

GIT Department of Computer Engineering

CSE 222/505 - Spring 2020

Homework 2 - Report

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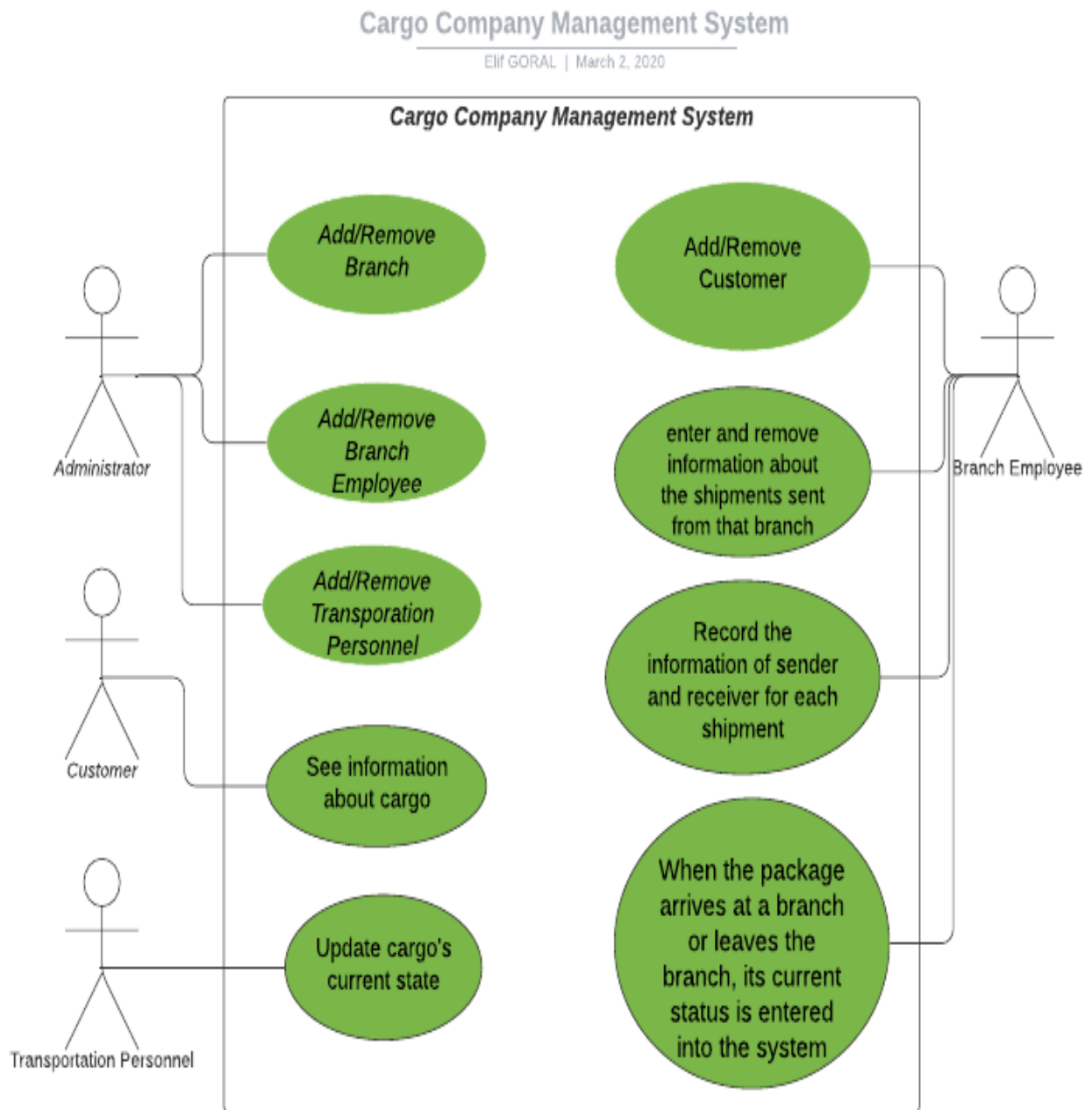
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1. SYSTEM REQUIREMENTS

