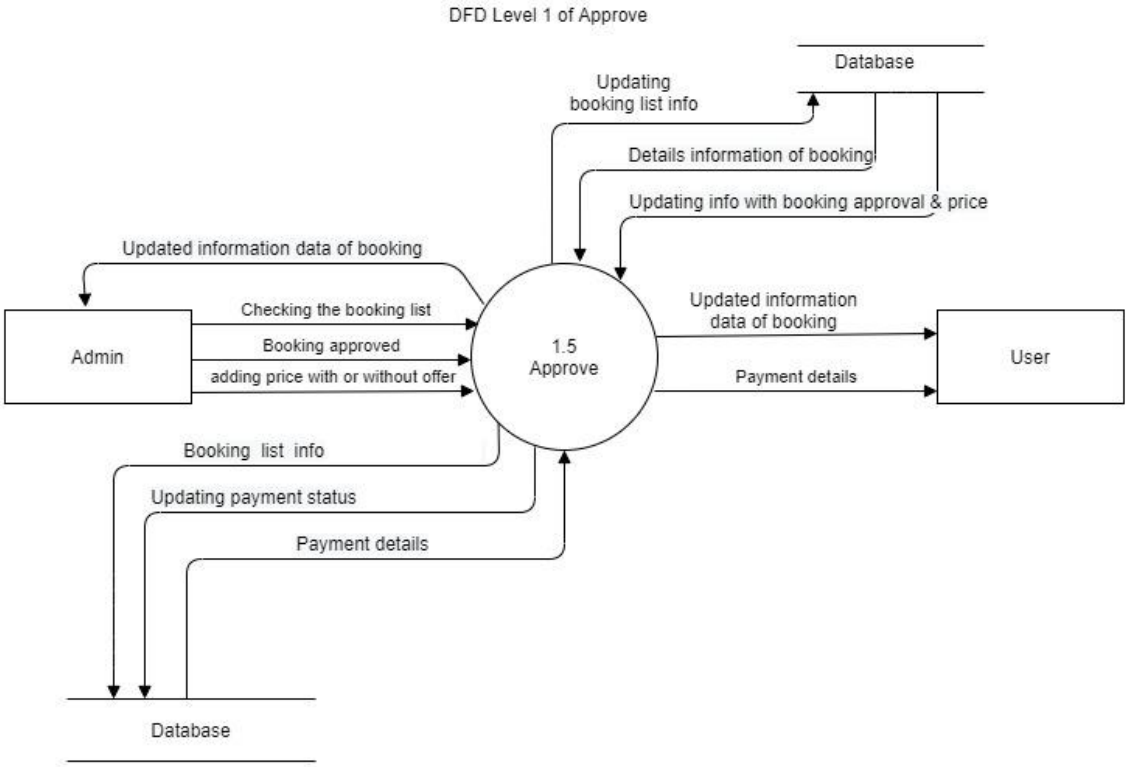
DFD Level 1 of Log in



DFD Level 1 of Update




DFD Level 1 of Request
Hospital list info with seat status
1.4 Request
Request for hospital list
Request for payment
Request for booking
request for ambulance service
User
Database
Hospital list info with seat status

