PANS CAKE SHOP

IDS 401 - BUSINESS OBJECT PROGRAMMING USING JAVA

PROJECT REPORT

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TABLE OF CONTENT

1. OBJECTIVE:

The main objective of creating an online system for ordering cakes or other bakery products is to enable customers to have a hassle-free experience when ordering online since people are almost always squeezed for time and tend to get finicky when waiting in lines. Also, in today's world, small scale businesses should have an omnichannel way of business to live-through the competition.

The online ordering system simplifies the process for the customer and the owner. The online ordering system provides an up-to-date menu of what is available at the shop so that the customer need not drive up to the shop to find out that the cake he wants to order is unavailable. The customer can choose the flavor or item of his choice, the number of items, the weight of the cake he wants to purchase. He also has options to choose other items like pastries and bread. Once the customer makes a choice, the item will be added to the cart. Once all the items are added to the cart, the customer can look at the order details in the cart including the final price before checking out. The order will have a unique order number with which the customer can look at the order details.

Once the order is placed it is entered in the database and retrieved in a real-time basis. This allows restaurant Employees to go through the orders as they are received and process all orders efficiently and effectively with minimal delays and confusion

2. PURPOSE:

To overcome the drawbacks of the conventional methods of ordering cakes or buying other bakery products, we designed an online system called PANS cake shop for bakery products. With the rapid development of network expertise, e-commerce is an emerging concept. Through online shopping, one can save everyone's valuable time. There is an increasing trend globally in the number of people using the internet through various mobile applications, websites,etc, to shop as it makes it more convenient for the customers to make their purchases.

The online cake system provides customers with a catalogue of all the items available for purchase in the store. We have therefore created a simple platform for customers to order cakes online and avoid the rush. It helps in getting a market hold on customers thereby increasing the brand loyalty and brand awareness. Nowadays, the majority of customers prefer to order things online, thereby increasing the sales of PANS cake shop. It also provides an easy way to track sales and inventory for cake shop owner, which would enable the owner to adjust reorder level and have things available all the time.

3. ADVANTAGES OVER MANUAL ORDERING:

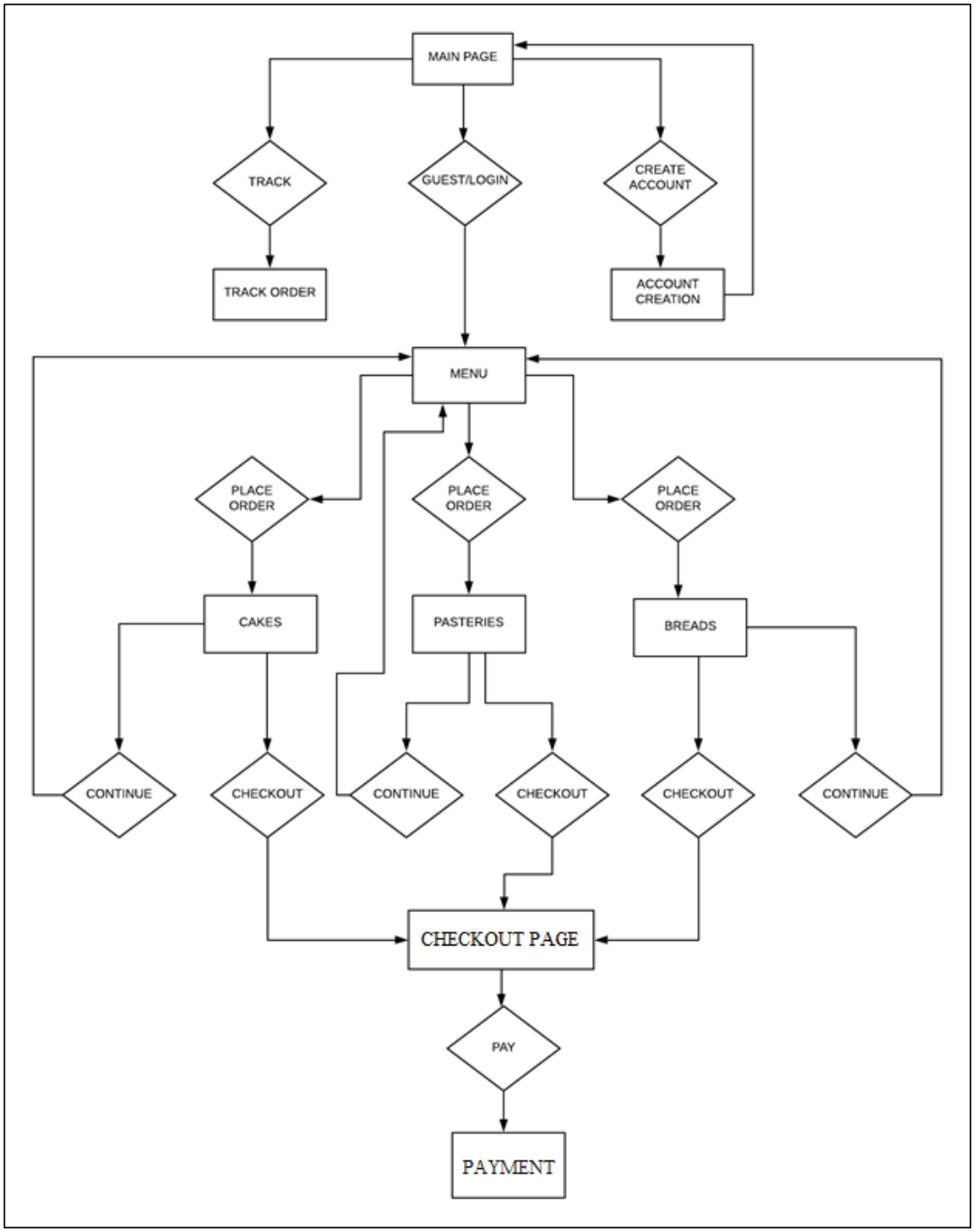
The following are the disadvantages with a manual ordering system:

- Customers need to manually visit the shop to know about the availability of the products and then place an order and pay. This is a time consuming process especially when the customer is not sure about the product they require.
- Once an order is placed, the customers have to wait in long queues to pay the bill. This in turn consumes more time of the customer.
- The bakery needs to hire employees on par with its food traffic to assist customers and deal with preparation of products. With increased labor rates this method becomes more expensive.

An online ordering system for a bakery has the following advantages:

- Simplified ordering process which helps reduce the workload. Online orders are automated and require less human intervention while at the same time are easier to track.
- Ease of access to product availability information from anywhere which saves customers the hassle of driving to the shop to find out the same information.
- Reduction in number of employees hired, thereby reducing the labor cost involved.
- Since the process is automated it is less susceptible to errors (especially human errors).
- Online transactions are much quicker and hence help save a considerable amount of time while providing maximum throughput.
- Order cancellation and refund process are simplified.

4. WORK FLOW:


MAIN PAGE
TRACK
GUEST/LOGIN
CREATE ACCOUNT
TRACK ORDER
ACCOUNT CREATION
MENU
PLACE ORDER
PLACE ORDER
PLACE ORDER
CAKES
PASTERIES
BREADS
CONTINUE
CHECKOUT
CONTINUE
CHECKOUT
CHECKOUT
CONTINUE
CHECKOUT PAGE
PAY
PAYMENT

5. FUNCTIONALITIES:

The various pages which have been incorporated are:

1. Login
2. Create Account
3. Main-Menu
4. Products
5. Checkout
6. Payment
7. Order Track

Each individual page along with its corresponding functionalities are further explained below.

5.1 LOGIN:

Upon entering the site, each customer has three distinct options regarding an account:

- **Login**: Existing customers may login with their “User Name” and “Password”.
- **Guest**: Customers may place an order without an official account.
- **Create account**: Customers would be able to register for an official account.

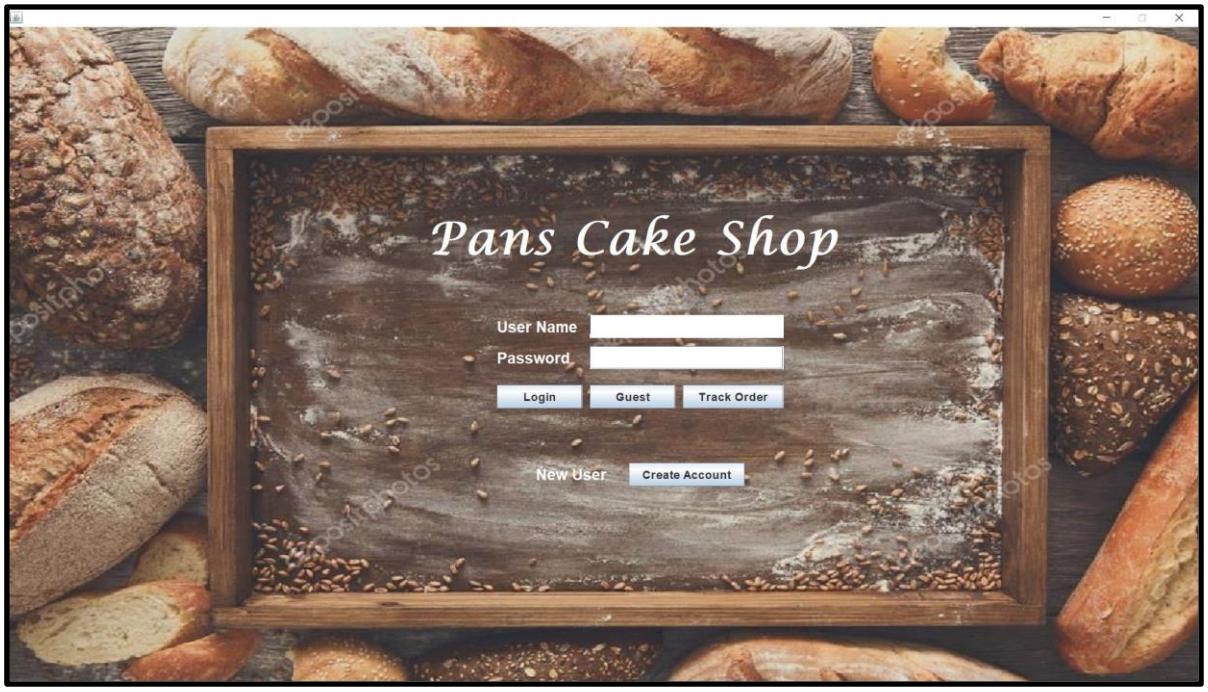


Figure 1 - Login

An existing customer would be able to login using the Customer Name and Password. The customer would have to use the credentials which was specified when they initially signed up on the website.

