

Software Requirement and Design Specifications

Stock Exchange

Version 2.0.1

<i>Course Code</i>	SE-2002
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Table of Contents

1. INTRODUCTION	5
1.1. Purpose of Document	5
1.2. Intended Audience	5
2. OVERALL SYSTEM DESCRIPTION	6
2.1. Project Background	6
2.2. Project Scope	6
2.3. Not in Scope	6
2.4. Project Objectives	6
2.5. Stakeholder	6
2.6. Operating Environment	6
2.7. System Constraints	6
2.8. Assumptions & Dependencies	6
3. EXTERNAL INTERFACE REQUIREMENTS	7
3.1. Hardware Interfaces	7
3.2. Software Interfaces	7
3.3. Communications Interfaces	7
4. FUNCTIONAL REQUIREMENTS	8
4.1. FUNCTIONAL HIERARCHY	8
4.2. Use Cases	8
4.2.1. Investor	8
4.2.2. Broker	8
5. NON-FUNCTIONAL REQUIREMENTS	9
5.1. Safety Requirements	9
5.2. Security Requirements	9
5.3. Documentation	9
6. System Architecture	
6.1. Component Diagram	
6.2. Deployment Diagram	
7. Design Strategy	
7.1. Detailed System Design	
7.1.1. Class Diagram	
8. Application Design	
8.1. Sequence Diagram	
8.2. Collaboration Diagram	
8.3. State Diagram	
8.4. Activity Diagram	

1. Introduction

1.1. Purpose of Document

1.1 The purpose of this document, or software requirements specification, is to provide a clear and detailed description of what a software system should do, and how it should behave, from the perspective of the user or customer

1.2. Intended Audience

1.2 This document is typically given to the development team responsible for creating the software system, as well as to other stakeholders who have an interest in the software system, such as project managers, testers, and technical writers. But as a project for our semester this SRS is given to our respected ma'am.

1.3 Glossary

Term	Description
ASP	Active Server Pages
DD	Design Specification

1.4 Document Convention

For Explanation we will be using Times New Roman with 12 size number of text and for heading we will be using Arial Black with 16-18 size.

2. Overall System Description

2.1. **Project Background**

A stock exchange app system is being built to provide a digital platform for users to buy and sell stocks in the stock market. The actual problem or opportunity that triggered the project is the increasing popularity of online trading and the need for a reliable, secure, and user-friendly app that can provide stock prices, news, and analysis to investors

2.2. **Project Scope**

The project scope for the stock exchange system outlines what it will and will not do.

What the app will do:

- Provide stock prices, news, and analysis to users
- Enable users to buy and sell stocks through the system.
- Allow users to monitor their investment portfolio and track their performance
- Provide a user-friendly and intuitive interface for easy navigation and use
- Offer secure and reliable transactions with multiple payment options
- Allow users to customize their watch list and receive alerts on stock price changes

What the app will not do:

- Provide financial advice or recommendations
- Guarantee investment returns or profits
- Offer personalized investment management services
- Provide access to all stock exchanges and financial markets
- Allow trading of cryptocurrencies or other alternative assets

1.3

2.3. **Not In Scope**

- It will not give the live stock price update.
- No payment with-drawl option.
- No custom integration of system.
- No multiple languages choices.

2.4. **Project Objectives**

1.4 The main objective of the system is to give the user friendly environment to the user as there are many systems available in market but it is very difficult to adopt it especially for the newbie investors. Also our system makes a big different or we can say the main functionality of our system that is not available in any of the system which is available in market that is insiders of the companies which are on the stock list.

2.5. **Stakeholders**

- Customer
- Project Manager
- Business Analyst

- Application Architect
- Designer
- Developer
- Product Owner
- Data Modeler
- Process Analyst
- Tester
- Product Manager
- Quality Assurance Staff
- Documentation Writer
- Database Administrator
- Hardware Engineer
- Infrastructure Analyst
- Business Solution Architect
- Investor
- Broker
- FBA
- Government Agency
- Share Holders
- Marketing
- Operational Support Staff
- Legal Staff
- Information Architect
- Company Owner
- Sales Staff
- Installer
- Maintainer
- Program Manager
- Usability Expert
- Subject Matter Expert
- Executive Sponsor
- Project Management Office
- General Public

1.5

1.6

2.6. **Operating Environment**

Hardware

- Mobile with Wi-Fi and GPS
- Dual-core processor.
- Touch screen.

Software

- Android 9 + /windows 10 +11.

Any browser

2.7. **System Constraints**

1.7 Following are the system constraints of the system

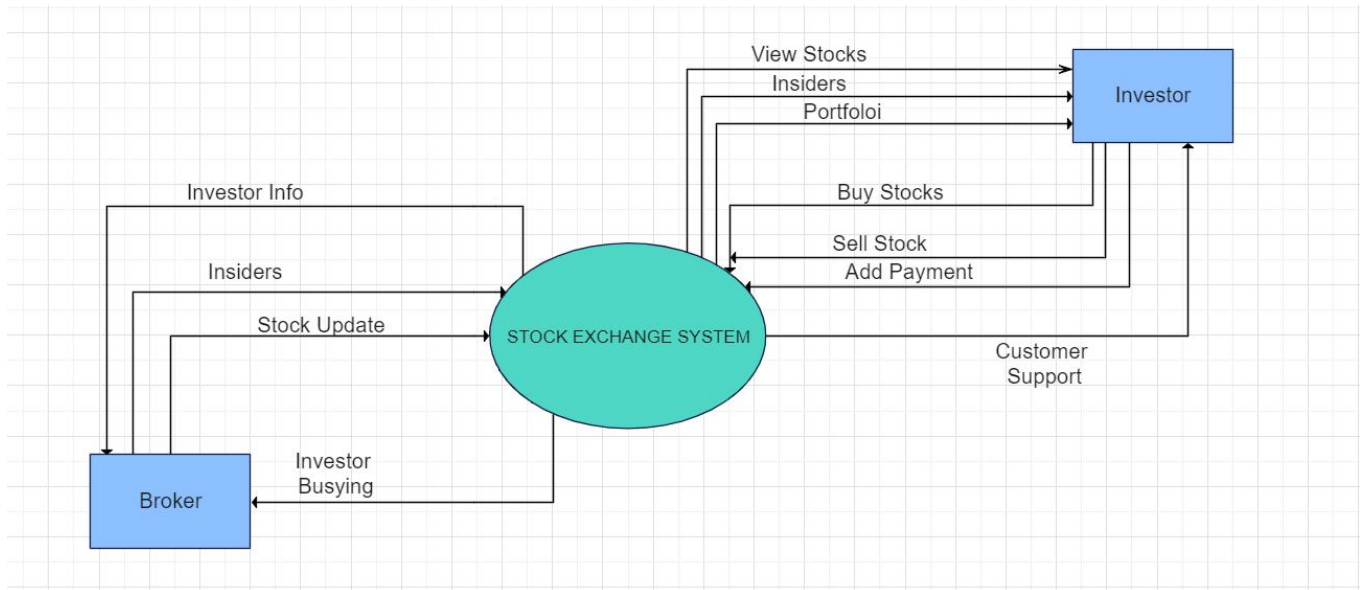
- The app may be designed to support a specific language or region, but the scope of the project may not include extensive localization efforts to support multiple languages or regions.
- Insiders of any company will not be guaranteed.
- Will only work for people with a compatible smartphone with Wi-Fi and GPS services available.
- Must agree to terms and conditions
- Only a registered user can buy stocks
- The memory usage of the app will have to be constrained by the devices it is intended to run. Since most Tablets and mobile may have limited apps.
- The primary candidate toolchains are Java/Swing and SQL.
- If the system is down, then customers must not notice or notice that the system recovers quickly (seconds).

2.8. **Assumptions**

- Buying and Selling of the stocks is quite convenient and simple.
- Authentic insiders will be provided to the user
- Every user will be granted his own broker which will give him/her an update.
- No customer demand will exceed the capacity of available stocks in the market.
- The operating hours for the online system are as the business operation hours which is from 8:00 AM to 4:30 PM everyday

3. External Interface Requirements

2



3.1. Hardware Interfaces

2.1 Not applicable

2.2

3.2. Software Interfaces

2.3 Not applicable

3.3. Communications Interfaces

2.4 Not applicable

4. Functional Requirements

3 This subsection presents the identified functional requirements for the subject Stock Exchange System. Requirements have been demarcated based on their relevance to the users of the system that is, the Investor and the broker.

4.1. Investors

The table presents the identified functional customer requirements that directly relate to the entire subject Food Ordering System.

Requirement	Description
FRC01	The customer shall be able to Sign Up into the system by entering the username, password, email-id, phone number, and CNIC number.
FRC02	The username and password should be remembered by the user
FRC03	The customer shall be to Login into the system by entering the email-id and password.
FRC04	If the customer enters the wrong email-id and password into the system provide 3 opportunities for the correct email-id and password otherwise the system terminates.
FRC05	The customer can search the stocks which are registered through the Broker.
FRC06	If the customer needs to pay avail of online payment through the banking system, the customer can select the most convenient method to pay.
FRC7	The customer shall be able to engage bill mode to finalize payment through their engaged stocks
FRC8	The Customer can schedule the order through the timer given in the application
FRC9	The customer can modify the order through the system.
FRC10	The customer can cancel the order before the time allocated by the system.
FRC11	The customer shall be able to navigate the order of stocks by portfolio.

FRC12	The customer shall be able to add and remove the item from the basket.
FRC13	The investor can see the insiders of the stocks to get a better knowledge of which stocks goanna will perform

4.2. *Broker*

The table presents the identified functional broker requirements that directly relate to the entire subject Stock Exchange System.

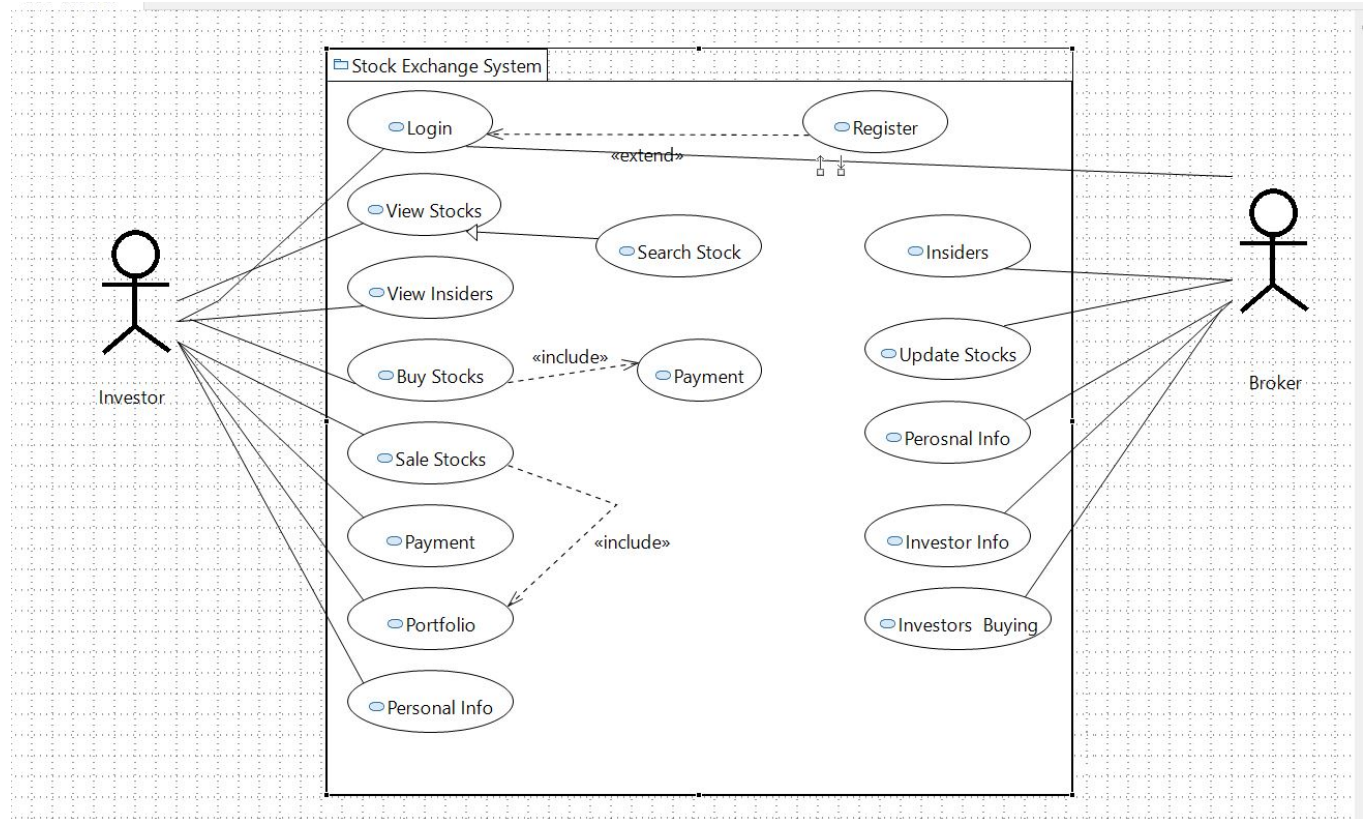
3.1

Requirements	Description
FRS01	The seller shall be able to Sign Up into the system by entering the username, password, email-id, phone number, and CNIC number.
FRS02	The seller shall be able to log in into the system by entering the email-id and password.
FRS03	The broker can check the history and order status of the investor to whom he is entertaining in the investor buying.
FRS04	The seller will get a notification from the customer about the order and then the seller will notify the order status.
FRS05	The broker can see the information of all of his investors
FRS06	The broker is the only one who is goanna update the insiders of the particular stocks.

