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Hotel Management System

Introduction to software engineering

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Chapter 1

Introduction

- **Company introduction**

Sisuru bowa rest is located on the Sella road, in Katharagama. They ensure to offer a friendly and courteous service while maintaining a clean, comfortable and well maintain premises for their guests.

The meals are prepared to order in time, nothing is pre-cooked, they allow a little time so that their qualified chefs can be ensure the meal is prepared with expertise and care.

The special climate and green nature around the hotel will make you feel better.

- Safari Service
  They organize safari tours to yala national park according to the guest's requirements.

- Comfortable A/C rooms or cottages
  - Comfortable A/C rooms or cottages are available, and every cottage have 3 rooms with whole equipped king size beds and spring mattress.

  - Cottages are furnished to easily accommodate up to 2 to 5 people per room.

  - Entire cottage or individual rooms can be purchased.

- Swimming pool
- Attached bathrooms and hot water facilities
- Satellite TV facilities
- Breakfast, lunch, dinner
- Bar
- Children's park
- Spa
- Badminton court
- Parking space

- **System introduction**

    - The current manual system uses paperwork and direct human language communication by mouth to manage the hotel. This delays information transmission in the hotel.
    - Booking is done through by phone calls or through visit to the hotel booking office.
    - The guest's personal details (name, age, nationality etc.) are input during booking in
    - The receptionist orders for preparation of the guest's room before his/her check in date. The documents are transferred manually to the filling department for compilation of the guest's file.
    - On the reported date the file is transferred to the reception and the on checking in the guest is given the key to his allocated room, he also specifies if he need room service.
    - The receptionist hand over the guest's file to the accountant on the next table.
    - Here the guest pays the accommodation and meals fee.
    - The guests file uploading daily basis of his expenditure costs.
    - For a one meal customer the bill is generated immediately after ordering and he pays at the accountant desk before leaving.
    - During checking out of guest, their expenditure outlines are generated a day before checking out date.
    - The guests receive their outlines at the accounts desk as they check out, when they pay for bills balance if any.

Background and Project Objectives

Background

The process starts from customers coming to the hotel to make reservation through the hotel receptionist. The customer booking details will be recorded in the system. After making the reservation system will be update automatically. After that bill is generated through the system. For extra foods and beverages, the prices will be added to the bill. Admin have the power of updating deleting and making changes of data and also have the power of creating new user profiles for each employee.

Problems in the Manual System

- **Difficulty in location of guest files**
  Due to the large number of guests' files, location of guest files during checking in, updating of daily expenditures, receipt generation and checking out is extremely difficult for the hotel employees.

- **Large storage space**
  The physical files occupy too much space of about rooms full of storage cabinets. This occupies the hotel's space that could have otherwise been used for income generation by the hotel.

- **Human and computational errors**
  Many errors enabled by the system due to tedious computations required during data processing cost the hotel management heavily.

- **Poorly generated records**
  Poorly generated records encourage omission of some important data by the employees. Such data as the guests' luggage I s omitted. This leads to security problems at the hotel such as armed robberies.

- **Complains from guests**
  Due to poor management of documents encouraged by the manual system, several cases were reported where guests complained of overcharging, charging of services not used by the guests.

- **Poor communication**
  Due to poor communication between the departments, guests are often served with services they didn't order.

- **Difficulty in data analysis**
  The accountants usually found it difficult to analyze the guests' data during generation of expenditure bills due to missing of some records.

Advantages of the new system

- the system enables easy and fast access to the guest files.
- The system provides better data management facilities
- The system enables online booking of guest into the hotel hence international guest can easily book into hotel.
- The system provides performance evaluation of the employees to ensure maximum output from the employees
- The system provides security measures to access to the hotel's information lowering data security threats
- The system help reduces the congestion of guest ensuring best service output for customer satisfaction purposes.
- Easy update of the guest record
- High customer service standards attract more guests to the hotel
- Reduction of data entry and processing errors
- Greatly reduce paper use at the hotel

Objectives

- Admin can generate the necessary reports and decide how to get the business more succeeded and also predict the changes of the business. From it the system become more efficient and really usable for all the users.
- System users can easily have done the business process. This shows the user friendliness and the effectiveness of the system.
- When a customer arrives they can easily have done the reservations without any delay. It means the system's really appropriate for the requirements.

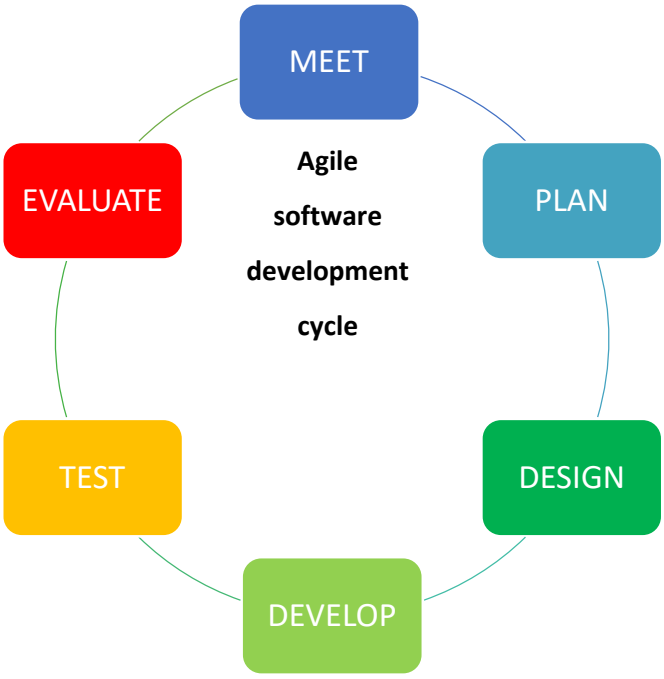
Methodology

Methodology.

The method being used in developing the system is the system development life cycle (SDLC). The SDLC we choose agile software development.

Agile software development.

Agile software development describes an approach to software development under which requirements and solutions evolve through the collaborative effort of self-organizing cross functional terms and their customer/end users.



We choose this methodology because;

- It's a very realistic approach to software development.
- Promotes teamwork and cross training.
- Functionality can be developed rapidly and demonstrated.
- Suitable for fixed or changing requirements.
- Delivers early partial working solutions.
- Good models for environments that change steadily.

The way how we done this project: -

In the begging of our project, we meet our client and then we discuss about their problem. After that we plan a project plan to achieve client's goals. There for we use our business analysist to get proper idea about this business organization. After that business analysists gather what are the requirement needed to develop the system. For that business analysist use interviews, observations, questionnaires and document analyze. And also done the feasibility studies for each requirements. They are Economical feasibility, Technical feasibility, Schedule feasibility. Then our system analysist analysis about our client's system. After that process data will be send to the System Designer to design the particular system. System designer draw ER diagrams, Data flow diagrams, Class diagrams, use cases etc. After that the documentation send to the system developers to implement the system. Then they select a suitable developing language for develop the system. Every day in development process, we test about our software and after that setup a meeting to discuss about what are the improvements to be taken for achieve our goal. Then testing part. The system testing is to ensure that the developed system meet all the technical requirements with the components and subsystems integrated. Our tester uses these testing strategies to done that. They are black box testing, white box testing and finally gray box testing. And also we done the integration part in this section. After the testing part tester deliver test analysis report about current condition of the software. In this segment we found some little things to change in this system. Then we done that part through the developers and again done the testing process. After that we move to implementation phase. In this we decide to select pilot approach because we launch our new system step by step. If our new system is operating smoothly, implementation goes whole business. In operation and maintenance phase we decide to do a maintenance part in every month. We setup meetings in every day with our

group members to discuss about current condition of our project. And also we meet our client several times during this project.

Requirement gathering methods used: -

1. Observation method

The team closely observed the hotel's activities as the guests are served at the hotel and how the management carried out its managerial activities. The team found out that the hotel indeed was in a dire need for automation of its activities to realize its maximum potential. The guest admission and booking process was not well managed by the current manual system. Hence, the team came up with this system to clearly outline the management boundaries of the two departments. The guest payment process also needed an urgent checkup as it led to congestion on the account's desk leading to time wastage. The team also observed that the guest was not well protected from unauthorized access as ill-motivated guests could easily gain access to the other guest files by posing as the real gust. From our observation we noted that the manual system denied the hotel of international guests who would have rather been potential customers through online booking.

2. Interview method

This was the most exhaustible method of data collection. The team used their data superior collection skills to extract data out of the hotel management team, the hotel employees and the hotel's guests at the moment of the data collection. The interviewers created a conducive environment in which the interviewers could feel free to let out the best they could that helped the team come up with the most effective system to fulfill their needs. Among the data collected the following was highlighted to be of a great consideration: the guests' feelings about the current management of the hotel, the employees' comfortability with the proposal of introducing a new computerized system. Many computer illiterate employees had fears of replaced per displaced by the computer literate employees, but they were assured of their survival should they be ready to prove their competence in their activities. The management dire needs for management of the hotel proceeding was put into consideration by the system developers.

3. Questionnaire method

Questionnaires were sent to several guests and the hotel's staff members into whom they filled in the information that they greatly aided the team to come up with a system that would-be user friendly to all the hotel users. The questionnaires were conduct orally to the users who were present at the hotel during the time of data collection and sent to appropriate staff members who were away at the time of data collection. The questions exhaustively dealt with how the system would ensure maximum output of the hotel to fully realize it's potential. The responses were used to develop this system accordingly.

4. Document revision

Both the guest and staff documents were revised. Several data entry errors and retrieval problems were encountered. The system has put into consideration an error recovery strategy that will ensure maximum data integrity.

Chapter 2

Functional Requirements

- **Reservation**

  Receptionist get details about customer and fill the forum.
- **Search rooms**

  In this system user can search any rooms for reserve or can check the availability.
- **Issue bills**

  User can issue a bill for relevant customer using the room number.
- **Manage room details (add, update, delete)**

  Admin can add rooms according to the room category. And also can update and delete particular room.
- **Manage user profile (add, update, delete, view)**

  Admin can create user profiles for system users. And also can view who are the users' login in to the system in any time. Additionally, admin can delete user accounts and can update user's password.
- **Set rates for rooms and beverages**

  Amin can set rates for the rooms, foods, desserts and drinks. And also can update and delete any kind of things in this system.
- **Taking backups**

  All reports and other details will be backup in every week.
- **Staff details**

  Admin can enter all details about employees to the system. And also can update and delete records of employee.
- **Booking report**

  Admin can view about all reservation details with customer details. In this admin can generate daily, monthly and annual reports.
- **Invoice report**

  Through this report admin can view all invoices according to the issuing bills. Invoices from reservation and restaurant. In this admin can generate daily, monthly and annual reports.
- **Dash board**

  Through this admin can get idea about current situation of the business.

