

Project Report

Project Title: ASL - Restaurant Management System

Group no: 06

Group Members:

- Arman Mokammel (ID: 2232450642)
- Soraiyah Samantha (ID: 2231590642)
- Sabrina Sabnam Farhana (ID: 2231425642)



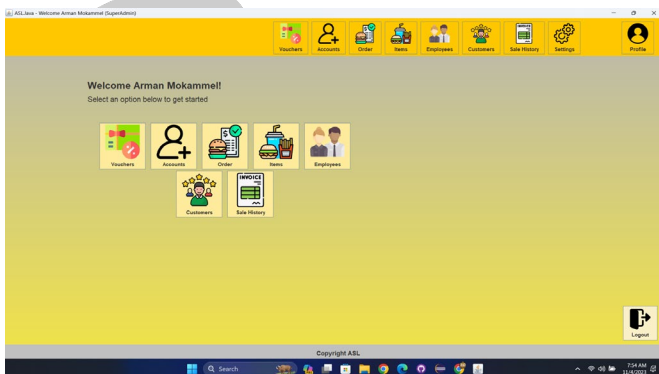
Introduction:

Our project aims to create a software system that will be used by restaurants to manage their entire operations. It will be an all-in-one solution.

It is capable of storing records of employees, customers, orders, etc as well as the POS terminal system for taking orders. It has a login system with different tiers of accounts. Each tiers have their specific level of access. The tiers are as follows:

- SuperAdmin – Has access to all features of the software.
- Admin – Does not have access to changing account and employee information.
- Order – Can only access the order system. Logging into this account will directly take the user to the order screen.

Some parts of UI is shown below:

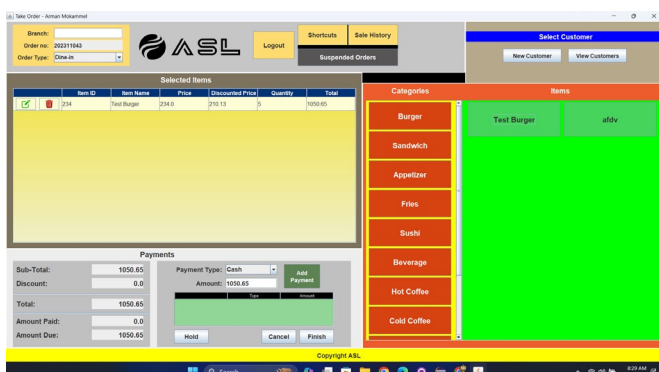


Main UI – After Login

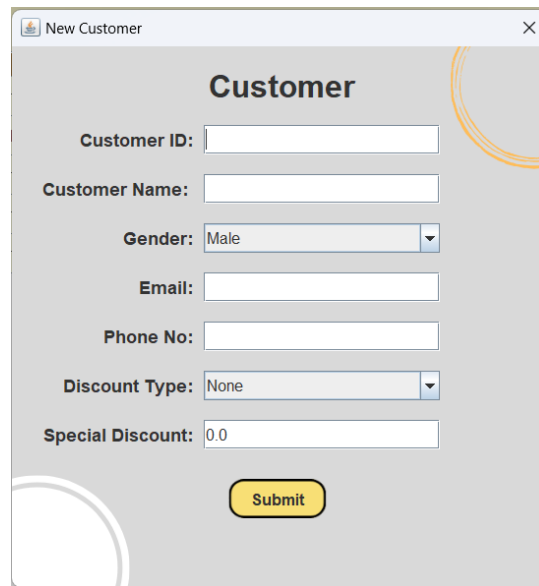
Customer Tab – For editing customer info

SL	Customer ID	Customer Name	Gender	Email	Phone No	Special Discount Type	Special Discount	
1	1234	Soraiyah	Female	soraiyahsamantha@gmail.com	01823351919	Value	20.5	<input checked="" type="checkbox"/>
2	12	PocAAAAA	Male	thw@	214	None	0.0	<input checked="" type="checkbox"/>
3	12312	Arman	Male	armanmokammel@gmail.com	0111075321	None	0.0	<input checked="" type="checkbox"/>
4	123	Indiv	Male	@ 434	342	None	0.0	<input checked="" type="checkbox"/>
5	1	A	Male	@2	343	None	0.0	<input checked="" type="checkbox"/>
6	12	MocAAAAA	Male	3 @	3423	None	0.0	<input checked="" type="checkbox"/>
7	25	Moc	Male	@	3442343	None	0.0	<input checked="" type="checkbox"/>
8	111111	Indiv	Male	@	3213	None	0.0	<input checked="" type="checkbox"/>
9	12	Ind	Male	ppa@gmail.com	223	Value	45.0	<input checked="" type="checkbox"/>
10	343	et	Male	ppa@	434	None	303.0	<input checked="" type="checkbox"/>
11	4353	Indiv	Male	@	4352	None	4.0	<input checked="" type="checkbox"/>
12	2524	Indiv	Male	@	345234	None	342.0	<input checked="" type="checkbox"/>