In case of wrong combination of login and password, the system will throw an error and the customer will be restricted from logging in. Once the customer signs in with a correct user name and password, they will get a pop-up, ‘Sign in Successful’ and will be redirected to the menu page.

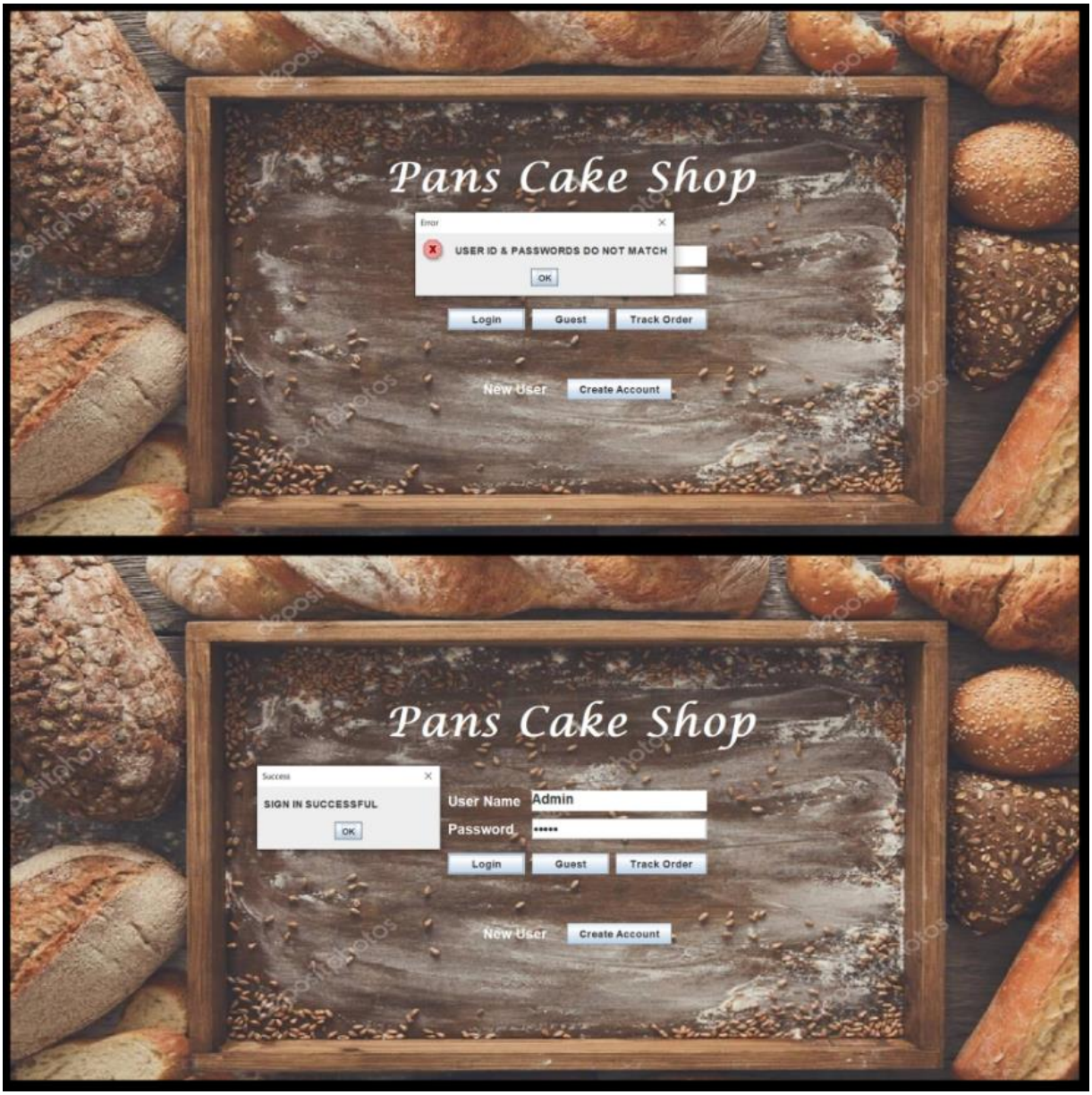


Figure 2 - Login Functionalities

5.2 CREATE ACCOUNT:

Customers who wish to create a new account can choose the “Create Account” option at the login page. The account creation page appears as shown in as shown in Figure 3 and customer needs to fill out all the provided fields “*User Name”, “User ID”, “Email ID”, “Password”* and “*Retype Password”*. Once successfully done the data is stored in the database. Now the customer is redirected to the login page again where they can sign in using their new User Name and Password.

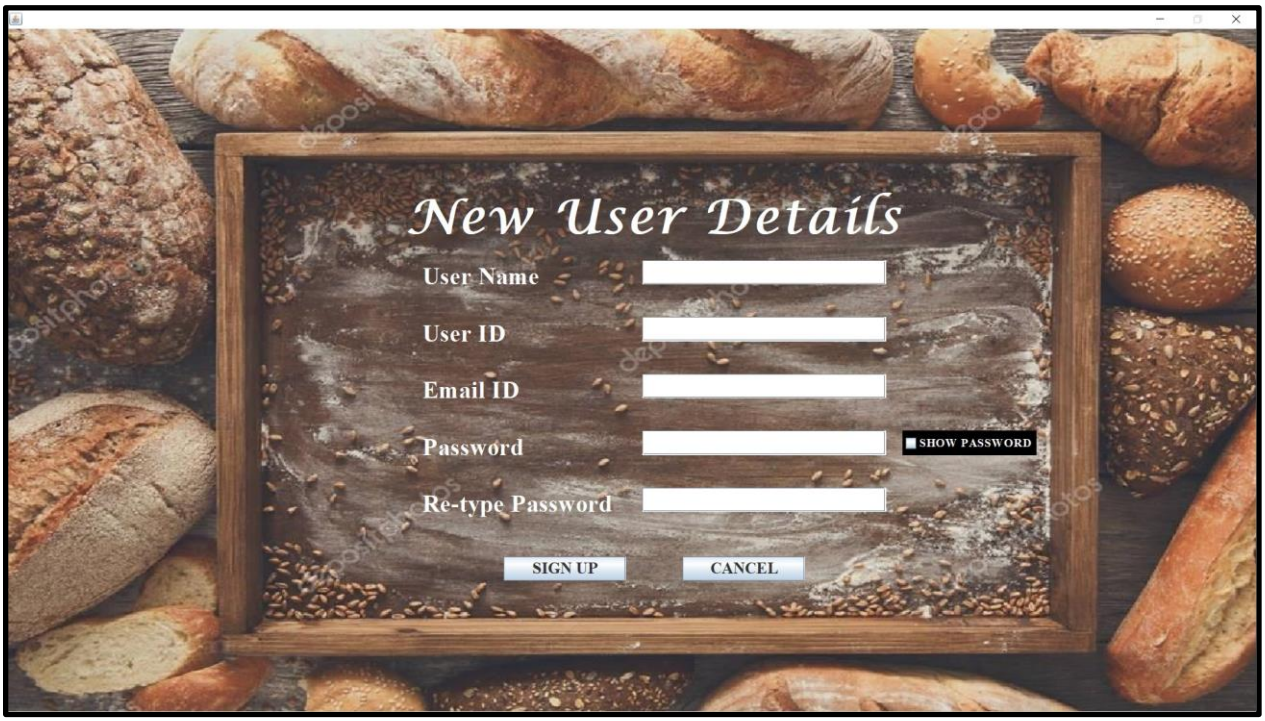


Figure 3 - Create Account

While entering the details for account creation, if any field has been missed or is filled with only empty spaces customers would get an error pop up indicating the corresponding field is missing. Restrictions have been placed on Password and Re-type password field such that if the text entered in both fields must be an exact match (including case sensitivity) else would receive an error pop-up for the same.