3.2

4.3. *Use Cases*

4.3.1. *[Stock Exchange System Use Case]*



[Use Case Description]

INVESTOR

Use Case name:	Login
Use Case Description: The investor will come and open the system and on the first-page Log in page will be open where he used to write his email address or user id with password	
Primary actor: Investor	Other actors: Non
Stakeholders:	Investor
Relationships Includes: Register Extends: Non	
Pre-conditions: Open the system	

Alternative and exceptional flows:

The user id or password is invalid

Post-conditions: The investor will be login

Use Case name:	Register
Use Case Description: The user opens the system and if it is not registered in the system than he first to do registers himself where he will give all his details.	
Primary actor: Investor	Other actors: Non
Stakeholders:	Investor
Relationships Includes: Extends:	
Pre-conditions: Open the system	
Alternative and exceptional flows: All the details are not given so it gives an error	
Post-conditions: The investor will be Register	

Use Case name:	View Stocks
Use Case Description: As the investor log into the system there will be an option of variety to select, So if it selects View Stocks it will show all the details of stocks i.e. its price and name	
Primary actor: Investor	Other actors: Non
Stakeholders:	Investor
Relationships Includes: Non Extends: Non	
Pre-conditions: After logging into the system and selecting this option	
Alternative and exceptional flows:	

The system crash
Post-conditions: It will show all the available stocks in market.

Use Case name:	View Insiders
Use Case Description: As the investor log into the system there will be an option of variety to select, So if it selects View Insider it will show all the details of stocks i.e. that incoming days whether it will perform or not	
Primary actor: Investor	Other actors: Non
Stakeholders:	Investor
Relationships Includes: Non Extends: Non	
Pre-conditions: After logging into the system and selecting this option	
Alternative and exceptional flows: The system crash No insiders is available	
Post-conditions: It will show all the insides in market.	

Use Case name:	Buy Stocks
Use Case Description: As the investor log into the system there will be an option of variety to select, So if it selects Buy stocks than they will be ready to invest in any stocks they like	
Primary actor: Investor	Other actors: Non
Stakeholders:	Investor

Relationships Includes: Payment Extends: Non
Pre-conditions: After logging into the system and selecting this option
Alternative and exceptional flows: The system crash Not enough payment to purchase stocks
Post-conditions: The stock is purchased successfully.

Use Case name:	Payment
Use Case Description: As the investor logs into the system there will be an option of variety to select, So if it selects Payment then it can transact money into their stock account. There is no limit to the money	
Primary actor: Investor	Other actors: Non
Stakeholders:	Investor
Relationships Includes: Non Extends: Non	
Pre-conditions: After logging into the system and selecting this option	
Alternative and exceptional flows: The system crash No money or we can say 0 or Negative money	
Post-conditions: Amount is transacted into your stock account	

Use Case name:	Sale Stocks
Use Case Description: As the investor logs into the system there will be an option of variety to select, So if it selects Sale Stocks it will show all the details of stocks that is purchased by him now they can select the number of stocks to sale	
Primary actor: Investor	Other actors: Non
Stakeholders:	Investor
Relationships Includes: Portfolio Extends: Non	
Pre-conditions: After logging into the system and selecting this option	
Alternative and exceptional flows: The system crash No stocks are purchased	
Post-conditions: All the selected stocks is sold	

Use Case name:	Portfolio
Use Case Description: As the investor log into the system there will be an option of variety to select, So if it selects Portfolio now they can see whether they are in profit or loss and all the available amount in their account	
Primary actor: Investor	Other actors: Non
Stakeholders:	Investor
Relationships Includes: Non Extends: Non	
Pre-conditions: After logging into the system and selecting this option	

Alternative and exceptional flows: The system crash
Post-conditions: It will show all the available information.

Use Case name:	Personal Info
Use Case Description: As the investor log into the system there will be an option of variety to select, So if it selects Personal info than all the information related to them is given which is taken at the time of Registration	
Primary actor: Investor	Other actors: Non
Stakeholders:	Investor
Relationships Includes: Non Extends: Non	
Pre-conditions: After logging into the system and selecting this option	
Alternative and exceptional flows: The system crash There is no account of	
Post-conditions: It will show all the available information of the investor	

BROKER

Use Case name:	Login
Use Case Description: The broker will come and open the system and on the first-page Log in page will be open where he used to write his email address or user id with a	

password	
Primary actor: Broker	Other actors: Non
Stakeholders:	Broker
Relationships Includes: Register Extends: Non	
Pre-conditions: Open the system	
Alternative and exceptional flows: The user id or password is invalid	
Post-conditions: The investor will be login	

Use Case name:	Register
Use Case Description: The broker opens the system and if it is not registered in the system then he first to do registers himself where he will give all his details.	
Primary actor: Investor	Other actors: Non
Stakeholders:	Broker
Relationships Includes: Non Extends: Non	
Pre-conditions: Open the system	
Alternative and exceptional flows: All the details are not given so it gives an error	
Post-conditions: The Broker will be Register	

Use Case name:	Insiders
Use Case Description: As the broker logs into the system there will be an option of variety to select, So if it selects Insiders now he can write all the insiders of the particular stocks which are in his knowledge	
Primary actor: Broker	Other actors: Non
Stakeholders:	Broker
Relationships Includes: Non Extends: Non	
Pre-conditions: After logging into the system and selecting this option	
Alternative and exceptional flows: The system crash	
Post-conditions: Insider is updated	

Use Case name:	Update Stocks
Use Case Description: As the broker logs into the system there will be an option of variety to select, So if it selects Update stocks now he can update the name as well as the price of stocks which is new in the market we called it IPO	
Primary actor: Broker	Other actors: Non
Stakeholders:	Broker
Relationships Includes: Non Extends: Non	
Pre-conditions: After logging into the system and selecting this option	

Alternative and exceptional flows: The system crash
Post-conditions: The stock is updated is successfully

Use Case name:	Investor Buying
Use Case Description: As the broker logs into the system there will be an option of variety to select, So if it selects Investor Info where he can see all the details of their client means the buying and selling of stocks	
Primary actor: Broker	Other actors: Non
Stakeholders:	Broker
Relationships Includes: Non Extends: Non	
Pre-conditions: After logging into the system and selecting this option	
Alternative and exceptional flows: The system crash	
Post-conditions: All the information is given	

Use Case name:	Personal Info
Use Case Description: As the Broker logs into the system there will be an option of variety to select, So if it selects Personal Info then all the information related to them is given which is taken at the time of Registration	
Primary actor: Broker	Other actors: Non
Stakeholders:	Broker

Relationships

Includes: Non

Extends: Non

Pre-conditions: After logging into the system and selecting this option

Alternative and exceptional flows:

The system crash

There is no account of

Post-conditions: It will show all the available information of the Broker

5. Non-functional Requirements

5.1. Performance Requirements

ER01. Server shall be able to support huge number of devices connected via the system
ER02. Server shall be able to support a number of active customer payments (no payments shall be lost)
ER03. Responses to queries shall take no longer than 10 seconds
ER04. 85% of the queries shall be completed in approximately 40 seconds
ER05. No more than 2 seconds would take to display an index of stocks.
ER06. After a user enters information into the system, the system must display confirmation messages to them within an average of 3 seconds and a maximum of 6 seconds.
ER07. The system shall be able to accommodate a total of 1000 users at the peak usage automatically calculated by the system

3.3

5.2. Safety Requirements

SRO1. The system shall ask the user to verify its identity before buying or selling the stocks
SRO2. The system shall send notifications to all the user accounts it has linked with the system for any operation it does
SRO3. Users that fail to send timely messages will be marked as non-operational by the system, and the assigned customer support panel will be disconnected from the server.
SRO4. The payment method as well as the total holding of stocks will be private for the investor

3.4

5.3. **Security Requirements**

ERO1. The Software Development Team shall pursue excellence, ensure that key compromises are understood by and accepted by the Client and Employer, and are open for User and Public consideration.

ERO2. Software engineers shall work under SOPs define by the organization

ERO3. The development team must recognize, classify, and deal with moral, financial, cultural, legal, and environmental problems that are connected to work projects.

ERO4. Software engineers must ensure they have the necessary education, training, and experience to be qualified for any project on which they work or plan to work.

ERO5. The Development team shall not break the privacy policy of the firm

ERO6. They must make sure a suitable method is used for whatever project they are working on or plan to work on.

ERO7. The development team must create software and related materials that protect the privacy of persons who will use the software.

ERO8. The system will use POS system (to keep track of sales and payments)

ERO9. The system will use HTTPS (more secure)

ER10. Users shall be provided with the option of security verification when he logged into the system

ER11. Users shall be provided with the option to change the initial password

3.5

5.4. **User Documentation**

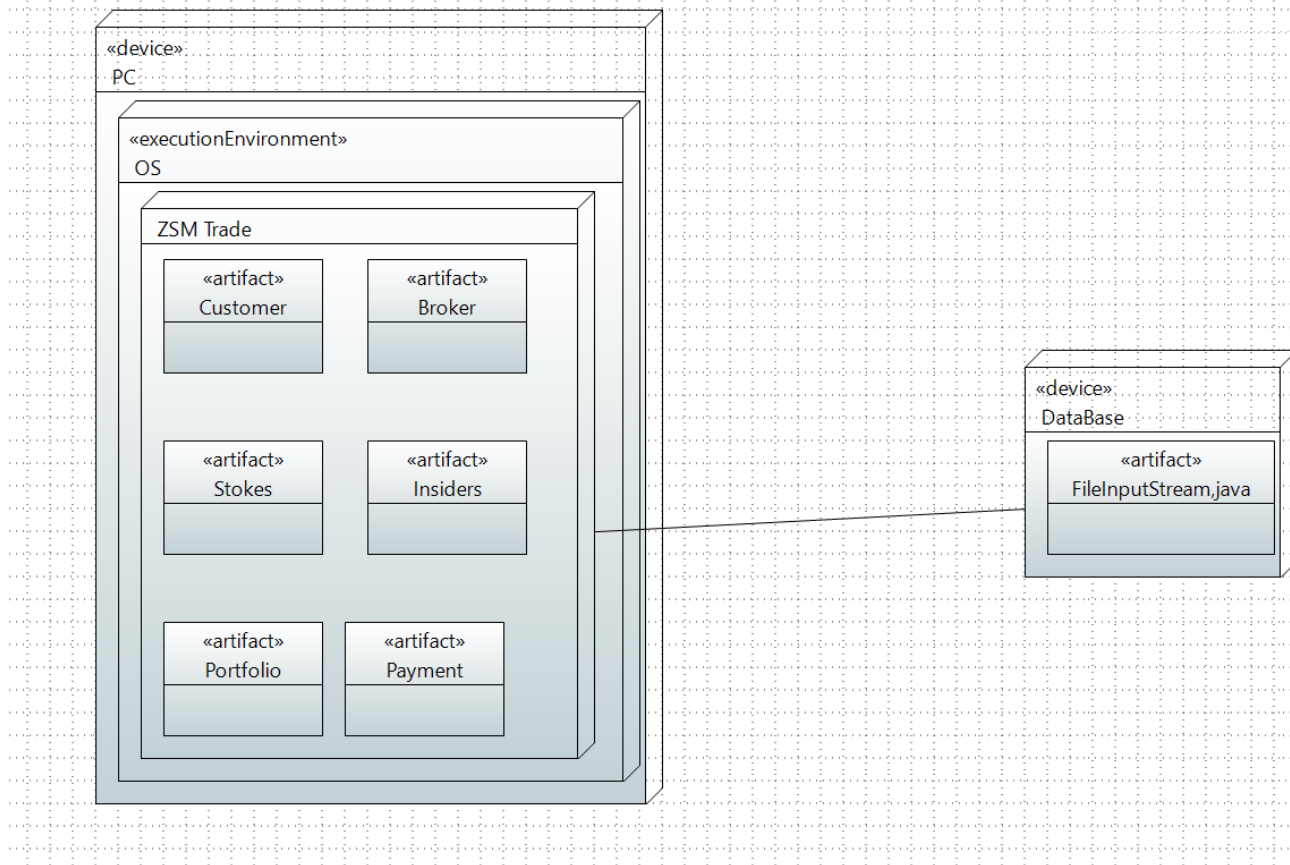
An installation guide will be provided. Any user of the Stock Exchange System is the target audience for user documentation generated about the software system. A range of short document types (e.g., guidelines, tutorials, frequently asked questions) in Hyper Text Markup Language (HTML) and/or Portable Document Format (PDF) format must describe the use of the software system.

