



KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY

Department of Computer Science and Engineering
(CSE)

Course No: CSE 2200

Course Title: Advanced Programming

Project Title:

Buffalo Burger

(A cloud restaurant management application)

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Objectives

“Buffalo Burger” is a windows-based desktop application. Since java is a platform independent language and we used **Java** language and **JavaFX** (a software platform for creating and developing desktop applications) to complete the project, so this application can be used in different platforms.

The objectives of the project are:

1. To develop an application that deals with the seller and customer of a cloud restaurant.
2. To develop an application that helps the management of the cloud restaurant to manage their sales availability and price.
3. To provide user security in using application by providing user security login where for every user there is unique username and user preferable password.
4. To create a signup form to provide customer details to management.
5. To provide food details to customer with user friendly UI.
6. To provide opportunity with different payment system for users.
7. To show the orders selected by customers and provide opportunity to them to cancel some selected items or cancel whole order before confirming their order.

Introduction

“Buffalo Burger” is a windows-based desktop application. This is an application for cloud restaurant system. Here the customers can order foods according to their wishes.

In this application, there is a sign-up form to create a user-account for customers. Customer detail information should be provided during signing up.

To sign in through the application, every user should provide their unique username and password. Without password and username, none of registered users can't enter into next pages.

When a user logged in, he/she enters to menu page, where he/she can select him/her preferable food items and after choosing these, he/she can go through the cart page.

In cart page, he/she can check his/her choice list and he/she can change he/she wants.

There is a portion for providing payment method in the cart page. For making this application user friendly, there are different payment method. They are:

- i. Cash on delivery
- ii. Bkash
- iii. Nagad
- iv. Rocket
- v. Master card
- vi. Visa card

User can choose their preferable payment method.

The admin can access all the order from notification page. Every order is notified to admin with time of order, date and also all other information.

There is a portion where admin can set the price of all items and also availability. If any product is not available, then admin simply change ta availability for this product and customers can't order it then.

“Buffalo Burger” is a windows-based desktop application where **JavaFX** is used to complete whole project.

JavaFX is a software platform for creating and delivering desktop applications, as well as rich web applications that can run across a wide variety of devices. **JavaFX** has support for desktop computers and web browsers on Microsoft Windows, Linux, and mac OS, as well as mobile devices running iOS and Android.

JavaFX is a Java library used to develop Desktop applications as well as Rich Internet Applications (RIA). The applications built in **JavaFX**, can run on multiple platforms including Web, Mobile and Desktops. This is a mentionable advantage of using **JavaFX**.

JavaFX is intended to replace **swing** in Java applications as a **GUI** framework. It provides more functionalities than swing. Like Swing, JavaFX also provides its own components and doesn't depend upon the operating system. It is lightweight and hardware accelerated. It supports various operating systems including Windows, Linux and Mac OS.

Features of JavaFX

Features	Description
Java Library	It is a Java library which consists of many classes and interfaces that are written in Java.
FXML	FXML is the XML based declarative mark-up language. The coding can be done in FXML to provide the more enhanced GUI to the user
Scene Builder	Scene Builder generates FXML mark-up which can be ported to an IDE.
Web view	Web pages can be embedded with JavaFX applications. Web view uses Web Kit HTML technology to embed web pages.
Built in UI Controls	JavaFX contains Built-in components which are not dependent on operating system. The UI component are just enough to develop a full featured application.
CSS like styling	JavaFX code can be embedded with the CSS to improve the style of the application. We can enhance the view of our application with the simple knowledge of CSS.
Swing interoperability	The JavaFX applications can be embedded with swing code using the Swing Node class. We can update the existing swing application with the powerful features of JavaFX.
Canvas API	Canvas API provides the methods for drawing directly in an area of a JavaFX scene.
Rich set of APIs	JavaFX provides a rich set of API's to develop GUI applications.
Integrated Graphics Library	An integrated set of classes are provided to deal with 2D and 3D graphics.
Graphics Pipeline	JavaFX graphics are based on Graphics rendered pipeline (prism). It offers smooth graphics which are hardware accelerated.
High Performance Media Engine	The media pipeline supports the playback of web multimedia on a low latency. It is based on a G streamer Multimedia framework.

In this project **Java** is used as programming language. Java is a **programming language** and a **platform**. Java is a high level, robust, object-oriented and secure programming language.

This project is fully database based project. **Database** is an organized collection of data, so that it can be easily accessed and managed. We can organize data into tables, rows, columns, and index it to make it easier to find relevant information.

Database handlers create a database in such a way that only one set of software program provides access of data to all the users. The **main purpose** of the database is to operate a large amount of information by storing, retrieving, and managing data.

There are many **dynamic websites** on the World Wide Web nowadays which are handled through databases. For example, a model that checks the availability of rooms in a hotel. It is an example of a dynamic website that uses a database.

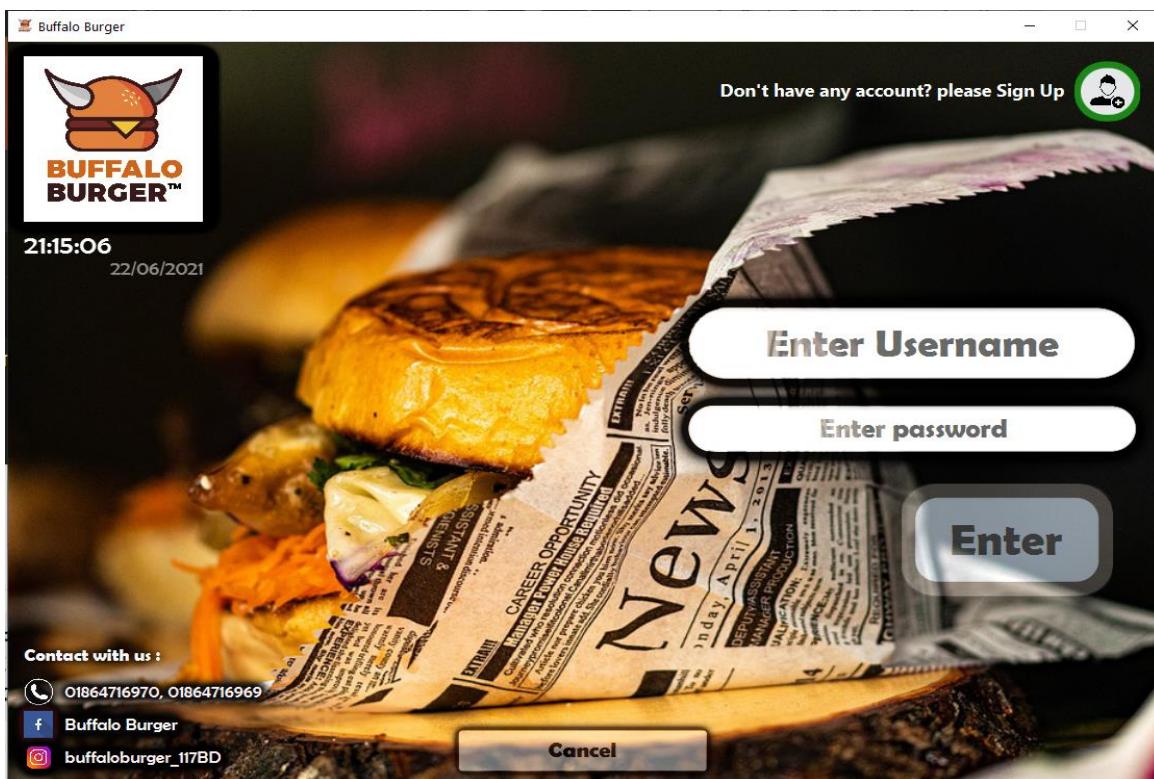
There are many **databases available** like MySQL, Sybase, Oracle, MongoDB, Informix, PostgreSQL, SQL Server, etc.

Modern databases are managed by the database management system (DBMS).

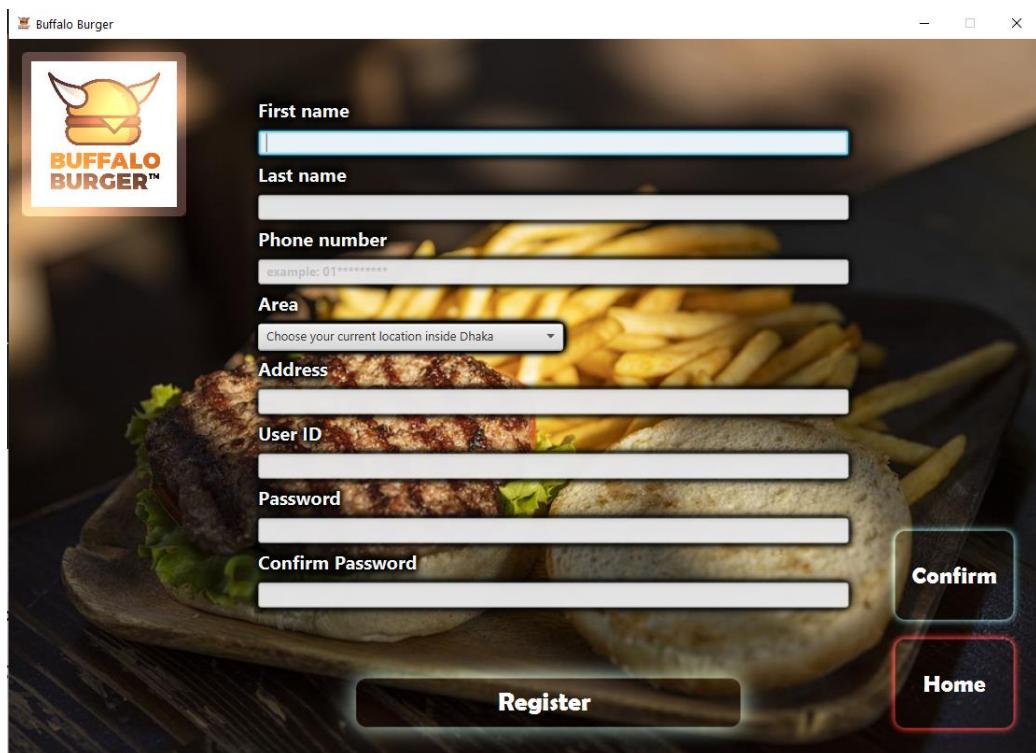
In this project, **SQL** is used. **SQL** or Structured Query Language is used to operate on the data stored in a database. **SQL** depends on relational algebra and tuple relational calculus.

