
Design Document

for

Billing 360

Version 1.00

Prepared by

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Course: CS253

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Date: 9 February, 2024

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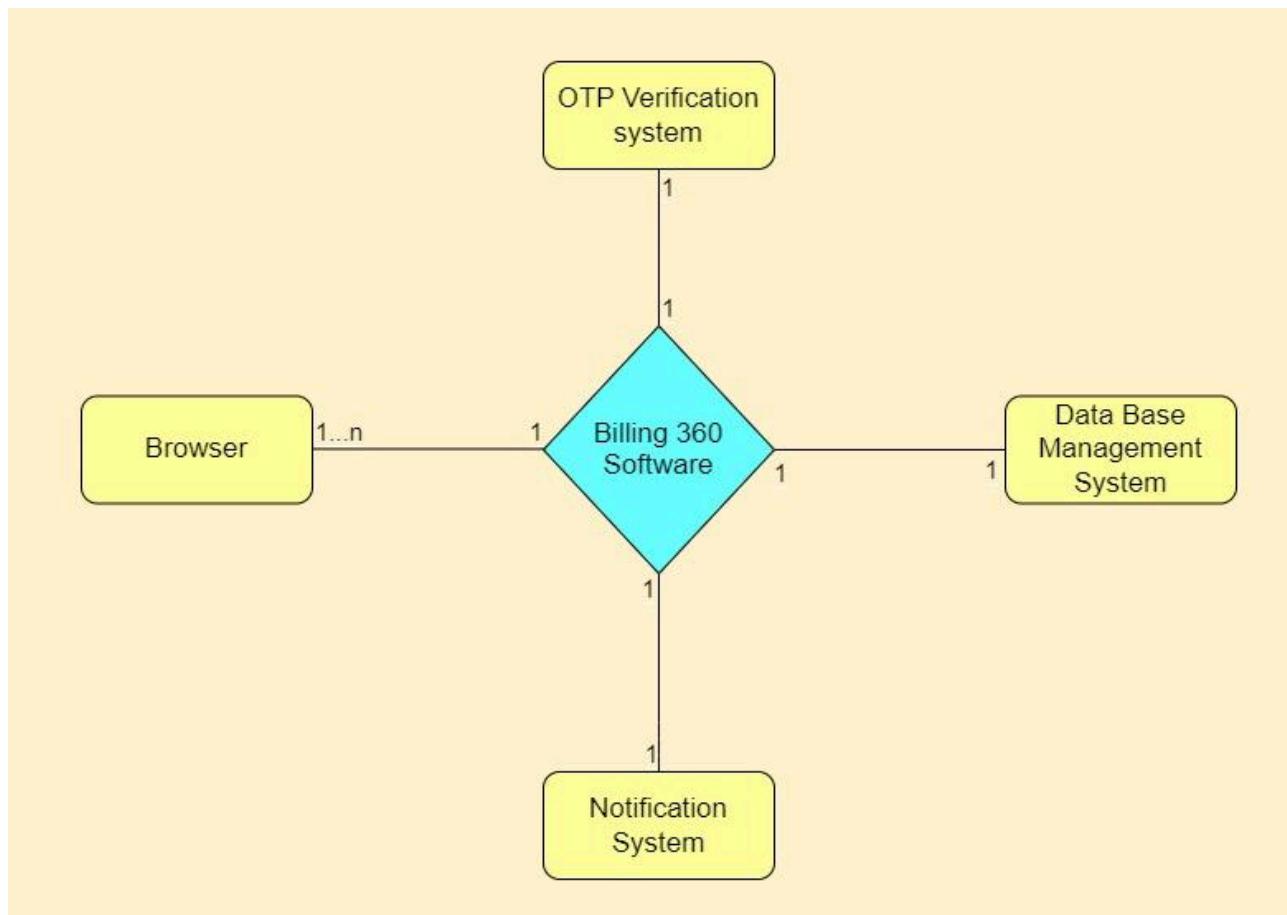
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Revisions

Version	Primary Author(s)	Description of Version	Date Completed
v1.00	Abhishek Khandelwal Dhruv Gupta Pallav Goyal Pragati Agrawal Kundan Kumar Ansh Agarwal Poojal Katiyar Nipun Nohria Saagar K V Venkatesh Akula	The first version of the design document	09/02/24

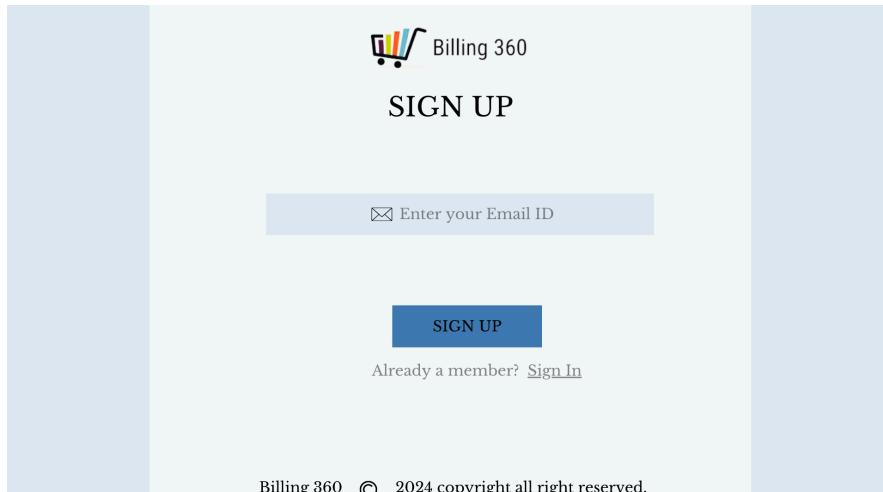
1. Context Design

1.1. Context Model



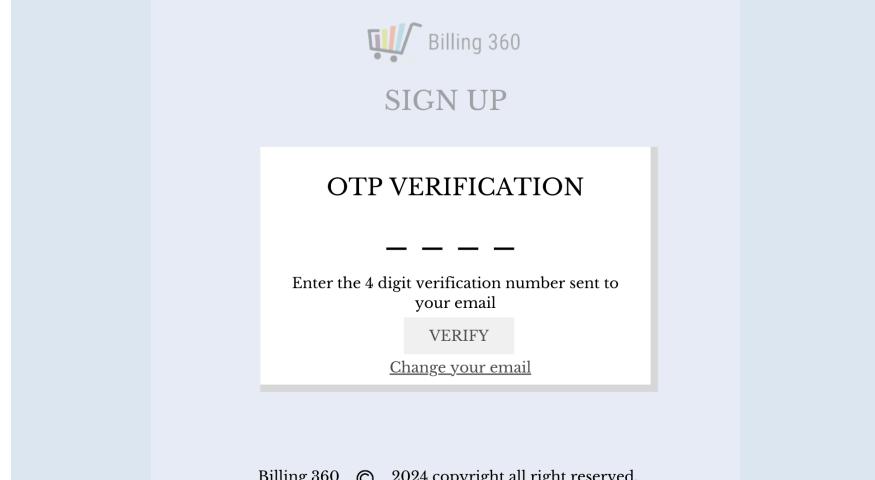
1.2. Human Interface Design

1.2.1 Sign Up:



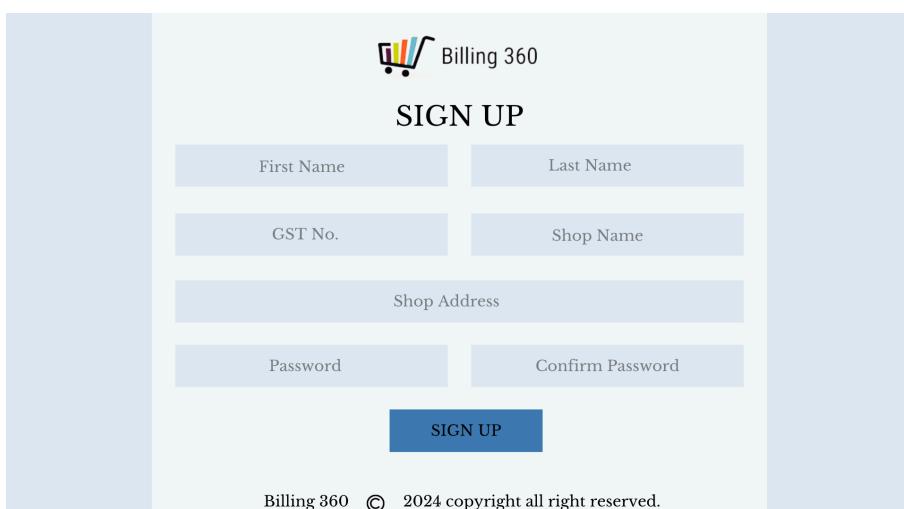
The first screenshot shows a simplified sign-up interface. It features a logo with three colored bars (blue, green, yellow) followed by the text "Billing 360". Below this is a large blue "SIGN UP" button. Underneath the button is a light gray input field with the placeholder text "✉ Enter your Email ID". At the bottom of the form, there is a link "Already a member? [Sign In](#)".

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This screenshot shows the OTP verification step of the sign-up process. It includes the Billing 360 logo and a "SIGN UP" button. A central box titled "OTP VERIFICATION" contains the instruction "Enter the 4 digit verification number sent to your email" above a dashed line. Below the line is a "VERIFY" button and a "Change your email" link.

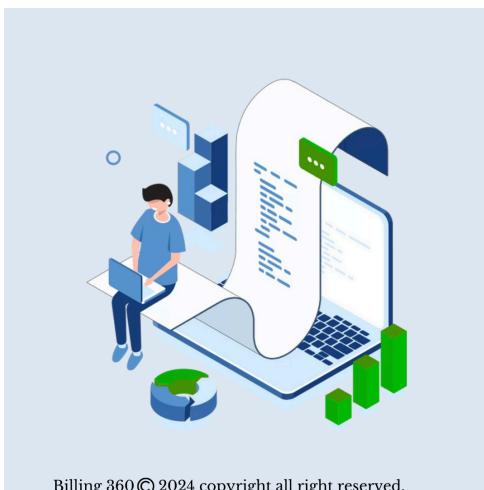
Billing 360 © 2024 copyright all right reserved.



The final screenshot displays the full sign-up form. It starts with the Billing 360 logo and a "SIGN UP" button. The form consists of several input fields arranged in pairs: "First Name" and "Last Name", "GST No." and "Shop Name", and "Shop Address". Below these are two more pairs: "Password" and "Confirm Password". At the bottom is a large blue "SIGN UP" button. The entire form is set against a light gray background.

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1.2.2 Forgot Password:



 Billing 360

Forgot Password

Enter the email id of existing account

[Back to Sign In Page](#)

 Billing 360

Forgot Password

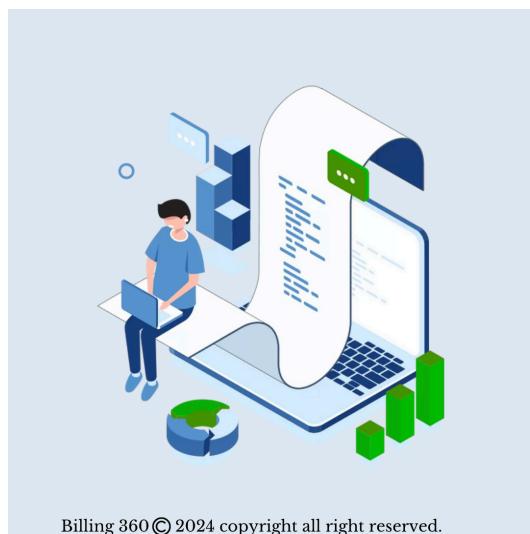
Enter the email id of existing account

OTP VERIFICATION

Enter the 4 digit verification number sent to your email

[Change your email](#)