3.6

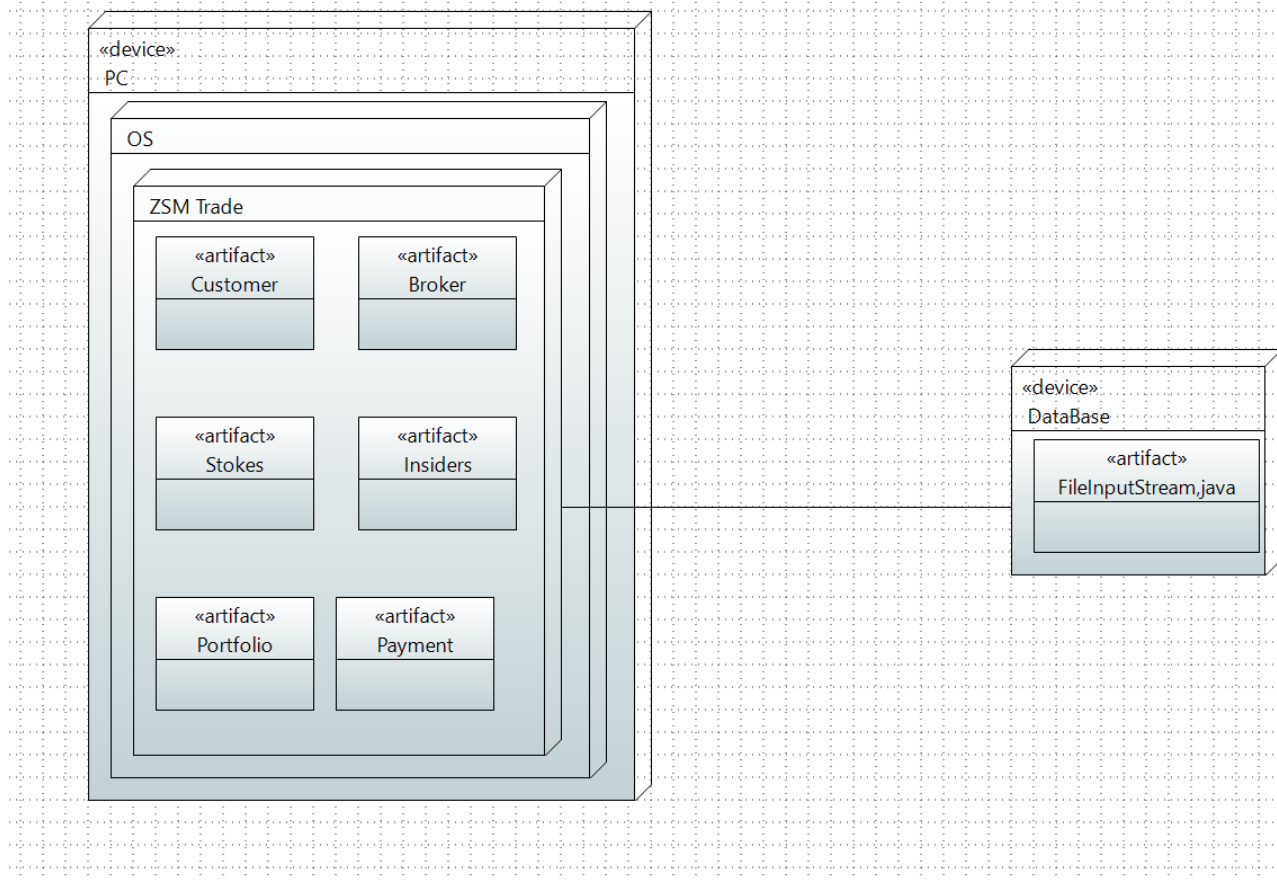
SDS

6. System Architecture

6.1. System level Architecture



6.2. Software Architecture



7. Design Strategy

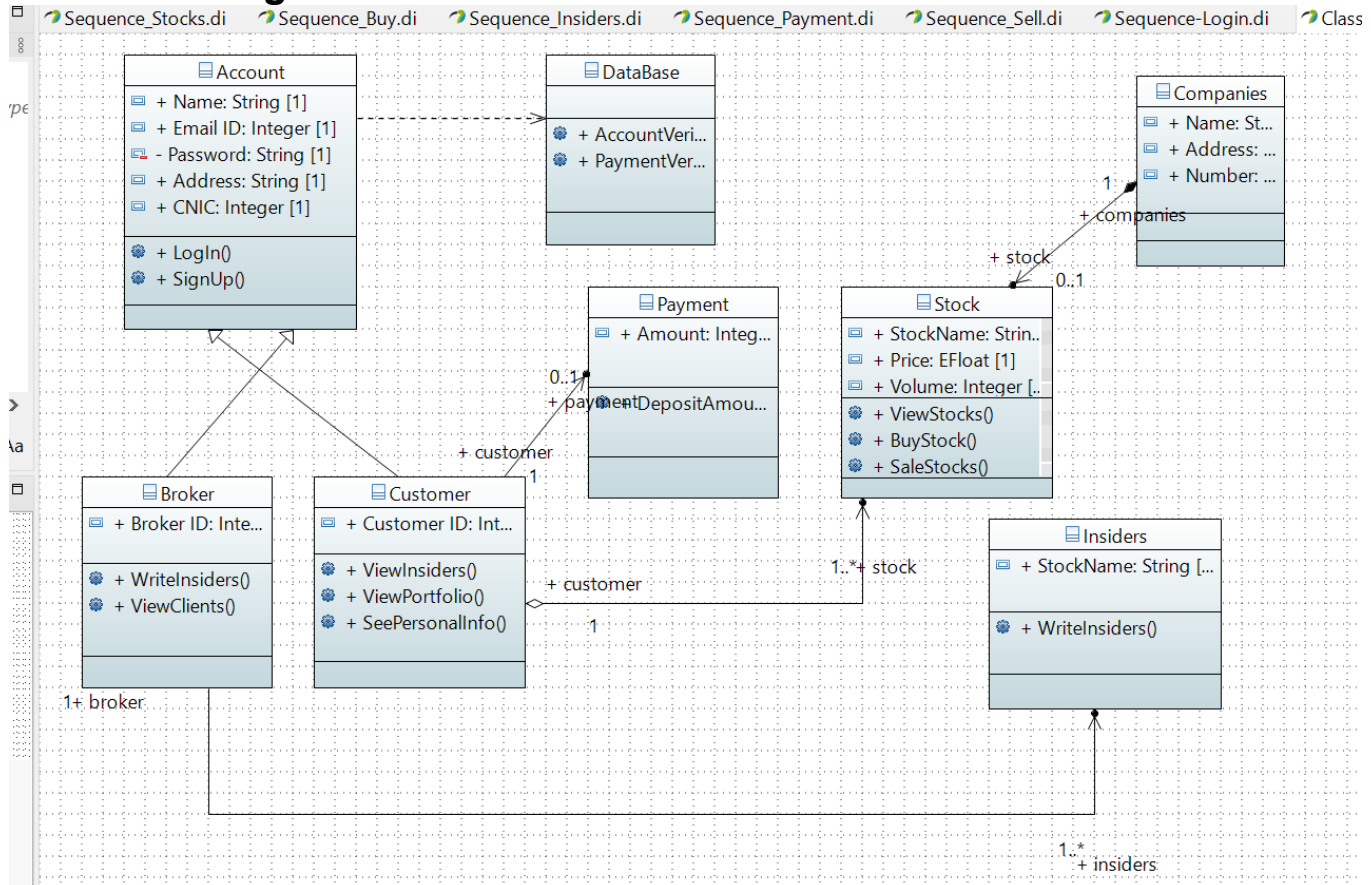
Designing an Stock Exchange system involves several components, including user interface, database management, and security. Here are some design strategies to consider:

1. **User Interface:** The user interface is critical to the success of an Stock Exchange system. It should be easy to use, visually appealing, and intuitive. A good user interface should guide the user through the buying and selling process with minimal confusion. It should also provide feedback on user actions, such as when a Login or a payment method is invalid.
2. **Database Management:** It is essential to ensure that the database is scalable and capable of handling a high volume of transactions. Additionally, the database should be secure and protected from unauthorized access.
3. **Security:** The Stock Exchange system should have robust security measures in place to protect user data and prevent unauthorized access.
4. **Integration With Other System:** An Stock Exchange system may need to

integrate with other systems, such as Stock systems, Broker systems, and payment gateways. It is essential to ensure that these integrations are seamless and reliable.