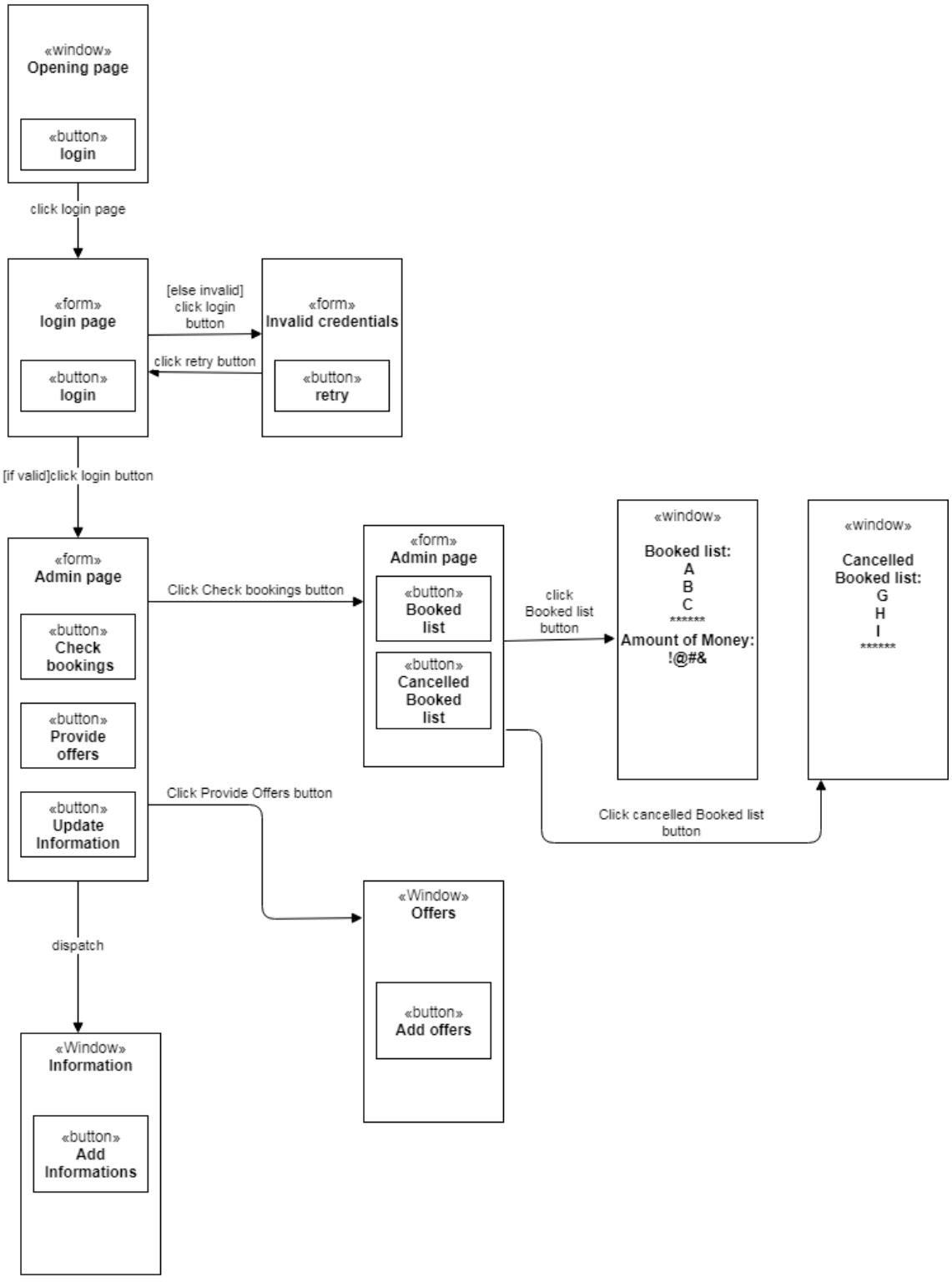

DFD Level 1 of Approve
Database
Updating booking list info
Details information of booking
Updating info with booking approval & price
Updated information data of booking
Admin
Checking the booking list
Booking approved
adding price with or without offer
1.5 Approve
Updated information data of booking
Payment details
User
Booking list info
Updating payment status
Payment details
Database

Windows navigation diagram:

This diagram is showing how the specific buttons and forms of window is taking to another page.