Implementation:

“Buffalo Burger” is a cloud restaurant desktop application. The customers can order their preferable food items easily by using this application.

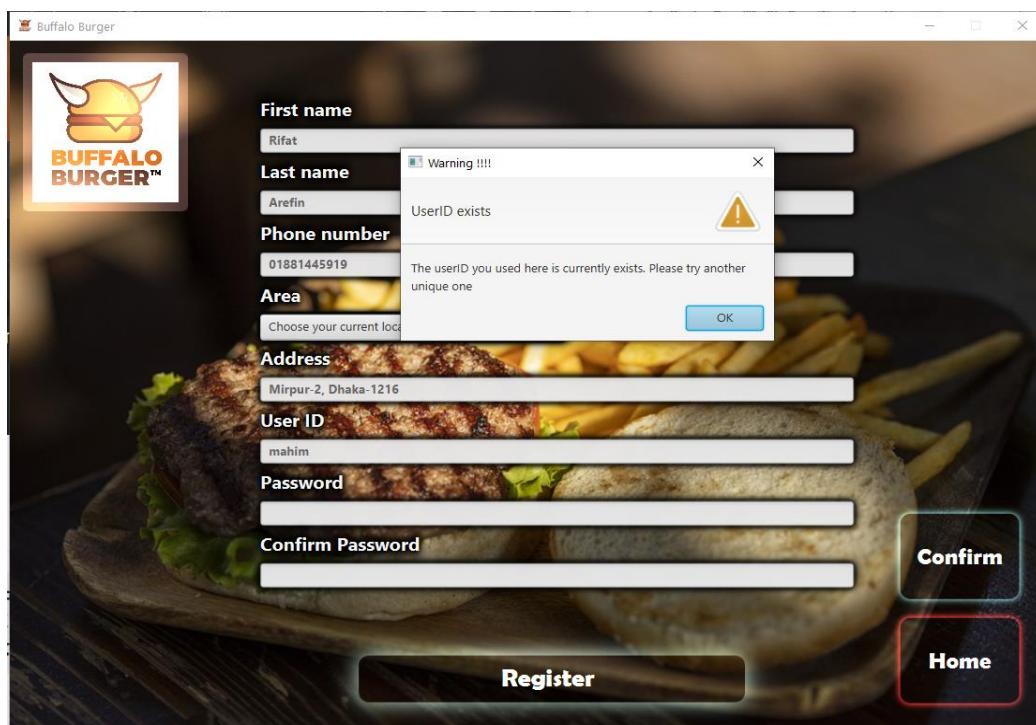


The image shown above is the starting UI or home UI. Here is the logo of the application at the left corner of the interface. There is a real time clock and date just below the logo. There is a button for signing up as a registered user.

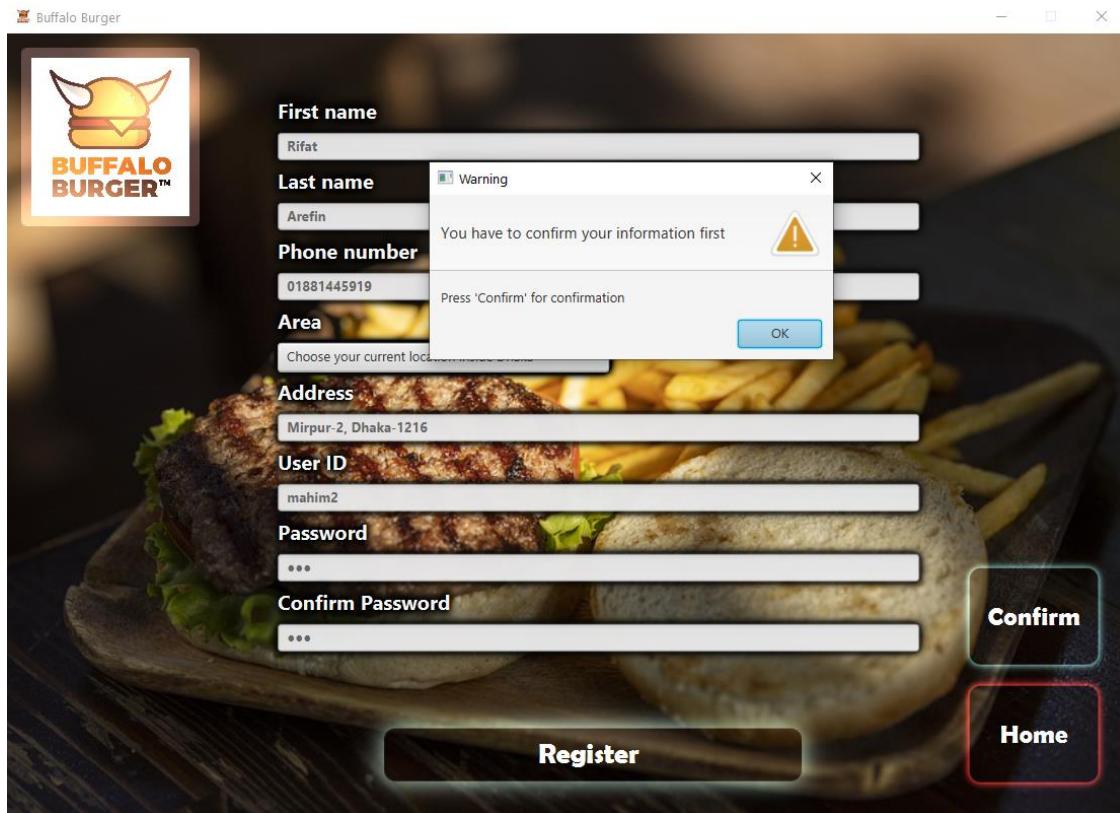


If a user wants to register an account then he have to fill this registration form perfectly. There are different field to ensure users details.

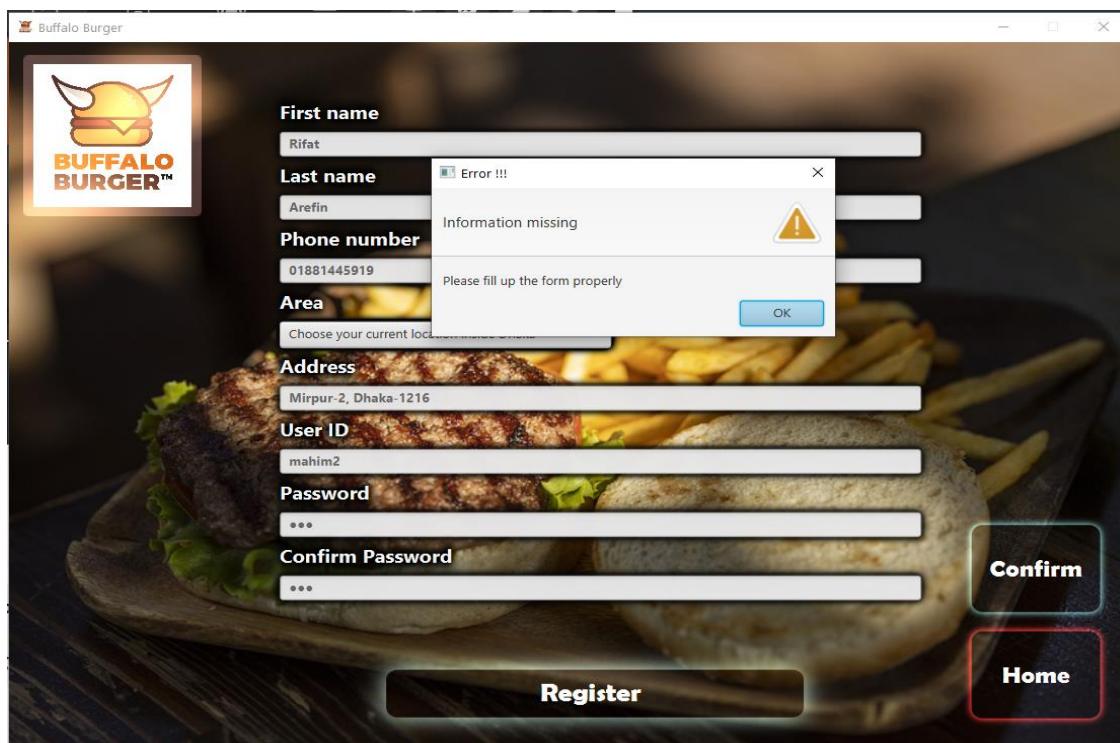
For every user, there is a unique user ID/ user name. So if the username provided by a user is already exist, then an alert message appears.



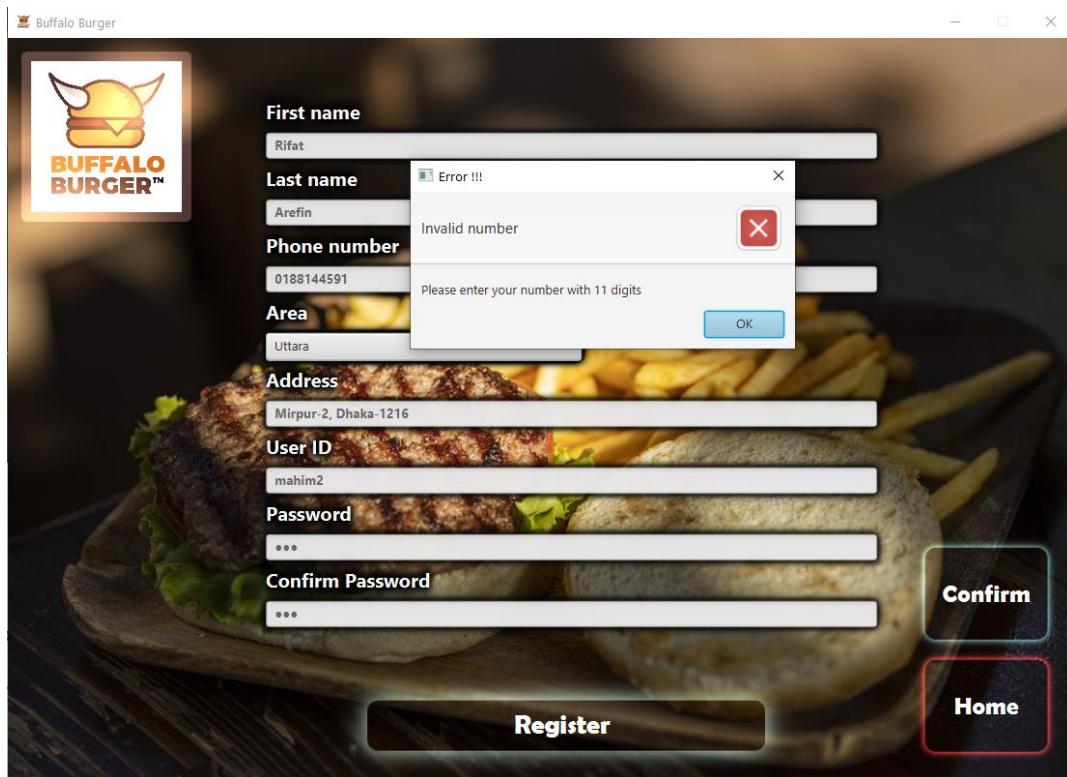
After completing to fill up the form, if a user wants to press ‘Register’ button, then a warning message appears to confirm all the data provided as their details.