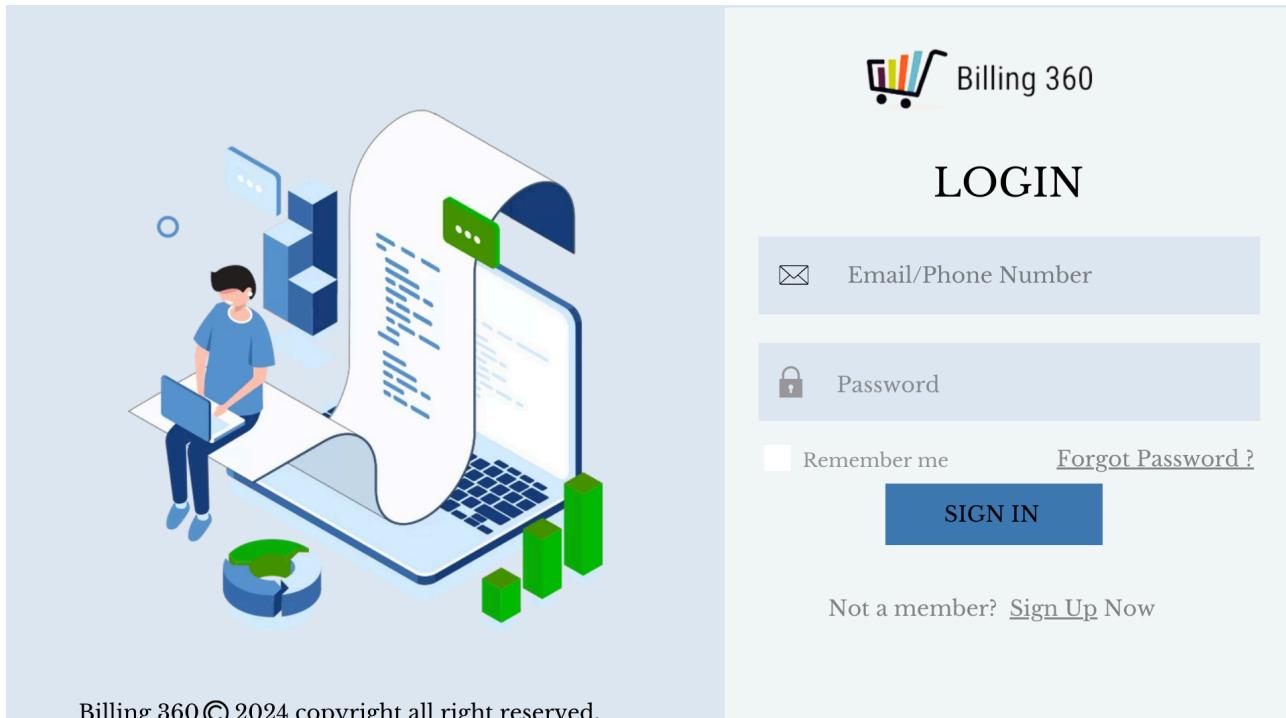
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 Billing 360

Forgot Password

1.2.3 Login:

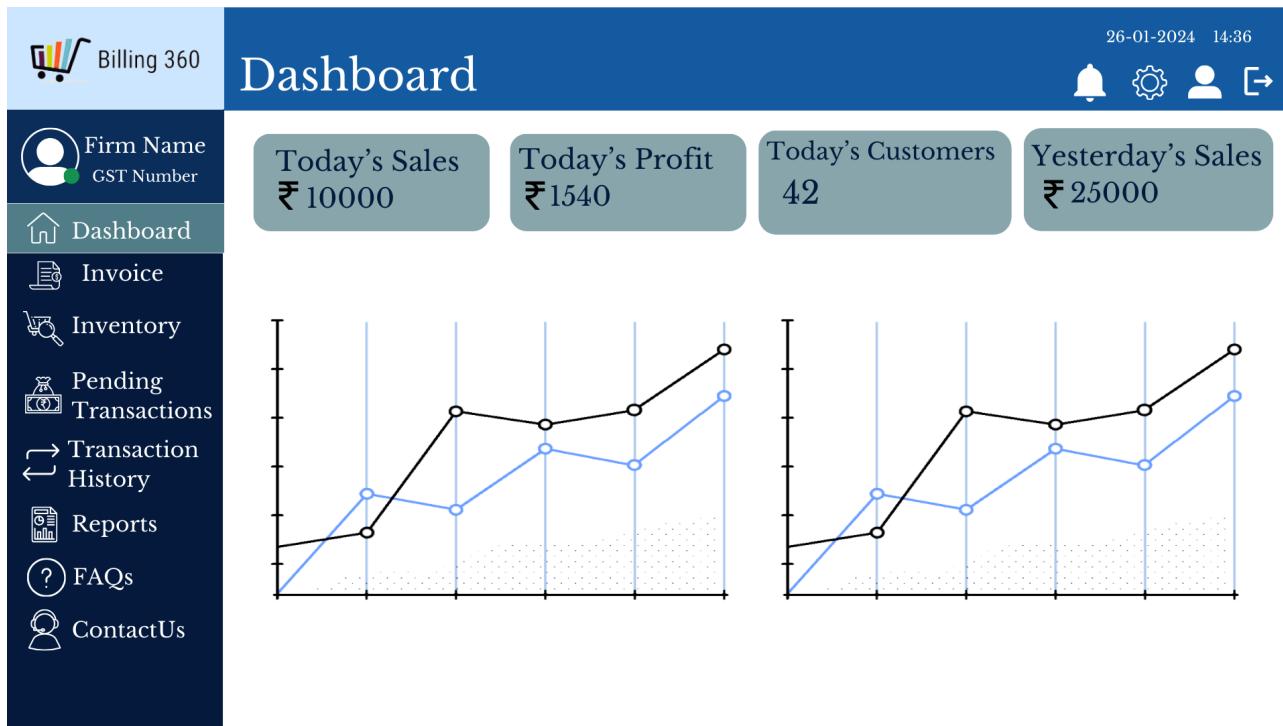


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1.2.4 User Profile:

The image shows the Billing 360 user profile page. The header features the Billing 360 logo and the date/time "26-01-2024 14:36". On the far right are icons for notifications, settings, profile, and logout. The main content area has a blue header "Profile". On the left is a sidebar menu with the following items: Firm Name (with GST Number), Dashboard, Invoice, Inventory, Pending Transactions, Transaction History, Reports, FAQs, and ContactUs. The main content area displays a large circular placeholder for a profile picture, with an "Edit Image" button below it. To the right, the profile information is listed under "My Profile": Firm Name (All In One General Store), Name of Owner (Abdul), Firm Address (Gokuldhaam Society, Powder Gali, Mumbai), GST Number (22AAAAA0000A1Z5), Email (abc@gmail.com), and Phone Number (9999999999). At the bottom are two buttons: "EDIT PROFILE" and "SAVE PROFILE".

1.2.5 Dashboard:



1.2.6 Invoice:

The invoice creation page has a header with the date and time (26-01-2024 14:36) and navigation icons. The sidebar includes links to Firm Name, GST Number, Dashboard, Invoice (selected), Inventory, Pending Transactions, Transaction History, Reports, FAQs, and Contact Us. The main form fields are Customer Name, Invoice Number, Customer Email, and Customer Phone No. A table titled "Item Table" lists columns for Item Details, Discount, Quantity, Rate, and Amount (₹). Buttons for "Add New Item" and "Scan Using Barcode" are available. A "Customer Notes" section contains the message "Thanks for your visit. Come Again!". At the bottom are buttons for "Total (₹) 0.00", "Preview Bill", and "Generate Bill".

1.2.7 Inventory:

The top screenshot shows the main Inventory screen with a list of items. The bottom screenshot shows a detailed view of an item's edit screen.

Main Inventory Screen Data:

Item Name/ID	Sale Price	Purchase Price	Stock
Lux Soap 50g xxxxxx	₹ 10	₹ 8	50
Maggie 70g yyyyyy	₹ 14	₹ 10	100
Maggie Masala-e-Magic zzzzzz	₹ 5	₹ 4	200
Nescafe Coffee 7.5g	₹ 10	₹ 7.5	100

Detailed Item Edit Screen Data:

Item name	Item Id	Quantity	Category	Stock
Lux S xxxxxx				0
Maggie yyyyyy				00
Maggie zzzzzz				00
Nescafe Coffee 7.5g				100

1.2.8 Transaction History:

The Transaction History screen displays a list of recent transactions with columns for Name/ID, Phone No., Date/Time, and Amount. Each transaction row includes a 'View Bill' link.

Transaction History Data:

Name/ID	Phone No.	Date/Time	Amount	Action
Raghunath pqrpqr	79xxx xxxxx	08/02/2024 16:24:36	₹ 500	View Bill
Anil aabbc	83xxx xxxxx	08/02/2024 08:10:51	₹10	View Bill
Arijit xyzxyz	89xxx xxxxx	07/02/2024 10:26:37	₹420	View Bill
Manindra xxyyzz	99xxx xxxxx	06/02/2024 22:30:45	₹5080	View Bill
Manoj abcbc	99xxx xxxxx	06/02/2024 09:12:28	₹ 114	View Bill

1.2.9 Pending Transactions:

The image displays two side-by-side screenshots of the Billing 360 application's "Pending Transactions" section.

Screenshot 1 (Left):

- Header:** Billing 360, Date: 26-01-2024 14:36, Notifications, Settings, User, Logout.
- Total Credit:** ₹10000.
- Table Headers:** Credit (green), Debit (grey).
- Table Data:**

Customer Name/ID	Phone No.	Amount	Action
Ramlal abcdef	98xxxx xxxx	₹ 420	View Bills
Shamlal pqrsstu	89xxxx xxxx	₹ 8004	View Bills
Mohan xyaxy	89xxxx xxxx	₹ 5400	View Bills
Payal	99xxxx xxxx	₹ 500	View Bills

Screenshot 2 (Right):

- Header:** Billing 360, Date: 26-01-2024 14:36, Notifications, Settings, User, Logout.
- Total Pending Debit:** ₹75000.
- Table Headers:** Credit (grey), Debit (green).
- Table Data:**

Supplier Name/ID	Phone No.	Amount	Action
Gupta Traders xyzxyz	79xxxx xxxx	₹ 5000	View Bills
Agrawal Traders xxyyzz	83xxxx xxxx	₹ 6530	View Bills
Khandelwal Traders khakha	89xxxx xxxx	₹ 420	View Bills
Goyal Traders	99xxxx xxxx	₹ 5080	View Bills

1.2.10 Reports:

The image shows a screenshot of the Billing 360 application's "Reports" section.

Header: Billing 360, Date: 26-01-2024 14:36, Notifications, Settings, User, Logout.

Left Sidebar:

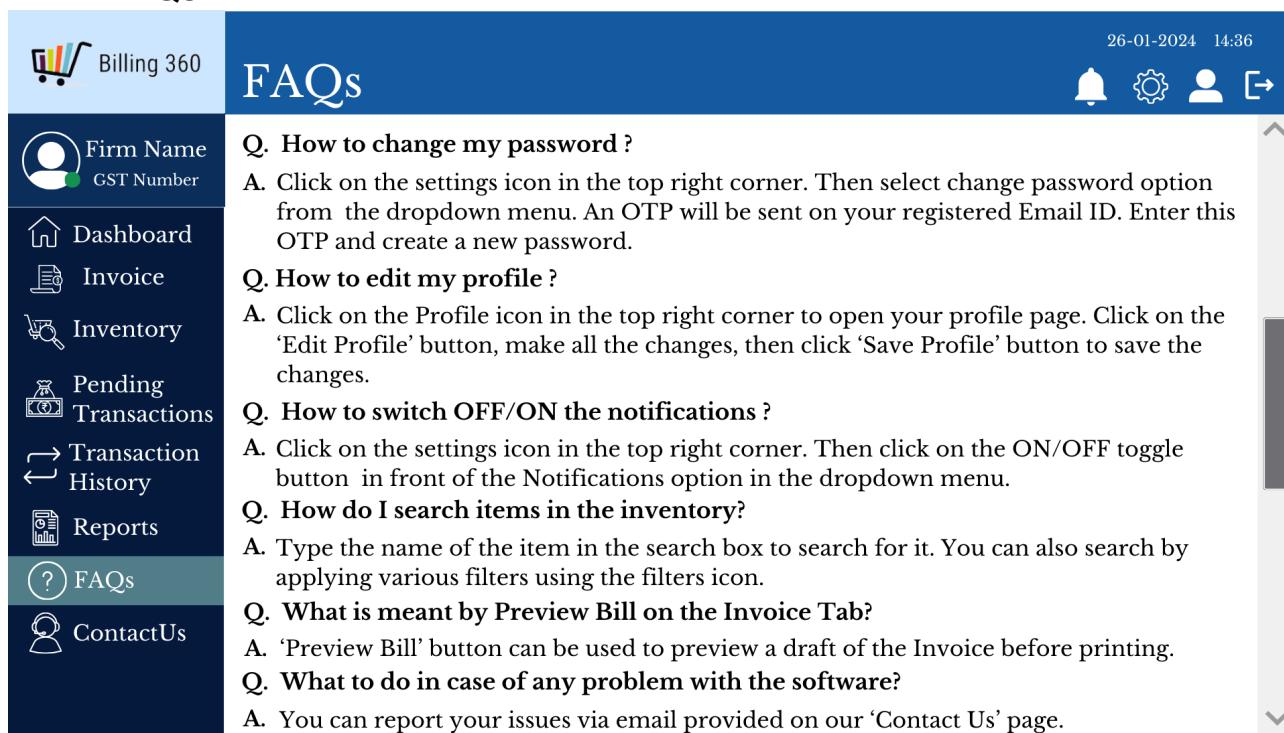
- Firm Name GST Number
- Dashboard
- Invoice
- Inventory
- Pending Transactions
- Transaction History
- Reports
- FAQs
- ContactUs

Report Selection: January 2024

Visualizations:

- Category wise Distribution of sold Items:** A pie chart showing the distribution of sold items across categories.
- Category wise Profit:** A horizontal bar chart showing the profit for various product categories.
- Sales:** A vertical bar chart showing sales in Rupees over time.

1.2.11 FAQs:



The screenshot shows the Billing 360 mobile application. At the top right, there is a timestamp '26-01-2024 14:36' and icons for notifications, settings, user profile, and sharing. On the left is a vertical navigation menu with icons and labels: Firm Name (GST Number), Dashboard, Invoice, Inventory, Pending Transactions, Transaction History, Reports, FAQs (highlighted in teal), and ContactUs. The main content area has a blue header 'FAQs'. Below it, there are several questions with corresponding A. and B. sections.