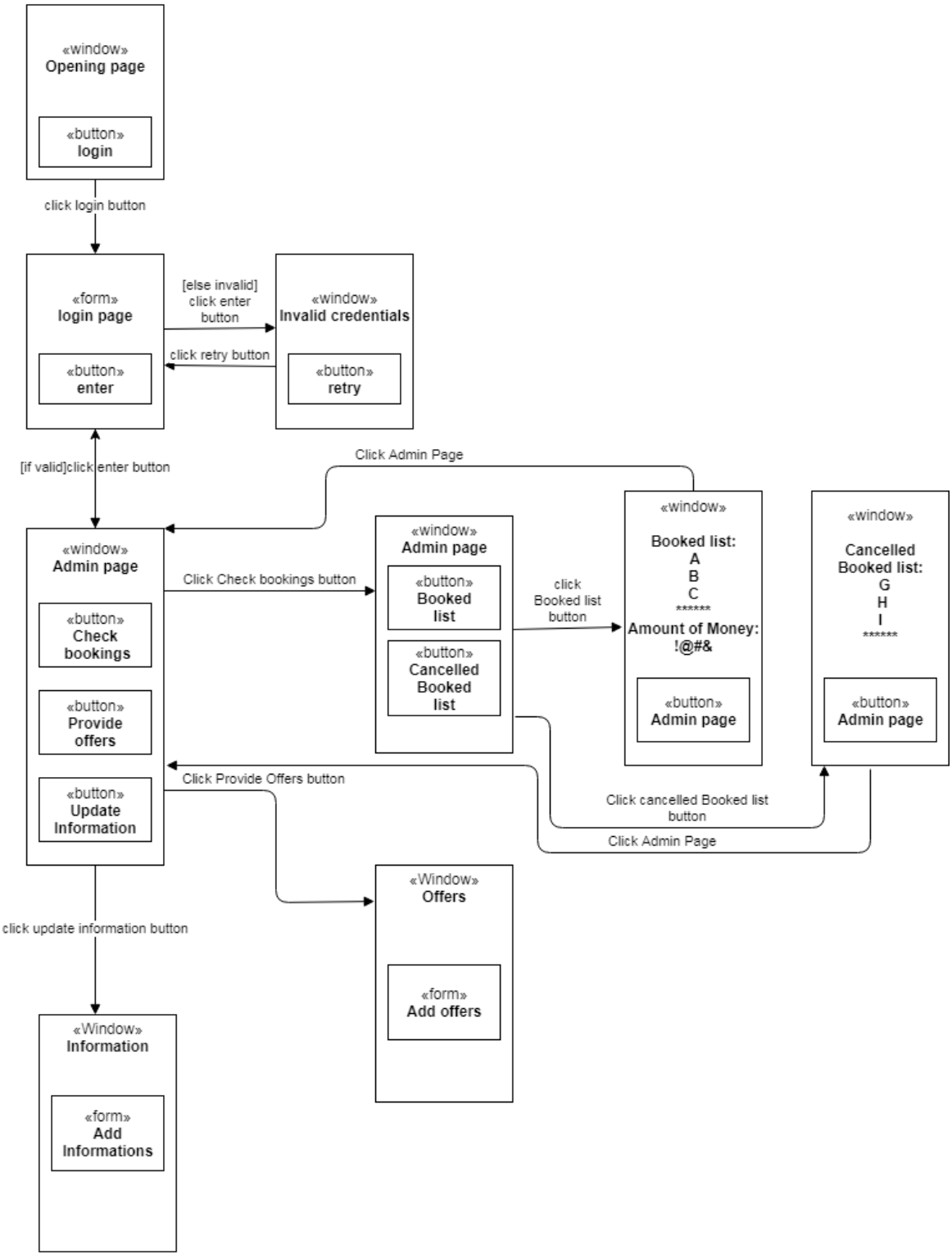
Scenario of Admin:

In this admin site, firstly there is an opening page where admin have to login with email and password. After login to the system, the system will show a window called Admin Page where three buttons are available. They are Check bookings, provide offers and Update Information. By clicking Check bookings button, admin can check how many bookings were placed and how many were cancelled. By clicking provide offers button admin can provide the offers given by the company. Lastly, by clicking Update Information button admin can update or change information provided by the authority.


«window»
Opening page
«button»
login
click login page
«form»
login page
«button»
login
[else invalid]
click login
button
click retry button
«form»
Invalid credentials
«button»
retry
[if valid]click login button
«form»
Admin page
«button»
Check
bookings
«button»
Provide
offers
«button»
Update
Information
Click Check bookings button
«form»
Admin page
«button»
Booked
list
«button»
Cancelled
Booked
list
click
Booked list
button
«window»
Booked list:
A
B
C
******
Amount of Money:
!@#&
«window»
Cancelled
Booked list:
G
H
I
******
Click cancelled Booked list
button
Click Provide Offers button
«Window»
Offers
«button»
Add offers
dispatch
«Window»
Information
«button»
Add
Informations

Scenario of User:

In this user site, there is an opening page where user have to login with email and password. After login, the system will show a window called Home page where five buttons are available. These are: nearest hospitals, searched hospitals, ambulance service, payment, new user. By clicking nearest hospitals, user can see hospital address and google map location. By clicking search hospitals, user finds a form to search hospital name. By clicking Ambulance service button user can find the list of ambulance number and driver's number if there is not any the system will immediately notify user. By clicking to payment button user can get options for both offline and online payment. New user have to communicate with help service to use this system.


«window»
Opening page
«button»
login
click login button
«form»
login page
«button»
enter
[else invalid]
click enter
button
click retry button
«window»
Invalid credentials
«button»
retry
[if valid]click enter button
Click Admin Page
«window»
Admin page
«button»
Check
bookings
«button»
Provide
offers
«button»
Update
Information
Click Check bookings button
«window»
Admin page
«button»
Booked
list
«button»
Cancelled
Booked
list
click
Booked list
button
«window»
Booked list:
A
B
C
******
Amount of Money:
!@#&
«button»
Admin page
«window»
Cancelled
Booked list:
G
H
I
******
«button»
Admin page
Click Provide Offers button
Click cancelled Booked list
button
Click Admin Page
«Window»
Offers
«form»
Add offers
click update information button
«Window»
Information
«form»
Add
Informations

Conclusion

Finally, we believe that this system will help a number of people who are getting in huge trouble to find hospital cabin and ICU from their home. People can access this system from anywhere of the country and this system will be eligible to every corner of the country. And also hope that the system will revive the medical situation of our country slowly but surely.