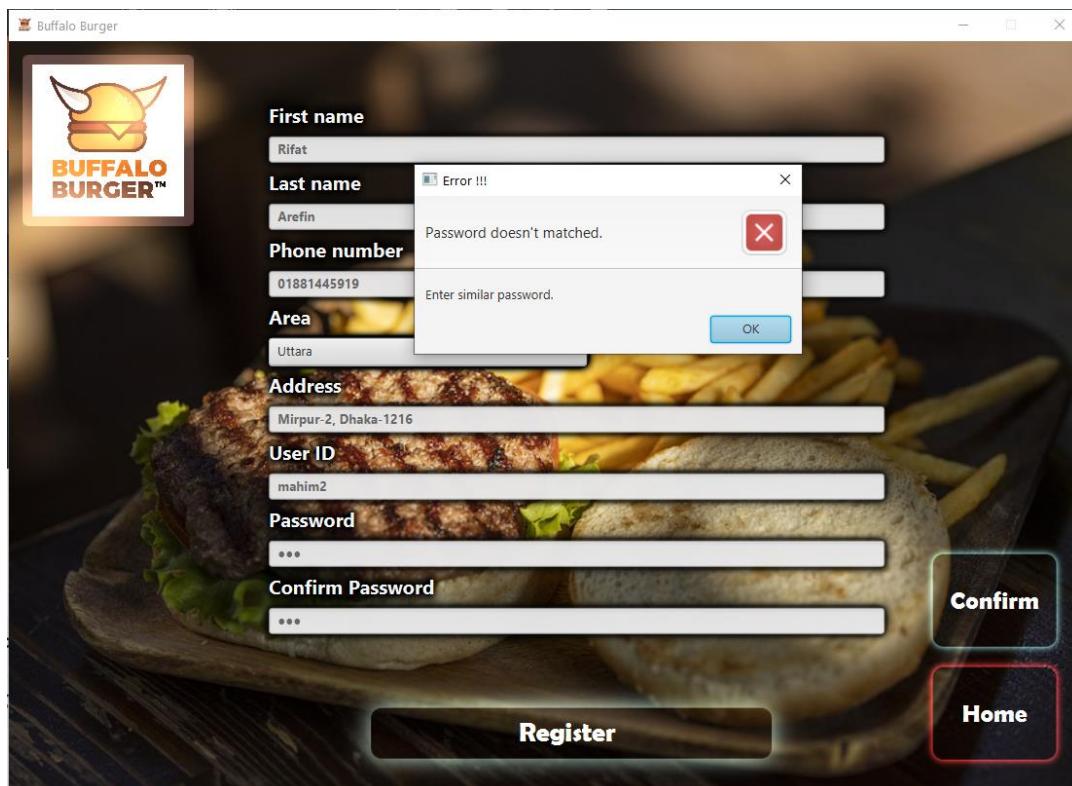
If a user forgets to fill any of the information of the form, then a warning message will show to fill all necessary field to provide full details.



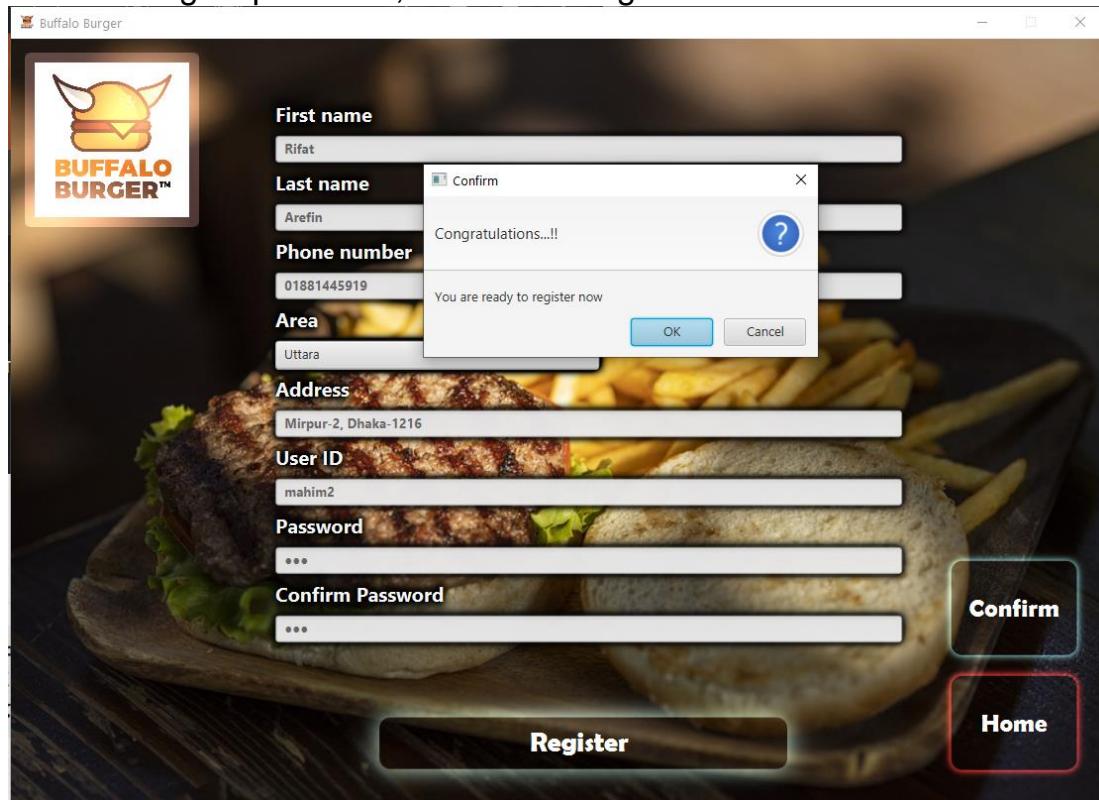
If the phone number provided by the customer is not exactly 11 digits then error message should appear to fix it.



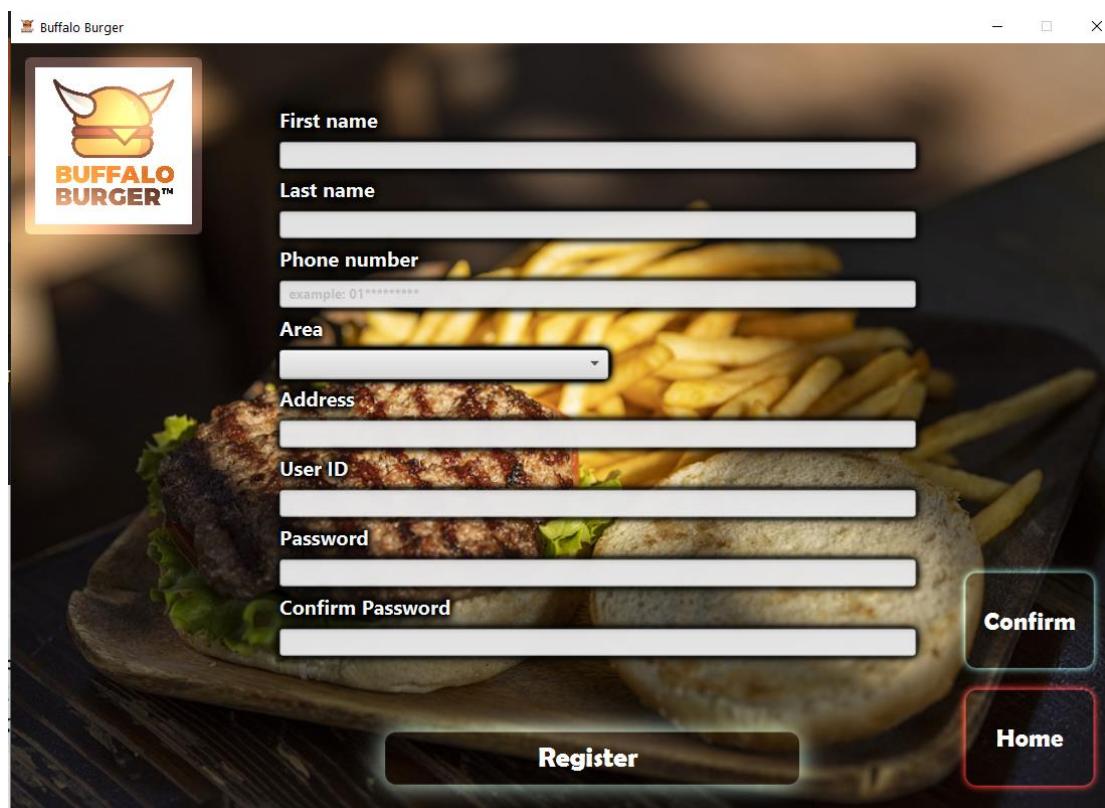
If the password provided by the customer and the password to confirm that password is not equal then error message should appear to fix it.



