

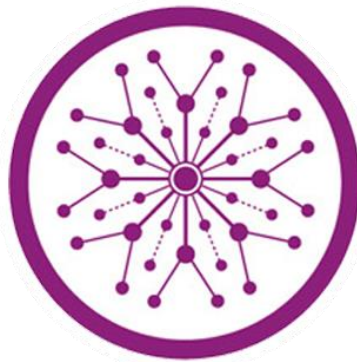
Trade Portal

Final Year Project

Session 2018-2022

A project submitted in partial fulfillment of the degree of

BS in Computer Science



Department of Computer Science

Faculty of Computer Science & Information Technology

Superior University, Lahore

Spring 2022

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Project Report

[Trade Portal]

Change Record

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Ammar Ali Raza	1.0.1			

APPROVAL

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Dedication

This work is dedicated to my family parents and teacher. Thank you so much for believing in me and supporting me Without you I might not be the person that I am today You have truly given me the world, and I thank you so much for all the sacrifices you have made for me. I couldn't have done it without you. I am very grateful for the financial contributions you have made in support of my education. Without your help, I may never have been able to complete my studies.

Acknowledgements

I am very thank full to my Supervisor Mr. Muhammad Jameel Summra and Co Supervisors Miss Maria for their important time, valuable advice's support, and tolerance during my BSCS final year project. In all of my academic research and daily life, their vast knowledge and wealth of experience have inspired me. Additionally, I want to thanks for their technical assistance with my study. I want to express my gratitude to every team member. Communication with my supervisor was an opportunity to learn ways of problem solving using different communication media.

Once more, I would like to thank you my Supervisor Mr. Muhammad Jameel Summra for his patient instruction, support, and offered to me during my time as a student. I consider myself extremely fortunate to have a boss that cares so much about my project and who responds to my inquiries and concerns in a timely manner.

Executive Summary

Trade Portal is the perfect accounting and management software and application for you because it does not charge at all! It is a good opportunity for the sellers or small business owners to get rid from using the papers work and saving overall records of their business because you can save your overall records of business to the app without using any paper and get your work done without paying a single penny.

Easiest way to manage your business payments, installments debit credit transactions for any type of business a most safe and secure online app.

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Chapter 1

Introduction

Chapter 1: Introduction

TRADE PORTAL is the perfect accounting and management software and application for you because it does not charge at all! It is a good opportunity for the sellers or small business owners to get rid from using the papers work and saving overall records of their business because you can save your overall records of business to the app without using any paper and get your work done without paying a single penny.

Easiest way to manage your business payments, installments debit credit transactions for any type of business a most safe and secure online app.

1.1 Background:

Manage your business on the go with the Trade portal app. It is an all-inclusive bookkeeping solution that also helps you collect your payments faster. With 100% free it keeps your business record safe and well-encrypted. Manage unlimited account ledgers of your customer & suppliers with the Trade portal app. Record your daily transactions & keep your bookkeeping records updated in real-time. You can also download a free pdf report of account ledgers and share it with relative prospects on WhatsApp. And other medias.

Tap on “Cash Book” on the Home Screen. Add your Cash In & Cash Out quickly. With the built-in calculator, you can easily evaluate your expenses & income. Add details, attach bills and download free pdf report. Once you log in to the Trade Portal app. Then tap on the ADD CUSTOMER button. Type your customer name and add their details from your contact. Or Click Add New Customer Type the name Add contact details.

1.2 Motivation and challenges:

Motivation:

This project is mainly targeting those people, which are facing the difficulties in making their records to paper works so, This Projects is planned, designed and prepared as a Mobile based application used to provide ease for the Business Owners to manage his business with customers to sell or buy his business products. This application will provide an opportunity to both (Business owner and Customer). Likely, business owner will be able to sell his products without even physically being present at any office. The following system is designed specifically according to business owners and customer needs. The Trade Portal System will give a relief to business owner to make records or his purchased products. On other hand the

customer will also be able to view and save the record of products, which he purchased from the business owners.



This project for your small business is that it is as simple as it sounds. If you are about to start a small business, you can only succeed after getting your hands on complicated and expensive accounting software. It might not seem straight forward for you at first, but once you start discovering how do you use the tools, you will never go back to the paper work It is true that many accounting software comes with a cost and is not easy to grasp at first. Mobile apps is a unit of excellent strategy to stay your customers engaged along with your complete, giving particular options that area unit additional participating. Record your inventories and cash balance or download PDF report to share online with customers. When you are running a business, then time is money for you, so you have to say wait at all cost. The efficiency and speed of accounting software are much faster as compared to manual calculations and spreadsheet software. Using TRADE PORTAL will save you a lot of time because of the quick and efficient experience it will provide

Challenges:

The main working in this project is upon payments management for business owner in that way that he will be able to create a digital slip for customers and print them using printer from his mobile phone and he will be able to edit it anytime. The customer will also able to view his products which is bought and digitally view his slip in application but, he will not be able to edit it. Other hand, the changes which will be done by will also showed to the customer. So, we are targeting the overall business owners. We faced many challenges to make it better or to make it most useful some of the challenges are given below.

- To make it very easy to use.
- Easy to understand.
- User friendly interface.

- Secure login.
- Secure databases.
- Easily manage business payments.
- Safe transactions.
- To generate slips.
- To keep the records of payment.
- Pending payments.
- Products detailed.
- To keep the correct date or time on the slips.



We worked hard on the mentioned things to provide you the good experience.

1.3 Goals and Objectives:

The main goal is providing the customers and business owner's perfect accounting and management software and application for you because it does not charge at all! It is a win-win situation for you because you can get your work done without paying a single penny. Easiest way to manage your business payments, installments debit credit transactions for any type of business a most safe and secure online app.

1.4 Literature Review/ Existing Solution:

We conduct a scientific Literature Review (SLR) throughout that we have a tendency to surveyed 109 relevant analysis papers printed in leading conferences and journals. Our thorough examination of the relevant literature has crystal rectifier to a appraisal of the projected solutions with attention on user privacy.

Extensions and mechanisms for the Android platform. moreover, solutions and analysis directions are mentioned

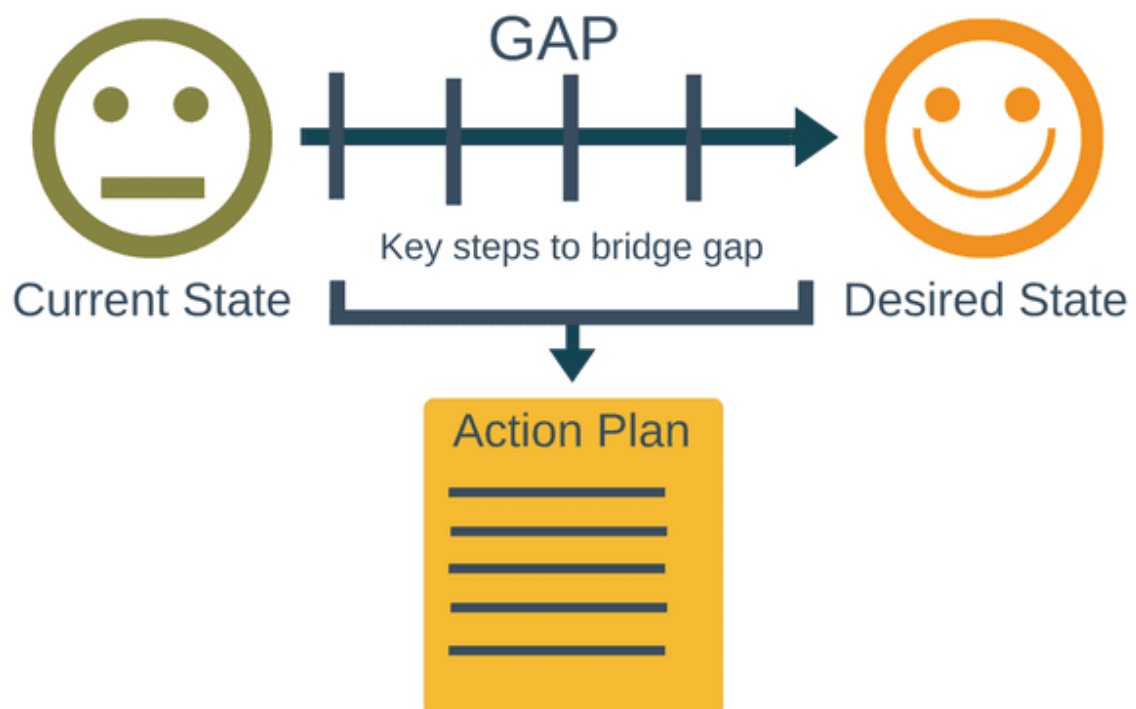
Keywords: User privacy, data flow control, Android apps, mobile application.

Existing Solution:

As we discuss the problem statement above about getting rid of paper works for a small business owner. We find only existing solution for the problem but this solution is not fully implemented. The existing solution that we find is that there are few applications, which help the small business owners to get rid of paper work but still the problem is that the small business owners or sellers get rid from paper work but there is not records history for the customers who buys a product from seller.

1.5 Gap Analysis:

A gap analysis is **process that compares actual performance or results with what was expected or desired**. The method provides a way to identify suboptimal or missing strategies, structures, capabilities, processes, practices, technologies or skills, and then recommends steps that will help the company meet its goals



1.6 Proposed Solution:

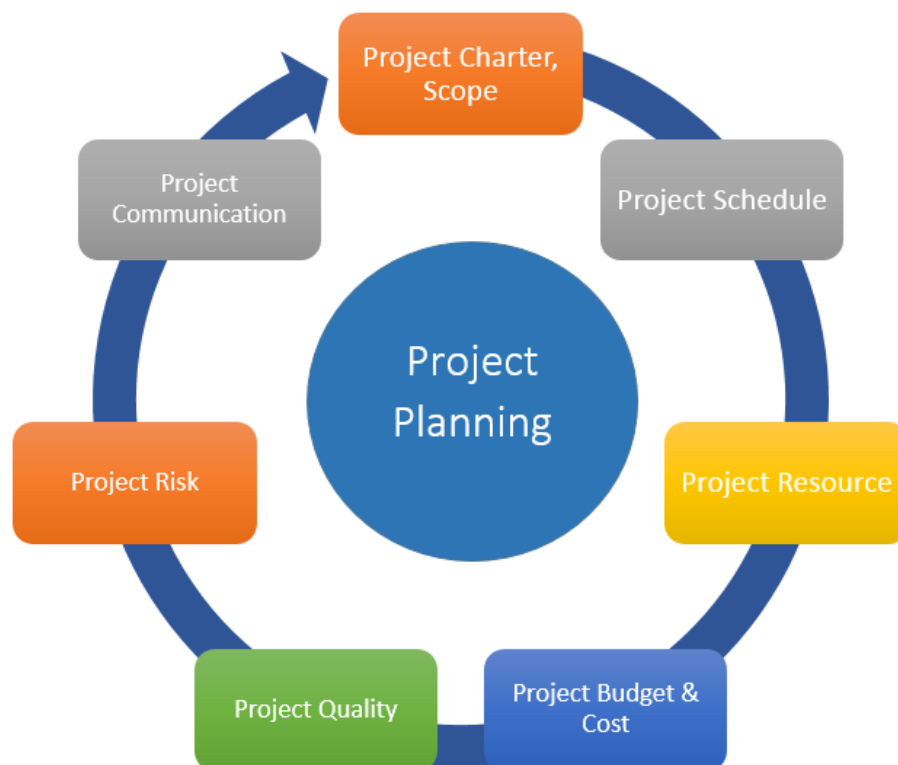
Easiest way to manage your business payments, installments debit credit transactions for any type of business a most safe and secure online app. Small businesses do not have a lot of money and capital on their hands because they are just startups right now. You have a long way to go as a small business owner, and that is why you should focus on saving money in the long run.

If user starting your business, then you can try out the free online financial software rather than purchasing the expensive ones at the start. It is better to be on the safe side and choose the most cost-effective option for you!

1.7 Project Plan:

Our project is basically Trade Portal App which control the functioning of a Business. Trade portal App is easy to use, helpful to manager business record. As we know, almost all of the workings and businesses are moving towards the software because it is difficult to manage all the records of business on a papers. The Trade Portal System will give a relief to business owner to make records

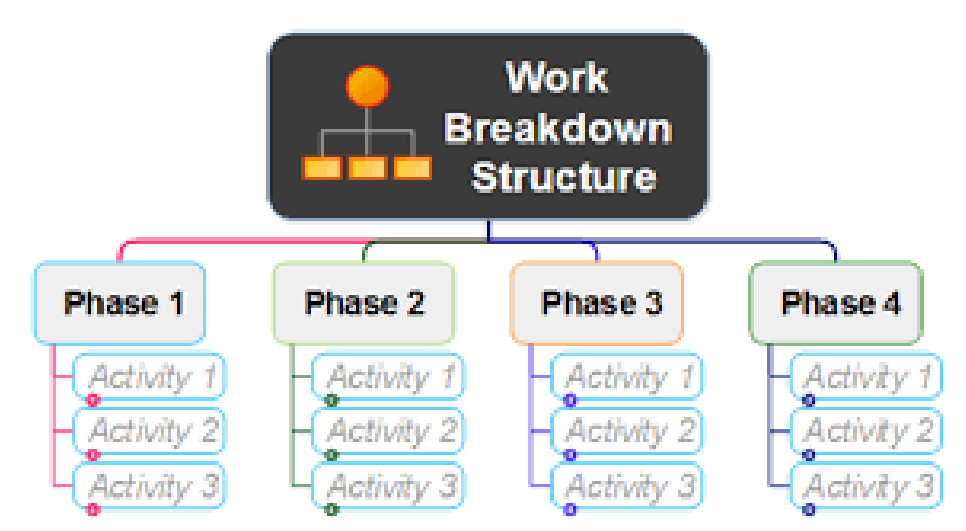
Or his purchased products. Or secondly the customer will also be able to view and save the record of products, which he purchased from the business owners.



1.7.1 Work Breakdown Structure:

- Requirements Elicitation and Analysis
- Gathering
- Refining
- Validation

- Verification
- Working
- Free testing
- Amendments or changes
- Requirement feasibility analysis.



1.7.2 Roles and Responsibilities Chart

This document ensures coherence throughout the project team and is useful even for a small project with little formal structure.

The Role and Responsibilities Template helps all team responsibilities and understand what individuals of work and how their activities overlap.

Role	Name	Responsibilities	Deliverables
Project documentation	Ali Makhdoom	Project documentation is made by the Total group members with Collaboration.	Information, gather, requirements.

Role	Name	Responsibilities	Deliverables
Owner portal	RAZA IJAZ	Owner login or sing Up, functionalities Is handled	Updating on the owner side Or gathers information from Customer.
Customer portal	Ali Makhdoom	Customer login or sing up, functionalities Is handled	Updating on the customer side Or gather information about bills.
Bills or payments	Ammar Ali	Total bills or payments, pending bills is handled or also generating Slips or bill.	To calculate bills or to generate transaction slips.

Roles:

A word description of the role that is to be filled it contain the main idea of working of a single person.

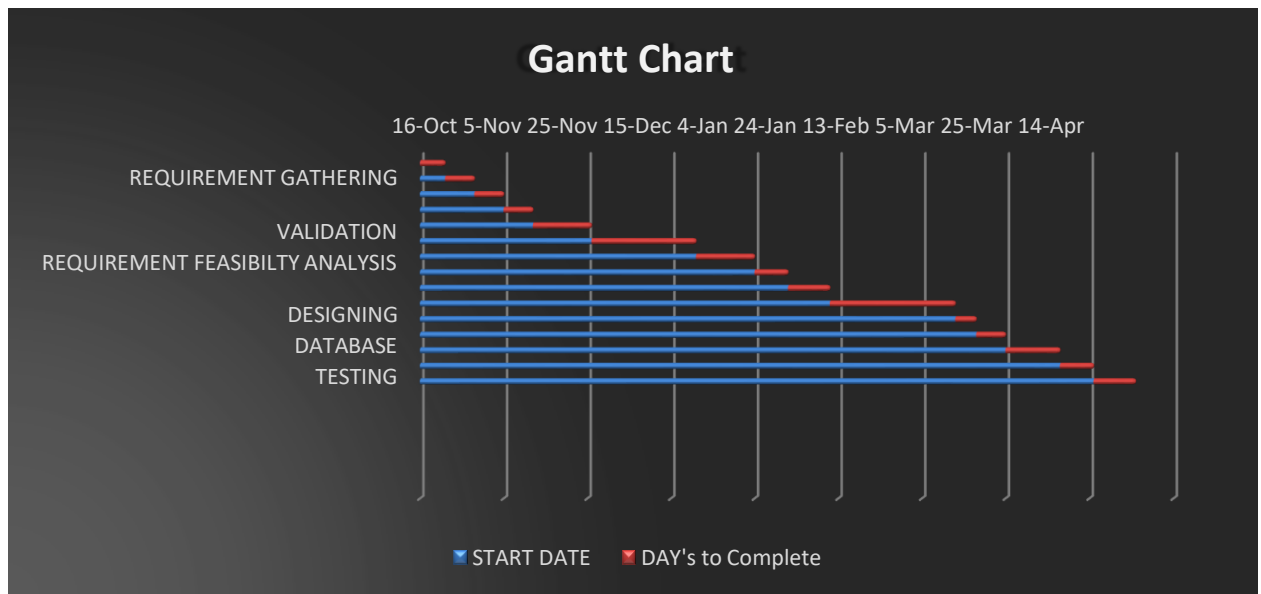
Responsibilities:

A summary of the responsibilities that the person or group will have in filling the role.

Deliverables:

A list of any major product or project deliverables which the person and group will be involved with.

1.7.3 Gant Chart:



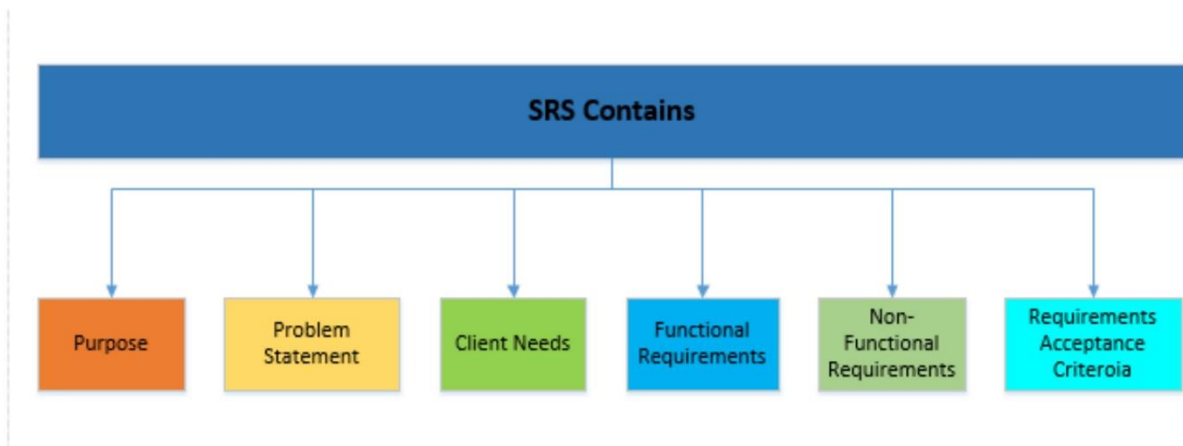
Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

2.1 Software Requirement Specification:

In the software requirement specification, we capture complete description about how the system is expected to perform. It is usually signed off at the end of requirements engineering phase.