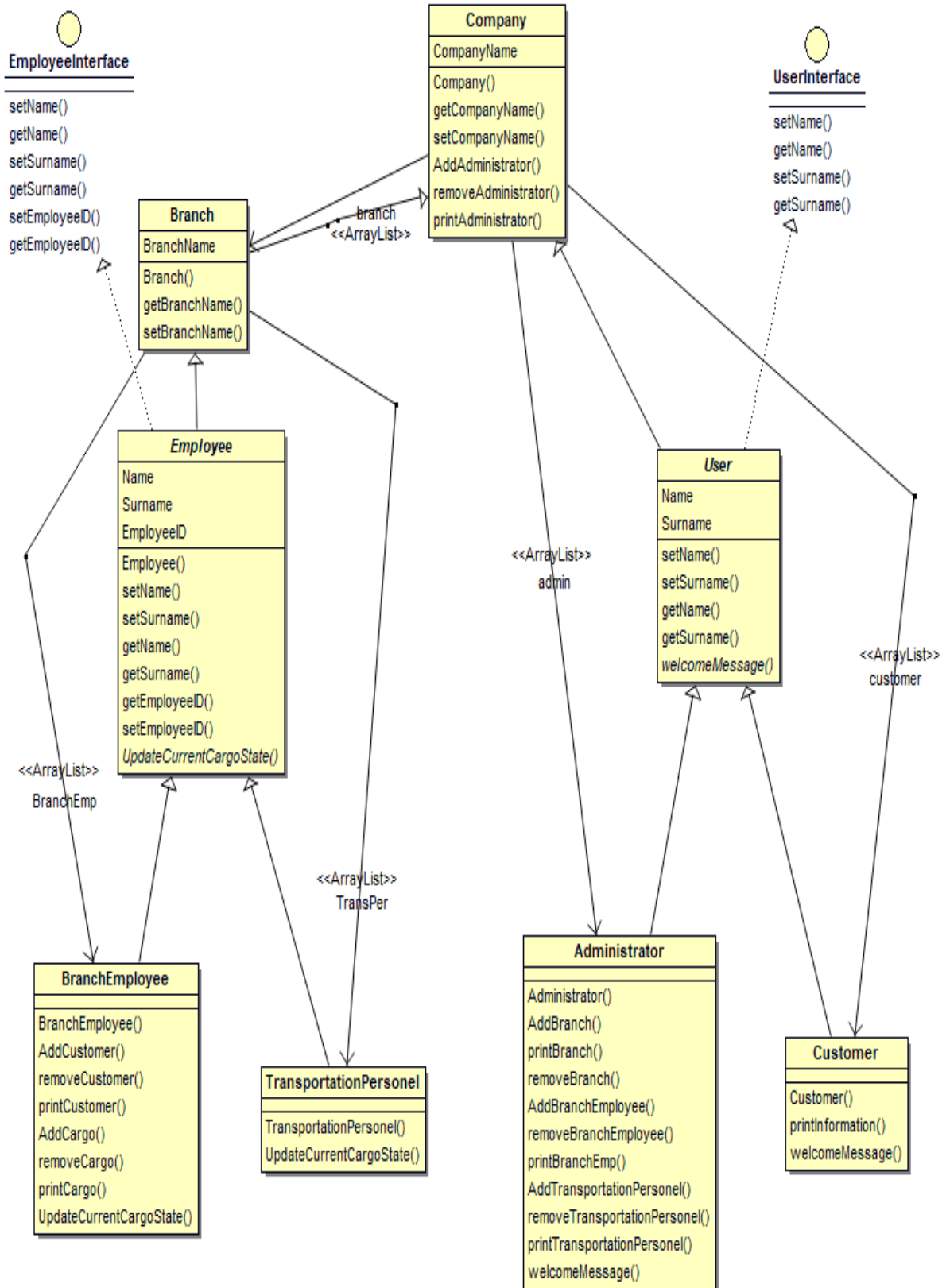
The whole system is based on the company. The company has its own branches, employees, and customers. Administrators can be added to the company system and deleted from the company system. The company has not only the user which are administrators and customers but also there are branch employees and transportation staff who are both employees and users. While only the names and surnames of the users are registered in the system, the employee numbers branch employees and transportation personnel which are both the users and the employees are also registered in the system.