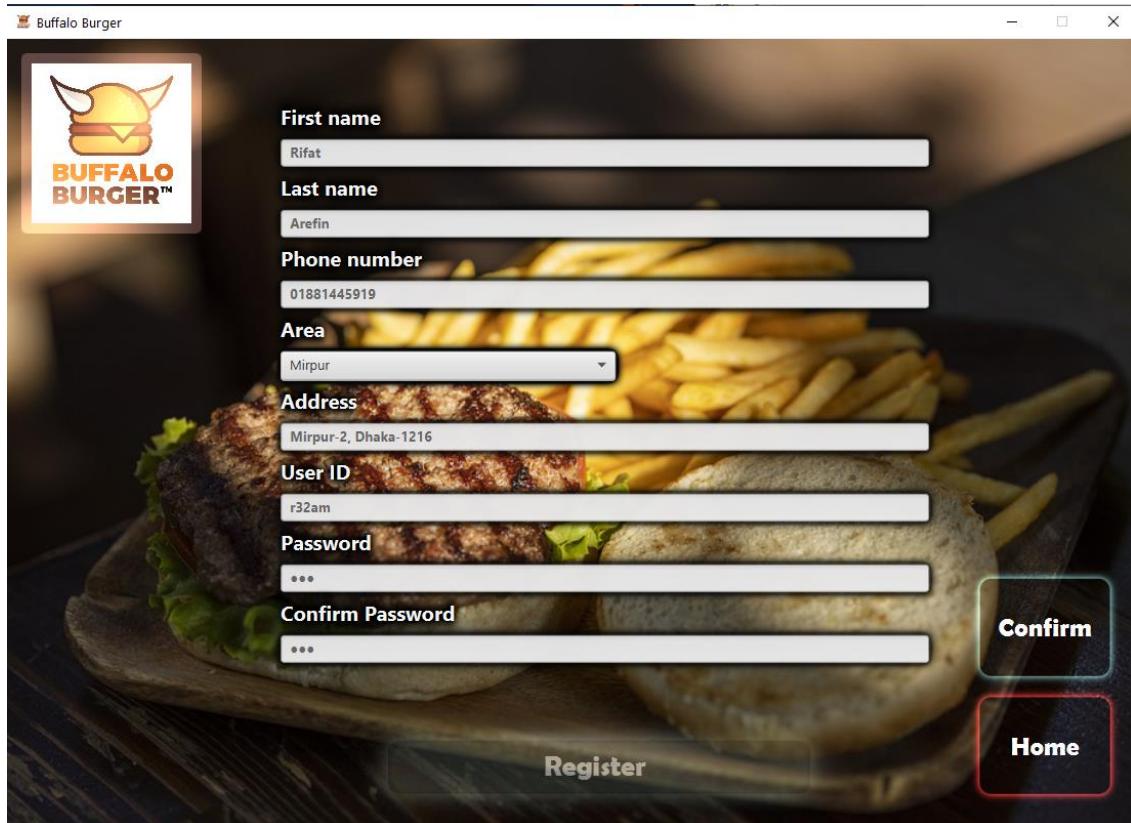
After solving all problems, a user can register his account now.



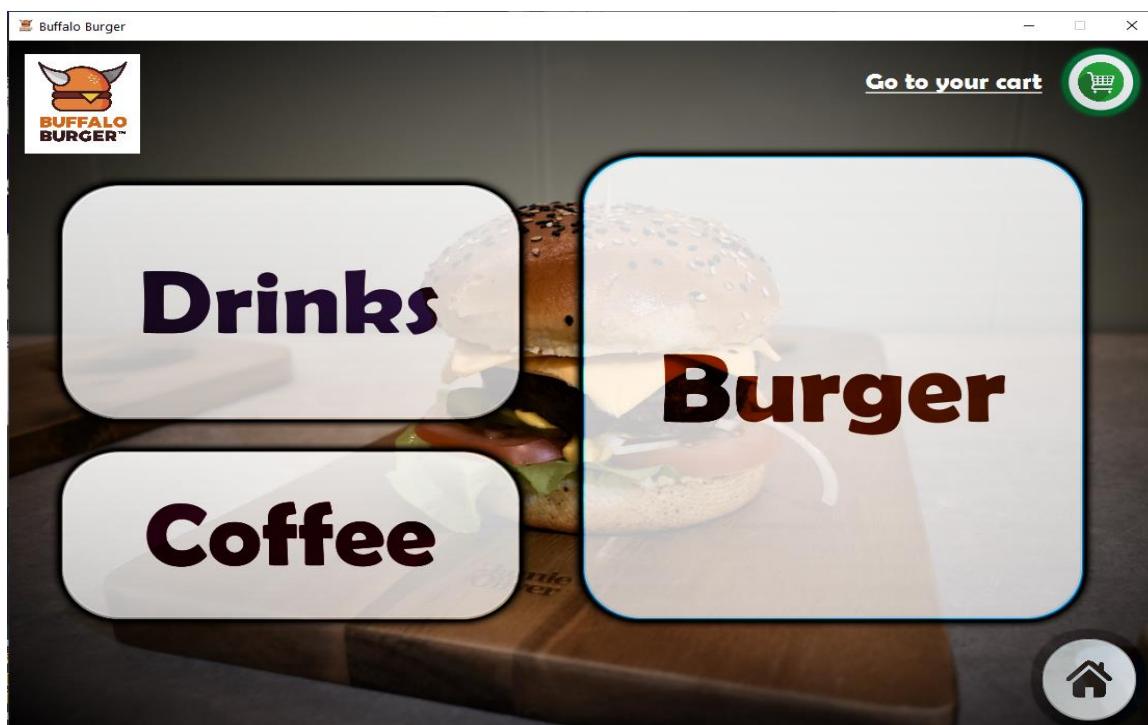
But if the user changes his/her mind not to register an account, then he/she can cancel all the procedure and all the data will be cleared.



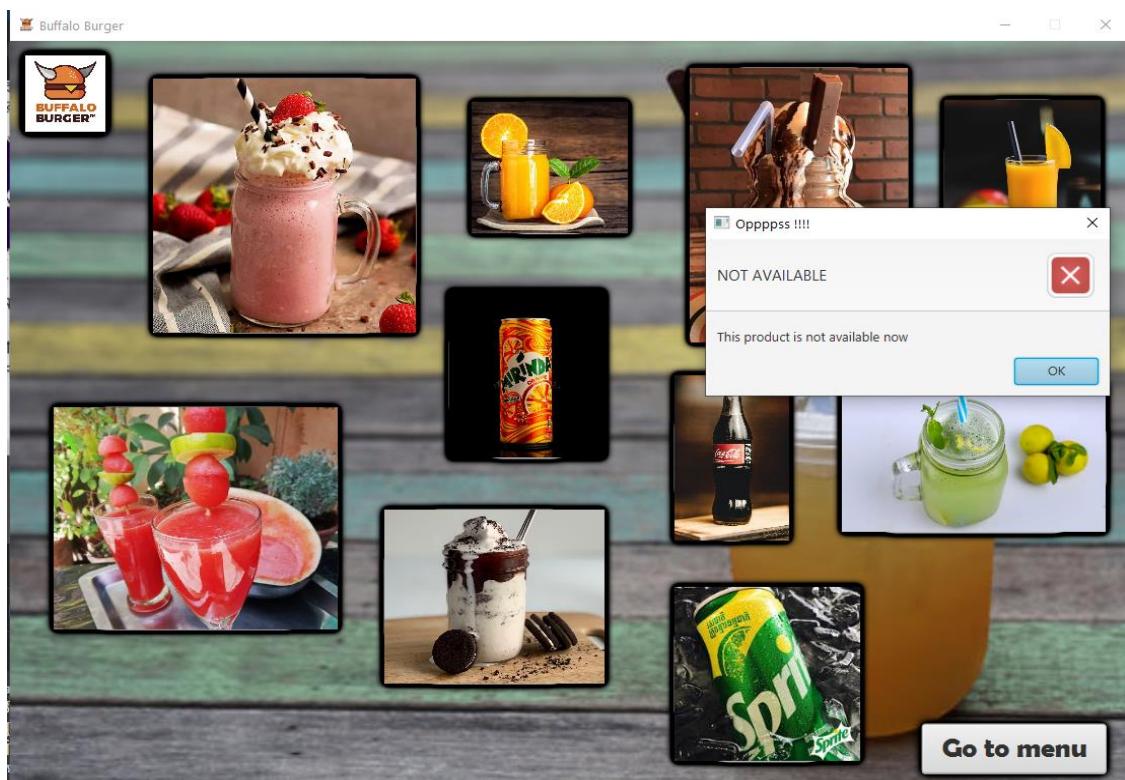
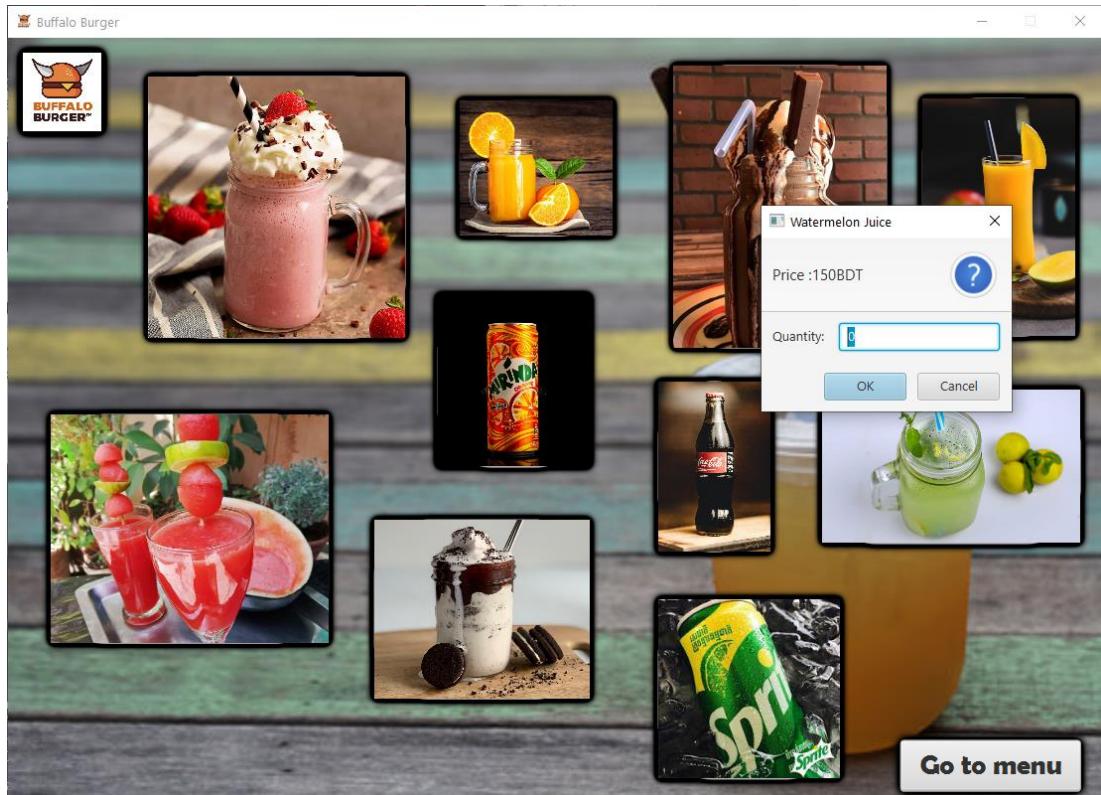
But if the user want to register, then he/she have to press ‘Register’ button and after pressing this, the button will be disabled.