Order Screen – For taking orders



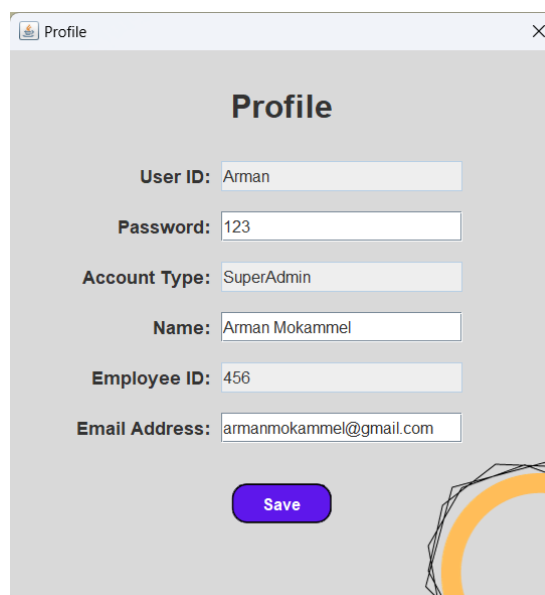
Each tab contains a JTable for displaying info along with a custom column where there will be a green edit button and a red delete button. There is also a button at the top right to add new entries, which will open a JDialog to provide details for the new entry just like this:



The 'New Customer' dialog box features a title bar with a close button. The main content area is titled 'Customer' and contains several input fields: 'Customer ID', 'Customer Name', 'Gender' (a dropdown menu currently showing 'Male'), 'Email', 'Phone No.', 'Discount Type' (a dropdown menu currently showing 'None'), and 'Special Discount' (a text field with '0.0'). A yellow 'Submit' button is located at the bottom center of the form.

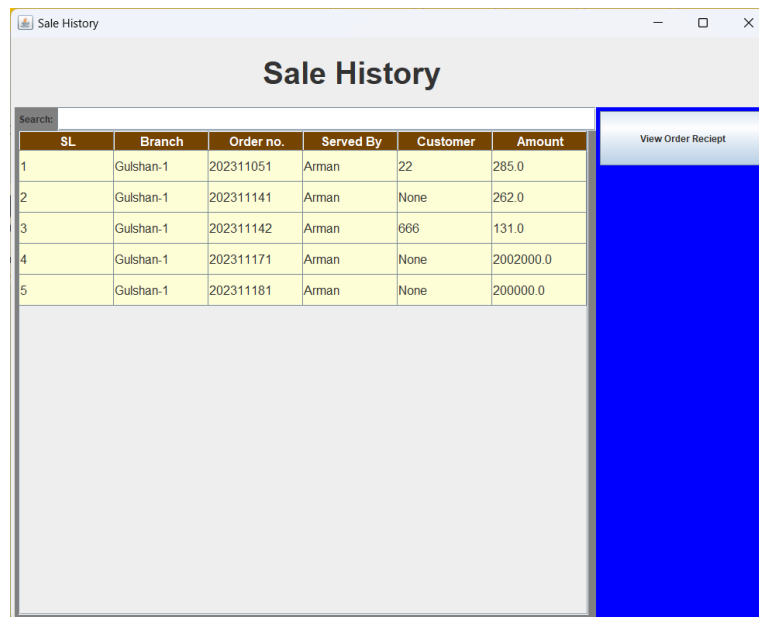
After clicking the submit button, each entry goes through a data validation process and makes sure that the data entered by the operator is not erroneous and goes by the rules set by the respective data fields. If there is no error, the data field will be highlighted to green, else it will be red and display an error message stating the exact error and also putting the cursor directly on the erroneous data field automatically.