To be able to operate in the system, firstly administrator must be created. Administrators which are the only user, manage the system as adding and removing a branch, branch employees and transportation personnel. When creating the admin, it returns an exception if the name and surname has already exist. Customers which are the only user, entering the system with the tracking number is only authorized to see the name and surname information of the sender and receiver and the current status of the cargo. On the other hand, branch employees who are employees and users can add and remove customers. Branch employees can enter and remove information about the shipments sent from that branch. The information of the sender and receiver are recorded for each shipment. When the package arrives at a branch or leaves the branch, its current status is entered into the system by the branch employee. Transportation personnel who are employees and users can update the cargo's current state when cargo is delivered.

2. USE CASE DIAGRAMS



3. CLASS DIAGRAM



4.PROBLEM APPROACH

In this homework, the problem is to build a automation system for a Cargo company. The automation system has users such as administrator,branch employees,transportation personnel and customers.

Firstly, I create a company object. Then, for the manage the system, I create administrators . While I was creating the administrators, I checked if I added the same person to the system before. After adding administrators, I create branches and branch employees. When I want to add a branch employee, I look the employee's branch. If the branch is not exists,I create branch first of all. Then I add branch employee to the branch. In the same way, I use this method to transportation personnel. Branch employees can add and remove customers. Before adding and removing the customer, I check the customer list to the look same person is exist or not.

When I creating the hierarchy, I use two interfaces which are employee and user interfaces. User interface has name and surname getters and setters. Employee interface has name, surname and employee ID getters and setters. After that I create a employee and user abstract classes and take the name,surname and employee ID fields to the those classes. The reason of this, not to write same code every class. More precisely, I want to write more reusable code. Finally,I take the arraylists of branch,Cargo,admin and customer to the Company Class but branch employee and transportation personel arraylists in branch class.

As a result, in this homework I use polymorphism ,inheritance and interfaces.

6. TEST CASES

CASE 1 : If we want to add same Branch to the Branch List, system throws an exception.

Test code :

```
comp.admin.get(0).AddBranch("Maltepe");
comp.admin.get(0).AddBranch("Küçükyalı");
comp.admin.get(0).AddBranch("Bostancı");
comp.admin.get(0).AddBranch("Kadıköy");
comp.admin.get(0).AddBranch("Kadıköy");
comp.admin.get(0).printBranch();
```

Result:

```
Welcome to Elif's Cargo Company
Adding Elif Goral as a administrator...
Entering the system as a Admin...
Adding Levent Goral as a administrator...
Entering the system as a Admin...
Administrators:
Elif Goral
Levent Goral
Admin size: 2
ADDING BRANCHES WITH OUR FIRST ADMIN Elif Goral
java.lang.Exception: Branch Kadıköy has already exist.
```

CASE 2: If we want to remove a Branch which is not exists anymore, system throws an exception.

```
-----
Removing branch Kadıköy:
-----
```

```
BRANCH Küçükyalı
Branch Employees:
There is no branch employee.
```

```
Transportation Personels:
There is no transportation personel.
```

```
-----
BRANCH Bostancı
Branch Employees:
There is no branch employee.
```

```
Transportation Personels:
There is no transportation personel.
```

```
-----
Removing branch Kadıköy:
java.lang.Exception: Branch Kadıköy not found.
```

CASE 3: if we try to add same branch employee, system throws an exception.

```
System.out.println("Adding B8 - E8 - 19 - KADIKÖY...");
comp.admin.get(0).AddBranchEmployee("B8", "E8", "19", "Kadıköy");
comp.admin.get(0).printBranchEmp();
System.out.println("-----");

System.out.println("Adding B8 - E8 - 19 - KADIKÖY...");
comp.admin.get(0).AddBranchEmployee("B8", "E8", "19", "Kadıköy");
comp.admin.get(0).printBranchEmp();
```

```
-----
Adding branch employees to our first admin...
Adding B1 - E1 - 12 - MALTEPE...
Adding B2 - E2 - 13 - MALTEPE...
Adding B3 - E3 - 14 - KÜÇÜKYALI...
Adding B4 - E4 - 15 - KÜÇÜKYALI...
Adding B5 - E5 - 16 - BOSTANCI...
Adding B6 - E6 - 17 - BOSTANCI...
Adding B7 - E7 - 18 - KADIKÖY...
Adding B8 - E8 - 19 - KADIKÖY...
```

```
branch employees of Branch Küçükyalı
B3 E3 14
B4 E4 15
```

```
branch employees of Branch Bostancı
B5 E5 16
B6 E6 17
```

```
branch employees of Branch Maltepe
B1 E1 12
B2 E2 13
```

```
branch employees of Branch Kadıköy
B7 E7 18
B8 E8 19
```

```
-----
Adding B8 - E8 - 19 - KADIKÖY...
java.lang.Exception: Branch employee B8 E8 has already exist.
```