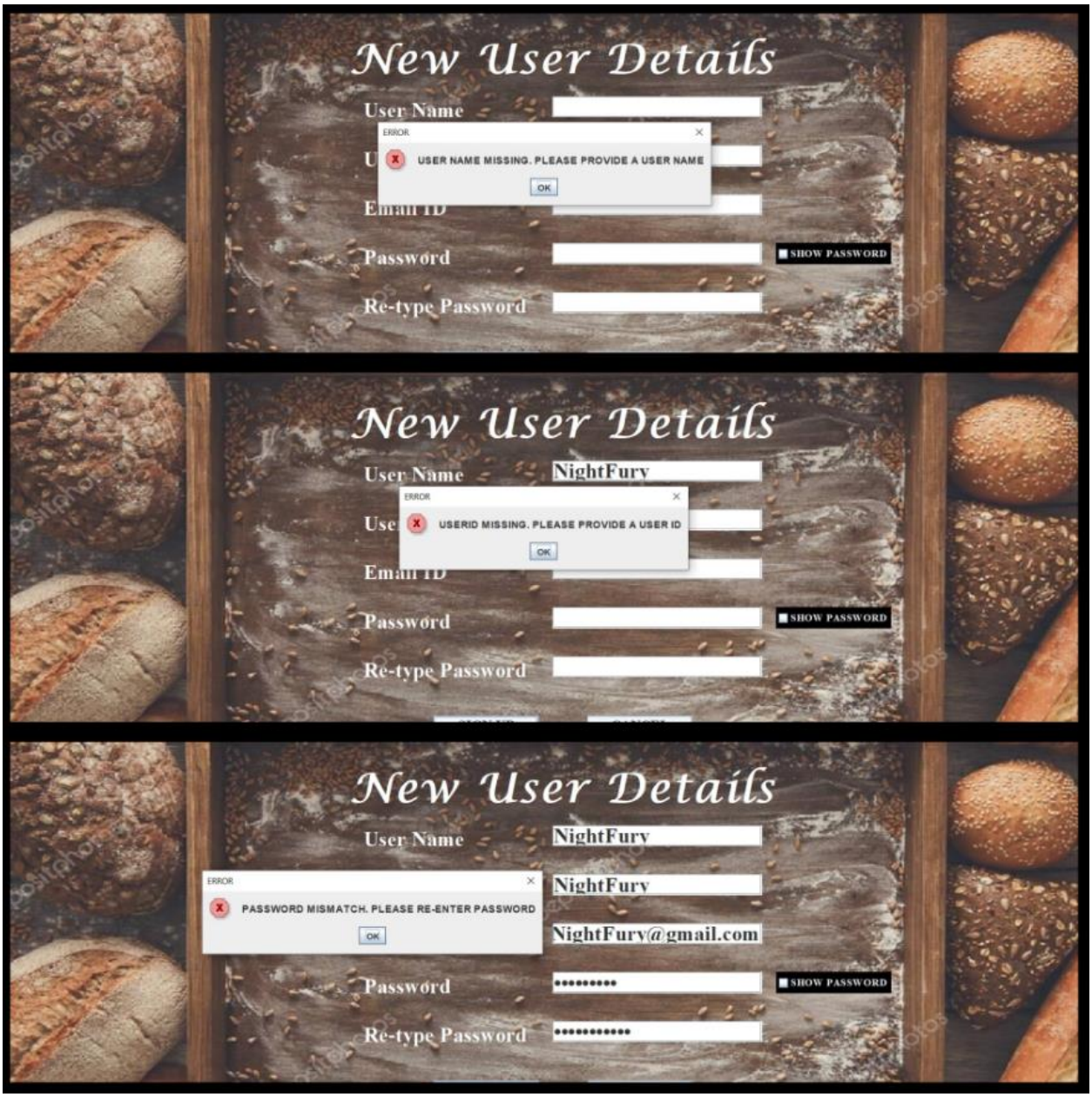


Figure 4 - Create Account Functionalities

There are two functionalities in place for the "*Email ID"* field. The first one ensures that a string has been entered in the text field, while the second functionality verifies that the entered string follows the appropriate email address format. If either of the functionality is not satisfied than the customer would get a corresponding error message as displayed in figure 5.

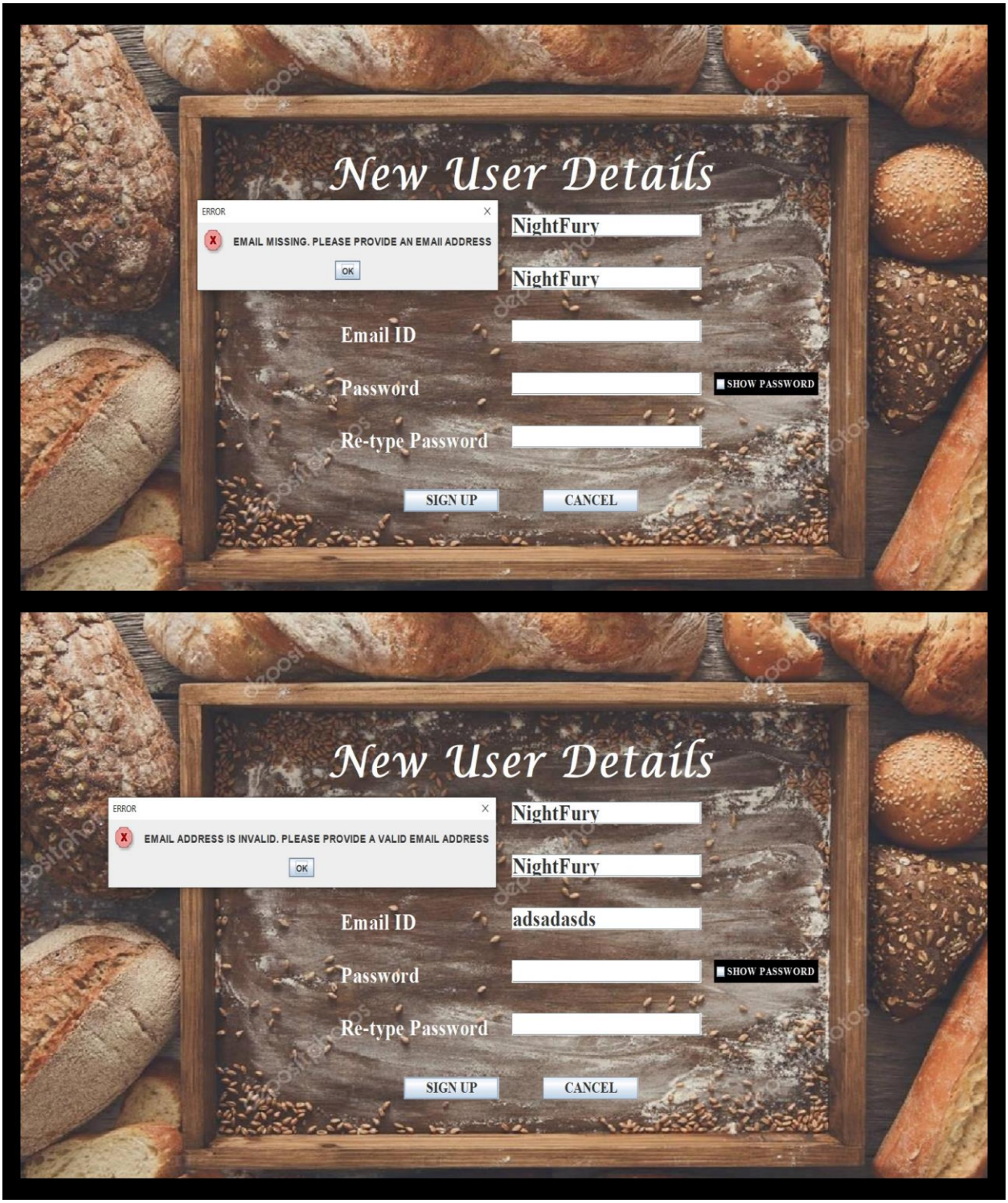


Figure 5 - Email ID Field functionalities

A functionality to check if the customer has typed in the intended password is also added. This can be achieved by clicking on "*Show Password*" as shown in Figure 5.

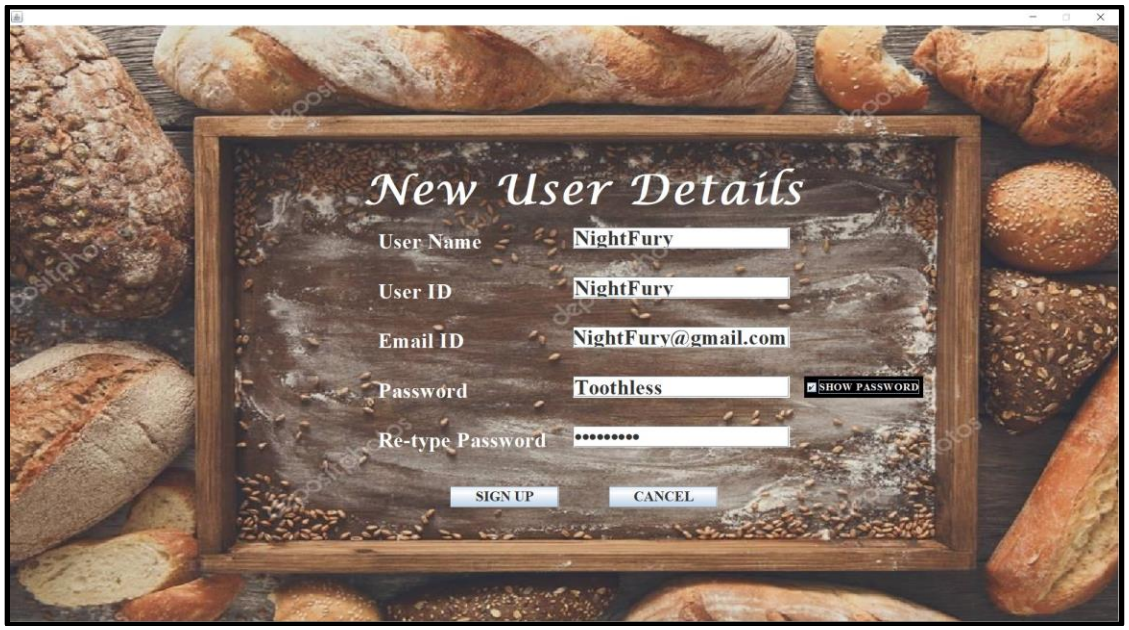


Figure 6 - Show Password

Once all fields have been properly filled and "*Sign Up*" button has been clicked the data is stored in the database, customer receives a pop up as shown in figure 7 and customer is redirected to the login page again where they can now sign in using their new User Name and Password.

