

GIT Department of Computer Engineering
CSE 222/505 - Spring 2020
Homework 1 Report

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1. SYSTEM REQUIREMENTS

We are designing a cargo company system. This system has 4 type of user. Such as administrator, branch employee, transportation employee and customer. These users can perform some operations in the cargo system as per their authorization. Operations are adding and removing branches, shipments, adding and removing employees.

To create an administrator in the system, the name and id of the admin must be entered as a string.

The administrator can add branches, branch employees and transportation employees. And branch employees can add customers.

Customers, administrators, branch employees and transportation employees are the subclasses of CargoCompanyUser class. So all these types has the values as name and id informations as type of string.

Data of the Cargo company system kepted in arrays. These array's types are shows differencies for the value will be keeping. Branch and transportation employee and customer arrays are type of CargoCompanyUser. Branch informations kepted as string and shipments kepted as Shipment type.

Initially, the sizes of all arrays are equal to 0. As elements are added to arrays, their sizes are automatically increased, and there is no problem of exceeding the size of the array.

If the users are tries to delete an element that does not exist in the arrays, all remove methods throws exception. Such as an administrator can not remove non-exist branch or branch employee from the system, program throws exception.

Transportation employee can update the status of the package.

An existing user in the system can see the information of that package by entering the tracking number of a package.

To add a package to the system, the sender, receiver, tracking number and status information of the package must be entered as a string.

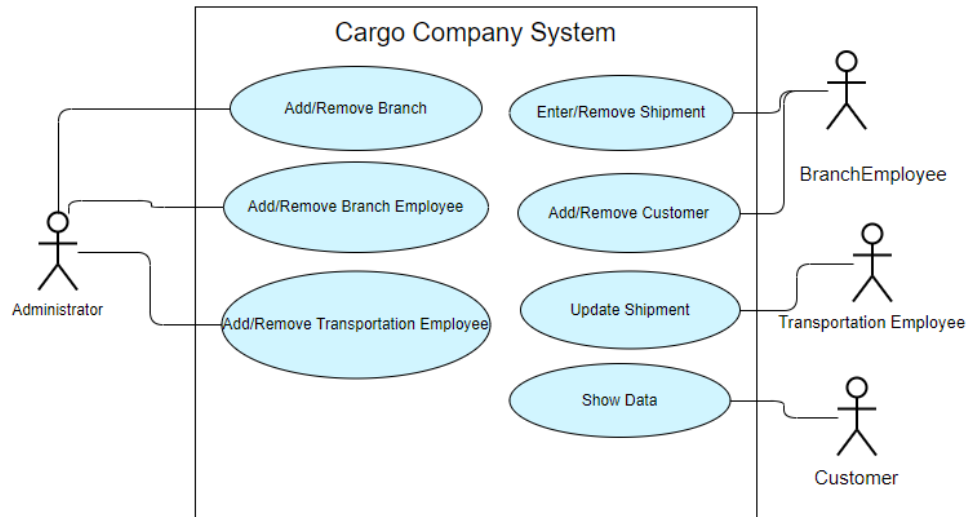
2. USE CASE DIAGRAMS

Administrator can add and remove branch, branch employees and transportation personnel.

