E-Transport Marketplace App

SOFT20091 COURSEWORK 2023

NOTTINGHAM TRENT UNIVERSITY

Nyein Khaing(T0279186)

Lab Tutor: Nuno Rodrigues Amalio

Contents

A general overview of the e- transport marketplace system

Adopting advanced technology has become vital to streamlining and improving many parts of corporate operations in the rapid changing environment of the modern world. Our eCommerce system, which is built around a set of classes that stand in for key entities, provides a sneak preview of what an e-transport marketplace system might be capable of. This system involves the ideas of digital transformation to improve the way logistics and

transport services are performed, with a focus on cargo owners, transport companies, and drivers.

The heart of the system lies in a series of meticulously designed classes. The Cargo class contains essential data about cargo items, making managing and tracking them effective. The CargoOwner, TransportCompany, and Driver classes, each designed for the specific roles they represent, are added to this. In addition to storing important data like usernames, passwords, and contact information, these classes make it easier to create and retrieve cargo orders, which is an important phase in the logistics process as a whole.

To facilitate user interaction, the system offers a suite of functions. The inputCargoDetails function provides a user-friendly way to input cargo-specific attributes, ensuring accurate data entry. The registerCargoOwner, registerTransportCompany, and registerDriver functions simplify user onboarding, enabling the creation of distinct profiles with relevant details. The login function forms the gateway for users to access their accounts, employing a secure authentication process.

The driving force behind our eCommerce system is the main function, orchestrating the entire user experience. A extensive menu is provided to users, allowing them to navigate easily through the registration process, log in, or exit the system. This rational progress provides a user-friendly interface that encourages simplicity of use and efficient navigation.

Importantly, this system establishes the framework for an e-transport marketplace, an idea with broad potential in the modern world. This sort of market is essential due to the increase in digital connectivity and the requirements for greater efficiency. Businesses may achieve previously unattainable levels of operational efficiency by digitising and centralising the processes involved in cargo management, transportation, and communication. Additionally, the inclusion of cargo owners, transportation providers, and drivers in a unified digital ecosystem encourages transparency, encourages teamwork, and is completely in line with the worldwide shift towards interconnection and data-driven decision-making.

A description of how cohesion and coupling have been considered in the class design.

Cohesion

The Cargo class displays high cohesion. It includes attributes and methods that are specifically relevant to cargo information, such as weight, dimensions, and conditions. The class has a clear and specific role because every method in the class is dedicated to handling cargo-specific data.

Additionally, there is considerable cohesiveness between the Driver, TransportCompany, and CargoOwner classes. The roles of each class are clearly defined because to the inclusion of attributes and methods appropriate to each role (e.g., CargoOwner stores owner-related data, TransportCompany stores company-related data, etc.).