Most important portion of home UI is login portion where there is a text field for providing user name and a password field to provide password. If user name and password successfully matched then the user can go to the next page, which is menu page for showing food items.



For different types of food there are different portions. In every case, if a selected food item is available then a dialog showing the price and quantity of these food will showed and if not available, then a massage will appear that this selected item is not available now.



Buffalo Burger

Buffalo Burger.

White Chocolate MOCHA

Go to menu

ESPRESSO
not espresso

Oopppss !!!!

NOT AVAILABLE

This product is not available now

OK

Buffalo Burger

Buffalo Burger.

White Chocolate MOCHA

Go to menu

ESPRESSO
not espresso

Expresso

Price :180BDT

?

Quantity:

0

OK

Cancel

Buffalo Burger

BUFFALO BURGER™

NAGA SPICY

BBQ BACON CHEESEBURGER

Price : 1500BDT

Quantity: 1

OK Cancel

Go to menu

Buffalo Burger

BUFFALO BURGER™

NAGA SPICY

BBQ BACON CHEESEBURGER

Oppppss !!!

NOT AVAILABLE

This product is not available now

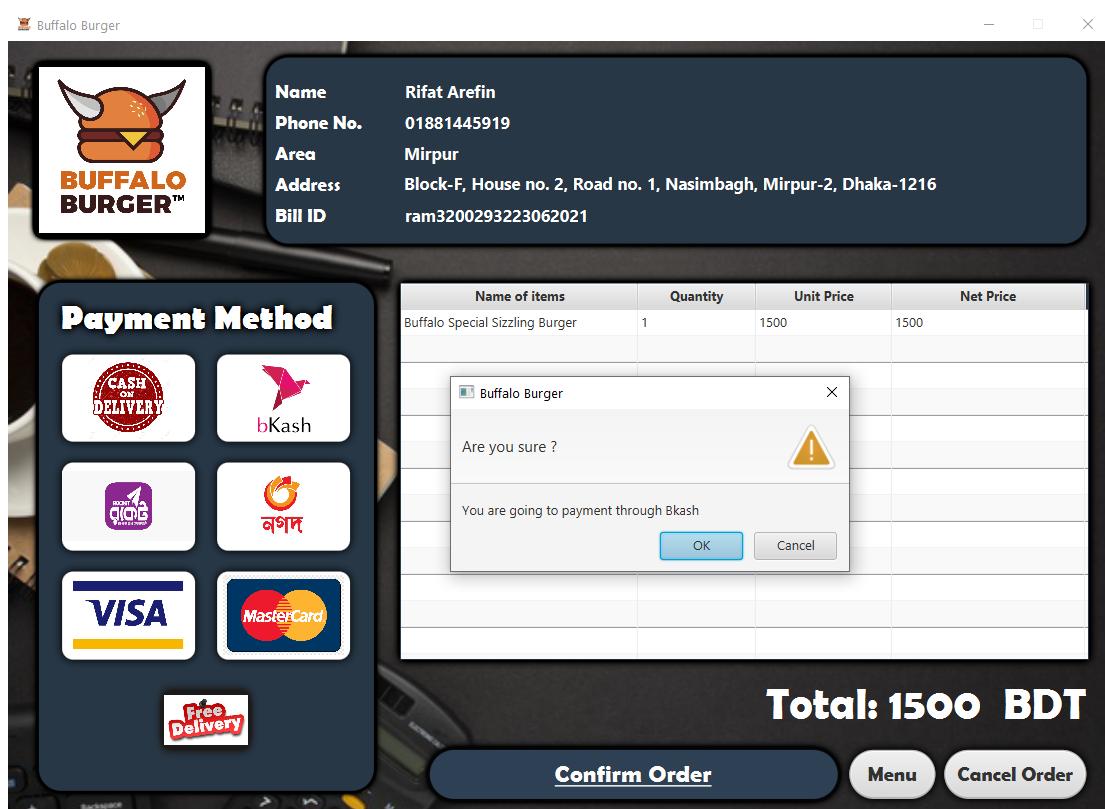
OK X

Go to menu

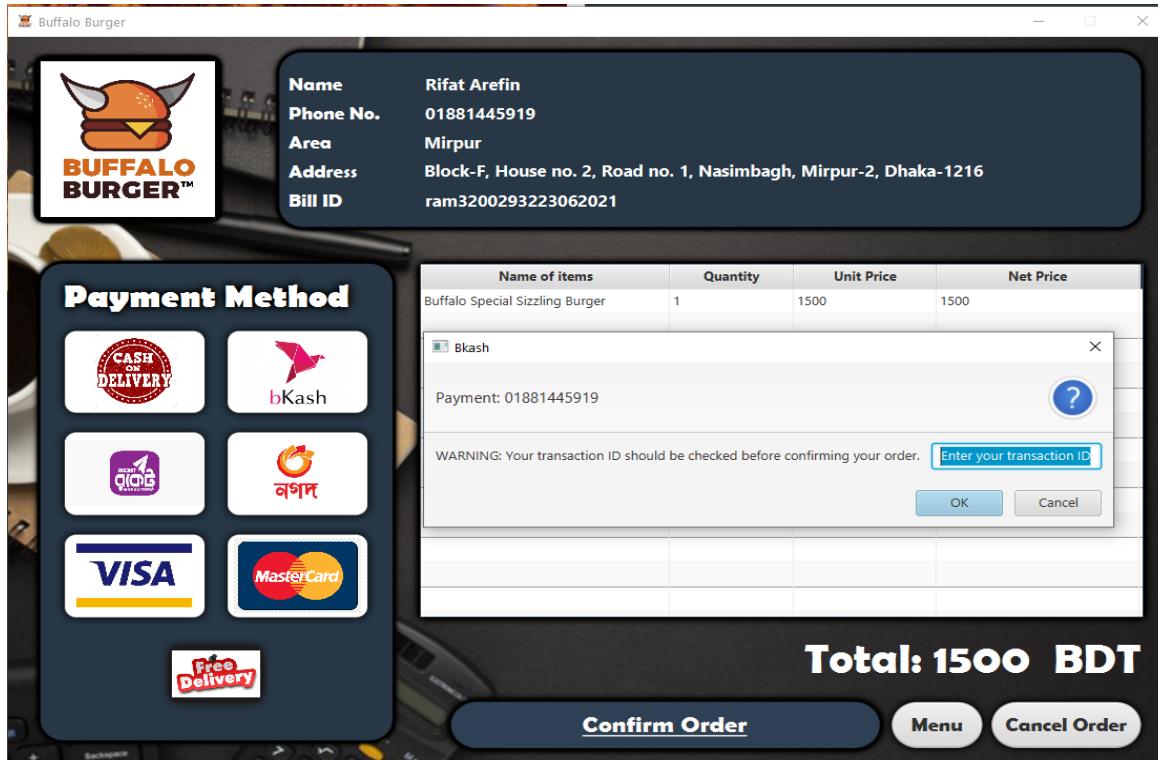
After selecting all food items, user has to go to the cart and check all the information about customer and his/her order details. There is a button named “Menu” to change selected food items and a button named “Cancel order” to cancel order instantly and a button for confirming order.



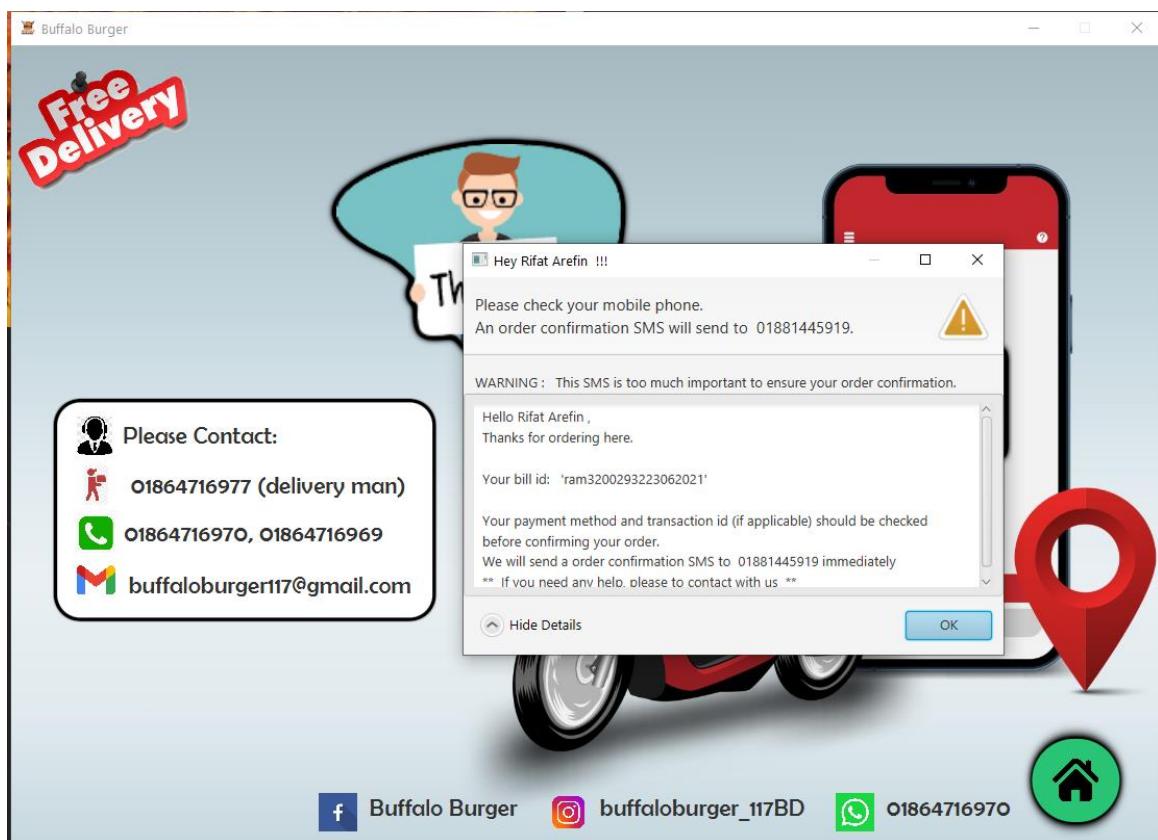
Here is a portion for payment method. For example, we select “Bkash” then a confirming message appears to user.