Non-Functional Requirements

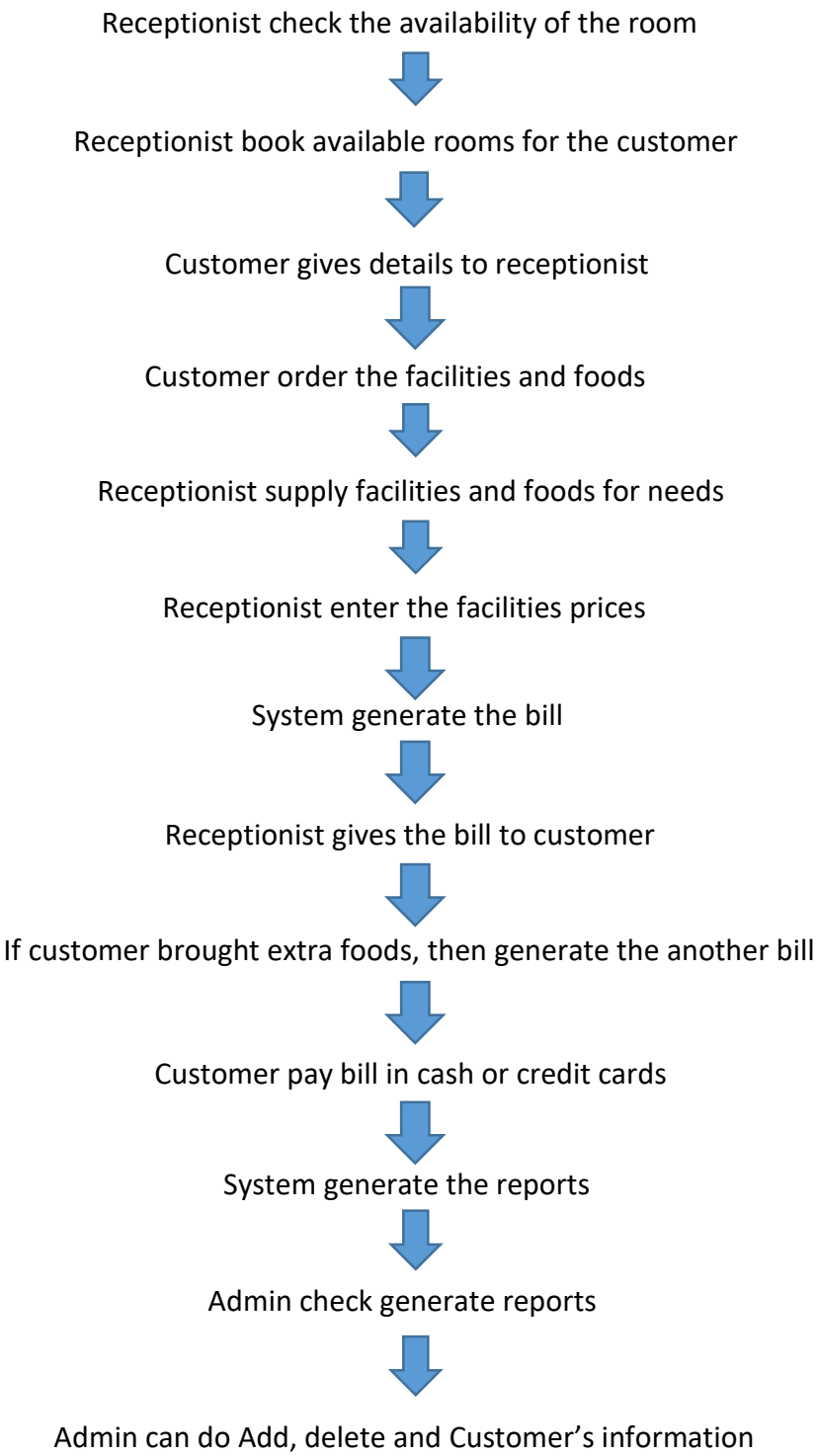
- **Backups/ Disaster recovery**
  If a system creates backups, it is very good for protect system data. Sometimes data can be crashed. Then we can have used backup data to run the system.
- **Nice interface**
  System interface is nice; it will be affected to the system users. They use this system for a long time. There for it is very good for system users.
- **User profile**
  Crating user profiles for system users is a good way to attract users to the system. In that user feel they have a security what they have doing.
- **Security of the document**
  If system document has a security it is good for system users. In reduce unauthorized parties access of the documents.
- **Usability**
  System is usability for every user who use this system.
- **Simple interface**
  Interfaces are very simple. So new user can identify system not taking too much time.

Domain Requirements

- Customer details.
  (name, NIC, Contact number, Order type, Customer type, Number of dates)
- Employee Details.
  (user ID, user name, NIC, gender, address, age, category, photo)
- System user details.
  (user ID, user name, password, employee type)
- Food item details.
  (Food id, food name, unit price)
- Dessert item details.
  (Dessert id, dessert name, unit price)
- Drinks details.
  (drink id, drink name, unit price)
- Room details.
  (Room number, room category, price)