8. Detailed System Design

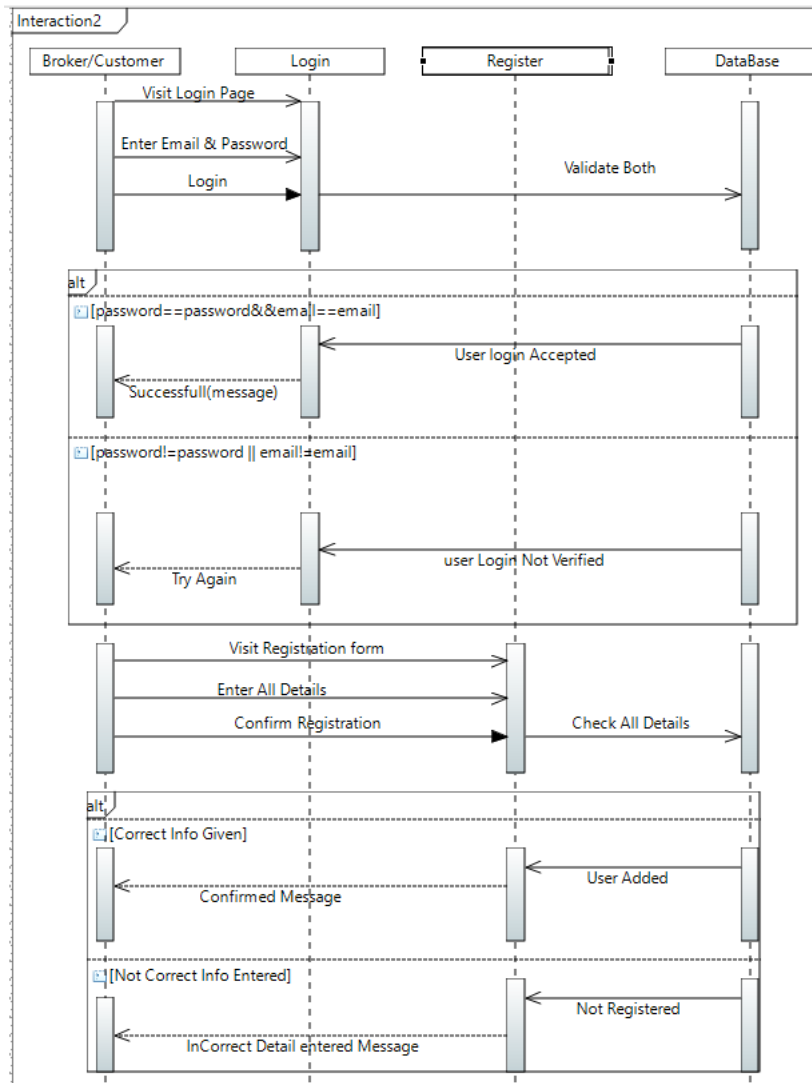
8.1 Class Diagram



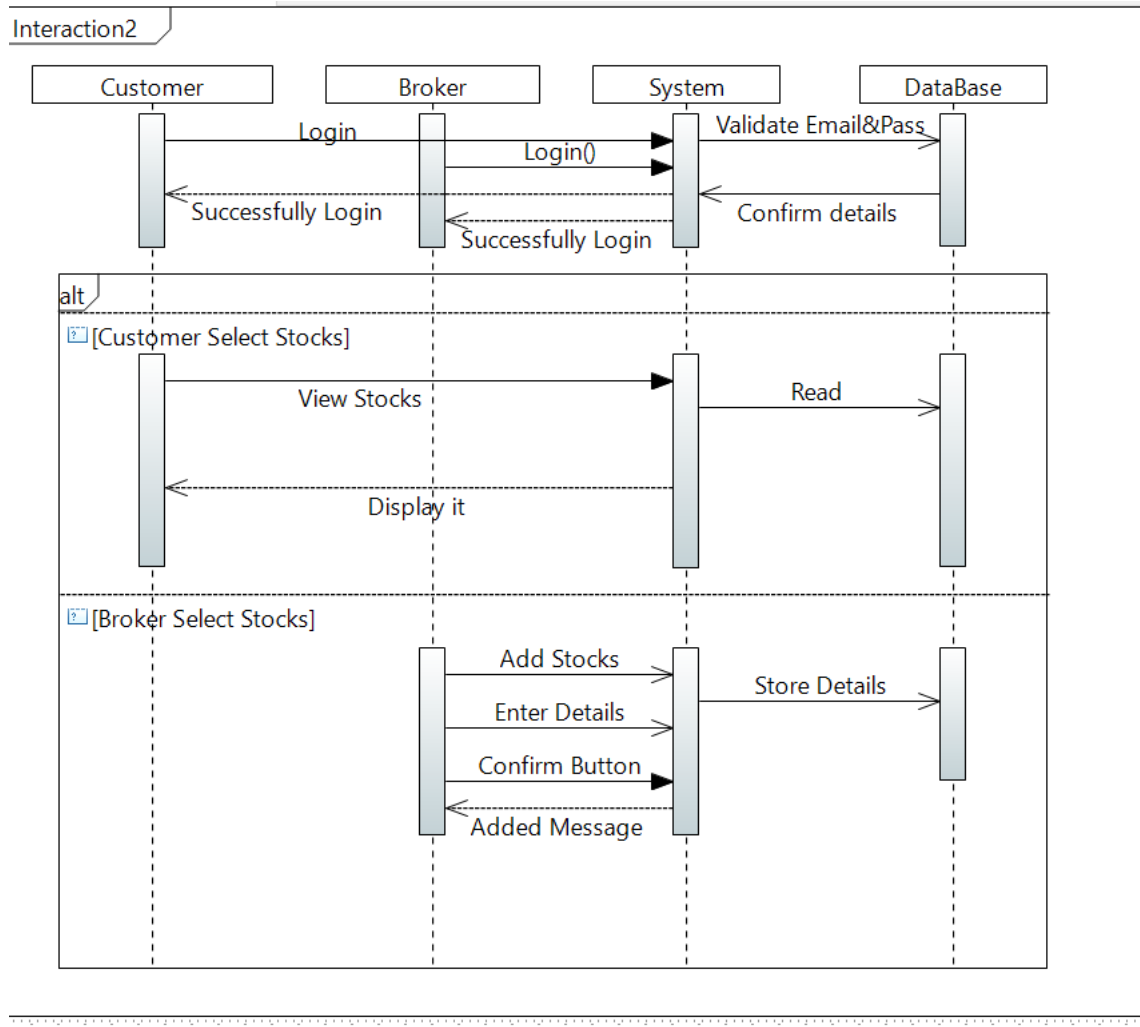
9. Application Design

9.1. Sequence Diagram

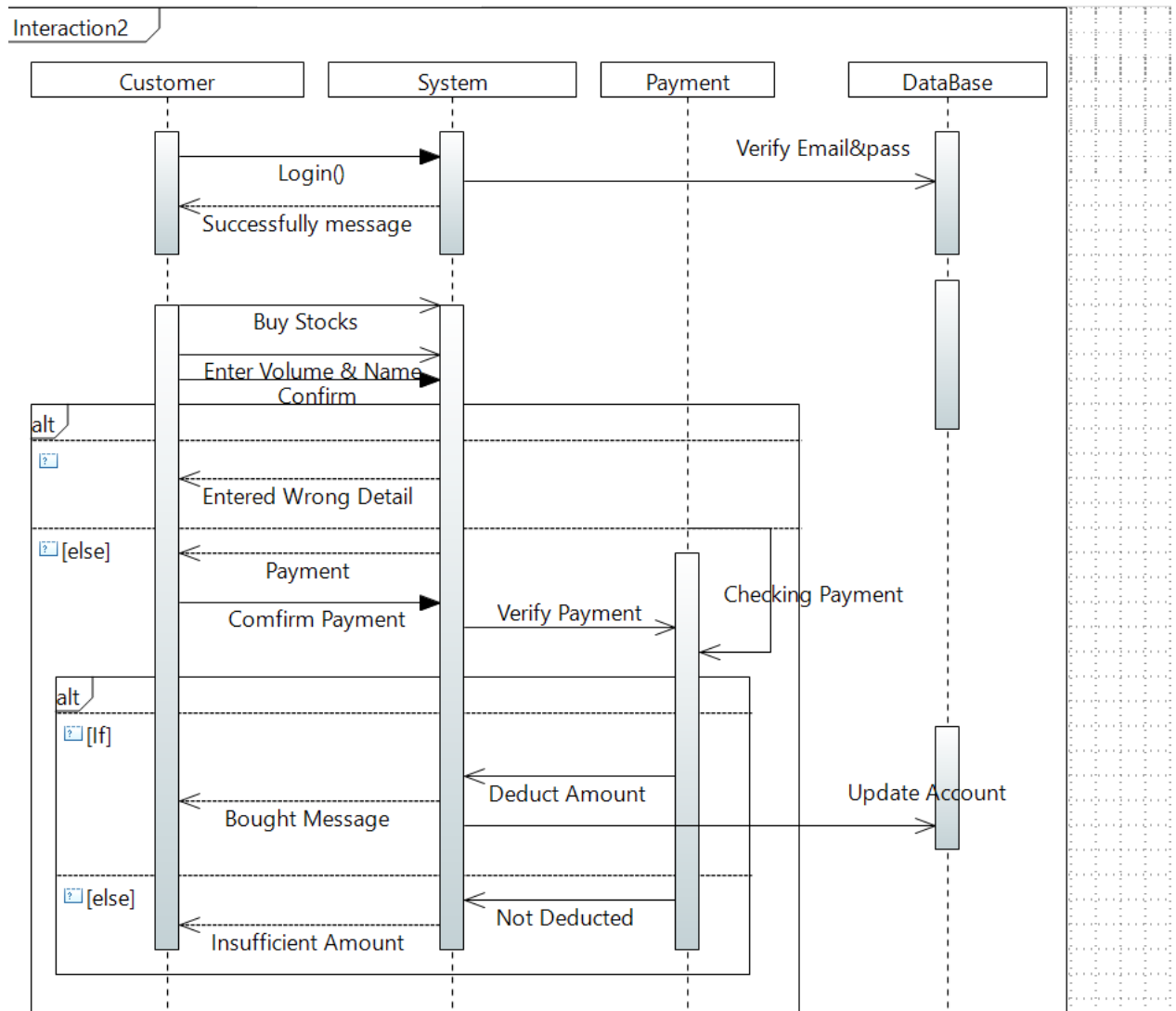
9.1.1 Login



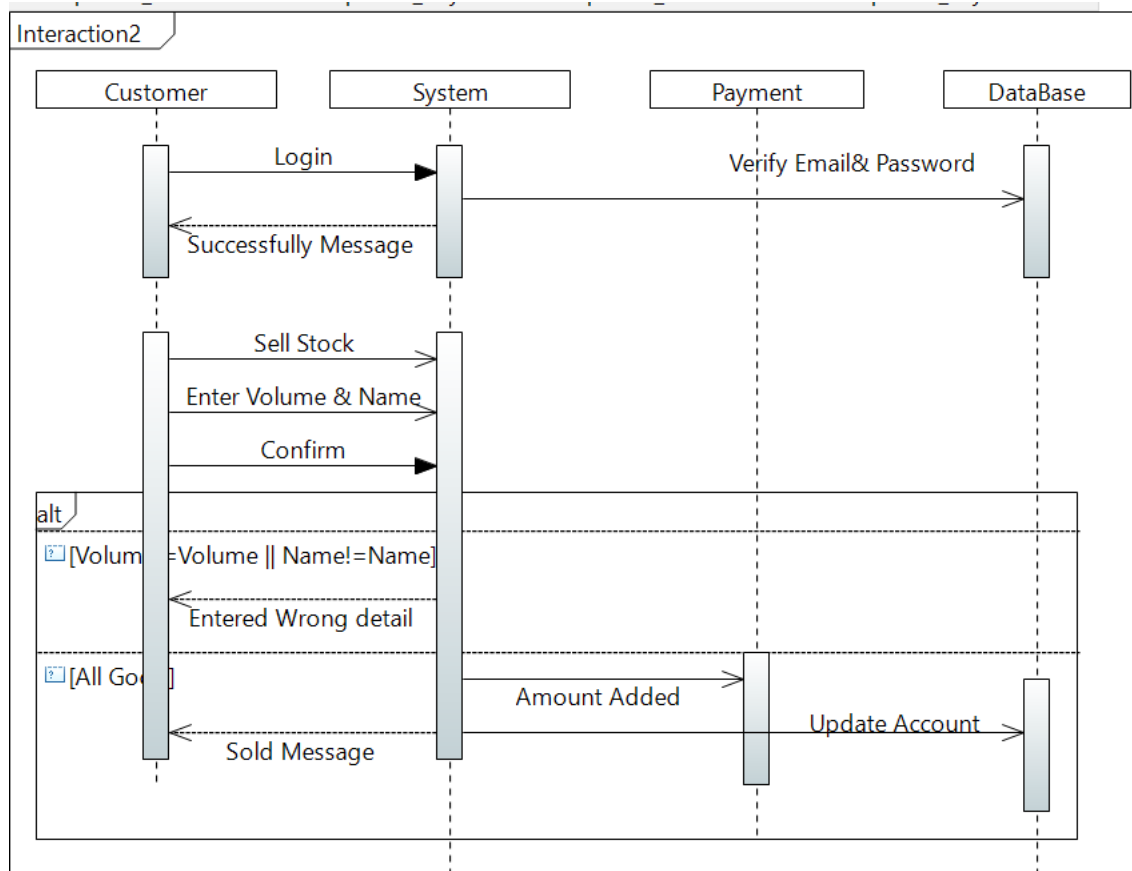