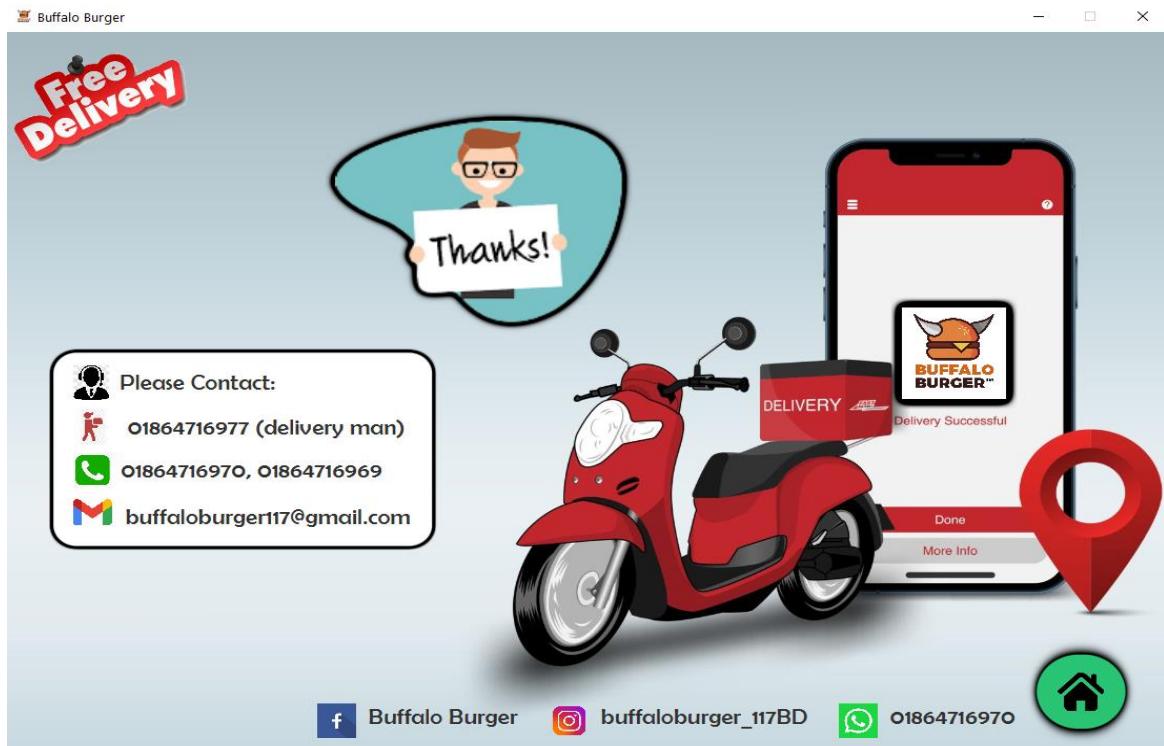


After confirming “Bkash”, a text input dialog will appear which wants transaction ID of the payment.



Finally after completing all procedures, the order confirmation SMS will provided to customer phone number and the UI(s) appears to user

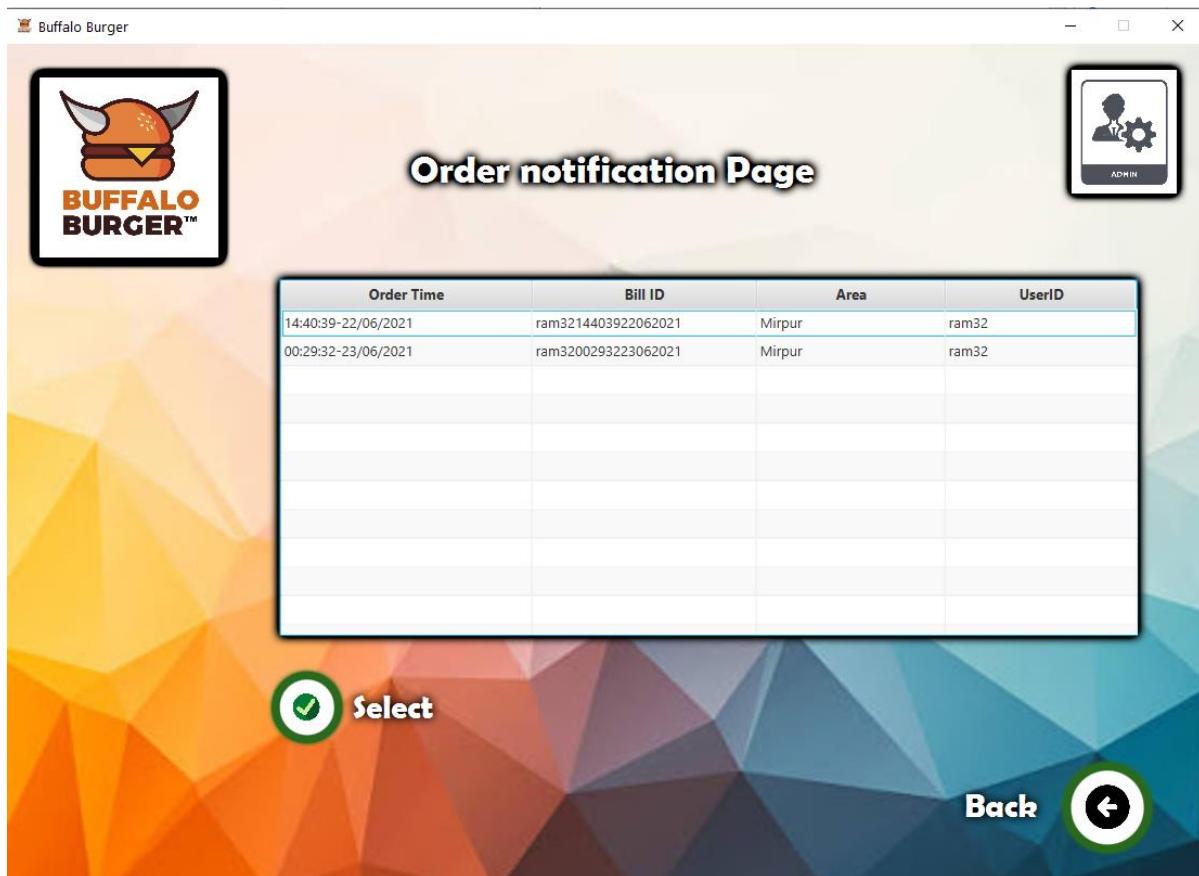




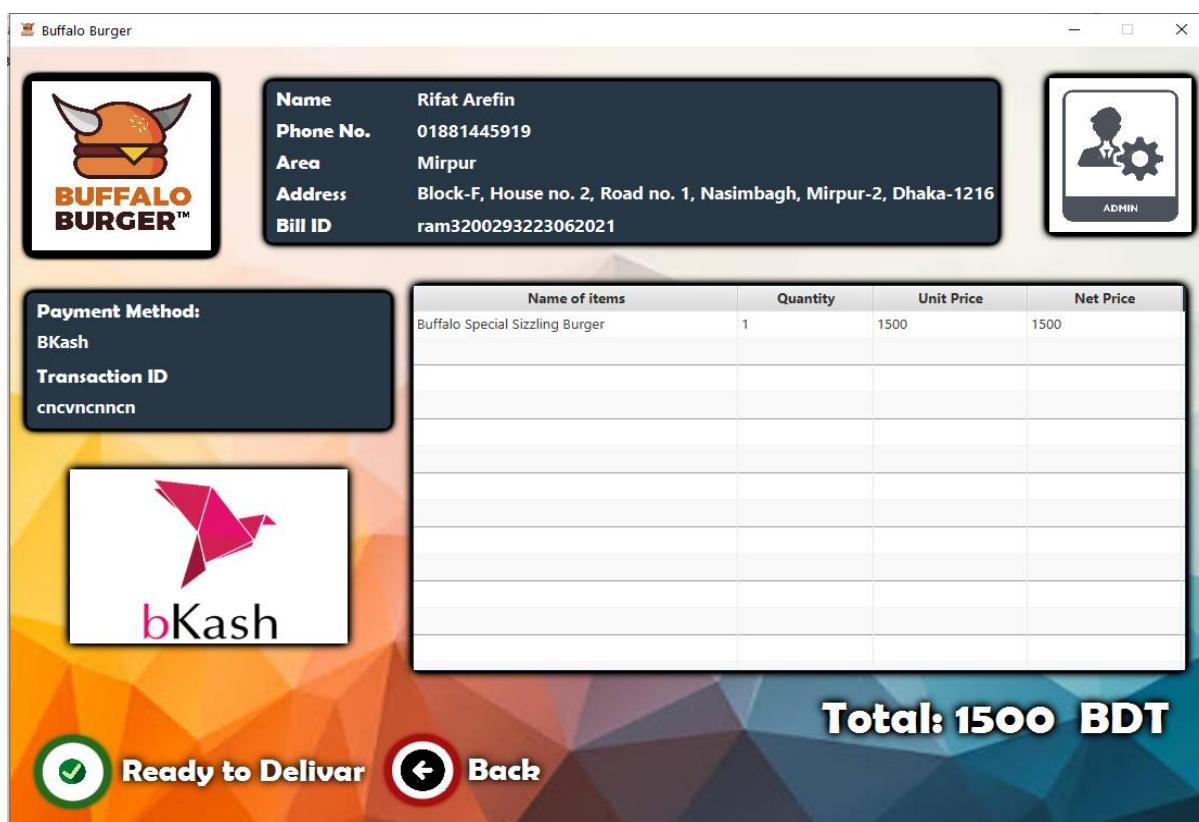
If a user logged in as admin, then the UI below will appear. There are 2 options. One is for order notification and another for setting product price and availability.