2.1.1 Purpose:

This project is mainly targeting those people, which are facing the difficulties in making their records to paper works so, This Projects is planned, designed and prepared as a Mobile based application used to provide ease for the Business Owners to manage his business with customers to sell or buy his business products. This application will provide an opportunity to both (Business owner and Customer). Likely, business owner will be able to sell his products without even physically being present at any office. The following system is designed specifically according to business owners and customer needs. The Trade Portal System will give a relief to business owner to make records or his purchased products. On other hand the customer will also be able to view and save the record of products, which he purchased from the business owners. The main working in this project is upon payments management for business owner in that way that he will be able to create a digital slip for customers and print them using printer from his mobile phone and he will be able to edit it anytime. The customer will also able to view his products which is bought and digitally view his slip in application but, he will not be able to edit it. Other hand, the changes which will be done by will also showed to the customer. So, we are targeting the overall business owners.

2.1.2 Document Conventions:

In the SRS documentation, We use different font size for clear a distinction. For example, in the document, the overall main headings are numbered with whole numbers

And the overall sub headings of main headings are number with decimal numbers

The text style which is used in the documentation is Times New Roman and the spaces between the texts is single space. Text size for the main headings is 16 and the size of subheading is 14 and the text size for the text is 12.

2.1.3 Intended Audience and Reading Suggestions:

The Document is studied to be ready by the followings:

- Project Manager.
- Developers.
- Testers.
- Marketing Staff .
- Users.
- Documentation Writers.

The documentation is organized into three parts.

- Introduction
- Software Requirements Specifications.
- Use case Analysis.

All the parts are independent moreover by reading document sequentially helps the reader to understand rder.

2.1.4 Product Scope:

The scope of Trade Portal is beneficial for the people facing the difficulties in making their records to paper works so, This Projects is planned, designed and prepared as a Mobile based application used to provide ease for the Business Owners to manage his business with customers to sell or buy his business products. This application will provide an opportunity to both (Business owner and Customer).). Likely, business owner will be able to sell his products without even physically being present at any office. The following system is designed specifically according to business owners and customer needs. The Trade Portal System will give a relief to business owner to make records or his purchased products. On other hand the customer will also be able to view and save the record of products, which he purchased from the business owners. The main working in this project is upon payments management for business owner in that way that he will be able to create a digital slip for customers and print them using printer from his mobile phone and he will be able to edit it anytime. The customer

will also be able to view his products which is bought and digitally view his slip in application but, he will not be able to edit it. Other hand, the changes which will be done by will also showed to the customer. So, we are targeting the overall business owners.

2.1.5 References:

- IEEE STD 610.12-1990, IEEE Standard Glossary for Software Engineering Terminology.
- IEEE STD 730-1998, IEEE Standard Glossary for Software Quality Assurance Plans.
- IEEE STD 730.1-1995, IEEE Standard Glossary for Software Quality Assurance Planning.
- IEEE STD 828-1998, IEEE Standard Glossary for Software Configuration Management Plans.
- IEEE STD 1028-1997, IEEE Standard Glossary for Software Reviews.

2.2 Overall Description:

Our term used to describe an in-depth description of a software product to be developed. It's considered one of the initial stages of the software development lifecycle **SDLC**.

2.2.1 Product Perspective:

Fundamental:

- The need of a product is recognized.
- The decision to provide the product is made.
- The scope of the product is determined.
- The requirement for the product is gathered.

Inventions:

- The product is designed from the requirements.
- The product is created from the designs.
- The product is documented and undergoes.

Release:

- The product is package for outside release.
- The product goes through further external testing.
- The product may be handled off to an operational group.

Support:

- An operational group may support the product.
- A user service group may support the product.
- Development may support operations/.
- Development will support the code.

DE support:

- The lack of need for the product is recognized.
- The product may be phased out entirely.
- Our support may transition to a different product.

2.2.2 Product Function:

- Login (Different for both customers and Business owners also).
- Signup (Different for both customers and Business owners also).
- Profile.
- Register Business.
- Create Bill.
- Manage Bills (Only for Business Owners).
- View Bill (Business owner can also edit the bill but the customer can only view it).
- Payment History (Includes Monthly, Early, Daily and Default Earnings).
- Purchasing History.

Software Interfaces:

- Android Studio.
- Java Language.
- Xml for Front End Designs.
- Sql and Firebase for Databases.
- Firebase Database.

2.2.3 User Classes and Characteristics:

By using the Trade Portal Mobile Applications, the both of the users, Business owners and the Customers will be able to get rid of using paper works for the history of their products. The Business owner should be able to do the Following functions:

- Register Business.
- Save The History of the products buys and sell.
- Keep the records of Earnings.
- Able to generate a slip using his mobile.
- Edit Delete slips.
- Able to receive money by from users online.

The Customer Will be able to do the following functions:

- Buy Products.
- Keep the records of his/her Purchasing.
- See his Purchasing Slips Digitally.

Administrative:

- Add or Delete a Business of Anyone.
- Add new Functionalities.
- Update for the new thing.

2.2.4 Operating Environment:

Operating an environment for the Trade Portal is the list below.

- Database: Firebase, SQLite and the Api using Php.
- Operating Platform: Android Phones.
- Tool: Android Studio.
- Languages: Java and Php.

2.2.5 Design and Implementation Constraints:

- The Information of all their Business must be stored in a database.
- The information's of all the customers must be stored in database.
- The app will runs 24/7 correctly.
- User can access the application from any android mobile having an active internet connection.
- The both of the users, Business owners and the customer must have their correct usernames or passwords to enter the online account and do actions.

2.2.6 User Documentation:

User documentation refers for a product and services provided to the end users. The user documentation is designed to assist end users to use the product or service.

- The user should be having android mobile and the android version of their mobile should be greater than 8.
- For the Installation of our App, the user should have to go to play Store and search Trade Portal application.
- After downloading the applications, the user should have to give permission of the internet so that the user will be able to use the application.
- The App will serve the both users, if the user is business owner, so he must have to register the user's business for performing the actions and if the user is customer, so it is simple and easy to use.
- If user have any issue regarding to our applications so have can contact us on the mail provided in the app.

2.2.7 Assumptions and Dependencies:

- The application will needs the third party products for storing database.
- Databases will stores using Firebase and SQLite Server.
- The users must have an active internet connection to access the features of the application.
- User will runs the Mobile application which supports internet browsing,
- Our app will not be violating any internet ethic or cultural rules and won't be blocked by Play store.

2.3 External Interface Requirements:

External interface requirements is the types of **functional requirements** They'r important for embedded systems. And they outline how your product will interface with other components.

2.3.1 User Interface:

There are two different type of user in our application so, the interface for both of the users will be different.

- **Login Interface:** The Login Interface will be same for both of the users.
- **Profile Page:** The Profile page will be same for the both of the users.
- **Home Page for Business Owner:** For the business owners, after logging into the app the business owner must have to provide the Details of the business for further use.
- **Payment History:** The Payment history page will be same for both of the users.
- **Create Bill/ Slip:** This page is designed only for the business provider for generating the slips.
- **Home Page for Customer:** The customer will be able to see the products of the any business.
- **View Slips:** The customer can see the records of the products which he has buy from the business provider and the customer can only view it.
- **Edit Slip:** This page is designed for the business owner so he can modulate or update the slips.

2.3.2 Hardware Interfaces:

Only the recommended configuration (base requirements of the android mobile) and there is no other hardware is required to run the application.

2.3.3 Software Interfaces:

- Operating System greater than version 8.
- App Store to download the Application for the use.

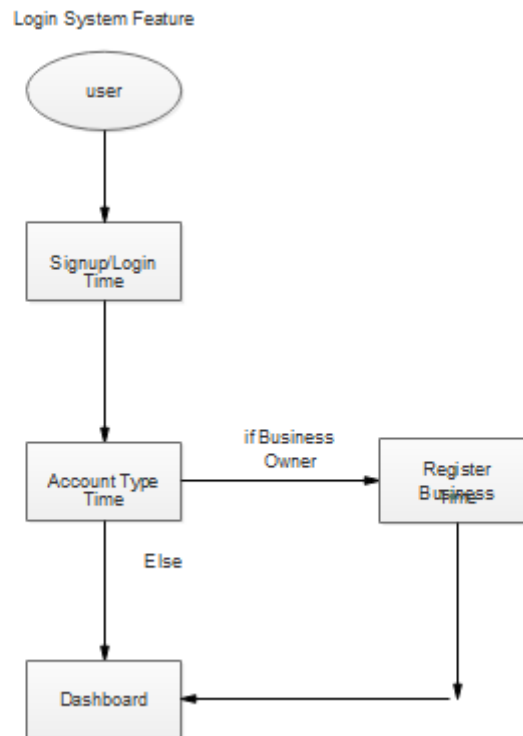
2.3.4 Communications Interfaces:

The communication architecture must follow the client-server model. and Communication between the client and server should utilize a REST-compliant web service and must be served over HTTP Secure (HTTPS). The client-server communication must be stateless. A uniform interface must separate the client roles from the server roles. Communication over the VDS must conform to a reference using XML. Communication must provide the user with XML for interfaces.

2.4 System Features:

System features are types of functional requirements. These are features that are required in order for a system to function.

2.4.1: System Feature 1:



2.4.1.1 Description and Priority:

So, after downloading the applications, it is compulsory for the user to make signup to access the overall features of the Trade Portal. During the signup process, the user must have to select the option that the user is making the account for his business or making the account as a buyer customer.

2.4.1.2 Stimulus/ Response Sequences:

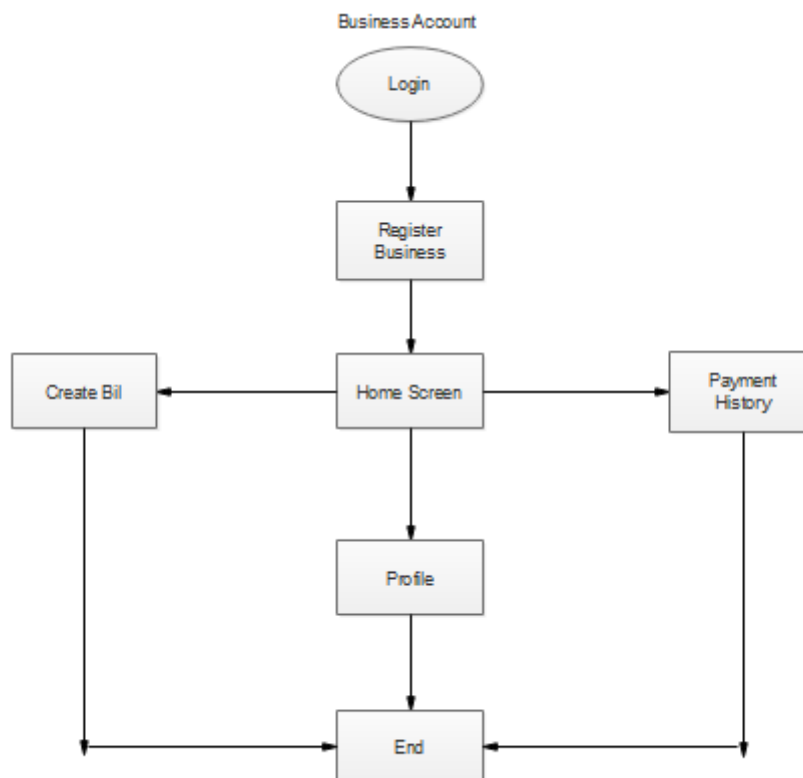
The response/ stimulus for the different classes of users are:

- Administrator: Login, Manage the system.
- Users: Login, Account type, Do actions.

2.4.1.3 Functional Requirements:

- Signup.
- Login.
- Select Account Type.

2.4.2 System Feature 2:



2.4.2.1 Description and Priority:

When the business owner registers his/her business, now the home screen appears which contain different functionalities according to the business account of the user.

2.4.2.2 Stimulus/ Response Sequences:

The response/ stimulus for the different classes of business owners are:

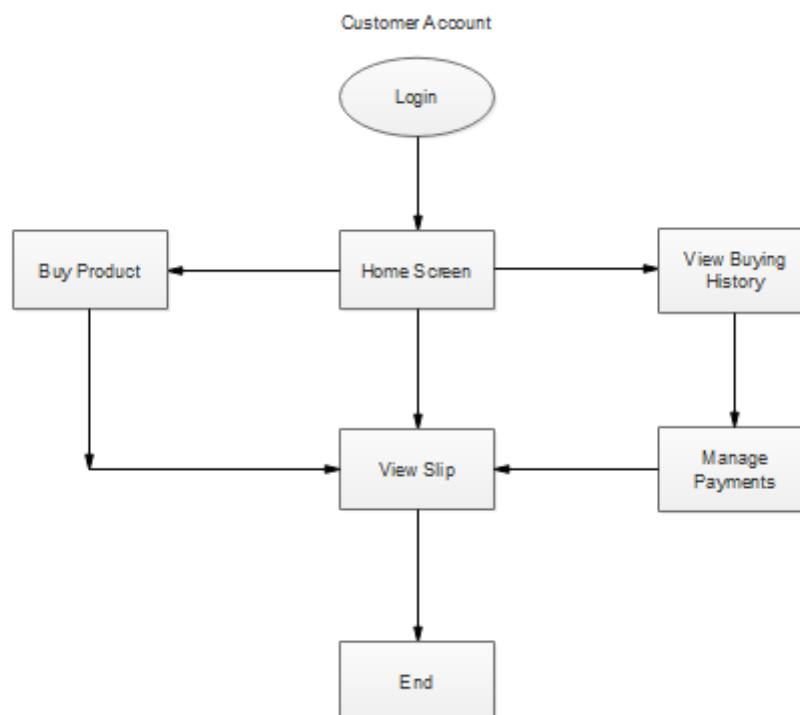
- Create new Bill.
- Payment History.
- Pending Payments (Divided into further functionalities Like, Today Earning, Monthly Earning, Yearly Earnings and the default earnings).

- My Purchasing History.
- Profile.

2.4.2.3 Functional Requirements:

- Login.
- Register Business.
- Create Bill.
- Manage Payments.
- Pending Payments.
- Purchasing history.
- Profile.

2.4.3 System feature 3:



2.4.3.1 Description and Priority:

The customer after logging in to the account, the customer will be able to perform functionalities like he can buy a product from random business owners and he can also buy the product from the specific business owner. The customer will also be able to view the slip of

the products which he buys from the business owner/ seller and also can pay for the product using the app through jazz cash.

2.4.3.2 Stimulus/ Response Sequences:

The response/ stimulus for the different classes of business owners are:

- View Products.
- Buy Product.
- Make Payment online and then view slip of the product.
- Manage Payment history.

2.4.3.3 Functional Requirements:

- Login.
- View Products.
- Buy Products.
- Make

2.5 Other Non-Functional Requirements:

- Performance
- Scalability
- Responsiveness
- Use-ability
- Reliability
- Security
- Documentation
- Availability

Performance:

- The performance of the application can be determined by its responsive time, time to complete the given task.
- For example when Application is made to start up it shouldn't take more than three seconds to load initial screen. Also it should be made sure that app will not hinderance to the user Input.

Scalability:

- App should be able to adopt itself to increased usage or be able to handle more data as time progresses.
- For example when the user data (caches, stored data etc.) increases the app should be capable of handling them without delay by optimizing the way storage is done and accessed.

Responsiveness:

- Application should be responsive to the user input or to any external interrupt which is of highest priority and return back to the same state.
- For example :- When the app gets interrupted by a call then the app should be able to save state and return to the same state page which was there before it got interrupted.

Use-ability:

- User should be able to understand the flow of the app easily i.e. users should be able to use the app without any guideline or help from experts manuals. If user experience needs to be explained then it's not good UX.

Reliability:

- The application should be reliable to perform the business, i.e. when a user performs some important action it should be acknowledged with confirmation.

Security:

- All the app data should be secured and be encrypted with minimum needs so that it's protected from outside environment also from internal attack.
- For example: All authentication tokens should be saved on local device for comparison and need user permission to gain access.

Availability:

- There should be a common platform where the user can access your application to install and look for regular updates give feedback.
- For example:- Google Play Store
- The above mentioned points cover only a few important areas of the Non Functional Requirement. Apart from this there are much more concepts to be covered and need to be taken care of. Some of the important ones are

Screen Adaption:

- Now a days lot of mobile devices comes with different screen sizes and layout,So your application should too able to render it's layout to different screen sizes. Along with automatic adjustment of font size and image rendering.

Network Coverage:

- As we all know all Apps work well with Wi-Fi but also care should be taken care to handle slow connection while experience Wi-Fi black spots or when connected to mobile Network. App should be able to look out for Wi-Fi if not available then automatically switch to mobile network.

Accessibility:

- It is a feature which makes physically challenged people make use of your Application.

Example:

- Let's take a real life Example to further understand the importance of the Non-Functional Requirement
- Consider you are in to restaurant business and you have an idea for mobile Application and defined all its feature and business logic now it time to cross verify it with above points.

2.5.1 Performance Requirement

The Trade Portal app will load and run in 3 second and must provide available fresh data to the requesting client at a rate of no less than 3second. The response-time for the Trade Portal should be minimized using industry recommended practices. All other performance related to storage, memory and processing should follow industry recommended practices to ensure resource requirements are minimized.

2.5.2 Safety Requirements:

- The App shall not permit operation unless the operator guard is in place.
- The App shall not allow to access the personal information of the user example media etc.
- The App shall not operate if the external temperature is below 4 degree Celsius.

2.5.3 Security Requirements:

The software system defined in this SRS must follow industry recommended practices for secure software development. At a minimum the software development must practice the principle of least privilege for defining access level requirements of the software system and its associated services. The production-release version of the software system must pass an automated dynamic application security testing tool.

2.5.4 Software Quality Attribute:

Our app will have assured to provide the following Quality attributes:

Correctness: The correctness of a software system refers to :

- Agreement of program code with specifications
- Independence of the actual application of the software system.

The correctness of a program becomes especially critical when it is embedded in a complex software system.

Reliability: Reliability of a software system derives from

- Correctness .
- Availability .

The behavior over time for the fulfillment of a given specification depends on the reliability of the software system.

Reliability of a software system is defined as the probability that this system fulfills a function determined by the specifications for a specified number of input trials under specified input conditions in a specified time interval assuming that hardware and input are free of errors.

A software system can be seen as reliable if this test produces a low error rate the probability that an error will occur in a specified time interval.)

Maintainability: Maintainability suitability for debugging localization and correction of errors and for modification and extension of functionality.

The **maintainability** of a software system depends on its:

- Readability .
- Extensibility.
- Testability .

Readability: Readability of a software system depends on its:

- Form of representation.
- Programming style.
- Consistency.
- Readability of the implementation programming languages.
- Structuredness of the system.
- Quality of the documentation.
- Tools available for inspection.

Extensibility: Extensibility allows required modifications at the appropriate locations to be made without undesirable side effects. Extensibility of a software system depends on its:

- Structuredness (modularity) of the software system.
- Possibilities that the implementation language provides for this purpose.
- Readability to find the appropriate location of the code.
- Availability of comprehensible program documentation.

Testability: Suitability for allowing the programmer to follow program execution runtime behavior under given conditions and for debugging The testability of a software system depends on its:

- Modularity.
- Structuredness.

Efficiency: Ability of a software system to fulfill its purpose with the best possible utilization of all necessary resources time, storage, transmission channels, and peripherals.

Portability: The ease with which a software system can be adapted to run on computers other than the one for which it was designed.

The portability of a software system depends on:

- Degree of hardware independence.
- Implementation language.
- Extent of exploitation of specialized system functions.

2.5.5 Business Rules:

It is a rule that defines or constrains some aspect of business and always resolves to either true or false. Business rules are intended to assert business structure or to control or influence the behavior of the business. Business rules describe the operations, definitions and constraints that apply to an organization. Business rules can apply to people, processes, corporate behavior and computing systems in an organization, and are put in place to help the organization achieve its goals.

Following are the business rules for making Android Application:

1. Analysis of User Requirement:

The user requirement analysis is critical to the success and failure of your Android app. If you are developing an android app in collaboration with a mobile app development company make sure that they represent user requirements in a proper form.

2. Optimize Performance of Your Android App for Multiple Android Devices:

The market is flooded with Android devices Every brand offers multiple types of devices with different screen size and capabilities. So, once when you have critically completed user-requirement analysis, shift your focus on the variety of Android devices. Here, make sure you technology team is aware of device compatibility requirements, and optimize the performance of your mobile app for Android.

