Software Requirement and Design Specifications

Freight Management System

Version: [1.0.0]

Course Code	Software analysis and Design
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Submission Date	9th Dec 2022

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1. Introduction

1.1. Purpose of Document

To provide complete documentation of our Database Project (Freight Management System)

1.2. Intended Audience

Anybody who intends to use this software in the future or intends to make further improvements/changes to it

1.3 Definition of Terms, Acronyms and Abbreviations

[Not Applicable]

Term	***Description***

1.4 Document Convention

[Headings will be in Arial (font size 12px and body-weight: bold), normal text would be in Arial (font size 10px, body-weight: normal)]

2. Overall System Description

2.1. Project Background

This project was conceived in order to provide a robust and efficient solution for freight management of ports.

2.2. Project Scope

This project enables the users to handle various operations of ports such as inventory management, account management etc.

2.3. Not In Scope

Not applicable

2.4. Project Objectives

To provide a solution that enables the port management to

i) Manage inventory of the ports

ii) Manage accounts and various billing of the ports w.r.t. to various customers

2.5. Stakeholders

There are 2 main stake-holders in this project

i) Admin

ii) Customer

2.6. Operating Environment

The software requires a web browser and an active internet connection to work.

2.7. System Constraints

When running via localhost for demo purposes the, host machine must have a programming utility that mimics the actions of mysql server (such as XAMPP used in this case)