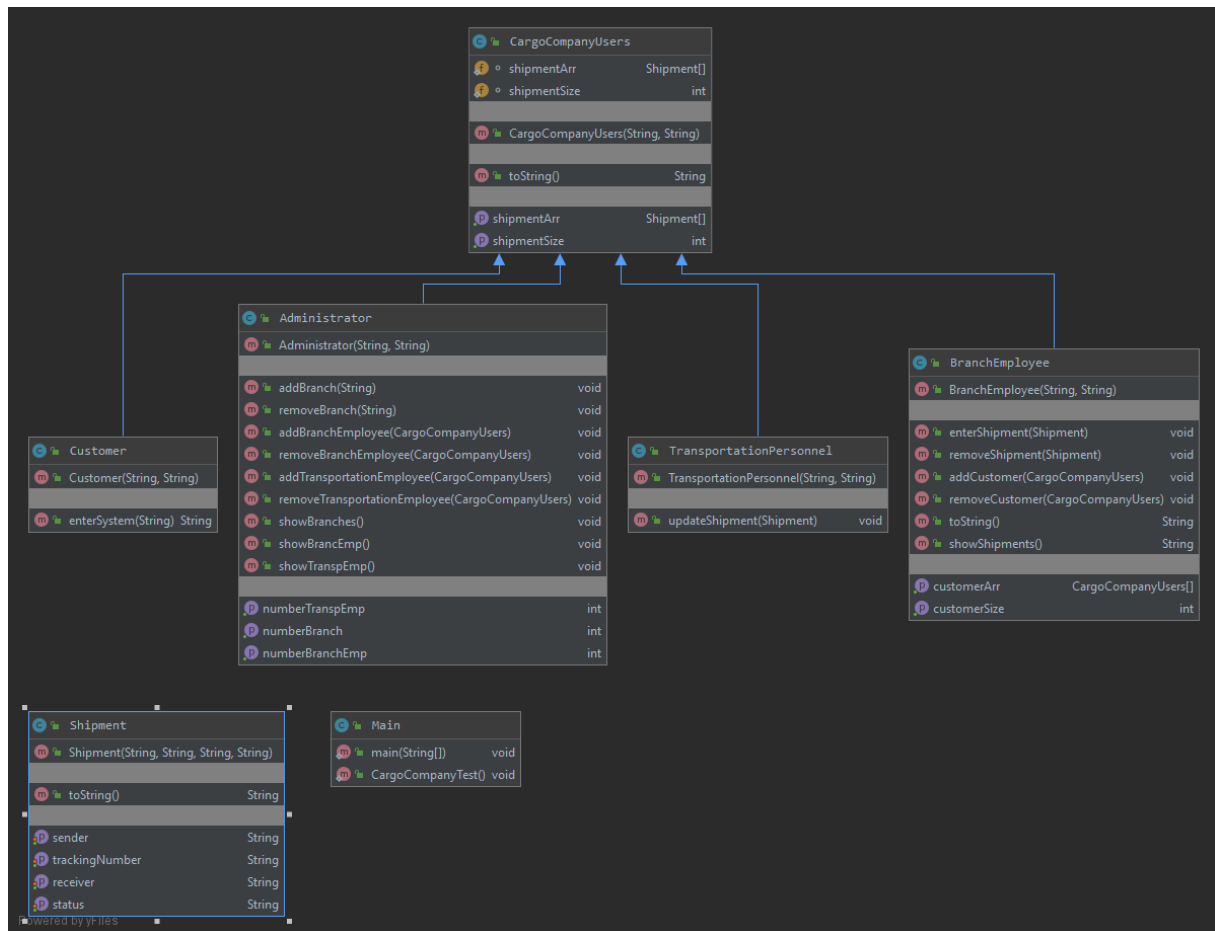
Branch employee can add and remove shipment and customer.