3. Responsive User Interface:

Responsive UI is integral to the mobile application. A responsive design has three key ingredients:

- Flexible Grid-based layout: When building a responsive app design, set the viewpoint right by fixing width, so that everything can be squish and stretch between the screen sizes.

- Flexible media: Individual elements of media such as images, frames, or videos should be organized in a perfect ratio by properly defining width and height of the elements..

4. Balance Functionality and Creativity:

This rule applies to Android Application Developers. It is assumed that for the Android Application to work effectively it must achieve a balance between functionality and creativity.

The entire feature and functionality of the application must reflect practical judgment from the developers based on what a customer wants and what is the business requirement.

On the other hand, all these features and functions closely follow the long-range and short term objective and usability of the software application and budgetary control.

5. Integer VS Float:

Until acute precision is not required, avoid using float This is because Smartphone's CPU is not as advanced as of a desktop and since float consumes more space than an integer.

Besides in most of the Android application, high precision is not a crucial issue.

So, when you structure your application using an integer to implement custom fixed-point math will allow you to have control over your accuracy without compromising with the space of the application.

6. Android Virtual Method Calls within the Class:

It is better to avoid virtual method calls unless it is required when using C C ++ programming language. When an object is written in this language the initializers run from most derived class to the base class.

So, if you make a virtual method call in a constructor, the natural, inheritance hierarchy is not the most derived type, as it will call on the class, whose constructor has not been run. You can hire Android developers to have more knowledge on the subject.

7. Mobile Application Usability Testing:

If you assume that every mobile app user who download the application, use it in the same way as other then you are wrong here And this assumption can prove fatal for your application.

And if you have considered all the possibilities during the Android app development process then it is time for you to conduct astringent mobile application usabilitytesting.

While testing, here are some factors that you need to consider:

- Give importance to single column layout than multiple columns.
- Keep content at the center of the screen and place the navigation controls at the bottom.
- The targeted touch for mobile devices is 7x7m which is approximately 40 pixels.
- Replicate real-world movements and proportionate gestures.
- Have a natural-flow of content to win the users.
- Follow a progressive disclosure policy.

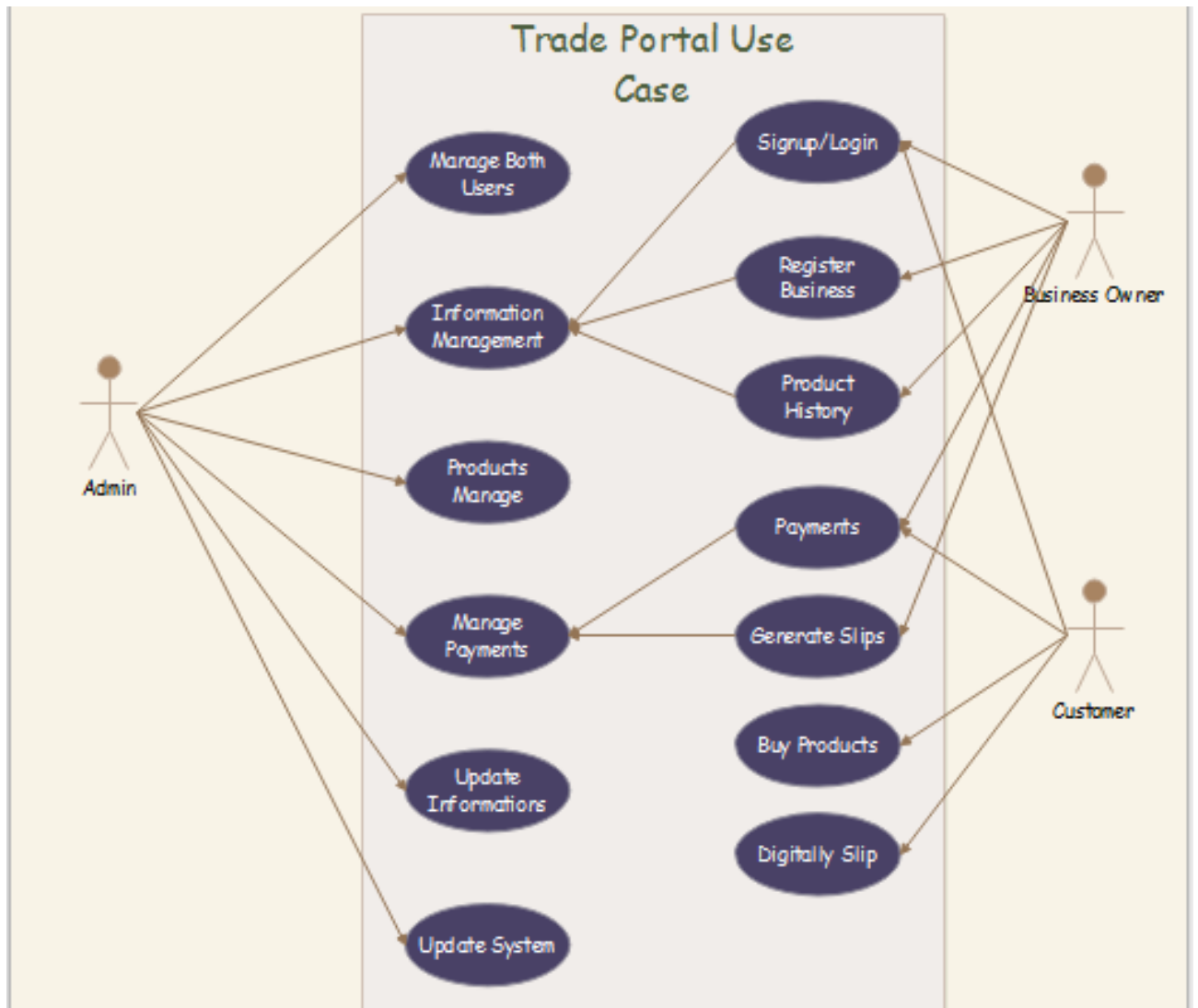
Chapter 3

Use Case Analysis

Use Case Analysis

The use case is the written descriptions of how the users will perform tasks on our application. In this use case, the diagram represents the sequence of steps.

3.1 Use Case Modal:



3.2 Use Case Descriptions:

Users

Use case Name	Login/Signup
Description	Both of the users must have to signup first and the login to access the app.
Actors	Business Owners, Customers.
Pre Conditions	System must be connected to the internet.
Post Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Enter Username. • Enter Password.
Extensions	<ul style="list-style-type: none"> • Invalid try will show Error. • 4 Time Invalid Password will close the Application.

Use case Name	Register Business
Description	The business owners must have to register their business to do operations.
Actors	Business Owners.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Overall Information of business.
Extensions	<ul style="list-style-type: none"> • Invalid Information will show Error. • Can register their business once.

Use case Name	Product History
Description	In this, the business owners can view the products in the warehouse etc.
Actors	Business Owner.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Purchasing History • Remaining Products
Extensions	<ul style="list-style-type: none"> • Will show the dialog box of remaining products.

Use case Name	Payment History
Description	The business owner will be able to manage the payments in this.
Actors	Business Owner.
Pre-Conditions	System must connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Pending Payments. • Check Today Earning. • Monthly Earnings. • Currently Year Earnings. • Default Earnings.
Extensions	<ul style="list-style-type: none"> • Will show the dialog box of the daily basis earnings.

Use case Name	Generate Slips
Description	In this, the business owners can generate the digitally slips for the user.
Actors	Business Owner.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Enter the products for Customer. • Then generate the slip.
Extensions	<ul style="list-style-type: none"> • Will show the dialog box of remaining products.

Use case Name	Digitally Slips
Description	The customer can view the slips of products.
Actors	Customer.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Customer can view the slips digitally.
Extensions	<ul style="list-style-type: none"> • Will show the dialog box for each purchasing.

Use case Name	Buy Products
Description	The user can buy the products using the app.
Actors	Customers.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Choose the Products. • Give online money transactions. • Receive digitally slip.
Extensions	<ul style="list-style-type: none"> • Will show the dialog box of each buying of products.

Use case Name	Information Manage
Description	The admin will manage both of the users.
Actors	Admin.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Keep records of both users.
Extensions	<ul style="list-style-type: none"> • Will update the system on same time.

Admin

Use case Name	Manage Users
Description	The admin will manage both of the users.
Actors	Admin.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Keep records of both users.
Extensions	<ul style="list-style-type: none"> • Will update the system on same time.

Use case Name	Products Manage
Description	The admin will manage the detail of the products for the business owners.
Actors	Admin.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Keep records of the business owners products.
Extensions	<ul style="list-style-type: none"> • Will update the system on same time.

Use case Name	Manage payments
Description	The admin will manage the payments of business owners and the customers.
Actors	Admin.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Manage payments transactions done. • Payment receives.
Extensions	<ul style="list-style-type: none"> • Will update the system on same time.

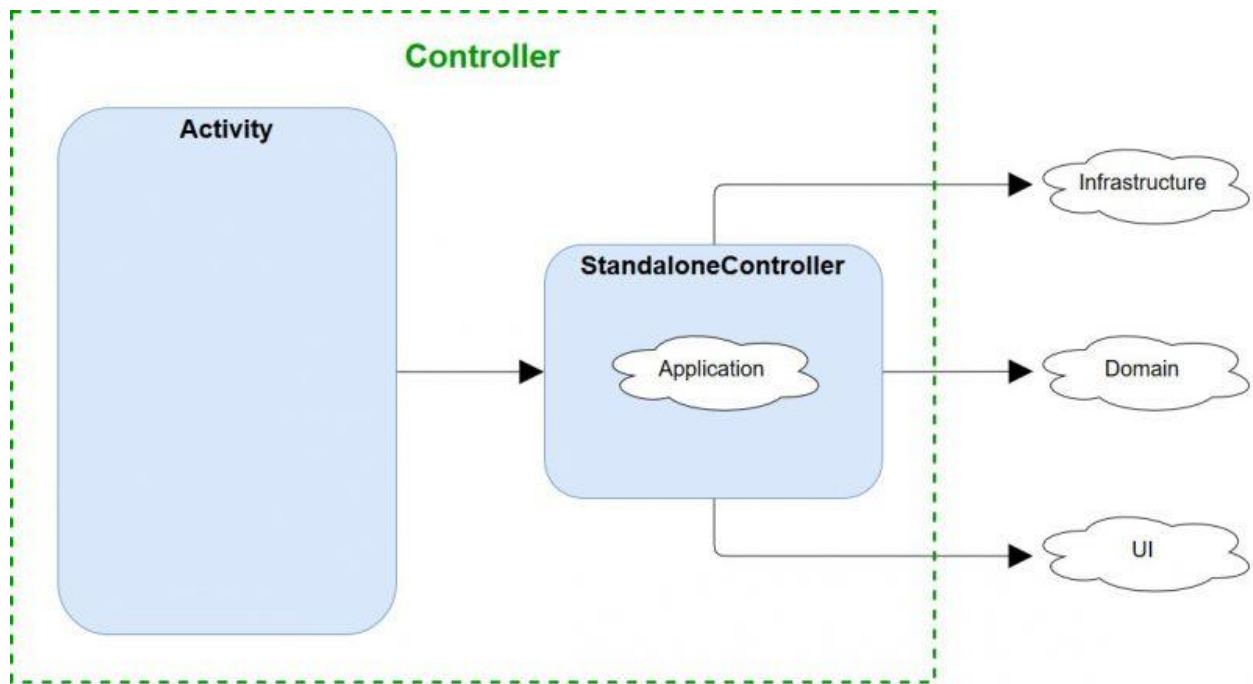
Use case Name	Update Information
Description	The admin will update the information on the same time.
Actors	Admin.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Keep the updated records of both users.
Extensions	<ul style="list-style-type: none"> • Will update the system on same time.

Use case Name	Update System
Description	The admin must have to update the system on time to avoid the distortions.
Actors	Admin.
Pre-Conditions	System must be connected to the internet.
Post-Conditions	Successful login will send confirmation mail to user.
Main Scenarios	Steps
Actors/users	<ul style="list-style-type: none"> • Keep the system up to date. • Give the updates for the applications.
Extensions	<ul style="list-style-type: none"> • Will update the system on same time.

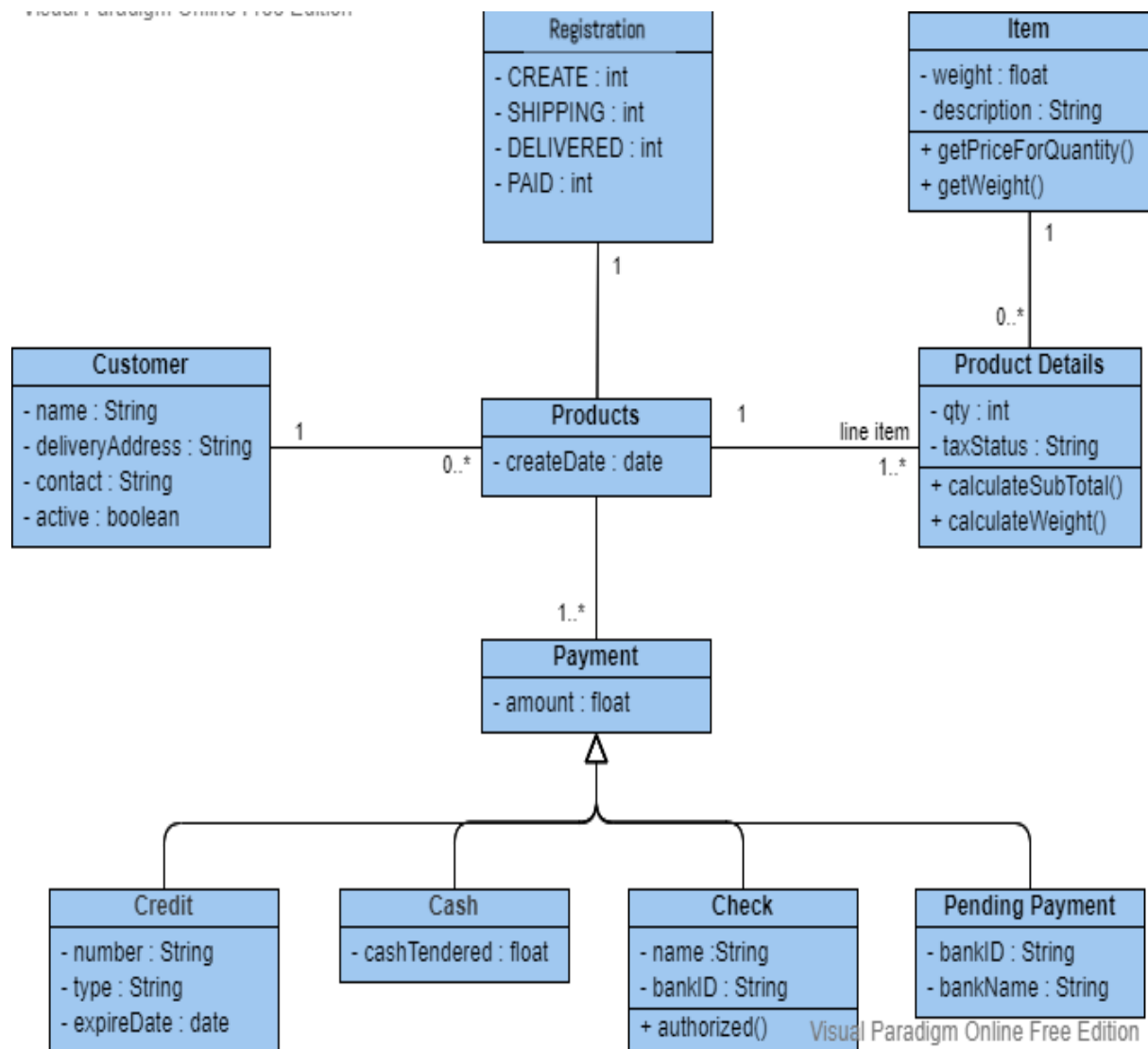
Chapter 4

System Design

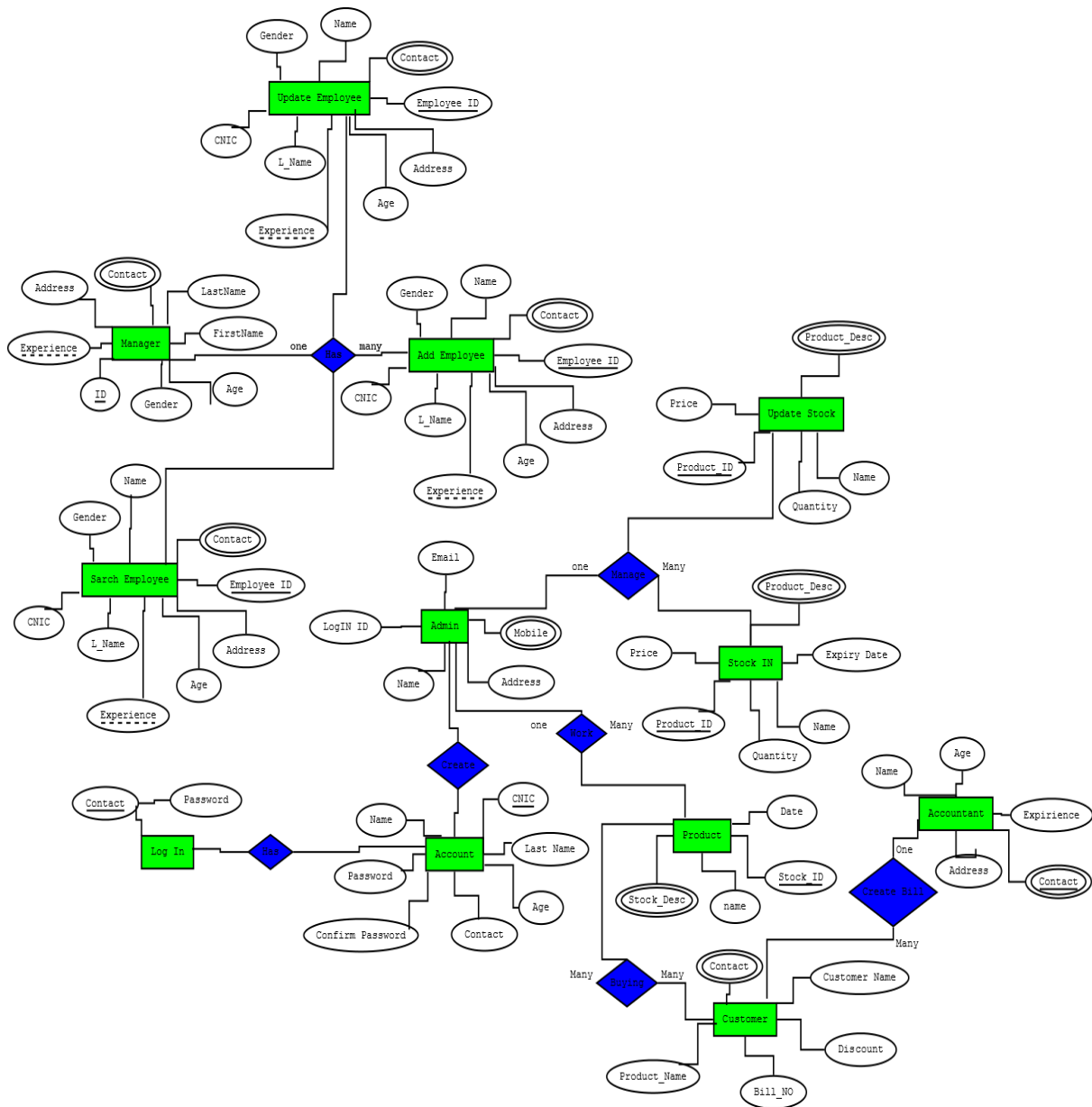
4.1. Architecture Diagram



4.2. Domain Model



4.3. Entity Relationship Diagram with data dictionary



Entities

- Manager
- Add Employee
- Search Employee
- Update Employee
- Account Create
- Log In
- Admin
- Add Stock
- Update Stock
- Products

