SOFTWARE REQUIREMENTS SPECIFICATION

&

UML Models

Motor Part Shop Software

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Contents

1. __INTRODUCTION__

1.1 Purpose

The purpose of the document is to serve as a guide to designers, developers and testers who are responsible for the engineering of the Motor Part Shop project . It should give the engineers all of the information necessary to design, develop and test the software.

1.2 Project Scope

A small automobile spare parts shop sells the spare parts for vehicles of several models. Also each part is typically manufactured by several small industries. To stream line the sales and supply ordering, the shop owner has asked us to develop the following motor part shop software. The motor part shop deals with large no. of motor parts of various manufacturers and various vehicle types. Some of the motor parts are very small and some are very large. The owner maintains di erent parts in wall mounted and numbered racks. The shop owner maintains as few inventory for each item as reasonable, to reduce inventory overheads after being inspired by "just in time (JIT) philosophy". Now to facilitate the sales and stocking up the motor parts, we are required to develop the required software.

1.3 Environment Characteristics

The software is compatible with Windows version 7 and above for greater exibility across all the systems. The hardware requirements involve RAM greater than 512 MB, with pentium core and above. The hard disc capacity needs to exceed 20 GB for this software to function smoothly.

2. <u>OVERALL</u> <u>DESCRIPTION</u>

2.1 Product Perspective

The Motor Part Shop Software will be a newly developed and self contained product. It will help in restocking of motor parts for the intended owner's shop as well as it will show required sales statistics to the owner. The Software can be modi ed in further versions to add complex functionalities.

2.2 Product Features

The product feature includes,

    i.   Login authentication

    ii.   Search for a motor part

    iii.   Checking current stock of motor parts in the store Setting
the threshold for a motor part

    iv.   Billing a customer

    v.   Checking the sales statistics for the shop

    vi.   Getting the list of parts that needs to be restocked, by the end of the day

    vii.   Updating the database when new stocks are added or when new parts are bought for the shop.

    viii. Adding a new motor part to the inventory

The above are the major ways for which the software can be used.

2.3 User Classes

    i.   The various user classes that are expected to use this software as follows,

    ii.   Owner can use the software to look into the sales statistics and the current stock of the motor parts.

    iii.   Shop Keeper can use the software for billing purpose.

    iv.   The Sales guy can update the current stock of the motor parts after getting the list from the software.

2.4 Operating Environment

The software is compatible with operating system windows version 7 and above and MAC OS. The database used is MySQL. PHP is used for the back end and Java has been used for rest of the software.

The hardware requirements involve RAM greater than 512 MB, with pentium core and above. The hard disc capacity needs to exceed 20 GB for this software to function smoothly.

2.5 Design and Implementation Constraints

The information of all the motor parts must be stored in a database that is accessible by the motor part shop software. No internet is required for the functioning of the motor part shop software, so the motor part shop software should be able run all 24 hours a day. The billing system is connected to the motor part shop software and the database used by the billing system must be compatible with the interface of the motor part shop software. The users must have their correct usernames and passwords to enter into the motor part shop software.

2.6 User Documentation

User Manual of the motor part shop software would be provided at the time of delivery of the software to the required authority which can be used to solve any troubleshoot issues regarding this software. If the user manual does not help, the developers are always ready to help with any trouble shoot who can be contacted by the number given in the manual.

3. FUNCTIONAL REQUIREMENTS

3.1 Login authentication

This is the rst functionality that the user encounters when it uses the software. There are three classes of users, which include owner, shop keepers and the sales executive. Users are required to enter their username and password to login into the software.

- Input - Username and Password
- Process - The username and password is matched with the existing data of owner, shop keeper and the sales executive.
- Output - Successful login if correct details are entered, else an unsuccessful login attempt is displayed.

3.2 Search for a motor part

This feature can be used to search for a motor part that is present in the inventory. This feature returns the location of the motor part and the number of parts left in the inventory. This feature can be accessed by the owner, the shop keeper and the sales executive.

- Input - Motor part ID
- Output - The rack location where the motor part is stored, and the number of parts stored there. If no parts are present, a warning message is to be displayed.