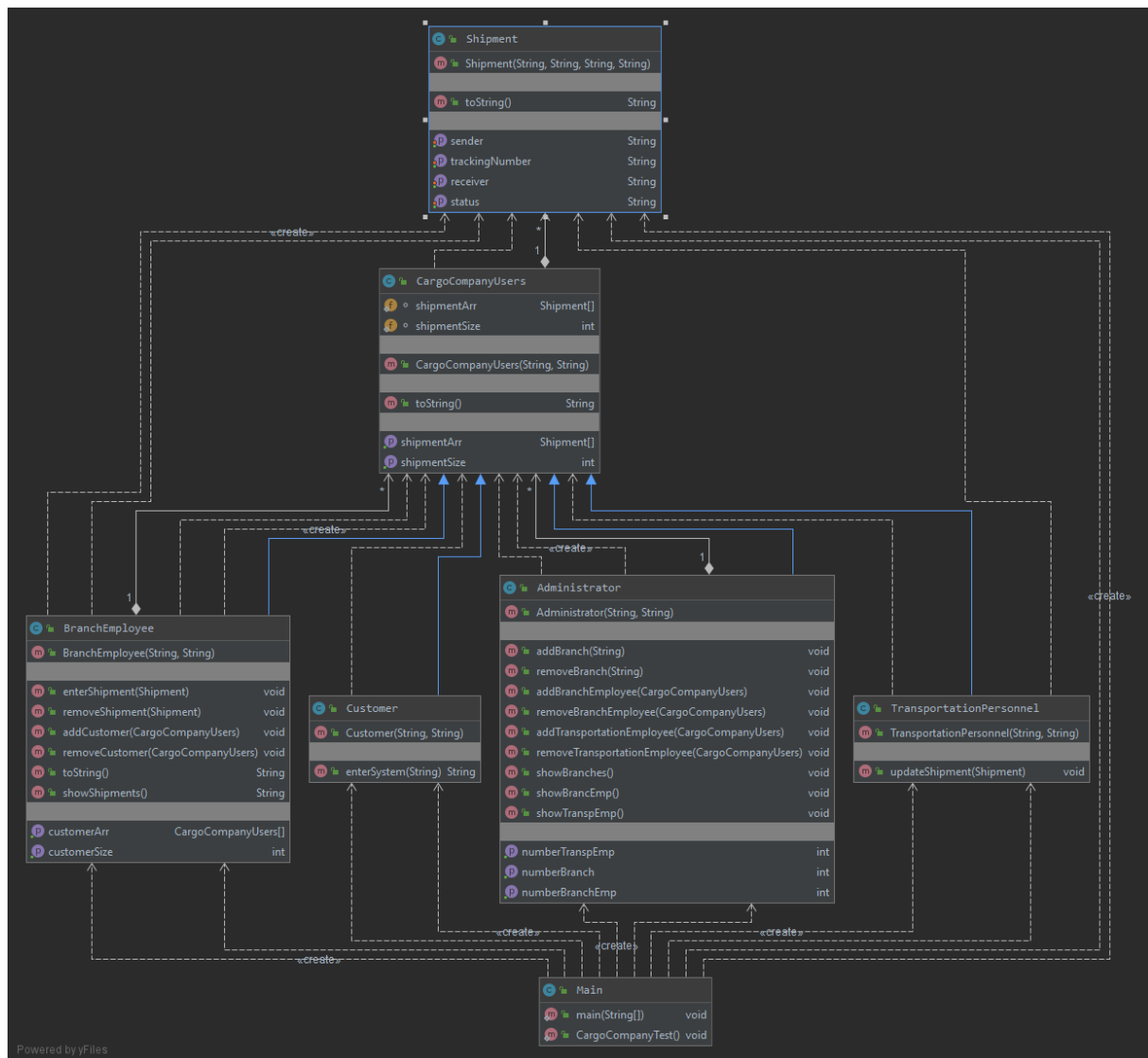
Transportation personnel can update the shipment's status.

Customer can see shipment's informations.



3. CLASS DIAGRAMS





CargoCompanyUsers is a super class which has general properties for users of the system. It has name and id data fields as string. It has methods get/set for name and id fields. Also this class has shipment array and shipment size data fields. Because subclasses can make changes on the shipments. Also toString method overridden for this class to represent users' information as name and id.

Administrator class extends from CargoCompanyUsers class. It has extra data fields for keeping other users as array. It has methods add/remove branch (parameter must be string), add/remove branch employee and add/remove transportation employee (parameter must be CargoCompanyUser object). Administrator class has three methods for showing branch, branch employee, and transportation employee. These methods print the arrays to the screen.

BranchEmployee class extends from CargoCompanyUsers class. It has extra data fields as array for keeping customers and shipments. Customers have to be type of CargoCompanyUser and shipments have to be type of Shipment. The method toString is overridden for printing customer information to the screen. Also there is another method for showing shipments. Branch employee can add/remove customers and shipments to the system.

Transportation employee class extends from CargoCompanyUsers class. Transportation employee can update the shipment's situation with method update shipment. This class makes changes on super class's shipment array.

Customer class extends from CargoCompanyUsers class. Customer can enter the system with tracking number of the shipment and see the shipment's information. If tracking number does not matches any of the shipments it throws exceptions.

Shipment is another class for representing package. It has data fields for sender,receiver,tracking number and status. These informations can change by set methods and seen by get methods.Also toString method is overridden fort his class for printing screen packages all informations.

Main class includes two methods. One is static main method which takes string arguments.In this method the test method called. CargoCompanyTest method is creates objects for system and calls every method for every system to show how cargo company is working.

4. OTHER DIAGRAMS

No additional diagram is required as the operations performed are explained with the use case and class diagrams.