- Customer
- Accountant

Attributes

- Name, Last Name, Contact, Address, Age, Manager ID, Gender, CNIC, Exp
- Name, Last Name, Contact Address, Age, Employee ID, Gender, CNIC, Exp
- Name, Last Name, Contact Address, Age, Employee ID, Gender, CNIC, Exp
- Name, Last Name, Contact Address, Age, Employee ID, Gender, CNIC, Exp
- Name, Last Name, Contact, Age, Password, Confirm Contact, Cnic
- Password, Contact
- Name, Address, Contact, Email, Log In
- Name, Quantity, Product Id, Product_Desc, Expiry date, Price
- Name, Quantity, Product Id, Produc_Desc, Price
- Name, Date, Stock ID, Stock_Desc
- Name Contact Discount Bill_No, Product_Name
- Name, Age, Address, Contact, Expe

Primary Key

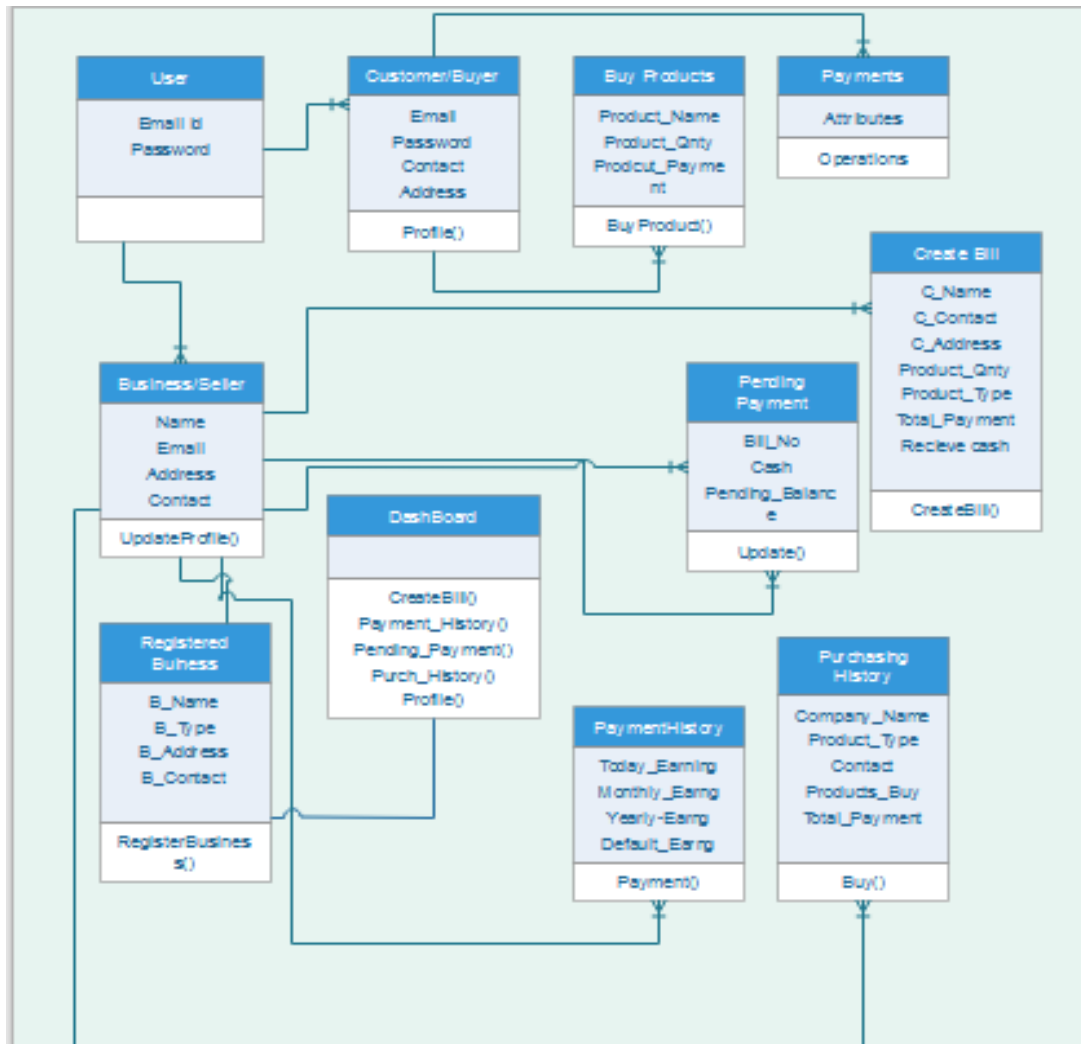
1. Manager_Id
2. CNIC
3. Contact
4. Product_ID
5. Stock_ID
6. Bill NO
7. Contact

Green Color Represent By Entity

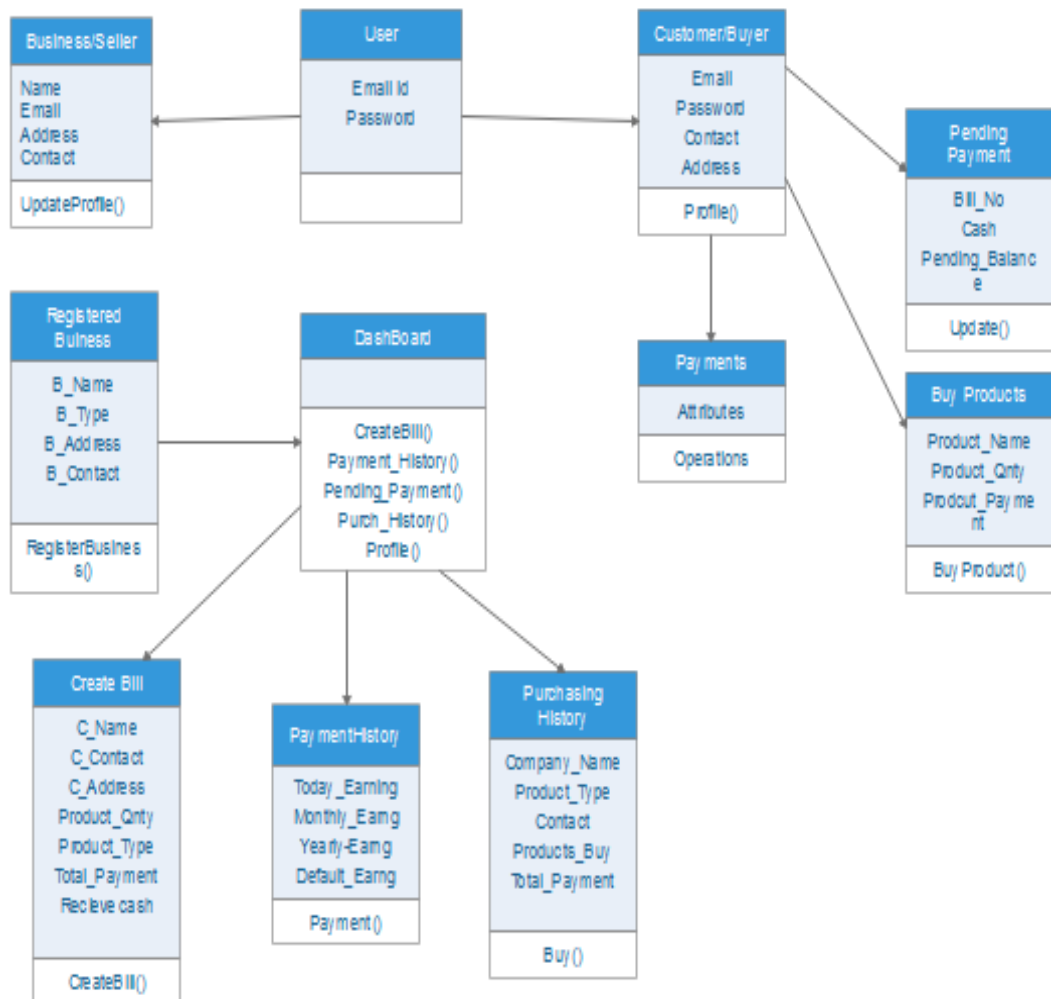
Blue Color Represent By Relationship

White Color Represent By Attributes

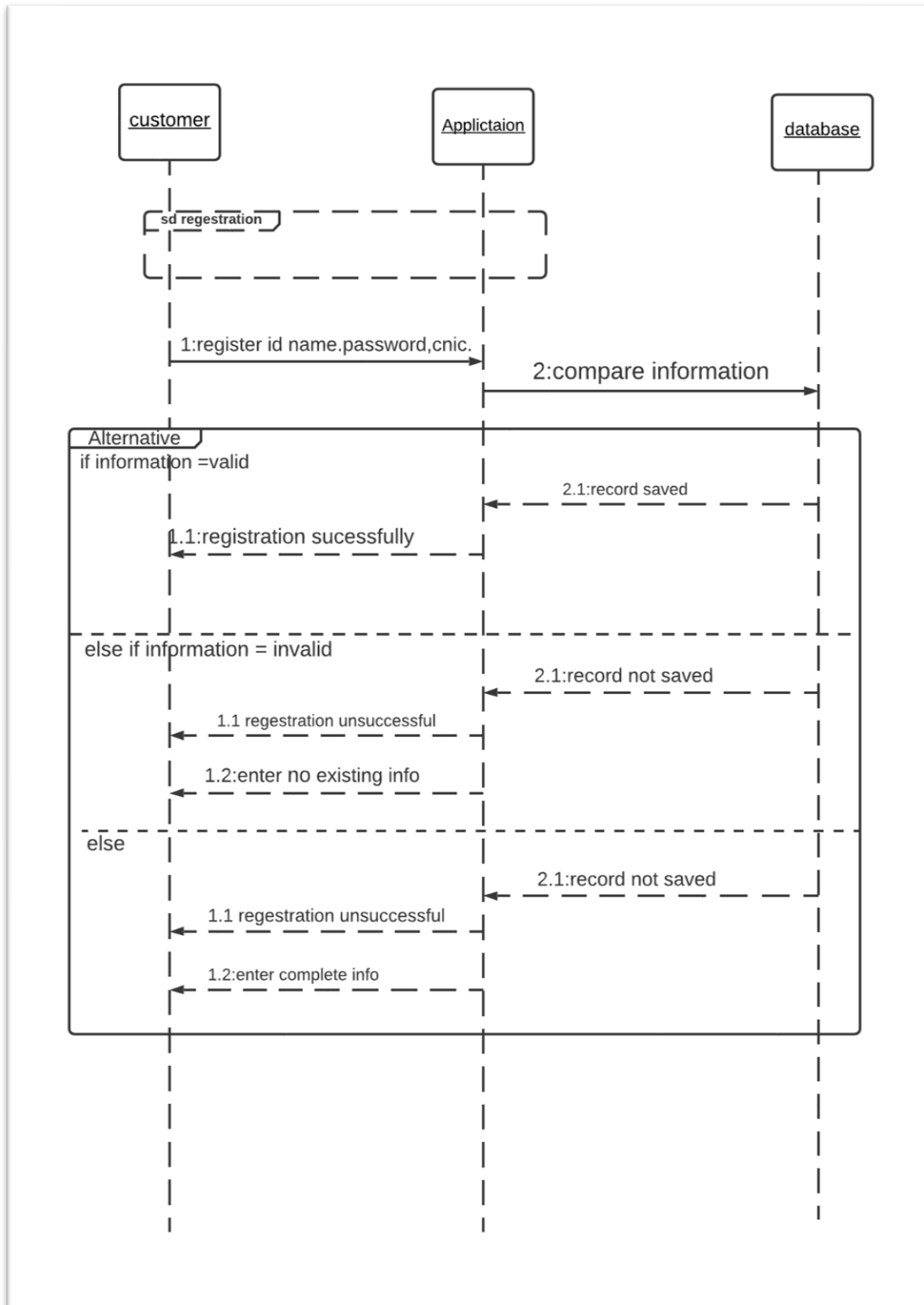
4.4. Class Diagram

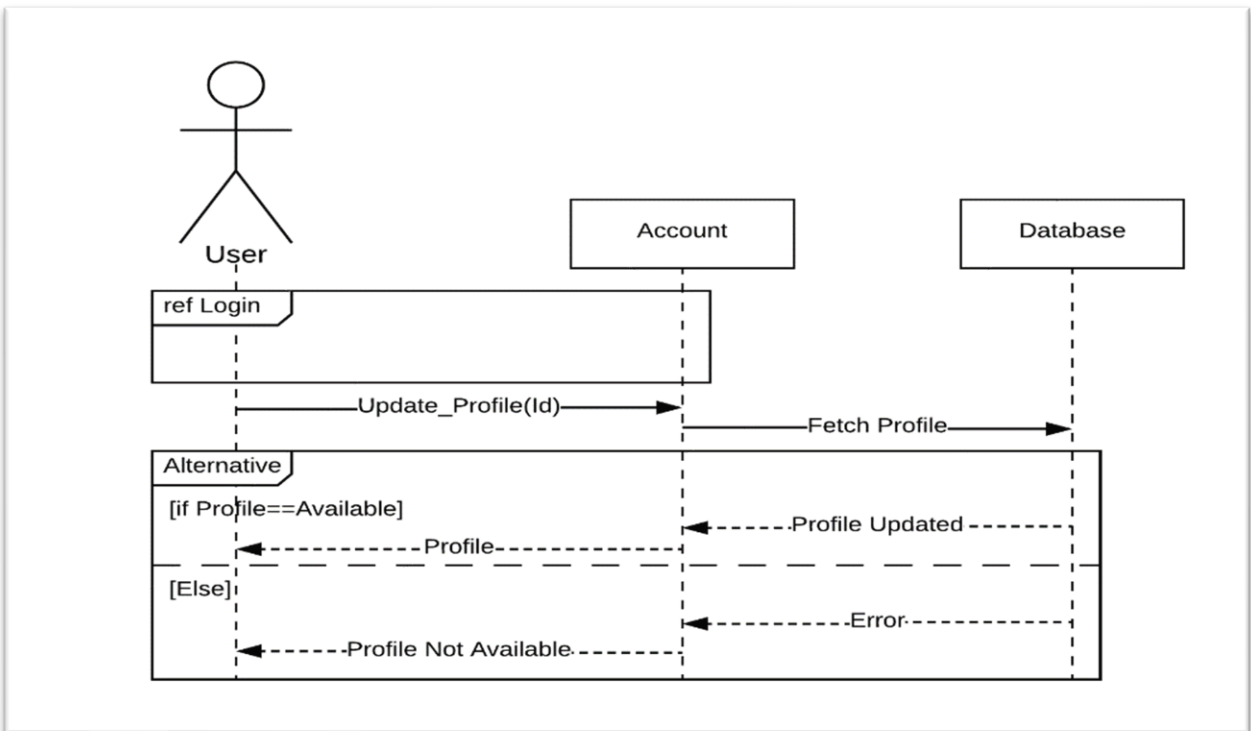
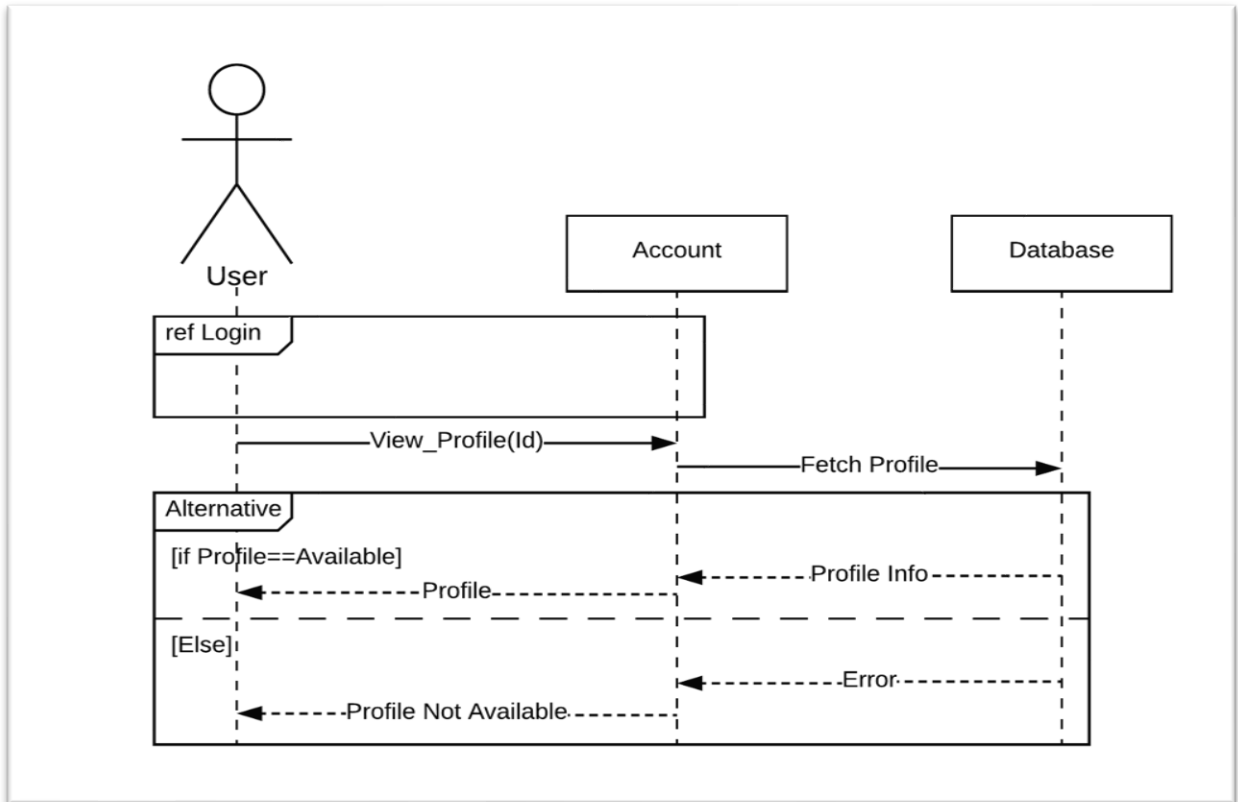