3.3 Checking current stock of motor parts in the store

This feature is kept to check the current stock of any motor part within the store. A list of all the existing motor parts is displayed when the user wishes to check the stock showing the part's number, part's name and the number of items in the shop currently.

- Input - User asks for the current stock by clicking on the "Check current stock" button.
- Process - The current stock is fetched from the database in ascending order of the part ID.
- Output - The current stock is displayed in a list showing the part ID, part name and the number of parts in the inventory currently.

3.4 Setting the threshold for a motor part

This functionality is required to calculate the threshold of each motor part based on the number of parts sold previously so that the shop does not run out of the speci ed part. The average of number of parts previously sold is calculated to get the threshold.

- Input - The stock that is sold in recent weeks
- Process - Average of the stocks is calculated for each part.
- Output - The threshold for each motor part, if the current stock falls below the threshold for a motor part, the motor part is restocked.

3.5 Billing a custome

This feature is used to bill a customer when it wishes to buy some required parts from the motor part shop. After the billing is done, the appropriate change is done in the database, which is re ected over the sales statistics.

- Input - The parts a user buys
- Output - The stock is reduced in the database.

3.6 Checking the sales statistics for the shop

This functionality has got two parts, as follows,

The owner can check the sale of motor parts from the shop in the current day. This includes the parts that were sold beginning from the day itself. The user can also check the revenue of the day with the help of this feature.

- Input - Owner asks for sale of motor parts of the current day.
- Output - Revenue for the day is calculated and displayed along with the sold parts details.

The owner can check the sales graph which shows the daily sales of the shop over a period of a month. This includes all the parts in the shop. The graph would also show the revenue generated every day in the current month.

- Input - Owner asks for sale of motor parts of the current month.
- Output - A graph is displayed which shows the sale of motor parts for each day of the month.

3.7 Getting the list of parts that needs to be restocked

The user can get a list of all the motor parts that need to be restocked using the software. The software compares the current stock of an item with the average number of sales of the item over a week. If the current stock is low, the user needs to restock the motor part to carry on the functioning of the shop in a smooth manner.

- Input - Sales executive wants a list of parts that need to be restocked
- Output - A list is displayed showing the ID, name, vendor address and the number of the motor parts that need to be restocked.

3.8 Updating the current stock

The user can increase the existing number of a motor part after it has been restocked using the software. The change would be re ected in the database, from which the upcoming purchases would be carried on.

- Input - The sales executive adds the number of parts bought for the shop against the ID of the motor part.
- Output - The number of motor parts is increased in the database and is re ected while checking the current stock.

3.9 Adding a new motor part to the inventory

This functionality enables the sales executive to add a new motor part into the inventory. To add a new part, the sales executive needs to enter the part ID, part name, the address of the vendor who currently sells the motor part. The initial count for a new part is set to 0, which can be incremented accordingly by the sales executive.

- Input - Sales Executive adds the id of the new part, name of the part, address of the vendor from which the part is bought along with the number of the parts.
- Output - New part is added in the database which can be checked by the current stock.

4. EXTERNAL INTERFACE REQUIREMENTS

4.1 User Interfaces

When the user will open the software, a welcome page asking the user id and password will be displayed. The software would entertain three categories of users, as it has been mentioned in the user classes. Upon logging in, the software will display four buttons along with a billing button and an exit button. Upon the clicking the exit button, the current user will be logged out and the login page will be displayed again. The billing button will direct the user to the billing page. The four functionalities include, Stocks, Sales, Requires Parts, Add parts. The stocks button will show the list of current stock of motor parts. The sales button will display the sales statistics of the shop. The requires parts button will display the motor parts that need to be restocked by the end of the day. The add parts page will help in adding the recent number of restocked motor parts. The UI is kept simple and understandable for the user, so that it can work with it without hassle.

4.2 Hardware Interfaces

Since the software is supposed to be run on a single system, we do not require cloud based hosting solution here. If more than one system needs to be connected, cloud based solution is required to store the database.