CASE 4: If we try to remove branch employee who is not exist, system throws an exception.

```
branch employees of Branch Küçükyalı  
B3 E3 14  
B4 E4 15
```

```
branch employees of Branch Bostancı  
B5 E5 16  
B6 E6 17
```

```
branch employees of Branch Maltepe  
B1 E1 12  
B2 E2 13
```

```
branch employees of Branch Kadıköy  
B7 E7 18  
B8 E8 19
```

```
Removing aa -bb - cc - Bostancı  
java.lang.Exception: Branch Employee aa bb not found.
```

CASE 5: if we try to remove transportation personnel who is not exist, system throws an exception.

```
BRANCH Küçükyalı  
Branch Employees:  
B3 E3 14  
B4 E4 15
```

```
Transportation Personels:  
T3 P3 22  
T4 P4 23
```

```
-----  
BRANCH Bostancı  
Branch Employees:  
B6 E6 17
```

```
Transportation Personels:  
T6 P6 25
```

```
-----  
BRANCH Maltepe  
Branch Employees:  
B1 E1 12  
B2 E2 13
```

```
Transportation Personels:  
T1 P1 20  
T2 P2 21
```

```
-----  
BRANCH Kadıköy  
Branch Employees:  
B7 E7 18  
B8 E8 19
```

```
Transportation Personels:  
T7 P7 26  
T8 P8 27
```

```
-----  
Removing dd - yy - qq - Bostancı  
java.lang.Exception: Transportation Personel dd yy not found.
```


Case 6: If we try to add customer who is already on list,system throws an exception.

Now we are adding customers with branch employee:
Branch employee's name:B3
Branch employee's surname:E3

Adding customer Abdullah Goral..
Adding customer Neslihan Goral..
Adding customer Murat Goral..
Adding customer Ela Goral..
Customers..
Abdullah Goral
Neslihan Goral
Murat Goral
Ela Goral

Adding customer Ela Goral..
[java.lang.Exception](#): Customer Ela Goral has already exist.

Case 7: If we try to remove customer who is not exist on customer list,system throws an exception.

Customers..
Abdullah Goral
Neslihan Goral
Ela Goral
Removing Murat Goral from customer arrayList...
[java.lang.Exception](#): Customer Murat Goral not found.

Case 8: If we try to add Cargo which is already exist,system throws an exception.

Adding cargo to the cargo ArrayList.
Adding SName1 - SSurname1 - RName1 - RSurname1 - 123...
Adding SName2 - SSurname2 - RName2 - RSurname2 - 456...
Adding SName3 - SSurname3 - RName3 - RSurname3 - 789...
cargo..
SName1 SSurname1 RName1 RSurname1 123
SName2 SSurname2 RName2 RSurname2 456
SName3 SSurname3 RName3 RSurname3 789

Adding SName3 - SSurname3 - RName3 - RSurname3 - 789...
[java.lang.Exception](#): Cago number 789 has already exist.