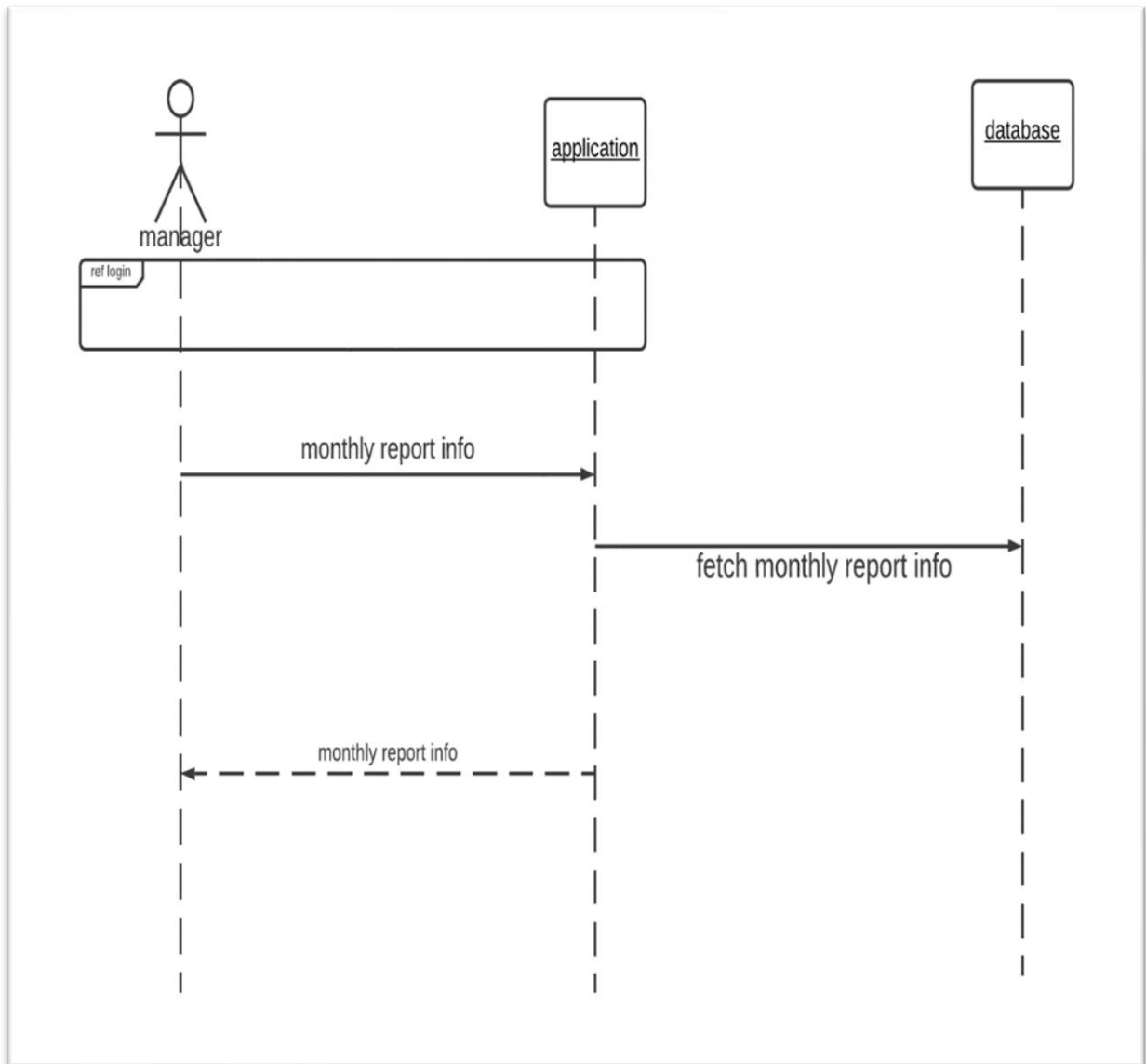
4.4 Class Diagram:

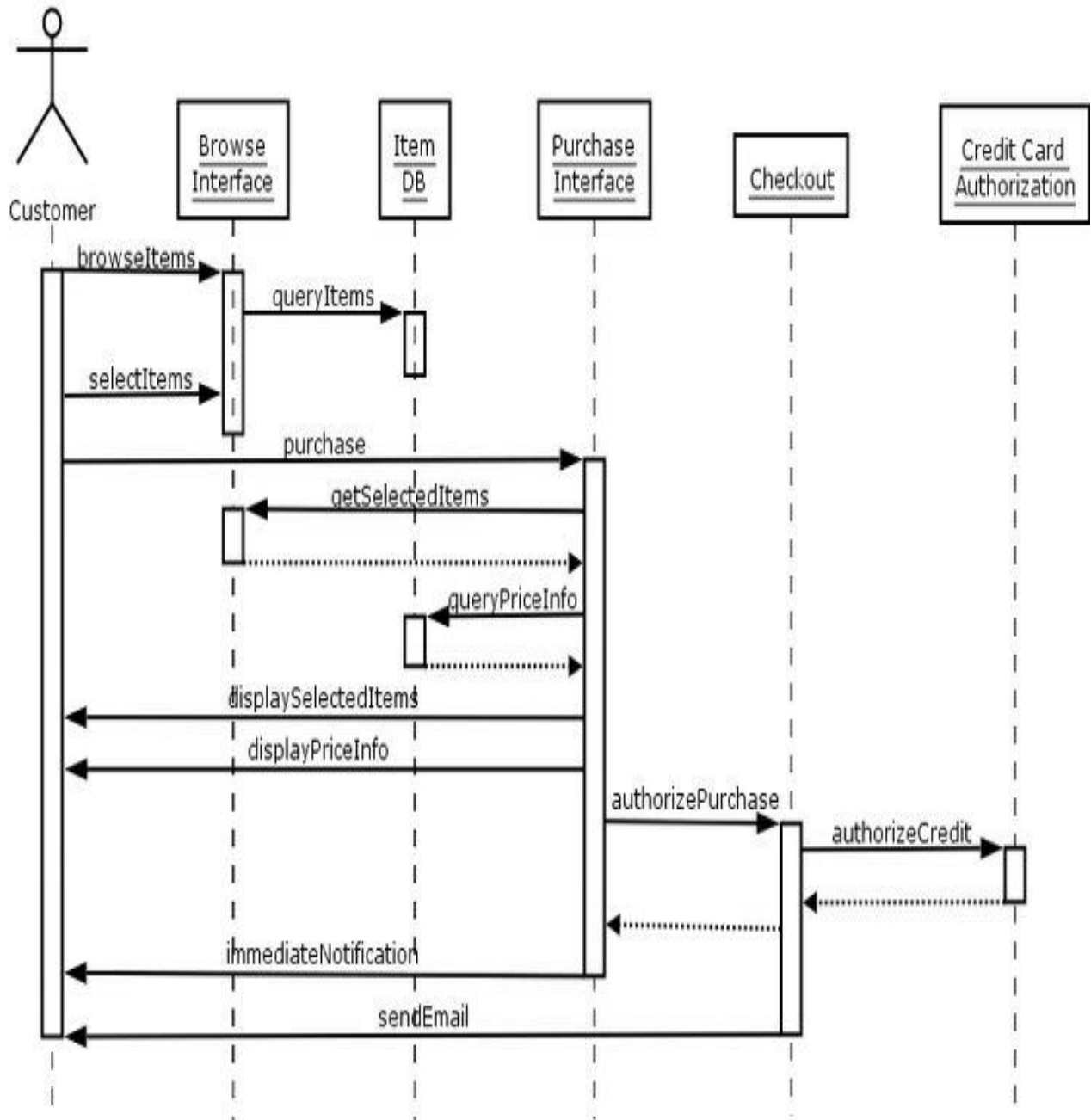


4.5. Sequence / Collaboration Diagram



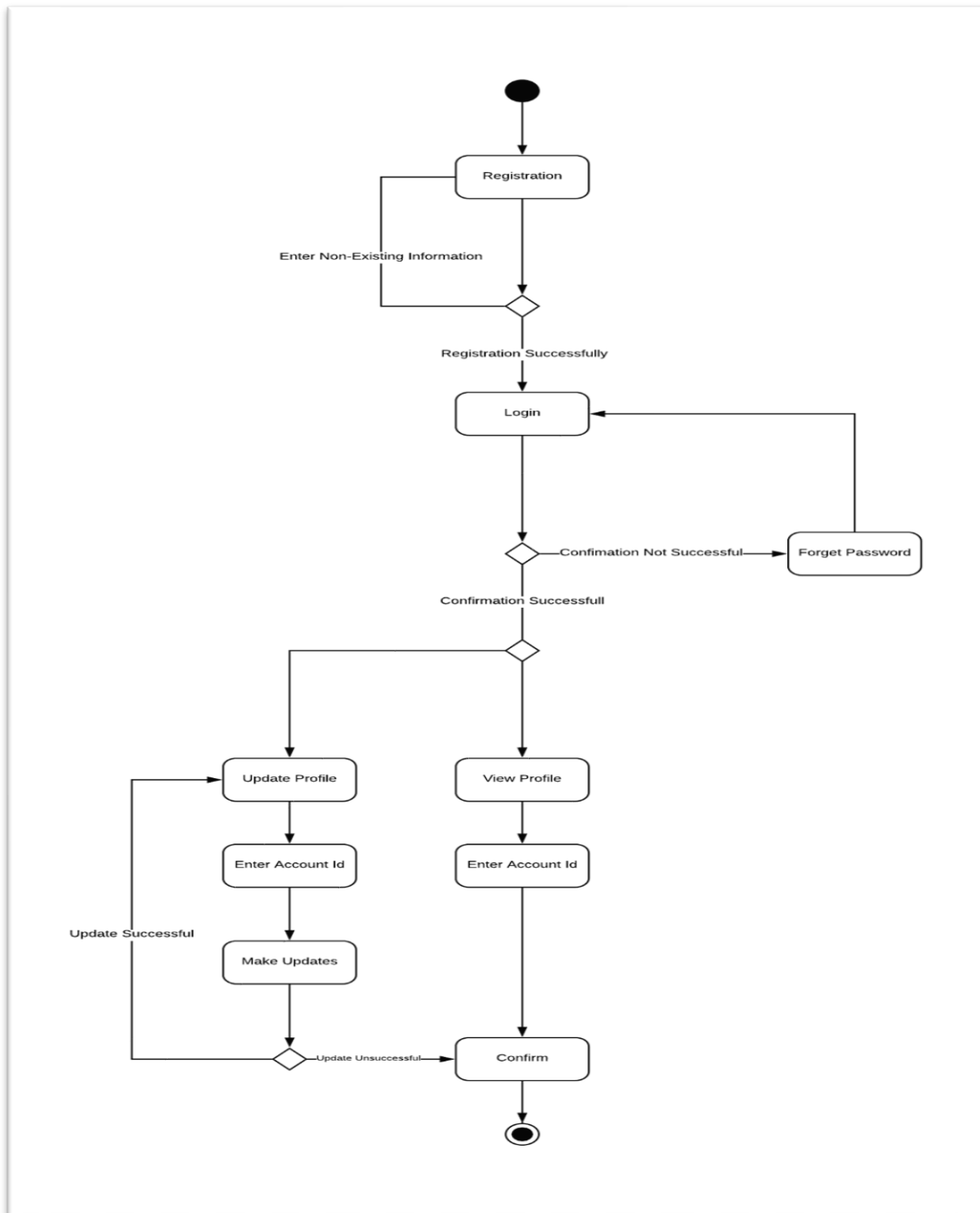


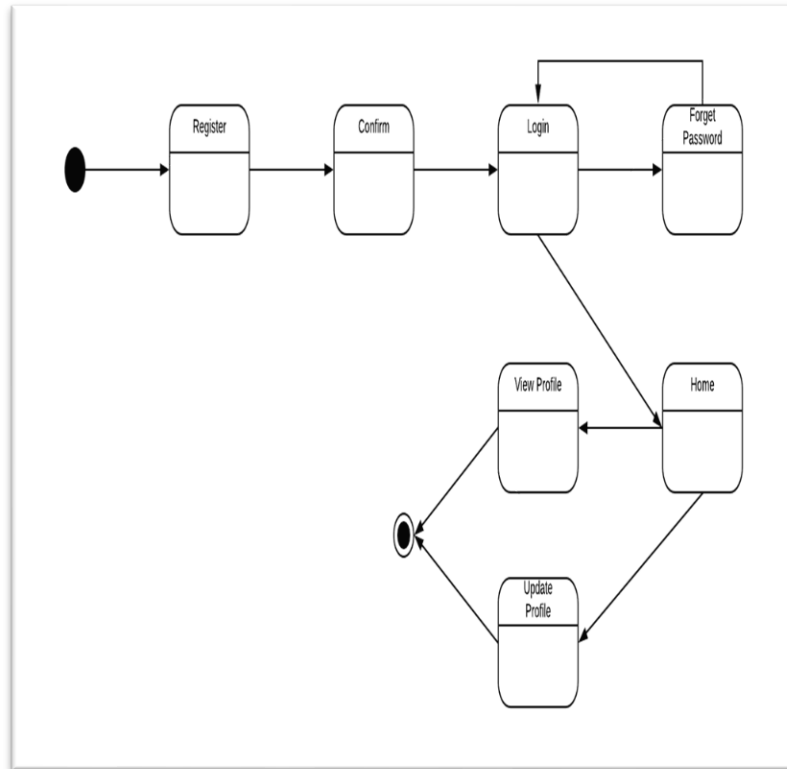




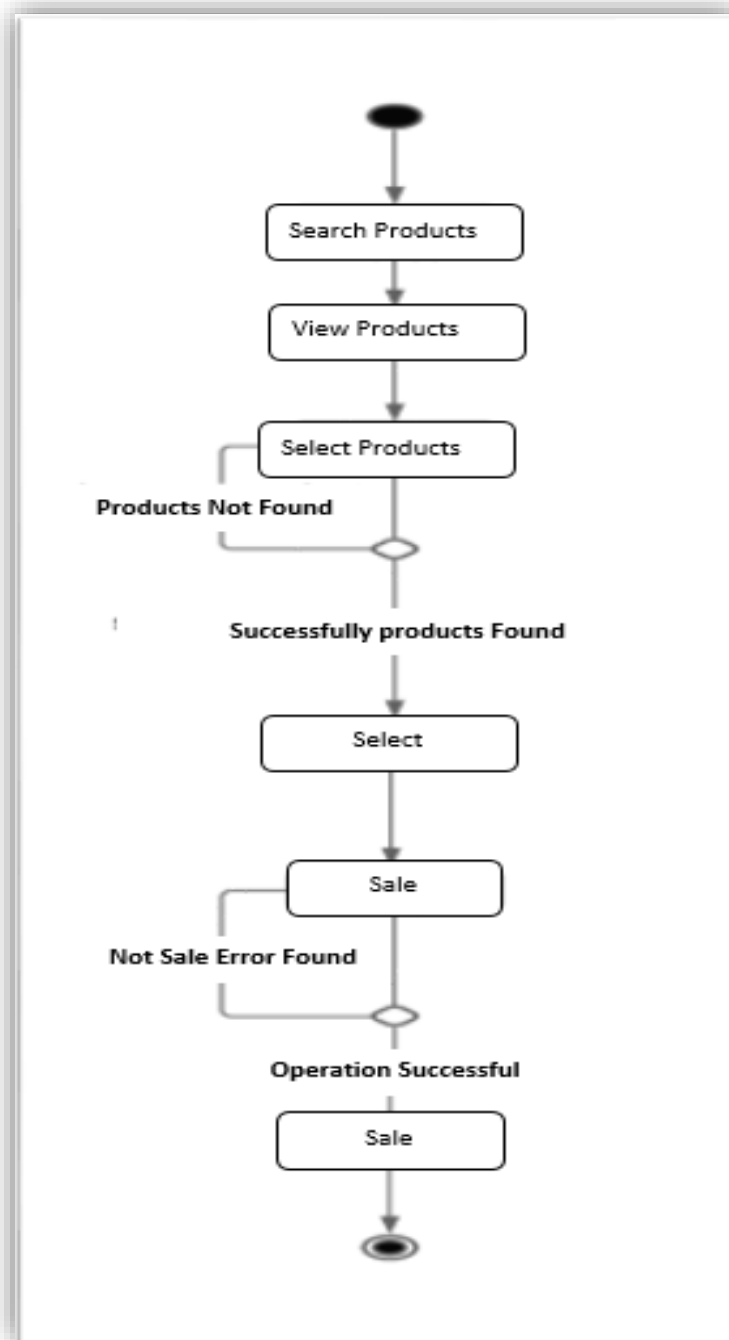
4.6. Activity Diagram

A.D 1.0:

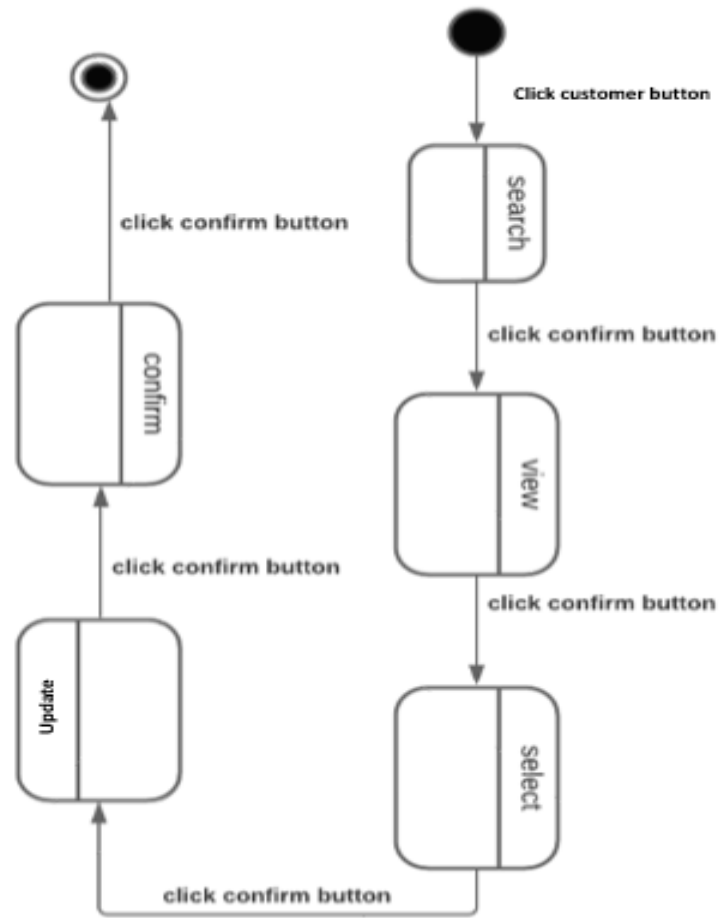




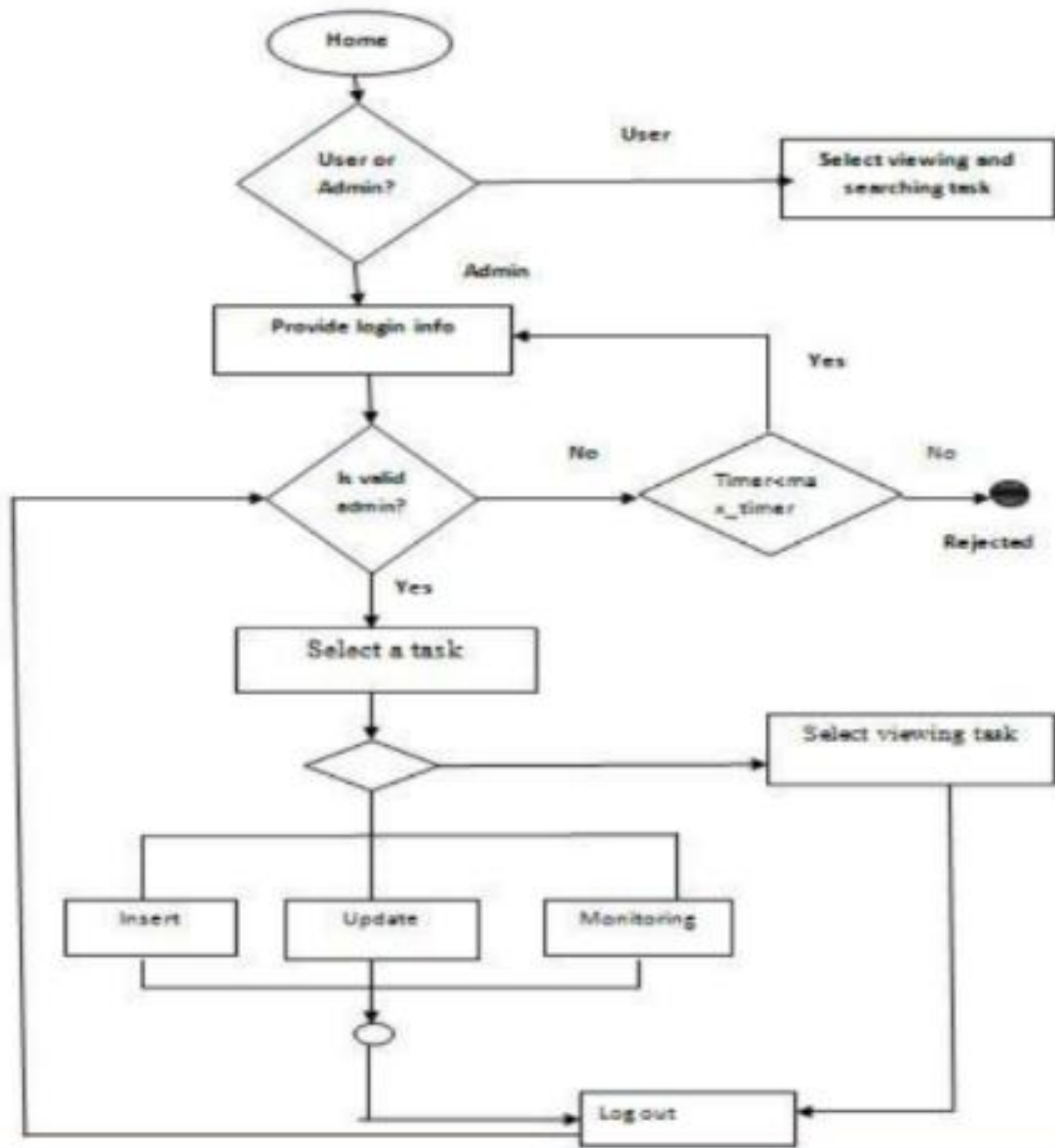
A.D 2.0



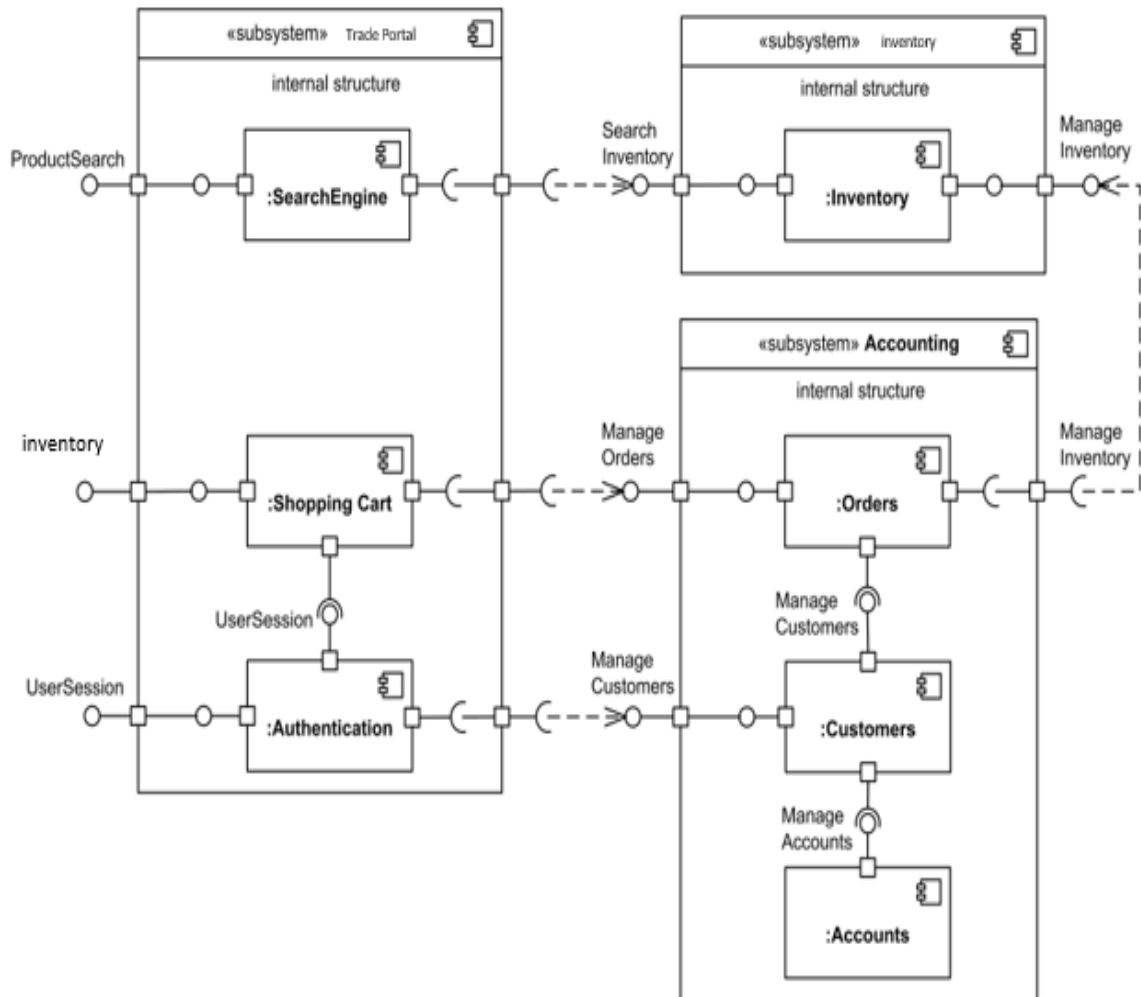
State .D 2.0



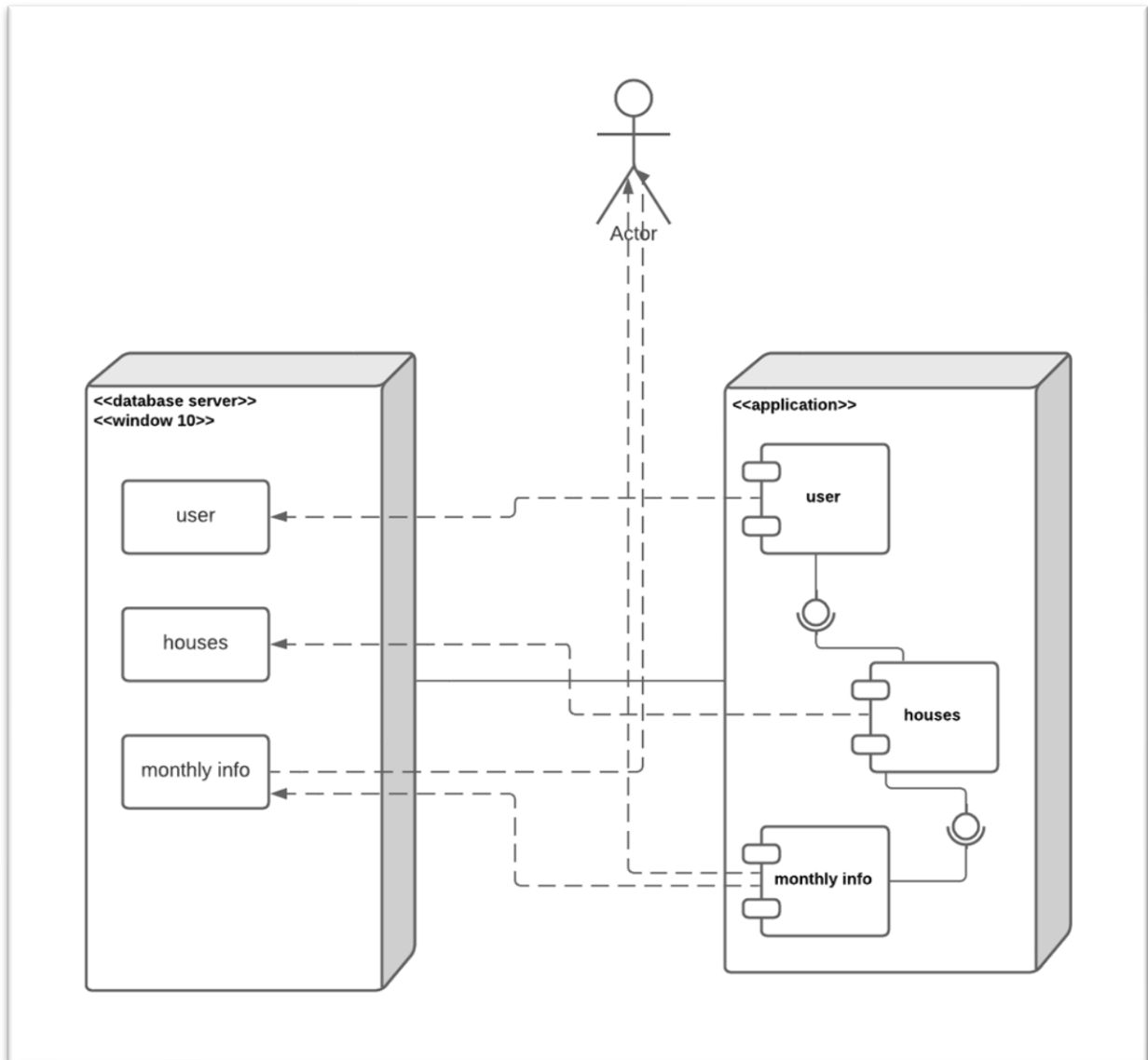
4.7. State Transition Diagram



4.8. Component Diagram

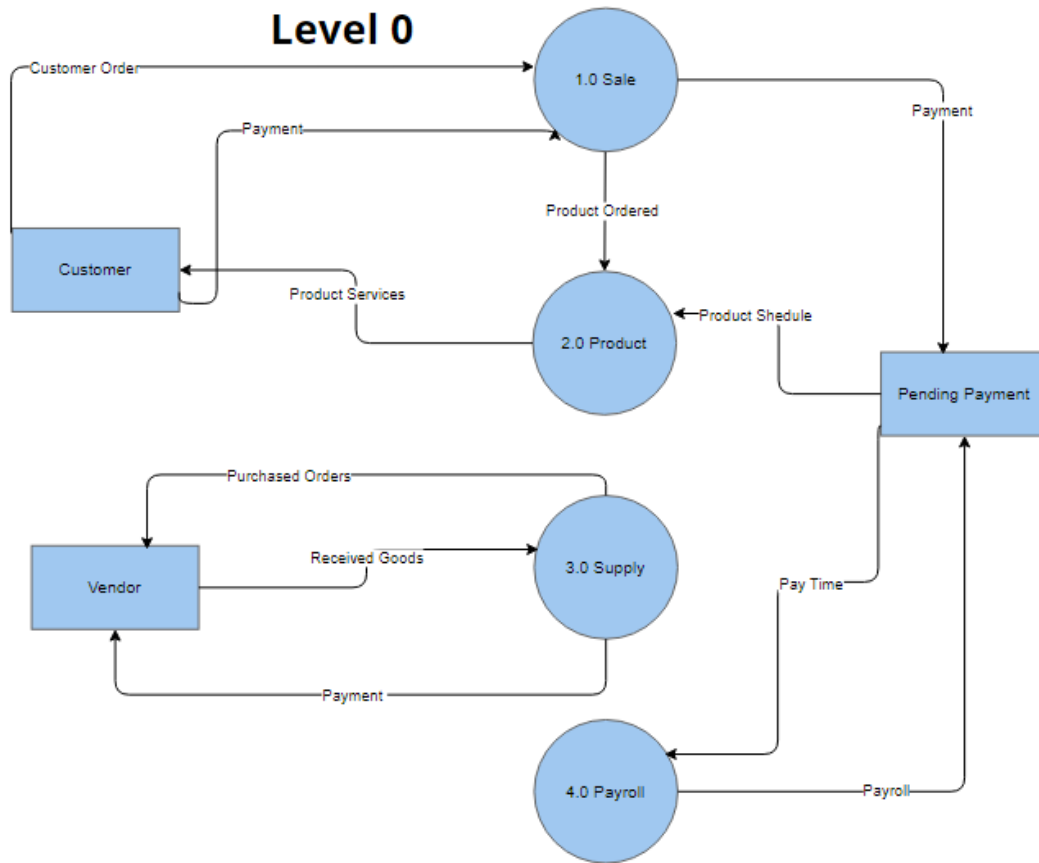


4.9. Deployment Diagram

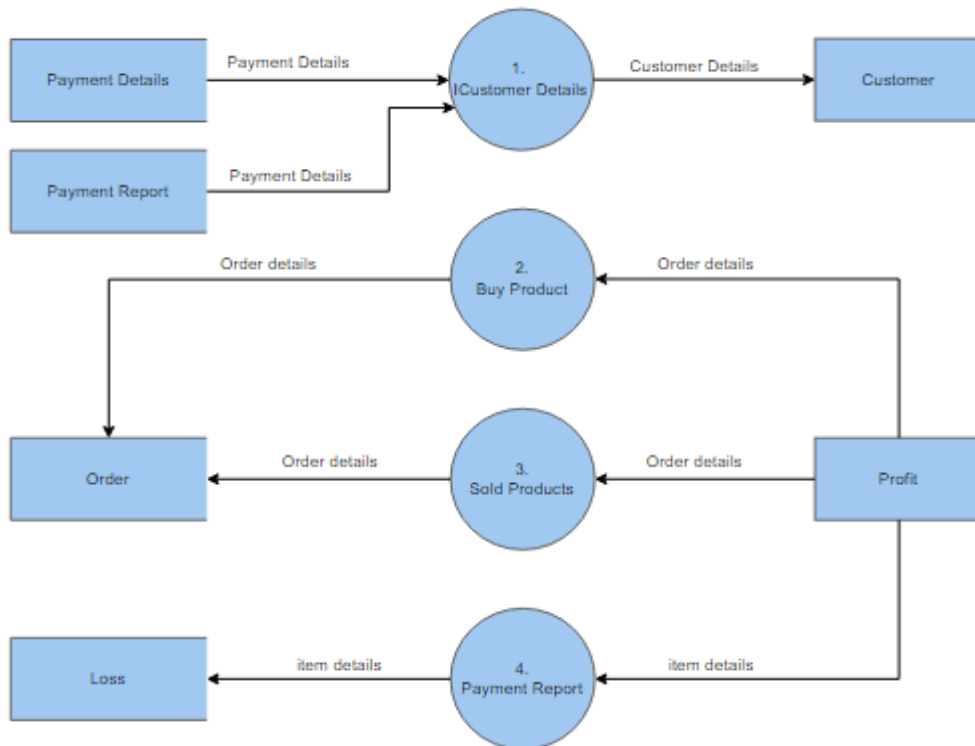


4.10. Data Flow diagram

only if structured approach is used - Level 0 and 1



4.11. Data Flow diagram [only if structured approach is used - Level 0 and 1]



Chapter 5

Implementation

Implementation

By using the Trade Portal Mobile Applications, the both of the users, Business owners and the Customers will be able to get rid of using paper works for the history of their products. The Business owner should be able to do the Following functions:

5.1. Important Flow Control/Pseudo codes

5.2. Components, Libraries, Web Services and stubs

User Interface components list are the following

- Button
- Check Box
- Date Picker
- Image
- Label
- List Picker
- Recycle View
- Password Text Box
- Screen
- Slider
- Spinner
- Switch
- Text Box
- Time Picker

Layout components list are the following

- Linear Layout
- Relative Layout
- Horizontal Arrangement
- Horizontal Scroll Arrangement
- Table Arrangement
- Vertical Arrangement
- Vertical Scroll Arrangement

Libraries Used

- Swipe Refresh
- Fire Base library Used
- Recycle View
- Glide
- Add mob
- Touch Image
- Circular Image View

5.3. Deployment Environment

Mobile Application

5.4. Tools and Techniques

- Android Studio
- SQLite Database
- Firebase
- Java
- Xml

5.5. Documentation:

- Microsoft Word 2016 and above
- Microsoft Visio 2010 and above
- Edraw Max 8.0
-

5.6. Best Practices / Coding Standards

Some Coding Standard must be followed like

Define lie cycle and milestone

Use single line comment for commenting one line and vice versa

Stable requirements and scope

Define organizations Systems and Roles

Quality Assurance

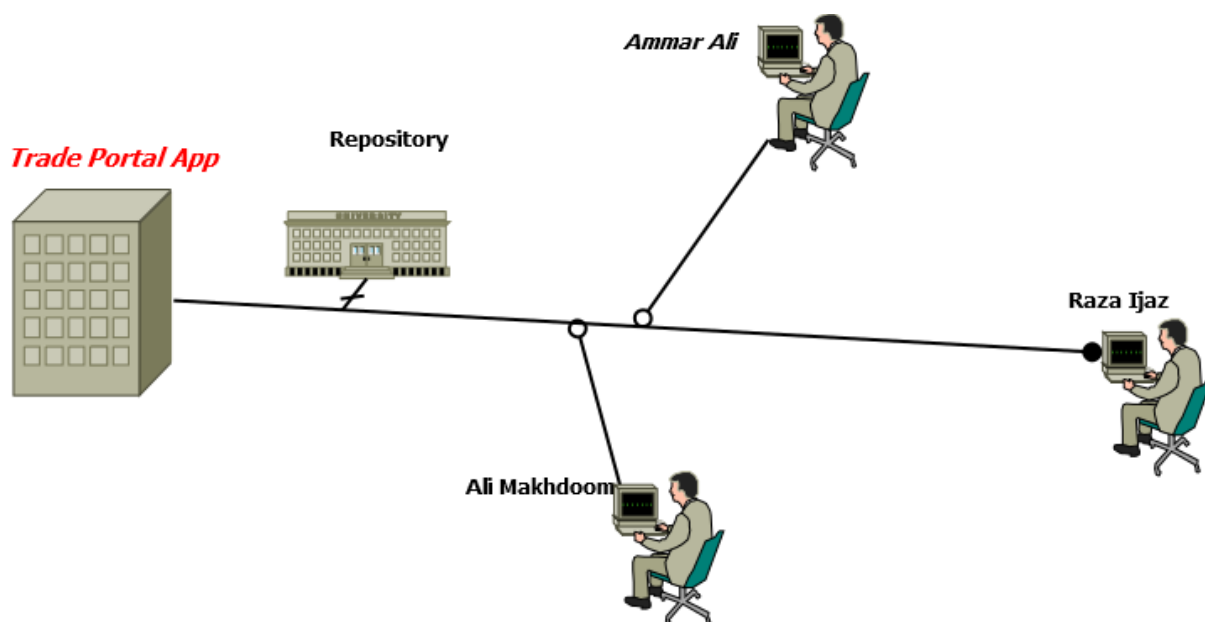
Avoid Unnecessary Code

Planned Commitments

Scope and missions

5.7. Version Control

A system of version control is useful for documents which are likely to be revised and redrafted and where you might need to keep a record of how the document changed over time



Chapter 6

Testing and Evaluation

Testing and Evaluation

Test and Evaluation is the process of by which a system or components are compared against requirements and specifications through testing. The results are evaluated to assess progress of design, performance supportability, etc. Developmental test and evaluation is an engineering tool used to reduce risk throughout the acquisition cycle. Operational test and evaluation is the actual or simulated employment, by typical users, of a system under realistic operational conditions.

6.1. Use Case Testing:

It is a brief description of a particular use of the software application by an actor or user. Use cases are made on the basis of user actions and the response of the software application to those user actions. It is widely used in developing test cases at system or acceptance level. so in our project we use several use cases or user Description, Actors extensions.

Test case id	Test case name	Input	Expected Output	Actual Output	Observation
1	User login	Email id and Password	Homepage open	Homepage open	Pass
2	User login	Email id and Password	Homepage open	Error message "Incorrect Email id or password".	Fail
3.	User Status	1.Active 2.Inactive	Access to homepage	When verified through Database	Pass
4.	User Status	1.Active 2.Inactive	Access to homepage	When not verified through Database	Fail
5	Apply for the services	Apply for the services	Successfully apply for the services	Apply for the services successful	Pass
6	Apply for the services	Apply for the services	unsuccessfully apply for the services	Apply for the services unsuccessful	Fail
7	Generate the customer details	Generate the customer details	Successfully generate the details	Generated details success	Pass
8	Generate the customer details	Generate the customer details	unsuccessfully generate the details	Generated details unsuccessful	Fail

6.2. Equivalence partitioning:

Equivalence partitioning or equivalence class partitioning software testing technique that divides the input data of a software unit into partitions of equivalent data from which test cases can be derived. In principle, test cases are designed to cover each partition least once. This technique tries to define test cases that uncover classes of errors

Guidelines for Equivalence Partitioning:

- If the range condition is given as input, then one valid and two invalid equivalence classes are defined.
- If a specific value is given as input, then one valid and two invalid equivalence classes are defined.
- If a member of set is given as an input, then one valid and one invalid equivalence class is defined.
- If Boolean no. is given as an input condition, then one valid and one invalid equivalence class is defined.