Chapter 3

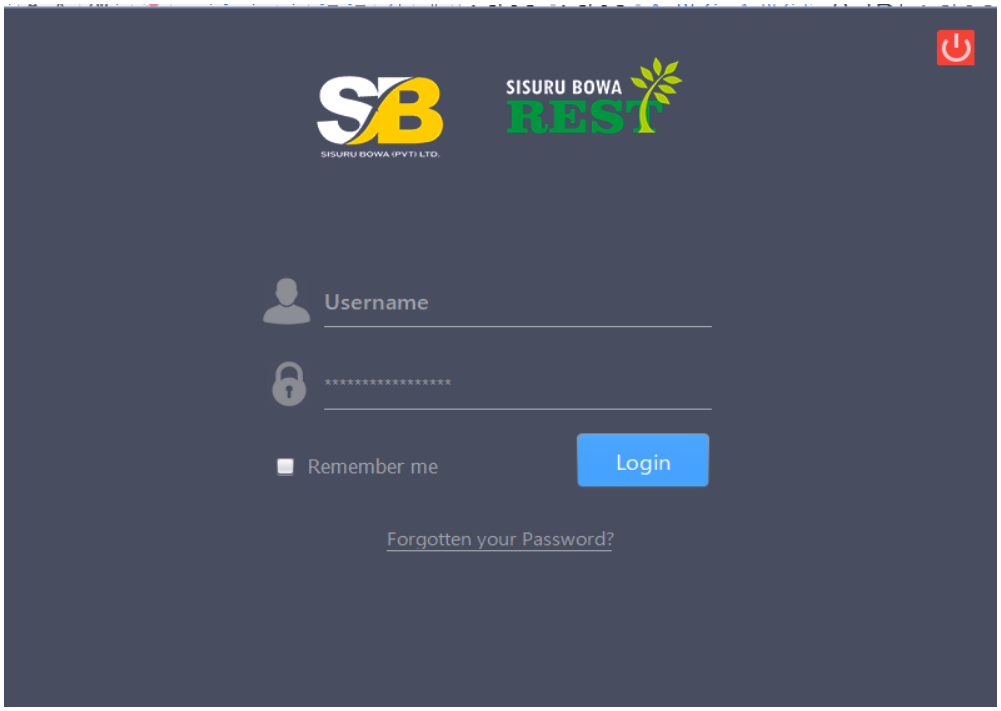
Architectural Design

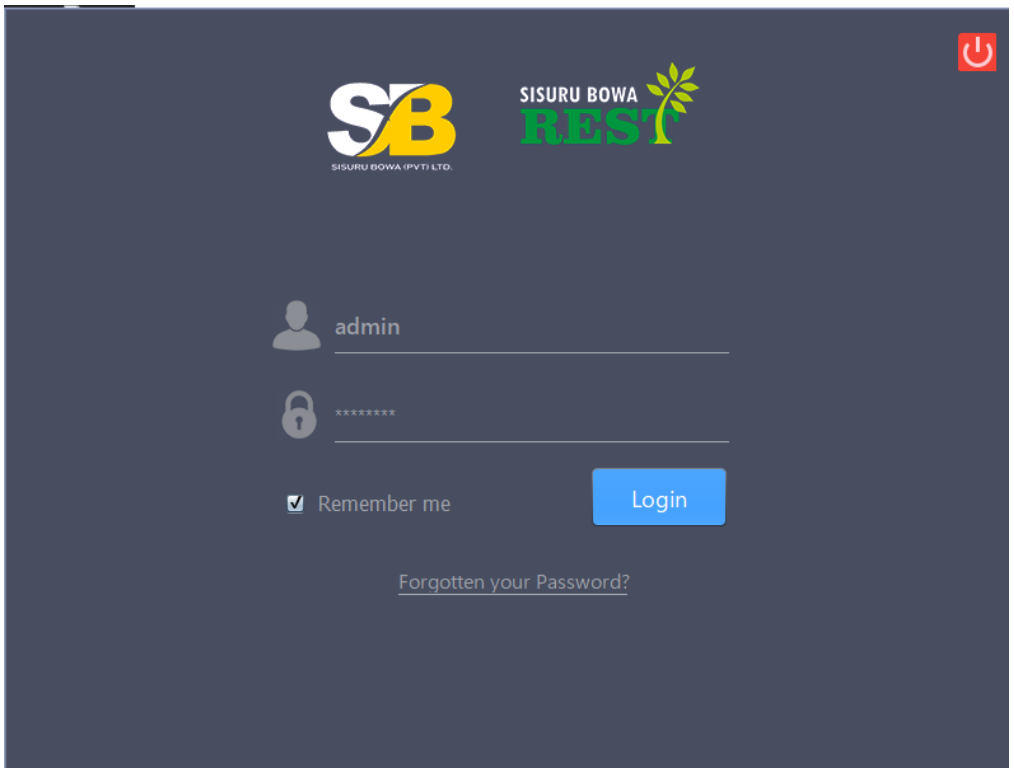


Use case diagram

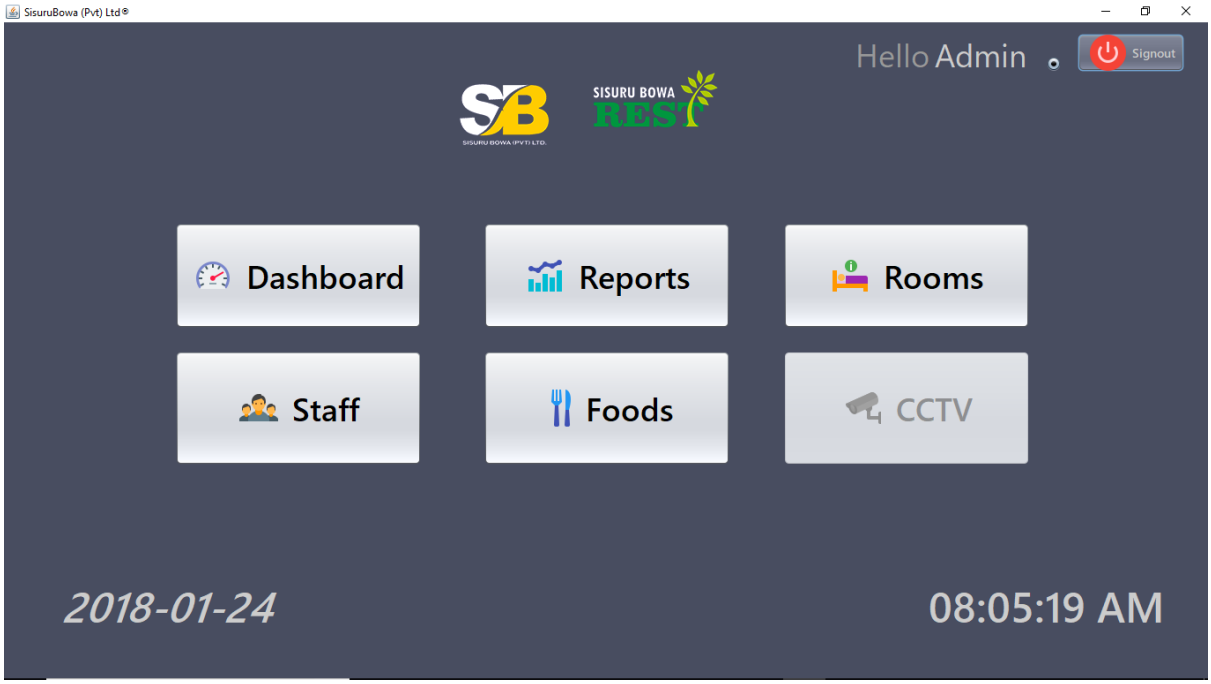
User Interfaces

Interface 1

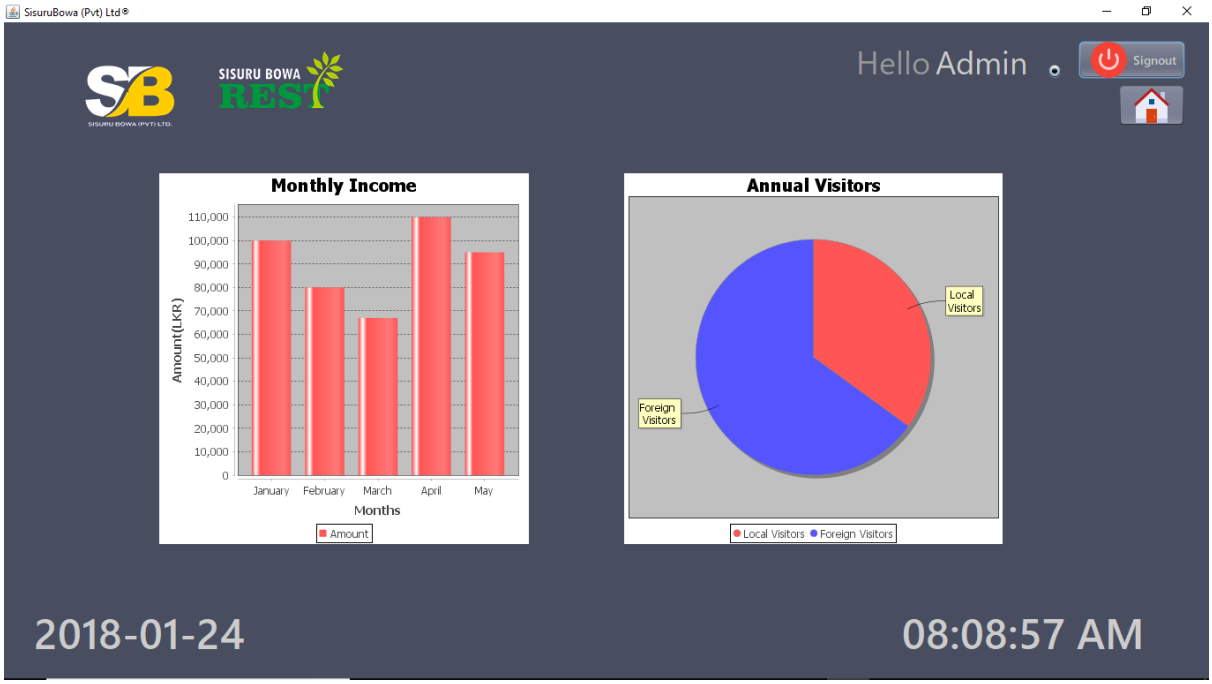




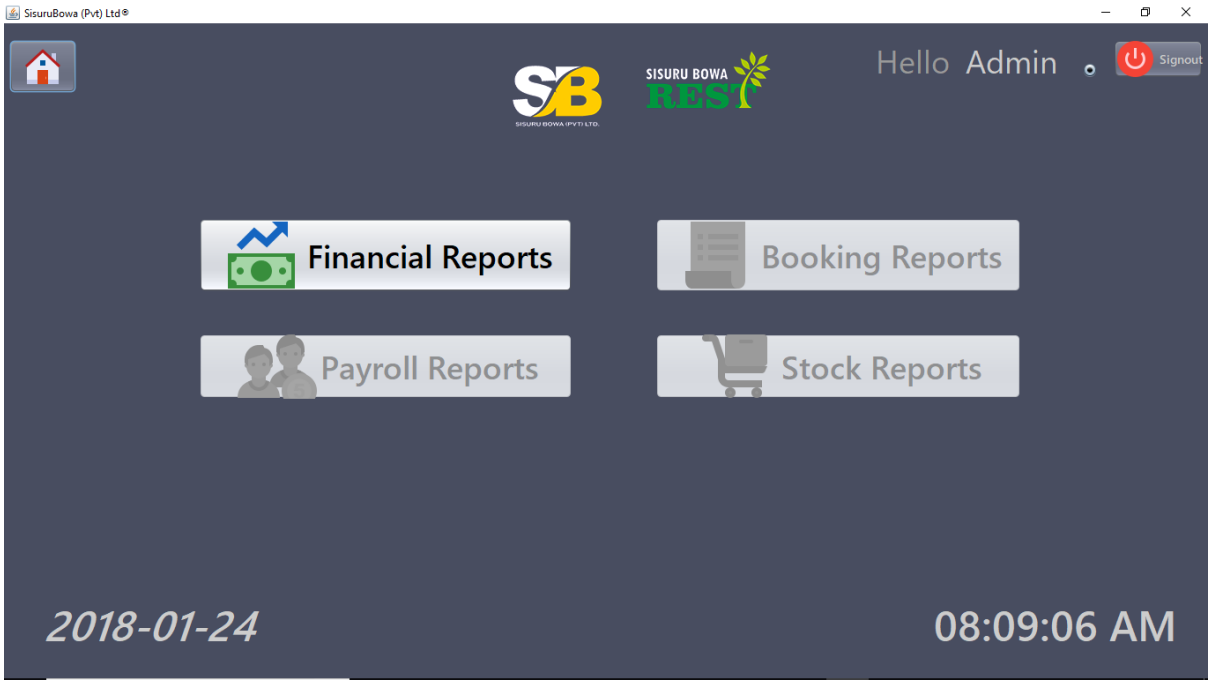
Interface 2



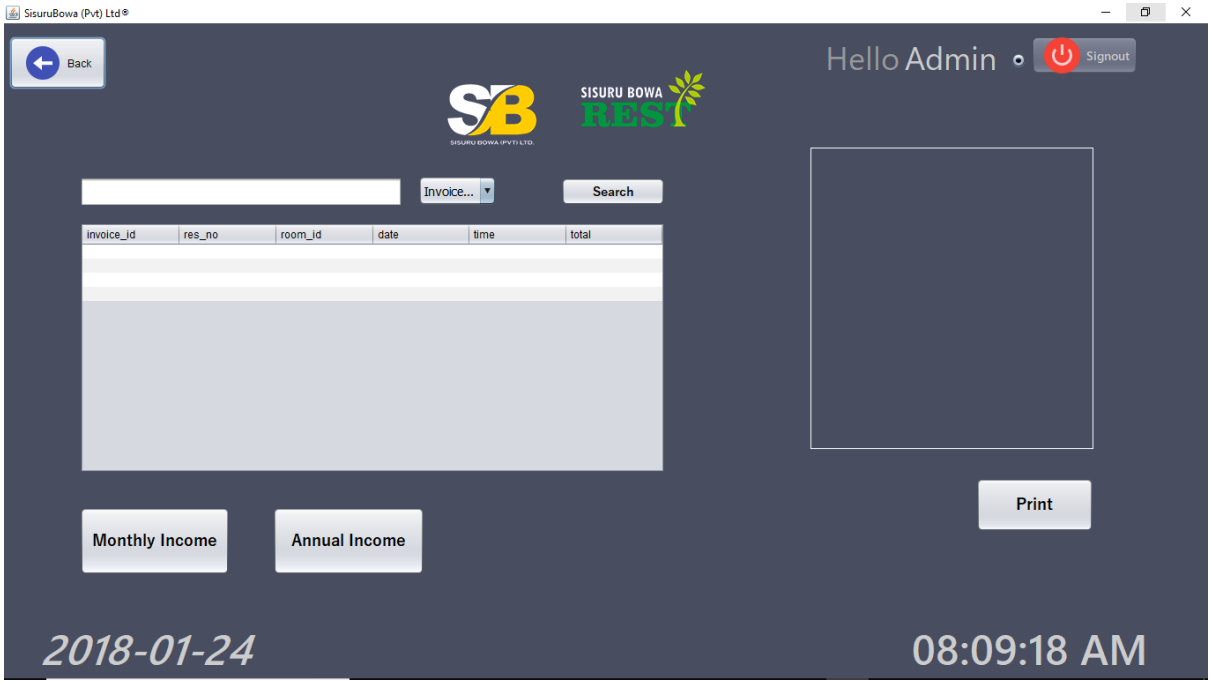
Interface 3



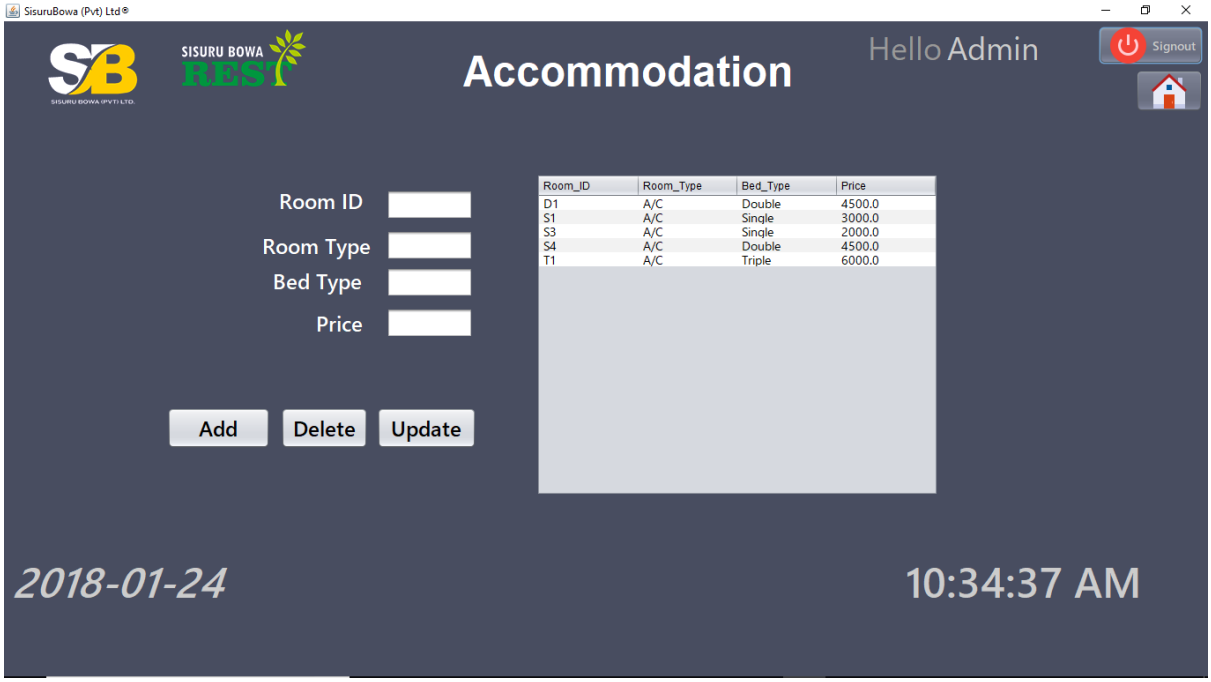
Interface 4



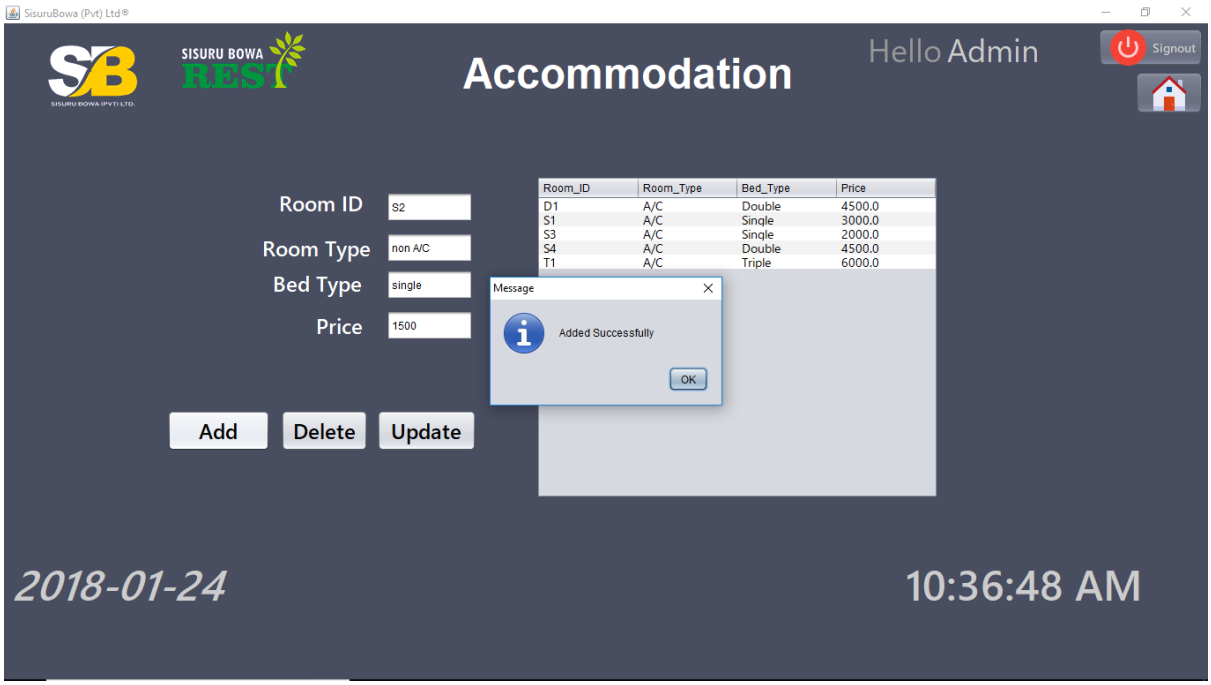
Interface 5



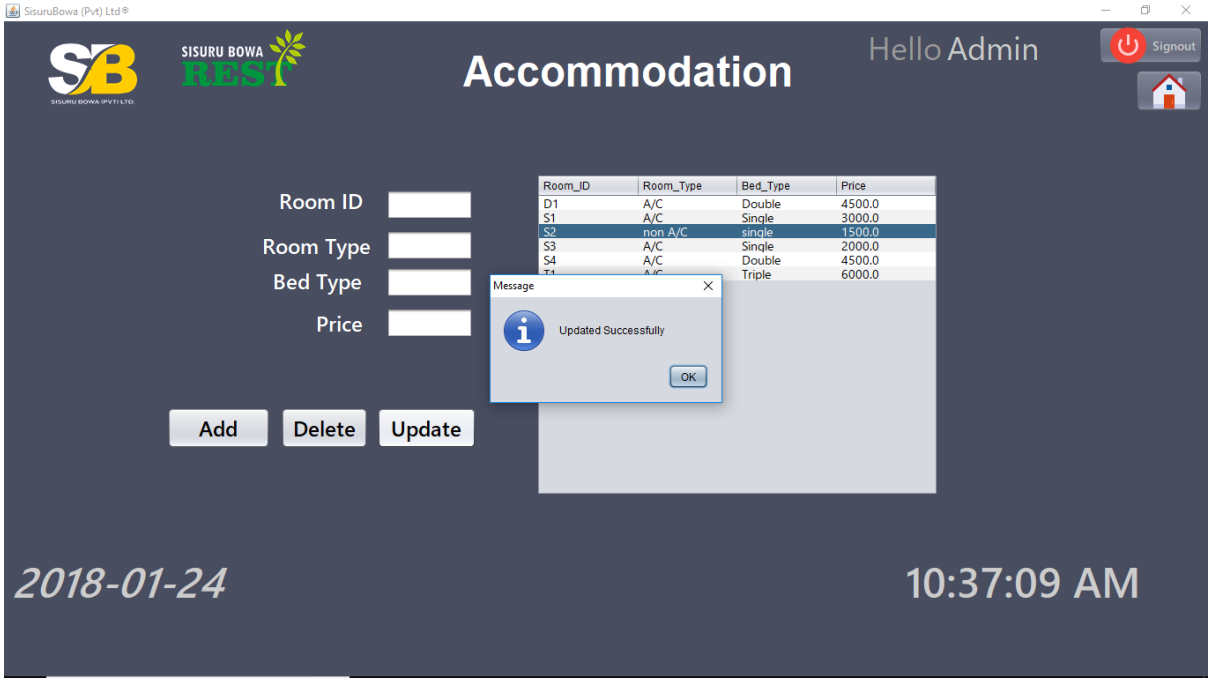
Interface 6



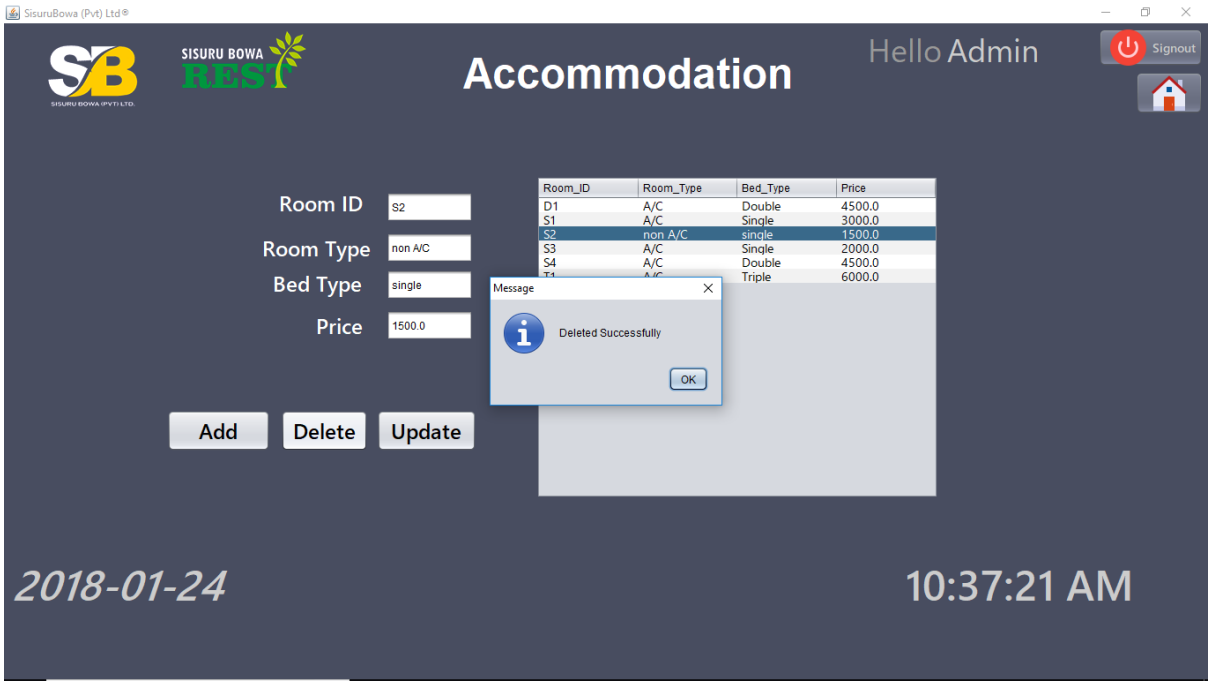
Interface 7



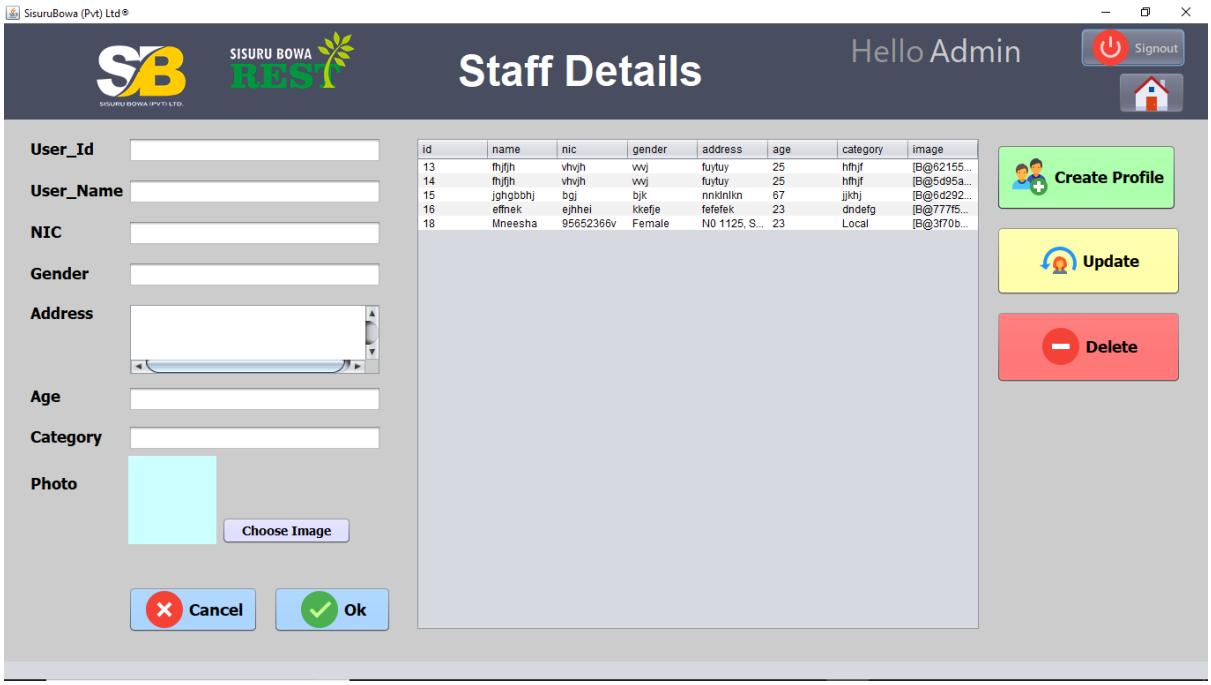
Interface 8



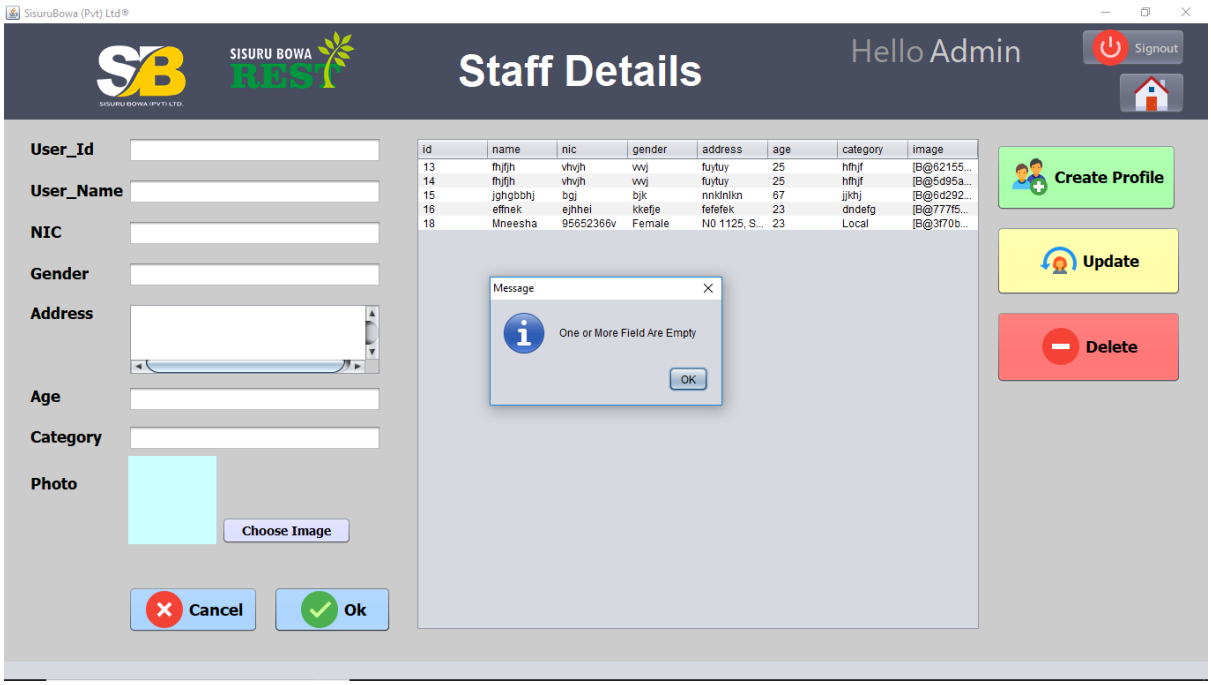
Interface 9



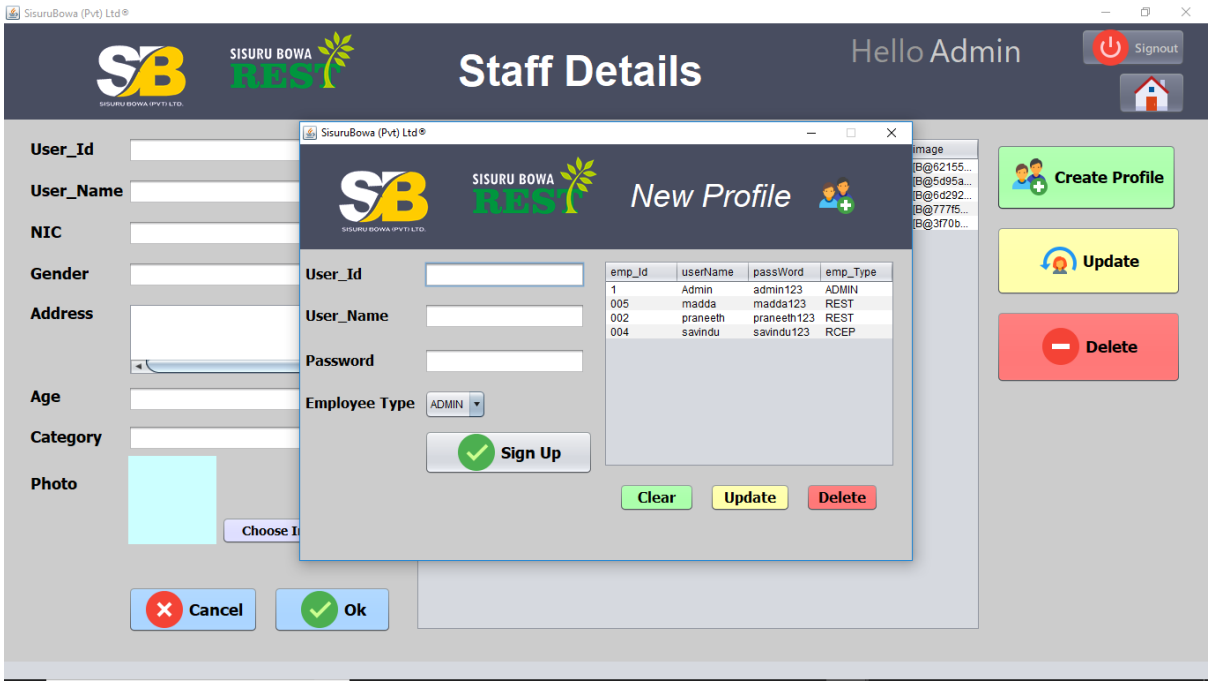
Interface 10



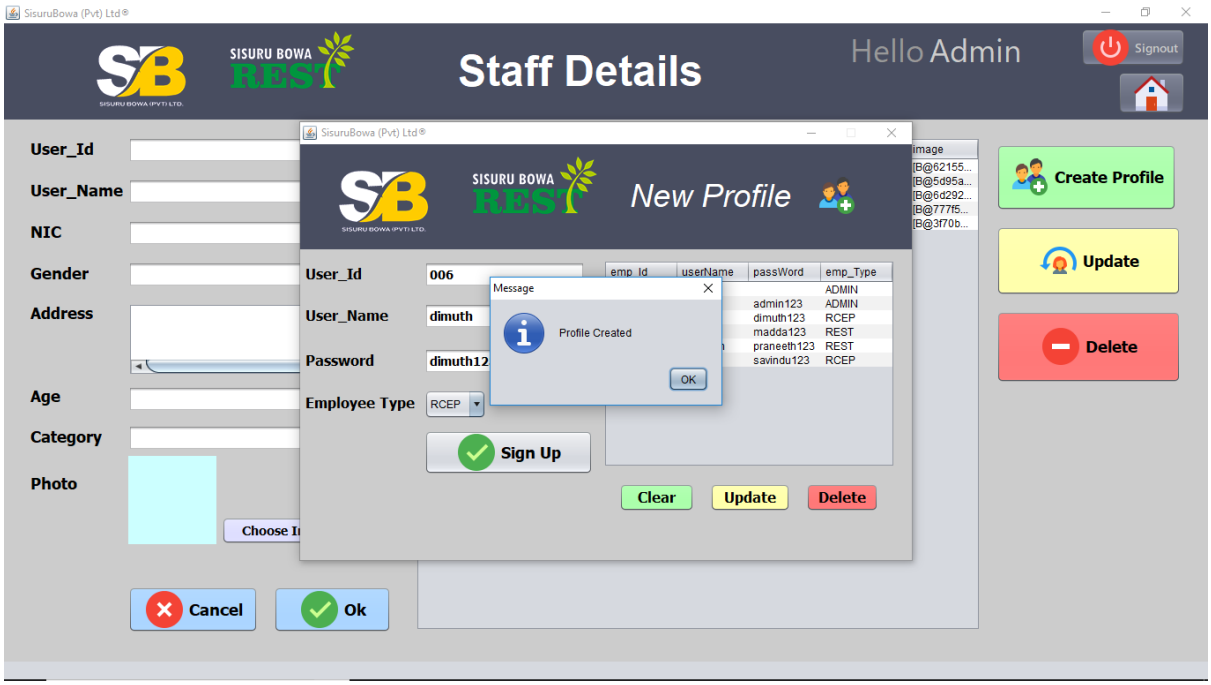
Interface 11



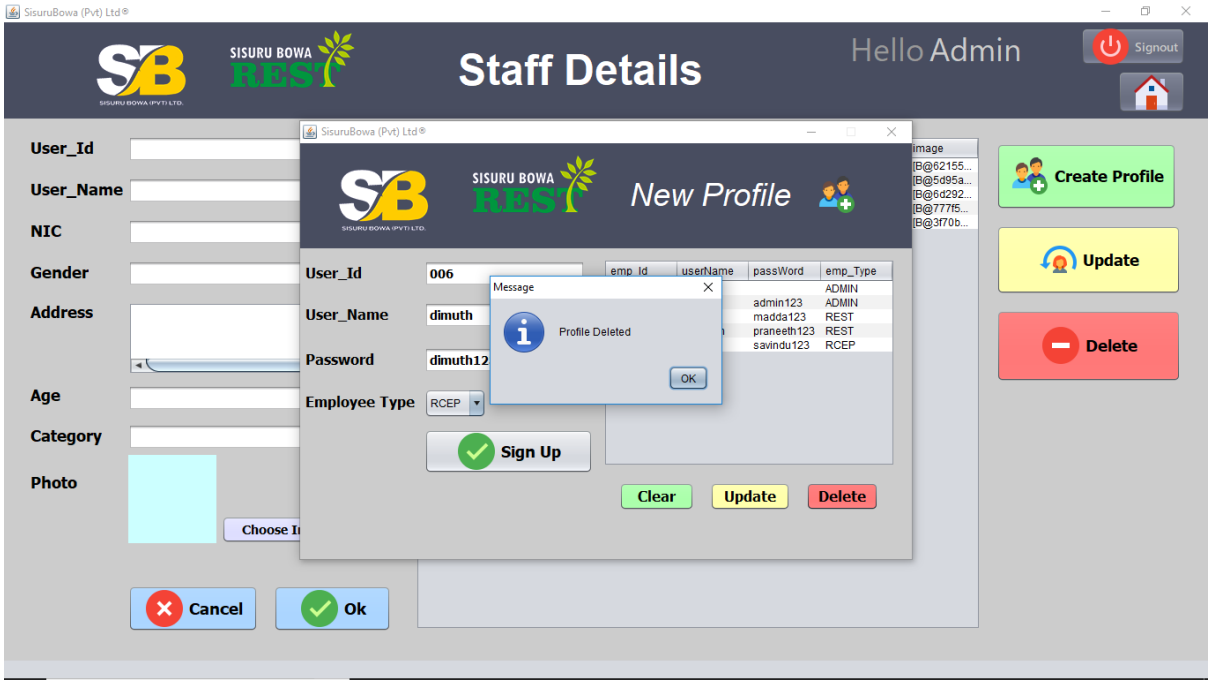
Interface 12



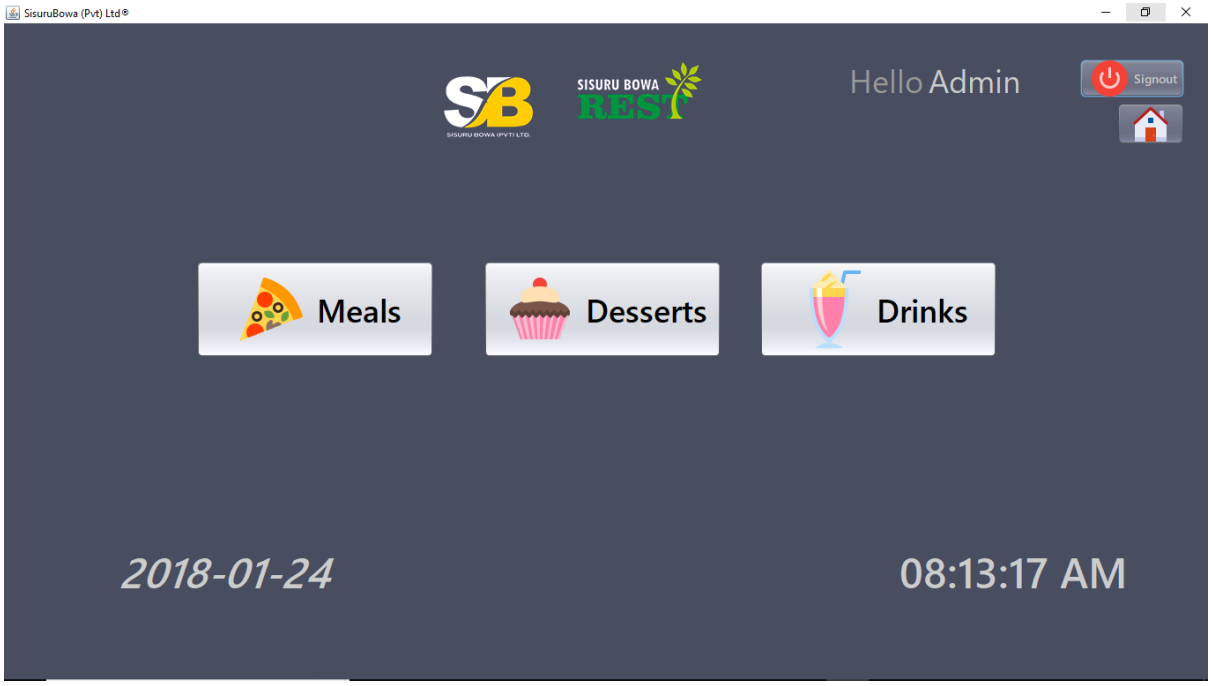
Interface 13



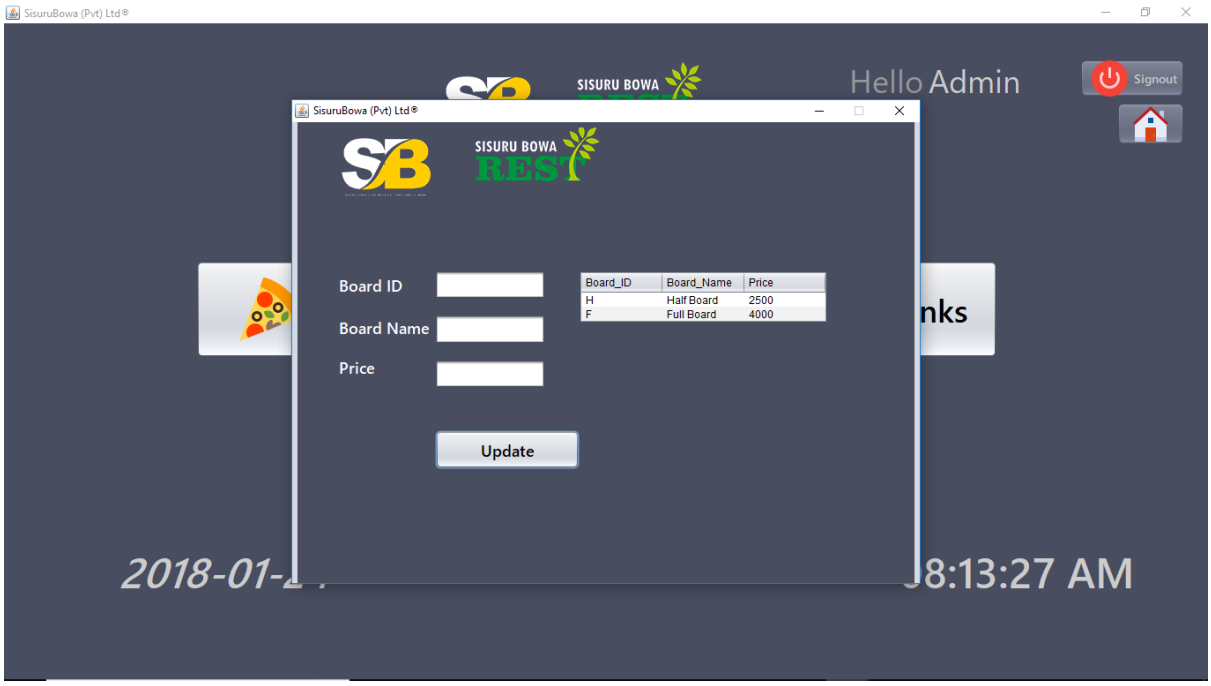
Interface 14



Interface 15



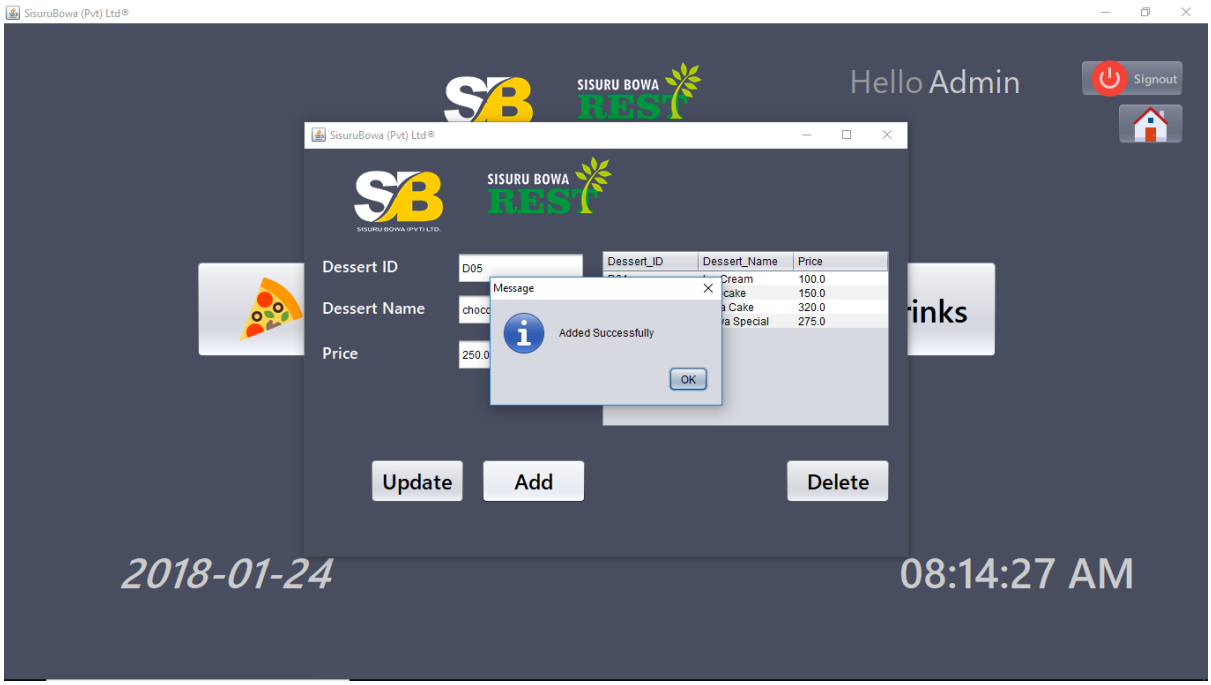
Interface 16



Interface 17

Interface 18

Interface 19



Interface 20

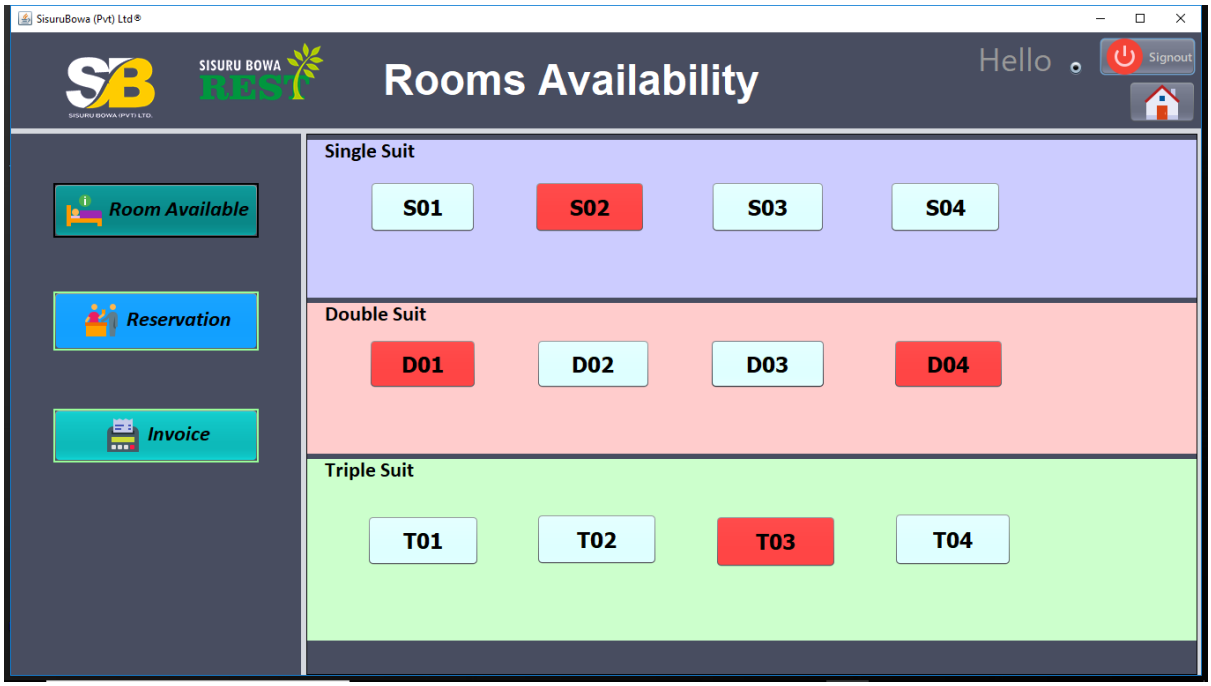
Interface 21

Interface 22

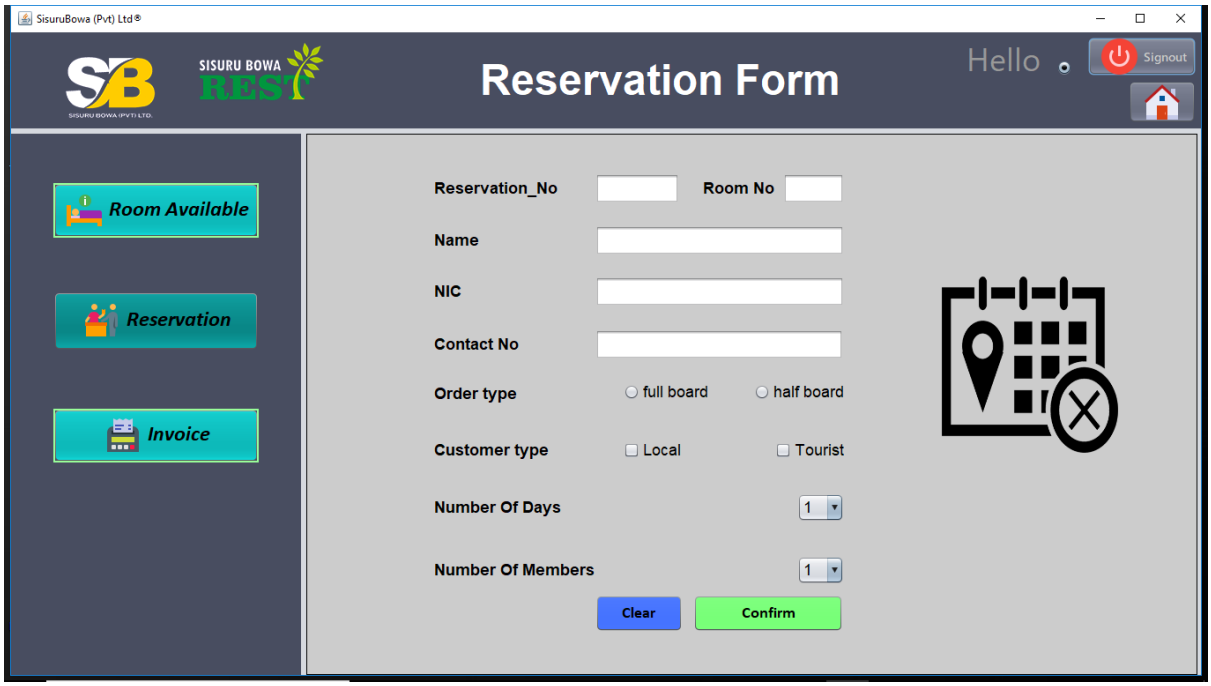
Interface 23

Interface 24

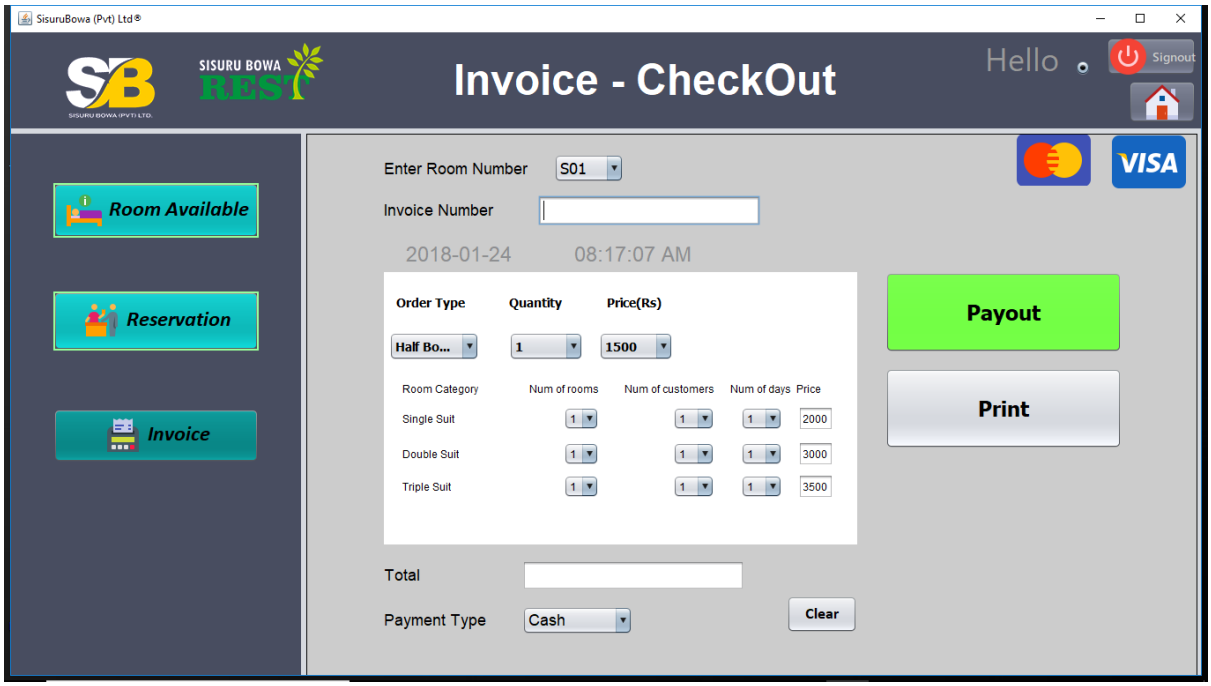
Interface 25



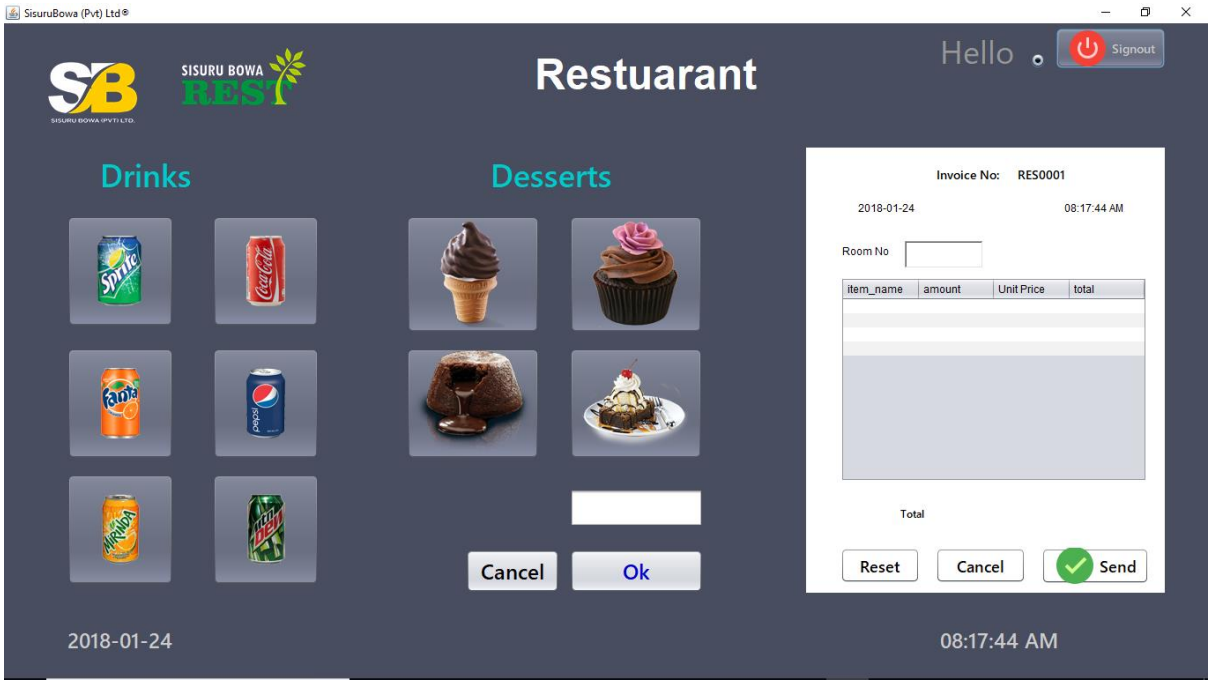
Interface 26



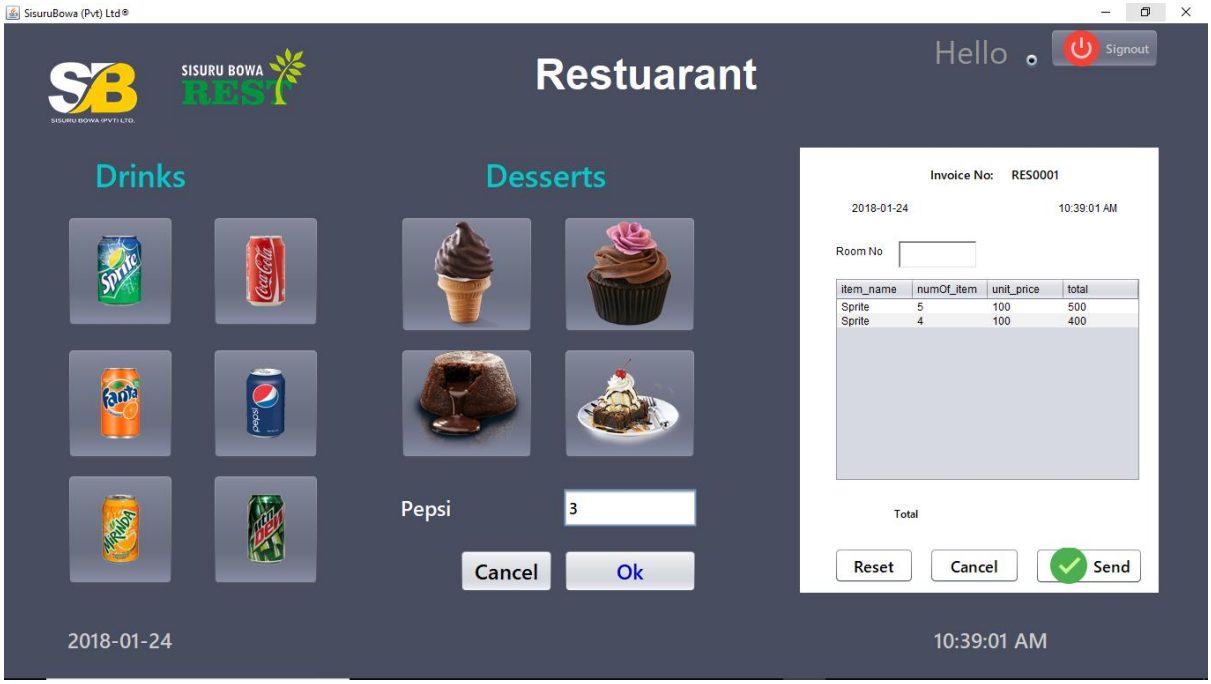
Interface 27



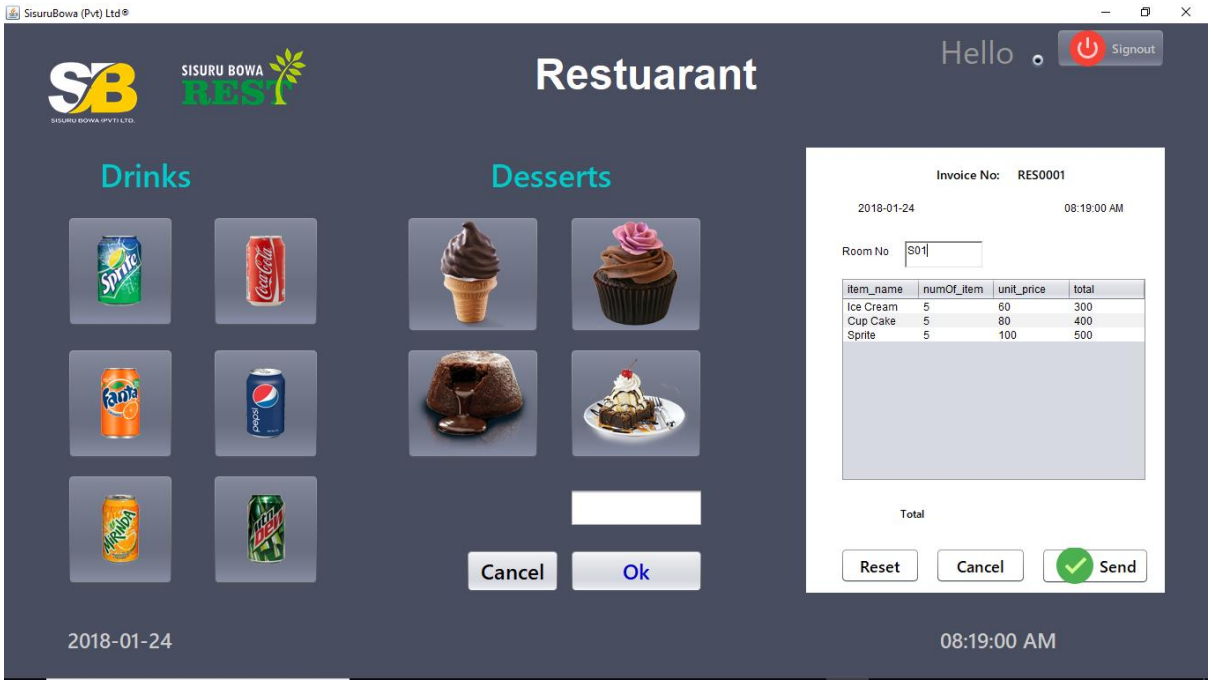
Interface 28



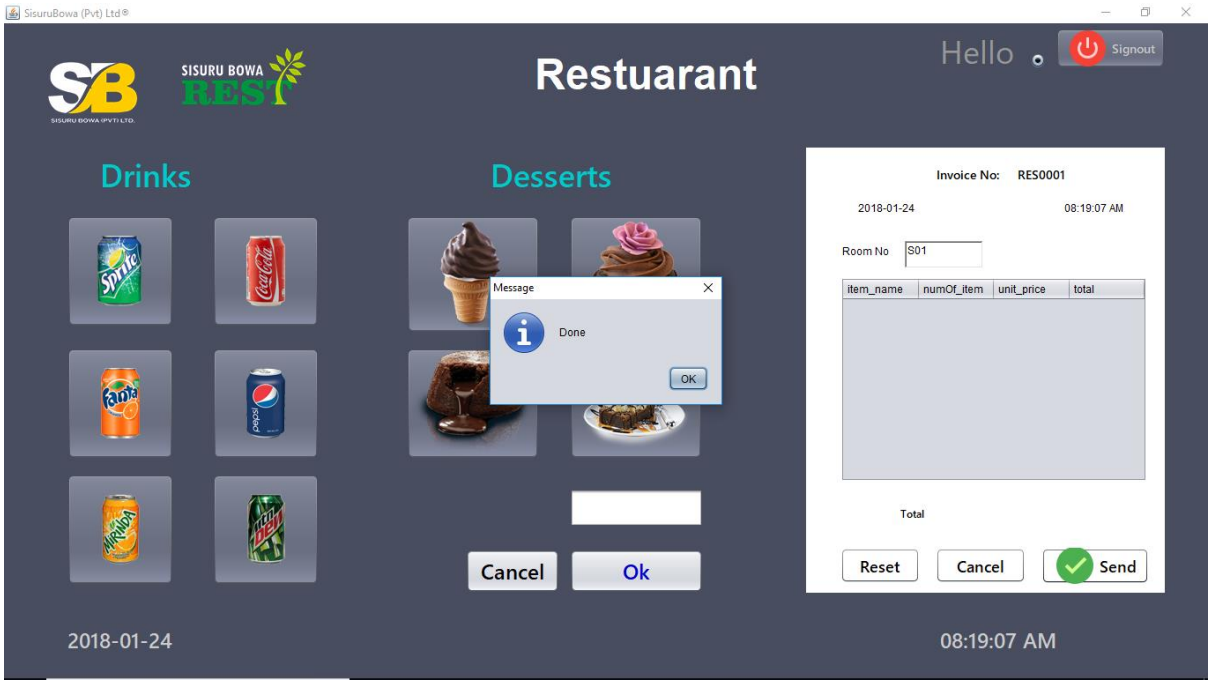