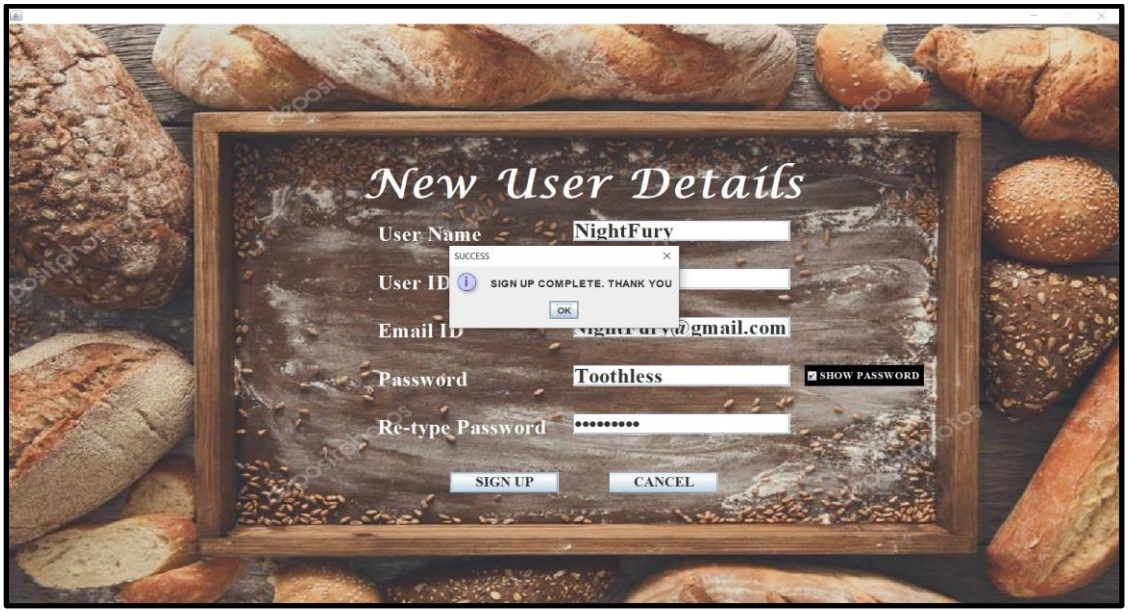


Figure 7 - Account Creation Success

5.3 MAIN-MENU:

The main menu page displays a welcome message at the top and provides information to the customer about the different categories of products currently available at the bakery as displayed in Figure 8.

Figure 8 - Main Menu

On this page, there are currently 3 different categories displayed:

- Cakes
- Pastries
- Breads

Each category is provided with a "*Place Order*" button directly below its image. Customer can select their required product by clicking on any of these three buttons, and would be redirected the corresponding products page.

5.4 PRODUCTS:

Once the customer chooses a desired product, they are redirected to the corresponding product's page where they can choose the desired items. All 3 product pages have two buttons "Continue" and "Checkout" at the bottom right respectively. The first button navigates a customer back to main menu so that they may continue to shop or order from other product category. The latter button proceeds to the checkout page which would give an overall display of the items and its quantity (or) size the customer has currently chosen.

In the cakes product page (displayed in figure 9), customers can choose a size for the different cakes they wish to order from its corresponding drop down menu. Customers have the option to choose from 0 to 6 pounds for a single cake with size increments in values of one pound.

Figure 9 - Cakes

In the pastries and breads page (figure 10 & 11) customers can indicate the quantity of a specific item they wish to order by using the two buttons *"-"* and *"+"* which are below the image of the item. Clicking on *"+"* increases the quantity while clicking on *"-"* decreases the same.

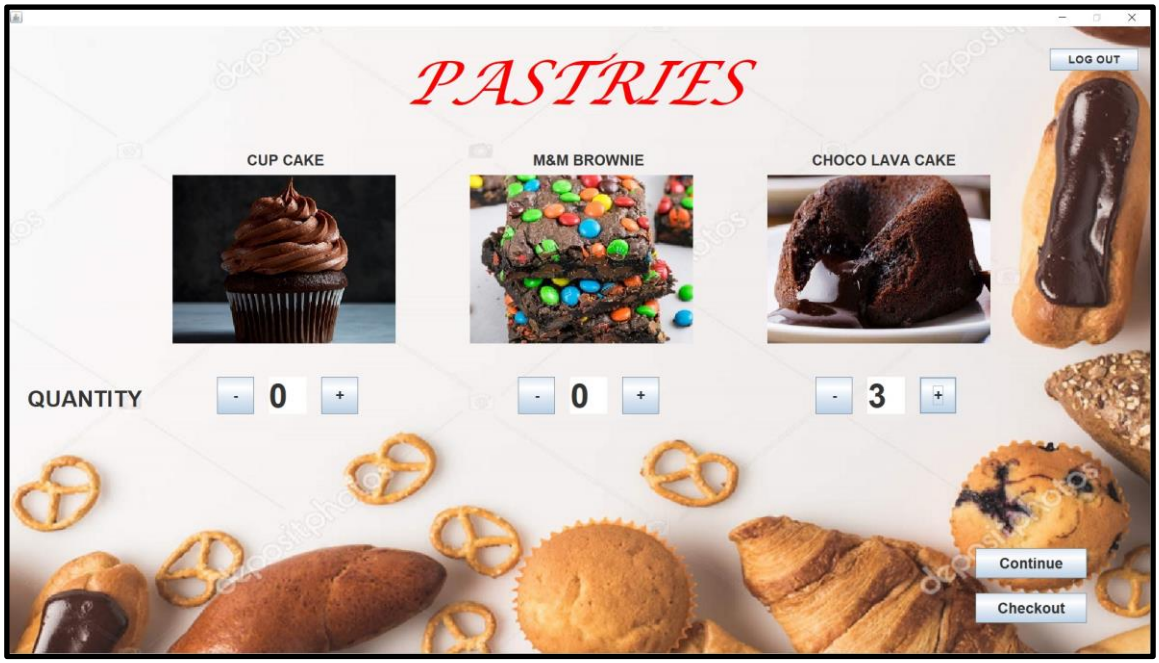


Figure 10 - Pastries

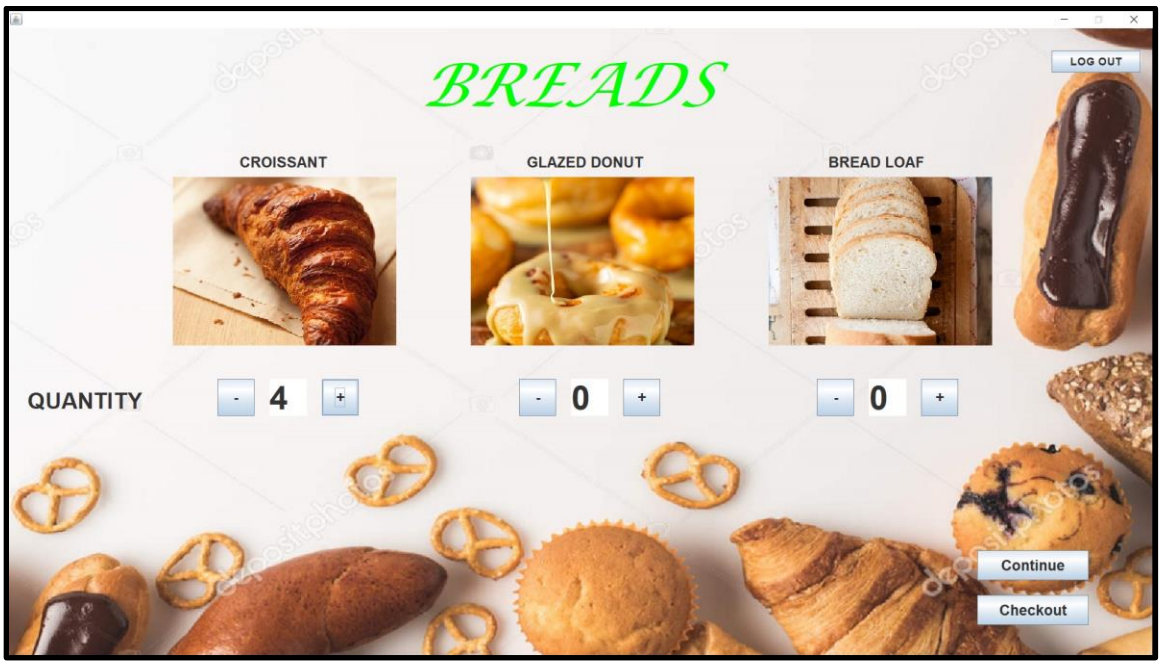


Figure 11 - Breads

For pastries and breads, restrictions have been placed on the lower limit for the quantity. Quantity value cannot be lowered below 0 and in the event a customer tries to lower the same they would receive an error pop-up as displayed in figures 12 & 13 respectively.