Case 9: If we try to remove Cargo which is not exist, system throws an exception.

```
cargo..  
SName1 SSurname1 RName1 RSurname1 123  
SName2 SSurname2 RName2 RSurname2 456  
Removing cargo aa - bb - cc - dd - 144  
java.lang.Exception: Cargo number 144 not found.
```

7.RUNNING AND RESULTS

Output 1: *Adding and printing a administrators.*

```
Welcome to Elif's Cargo Company
Adding Elif Goral as a administrator...
Entering the system as a Admin...
Adding Levent Goral as a administrator...
Entering the system as a Admin...
Administrators:
Elif Goral
Levent Goral
Admin size: 2
```

Output 2: *Adding branches with specified administrator. Prints branches and branches' branch employees and transportation personnel.*

```
ADDING BRANCHES WITH OUR FIRST ADMIN Elif Goral
-----
BRANCH Maltepe
Branch Employees:
There is no branch employee.

Transportation Personels:
There is no transportation personel.

-----
BRANCH Küçükyalı
Branch Employees:
There is no branch employee.

Transportation Personels:
There is no transportation personel.

-----
BRANCH Bostancı
Branch Employees:
There is no branch employee.

Transportation Personels:
There is no transportation personel.

-----
BRANCH Kadıköy
Branch Employees:
There is no branch employee.

Transportation Personels:
There is no transportation personel.

-----
```

Output 3: *Removing a branch from the branch list and prints branches and branches' branch employees and transportation personnel.*

```
-----
Removing branch Maltepe:
-----
BRANCH Küçükyalı
Branch Employees:
There is no branch employee.

Transportation Personels:
There is no transportation personel.

-----
BRANCH Bostancı
Branch Employees:
There is no branch employee.

Transportation Personels:
There is no transportation personel.

-----
BRANCH Kadıköy
Branch Employees:
There is no branch employee.

Transportation Personels:
There is no transportation personel.

-----
```

Output 4 : *Generating to different administrator and add branches both of them.*

```
System.out.println("ADDING BRANCHES WITH OUR FIRST ADMIN " + comp.admin.get(0).getName() + " " + comp.admin.get(0).getSurname());
comp.admin.get(0).AddBranch("Maltepe");
comp.admin.get(0).AddBranch("Küçükyalı");
comp.admin.get(0).AddBranch("Bostancı");
comp.admin.get(0).AddBranch("Kadıköy");
/*

System.out.println("ADDING BRANCHES WITH OUR SECOND ADMIN " + comp.admin.get(1).getName() + " " + comp.admin.get(1).getSurname());
comp.admin.get(1).AddBranch("Küçükçekmece");
comp.admin.get(1).AddBranch("Gebze");
comp.admin.get(1).AddBranch("Büyüçekmece");
comp.admin.get(1).printBranch();
System.out.println("Our first administrator's branch size: " + comp.admin.get(0).branch.size());
System.out.println("Our second administrator's branch size: " + comp.admin.get(1).branch.size());
```

Output 5: Adding branch employees to our first admin.

```
-----  
Adding branch employees to our first admin...  
Adding B1 - E1 - 12 - MALTEPE...  
Adding B2 - E2 - 13 - MALTEPE...  
Adding B3 - E3 - 14 - KÜÇÜKYALI...  
Adding B4 - E4 - 15 - KÜÇÜKYALI...  
Adding B5 - E5 - 16 - BOSTANCI...  
Adding B6 - E6 - 17 - BOSTANCI...  
Adding B7 - E7 - 18 - KADIKÖY...  
Adding B8 - E8 - 19 - KADIKÖY...
```

```
branch employees of Branch Küçükalyı  
B3 E3 14  
B4 E4 15
```

```
branch employees of Branch Bostancı  
B5 E5 16  
B6 E6 17
```

```
branch employees of Branch Maltepe  
B1 E1 12  
B2 E2 13
```

```
branch employees of Branch Kadıköy  
B7 E7 18  
B8 E8 19
```

Output 6 : Removing a branch employee from a branch.

```
branch employees of Branch Küçükalyı  
B3 E3 14  
B4 E4 15
```

```
branch employees of Branch Bostancı  
B5 E5 16  
B6 E6 17
```

```
branch employees of Branch Maltepe  
B1 E1 12  
B2 E2 13
```

```
branch employees of Branch Kadıköy  
B7 E7 18  
B8 E8 19
```

```
-----  
Removing B5 - E5 - 16 - Bostancı
```

```
branch employees of Branch Küçükalyı  
B3 E3 14  
B4 E4 15
```

```
branch employees of Branch Bostancı  
B6 E6 17
```

```
branch employees of Branch Maltepe  
B1 E1 12  
B2 E2 13
```

```
branch employees of Branch Kadıköy  
B7 E7 18  
B8 E8 19
```