4.3 Software Interfaces

A rewall will be used with the server to prevent unauthorized access to the system

4.4 Communications Interfaces

The software is to be kept connected to the internet for continuous use in multiple systems.

5. OTHER NONFUNCTIONAL REQUIREMENTS

5.1 Maintainability Requirements

The software must be robust enough to require as lesser maintenance as possible. Given a glitch in the software, the administrators must be capable enough to sort out the bug quickly to prevent delay in the shop's functionality.

5.2 Portability Requirements

The software should be able to be deployed in any machine.

5.3 Performance Requirements

The software must be developed using an object oriented model. The performance of every existing module in this software must be robust. This software should be able to run on various operating systems steadily as it as been speci ed before. Overall the performance of the software must be reliable and the data kept must be safe in case of a power failure.
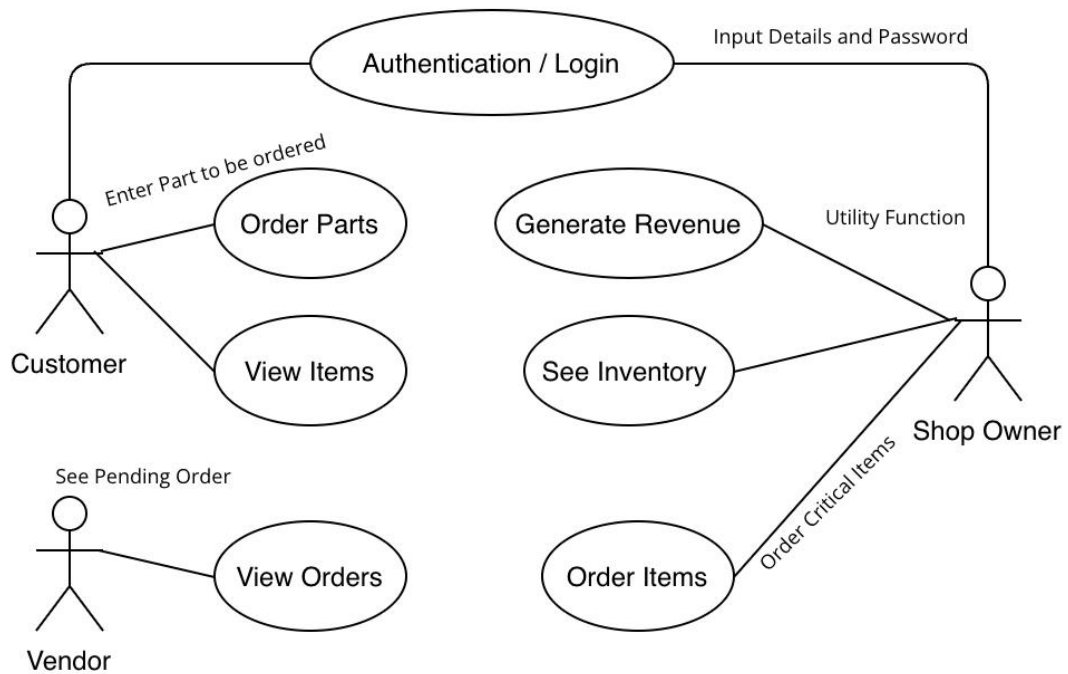
5.4 Safety Requirements