Q. How to change my password ?

A. Click on the settings icon in the top right corner. Then select change password option from the dropdown menu. An OTP will be sent on your registered Email ID. Enter this OTP and create a new password.

Q. How to edit my profile ?

A. Click on the Profile icon in the top right corner to open your profile page. Click on the 'Edit Profile' button, make all the changes, then click 'Save Profile' button to save the changes.

Q. How to switch OFF/ON the notifications ?

A. Click on the settings icon in the top right corner. Then click on the ON/OFF toggle button in front of the Notifications option in the dropdown menu.

Q. How do I search items in the inventory?

A. Type the name of the item in the search box to search for it. You can also search by applying various filters using the filters icon.

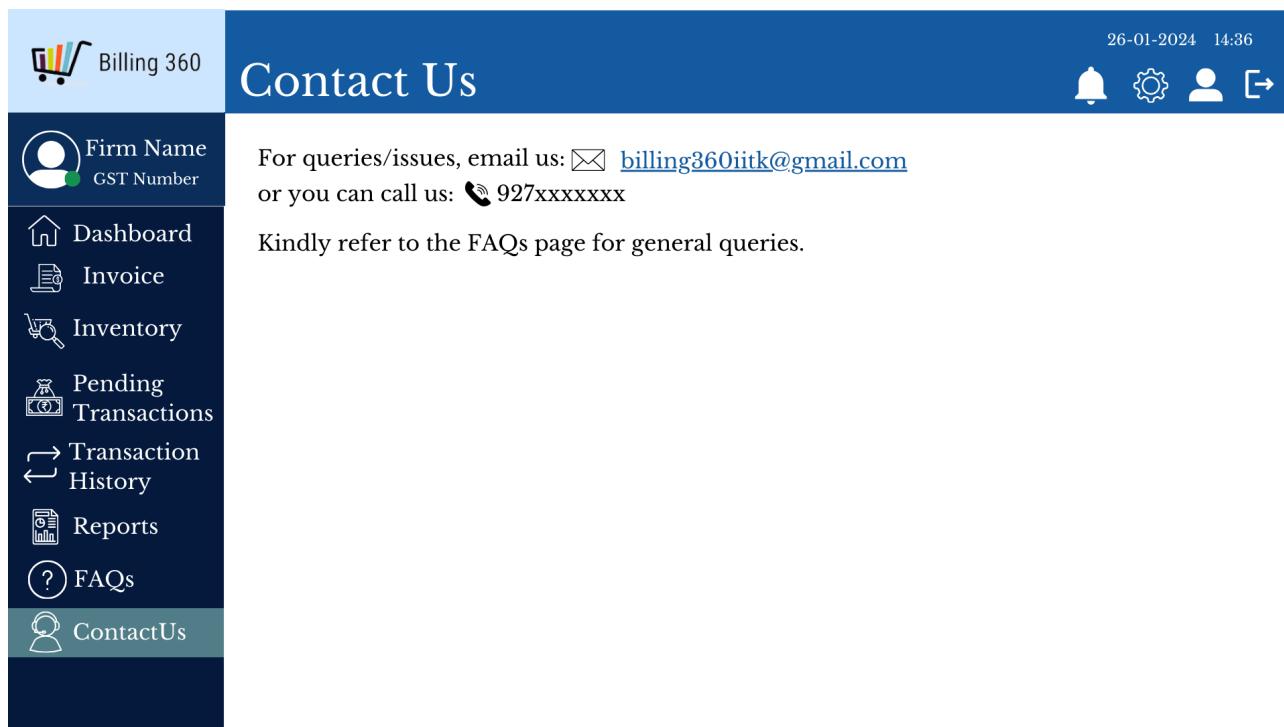
Q. What is meant by Preview Bill on the Invoice Tab?

A. 'Preview Bill' button can be used to preview a draft of the Invoice before printing.

Q. What to do in case of any problem with the software?

A. You can report your issues via email provided on our 'Contact Us' page.

1.2.12 Contact Us:

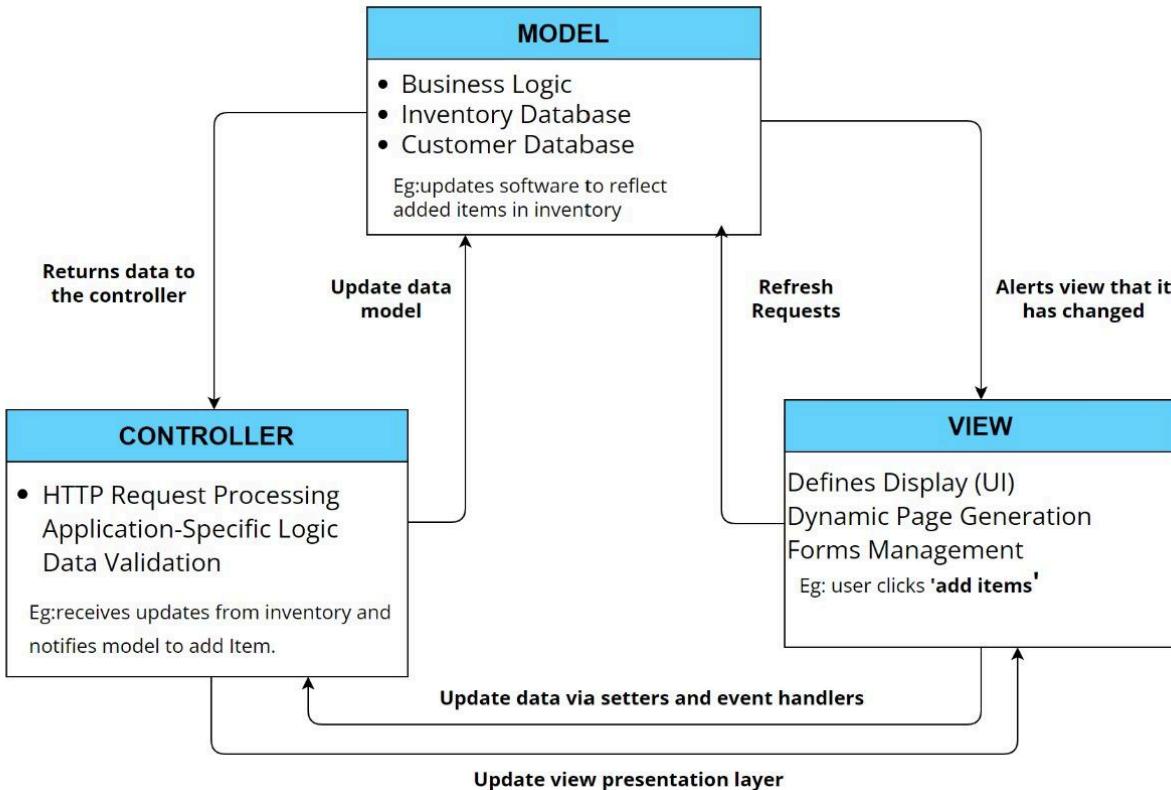


The screenshot shows the Billing 360 mobile application. At the top right, there is a timestamp '26-01-2024 14:36' and icons for notifications, settings, user profile, and sharing. On the left is a vertical navigation menu with icons and labels: Firm Name (GST Number), Dashboard, Invoice, Inventory, Pending Transactions, Transaction History, Reports, FAQs (highlighted in teal), and ContactUs. The main content area has a blue header 'Contact Us'. Below it, there is text providing contact information and a note about referring to the FAQs page.

For queries/issues, email us: billing360iitk@gmail.com
or you can call us: [927xxxxxxx](tel:927xxxxxxx)

Kindly refer to the FAQs page for general queries.

2. Architecture Design



MODEL VIEW CONTROLLER:

The Model View Controller Architecture is a robust framework to carry out various operations related to invoice management, inventory tracking, credit and debit logs, and comprehensive reporting.

It separates an application into three main logical components: the model, the view, and the controller. Each of these components are built to handle specific development aspects of an application.

Model:

- The Model in our billing software is responsible for managing the database using MongoDB as the database management system. It manages tasks related to invoice creation, inventory updates, credit and debit log entries, sending notifications and report generation.
- The Model receives information about user queries, profiles, and various data interactions from the Controller. It provides updates regarding query resolutions, notifications, and user profiles back to the Controller. Additionally, it interacts with the View to receive information about refreshed requests of the user.

View:

- The View component defines the user interface for our billing software, incorporating HTML, CSS, and JavaScript. It handles the presentation layer, showcasing features like invoice displays, inventory status, credit and debit logs, and various reports.
- Information about posted queries, announcements, profile management, and status updates is communicated from the View to the Controller. The View receives notifications, status updates, and user and profile management information from the Controller. This component is directly connected to the browser, providing a seamless user experience.

Controller:

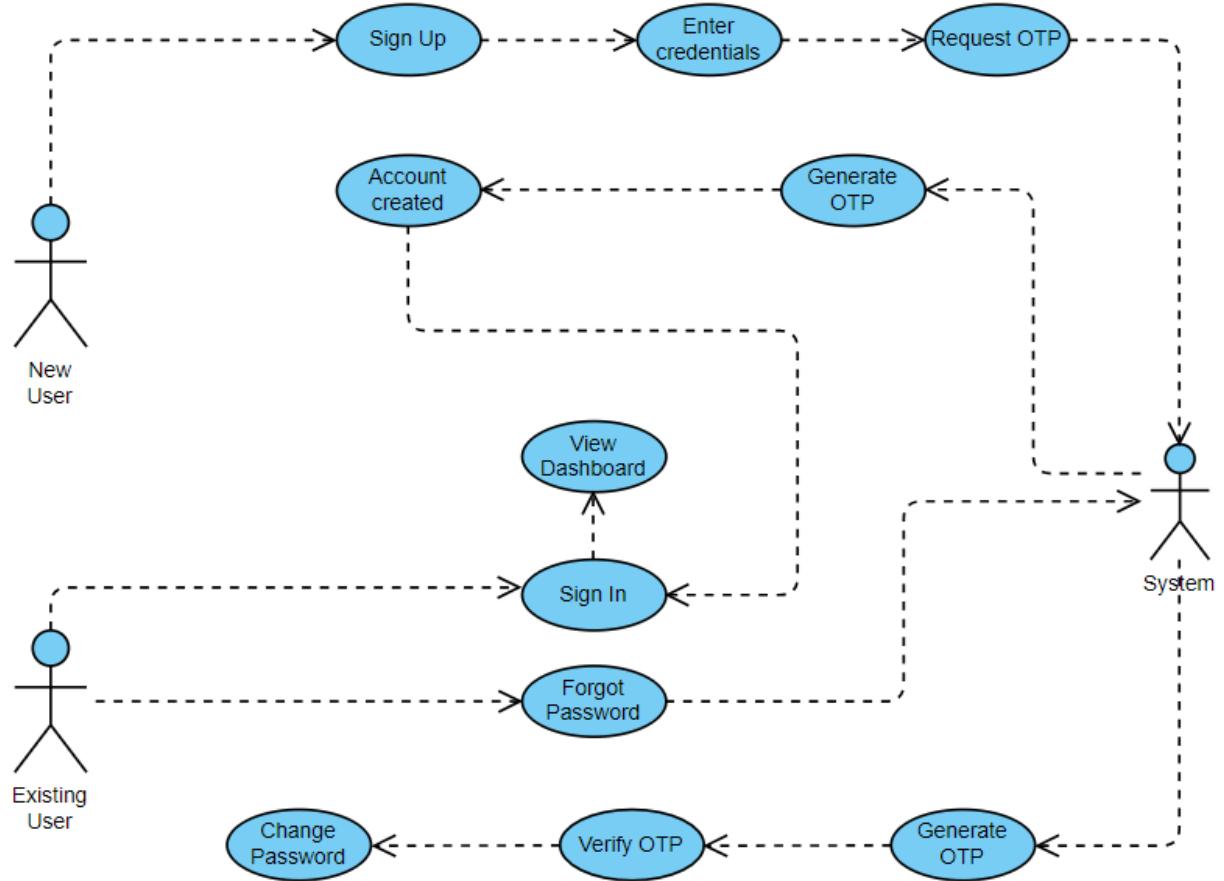
- It acts as an intermediate between Model and View. It utilizes NodeJS for managing the application logic and flow. The Controller receives updates from the View regarding user interactions and sends relevant information to the Model for database operations.
- The Controller ensures that changes in the View or Model do not directly affect each other.
- Pipe and Filter architecture is used to perform subtasks like invoice generation.

Therefore, the MVC architecture stands as the optimal choice for our billing software project, seamlessly integrating the frontend, backend, and database to cater to diverse functionalities. This architecture excels in facilitating end-to-end connectivity while allowing data to undergo independent changes, ensuring flexibility in representation and functionality. It perfectly aligns with our requirements for efficient management of invoicing, inventory, and financial logs. However, there are cons associated with it as well. There might be a need for additional code or an increase in code complexity, particularly in scenarios where data interactions are not straightforward. This, in turn, could extend the debugging process.