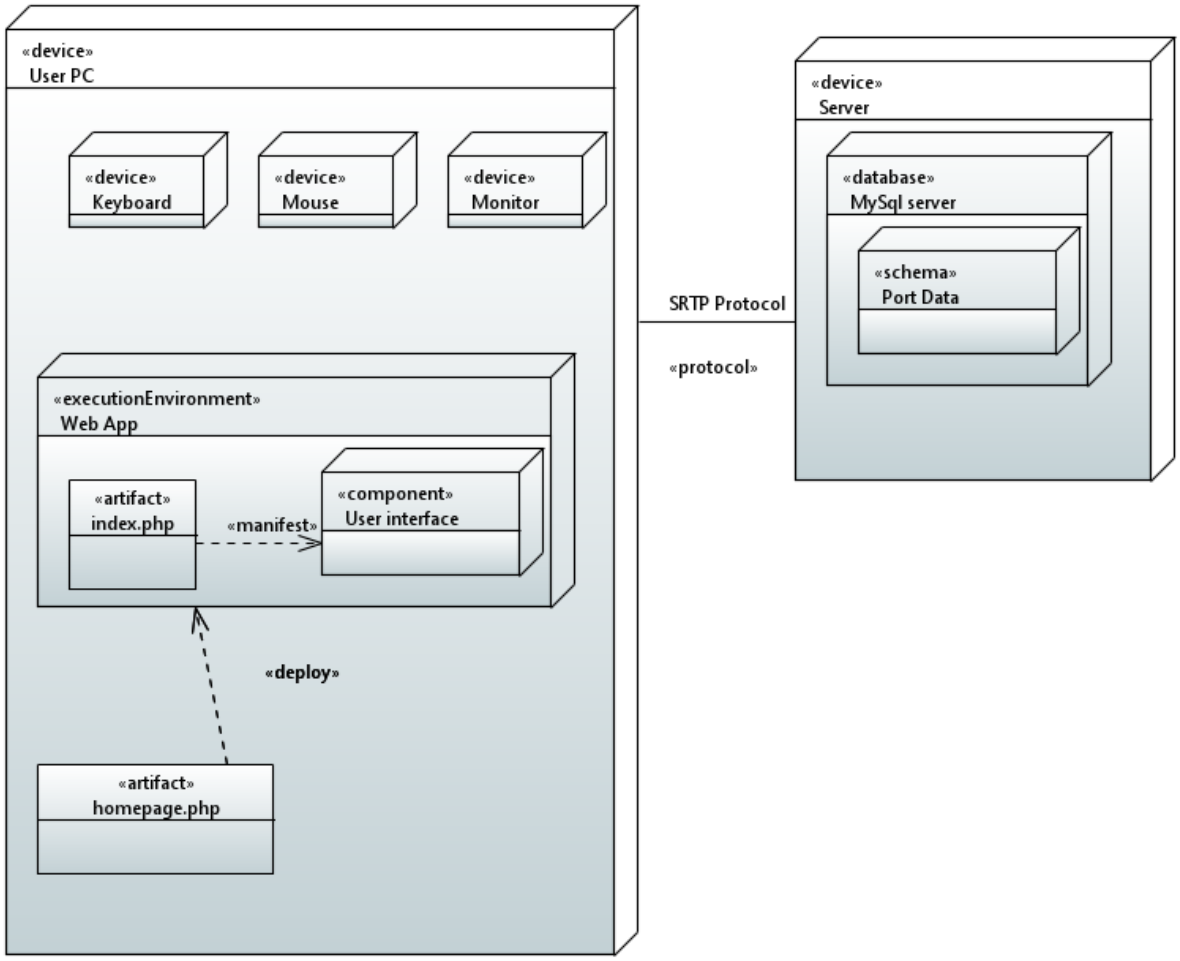
2.8. Assumptions & Dependencies

Not applicable

3. External Interface Requirements

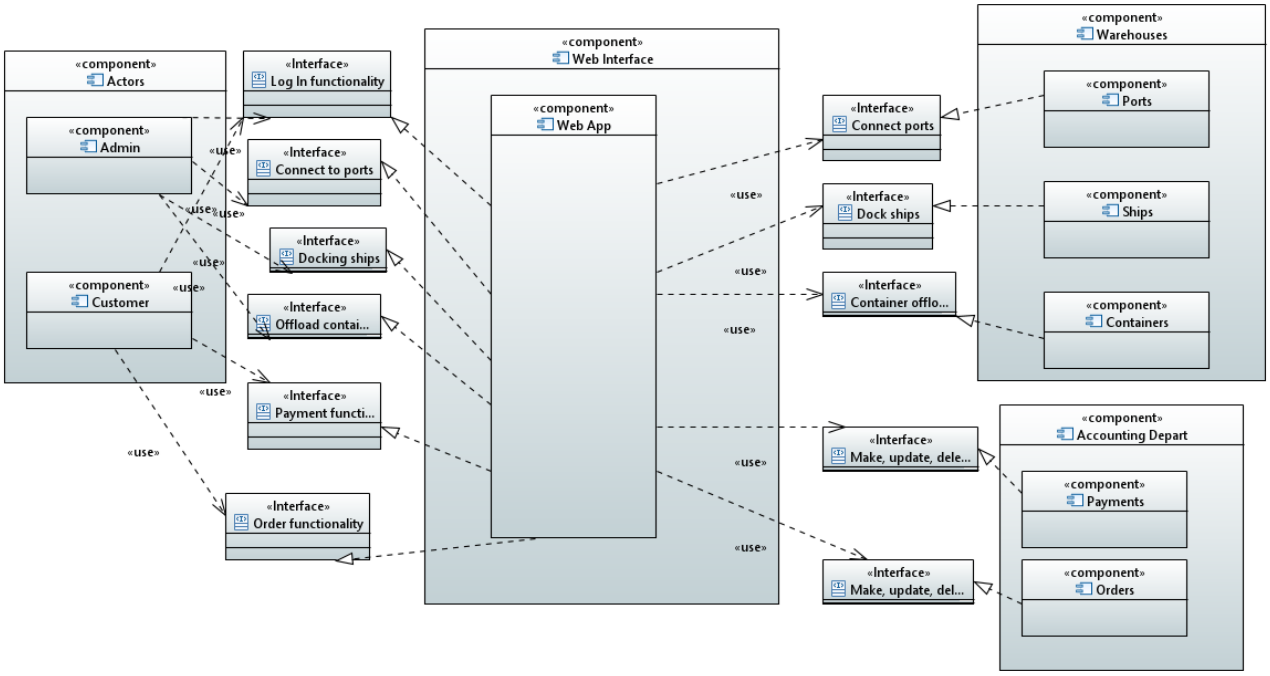
3.1. Hardware Interfaces

The deployment diagram below identifies the hardware interfaces of our system



3.2. Software Interfaces

The component diagram below identifies the software interfaces of our system



3.3. Communications Interfaces

Not Applicable

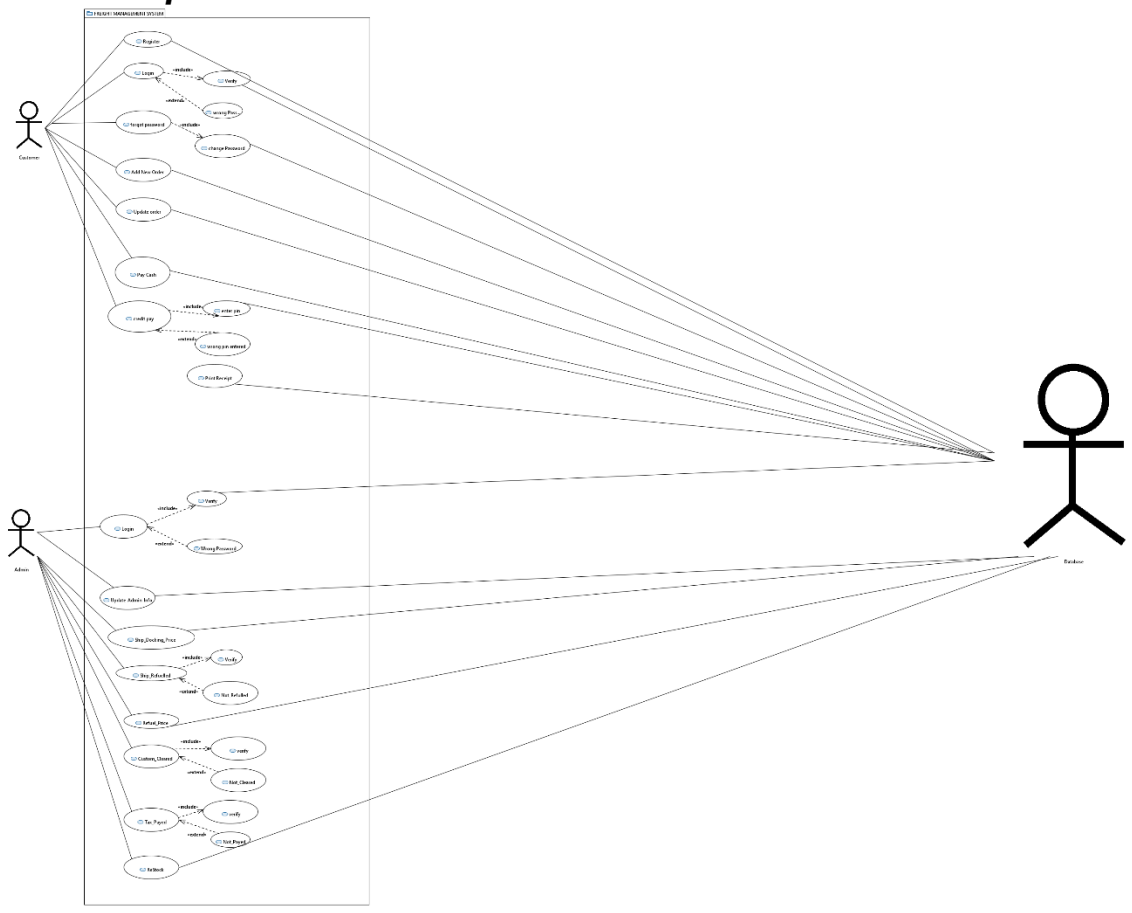
4. Functional Requirements

4.1. Functional Hierarchy

1) The main program starts from the homepage where the visitor can log in as admin or the customer
2) After logging in as the Admin user can
    a. Add/Update/Delete/Read ports connected the system
    b. Deactivate customer accounts
    c. Add/Update/Delete/Read all ships docked at the port
    d. Add/Update/Delete/Read inventory of each ship
3) After logging in as the customer the user can:
    a. Add/Update/Delete/Read orders
    b. Add/Update/Delete/Read Payments for those orders

4.2. Use Cases

4.2.1. Use Case Description



ID	UC-1
Use Case Name	Login
Author	Hameez/Bilal
Last revision	12/8/2022
Description	User enters credentials and logs into system.
Primary actor	Customer/admin
Supporting actor	database
Preconditions	User has been registered.
Postconditions	User is logged into system.
Main Success Scenario	1. User enters userID and password. 2. System sends request to verify login credentials.
Extensions	1. System crashes. a. System reboots. b. User brought to login page. 2. Incorrect credentials. a. System displays error message.