An operator/user can change his own account details through the Profile button regardless of the access level, with the exception of Order accounts. The Profile button opens up a JDialog just like this:



The 'Profile' dialog box has a title bar with a close button. The main content area is titled 'Profile' and contains several input fields: 'User ID' (with 'Arman'), 'Password' (with '123'), 'Account Type' (with 'SuperAdmin'), 'Name' (with 'Arman Mokammel'), 'Employee ID' (with '456'), and 'Email Address' (with 'armanmokammel@gmail.com'). A purple 'Save' button is located at the bottom center of the form.

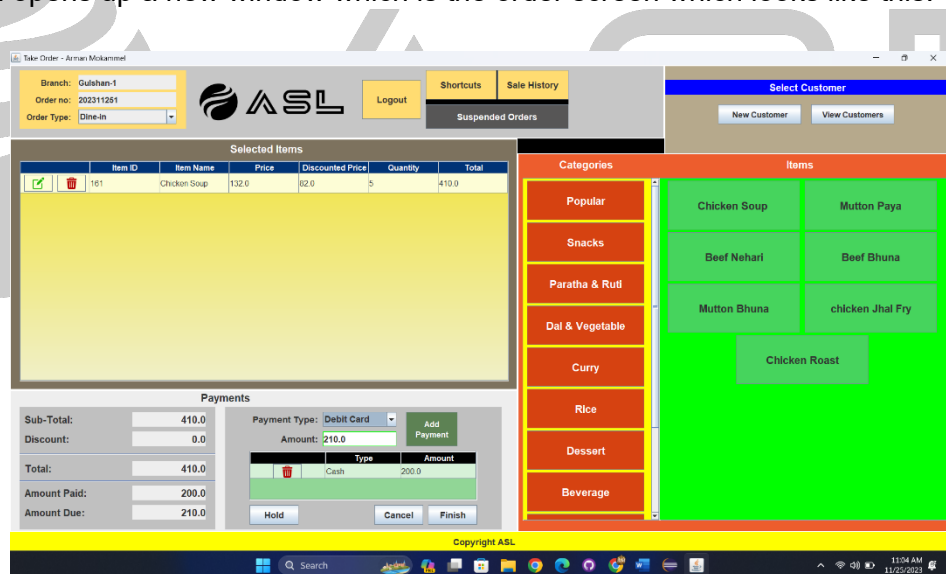
The Sale History button opens up a new window which is the which show all the previous orders along with the option to view their receipts. The window looks like this:



SL	Branch	Order no.	Served By	Customer	Amount
1	Gulshan-1	202311051	Arman	22	285.0
2	Gulshan-1	202311141	Arman	None	262.0
3	Gulshan-1	202311142	Arman	666	131.0
4	Gulshan-1	202311171	Arman	None	2002000.0
5	Gulshan-1	202311181	Arman	None	200000.0

There is a search feature that uses order number to filter out results.

The Order button opens up a new window which is the order screen which looks like this:



Take Order - Arman Mollammel

Branch: Gulshan-1
Order no: 202311251
Order Type: Dine-In

ASL Logout Shortcuts Sale History
Suspended Orders

Select Customer
New Customer View Customers

Item ID	Item Name	Price	Discounted Price	Quantity	Total
161	Chicken Soup	132.0	82.0	5	410.0

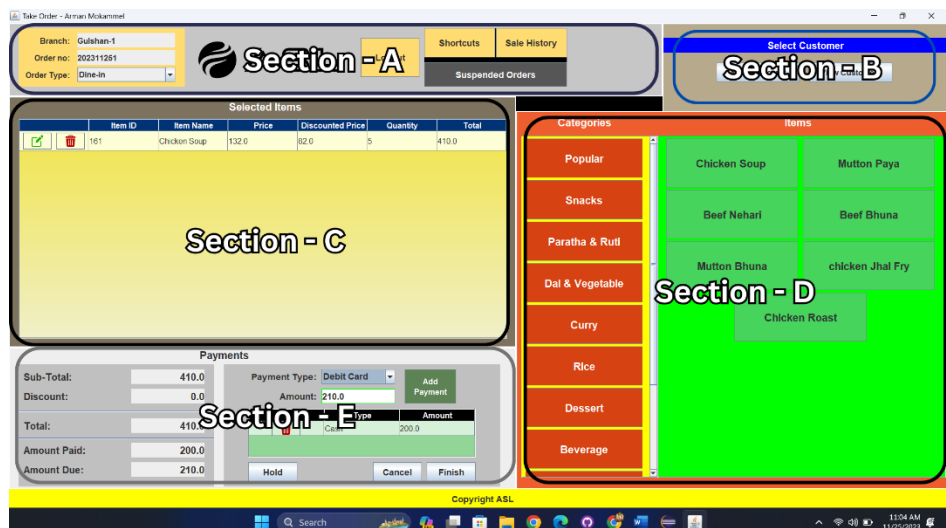
Categories: Popular, Snacks, Paratha & Ruti, Dal & Vegetable, Curry, Rice, Dessert, Beverage