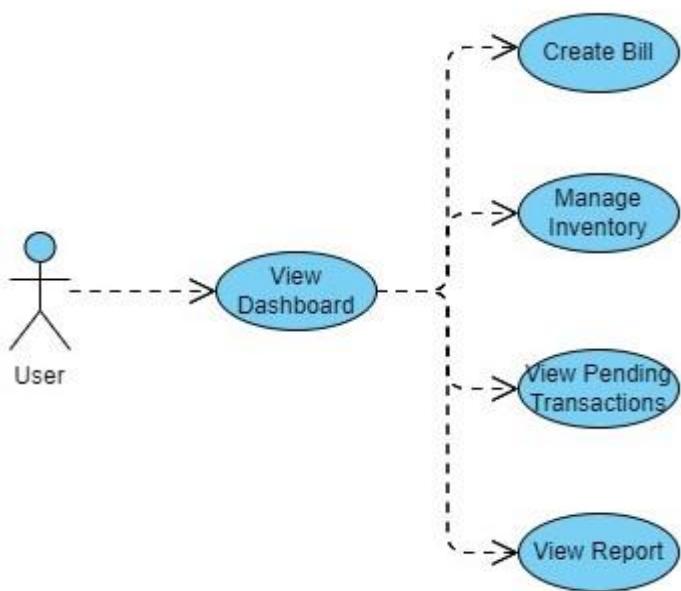
3. Object Oriented Design

3.1. Use Case Diagrams

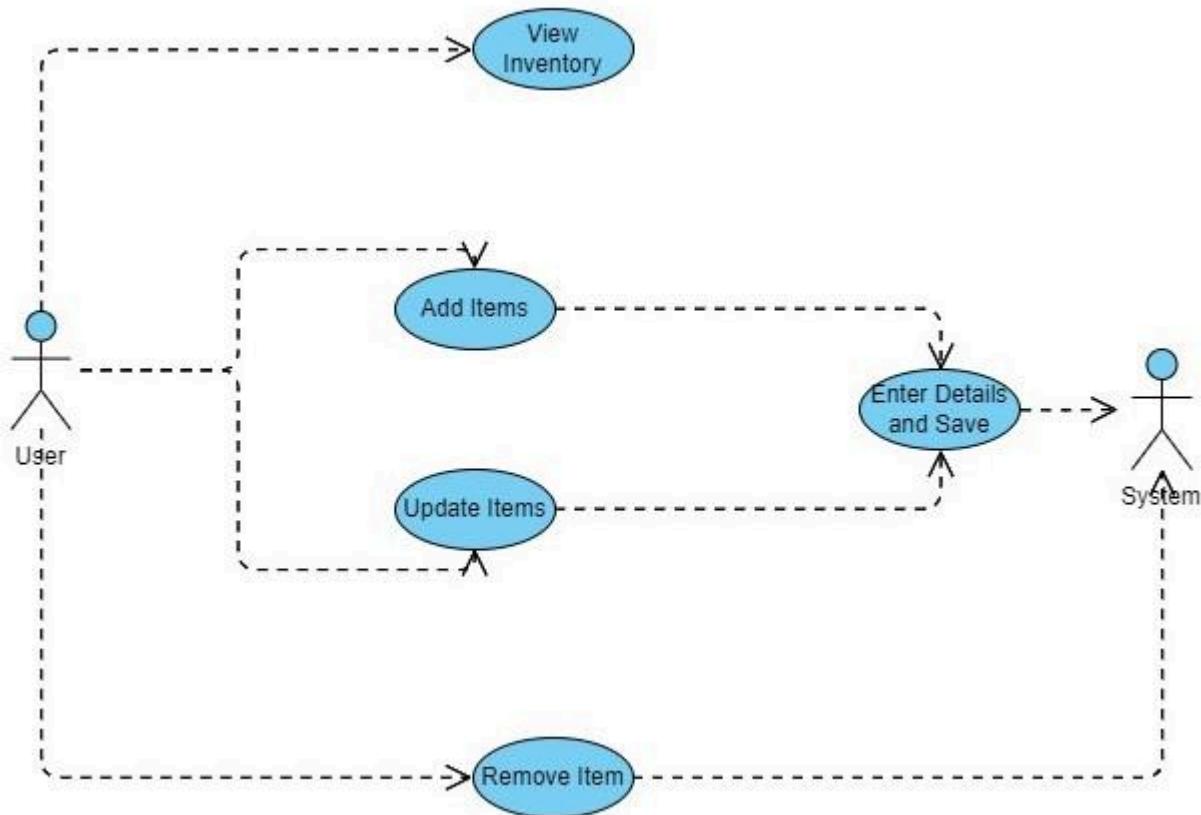
3.1.1 Login



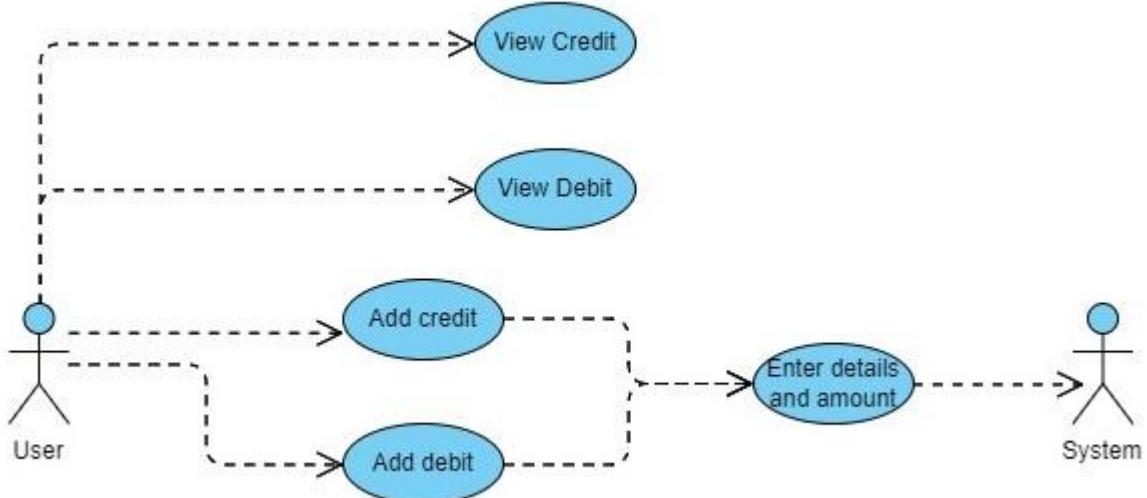
3.1.2 Dashboard



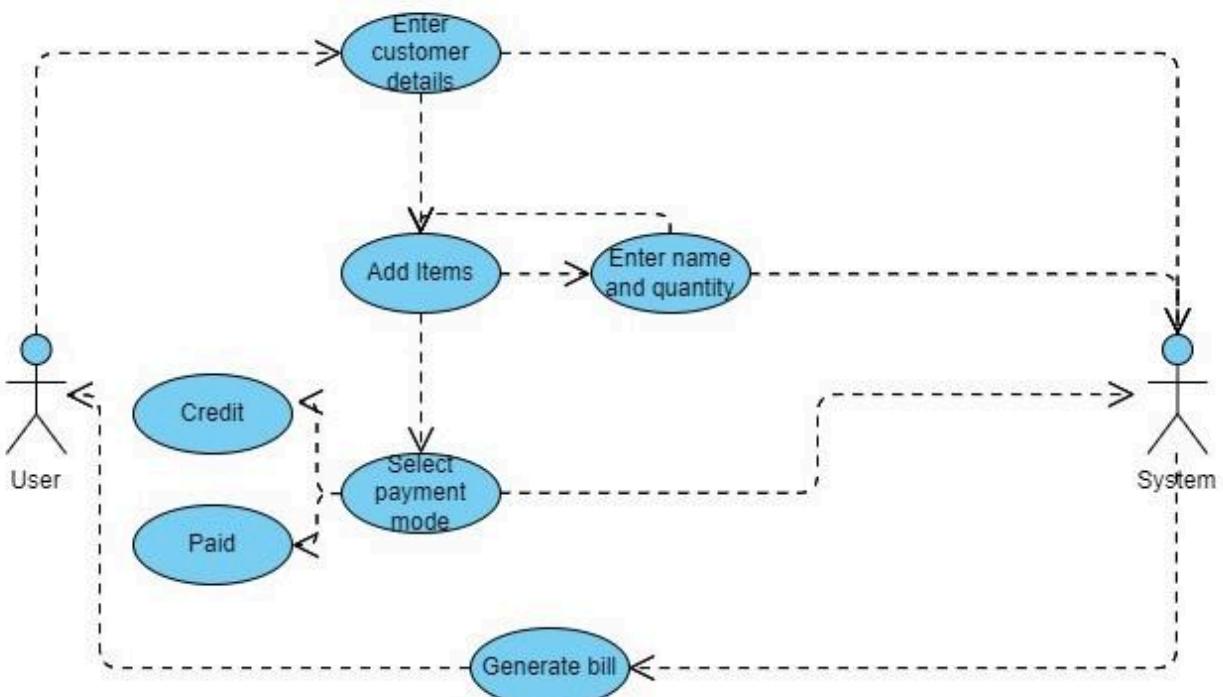
3.1.3 Inventory



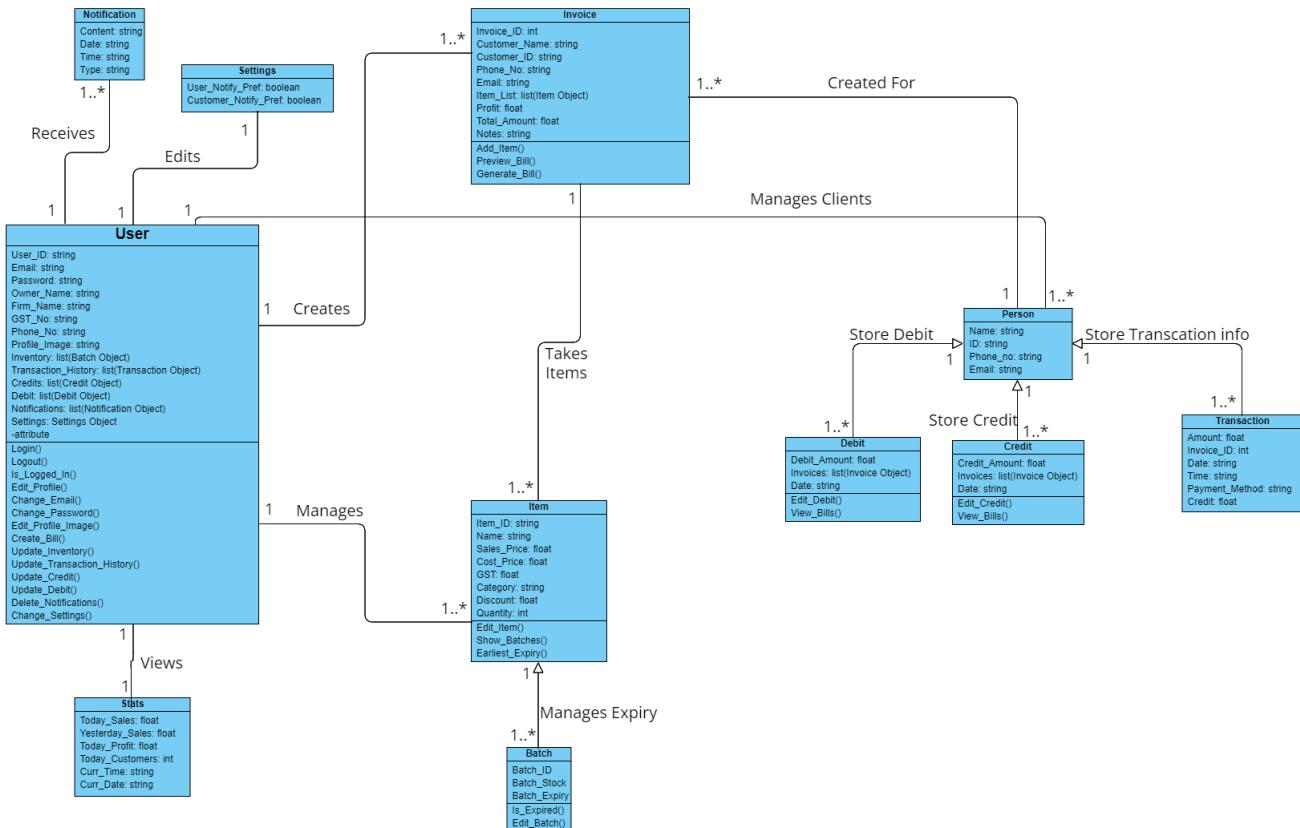
3.1.4 Pending Transactions



3.1.5 Invoice



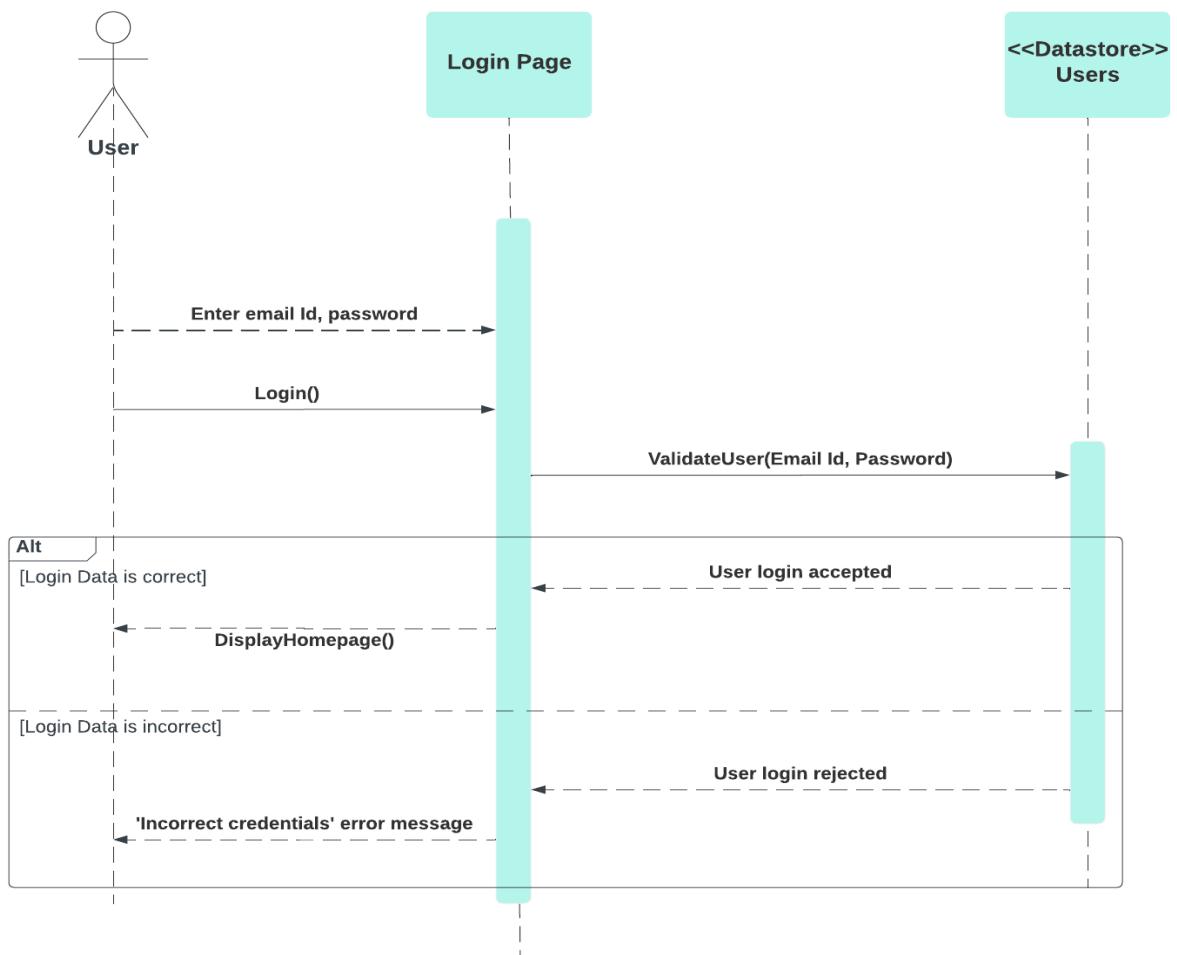
3.2. Class Diagrams



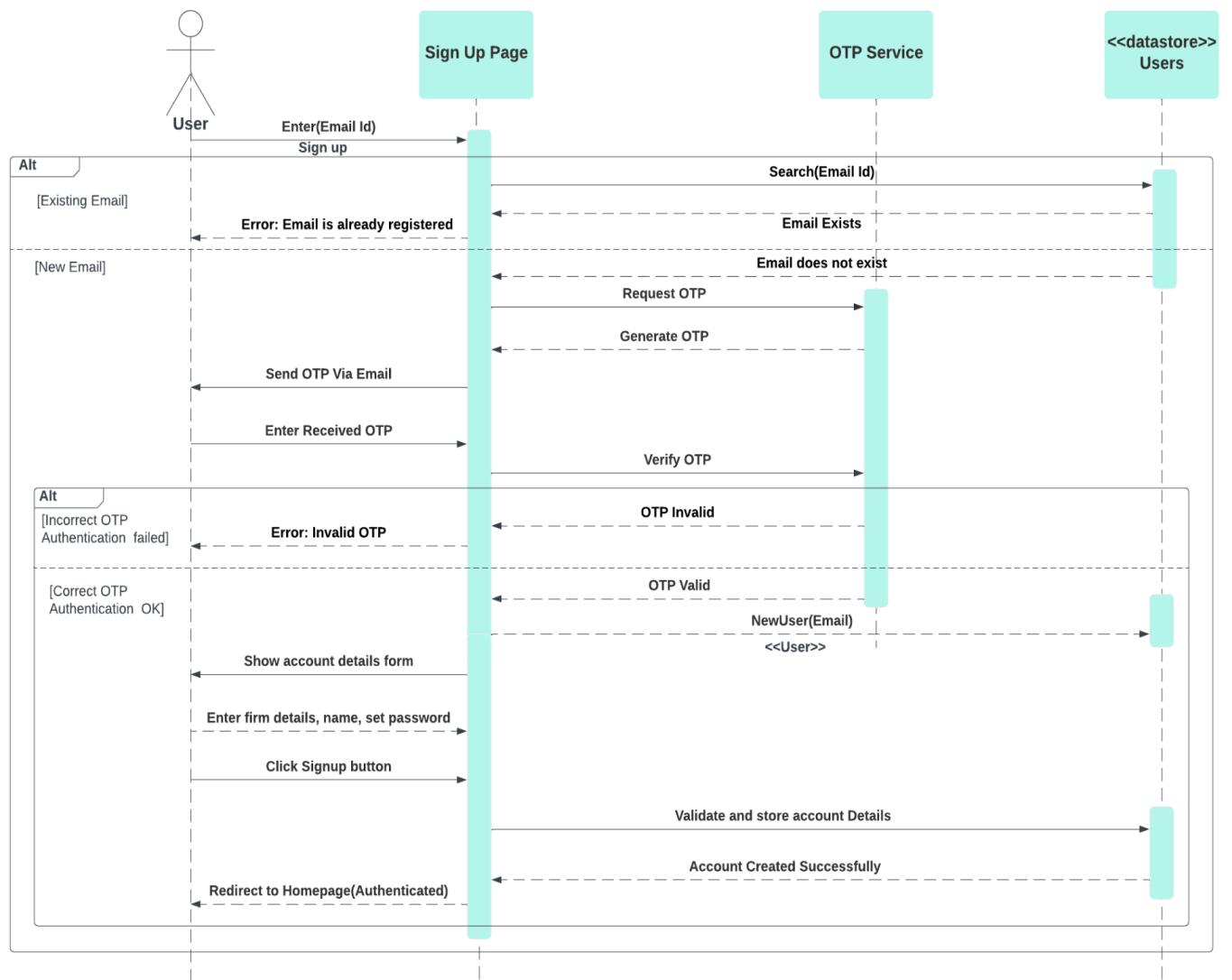
3.3. Sequence Diagrams

Symbol	Meaning
Arrow (solid line)	The sender of the message waits for an acknowledgement from the receiver