Passwords must be kept di erent from the student id's for safety purpose. A mail must be provided for emergency queries regarding the software, so that the software can be used without concerns. The mail must be replied by the admins of the software for quick responses.
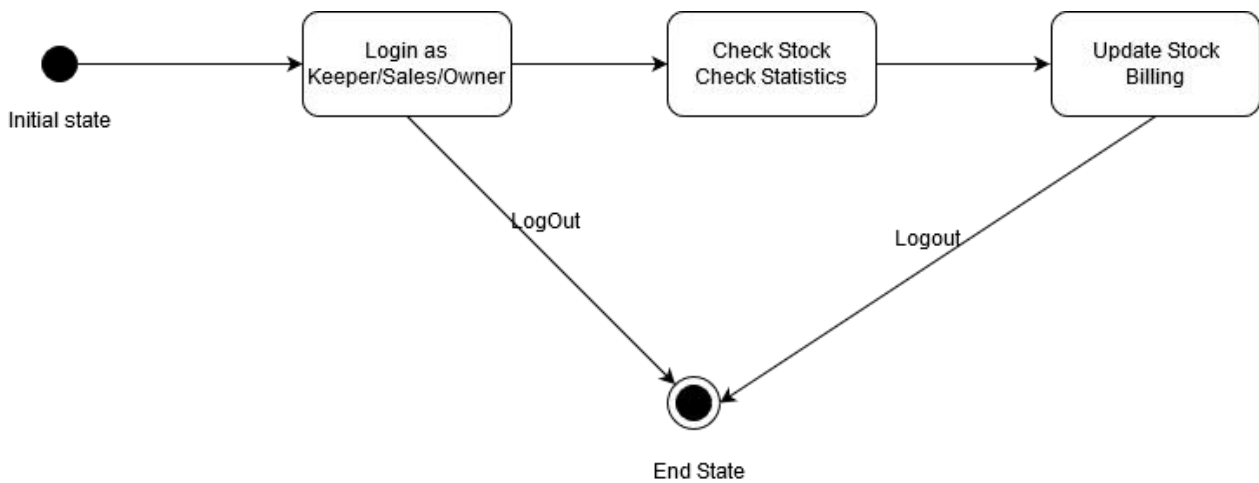
5.5 Security Requirements