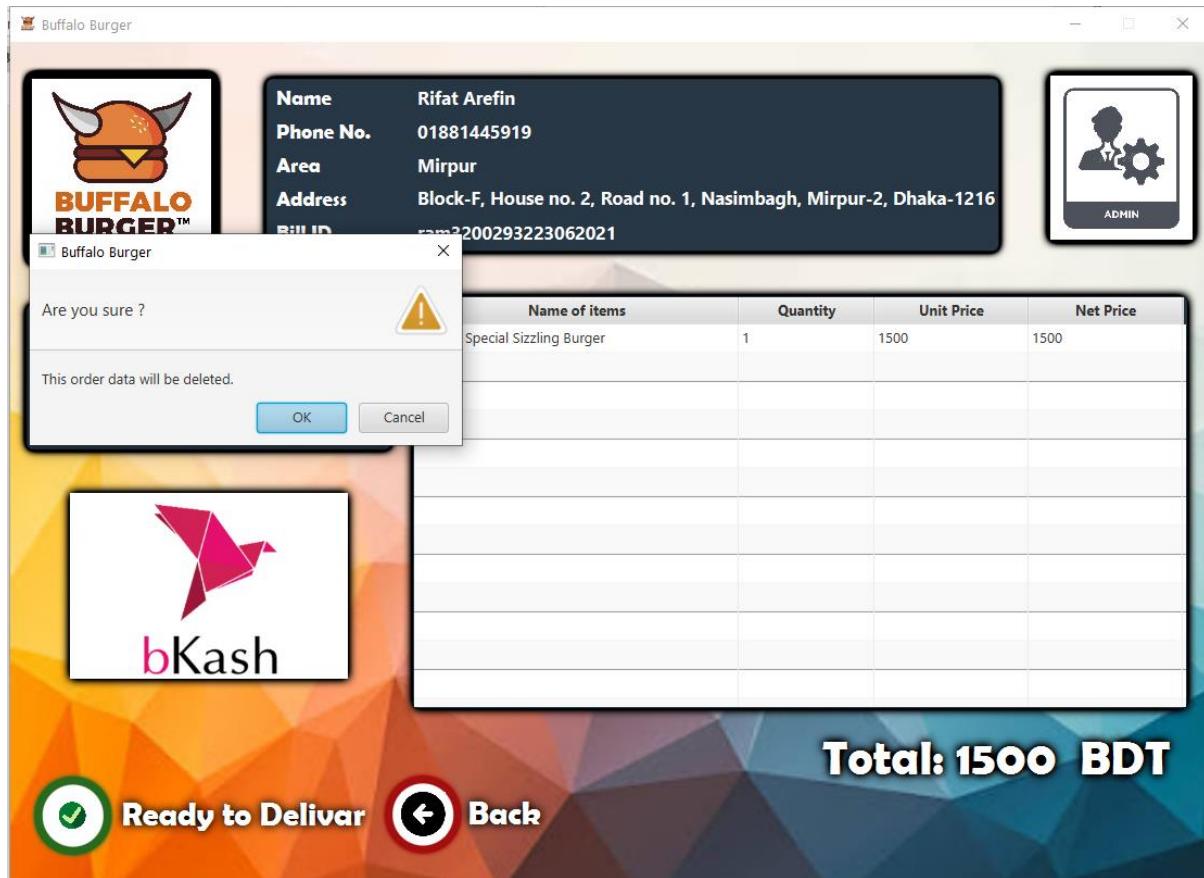
In the order notification page, here all the notifications will appear.



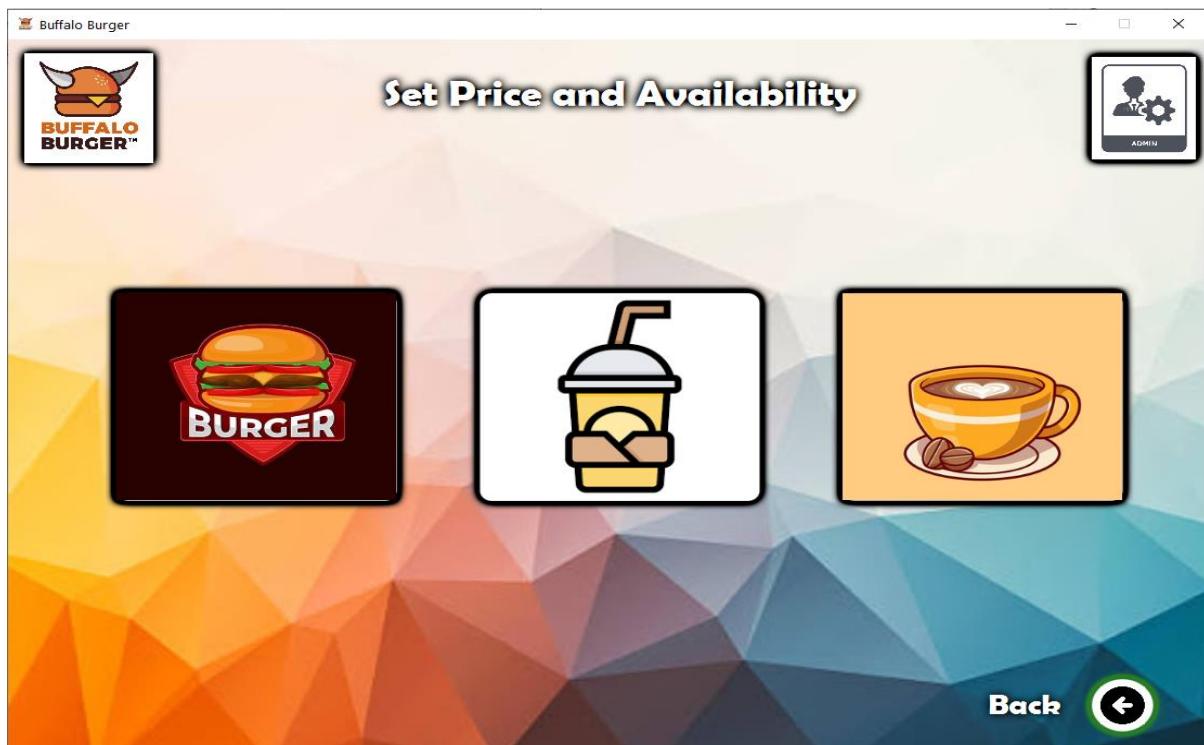
After selecting an order notification, order details will appear.



If order completed, management can delete this order from notification by pressing “Ready to Deliver” button.



Now if the admin wants to set price of food items then this UI showing below will appear.



By selecting **Burger**, this UI will appear

Buffalo Burger

Set Burger Price



#Burger3

ADMIN

# Burger 1	amount	yes/no
# Burger 2	amount	yes/no
# Burger 3	250	yes
# Burger 4	amount	yes/no
# Burger 5	amount	yes/no
# Burger 6	amount	yes/no
# Burger 7	amount	yes/no
# Burger 8	amount	yes/no

Double Patty Steak Burger
Price: 250 BDT
Available Now



Back

By selecting **Drink**, this UI will appear

Buffalo Burger

Set Drinks Price



#Drink4

ADMIN

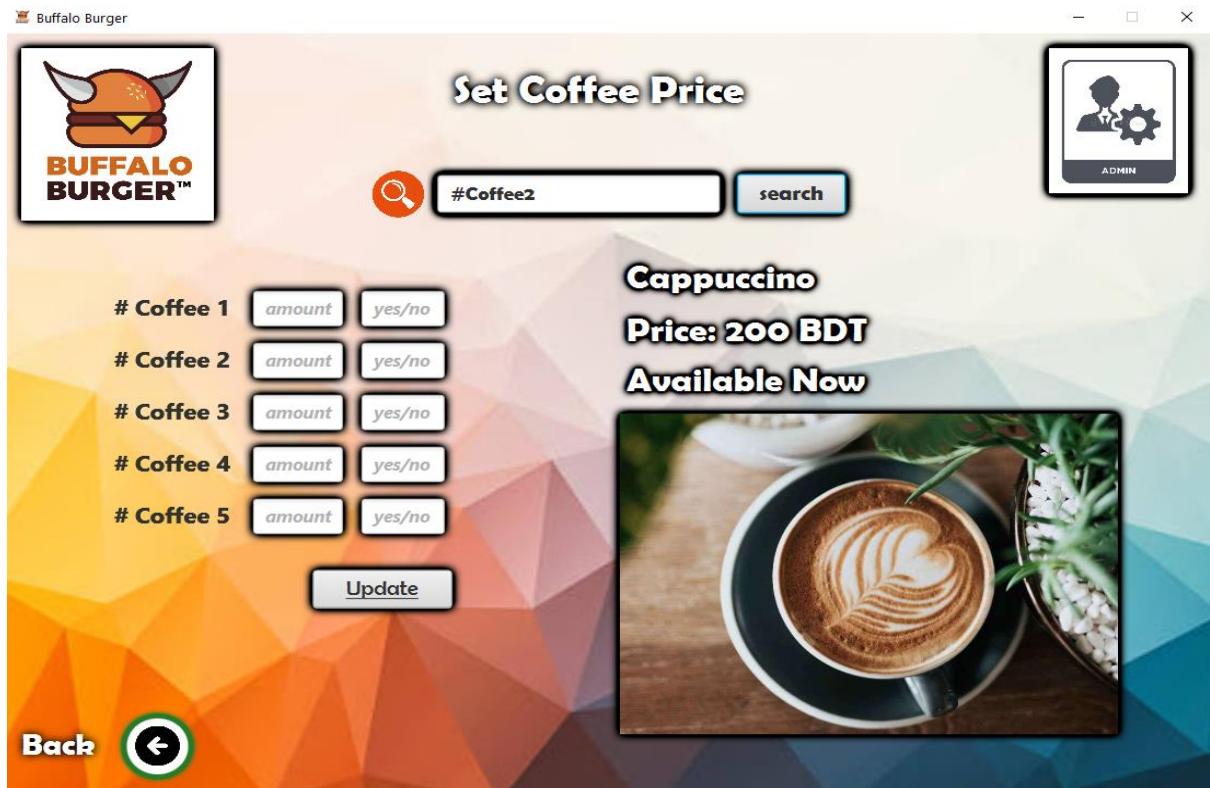
# Drink 1	amount	yes/no
# Drink 2	amount	yes/no
# Drink 3	amount	yes/no
# Drink 4	150	yes
# Drink 5	amount	yes/no
# Drink 6	amount	yes/no
# Drink 7	amount	yes/no
# Drink 8	amount	yes/no
# Drink 9	amount	yes/no
# Drink 10	amount	yes/no