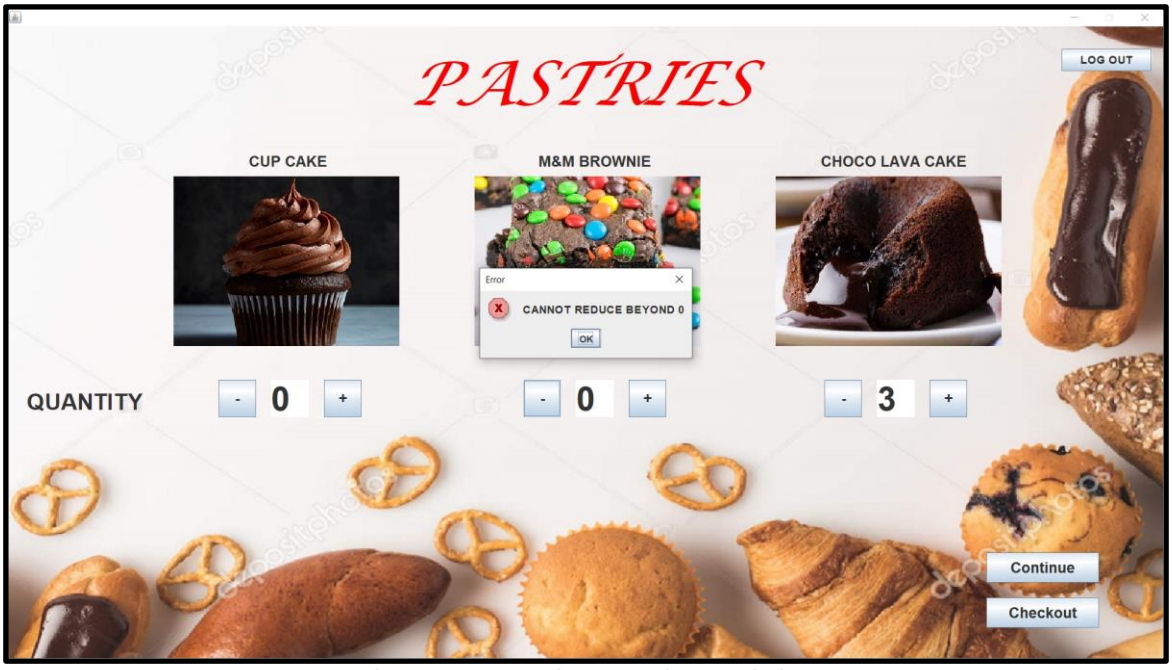


Figure 12 - Pastries quantity restriction

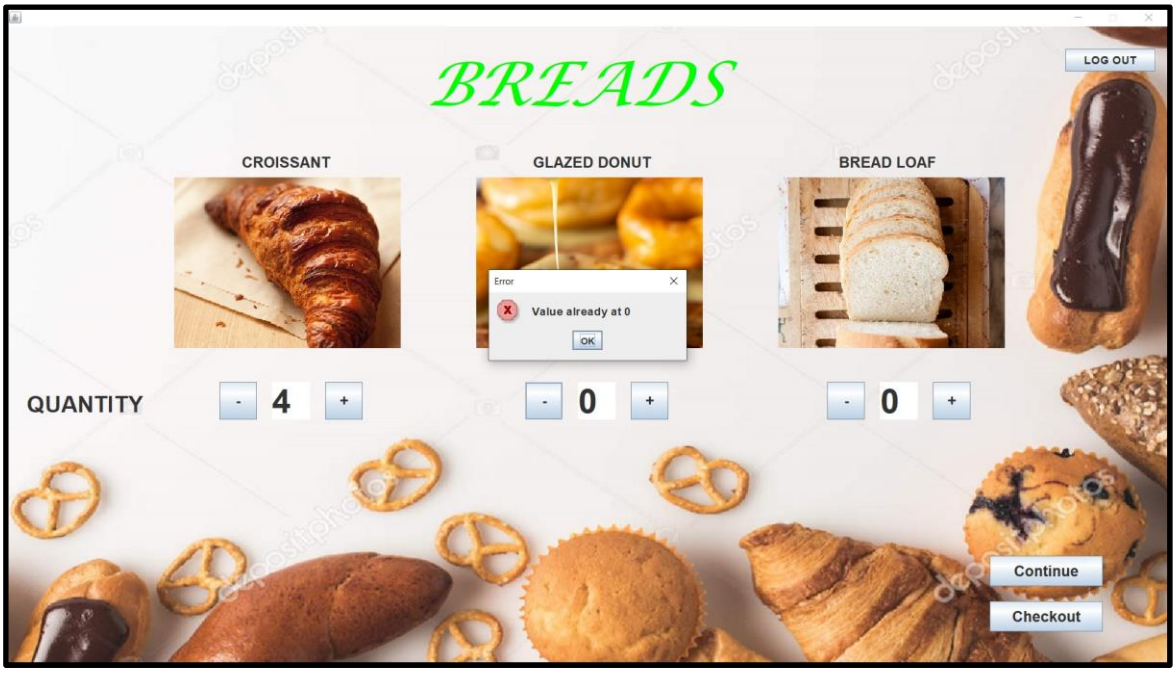


Figure 13 - Breads quantity restriction

5.5 CHECKOUT:

Once customers have selected the quantity for necessary items, they may proceed to checkout by clicking on the *"Checkout"* button in any of the product pages.

Once done they are redirected to the checkout page where the order number is displayed at the top, below which a summary of order is displayed.Below the summary the total amount for the order is highlighted in red The summary comprises of four different columns as shown in figure 14:

- Item - Individual items customer has placed order for
- Quantity / Size - Quantity (or) Size of each item order has been placed for
- Cost per unit - Cost for one unit for the corresponding item
- Item Price - Total cost for particular item (Quantity * Cost per unit)

Figure 14 - Checkout

The Time package is used to retrieve the exact time a customer logs into the website (using credentials or guest) in "yyyyMMddHHmmss" format. This value is multiplied by 1000 and incremented by one to get a unique order number for the customer. Once ready customer can proceed to the payment gateway page by selecting *"Proceed to Payment"* button.

5.6 PAYMENT GATEWAY:

Once the customer is ready to proceed with the online order, they will navigate to the payment gateway page (refer Figure 15). The payment page comprises of three portions namely, **Customer Details, Address Details** and **Payment Option** each of comprises of the following fields respectively all of which are mandatory.

Portion	Fields
Customer Details	*First Name, Last Name, Mobile Number, Email*
Address Details	*Apartment, Street, City, State, Country, Zip Code*
Payment Option	*Credit Card, Debit Card, PayPal, Cash On Delivery*