9.1.2 Stocks



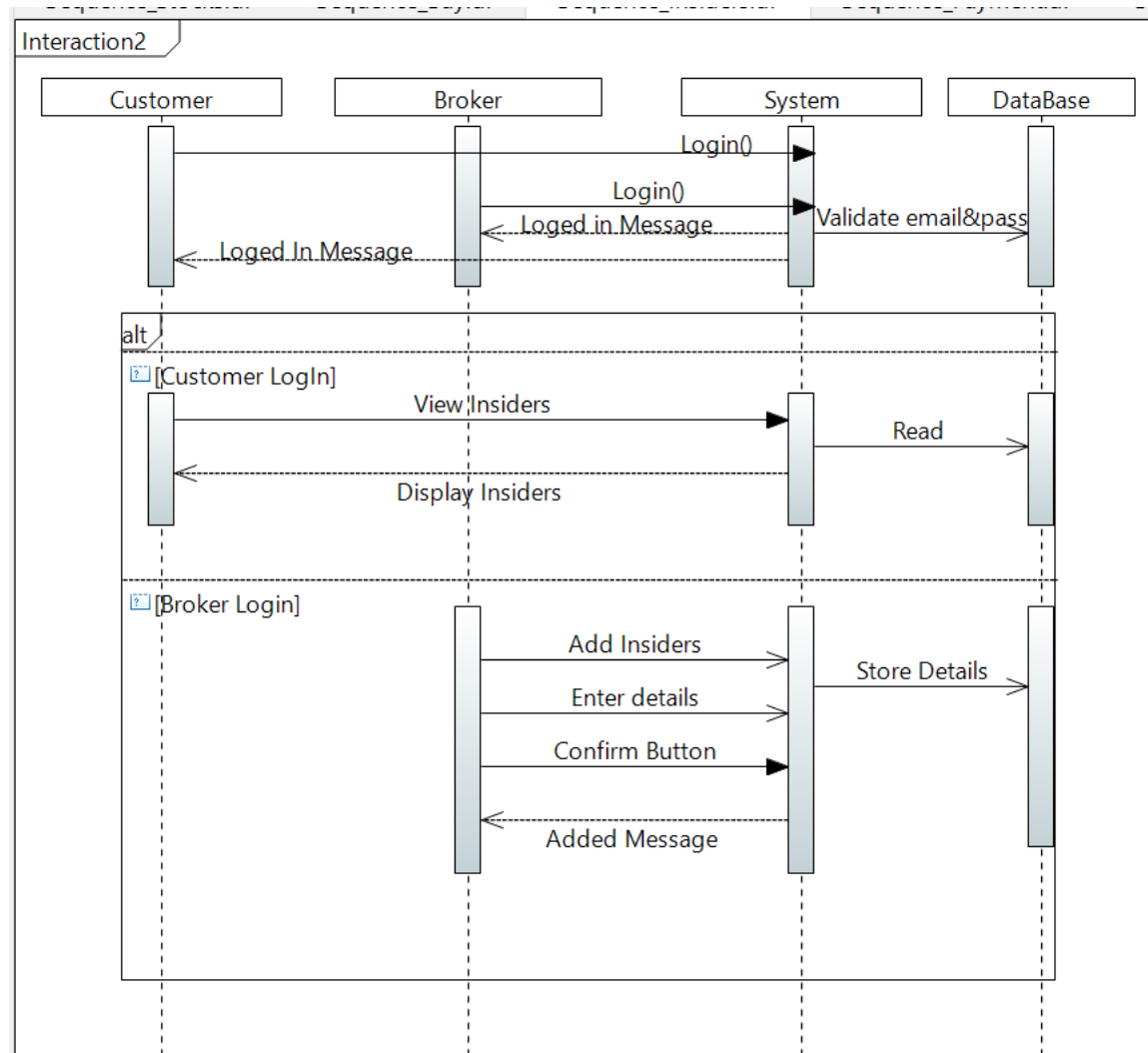
9.1.3 Buy Stocks



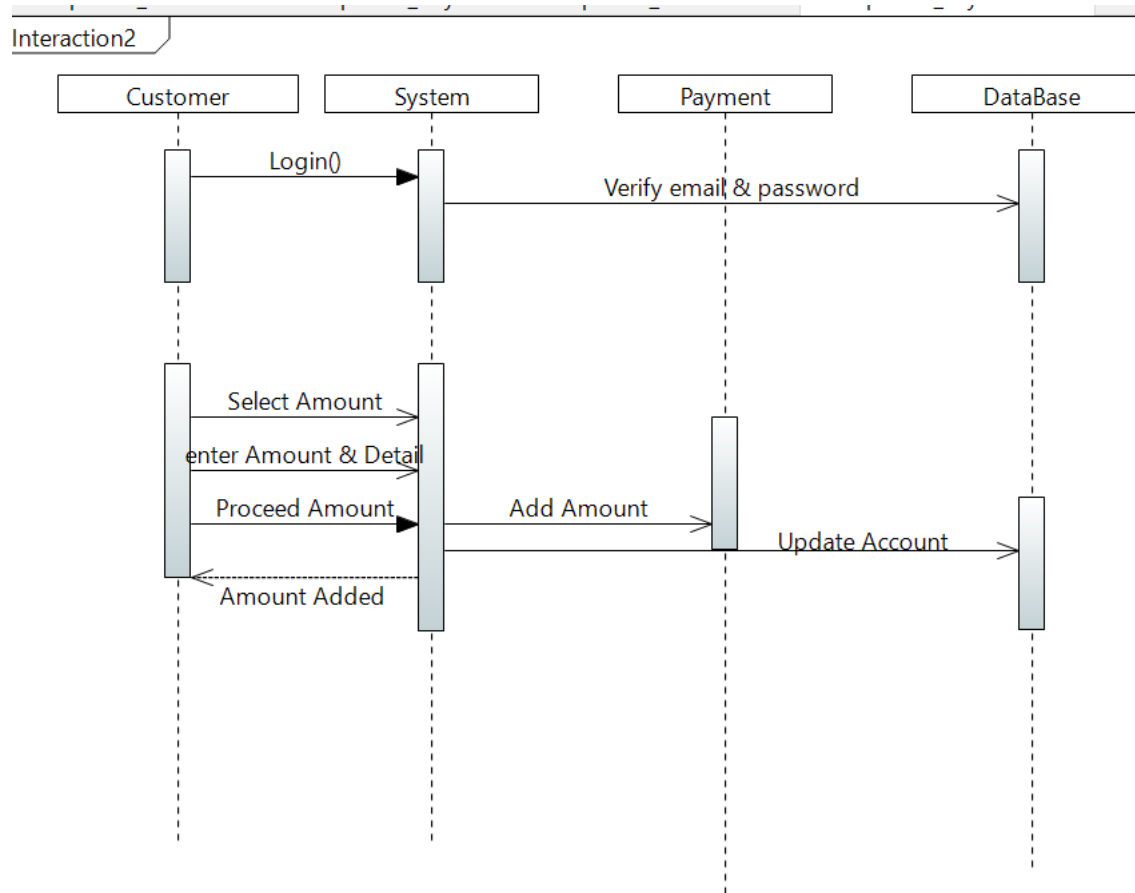
9.1.4 Sale Stocks



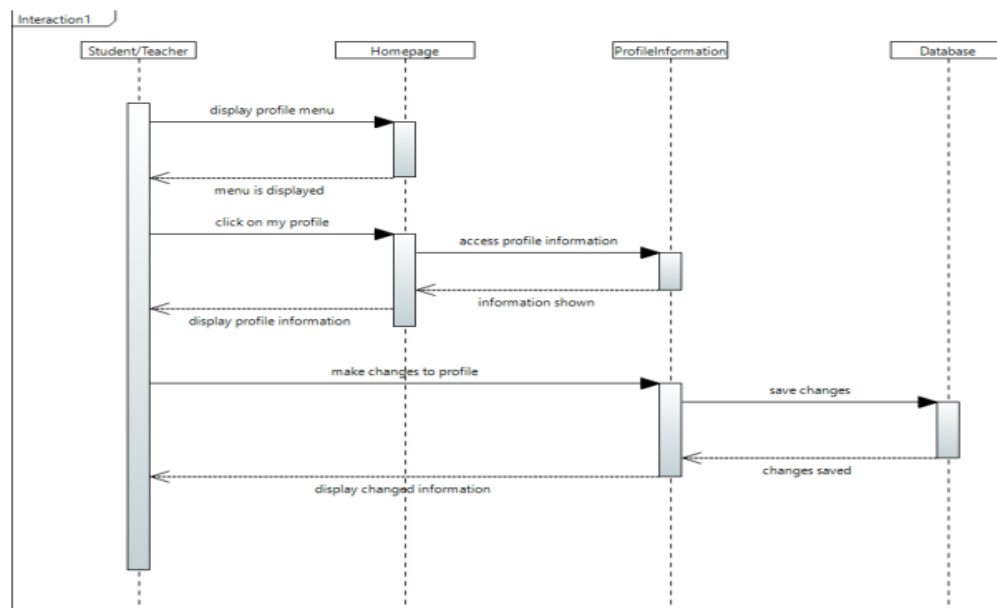
9.1.5 Insiders



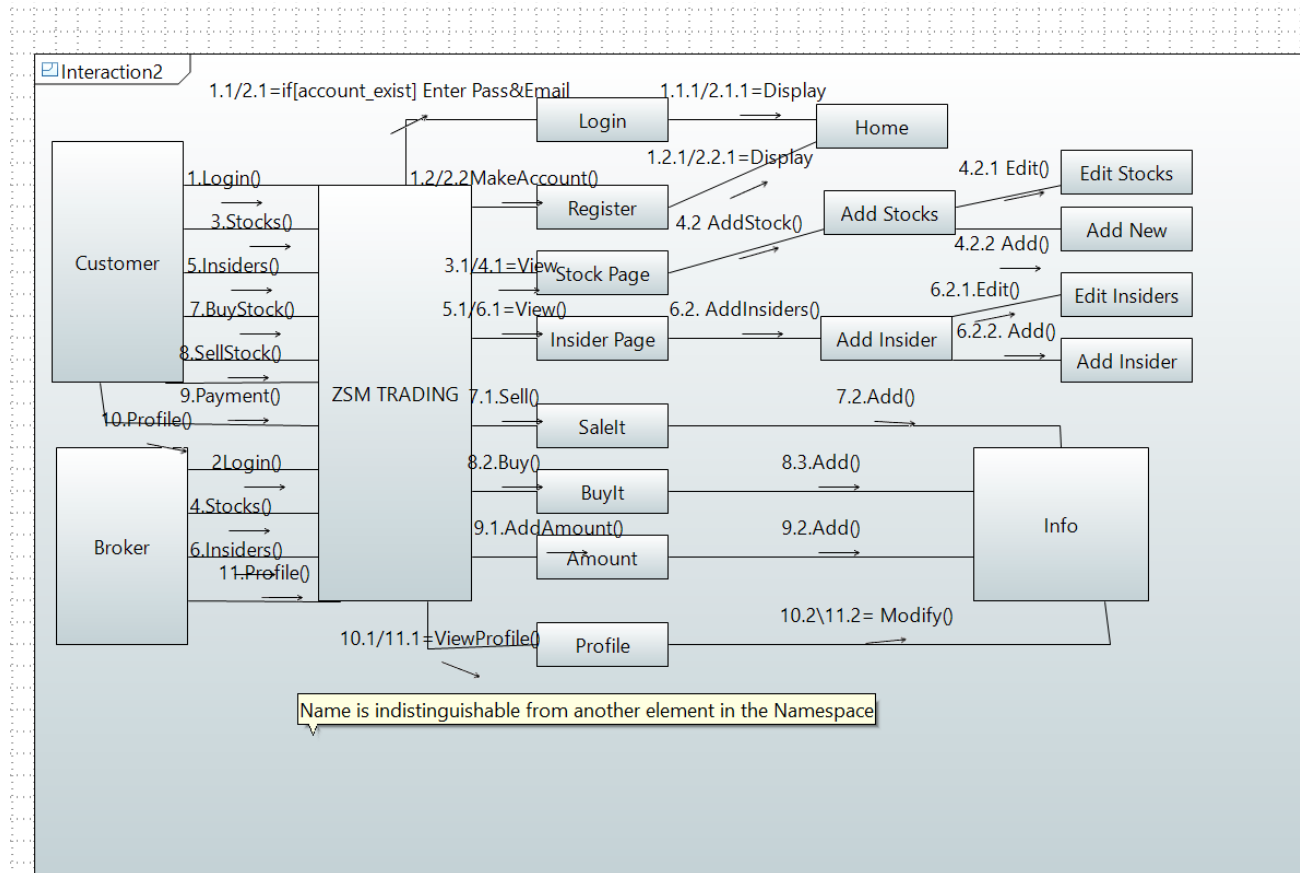
9.1.6 Payment



9.1.7 Portfolio