Items: Chicken Soup, Mutton Paya, Beef Nehari, Beef Bhuna, Mutton Bhuna, chicken Jhal Fry, Chicken Roast

Payments
Sub-Total: 410.0
Discount: 0.0
Total: 410.0
Amount Paid: 200.0
Amount Due: 210.0

Payment Type: Debit Card
Amount: 210.0
Add Payment
Type Amount
Cash 200.0
Hold Cancel Finish

Copyright ASL



Take Order - Arman Mollammel

Branch: Gulshan-1
Order no: 202311251
Order Type: Dine-In

Section - A ASL Logout Shortcuts Sale History
Suspended Orders

Select Customer
New Customer View Customers

Section - B

Item ID	Item Name	Price	Discounted Price	Quantity	Total
161	Chicken Soup	132.0	82.0	5	410.0

Section - C

Categories: Popular, Snacks, Paratha & Ruti, Dal & Vegetable, Curry, Rice, Dessert, Beverage

Section - D

Items: Chicken Soup, Mutton Paya, Beef Nehari, Beef Bhuna, Mutton Bhuna, chicken Jhal Fry, Chicken Roast

Section - E

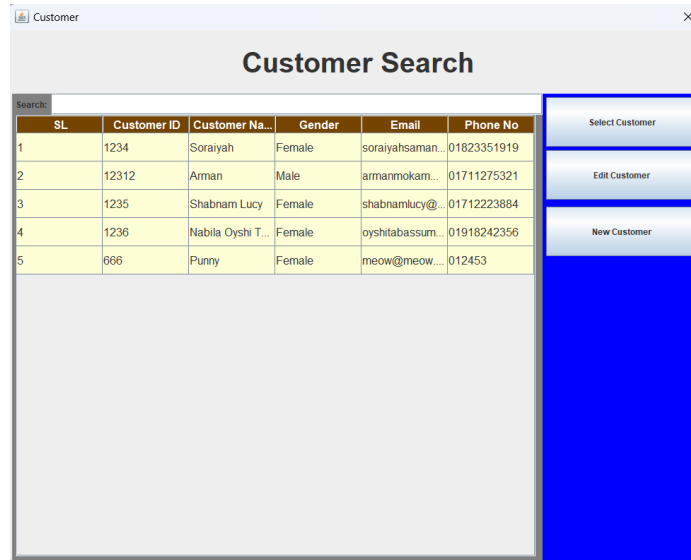
Payments
Sub-Total: 410.0
Discount: 0.0
Total: 410.0
Amount Paid: 200.0
Amount Due: 210.0

Payment Type: Debit Card
Amount: 210.0
Add Payment
Type Amount
Cash 200.0
Hold Cancel Finish

Copyright ASL

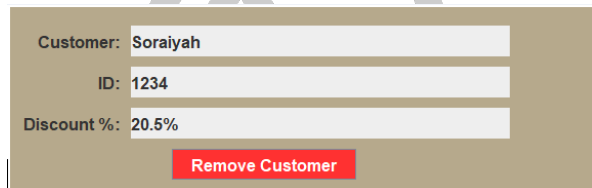
It consists of 5 sections:

- Section – A : It contains information such as branch, current order number (which is automatically generated), and order type. It also has some buttons to logout, view keyboard shortcuts, sale history & view suspended orders.
- Section – B : It is used to link a customer to the order or create and link a new customer to the order. Clicking the view customers button will show:



SL	Customer ID	Customer Na...	Gender	Email	Phone No
1	1234	Soraiyah	Female	soraiyhasaman...	01823351919
2	12312	Arman	Male	armanmokam...	01711275321
3	1235	Shabnam Lucy	Female	shabnamlucy@...	01712223884
4	1236	Nabila Oyshi T...	Female	oyshitabassum...	01918242356
5	666	Punny	Female	meow@meow...	012453

Customers can also be searched using their phone numbers. After linking a customer, it will display the info similar to this:



Customer: Soraiyah

ID: 1234

Discount %: 20.5%


Remove Customer

It shows the Customer name, id and the discount percentage or value, if there is any.