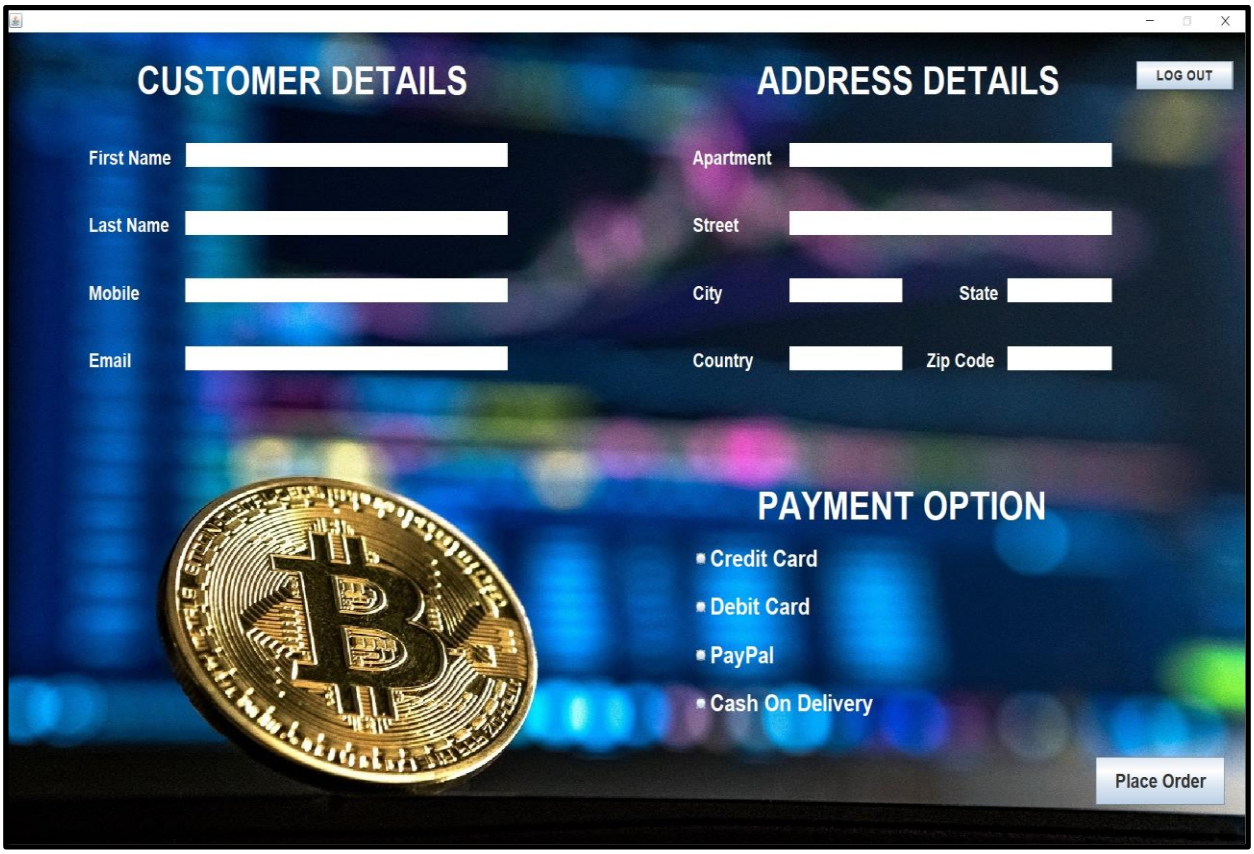


Figure 15 - Payment Gateway

Under **Customer Details** if a customer tries submitting without filling any particular field it will throw a pop up error window for the corresponding fields as shown in figures 16 and 17. Restrictions have been placed such that the *"First name"*, *"Last name"* text field accepts only string characters while *"Mobile"* text field accepts only numbers which are of exact length of 10.

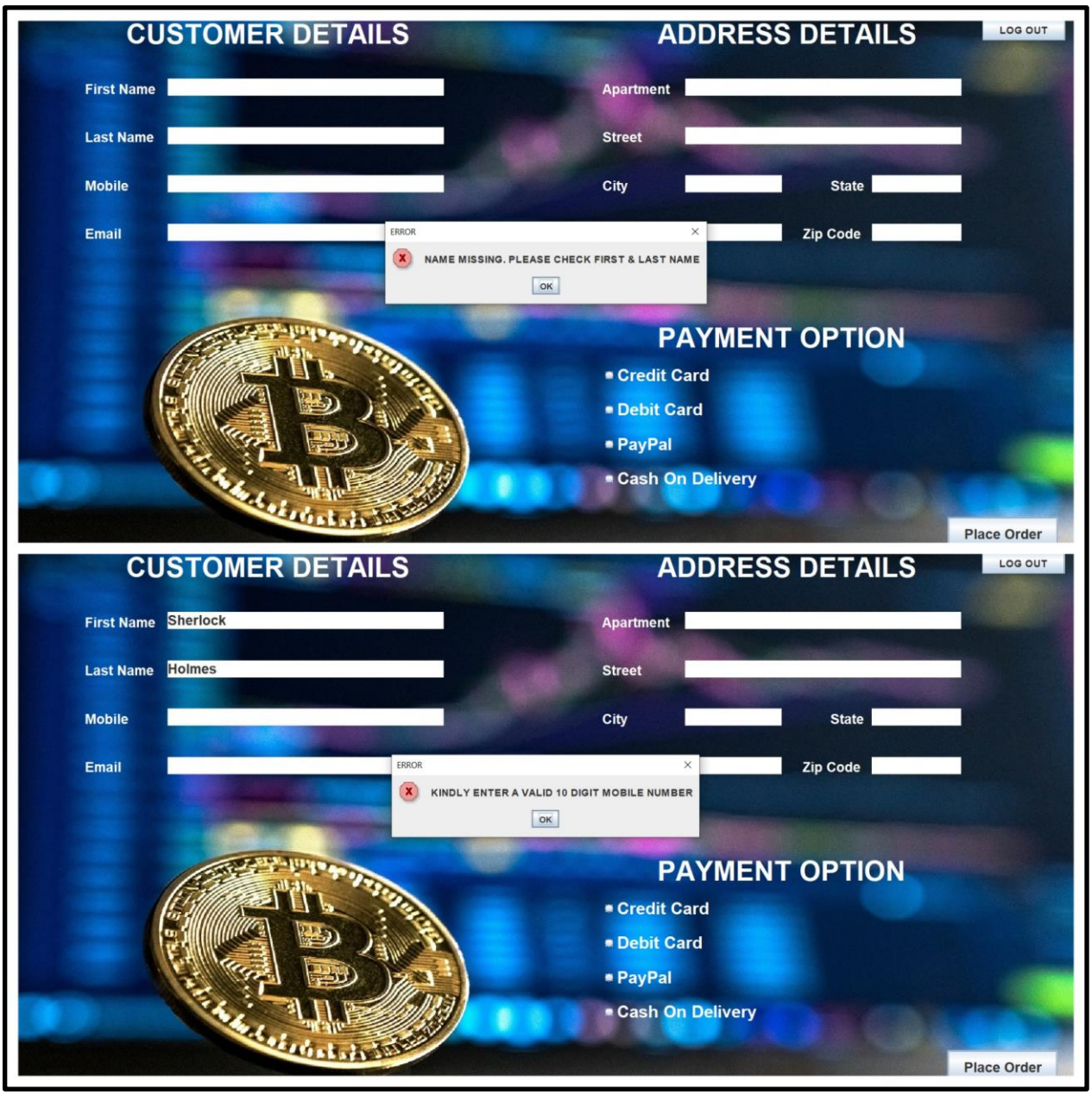


Figure 16 - Customer Details Fields functionality

There are two functionalities in place for the "*Email"* field. The first one ensures that a string has been entered in the text field, while the second functionality verifies that the entered string follows the appropriate email address format. If either of the functionality is not satisfied than the customer would get a corresponding error message as displayed in figure 17.

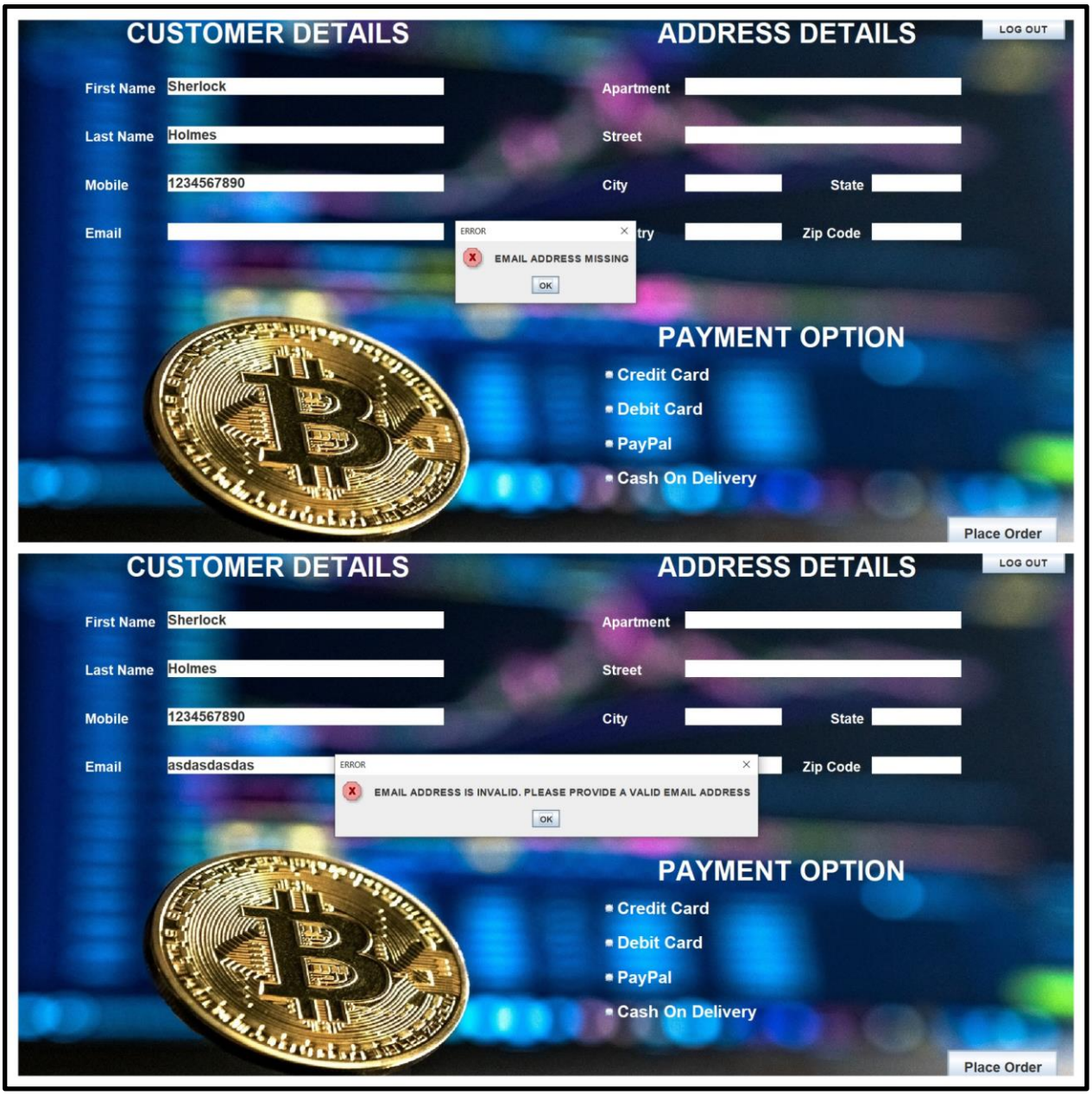


Figure 17 - Email Field functionalities

If customer has missed any fields under the **Address Details** section a single error pop up appears. The *"Zipcode"* field has an additional constraint where it can accept only a number else would display as error pop-up (refer figure 18).