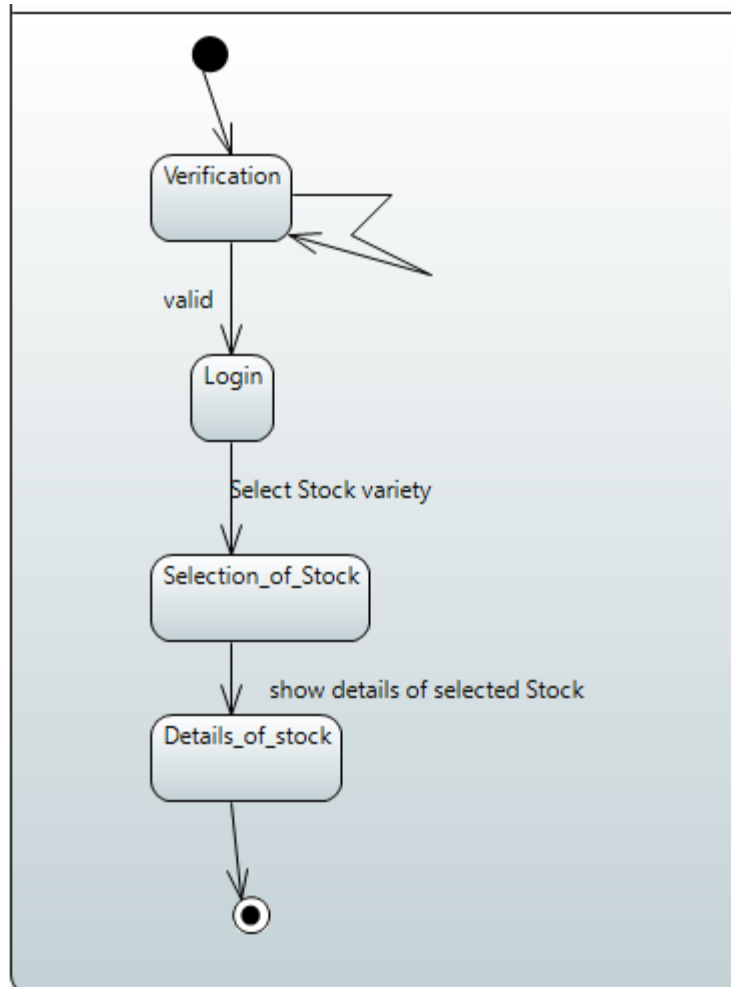
9.2. Collaboration Diagram



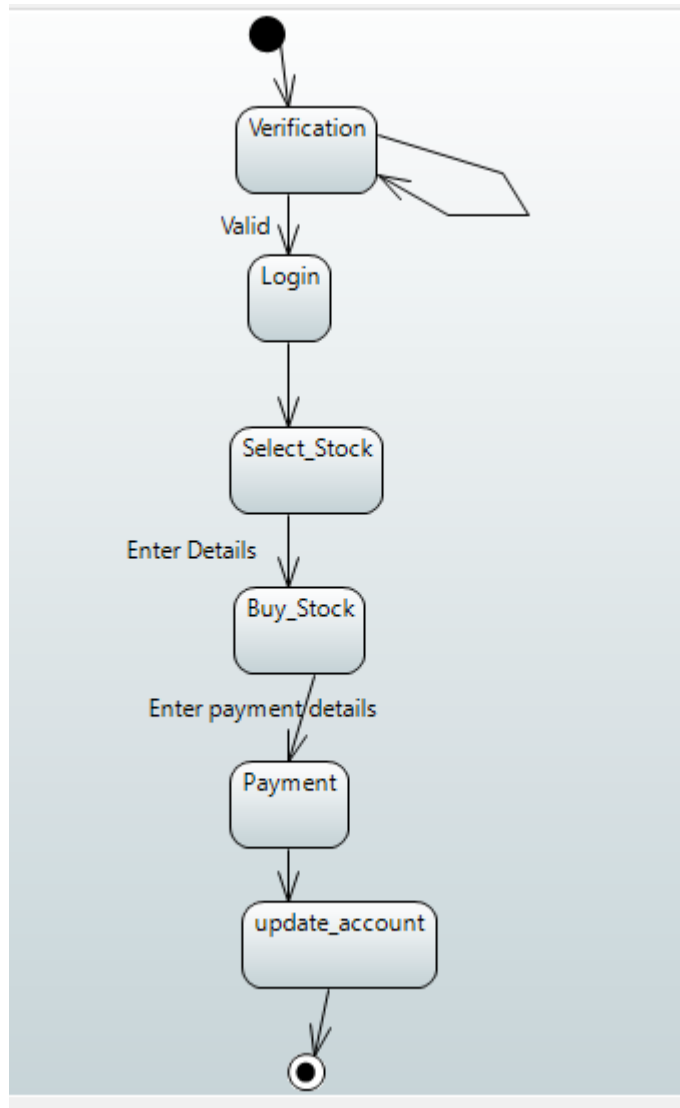
9.3. State Diagram

9.3.1 Login

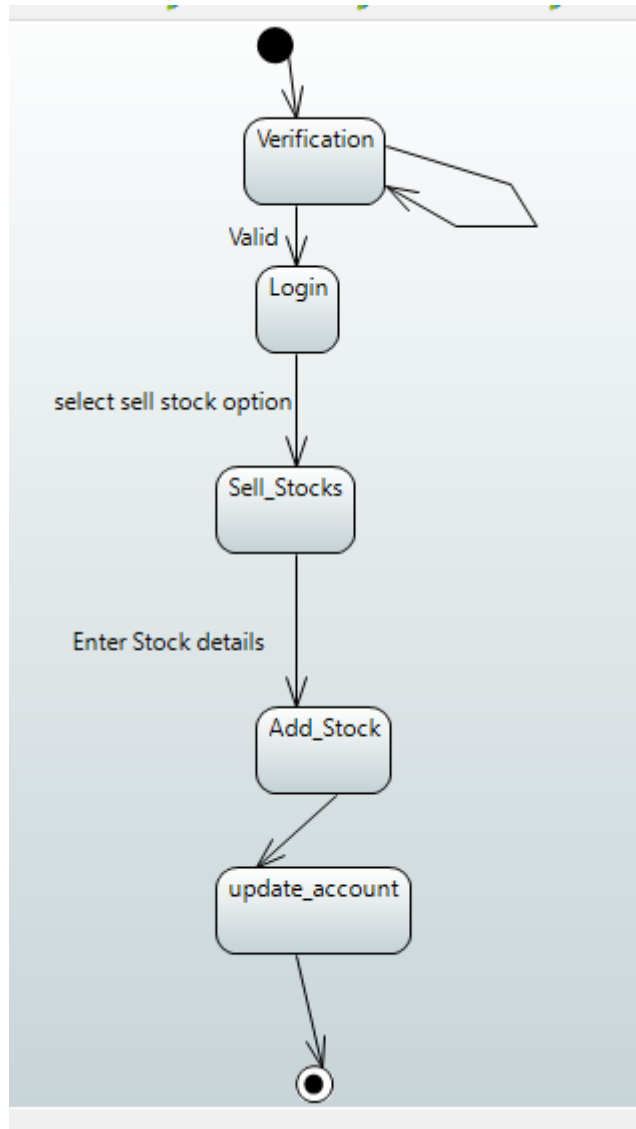
9.3.2 Stocks



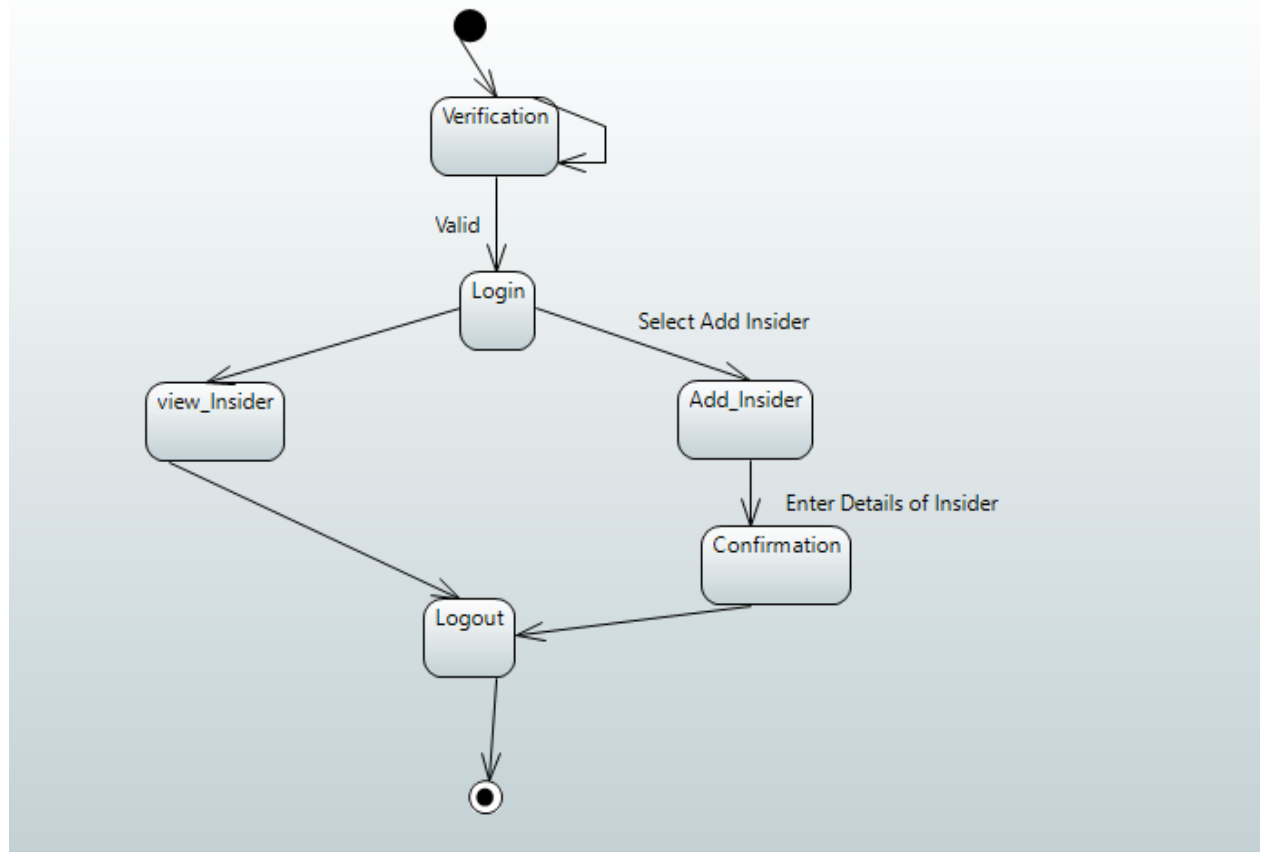
9.3.3 Buy Stock