Interface 29



Interface 30



Interface 31



Chapter 4

Testing Part

There are several testing strategies. They are black boxing, white boxing and gray boxing strategy. White boxing mainly focusses about internal codes. Gray box testing is combination of both white and black boxing strategies. For this part we selected black box testing strategy. In this testing techniques in which functionality of the software d test is tested without looking at the internal code structure, implementation details and knowledge of internal paths of the software. This type of testing is based entirely on the software requirements and specifications. In black box testing we just focus on inputs and outputs of the software system without bothering about internal knowledge of the software program.

User logging interface: -

Inputs: - user name, password

out puts: - can access to other interfaces.

- If user enter wrong user name or wrong password system will automatically show message "invalid user name or password".
- If user couldn't remember password, then user can select forgot password function and password will be changed through the system.
- And also user can select remember me function. Then next time that data will be save in automatically. Without typing user name and password user can log into the system.

Create user profile interface: -

Inputs: - user name, employee ID, password, employee type.

out puts: - Successfully create profile.

- This part can access only for system admin.
- Admin should fill the details correctly. Other vise can’t create profiles.
- If admin missed any detail in that form can’t create new user profile. And also every field is mandatory.
- If admin entered wrong employee type can’t go to the next step. There are only 3 types of employee types.

- If entered details was correct system will generate automatically message “Profile create successfully”.

Sample user manual

- **User login interface**

  First admin can only have logged to the system using admin's user name and password. (See interface 1)
  If user have already user account can log to the system using the user name and password.
  From this user can log into admin part, Receptionist part and restaurant.
  After that you can select what are the places want to go. (See interface 2)

- **Admin dash board**

  This is a summary about data in the databases which represented using live widgets. Whole things done by automatically in this part. (See interface 3)

- **Admin staff details**

  In this system, user can fill all the details about employee and then select a picture to set as a profile picture. (See interface 10,11)
  If user select ok button data bases will be updated and if click cancel that data doesn't update.
  User can select data in the table and can update and delete relevant users.

- **Creating user profiles**

  When user select create profile there is a new pop up form for that and through that can create new user profiles. (See interface 12, 13, 14)