Orange Juice
Price: 150 BDT
Available Now



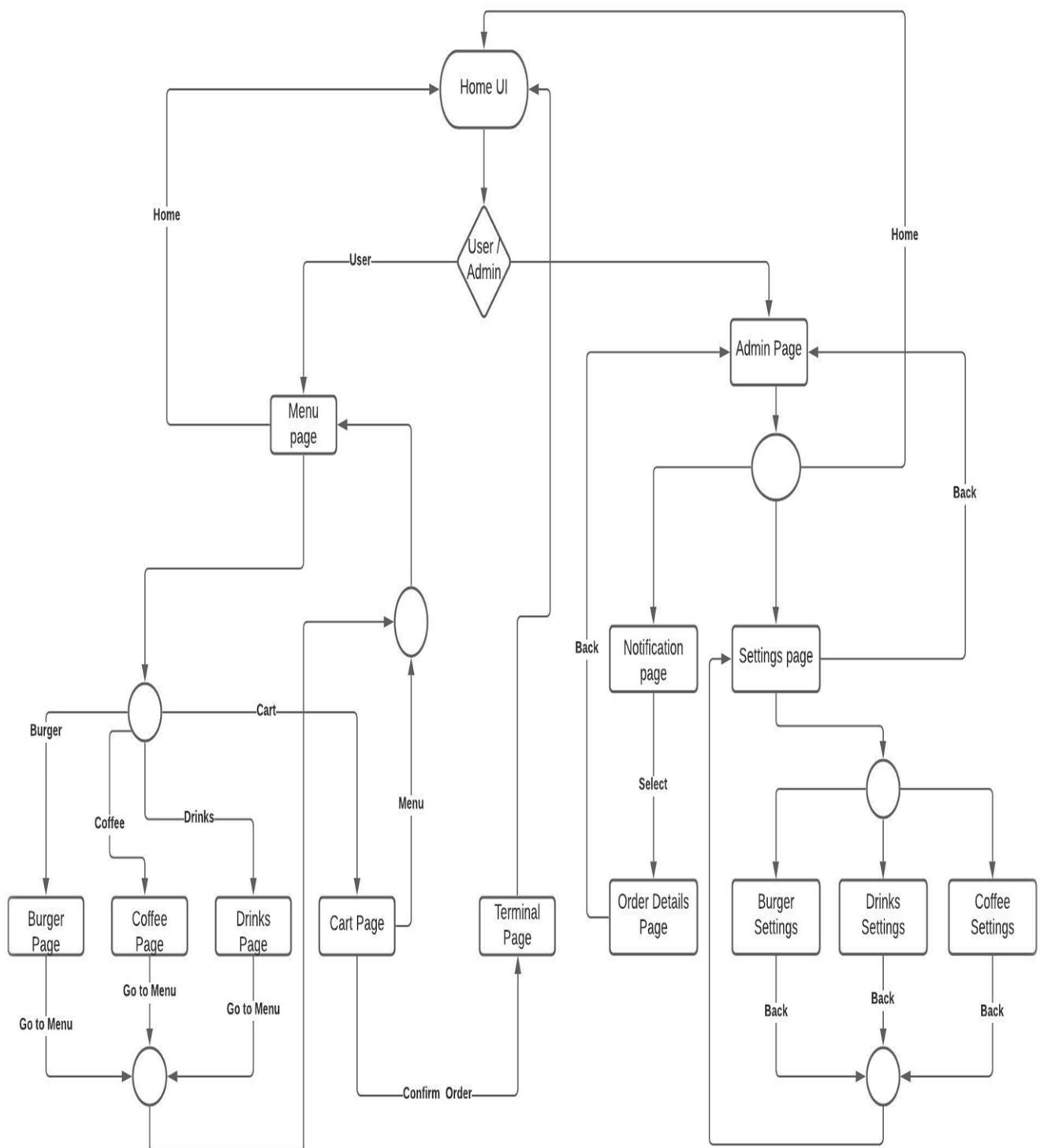
Back

By selecting **Coffee**, this UI will appear

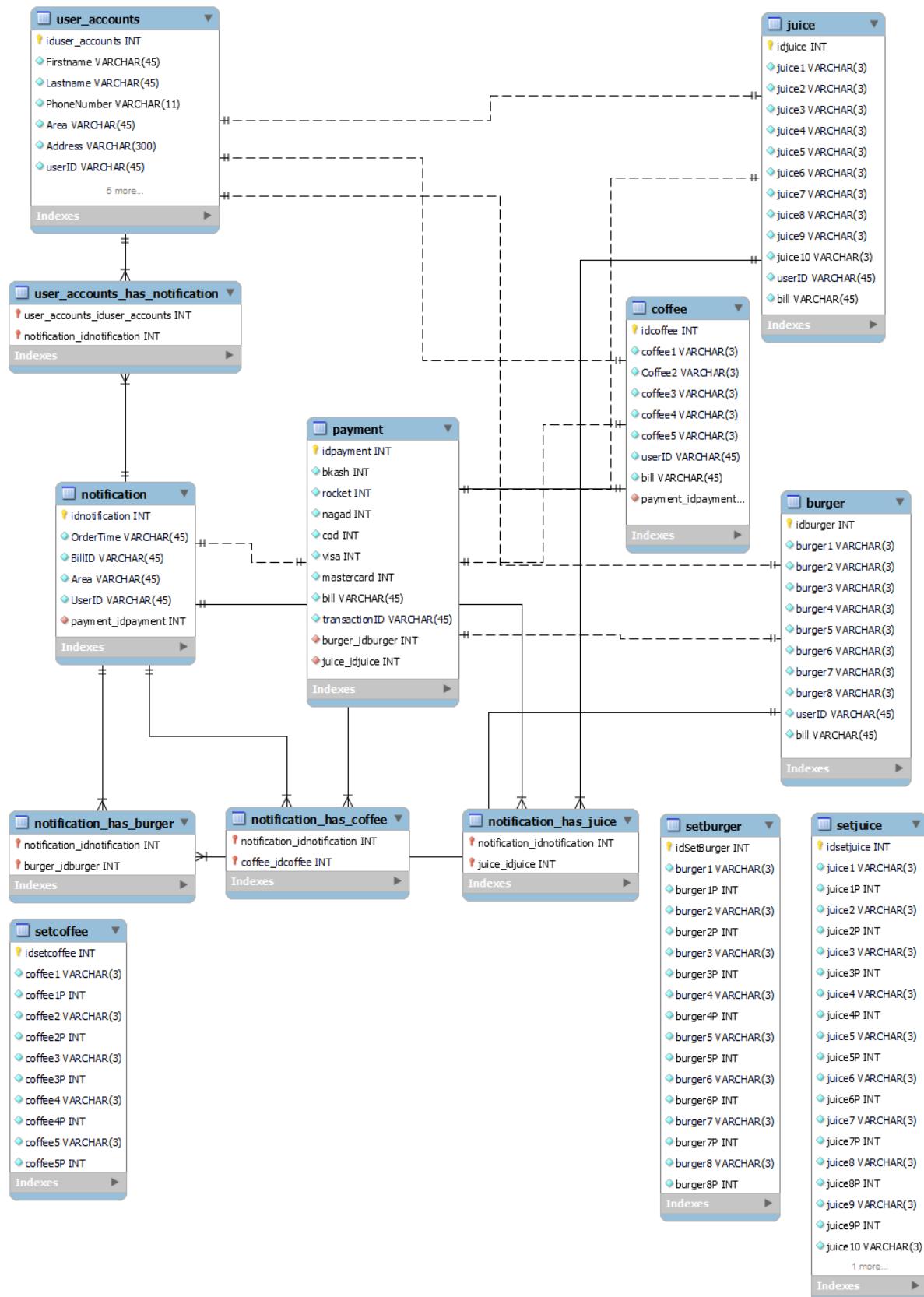


This is the complete description with visualization of the application.

Flow Chart



Schema Diagram:



Target vs Actual Accomplishment

In this project, I tried to depict a simple cloud restaurant application.

Our objective was to make such an application which is used to order available food items from home. Using this application, customers can order various types of available foods according to their preferable criteria. So this project simply complete this objective.

Again, to set the availability and price for every products are also one of the main objectives. Restaurant management can set their foods availability and also price according to market demand.

User security is strongly maintained in this application. Users must have unique username and also password. Without username and password, none can enter into ta application.

This application is fully database based project. I used local database hosting for completing this project. That's why this application can't run in others devices. If I used web hosted database then other people can run this application on their devices.

There is an option for sending the customer order confirmation SMS to their cell phones. I wished to send this SMS via this application

So finally I can ensure that, all the objectives are completed successfully but since I use local database hosting, so this application can't run on other devices. To access this from other device, web hosting database should be used.

Risks and Issues

This app required an internet connection as it is a real-time app, it needs a continuous internet connection to access this application from another devices.

Though now I used local hosting database for practical use. That's why this application can't access from other devices. But when web hosting paid database is used to access from another devices, then continuous internet connection is necessary.

Again if paid API is used then by using this application, the management can send order confirmation SMS to the customer. But currently this feature is not available.

Discussion and Conclusion

The project was performed quite perfectly. Some difficulties were faced at first. This is an online based cloud restaurant application. There are a lots of features to confirm every order perfectly and correctly. I tried to show some alert message to customer who use this application in ordering their preferable food perfectly. If any customer goes through wrong way while using this application unconsciously, there are some alert message to ensure the customers run this application properly.

There are some obstacles in sending order confirmation SMS to customer because paid API is necessary to implement this. However this obstacle is overcome by using paid API.

Hopefully this application is too much user friendly with looking good UI. Hopefully customers can order their preferable foods safely.

The management also notified at the time of order has placed from customer.

Management can change the price of the foods and availability of the food items easily. Restaurant Management can use this without any difficulties. So finally I can say that this application is very user friendly desktop application.

Reference:

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2. <https://fxdocs.github.io/docs/html5/>
3. <https://www.tutorialspoint.com/javafx/index.htm>
4. <https://www.youtube.com/watch?v=DH3dWzmkT5Y&t=167s>
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6. <https://stackoverflow.com/>