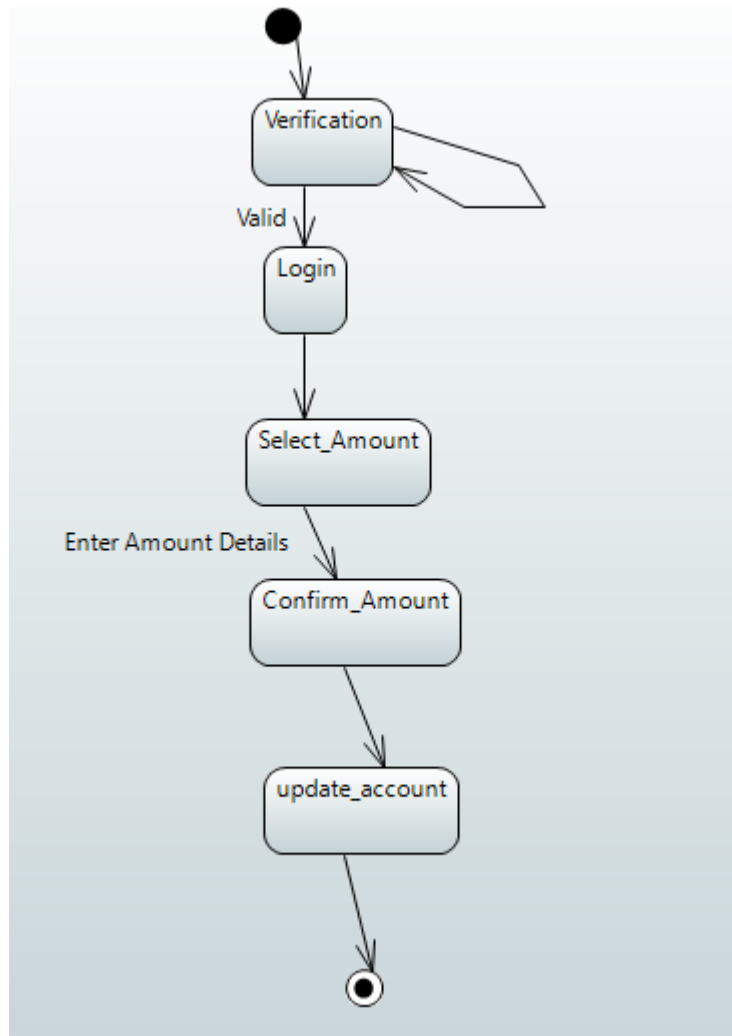
9.3.4 Sale Stock



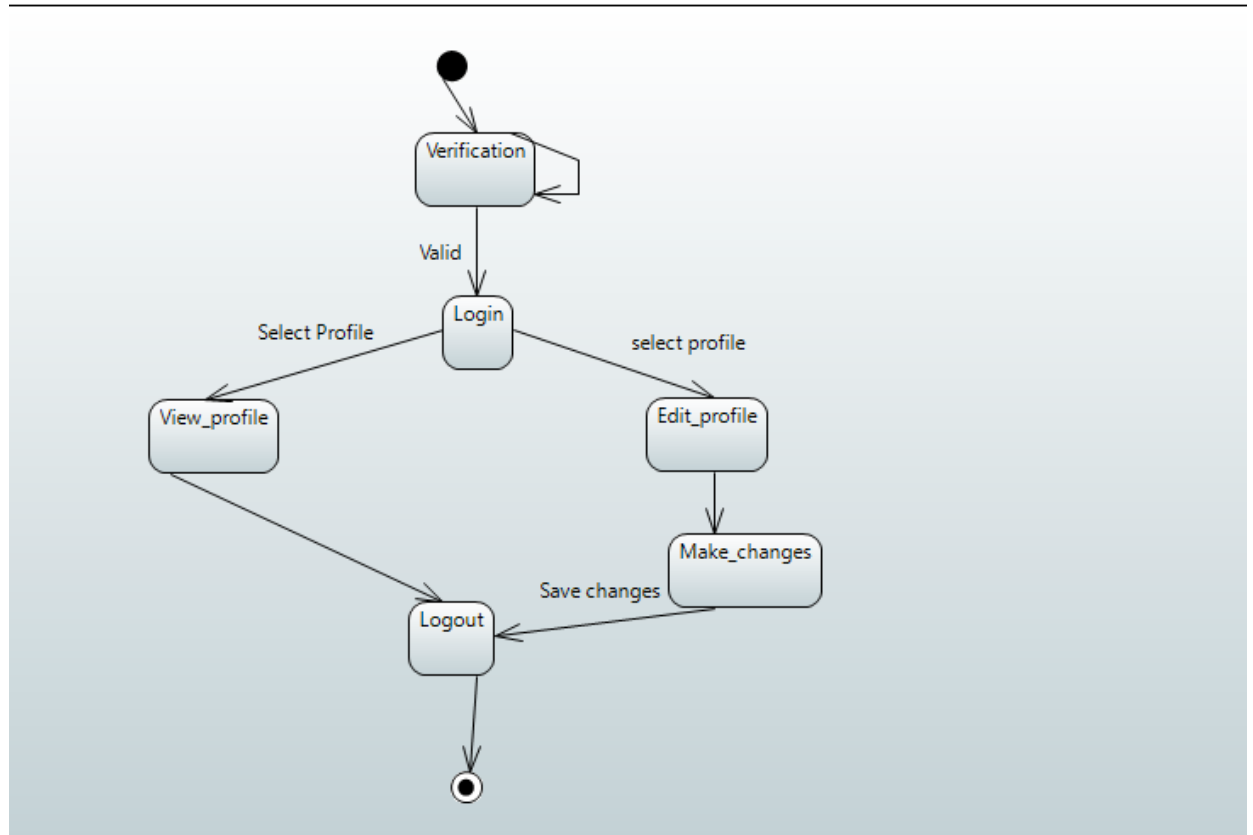
9.3.5 Insiders



9.3.6 Payment

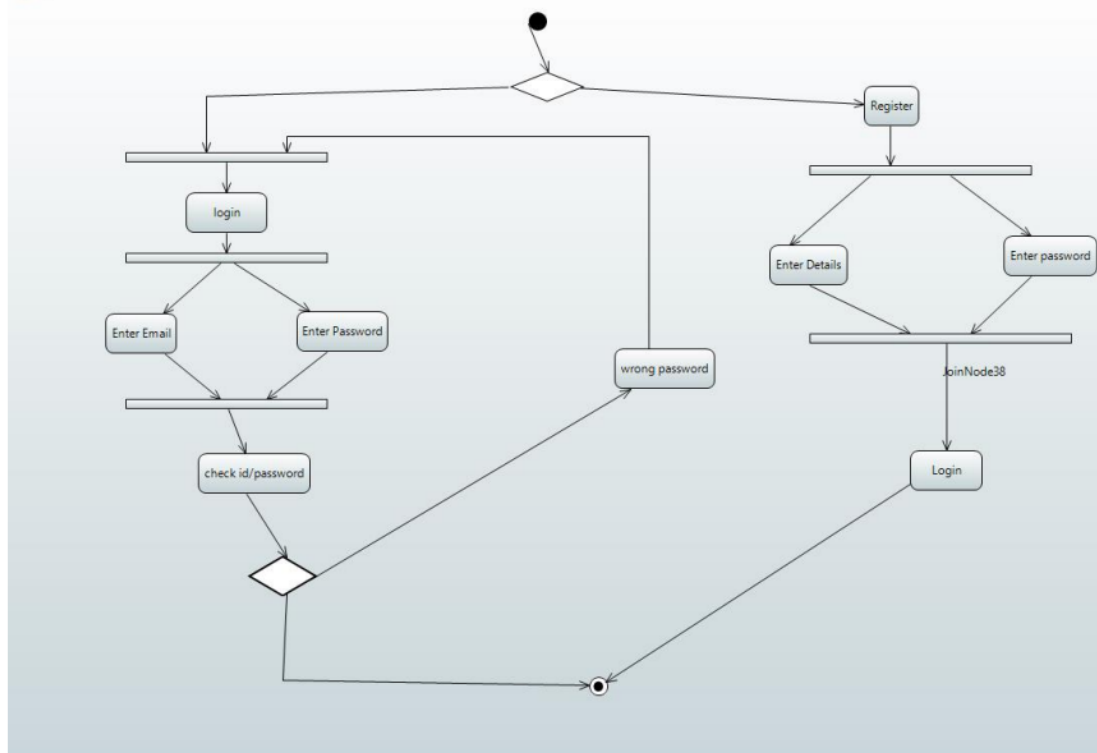


9.3.7 Portfolio

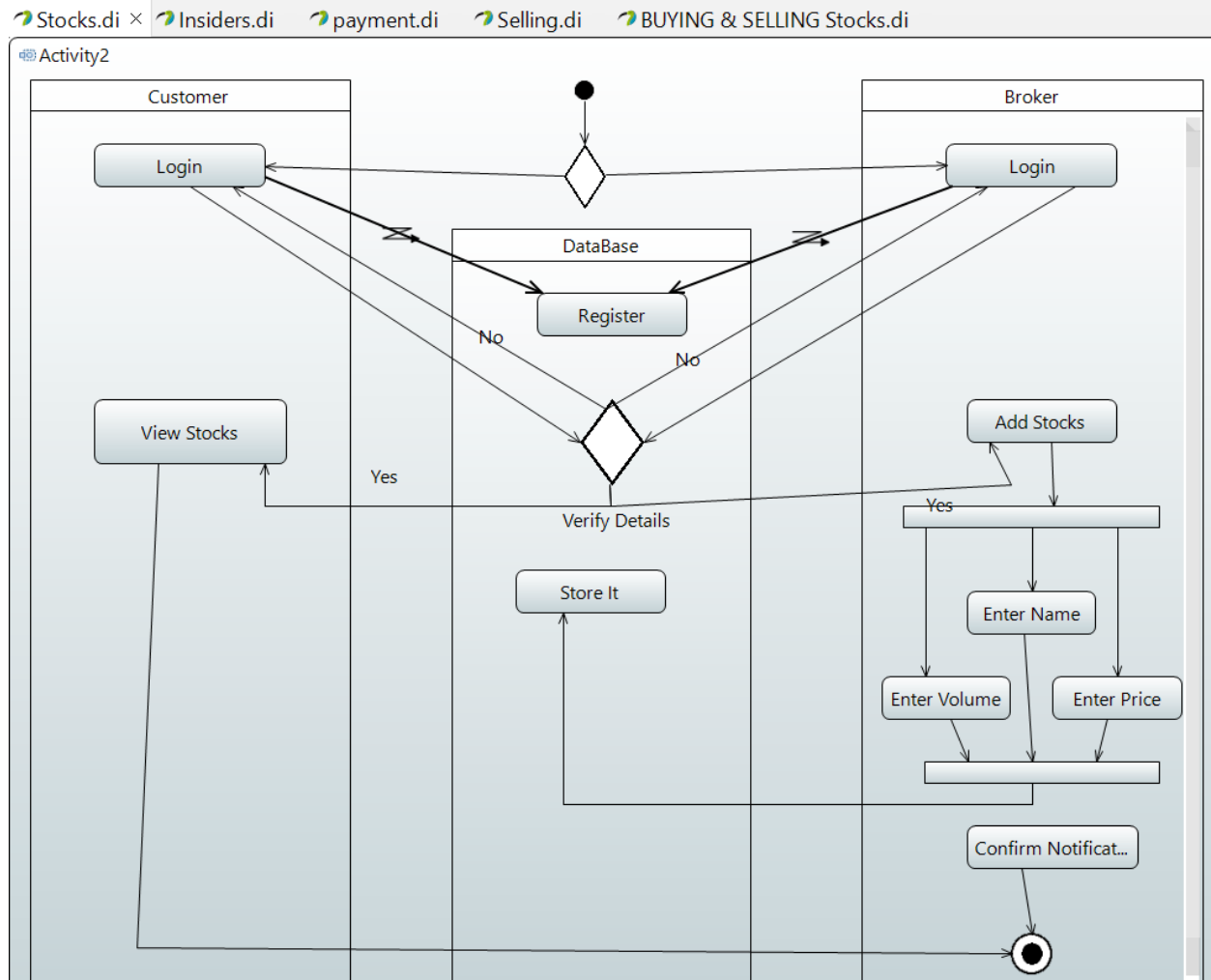


9.4. Activity Diagram

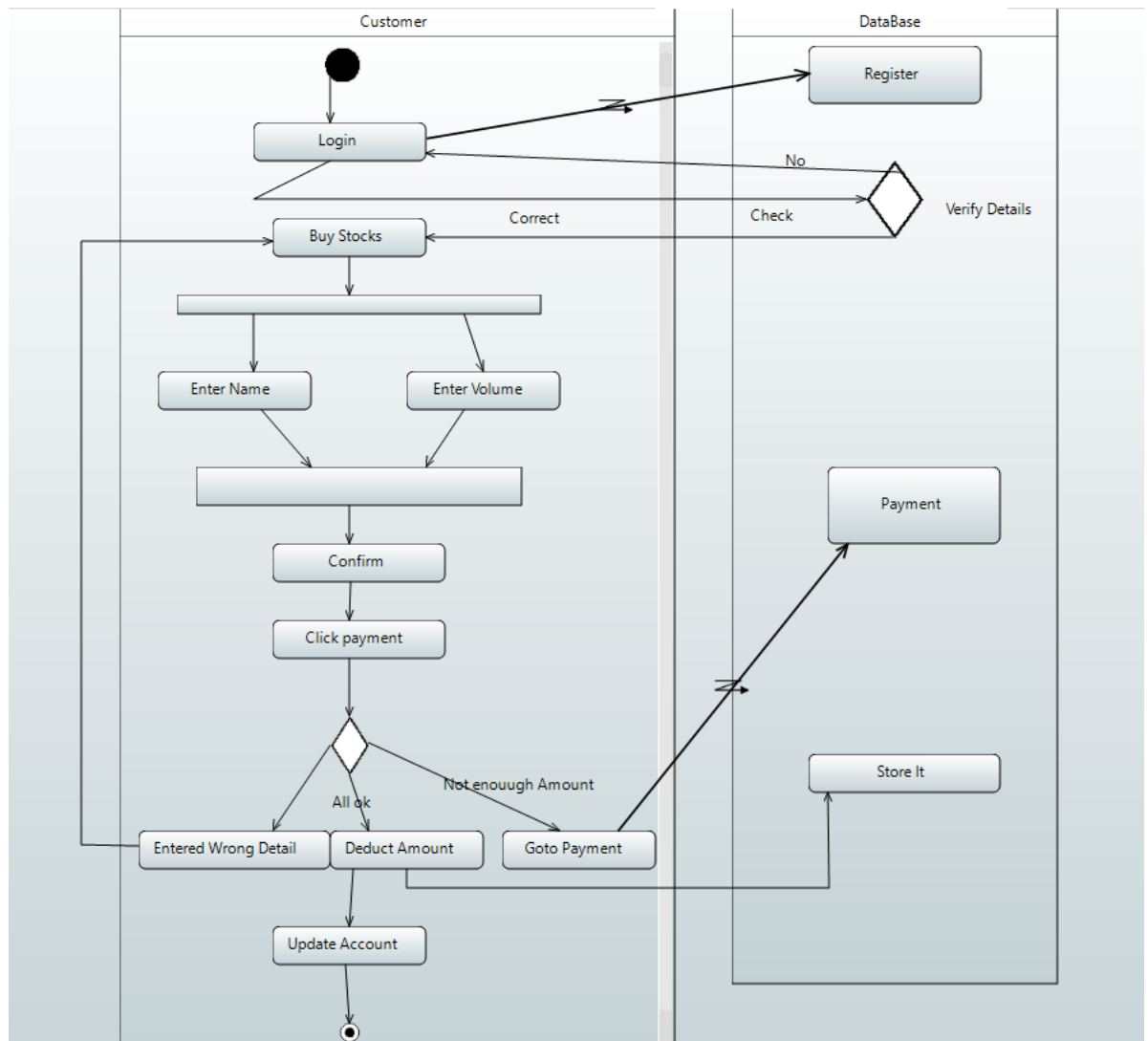