Arrow (dashed line)	The sender of the message does not wait for a reply
<<datastore>>	Indicates a database
abc : xyz	'abc' is an object of class 'xyz'
<< a >>	Creation of object 'a'
Cross mark	Destruction of an object
Vertical dashed line	Lifeline symbol (Time increases down the line, hence, an interaction occurs after the interaction above it.)
Alt	Alternative (Exactly one of the two possibilities occurs)
Loop	Indicates a set of interactions that occur repeatedly

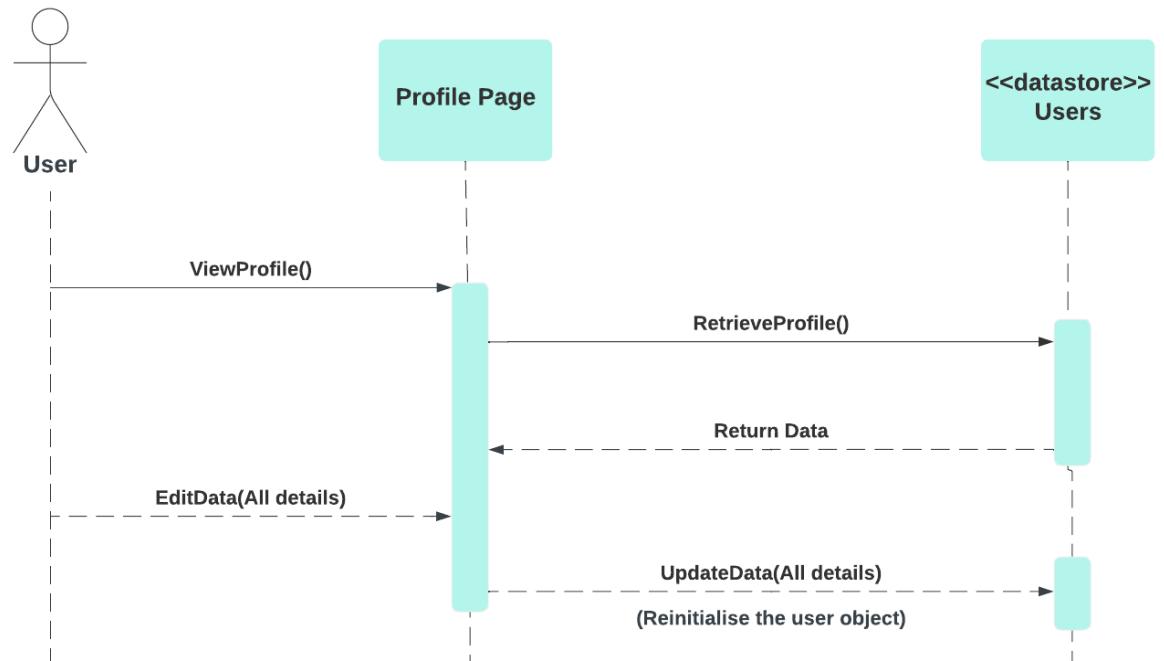
3.3.1 Login:



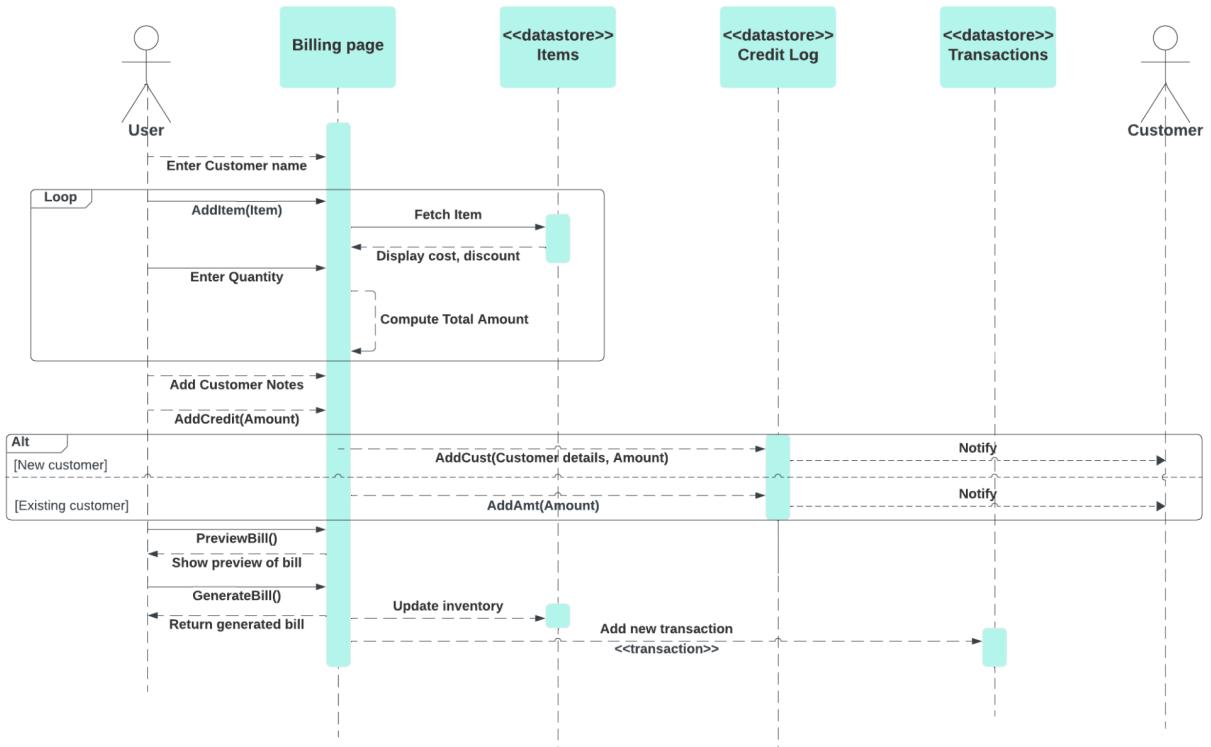
3.3.2 SignUp:



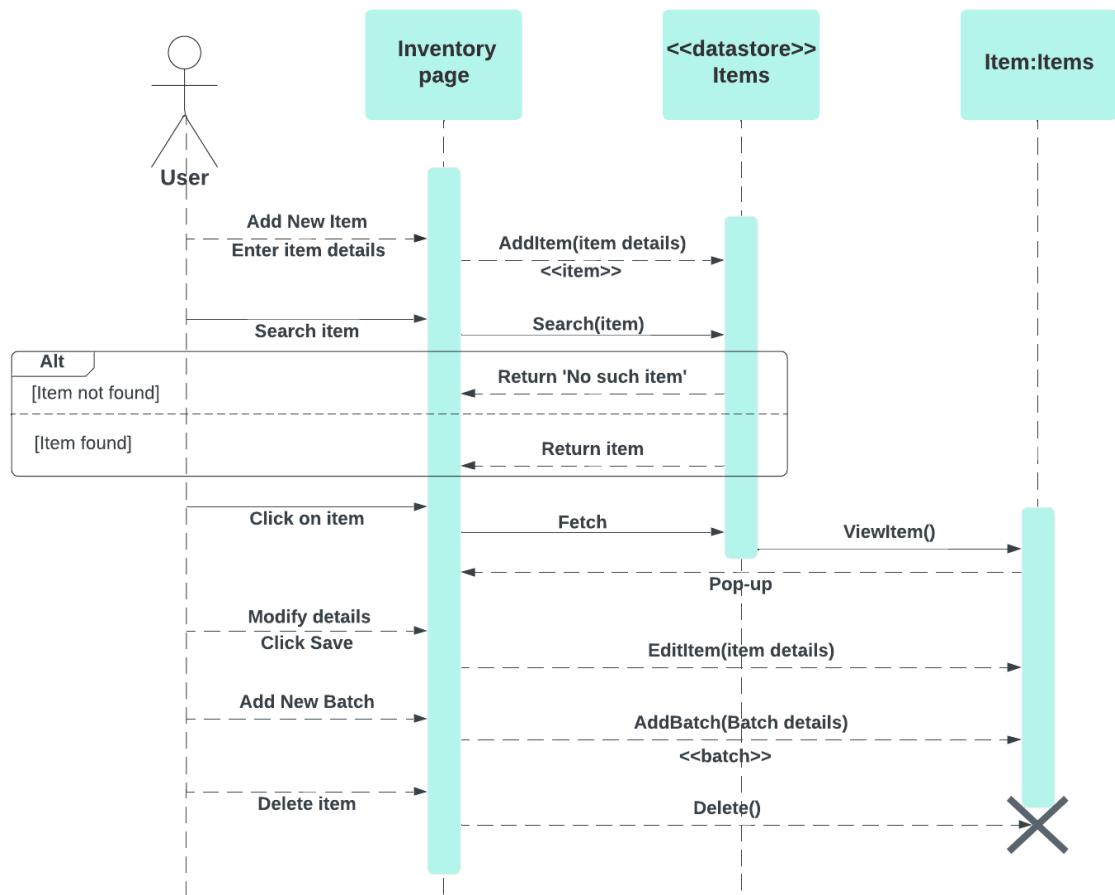
3.3.3 Profile:



3.3.4 Billing:

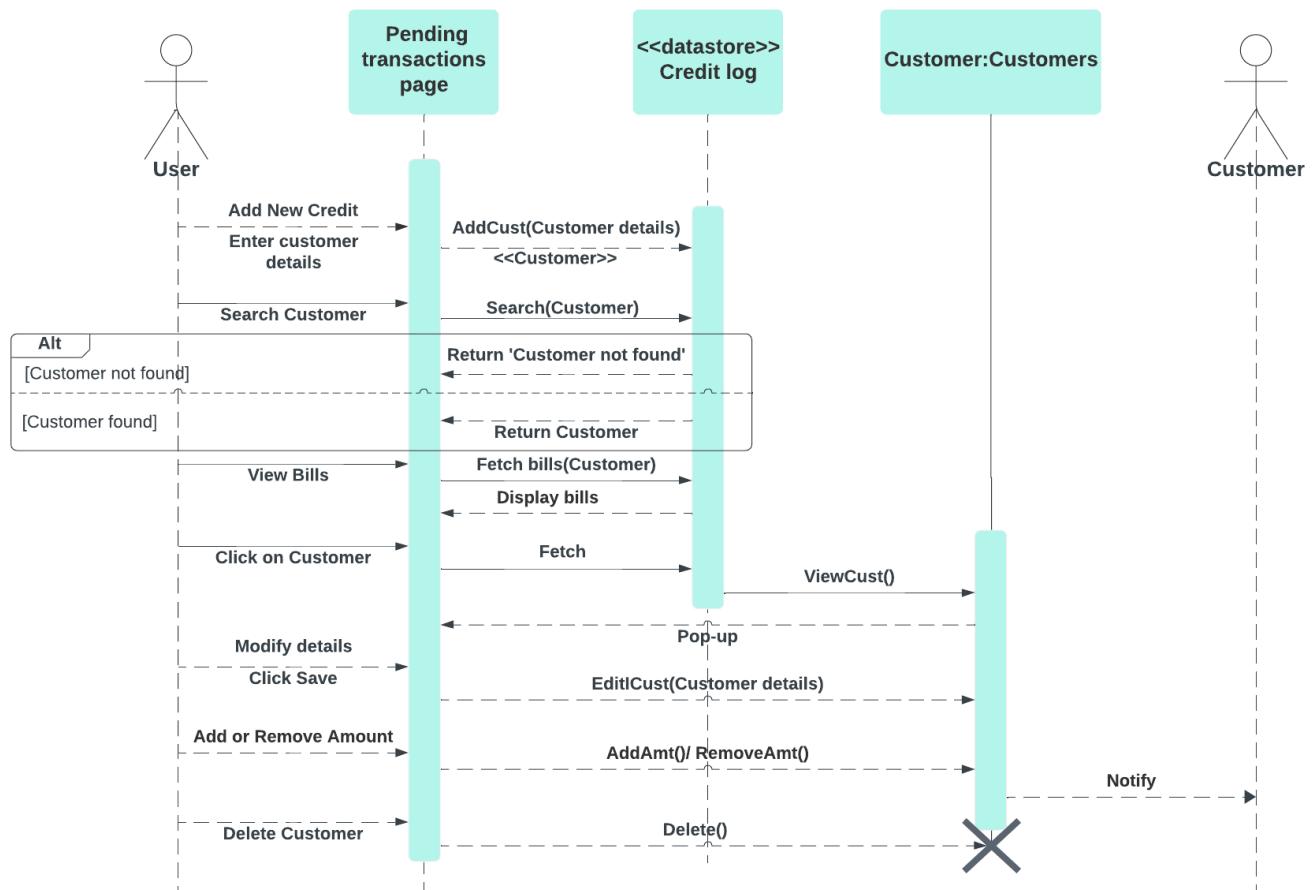


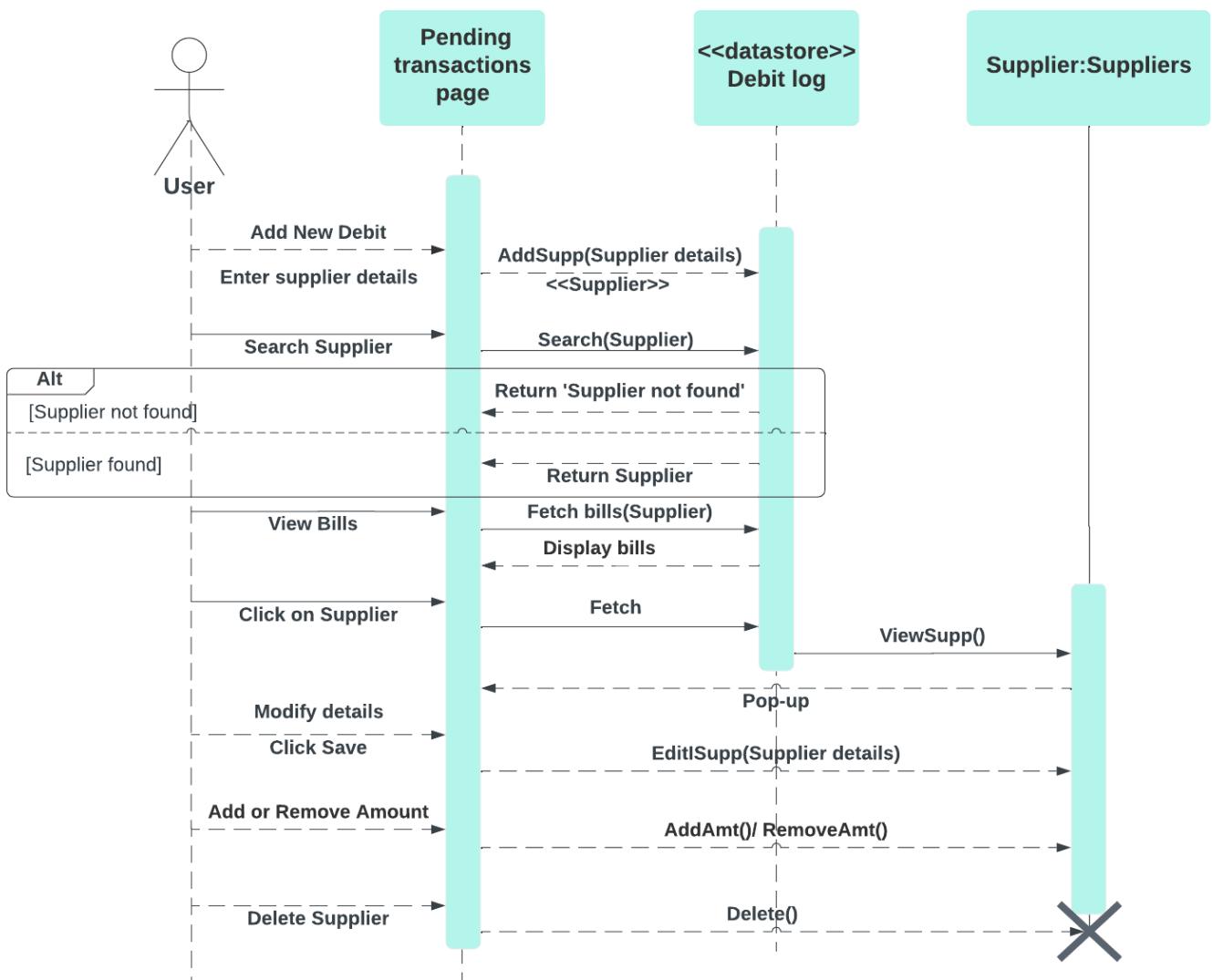
3.3.5 Inventory management:



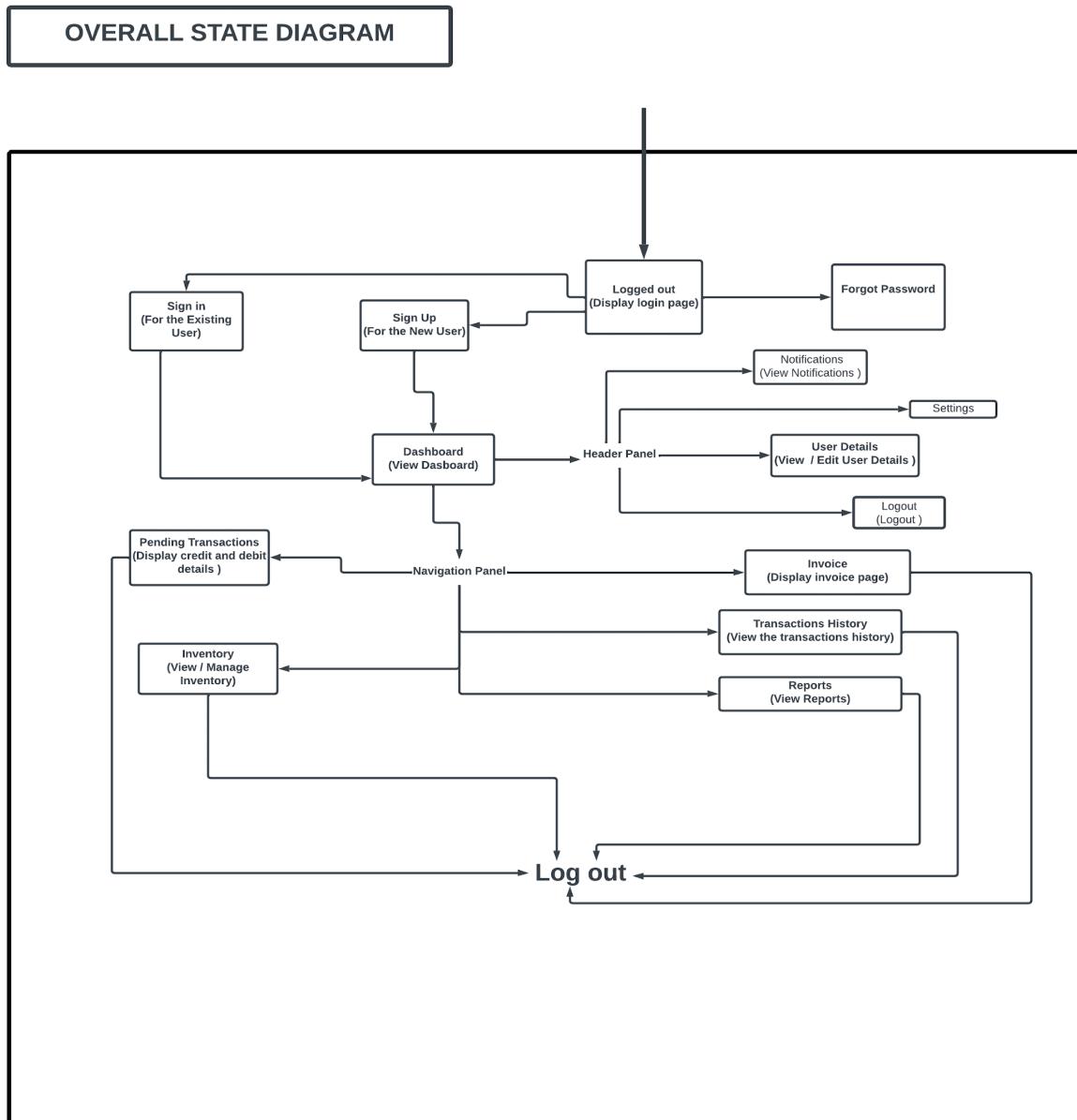
3.3.6 Pending Transactions management:

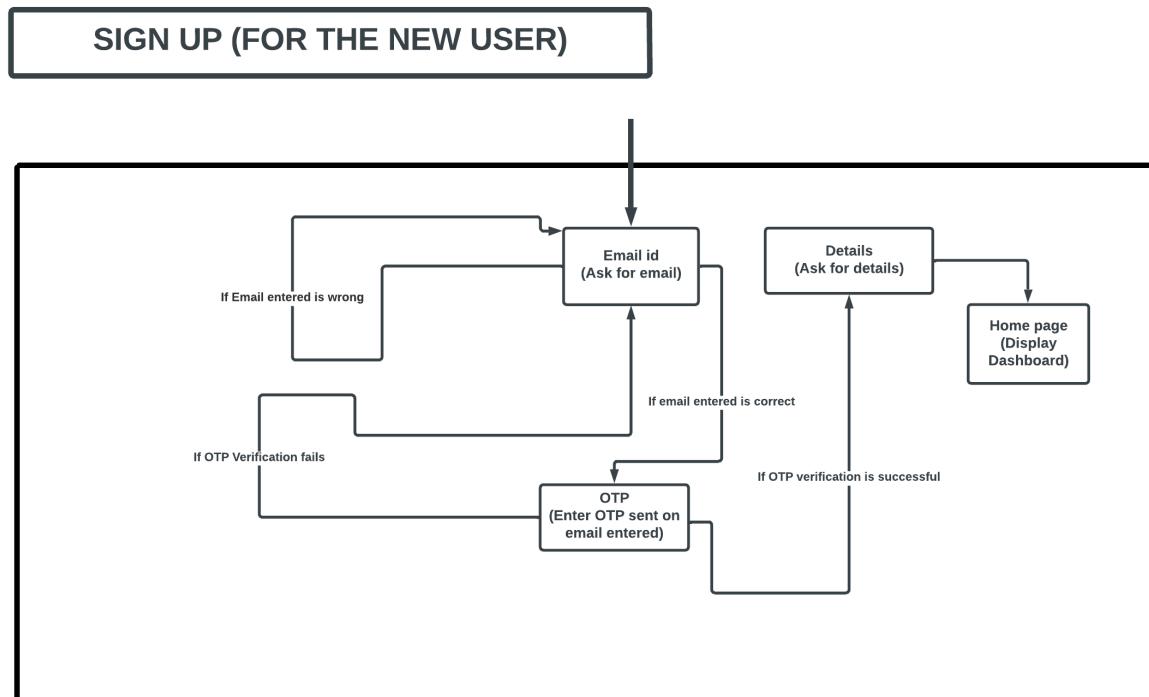
a) Credit:



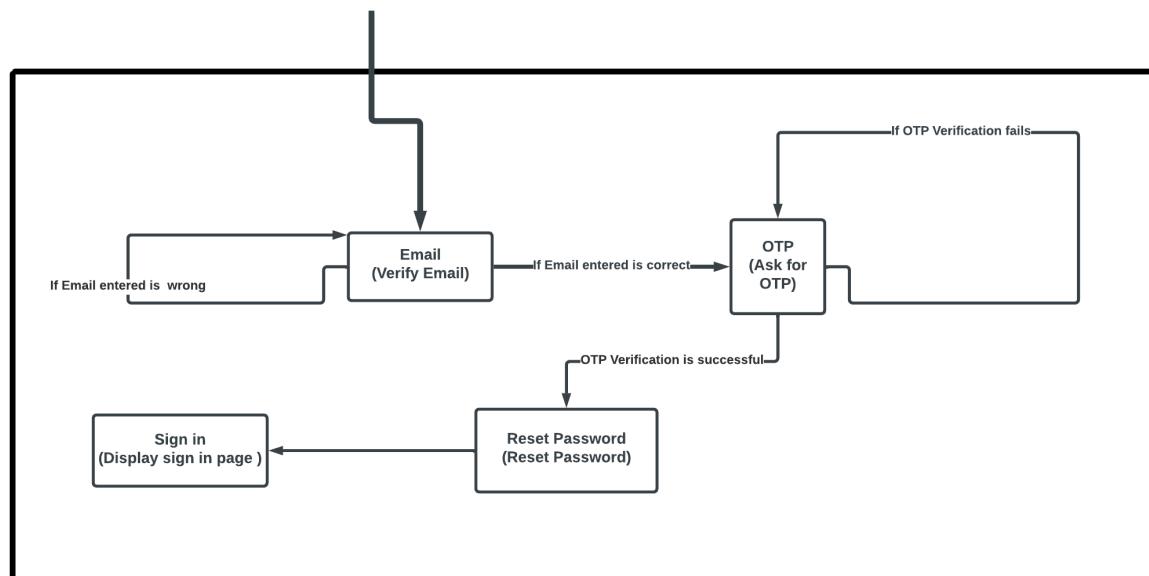
a) **Debit:**

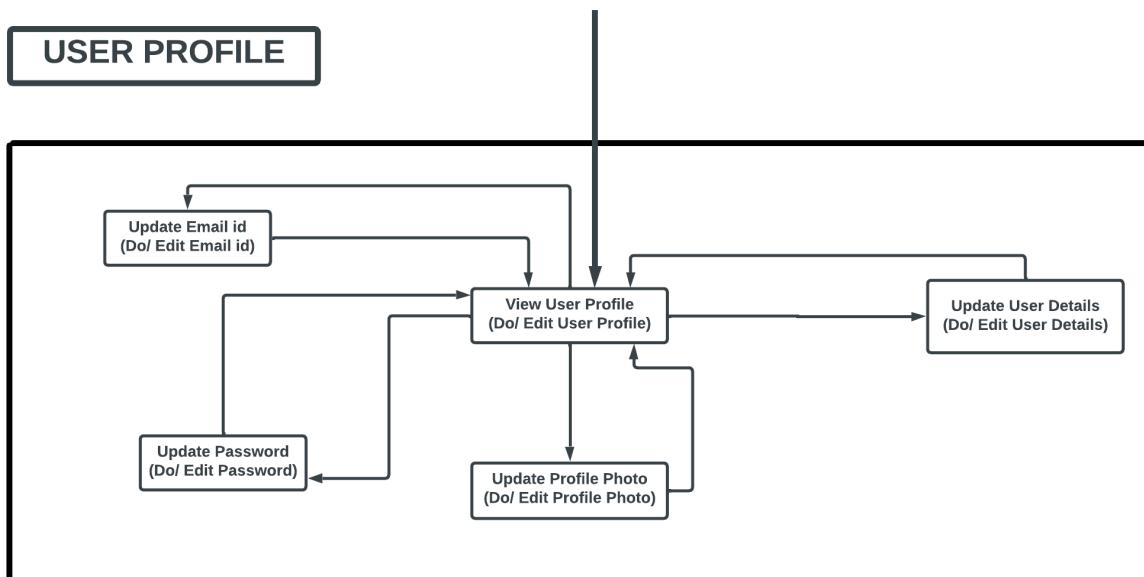
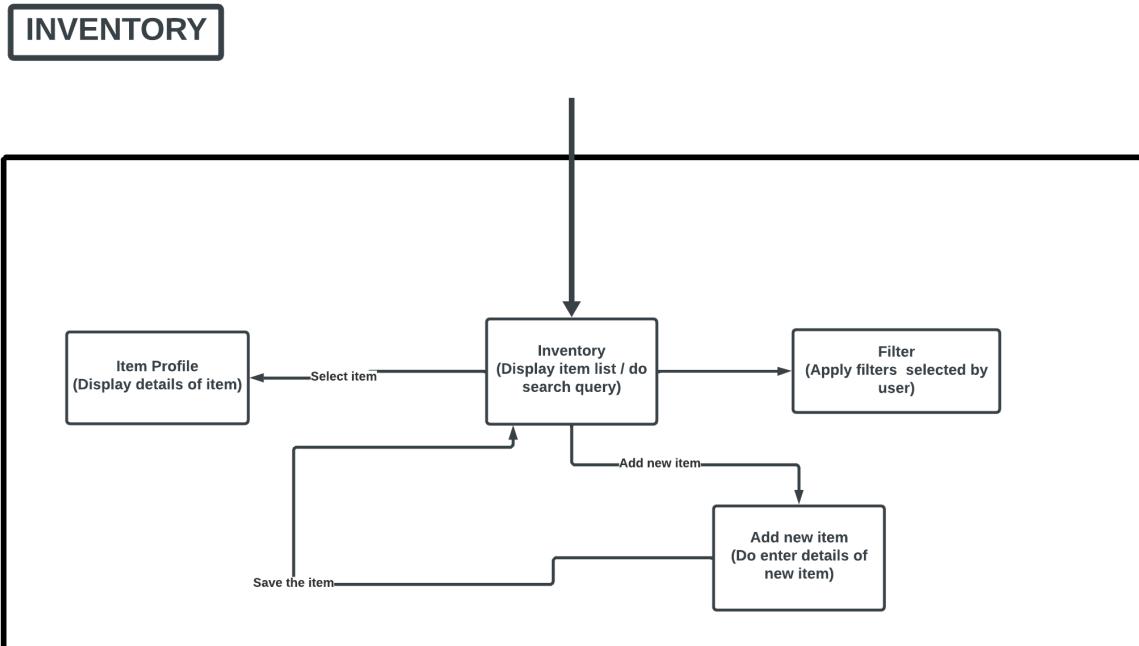
3.4. State Diagrams

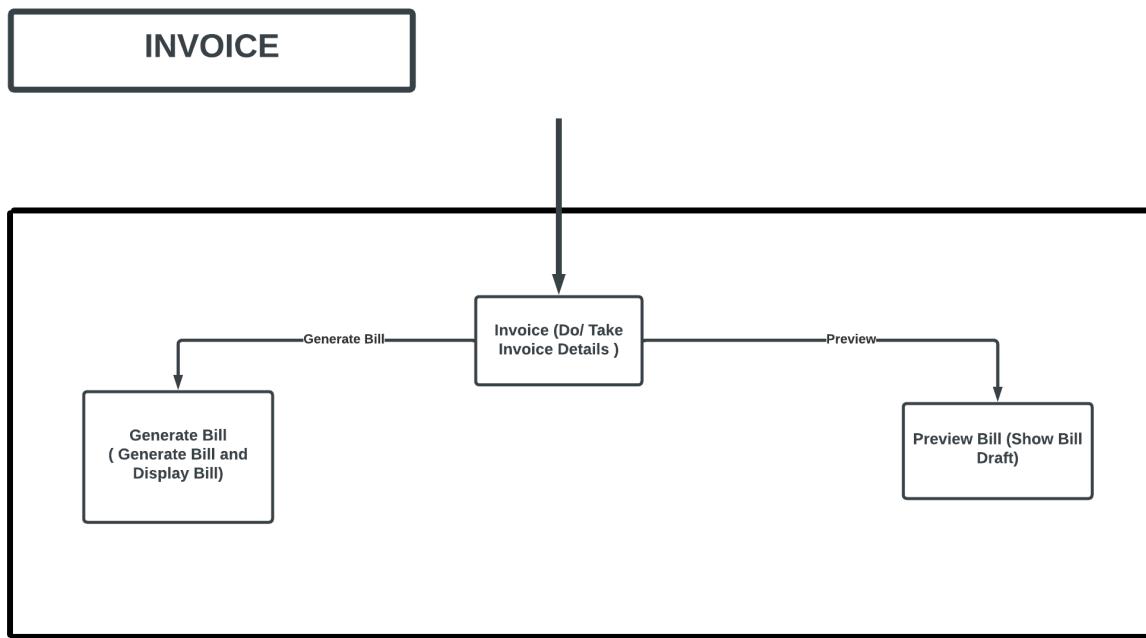
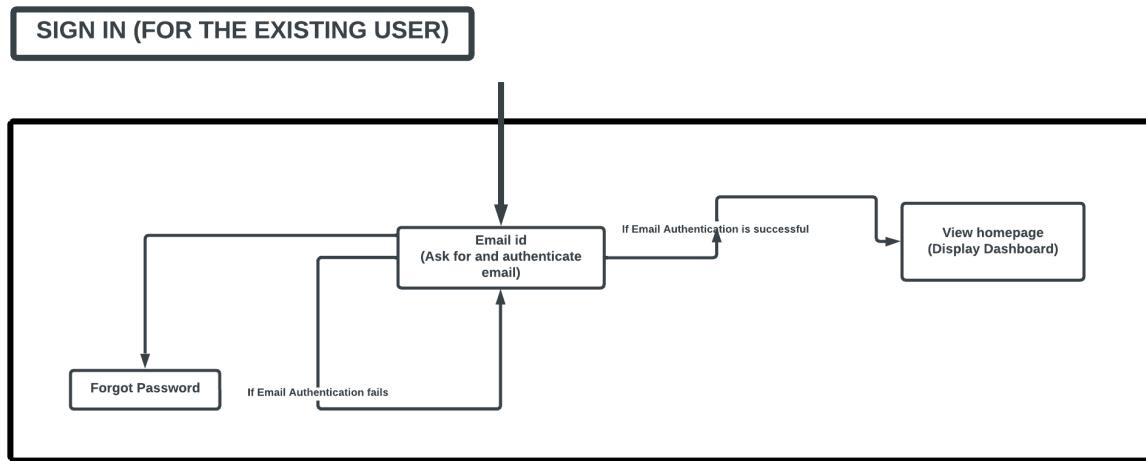