- Section – C : It contains the information of all selected items with its details such as ItemId, Item Name, Price, Discounted Price, Quantity, and Total. It also provides an edit button to edit the quantity after the item is added.
- Section – D : This section is divided into two parts:
 - Categories: It contains a list of all the category names of items. Whenever a category is clicked, all the items under this category is displayed in the Items section.
 - Items: It contains the names of all the items which is under the category selected in the Categories section. When an item is clicked it ask for quantity and then adds it to the Selected Items which is Section – C.
- Section – E : It is also divided into two parts. The first part on the left displays the various types of amounts such as total, discount, subtotal, amount paid and due. The second part on the right is used to add payments to the order. The payment types are all customizable. Each payment type can be selected and once amount is written can be added to the order using the Add payment button. There is a special payment option called Voucher. Once selected, the operator must type the voucher code which is set in the Voucher tab in the Main UI after login. While typing, it will show a list of matching discount voucher codes. Once the right one is found and selected, It will provide additional discount to the order in the form of payment.

It also contains three more buttons:

- Cancel – To cancel the order and clear the screen
- Hold – To suspend the order and add to the suspended orders list which can be accessed by the Suspended Orders button in Section – A.
- Finish – To complete the order and generate a receipt, display it in front of the operator and save to a pdf file.


ASL
Plot-21, Gulshan Avenue, Gulshan-1,
Dhaka-1213, Bangladesh
Phone# 01711275323

Date: 25/11/2023Time: 12:29:11
Order No: 202311251
Invoice To: Shabnam Lucy
Served By: Arman

Item Name	Qty	Price	Total Price
Chicken Soup	5	132.0	660.0

Gross Total : 660.0
Discount @50.0%: 330.0
Net Total : 330.0

Payments:

Cash	100.0
Debit Card	230.0

Thank you for your order!

There are keyboard shortcuts implemented in the order system for faster interaction with the UI. The keyboard shortcuts are as follows:

- ESC for Logout
- Ctrl+1 for Order History
- Ctrl+2 for Suspended Orders
- Alt+1 for View Customers
- Alt+2 for New Customer
- Alt+3 for Add Payment
- Alt+4 for Finish
- Alt+5 for Hold
- Alt+6 for Cancel

The list of packages and their respective classes are as follows:

- default package
 - Main.java (Arman Mokammel)
- Custom Cell
 - TableEditRemove_Editor.java (Arman Mokammel)
 - TableEditRemove_Renderer.java (Arman Mokammel)
 - TableRemove_Editor.java (Arman Mokammel)
 - TableRemove_Renderer.java (Arman Mokammel)
- Custom Components
 - EditRemove_Pane.java (Arman Mokammel)
 - ItemCategoryButton.java (Arman Mokammel)
 - JButtonT1.java (Arman Mokammel)
 - MenuButton.java (Arman Mokammel)
 - JPanelIX.java (Soraiyah Samantha)
 - SearchableComboBox.java (Arman Mokammel)
 - Settings_Button.java (Arman Mokammel)
 - WrapLayout.java (Arman Mokammel)
- Data
 - Account.java (Sabrina Sabnam Farhana)
 - Customer.java (Soraiyah Samantha)
 - Discount_Voucher.java (Sabrina Sabnam Farhana)
 - Employee.java (Soraiyah Samantha)
 - MenuItem.java (Soraiyah Samantha)
 - Order.java (Arman Mokammel)
 - OrderController.java (Arman Mokammel)
 - OrderMenuItem.java (Arman Mokammel)
 - Payment.java (Sabrina Sabnam Farhana)
- DataEditorUI
 - AccountEditor_Dialog.java (Sabrina Sabnam Farhana)
 - CustomerEditor_Dialog.java (Arman Mokammel & Soraiyah Samantha)
 - EmployeeEditor_Dialog.java (Soraiyah Samantha)
 - MenuItemEditor_Dialog.java (Soraiyah Samantha)
 - Profile_Screen.java (Arman Mokammel)
 - VoucherEditor_Dialog.java (Sabrina Sabnam Farhana)
- Enum
 - AccountType.java (Sabrina Sabnam Farhana)
 - DiscountType.java (Sabrina Sabnam Farhana)
 - InputType.java (Sabrina Sabnam Farhana)
- Exception
 - InputException.java (Sabrina Sabnam Farhana)
- SettingsPanels
 - ItemSettings.java (Arman Mokammel)
 - PaymentMethods.java (Arman Mokammel)