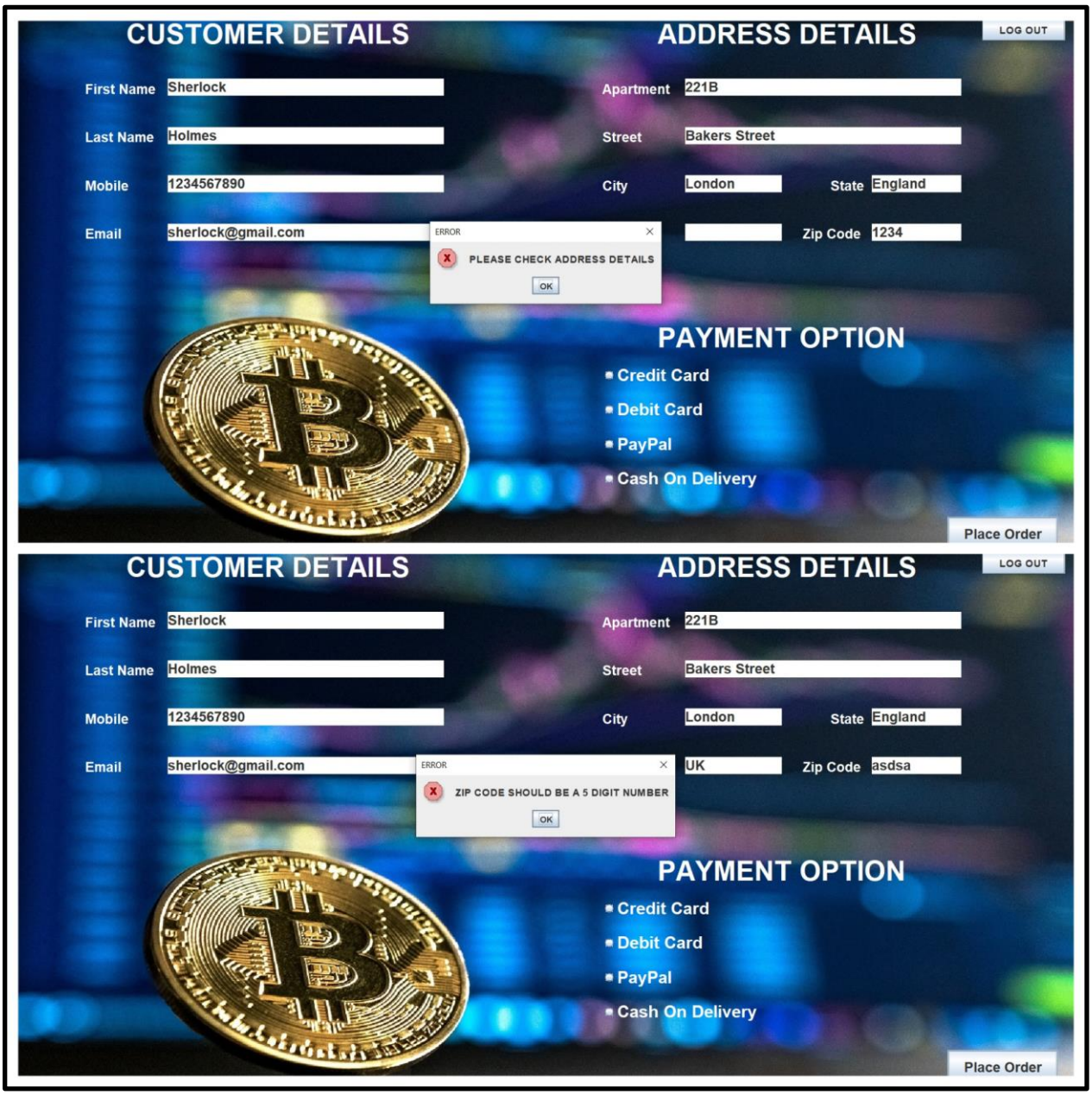


Figure 18 - Address Details section functionalities

Under **Payment Options** the customer needs to select a payment option from the provided set of options *Credit Card, Debit Card, PayPal, Cash On Delivery* all of which are grouped under a single ButtonGroup to ensure that a customer can select only one option. A failure to select any option will result in an error pop-up (refer figure 19).

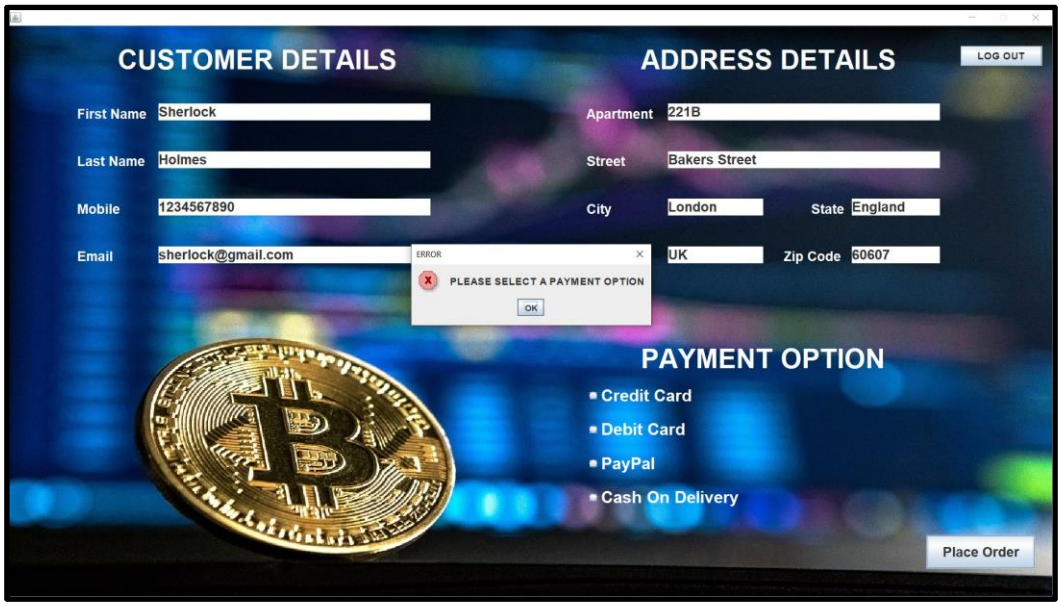


Figure 19 - Payment Option functionalities

Once all necessary fields have been filled out, customer can select the *"Place Order"* button on the bottom right to place their order and would receive a success pop up message (refer figure 20) post which they get redirected to the login page.

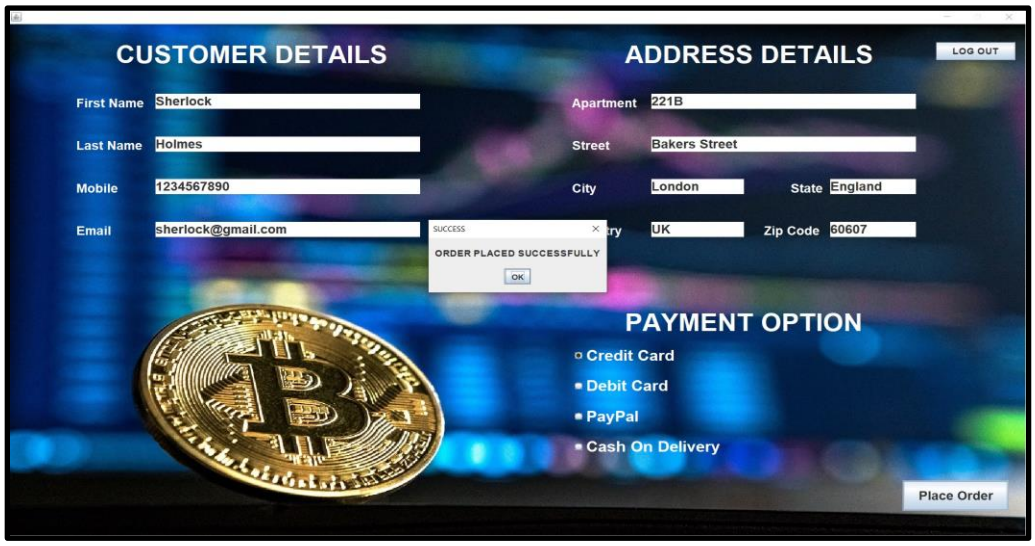


Figure 20 - Order Placed

5.7 ORDER REVIEW:

Customers also have to option of reviewing their order using the Order number after an order has been placed. To review the same, customers need to select the track order option in the login page which would redirect them to the order review page which has a search bar at the top to enter the order number (refer figure 21).

Figure 21 - Order Review

Customers can review their orders placed by using the order number. If the search is performed with an order number that does not exist in the database then customers will receive an error pop up. If the order number does exist in the database then customers would be able to see all the details of that particular order as depicted in figure 22.