5. PROBLEM SOLUTION APPROACH

To creating an employee of the Cargo company system,all users has to be type of CargoCompanyUser.

An administrator can employ employees and opens branches, administrator also can delete branches and the employees from the system.

After a branch employee added to the system, this employee can add customers and shipments to system. Customer has be type of CargoCompanyUser and for adding a shipment, a new class needed for representing the package.

Shipment class has shipments informations like sender,receiver,tracking number and status.

When a shipment added to a branch by branch employee, its status changes as "Entered the branch" and if it removed its status changes as "Leaved branch".

Transportation employee makes the deliver. So it can update the shipments situation as "Reached to the receiver".

A customer can enter the system with package tracking number. If the number exist in the cargo company system's shipments,it can see all information about that shipment, otherwise an error message given.

6. TEST CASES

-Administrator created.

-Administrator's addBranch method tested for four times,and these branches added to the system.

-Administrator's removeBranch method tested and one of the branches deleted from the system.

-Administrator's addBranchEmployee method tested and branch employees added to the system, after that removeBranchEmployee method tested and one branch employee deleted from the system.

- Administrator's addTransportationEmployee method tested and transportation employees added to the system, after that removeTransportationEmployee method tested and one transportation employee deleted from the system.

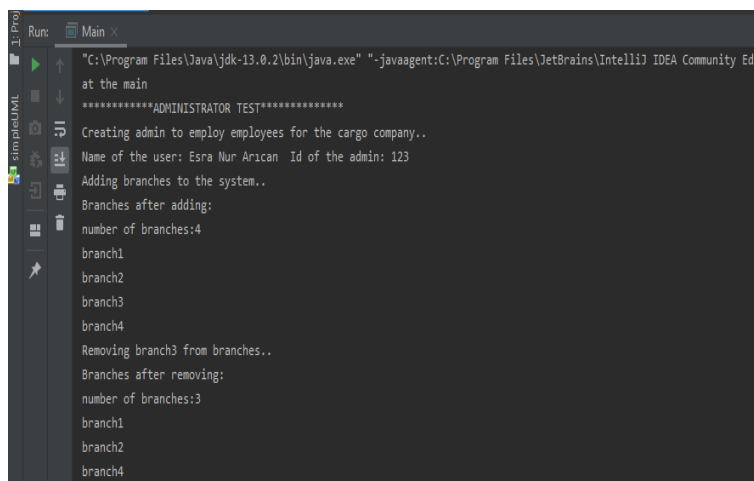
-To test the addShipment method , shipment objects created. Shipments added to the system by branch employee. After that one shipment used in removeShipment method,shipment's method changed as "Leaved branch".

-Transportation employee delivered the shipment which was leaved from the branch. Package's status changed as "Reached to the receiver".

-To test the customer, one of the customers which added system by branch employee entered the system with tracking number. Customer entered two tracking number and saw packages informations.

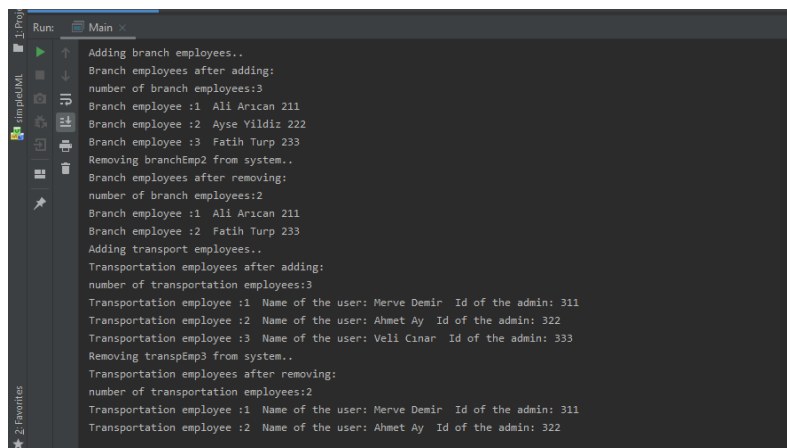
7. RUNNING AND RESULTS

Creating admin and adding,removing branches.



```
Run: Main x
"C:\Program Files\Java\jdk-13.0.2\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Ed
at the main
*****ADMINISTRATOR TEST*****
Creating admin to employ employees for the cargo company..
Name of the user: Esra Nur Arican Id of the admin: 123
Adding branches to the system..
Branches after adding:
number of branches:4
branch1
branch2
branch3
branch4
Removing branch3 from branches..
Branches after removing:
number of branches:3
branch1
branch2
branch4
```