  First of all, should fill the form and click sign up button. If details are valid new user can access to the systems.

  System will be update data bases and user can clear, update and delete.

- **Admin reports**

  Generate Financial Reports (See interface 4,5)

To get invoice details, select one out three types given below in the combo box and type the relevant data in the text field and click the Search button. Then it will display.
To get Monthly Income details, Click the Monthly button. Then it will display.
To get Annual Income detail, Click the Annual Income button. Then it will display.
To Print all above detail invoices, Click the Print button.

Generate Booking Reports

- To get Booking Details Click the Booking Reports button. Then it will display on the panel.

- **Admin foods and rooms**

Room details (See interface 6, 7, 8, 9)

To add new room to the system, Click the Add button.

To delete room, Click the Delete button.

To change/update room details, Click the Update button.

Food details (See interface 15,16,17,18,19,20,21,22,23,24)

- To change/update meal details, Click the Update button.

- To add new dessert to the system, Click the Add button.
- To delete dessert, Click the Delete button.
- To change/update dessert details, Click the Update button.

- To add new drink to the system, Click the Add button.
- To delete drink, Click the Delete button.
- To change/update drink details, Click the Update button.

- **Receptionist-Invoices**

  At first user enter the room number using a combo box and then enter the invoice number. After that user can select the order type, its quantity and its price also. All of those selection occur through a combo box. (See interface 27)
  Next can select number of rooms, number of customers, number of days and price according to the room category. Finally, after the calculation of the total amount select the payment type (cash / credit card). And then there's a pay button to make the payment and clear button for removing entered items and exit button also there.

- **Receptionist-Rooms availability**

  After click on the button to book a room then those details connect with a database and store all the details of the booking. if the room is booked then that particular room number button will be changed into another color. (See interface 25)

- **Receptionist-Reservation**

  Guest will be asked which type of room he wishes for and if that type of room is available, then receptionist can check if any free rooms are available in the hotel database and subsequently reserve it for a guest. (See interface 26)
  Receptionist can enter the guest details in the database if it wishes to stay in the hotel. After inputting reservation number, name, NIC, order type, customer type, number of days, number of members and contact number, the guest details will be stored for database
  Then receptionist can confirm guest arrival, clear the enter details and exit the system.

- **Restaurant**

  Through this part customer can select extra drinks and desserts. (See interface 28, 29, 30, 31)
  If user select particular item using buttons there is a label to show what is selected. Then user can enter number of items and then select ok button it will go to the bill through the data bases. User can select every food item according to customer's choice.
  If user select cancel button deselect the button and clear the food item label and number of item text box.
  In the invoice, invoice number will generate automatically. And also bill date and time will be set according to the system.
  Room number should enter to the relevant text box.
  If user select send button to calculate total and data will update in invoice table. If user select cancel button bill is not send. User can reset that bill by clicking reset button.

If user click home button user can go to the home page. Every page has a sign-out button to log out from the system.

Conclusion

We done a good project about hotel management system. In this we learn about lots of things about software project development. And also learn about software development life cycles and phases of it. As we done this group project we learn about how to do real software implementation. Our client decide to run our system and take action according to improve this software.

Appendix

Work Load

- Abeysiriwardana D Nimashi K 10%
- M Sandali Jayamaha 10%
- Perera G N Shavindi 10%
- Praneeth R G 10%
- Shashikala N G Heshani 10%
- Shivanka D A Savindu H 10%
- Suriarachchi M Nilakshi 10%
- Wanigarathna Dimuth N 10%
- Chithrananda B A Kolitha M 10%
- Perera M S Dilshanika 10%