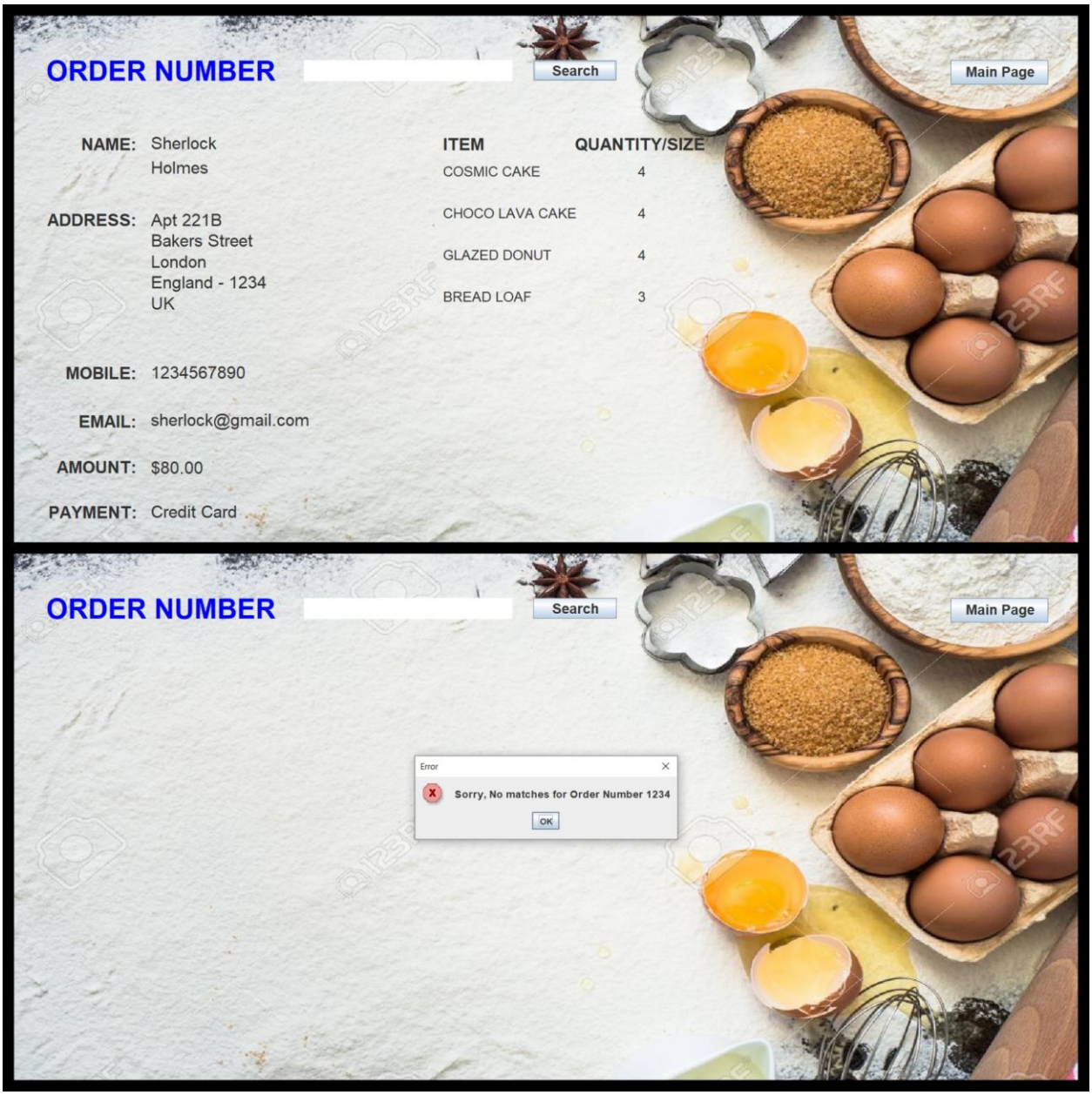


Figure 22 - Order Review Constraints

6. DATABASE:

The database configuration have been done using SQLite. SQlite is a Relational Database Management System (RDBMS) which is contained in C-library. The SQLite is generally embedded into the program in contrast to other database management systems.

SQLite incorporates the SQL standard and supports ACID transactions. Also SQlite is lightweight in while compared to MySQL and requires less resources for management which makes it a suitable application for small time bakeries.

6.1 FEATURES OF SQLite:

1. Transactions are atomic, consistent, isolated, and durable (ACID) even after system crashes and power failures.
2. Zero-configuration - no setup or administration needed.
3. Serverless
4. Compact
5. Single Database File
6. Stable Cross-Platform Database File
7. Simple, easy to use API.
8. Variable-length records
9. Readable source code
10. SQL statements compile into virtual machine code

6.2 DATABASE and its TABLES:

A database named “Final” has been created using SQLite and connection has been established between this database and Java eclipse for this project. Figure 23 gives an overall view of the database and its tables. The database has four tables name:

- Authorisation
- Billing
- Order_Line_Number
- Products

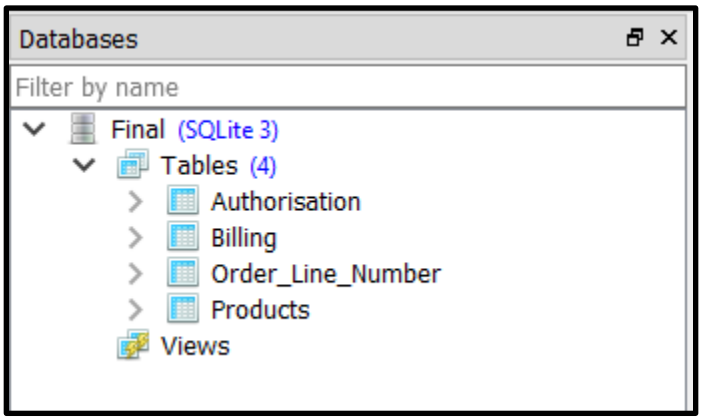


Figure 23 - Database

- **AUTHORISATION:** This table holds the customer account details such as “User Name”. “User ID”, “Password” etc.. using which a customer logs into the site. When a customer tries to login, the strings entered under “User Name” and “Password” field in login page is compared against the “User Name” and “Password” records in this table and when a match is found the customer is logged in. Also when a customer successfully creates their account, this new account details are automatically updated under this table. Figure 24 shows the table with its corresponding columns.

	UserID	Password	User Name	Email ID
1	Admin	Admin	Admin	admin@gmail.com
2	Pras Vengs	EdenHaz10	Prasanna	prasvengs6795@gmail.com
3	NightFury	Toothless	NightFury	NightFury@gmail.com

Figure 24 - Authorisation Table

➢ **BILLING:** The Billing table captures all the customer information provided in the *"Payment Gateway"* page. Additionally it also stores the total cost for the order number under the *"Amount"* column. The "*Order Review"* page searches this table for the provided order number and when it finds a match displays the result. Figure 25 shows the table with its corresponding columns.

	Order_No	First_Name	Last_Name	Mobile	Email	Aparment	Street	City	State	Zip_Code	Country	Amount	Payment_Method
1	20191205174220001	Sherlock	Holmes	1234567890	sherlock@gmail.com	221B	Bakers Street	London	England	60607	UK	80	Credit Card
2	20191130213737001	Prasanna	Vengatesh	3124782816	pvenka24@uic.edu	2F	822 South Loomis	Chicago	Illinois	60607	USA	139	Cash On Delivery

Figure 25 - Billing Table

➢ **ORDER_LINE_NUMBER:** The *"Order_Line_Number"* table stores information regarding the individual products in particular order. Once an order has been placed this table is populated with data from all three *"Product"* pages including the quantity for each product.This value is used along with *"Unit Price"* from *"Products"* table to determine the *"Price"* field value. Figure 26 shows this table with its corresponding columns.

	Order Number	Product ID	Quantity	Price
1	20191210211706001	P3	3	12
2	20191210211706001	B1	4	8
3	20191210211706001	C1	3	30
4	20191210211706001	P3	3	12
5	20191210211706001	B1	3	6
6	20191210212710001	C1	5	50
7	20191210212710001	P3	3	12
8	20191210212710001	B1	4	8
9	20191210212710001	C1	5	50
10	20191210212710001	P3	3	12
11	20191210212710001	B1	4	8

Figure 26 - Order_Line_Number Table

➢ **PRODUCTS:** Finally, the *"Products"* table stores details about individual products available in the bakery**.** This table is useful for both the Bakery owners and its customers in identifying the available products. Figure 27 shows the table with its corresponding columns.

	Product ID	Product Name	Unit Price
1	C1	COSMIC CAKE	10
2	C2	RAINBOW CAKE	15
3	C3	DEATH BY CHOCOLATE	20
4	P1	CUP CAKE	2
5	P2	M&M BROWNIE	3
6	P3	CHOCO LAVA CAKE	4
7	B1	CROISSANT	2
8	B2	GLAZED DONUT	3
9	B3	BREAD LOAF	4

Figure 27 - Products Table

7. FUTURE SCOPE:

- Provide more menu options for customers to order.
- Coupons and offers for online order and in store.
- Loyalty cards for online order.
- Customization of cakes on pre order. New layout, flavor or message can be added based on customer preference.
- Business Intelligence is the trend nowadays and when a customer sees that the system suggests items based on his previous orders, it will make the ordering process very fast and easy for them. Also, this would help to retain and gauge more customers.
- Modify orders after its being placed. Customer can go back to change the current order, drop options add more option.
- Delivery options. Collect in-store services, giving free shipping based on the minimum order amount
- A virtual assistant that will troubleshoot problems and ensure a smooth process.
- Live tracking. Clear and accurate tracking information that can save a lot of wasted time and frustration for customers.