ID	UC-2
Use Case Name	Login
Author	Hameez/Bilal
Last revision	12/8/2022
Description	User credentials are validated from database
Primary actor	customer/admin
Supporting actor	database
Preconditions	UserID and password has been entered
Postconditions	Boolean returns for user credentials whether he has entered Correct credentials or not.
Main Success Scenario	1. UserID compared in database to check if any duplicate value is there. 2.If duplicate not found then 3. User is logged into system.
Extensions	1.System crashes. a.System reboots. b.User brought to login page. 2.Incorrect credentials. a.System displays error message.

ID	UC-3
Use Case Name	Register
Author	Hameez/Bilal
Last revision	12/8/2022
Description	A new user signs up as a customer.
Primary actor	customer/admin
Supporting actor	database
Preconditions	Customers enters login credentials and personal details
Postconditions	Customer data is validated and stored in database.
Main Success Scenario	4. Customer enters userID and password along with personal details. 5. System verifies if no duplication found in database. 6. Customer registered and can login in system.
Extensions	1. Customer ID already stored in database. a) Error shown for duplicate data. b) Customer asked again to re enter credentials.

	c) Credentials checked again in database. 2. System crashes. c. System reboots. d. User brought to login page. 3. Incorrect credentials. b. System displays error message.

ID	UC-4
Use Case Name	Forget Password
Author	Hameez/Bilal
Last revision	12/8/2022
Description	User Forgets password.
Primary actor	User/admin
Supporting actor	database
Preconditions	User must know ID
Postconditions	User resets his password.
Main Success Scenario	1. User re-enters userID and password. 3. System goes to database to check ID . 4. User password is reset of the corresponding ID in database.
Extensions	1.Customer ID not found in database. a) displays message customer ID not found. b) asks user to reenter customer id or register again. 2. System crashes. e. System reboots. f. User brought to login page. 4. Incorrect credentials. c. System displays error message.

ID	UC-5
Use Case Name	Store Customer details
Author	Hameez/Bilal
Last revision	12/8/2022

Description	Store customer details into database.
Primary actor	User/admin
Supporting actor	Database
Preconditions	Customer has been logged in .
Postconditions	Customer details have been stored in the database if not stored.
Main Success Scenario	7. If Customer details not entered in database. 8. This function will insert Customer details in db.
Extensions	5. System crashes. g. System reboots. h. User brought to login page. 6. Incorrect credentials. d. System displays error message.

ID	UC-6
Use Case Name	retrieve Customer details
Author	Hameez/Bilal
Last revision	12/8/2022
Description	retrieve customer details from database.
Primary actor	User/admin
Supporting actor	Database
Preconditions	Customer has been logged in.
Postconditions	Customer details have been stored in the database if not stored.
Main Success Scenario	9. Customer Id sent to database. 10. Database checks for the corresponding data lying on the row containing the matching customer ID. 11. Database returns customer data.
Extensions	7. System crashes. i. System reboots. j. User brought to login page. 8. Incorrect credentials. e. System displays error message.

ID	UC-7
Use Case Name	Add Customer Order
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Add new customer Order into database.
Primary actor	User/admin
Supporting actor	Database
Preconditions	Customer has been registered.
Postconditions	New customer order stored in database.
Main Success Scenario	1. Customer clicks on new Order. 2. Website asks for new order requirements. 3. Customer enters requirement and clicks submit. 4. New order added to database.
Extensions	1.System crashes. a. System reboots. b. User brought to login page. 9. Incorrect credentials. f. System displays error message.

	3. if item not available a) order not added. b) pop up of invalid order entered.

ID	UC-8
Use Case Name	update Customer Order
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Update existing customer Order and store into database.
Primary actor	User/admin
Supporting actor	Database
Preconditions	Customer has been registered.
Postconditions	Existing customer order updated in database.
Main Success Scenario	1. Customer clicks on update Order. 2. Website asks for order requirements. 3. Customer enters requirement and clicks submit. 4. Order updated and added to database.
Extensions	1.System crashes. c. System reboots. d. User brought to login page. 2. Incorrect credentials. a. System displays error message. 3. if order not found a) Customer brought back to orders page. b) pop up of no order found.

ID	UC-9
Use Case Name	Cash payed
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Check if cash if payed for customer's order.
Primary actor	User/admin
Supporting actor	Database

Preconditions	Customer has placed an order.
Postconditions	Customer payment is successful.
Main Success Scenario	1. Customer clicks on Payment. 2. Selects Cash. 3. Pays cash to the vendor. 4. Payment completed.
Extensions	1.System crashes. a. System reboots. b. User brought to login page. 2. Incorrect credentials. b. System displays error message..

ID	UC-10
Use Case Name	Pay authorized using card
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Check if payment has been authorized with card.
Primary actor	User/admin
Supporting actor	Database
Preconditions	Customer has placed an order.
Postconditions	Customer payment is successful.
Main Success Scenario	1. Customer clicks on Payment. 2. Selects credit. 3. Enters card NO and CC on the payment page. 4. Card authorized for payment. 5. Payment completed.
Extensions	1.System crashes. b. System reboots. c. User brought to login page. 2. Incorrect credentials. c. System displays error message.. 3. card not valid a)asks user to enter the card details again
ID	UC-11
Use Case Name	Print receipt
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Receipt is printed for the order after payment.
Primary actor	Customer/admin
Supporting actor	database
Preconditions	User has Payed for his order.
Postconditions	Final receipt is printed for the customer order.
Main Success Scenario	1. User enters completes his payment for his order. 2. A receipt is printed for his order .
Extensions	1.System crashes. 3. System reboots. 4. User brought to login page. 2.Incorrect credentials.

	g. System displays error message.

ID	UC-12
Use Case Name	Update Details
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Admin details are updated.
Primary actor	Customer/admin
Supporting actor	database
Preconditions	Admin has been logged in.
Postconditions	Admin details have been updated.
Main Success Scenario	1. Admin logs into the system. 2. Admin updates his details. 3. Server goes to the database and searches details for the admin ID. 4. Server updates the details of the admin in the database.
Extensions	1. System crashes. a. System reboots. b. User brought to login page. 2. Incorrect credentials. a. System displays error message. 3. if Admin Id not found in database a) message pops for Id not found b) admins goes back to admin page.