9.4.1 Login



9.4.2 Stocks

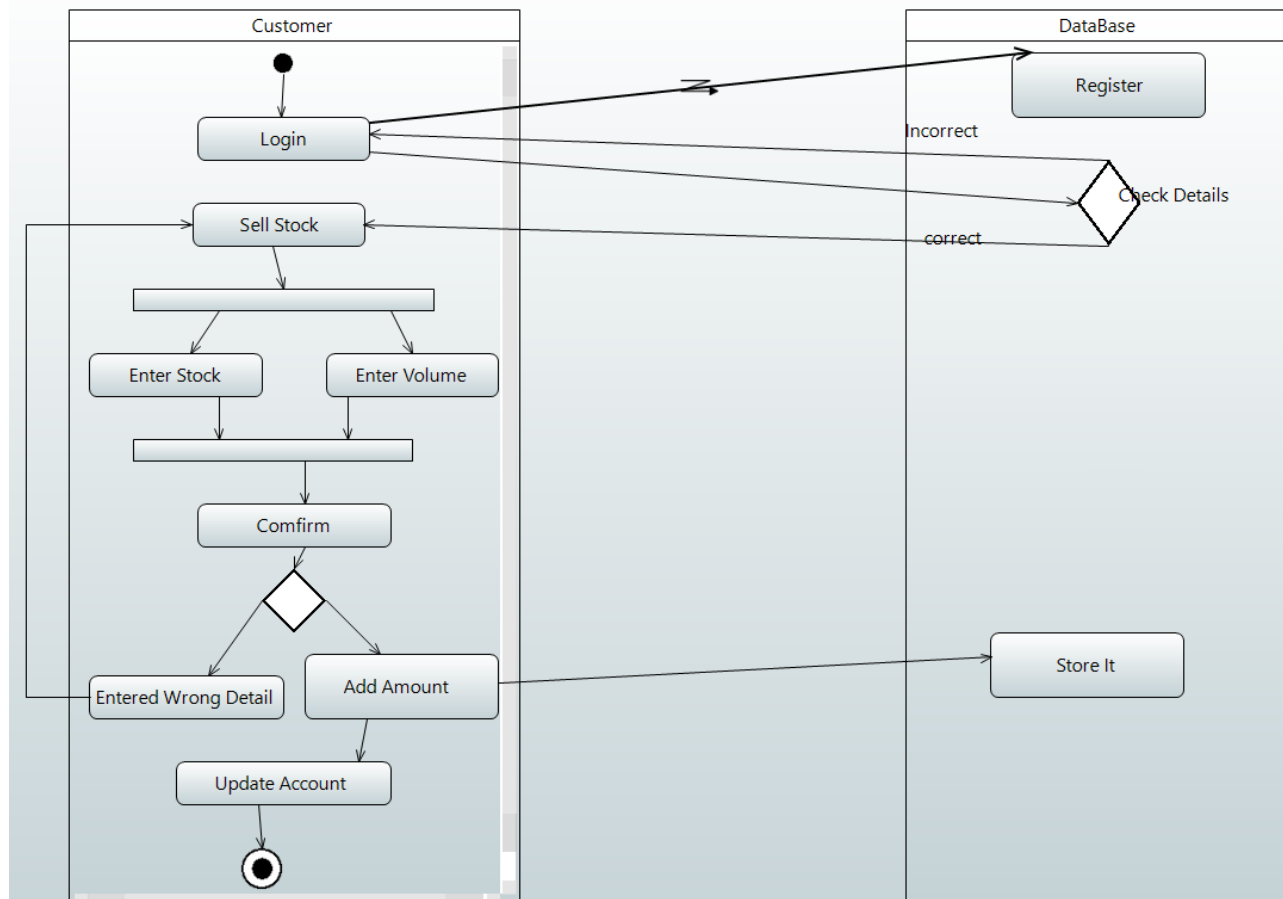


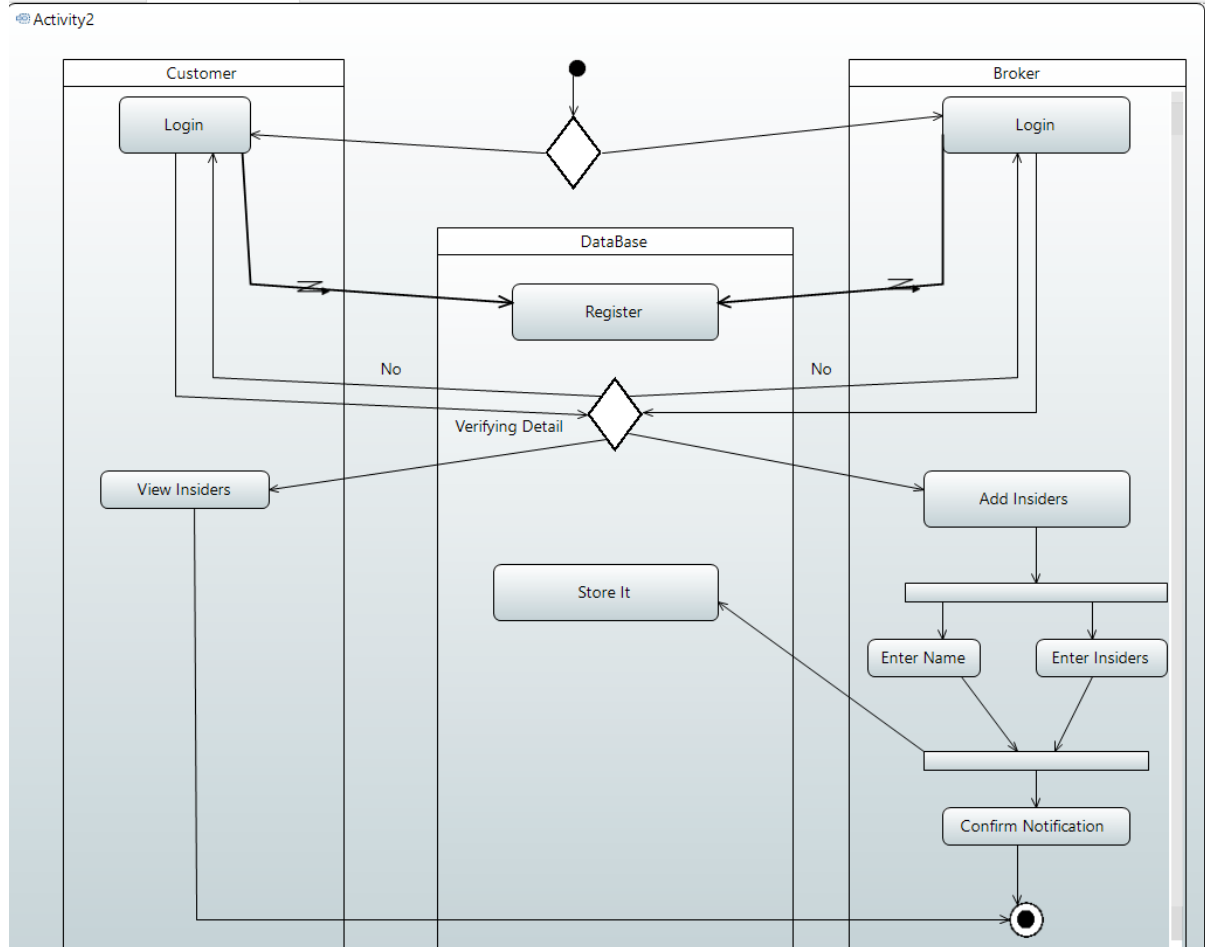
9.4.3 Buy Stock



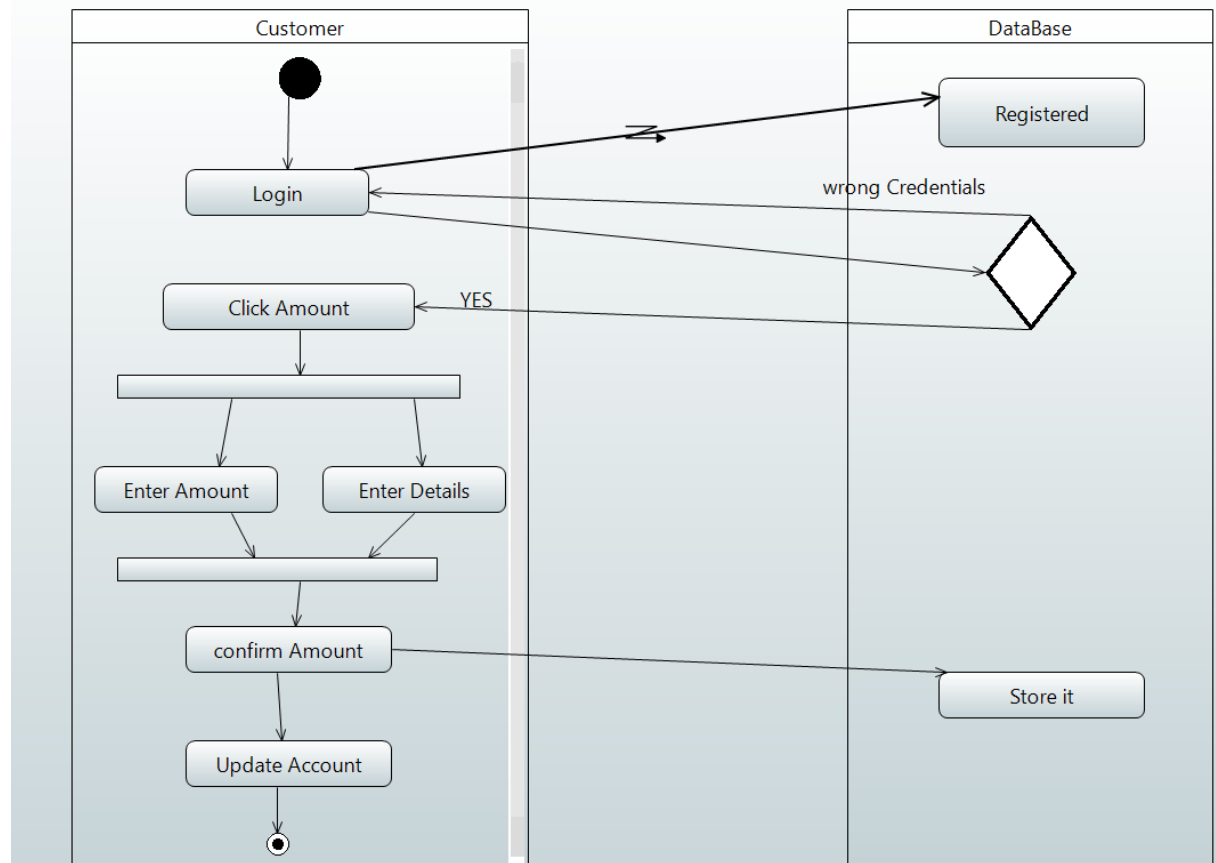
9.4.4 Sale Stock

Activity2

**9.4.5 Insiders**



9.4.6 Payment



9.4.7 Portfolio