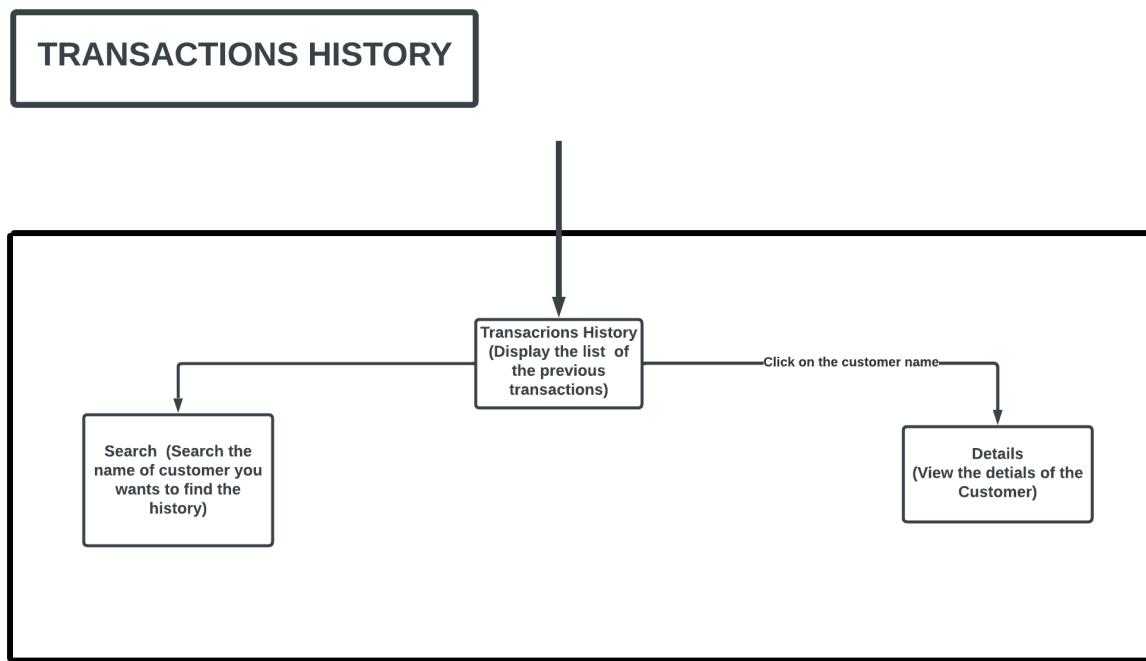
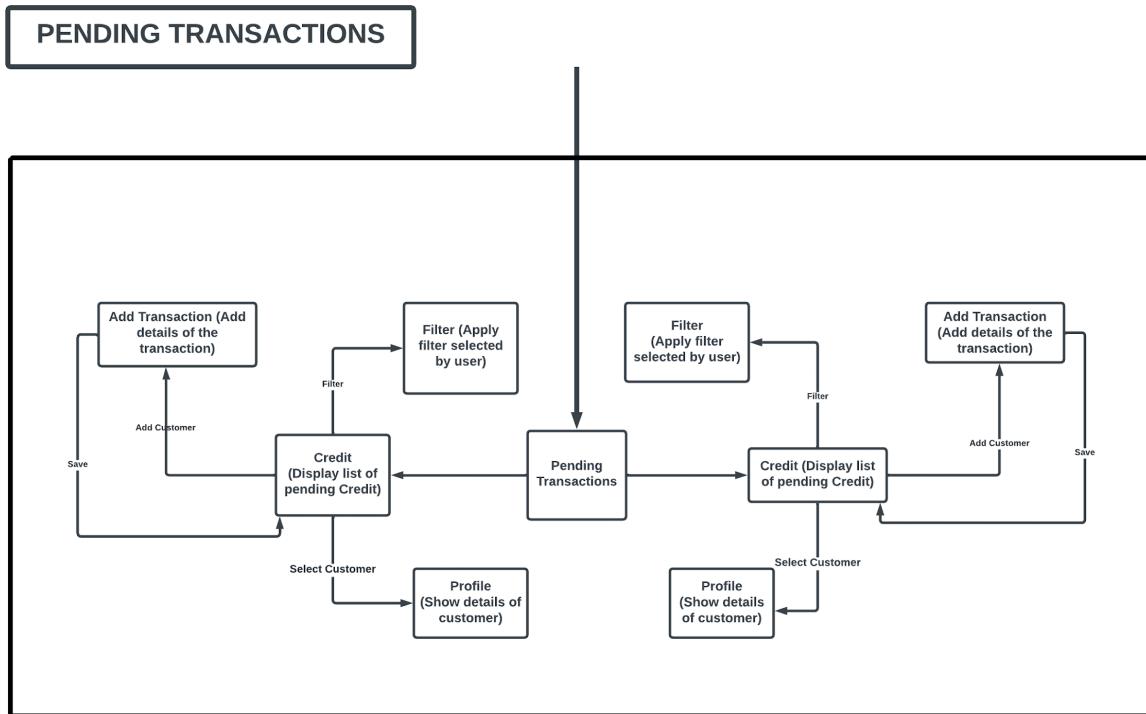


FORGOT PASSWORD



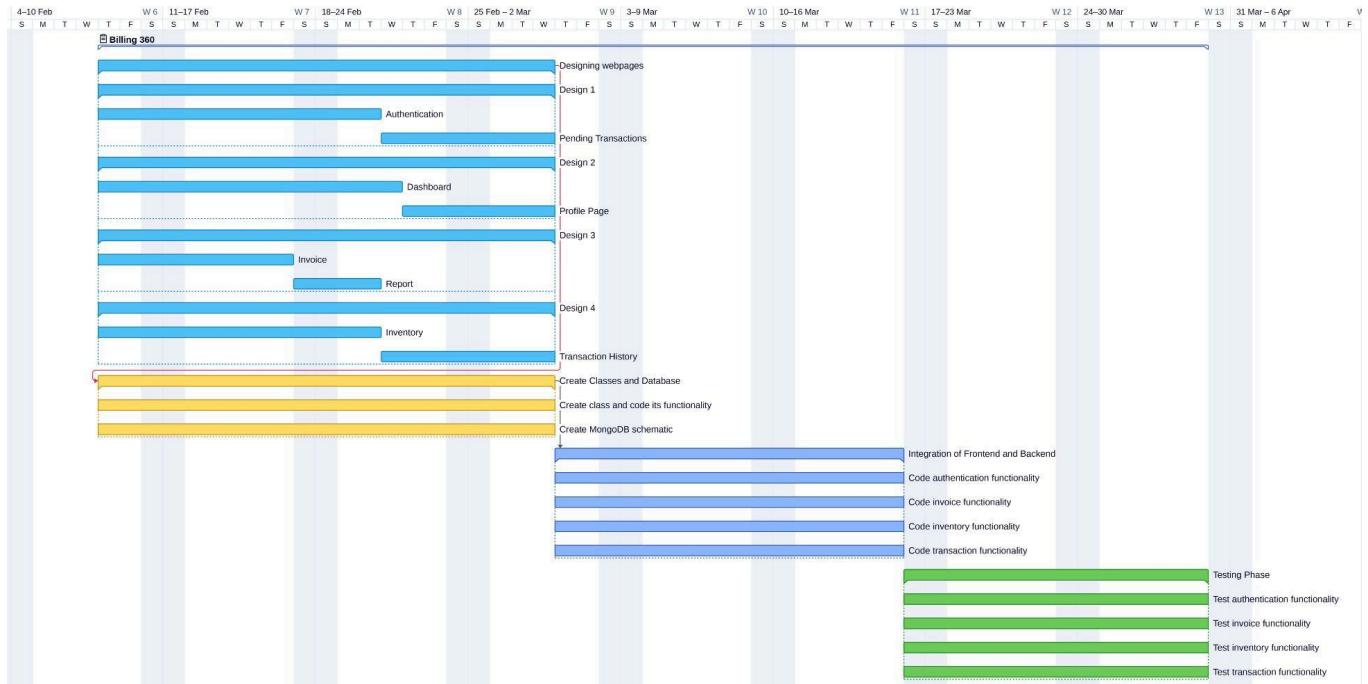






4. Project Plan

GANTT CHART



Communication:

For the communication purpose we used a Whatsapp group.

We also held offline meets at least twice a week, in which everybody was present, to ensure effective collaboration.. After every meeting, the agenda and plan for the next meet used to be subsequently decided along with the division of work amongst team members.



Team Arjuna CS253

Created
01-01-2024 17:37

Description
https://docs.google.com/spreadsheets/d/1jcPcnH_5zubZPQWfRLkZZf1lqVMsDuAtOgRzlzdDrk/edit?usp=drivesdk - for g... Show

Disappearing messages
Off

Mute notifications
Mute ▾

That might also be better

@Venkatesh kindly describe your idea

Class wise listing like in store it ig

Venkatesh

Saagar Kopparam

I think @Venkatesh has another idea for data dictionary
That might also be better...

I mean , we can do like 'store it' or 'whats next' where they showed how different classes interact as well, I feel it will give a better picture of the software na...? (but then, we all need to think together and give higher level picture of the software and may not able to do individually)

Dhruv Gupta

I mean, we can do like 'store it' or 'whats next' where they showed how different classes interact as well, I feel it will give a better picture of the software na...? (b...
I feel this would come in Design Document

Edited 12:26

Venkatesh

Dhruv Gupta

I feel this would come in Design Document

Acha ohkk makes sense, maybe we can modify the table a bit, removing the variable size column and include related operations/requirements?

Edited 13:04

Saagar Kopparam

What's the final conclusion on data dictionary?

Columns haven't been changed in the doc yet

Task	People Assigned
Frontend- Design 1	AA, NN
Frontend- Design 2	AK, KK
Frontend- Design 3	PA, DG
Frontend- Design 4	PG, PK
Backend- Authentication	AA, NN
Backend- Invoice	AK, KK
Backend- Inventory	PG, PK
Backend- Transactions	PA, DG
Create Classes	SK, VA
Create MongoDB Schema	SK, VA

Abhishek Khandelwal- AK

Ansh Agarwal- AA

Nipun Nohria- NN

Kundan Kumar- KK

Dhruv Gupta- DG

Pallav Goyal- PG

Poojal Katiyar- PK

Pragati Agrawal- PA

Saagar KV- SK

Venkatesh Akula- VA

Appendix A - Group Log

Date	Timing	Duration	Agenda
01/02/2024	14:00-17:00	3 hours	<ul style="list-style-type: none"> • Distribution of tasks for design document • Divided into 4 teams • Distributed roles of backend, frontend and databasing for future
03/02/2024	15:00-18:00	3 hours	<ul style="list-style-type: none"> • Explained approach of respective work to each other. • Discussed doubts among team members.
06/02/2024	9:00 -11:00	2 hours	<ul style="list-style-type: none"> • Reviewed the work done by the four teams and suggested improvements. • Clarified any irregularities in different tasks.
08/02/2024	16:00-16:30	30 mins	<ul style="list-style-type: none"> • Discussed our doubts with the Professor.
08/02/2024	17:00-18:00	2 hrs	<ul style="list-style-type: none"> • Discussed project plan among team members.
09/02/2024	14:30 - 16:30	2 hrs	<ul style="list-style-type: none"> • Finalised the document.