ID	UC-13
Use Case Name	Check stock
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Admin checks stock in the database if it is available.

Primary actor	Customer/admin
Supporting actor	database
Preconditions	Admin must be logged in.
Postconditions	System returns with a Boolean value .
Main Success Scenario	1. Admin clicks on check stock. 2. System checks for that item in the database. 3. If item found the system returns with true. 4. Else false
Extensions	1. System crashes. c. System reboots. d. User brought to login page. 2. Incorrect credentials. a. System displays error message.

ID	UC-14
Use Case Name	Restock
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Admin checks stock in the database if it is not available he restocks it.
Primary actor	Customer/admin
Supporting actor	Database
Preconditions	Admin must be logged in.
Postconditions	Item that is finished is restocked.
Main Success Scenario	1. Admin checks for a particular stock whether it is available or not. 2. If item not available then the admin will restock that particular item. 3. Item quantity will be updated in the database.
Extensions	1. System crashes. a. System reboots. b. User brought to login page. 2. Incorrect credentials. d. System displays error message.

ID	UC-15
Use Case Name	customCleared
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Admin clear container from customs
Primary actor	Customer/admin
Supporting actor	Database
Preconditions	Admin must be logged in.
Postconditions	Container is cleared and collected by the recipient
Main Success Scenario	1. Admin checks if containers are up for clearance. 2. Admin clears containers from port inventory. 3. Container is received by the customer.
Extensions	1. System crashes. a. System reboots. b. User brought to login page. 2. Incorrect credentials. a. System displays error message and asks admin user to enter correct credentials

ID	UC-16
Use Case Name	RefuelPrice
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Ships refuel price is calculated on the basis of its refuel duration
Primary actor	Admin/Ships
Supporting actor	Database
Preconditions	Customer must be logged in
Postconditions	Ships refuel price has been calculated
Main Success Scenario	1. Admin checks for the ships refuel time based on the records kept by the port staff 2. Ships refuel price is calculated on the basis of its time duration/fuel used
Extensions	1. System crashes. a. System reboots. b. User brought to login page. 2. Incorrect credentials. a. System displays error message.

ID	UC-17
Use Case Name	DockTimePrice
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Admin checks docktime of the ships and charges it a fare based on pre-decided rates.
Primary actor	Admin/Ships
Supporting actor	Database
Preconditions	Admin must be logged in.
Postconditions	Ships dock time fare is calculated
Main Success Scenario	1. Admin for how much time the ship has been docked. 2. Ship's dock time fare is calculated based on pre-decided rates 3. The function returns an integer value for the dockTime price.
Extensions	1. System crashes. a. System reboots. b. User brought to login page. 2. Incorrect credentials. a. System displays error message.

ID	UC-18
Use Case Name	GetNumberOfShips
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Admin checks the number of ships currently docked on a particular port
Primary actor	Admin/Ships
Supporting actor	Database
Preconditions	Admin must be logged in.
Postconditions	Number of ships docked on the port is displayed
Main Success Scenario	1. Admin is shown the list of currently connected port-terminals 2. Admin enters one of the ports in the given dialog box to see how many ships are currently docked on the particular port 3. The ships which specify the criteria are displayed on the screen.
Extensions	1. System crashes. a. System reboots. b. User brought to login page. 2. Incorrect credentials. a. System displays error message.

ID	UC-19
Use Case Name	Get number of customers
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Admins checks out the current number and record of users
Primary actor	Customer/admin
Supporting actor	Database
Preconditions	Admin must be logged in.
Postconditions	Admin can see how many customers have currently signed up for the web app.
Main Success Scenario	1. Admin logs in on the web app 2. Admin selects the customer tab 3. The systems shows all the users currently signed up for the web app.
Extensions	1. System crashes. a. System reboots. b. User brought to login page. 2. Incorrect credentials. a. System displays error message.

ID	UC-20
Use Case Name	Check stock
Author	Hameez/Bilal
Last revision	12/8/2022
Description	Admin checks stock in the database if it is available.
Primary actor	Customer/admin
Supporting actor	database
Preconditions	Admin must be logged in.
Postconditions	System returns with a Boolean value .
Main Success Scenario	5. Admin clicks on check stock. 6. System checks for that item in the database. 7. If item found the system returns with true. 8. Else false
Extensions	3. System crashes. e. System reboots. f. User brought to login page. 4. Incorrect credentials. b. System displays error message.

5. Non-functional Requirements

5.1. Performance Requirements

[The web app requires a system which has stable internet connectivity and the capability to run a web browser]

5.2. Safety Requirements

[Not Applicable]

5.3. Security Requirements

A Secure internet connection

5.4. User Documentation

Following user documentation will be provided with the software

1) Complete SRS Document

2) Use Case Description Files

3) UML Papyrus model diagrams

SDS

6. System Architecture

Following is the architecture of our web app

6.1. System Level Architecture

The front end is made upon:

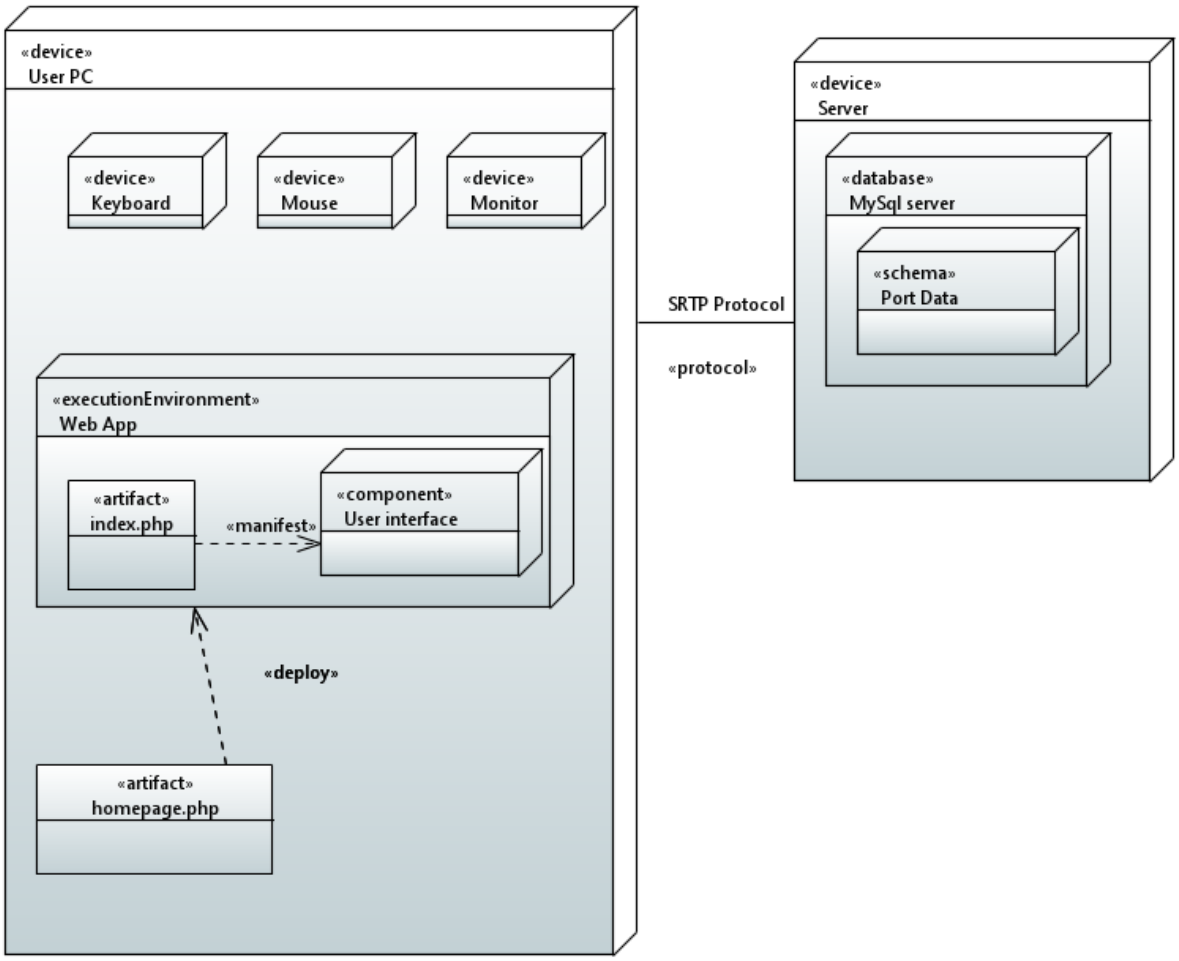
1) HTML
2) CSS
3) Bootstrap

The backend is made upon:

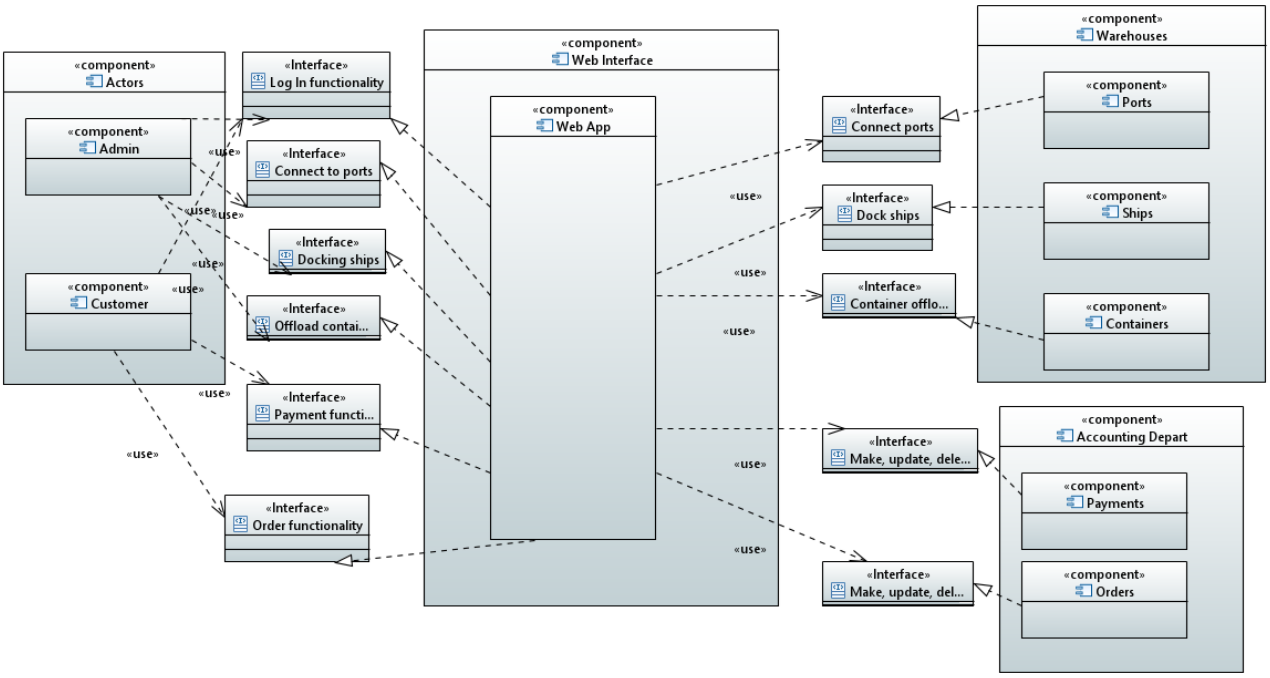
1) Php

The Database used is

1) MySql



6.2. Software Architecture



7. Design Strategy

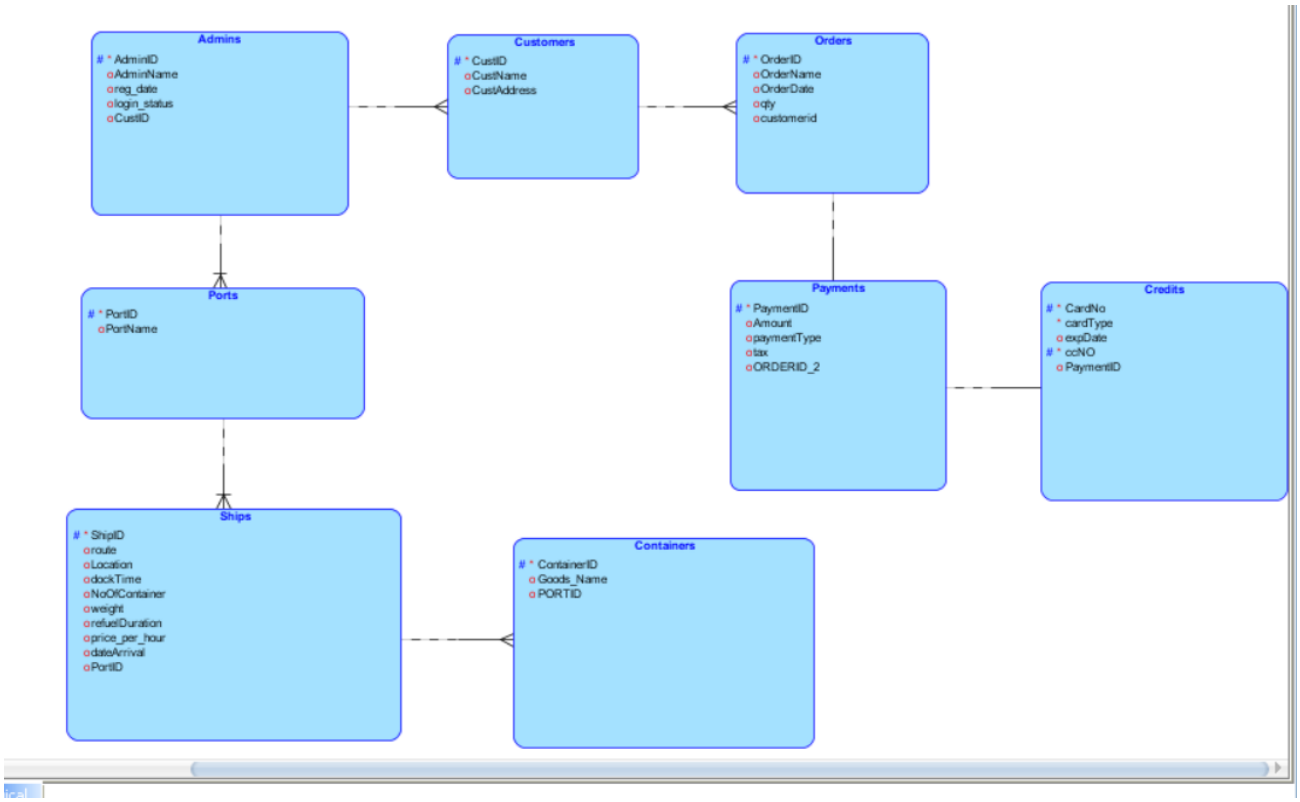
In our program we wanted to create a simple yet fully working project that focused on things that matter with a minimalist UI/UX.

8. Detailed System Design

8.1. Database Design

8.1.1. ER Diagram

[Entity Relationship Diagram of the system with description]



8.1.2. Data Dictionary

<Admin>	
Name	*Admin*
Alias	*None*
Where-used/how-used	*As a main actor of the program*
Content description	*Data dictionary for the admin table*

Column Name	***Description***	***Type***	***Length***	***Null able***	***Default Value***	***Key Type***
Adminid	None	varchar	*10*	*No*	*None*	*Primary Key*
AdmiName	None	*varchar*	*20*	*No*	*None*	*No*
Regdate	None	Date		No	No	No
Adminpaswo rd	None	Varachar	10	No	No	No
LoginSatus	None	Tinyint	1	No	No	No

<Container>						
Name	Container					
Alias	*None*					
Where-used/how-used	*As a main actor of the program*					
Content description	*Data dictionary for the container table*					
Column Name	***Description***	***Type***	***Length***	***Null able***	***Default Value***	***Key Type***
Containerinfo	None	varchar	*10*	*No*	*None*	*Primary Key*
GoodsName	None	*varchar*	*20*	*No*	*None*	*No*
ShipId	None	Varchar	10	No	No	No

<Credit >						
Name	*Credit*					
Alias	*None*					
Where-used/how-used	*As a main actor of the program*					
Content description	*Data dictionary for the credit table*					
Column Name	***Description***	***Type***	***Length***	***Null able***	***Default Value***	***Key Type***
CardNo	None	Int	*16*	*No*	*None*	*Primary Key*
CCNo	None	*Int*	*3*	*No*	*None*	*No*
ExpDate	None	Date		No	No	No
CardType	None	Varachar	10	No	No	No
PaymentId	None	Varchar	10	No	No	No

<Customer>						
Name	Customer					
Alias	*None*					
Where-used/how-used	*As a main actor of the program*					
Content description	*Data dictionary for the customer table*					
Column Name	***Description***	***Type***	***Length***	***Null able***	***Default Value***	***Key Type***
CustId	None	varchar	*10*	*No*	*None*	*Primary Key*
CustName	None	*varchar*	*20*	*No*	*None*	*No*
CustAddress	None	Varchar	50	No	No	No
CustAddress	None	Varachar	10	No	No	No

<Orders >						
Name	*Order*					
Alias	*None*					
Where-used/how-used	*As a main actor of the program*					
Content description	*Data dictionary for the Order table*					
Column Name	***Description***	***Type***	***Length***	***Null able***	***Default Value***	***Key Type***
Orderid	None	varchar	*10*	*No*	*None*	*Primary Key*
OrderName	None	*varchar*	*20*	*No*	*None*	*No*
OrderDate	None	Date		No	No	No
Qty	None	Int	3	No	No	No
CustId	None	Varchar	10	No	No	No

<Payments>						
Name	*Payments*					
Alias	*None*					
Where-used/how-used	*As a main actor of the program*					
Content description	*Data dictionary for the payments table*					
Column Name	***Description***	***Type***	***Length***	***Null able***	***Default Value***	***Key Type***
PaymentId	None	varchar	*10*	*No*	*None*	*Primary Key*
Amount	None	*Int*	*6*	*No*	*None*	*No*
PaymentType	None	Varchar	10	No	No	No
Tax	None	Int	6	No	No	No
OrderId	None	Varchar	10	No	No	No