Output 7: Adding transportation personnel to our first admin.

```
-----
Adding transporation personnel to our first admin...
Adding T1 - P1 - 20 - MALTEPE...
Adding T2 - P2 - 21 - MALTEPE...
Adding T3 - P3 - 22 - KÜÇÜKYALI...
Adding T4 - P4 - 23 - KÜÇÜKYALI...
Adding T5 - P5 - 24 - BOSTANCI...
Adding T6 - P6 - 25 - BOSTANCI...
Adding T7 - P7 - 26 - KADIKÖY...
Adding T8 - P8 - 27 - KADIKÖY...
```

```
Transportation personels of Branch Küçükyalı
T3 P3 22
T4 P4 23
```

```
Transportation personels of Branch Bostancı
T5 P5 24
T6 P6 25
```

```
Transportation personels of Branch Maltepe
T1 P1 20
T2 P2 21
```

```
Transportation personels of Branch Kadıköy
T7 P7 26
T8 P8 27
```

Output 8: branch list after adding branch employee and transportation personnel

```
-----
BRANCH Küçükyalı
Branch Employees:
B3 E3 14
B4 E4 15

Transportation Personels:
T3 P3 22
T4 P4 23
```

```
-----
BRANCH Bostancı
Branch Employees:
B6 E6 17

Transportation Personels:
T5 P5 24
T6 P6 25
```

```
-----
BRANCH Maltepe
Branch Employees:
B1 E1 12
B2 E2 13

Transportation Personels:
T1 P1 20
T2 P2 21
```

```
-----
BRANCH Kadıköy
Branch Employees:
B7 E7 18
B8 E8 19

Transportation Personels:
T7 P7 26
T8 P8 27
```

Output 9: If the difference between the 8th output and the 9th output is considered carefully, deletion is done.

```
terminated: main() { java -cp src *.class }
```

```
Removing T5 - P5 - 24 - Bostanci
```

```
-----
```

```
BRANCH Küçükyalı
```

```
Branch Employees:
```

```
B3 E3 14
```

```
B4 E4 15
```

```
Transportation Personels:
```

```
T3 P3 22
```

```
T4 P4 23
```

```
-----
```

```
BRANCH Bostanci
```

```
Branch Employees:
```

```
B6 E6 17
```

```
Transportation Personels:
```

```
T6 P6 25
```

```
-----
```

```
BRANCH Maltepe
```

```
Branch Employees:
```

```
B1 E1 12
```

```
B2 E2 13
```

```
Transportation Personels:
```

```
T1 P1 20
```

```
T2 P2 21
```

```
-----
```

```
BRANCH Kadıköy
```

```
Branch Employees:
```

```
B7 E7 18
```

```
B8 E8 19
```

```
Transportation Personels:
```

```
T7 P7 26
```

```
T8 P8 27
```

Output 10: Adding and removing customers

Now we are adding customers with branch employee:

Branch employee's name:B3

Branch employee's surname:E3

Customers..

Abdullah Goral

Neslihan Goral

Murat Goral

Ela Goral

```
-----
```

Removing Murat Goral from customer arrayList...

Customers..

Abdullah Goral

Neslihan Goral

Ela Goral

```
-----
```

Output 10: *Adding and removing cargo*

```
Adding cargo to the cargo ArrayList.  
Adding SName1 - SSurname1 - RName1 - RSurname1 - 123...  
Adding SName2 - SSurname2 - RName2 - RSurname2 - 456...  
Adding SName3 - SSurname3 - RName3 - RSurname3 - 789...  
cargo..  
SName1 SSurname1 RName1 RSurname1 123  
SName2 SSurname2 RName2 RSurname2 456  
SName3 SSurname3 RName3 RSurname3 789  
-----  
  
Removing cargo SName3 - SSurname3 - RName3 - RSurname3 - 789  
cargo..  
SName1 SSurname1 RName1 RSurname1 123  
SName2 SSurname2 RName2 RSurname2 456  
-----
```