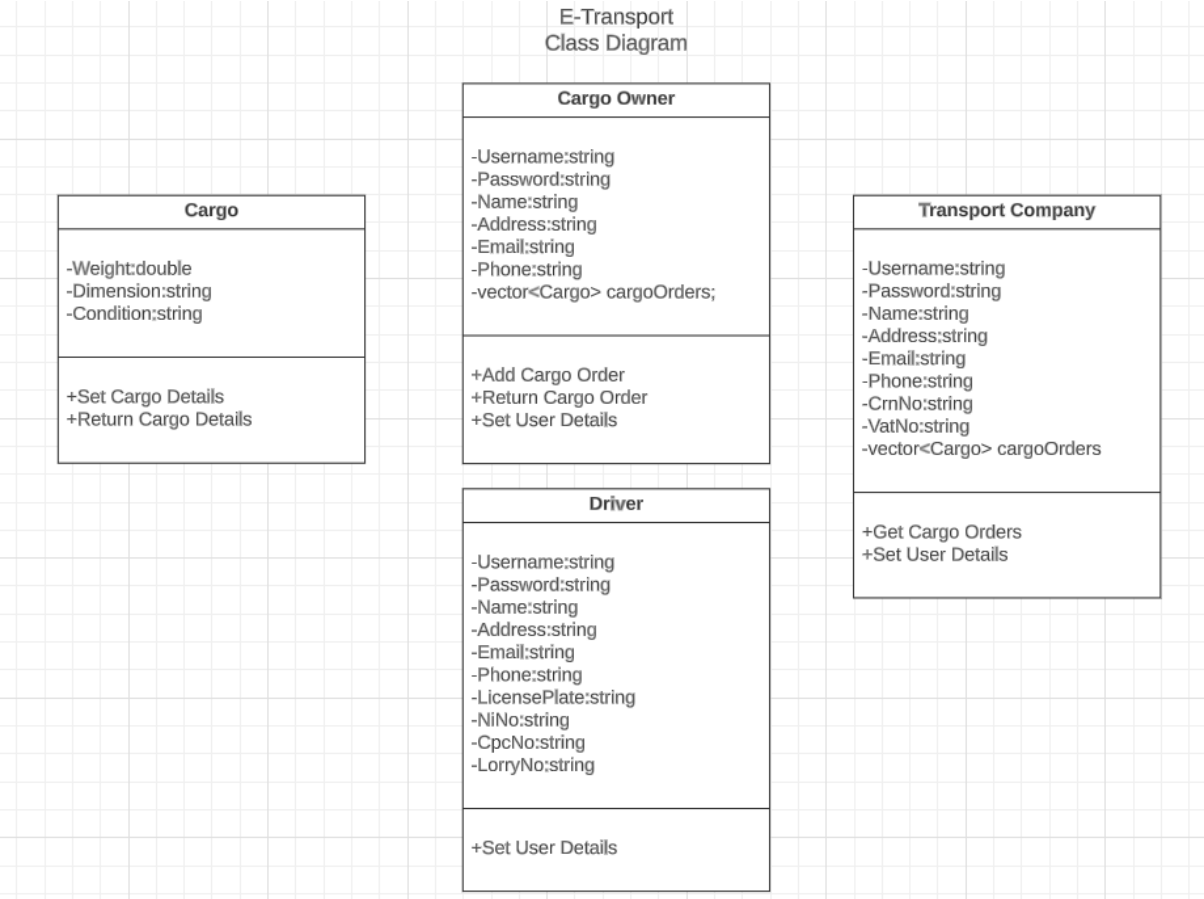
Coupling

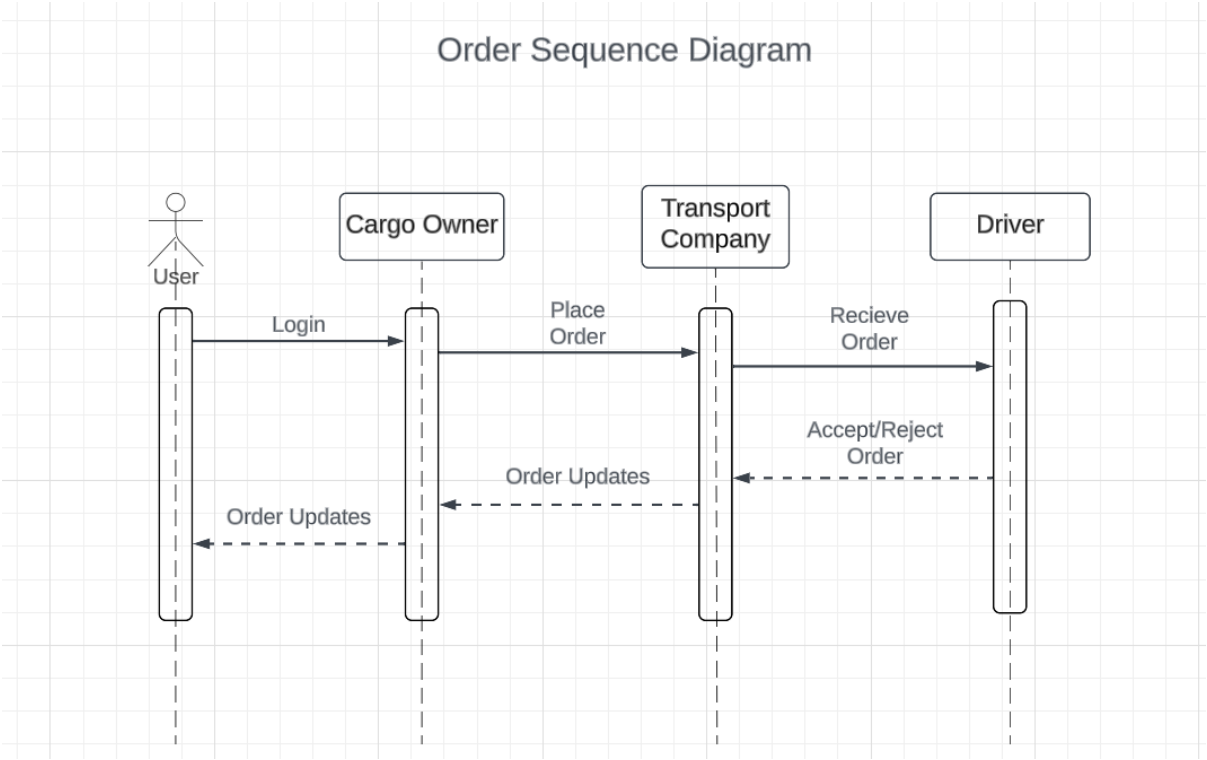
Low coupling exists between the Cargo class and other classes. It focuses mostly on data relating to cargo and doesn't rely much on interactions with other types.