6.3. Boundary value analysis

- Boundary value Analysis is a BlackBox testing technique used to check the errors at the boundaries of an input domain.
- The name comes from the Boundary, which means the limits of an area. So, BVA mainly focuses on testing both valid and invalid input parameters for a given range of a software component.
- If (Min,MAX) is the range given for a field validation, then the boundary values come as follows:

6.4. Data flow testing

Data flow testing is a family of test strategies based on selecting paths through the program's control flow in order to explore sequences of events related to the status of variables or data objects. Dataflow Testing focuses on the points at which variables receive values and the points at which these values are used. It will describe the flow of a program.

6.5. Unit testing

Unit testing software development process in which the smallest testable parts of application, called units, are individually and independently scrutinized for proper operation. This testing methodology is done during the development process

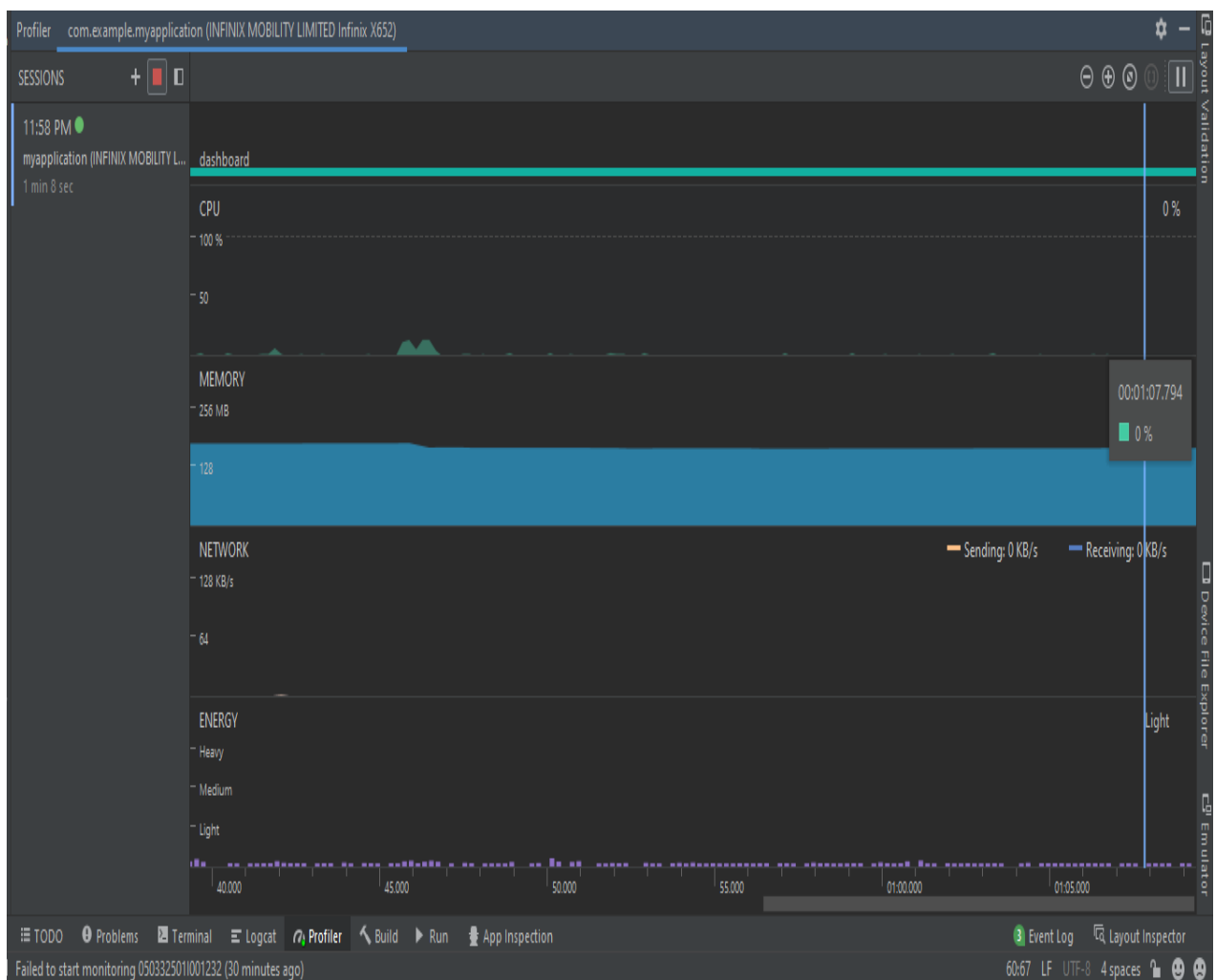
6.6. Integration testing

Integration testing also known as integration and testing is a type of software testing in which the different units, modules or components of a software application are tested as a combined entity However, these modules may be coded by different programmers.

6.7. Performance testing

Performance testing is a testing measure that evaluates the speed, responsiveness and stability of a computer, network, software program or device under a workload. Organizations will run performance tests in order to identify performance-related bottlenecks.

Without some form of performance testing in place, system performance will likely be affected with slow response times, experiences that are inconsistent between users and the operating system,creating an overall poor user experience. Determining if the developed system meets speed,responsiveness and stability requirements while under workloads will help ensure a more positive user experience.



6.8. Stress Testing

Stress testing is the process of determining the ability of a computer network program or device to maintain a certain level of effectiveness under unfavorable conditions. The process can involve quantitative tests done in a lab such as measuring the frequency of errors or system crashes. Stress testing is also extremely valuable for the following reasons:

- To check whether the system works under abnormal conditions.
- Displaying appropriate error message when the system is under stress.
- System failure under extreme conditions could result in enormous revenue loss.
- It is better to be prepared for extreme conditions by executing Stress Testing.

6.9. Project Key Milestones

Elapsed time in (days or weeks or month or quarter) since start of the project	Milestone	Deliverable
20-10-2021	Project documentation is made by the all group members with Collaboration.	Information, gather, requirements.
26-10-2021	Owner login or sing up functionalities Is handled	Updating on the owner side Or gathers information from Customer.
15-11-2021	Customer login or sing up functionalities Is handled	Updating on the customer side Or gather information about bills.
20-02-2022	Total bills or payments, pending Bills is handled or also generating Slips or bill.	To calculate bills or to generate transaction slips.

Chapter 7

Summary, Conclusion & Future Enhancements

7.1. Project Summary

This project is mainly targeting those people, which are facing the difficulties in making their records to paper works so, This Projects is planned, designed and prepared as a Mobile based application used to provide ease for the Business Owners to manage his business with customers to sell or buy his business products. This application will provide an opportunity to both (Business owner and Customer). Likely, business owner will be able to sell his products without even physically being present at any office. The following system is designed specifically according to business owners and customer needs. The Trade Portal System will give a relief to business owner to make records or his purchased products. On other hand the customer will also be able to view and save the record of products, which he purchased from the business owners.

The main working in this project is upon payments management for business owner in that way that he will be able to create a digital slip for customers and print them using printer from his mobile phone and he will be able to edit it anytime. The customer will also able to view his products which is bought and digitally view his slip in application but, he will not be able to edit it. Other hand, the changes which will be done by will also showed to the customer. So, we are targeting the overall business owners. We faced many challenges to make it better or to make it most useful some of the challenges are given below.

7.2. Achievements and Improvements

The main achievements is providing the customers and business owner's perfect accounting and management software and application for you because it does not charge at all! It is a win-win situation for you because you can get your work done without paying a single penny. Easiest way to manage your business payments, installments debit credit transactions for any type of business a most safe and secure online app. The main working in this project is upon payments management for business owner in that way that he will be able to create a digital slip for customers and print them using printer from his mobile phone and he will be able to edit it anytime. The customer will also able to view his products which is bought and digitally view his slip in application but, he will not be able to edit it. Other hand, the changes which will be done by will also showed to the customer. So, we are targeting the overall business owners. We faced many challenges to make it better or to make it most useful some of the challenges are given below.

- To make it very easy to use.
- Easy to understand.
- User friendly interface.

- Secure login.
- Secure databases.
- Easily manage business payments.
- Safe transactions.
- To generate slips.
- To keep the records of payment.
- Pending payments.
- Products detailed.
- To keep the correct date or time on the slips.

7.3. Critical Review :

The critical review is a writing task that asks you to summaries and evaluate a text. The critical review can be of a book, a chapter, or a journal article Writing the critical review usually requires you to read the selected text in detail and to also read other related texts so that you can present a fair and reasonable evaluation of the selected text. TRADE PORTAL is the perfect accounting and management software and application for you because it does not charge at all! It is a good opportunity for the sellers or small business owners to get rid from using the papers work and saving overall records of their business because you can save your overall records of business to the app without using any paper and get your work done without paying a single penny.

7.4. Lessons Learnt:

Easiest way to manage your business payments, installments debit credit transactions for any type of business a most safe and secure online app. Small businesses do not have a lot of money and capital on their hands because they are just startups right now. You have a long way to go as a small business owner, and that is why you should focus on saving money in the long run. If user starting your business, then you can try out the free online financial software rather than purchasing the expensive ones at the start. It is better to be on the safe side and choose the most cost-effective option for you! This Projects is planned, designed and prepared as a Mobile based application used to provide ease for the Business Owners to manage his business with customers to sell or buy his business products. This application will provide an opportunity to both (Business owner and Customer). Likely, business owner will be able to sell his products without even physically being present at any office. The following system is designed

specifically according to business owners and customer needs. Also we learnt that which kind of projects is helpful for daily problems in life.

7.5. Future Enhancements/Recommendations

We create a few steps for the future enhancement of our project are given below.

- Stay Focused on the Main Goal.
- Improve Project Planning and Quality.
- Stay in Touch with the Group More Often
- Communicate with the Customer Three Times a Week.
- Help Prioritize Team Members' Tasks
- Discuss Lessons Learned in the Middle of a Project.
- Report Project Status Professionally.

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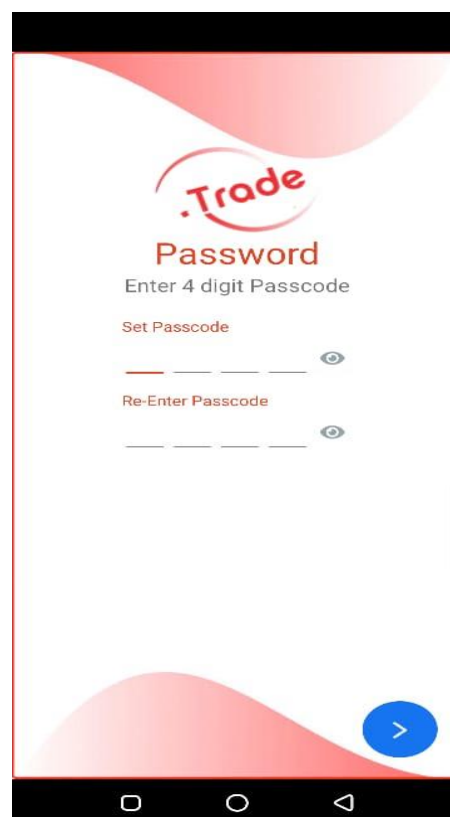
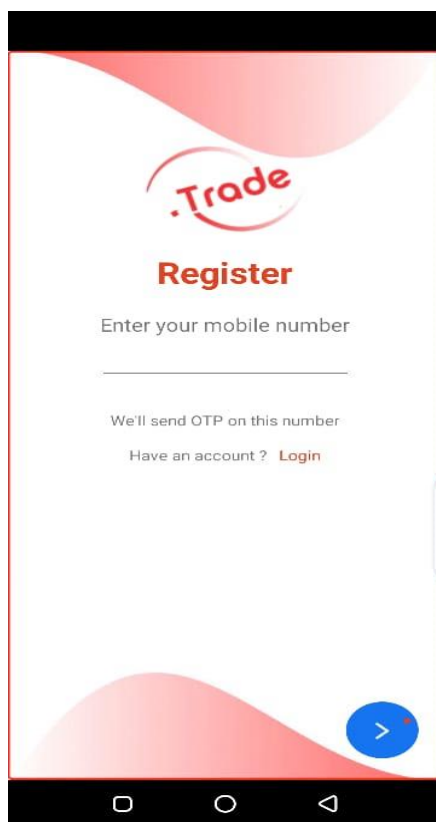
Appendix

1. Trade Portal Manual

This appendix is a user manual for the Trade Portal app which is a mobile application used for Payments activity monitoring and providing accurate and timely information. Trade Portal allows to store the information's of your payments. Easiest way to manage your business payments, installments debit credit transactions for any type of business a most safe and secure online app. Small businesses can't have a lot of money and capital on their hands they are just startup companies now. You have a long way to go as a small business owner, and that is why you should focus on saving money in the long run. If user starting your business, then you can try out the free online financial software rather than purchasing the expensive ones at the start

2. Register User:

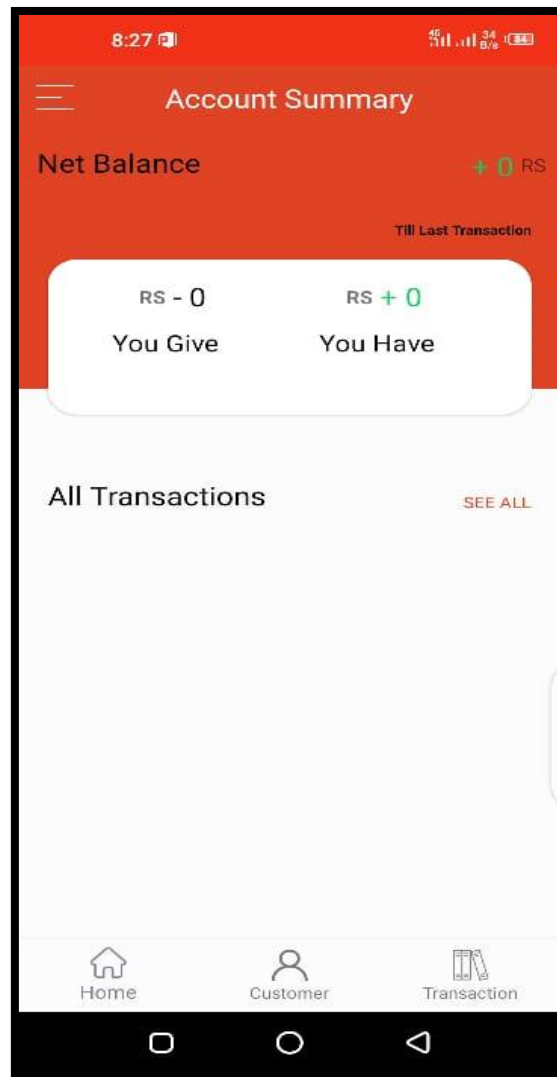
Register as a User All users are required to register using a valid email address and password. Also you have to add a valid phone number on which you will get OTP code confirmation. After this you have to add this otp and your password to login. You can see in the figure given below.



Once registered, users will be automatically signed in every time they open the app. After successful registration, the user is granted to take records of their payments just like the past payments transactions or budgets.

3. Dashboard:

After registering in our applications, the user will see the dashboard like this.



After login dashboard appear on which you have check and balance of all the things like previous transactions, payments, or budget remaining etc.

4. Edit / Update your Data:

Edit/Update Project Information to edit or delete a project, swipe left on the project profile on the Projects page.

10:13

Update Details

A

+92-3104847590

Name
Ali

Business Name
garments

Location
abc

Save

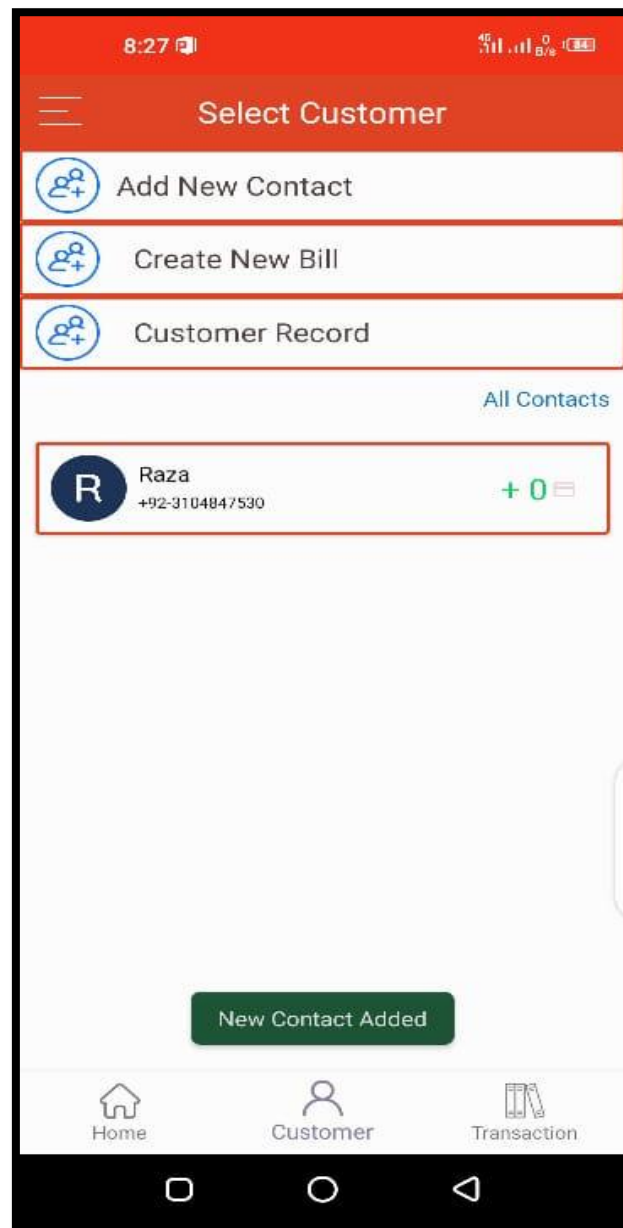
Nice job! **Test Ad** This is a 468x60 test ad.

Home Customer Transaction

Press the Edit button to fetch all information related to the selected project and display it in a window for editing.

Add Customer:

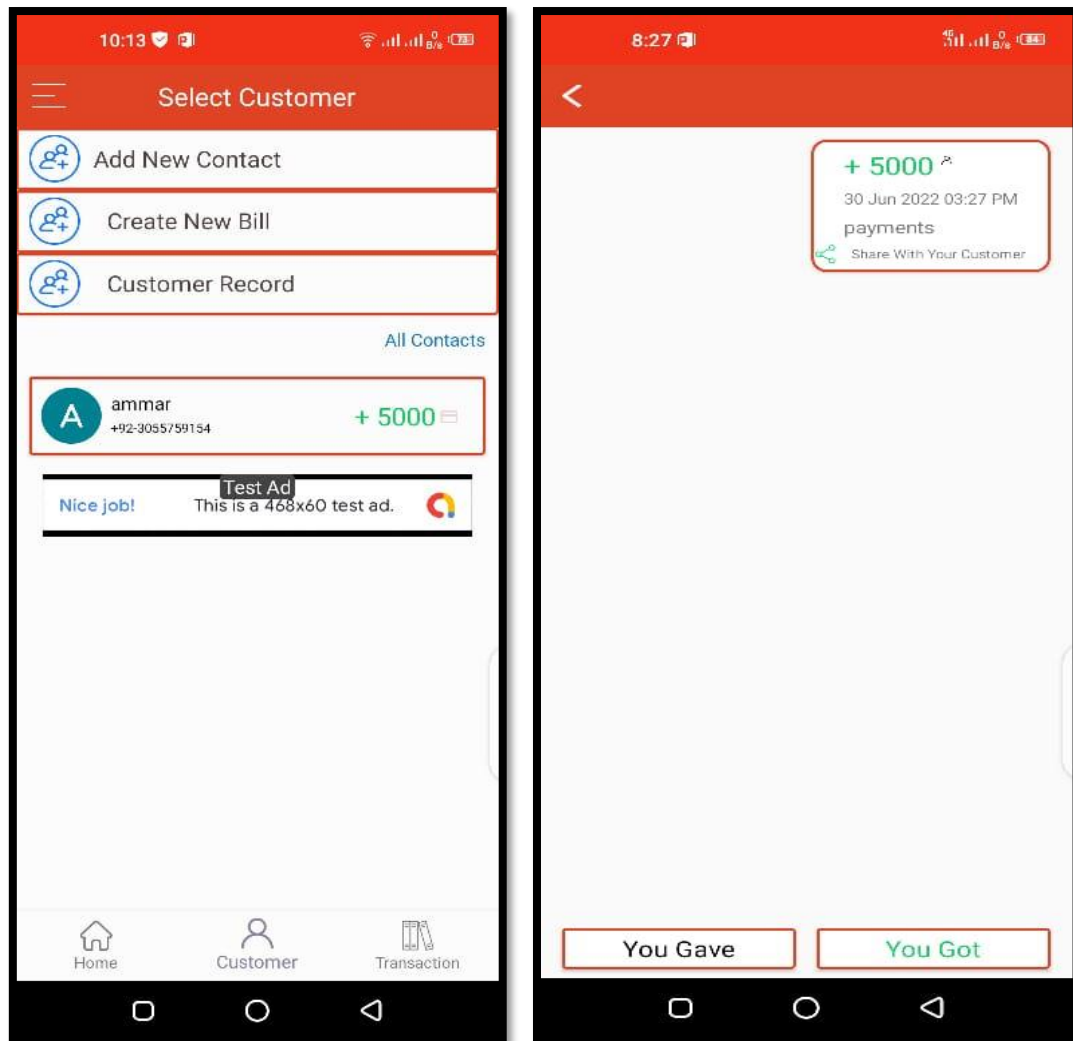
For the managing the payments, the user should have to add their customer using the contact number of their customers. The user will be able to see the overall data of payments in the screen.