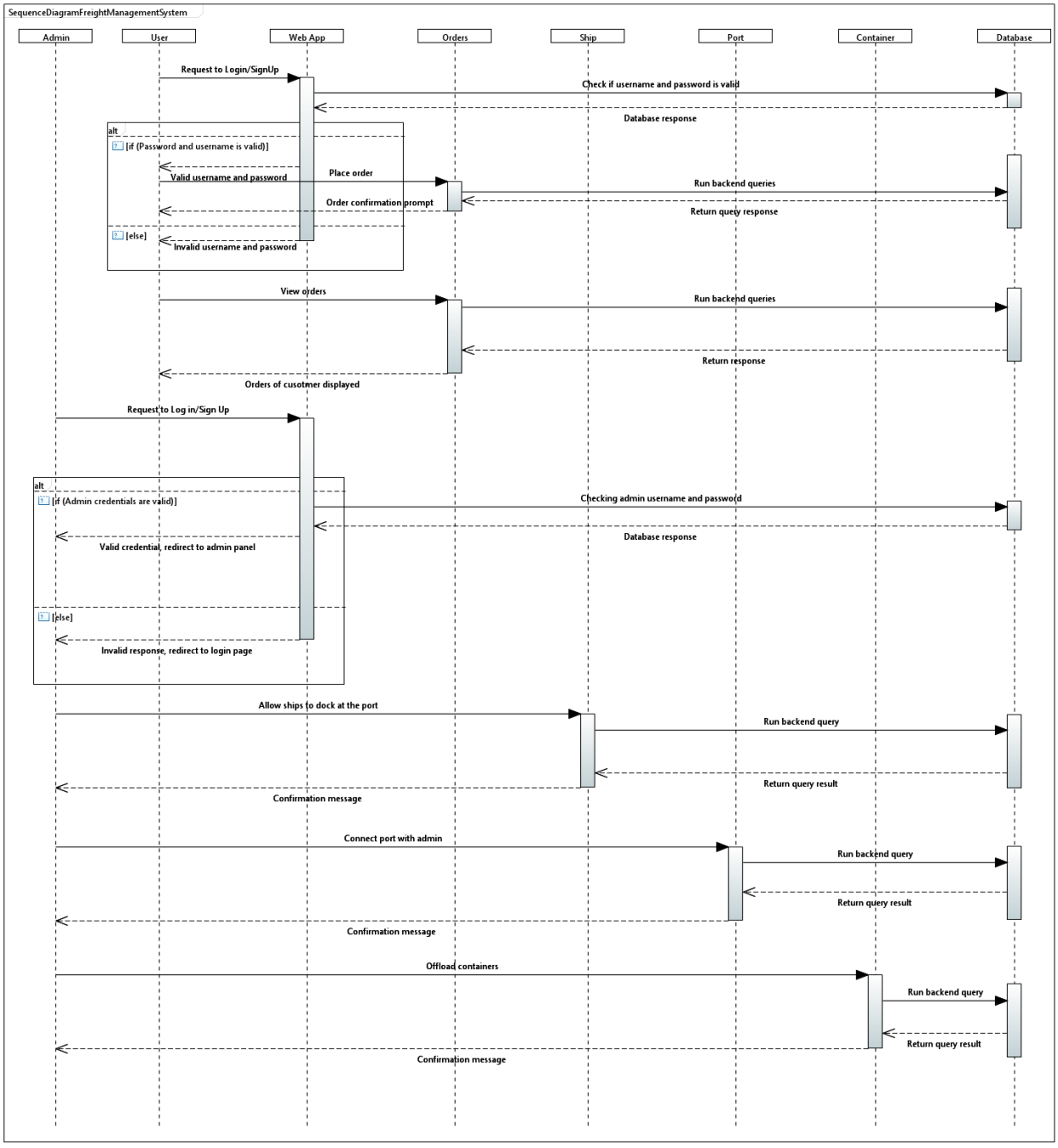
<Ports>						
Name	*Ports*					
Alias	*None*					
Where-used/how-used	*As a main actor of the program*					
Content description	*Data dictionary for the ports table*					
Column Name	***Description***	***Type***	***Length***	***Null able***	***Default Value***	***Key Type***
PortId	None	varchar	*10*	*No*	*None*	*Primary Key*
PortName	None	*varchar*	*20*	*No*	*None*	*No*

<Ships >						
Name	*Ships*					
Alias	*None*					
Where-used/how-used	*As a main actor of the program*					
Content description	*Data dictionary for the Ships table*					
Column Name	***Description***	***Type***	***Length***	***Null able***	***Default Value***	***Key Type***
ShipId	None	varchar	*10*	*No*	*None*	*Primary Key*
Route	None	*varchar*	*10*	*No*	*None*	*No*
Location	None	Varchar	20	No	No	No
Docktime	None	Time		No	No	No
NoOfContainers	None	Int	4	No	No	No
Weight	None	Int	4	No	No	No

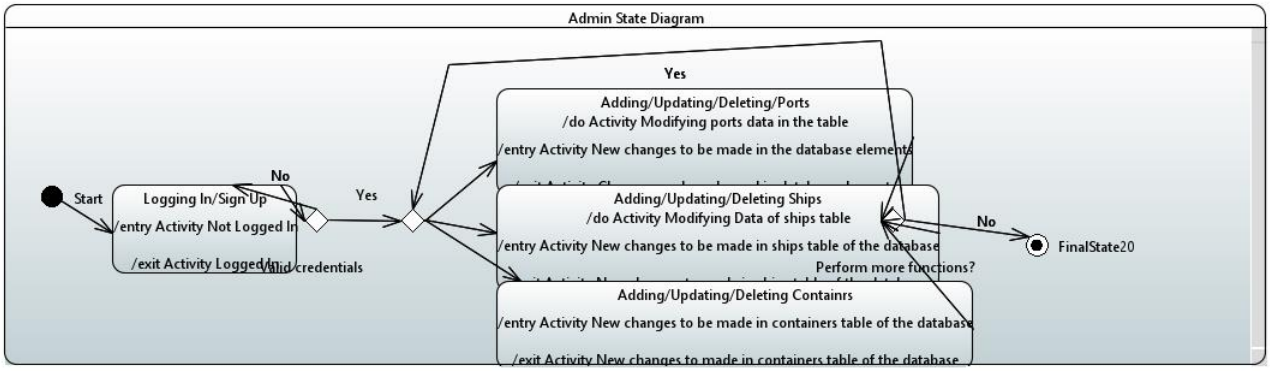
RefuelDuration	None	Int	3	No	No	No
PricePerHour	None	Int	6	No	No	No
ArrivalDate	None	Date		No	No	No
PortId	None	Varchar	10	No	No	No