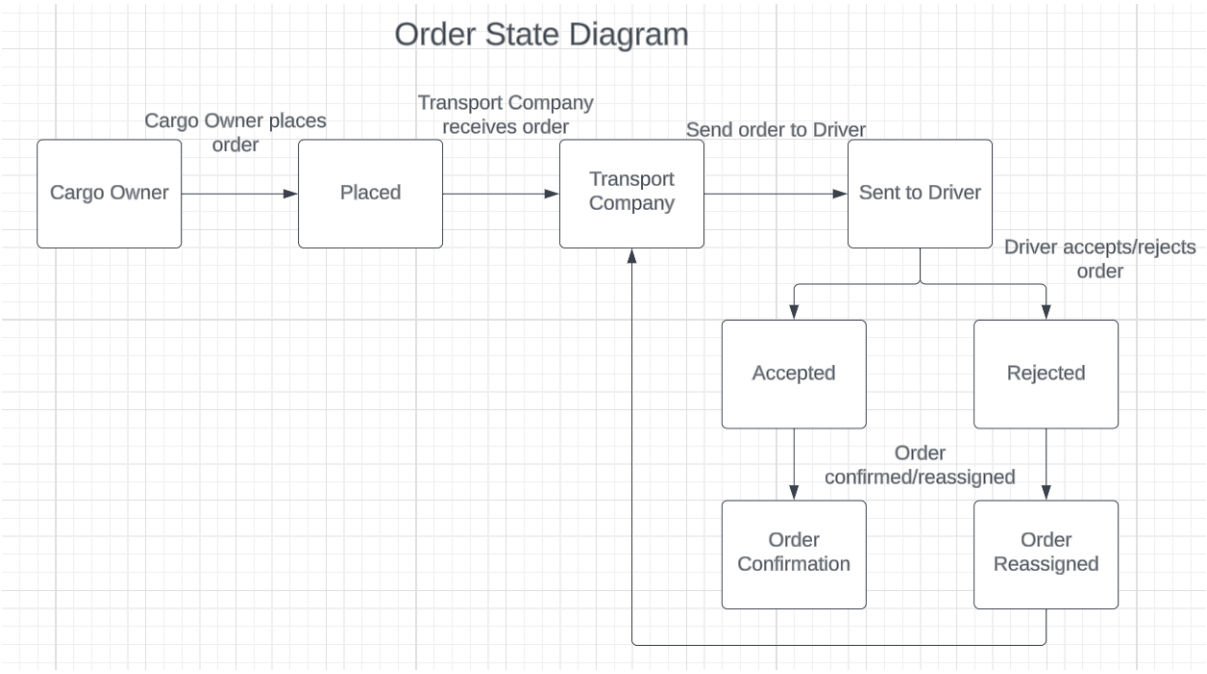
The CargoOwner, TransportCompany, and Driver classes exhibit low coupling as well. While these classes interact with each other indirectly (e.g., cargo owners and transport companies may place orders), their interactions are mediated through well-defined interfaces and methods, minimizing direct dependencies.