Passwords must be stored in hashed format to prevent any data leak. The authentication used in the login page should work without fault. And nally the whole software is completely secured from outside accessing.
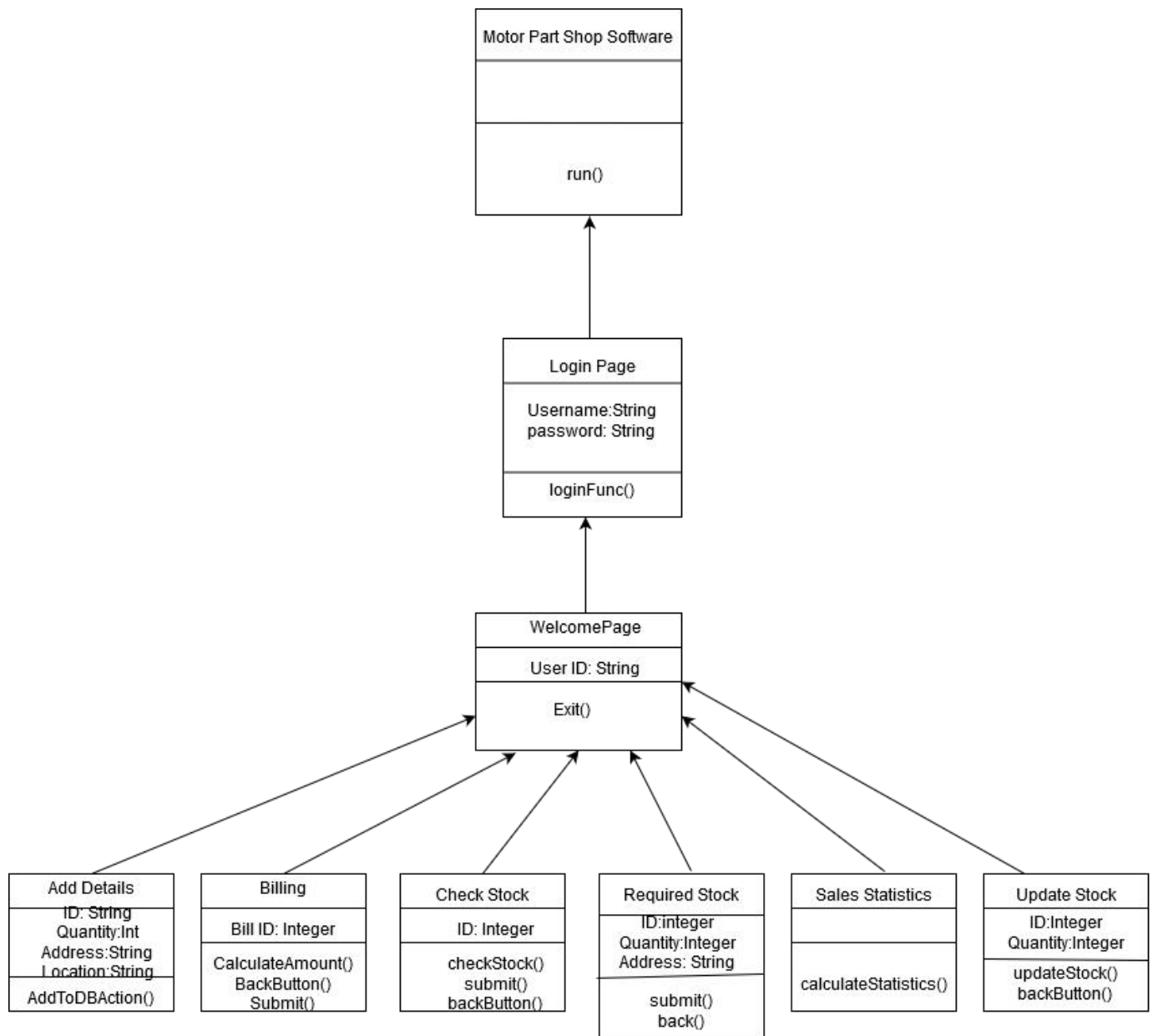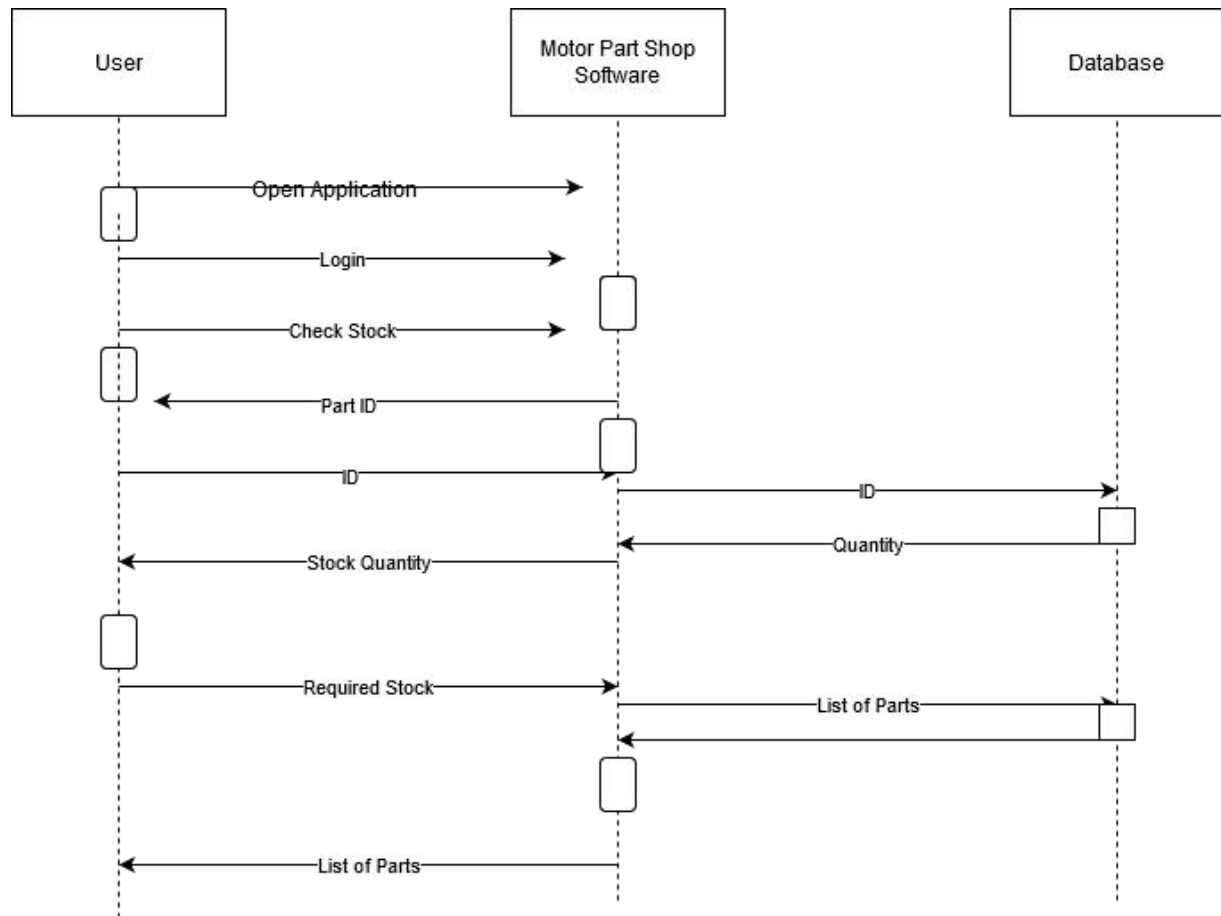
UML models
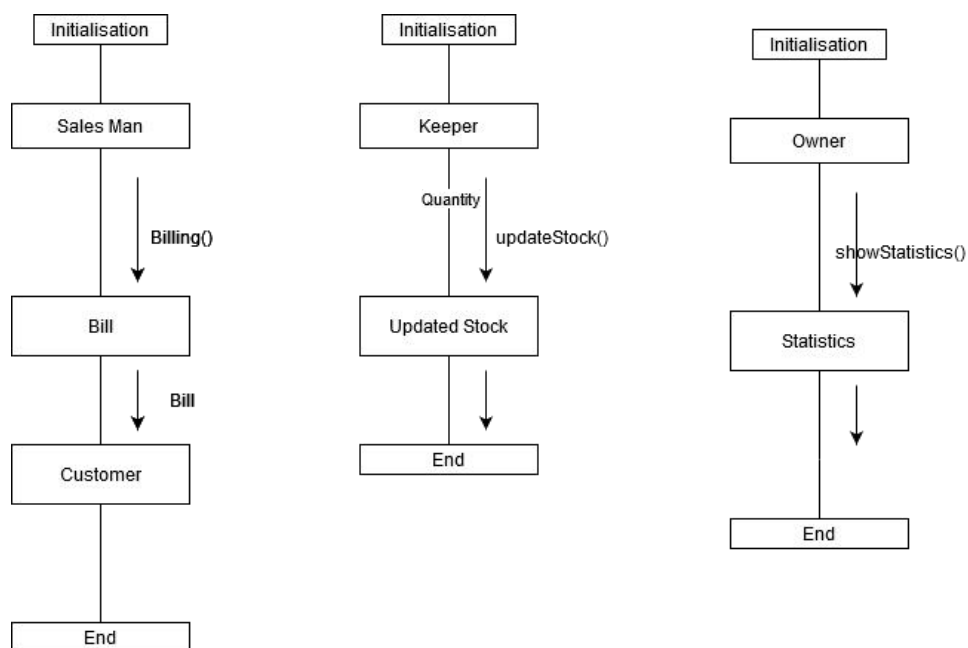
i. UseCaseDiagram :

ii. Statechart Diagram :

iii. Class Diagram :

Motor Part Shop Software

run()

Login Page

Username:String
password: String

loginFunc()

WelcomePage

User ID: String

Exit()

Add Details

ID: String
Quantity:Int
Address:String
Location:String

AddToDBAction()

Billing

Bill ID: Integer

CalculateAmount()
BackButton()
Submit()

Check Stock

ID: Integer

checkStock()
submit()
backButton()

Required Stock

ID:integer
Quantity:Integer
Address: String

submit()
back()

Sales Statistics

calculateStatistics()

Update Stock

ID:Integer
Quantity:Integer

updateStock()
backButton()

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iv. Sequence Diagram :

v. Collaboration Diagram :

vi. Component Diagram :