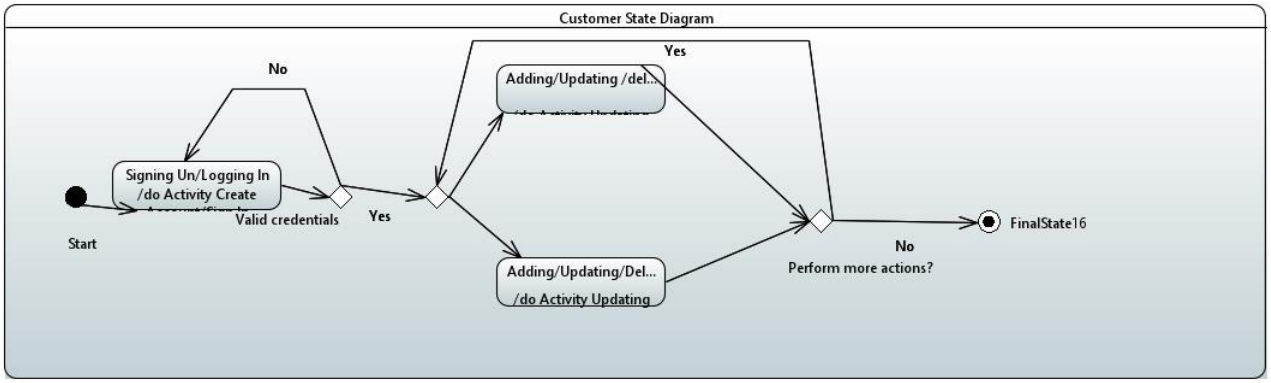
9. Application Design

9.1.2. Sequence Diagram

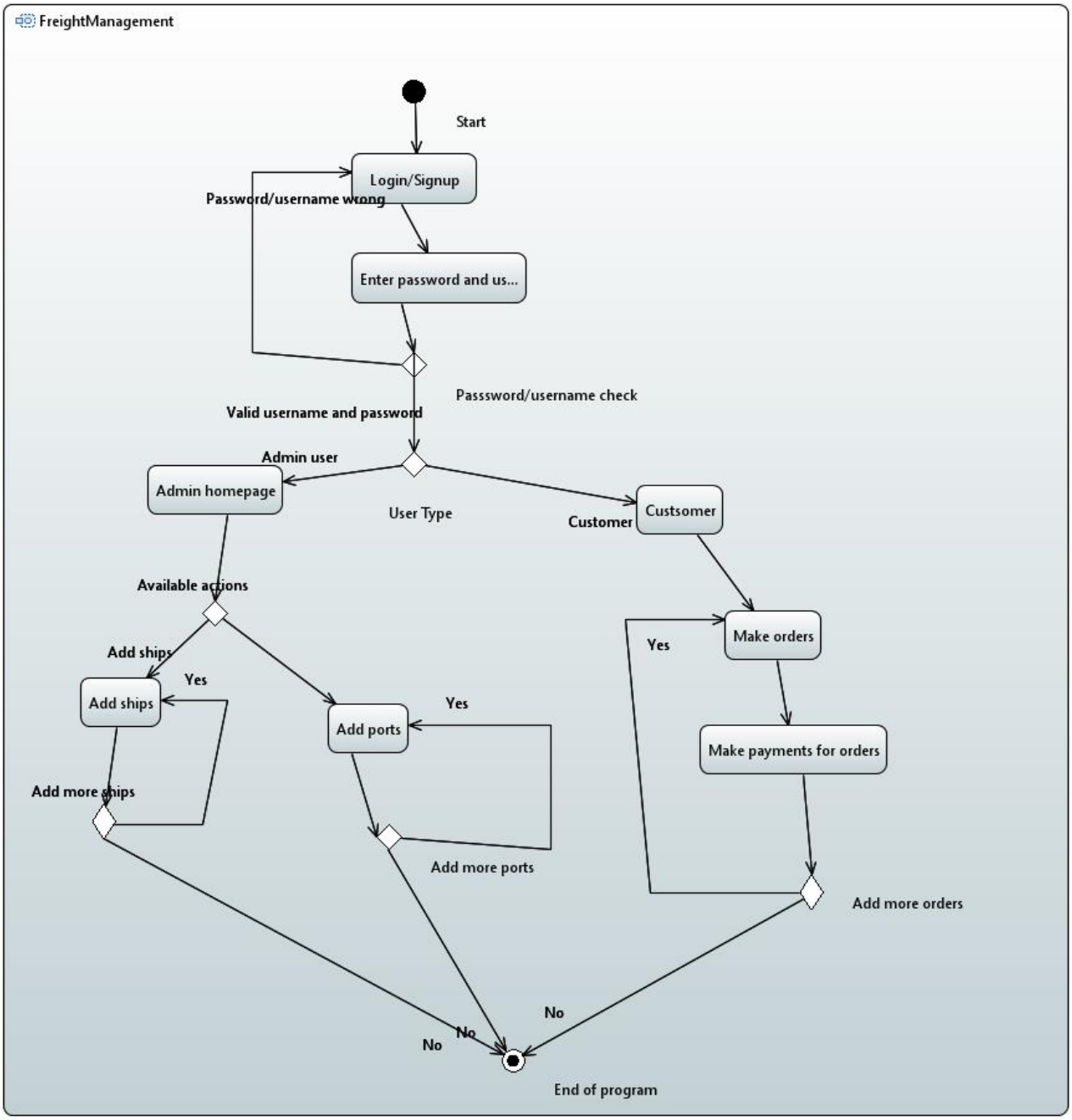


9.1.3. State Diagram





9.1.4. Activity Diagram



10. References

[Not applicable]

11. Appendices

[Not Applicable]