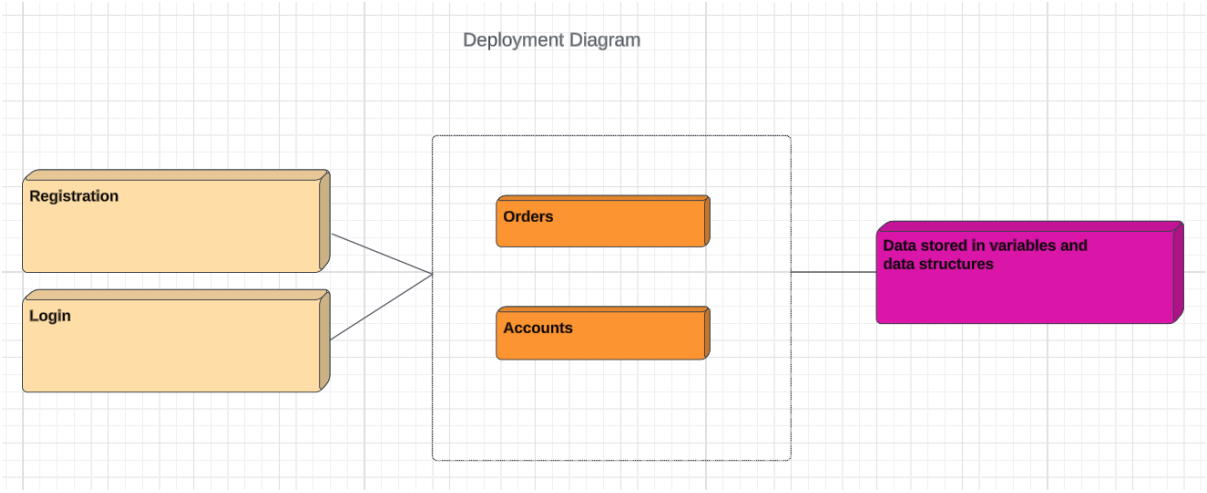
By offering separate interfaces for cargo owners, transport companies, and drivers, the login function exemplifies loose coupling. The actions of each user type are isolated, which minimizes direct interactions between the corresponding classes.

Illustrations of Diagrams




Order Sequence Diagram
User
Cargo Owner
Transport Company
Driver
Login
Place Order
Recieve Order
Accept/Reject Order
Order Updates
Order Updates


Order State Diagram
Cargo Owner
Cargo Owner places order
Placed
Transport Company receives order
Transport Company
Send order to Driver
Sent to Driver
Driver accepts/rejects order
Accepted
Rejected
Order confirmed/reassigned
Order Confirmation
Order Reassigned



A brief explanation of any relevant part of the implementation

Data Structures:

Vectors: Vectors (from the <vector> library) are used to store collections of objects for cargo owners, transport companies, and drivers. Vectors provide dynamic sizing and efficient random access. They are employed to manage and store cargo orders, as well as user profiles.

Relevant Classes:

Cargo, CargoOwner, TransportCompany, Driver: These classes encapsulate data related to cargo, cargo owners, transport companies, and drivers, respectively. They serve as structured containers to hold relevant attributes and methods, promoting modularity and encapsulation.

A brief user manual and instruction of the software developed.

User Manual: E-Commerce Transport Marketplace

Introduction:

Welcome to the E-Commerce Transport Marketplace software! This application is designed to facilitate seamless interactions between cargo owners, transport companies, and drivers. By leveraging this platform, you can efficiently manage cargo orders, streamline communication, and enhance your logistics operations.

Getting Started:

E-commerce Transport Marketplace User Guide

Starting Off:

To launch the application, run the programme.

There will be a main menu with several choices shown. Enter the corresponding number to select the appropriate action.

Registration:

Select option 1 to begin the registration process to become a cargo owner. When prompted, provide your information, including your username, password, name, address, email address, and phone number.

Choose option 2 to register as a transport company. Enter your company's username, password, name, address, phone number, CRN (Company Registration Number), and VAT (Value Added Tax) information.

A main menu will be displayed with various options. Choose the appropriate action by entering the corresponding number.