Collect Payment:

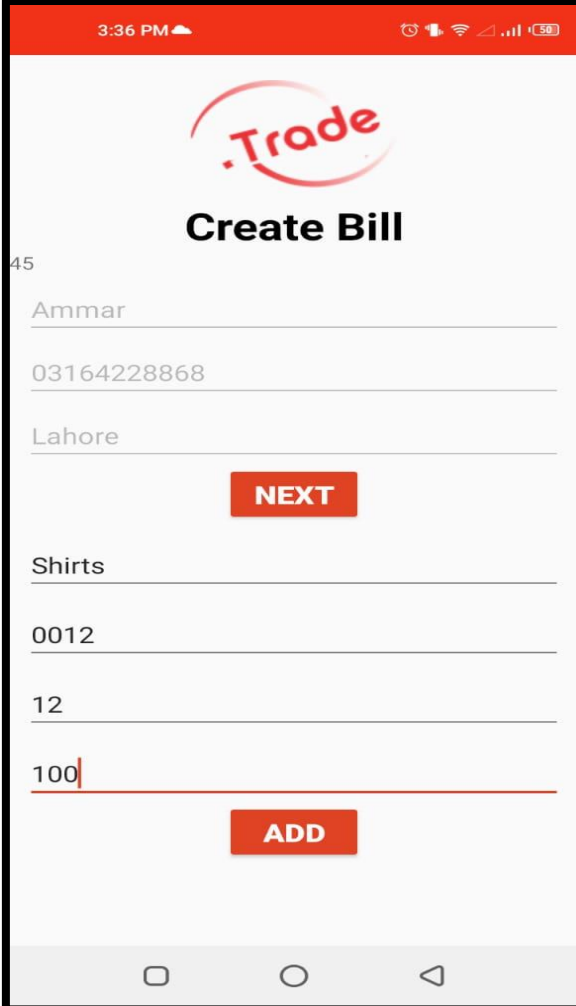
After adding the customer, the user will be able to manage the transactions between them . The user will also able to perform the two main functionalities:

- Give Money.
- Get Money.



Create Bills:

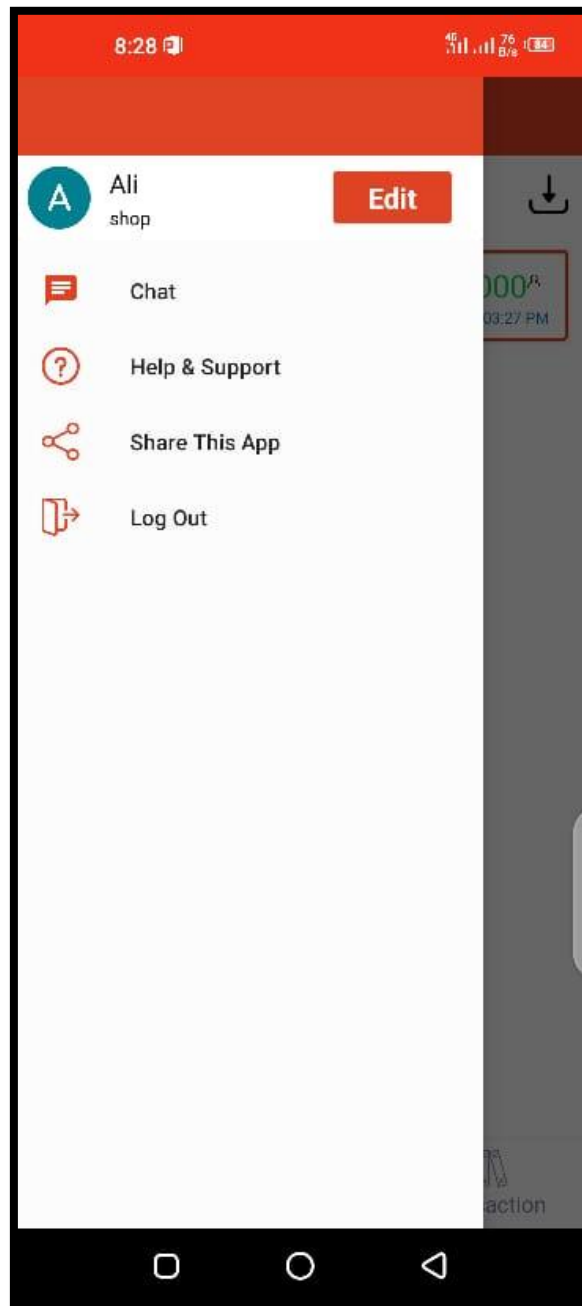
After managing the payments of the customers, the user will be able to generate slip as a pdf file to send it to customer or make a print using Bluetooth.



The screenshot shows a mobile application interface for creating a bill. At the top, there is a red status bar with the time 3:36 PM and various icons. Below the status bar is a white header area with the 'Trade' logo (a red circle with the word 'Trade' inside) and the title 'Create Bill'. The main content area is white and contains several input fields and buttons. The first input field contains the name 'Ammar'. The second input field contains the phone number '03164228868'. The third input field contains the location 'Lahore'. Below these fields is a red button labeled 'NEXT'. The fourth input field contains the item name 'Shirts'. The fifth input field contains the quantity '0012'. The sixth input field contains the price '12'. The seventh input field contains the amount '100'. Below these fields is a red button labeled 'ADD'. At the bottom of the screen, there is a grey navigation bar with three icons: a square, a circle, and a triangle.

Drawer Menu:

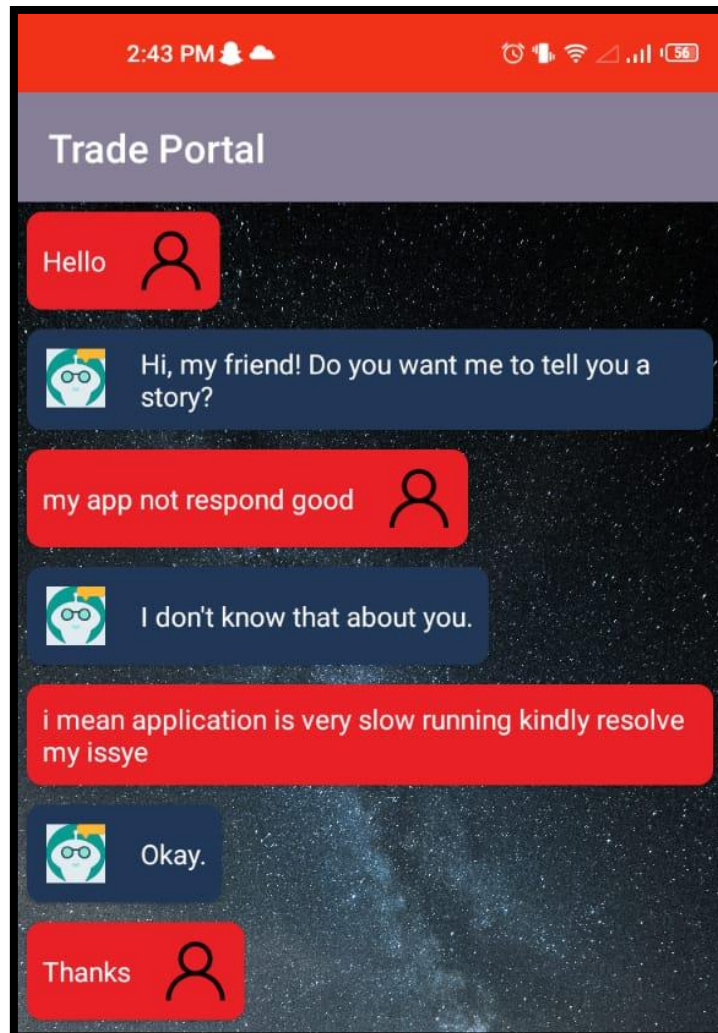
The drawer menu contains the following functionalities:



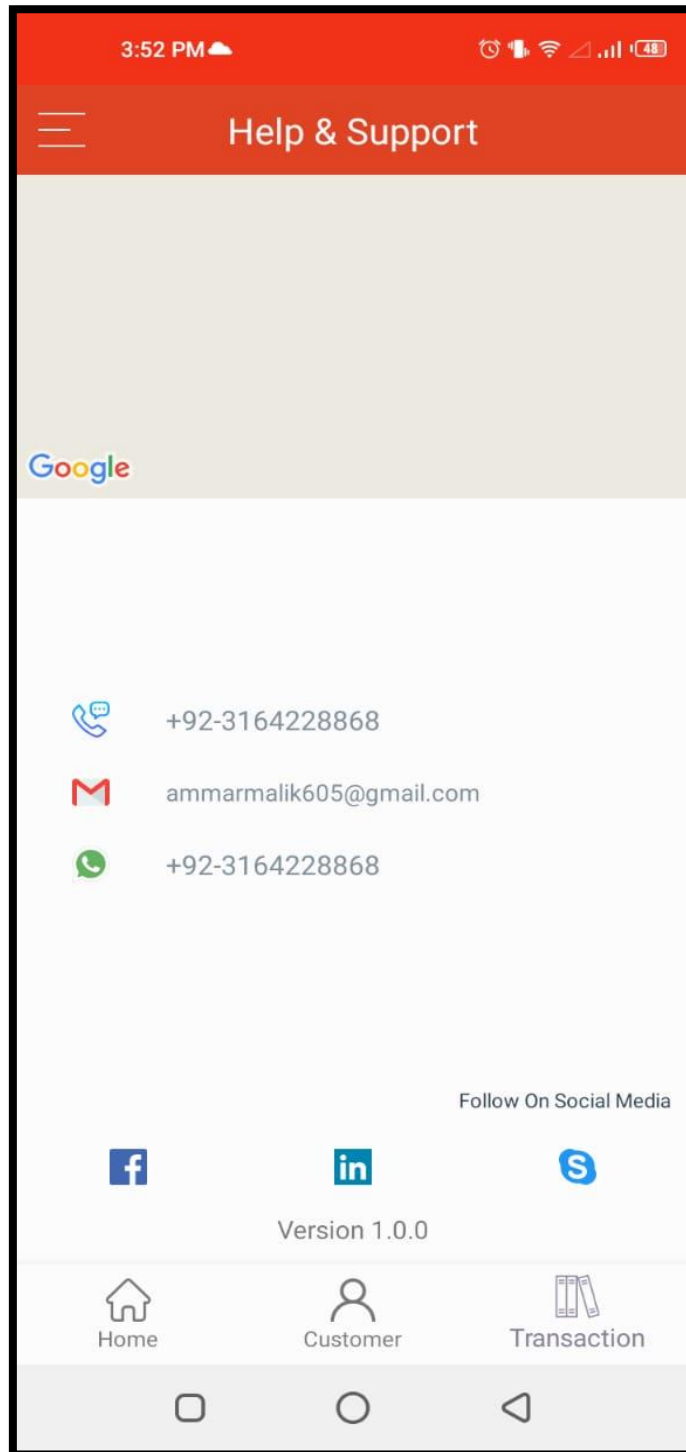
The user can also logout from their accounts using the functionality give above.

Chat Bot

In case of facing any issue regarding to the application, the user can directly chat to our help center using this chat option.

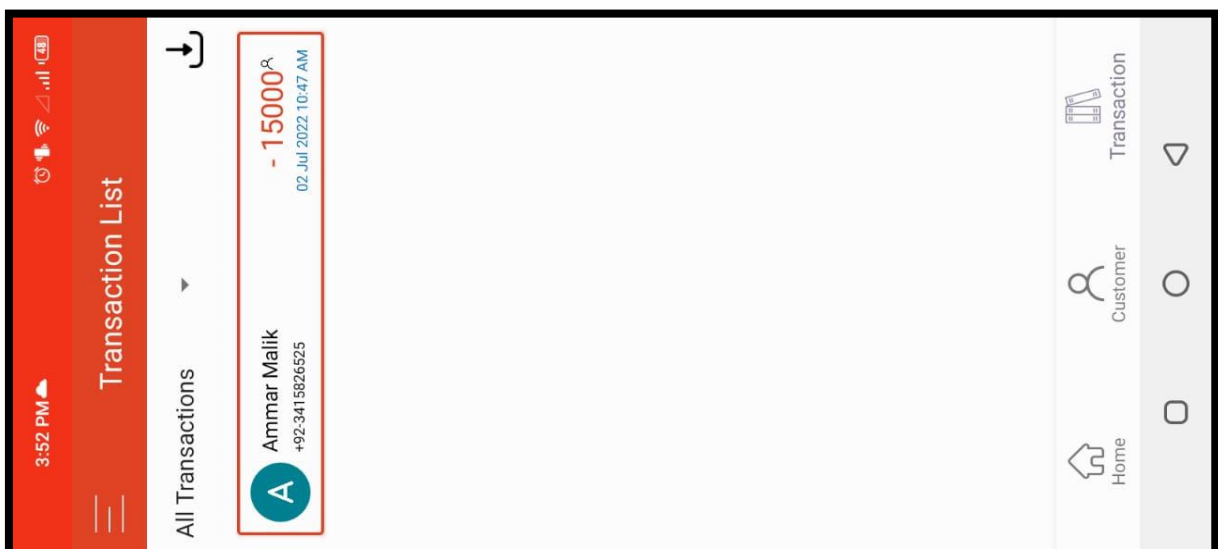
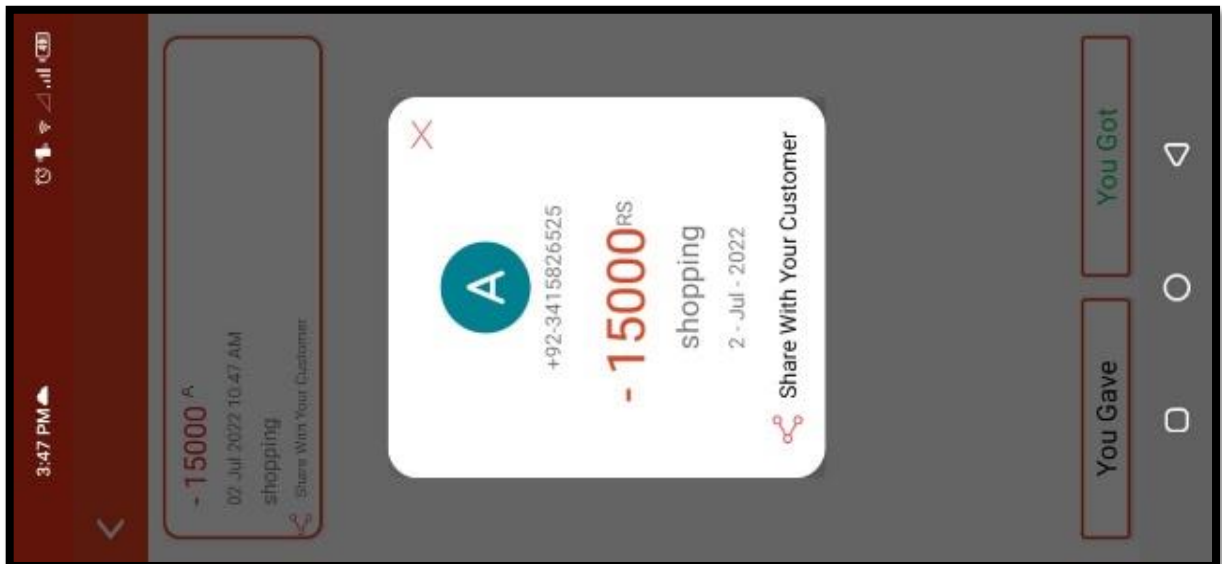
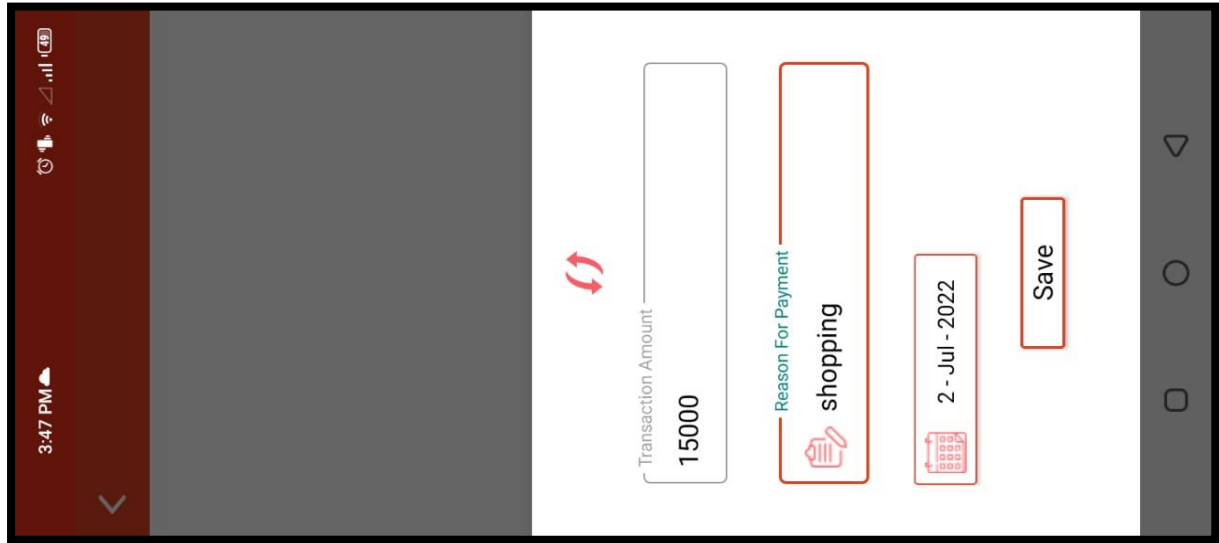


Help and Support Features



12. Transaction List:

In this screen, the user can see all the details of the transactions done by the



Conclusion

An android application is developed which provide manage your business and credit ledger. The android application will provide a good user friendly interface for manage the transaction. It will give free of cost for every transaction and manage record itself. It will provide notification so that the user keeps updated every time. It will provide the comments on feedback. in the application itself will be more secured. It is a good opportunity for the sellers or small business owners to get rid from using the papers work and saving overall records of their business because you can save your overall records of business to the app without using any paper and get your work done without paying a single penny. Easiest way to manage your business payments, installments debit credit transactions for any type of business a most safe and secure online app.