Adding and removing branch employees and transportation personnel.



```
Run: Main x
Adding branch employees..
Branch employees after adding:
number of branch employees:3
Branch employee :1 Ali Arican 211
Branch employee :2 Ayse Vildiz 222
Branch employee :3 Fatih Turp 233
Removing branchEmp2 from system..
Branch employees after removing:
number of branch employees:2
Branch employee :1 Ali Arican 211
Branch employee :2 Fatih Turp 233
Adding transport employees..
Transportation employees after adding:
number of transportation employees:3
Transportation employee :1 Name of the user: Merve Demir Id of the admin: 311
Transportation employee :2 Name of the user: Ahmet Ay Id of the admin: 322
Transportation employee :3 Name of the user: Veli Cinar Id of the admin: 333
Removing transpEmp3 from system..
Transportation employees after removing:
number of transportation employees:2
Transportation employee :1 Name of the user: Merve Demir Id of the admin: 311
Transportation employee :2 Name of the user: Ahmet Ay Id of the admin: 322
```

```
Run: Main x
*****BRANCH EMPLOYEE TEST*****
Adding customers to the branch..
Customers at the branch after adding..
Customer :1 Name of the user: John Gruber Id of the admin: 10
Customer :2 Name of the user: Kevin Murray Id of the admin: 20
Customer :3 Name of the user: David Stan Id of the admin: 30
Customer :4 Name of the user: Elly Jensen Id of the admin: 40

Removing customer 2 from the system..
Customers at the branch after removing..
Customer :1 Name of the user: John Gruber Id of the admin: 10
Customer :2 Name of the user: David Stan Id of the admin: 30
Customer :3 Name of the user: Elly Jensen Id of the admin: 40
```

Adding and removing customers by branch employee.

Adding shipments.

```
***Shipments after entering the branch..***
-----Shipment number 1-----
Tracking number of the package: 12345
Sender information of the package: Esra Gunduz
Receiver information of the package: Tugce Ekin
Current status of the package: Entered the branch
-----Shipment number 2-----
Tracking number of the package: 67890
Sender information of the package: Elif Soylu
Receiver information of the package: Başak Deniz
Current status of the package: Entered the branch
-----Shipment number 3-----
Tracking number of the package: 85236
Sender information of the package: Mert Demir
Receiver information of the package: Mehmet Aydın
Current status of the package: Entered the branch
```

Removing one shipment from the branch, status changed.

```
***Shipments after removing the package2 from the branch..***
-----Shipment number 1-----
Tracking number of the package: 12345
Sender information of the package: Esra Gunduz
Receiver information of the package: Tugce Ekin
Current status of the package: Entered the branch
-----Shipment number 2-----
Tracking number of the package: 67890
Sender information of the package: Elif Soylu
Receiver information of the package: Başak Deniz
Current status of the package: Leaved the branch
-----Shipment number 3-----
Tracking number of the package: 85236
Sender information of the package: Mert Demir
Receiver information of the package: Mehmet Aydın
Current status of the package: Entered the branch
```

```
*****TRANSPORTATION EMPLOYEE TEST*****
Transportation personnel delivers the package2,updates its situation -which was leaved from branch-
Tracking number of the package: 67890
Sender information of the package: Elif Soylu
Receiver information of the package: Başak Deniz
Current status of the package: Reached to the receiver.

*****CUSTOMER TEST*****
Customer's can enter the system by tracking number and see the shipment's information..
Hello Customer:John Gruber Package informations that you want to see:
Tracking number of the package: 85236
Sender information of the package: Mert Demir
Receiver information of the package: Mehmet Aydın
Current status of the package: Entered the branch
*****
Hello Customer: David Stan Package informations that you want to see:
Tracking number of the package: 67890
Sender information of the package: Elif Soylu
Receiver information of the package: Başak Deniz
Current status of the package: Reached to the receiver.

Process finished with exit code 0
|
```

Transportation personnel delivers package.

Customer can see shipments informations by entering tracking number.