Registration:

To register as a Cargo Owner, select option 1. Follow the prompts to provide your details, including username, password, name, address, email, and phone number.

To register as a Transport Company, select option 2. Provide company details such as username, password, name, address, email, phone, CRN (Company Registration Number), and VAT (Value Added Tax) number.

To register as a Driver, select option 3. Enter your information, including username, password, name, address, email, phone, license plate, NI (National Insurance) number, CPC (Certificate of Professional Competence) number, and lorry number.

Logging In:

Choose option 4 from the main menu to log in.

Enter your username and password as prompted.

Depending on your user type (Cargo Owner, Transport Company, or Driver), you'll be directed to your respective dashboard.

Cargo Owner Dashboard:

Add a Cargo Order:

a. Select option 1.

b. Enter cargo details such as weight, dimensions, and conditions.

c. Your cargo order will be added to your account.

Transport Company Dashboard:

View Cargo Orders:

a. Select option 1.

b. All cargo orders associated with your company will be displayed, including weight, dimensions, and conditions.

Driver Dashboard:

As a driver, you currently have limited functionality, including registration and login. Further features for drivers can be added in the future.

Exiting the Application:

To exit the application, select option 5 from the main menu.

Thank you for using the E-Commerce Transport Marketplace software!

Test Plans

ID	01	Description:	Accounts must be created successfully, testing options take you to correct place, data entered is stored correctly.
Test type	Qualitative	Success criteria:	Successfully create accounts, not able to input invalid data to form options.
Number of attempts	3	Comments:	Testing was mostly successful, could input invalid data in forms which could cause errors if this was a real commercial product.
List of requirements	Accounts created; correct account details inputted.		
Setup instructions	Run program, test if accounts create successfully.		
Failure correction procedure	Check debugger for error -> solve error, research if required.		
Individual results:	Worked as intended, results successful.		
Test Date:	07/08/23	Date:	07/08/23

ID	02	Description:	Testing login with account details after registration.
Test type	Qualitative	Success criteria:	Users should be able to log into the correct account type based on their inputted valid username and password.
Number of attempts	3	Comments:	Testing was successful.
List of requirements	Recognition of username and password with related account type.		
Setup instructions	Register account, try to login with registered account details.		
Failure correction procedure	Check debugger for error -> solve error, research if required.		
Individual results:	Testing was successful.		
Test Date:	07/08/23	Date:	07/08/23

ID	03	Description:	Testing if cargo owners can create an order.
Test type	Qualitative	Success criteria:	Cargo owners can successfully create an order with the necessary information.
Number of attempts	3	Comments:	Initially wasn't working as intended, but after a bit of debugging I managed to solve the issue successfully.
List of requirements	Cargo owner should be able to submit all required information, data should be stored in vector ready for it to be accessed later by the transport company.		
Setup instructions	Login to cargo owner account, press option to create order, test if data is submitted successfully.		
Failure correction procedure	Check debugger for error -> solve error, research if required.		
Individual results:	Found errors, resolved issue.		
Test Date:	07/08/23	Date:	07/08/23

ID	04	Description:	Testing if transport company received order details.
Test type	Qualitative	Success criteria:	Transport company can view placed order details.
Number of attempts	3	Comments:	Works as intended.
List of requirements	Place order from cargo owner account, login to transport company account, view orders to see if order details are shown and correct.		
Setup instructions	Login to company account and view orders.		

Failure correction procedure	Check debugger for error -> solve error, research if required.		
Individual results:	No issues.		
Test Date:	07/08/23	Date:	07/08/23

ID	05	Description:	Testing back to main menu and exit program options.
Test type	Qualitative	Success criteria:	Back to main menu will take you to the menu and exit program option will end the application.
Number of attempts	3	Comments:	Works as intended.
List of requirements	Buttons should function as intended, self-explanatory by their names.		
Setup instructions	Login to any account to test the back to main menu option, test the exit program option in the main menu.		
Failure correction procedure	Check debugger for error -> solve error, research if required.		
Individual results:	No issues.		
Test Date:	07/08/23	Date:	07/08/23

Github

https://olympuss.ntu.ac.uk/T0279186/SDI_resubmission