- UI
 - CustomerWindow.java (Arman Mokammel)
 - Login_Screen.java (Arman Mokammel)
 - MainWindow.java (Arman Mokammel)
 - OrderSystem (Sub-Package)
 - Panel_A.java (Arman Mokammel)
 - Panel_B.java (Arman Mokammel)
 - Panel_C.java (Arman Mokammel)
 - Panel_D.java (Arman Mokammel)
 - Panel_E.java (Arman Mokammel)
 - Order_Screen.java (Arman Mokammel)
 - Panels (Sub-Package)
 - Account_Panel.java (Sabrina Sabnam Farhana)
 - Customer_Panel.java (Soraiyah Samantha)
 - Employee_Panel.java (Soraiyah Samantha)
 - Item_Panel.java (Soraiyah Samantha)
 - Voucher_Panel.java (Sabrina Sabnam Farhana)
 - Welcome_Panel.java (Arman Mokammel)
 - SaleHistory_Window.java (Arman Mokammel)
 - Settings_Screen.java (Arman Mokammel)
 - SuspendedOrders_Screen.java (Arman Mokammel)
- Utilities
 - Utility.java (Arman Mokammel)
 - Receipt.java (Arman Mokammel)

Our project uses the Java Swing framework for our UI. We have extensively used JFrame for our major windows, JDialog for our sub-windows (to edit details etc.), JButton, JTextField, JComboBox, JTable (for displaying information in tabular form) and JScrollPane (for making our table and contents of some panels to be scrollable). We also made some custom components that derive from the base Swing Components. Some of those are :

- JButtonT1 – Custom JButton with an image and scale effect.
- SearchableComboBox – Custom ComboBox with its contents searchable while typing into it.
- EditRemove_Pane – Custom Panel which contains edit and remove buttons for use in our tables to edit or remove entry.
- WrapLayout – This layout is similar to FlowLayout but more flexible and adapts automatically to its container size and positions elements accordingly.

We included several files which all end with the extension “.ASL” to identify as files used by the program to store data. The files used are as follows:

- Accounts.ASL – To store data of all user/operator accounts.
- Customers.ASL – To store data of all customers.
- Data.ASL – To store our last order number and the total number of orders taken in the current day.
- Discount-Vouchers.ASL – To store data about all the discount vouchers.
- Employees.ASL – To store data of all employees.
- Item-Categories.ASL – To store data of all Item Categories.
- Menu-Items.ASL – To store data of all Items and linked to Categories.
- Payment-Methods.ASL – To store data of all the payments methods used by the order system.
- .txt files – To store data about all orders in digital form.
- .pdf files – To store receipts of completed orders.

There were several difficulties that we faced during the course of our project. Most of them were because of the Swing framework and glitches in the UI that were fixed after extensive debugging. There were also issues regarding data input validation but we fixed it by introducing check functions and a custom exception and using it across all our data input forms. It was extremely challenging to integrate the searchablecombox feature and integrating it to our project. We also found it difficult to keep records of custom categories and linking them with custom items as it required a linkedlist inside a hashmap and so on. Again, debugging and checking values of variables at runtime solved most of our problems. The IDE played an important role in helping us debugging efficiently. The only bugs that can be critical at times are the rounding error that occur in the order system. This is a bug that has to be fixed before this project can be launched

Future Plan: Our project currently lacks database support and so data is not synced with other computers. This is not ideal for any software of such scale. We intend to add this support before launching. We aim this project to make it extremely easy for restaurants to manage their entire operations at scale and also intend to add more features such as finance, supplies, etc to the software. This would ensure more diverse management and will allow restaurants to keep track of more aspects of their operations centrally.

We conclude with thanks to all our team members who worked (maybe) tirelessly to put together the software piece by piece. Thanks to Soraiyah Samantha for working on the data input windows and systems and also thanks to Sabrina Sabnam Farhana for helping to design the UI across our entire software.

Thanks to Arman Mokammel too I guess 😊.

