

System Requirements:

- There is 4 Users in my Cargo Company Design.
- First user is Administrators
 - Admins can adding and removing Branches to the system.
 - Admins can adding and removing Branch Employees to the system.
 - Admins can adding and removing Transportation Personnel to the system.
- Second user is Branch Employees
 - Branch Employees can enter and remove information about package
 - Branch Employees can add or remove customers to the system .
- Third user is Transportation Personnel
 - Transportation personnel when package is delivered update the package status
- Fourth user is Customers
 - All Customers have a tracking number .
 - With this number if they have a package they can see its current statu in system.
- Also There are Branch and ShipmentSent class too.

Rapor:

In my Design I created a User class that is superclass for Administrators, BranchEmployees, Transportation personnels and Customers. I define User class as Abstract class because I don't want to have a User class object. And I define a System class .My Administrators class object Admin1 can adding and removing branches, Branch Employees and Transportation Personnels to the system. Only Administators can do these jobs because only admin has methods for adding and removing branches, Branch emps and transportation personnel to the system. Like Adminstrator class I have Branch employee, Transportation personnel and Customer class too Branch Employee can enter and remove Information about package and add or remove customers in system with its methods.

Transportation Personnel can update package statu with its methods.

Customer class has a data field called Tracking number and a method for check there is a package that match with this tracking number and see its status.

Also I have Branch and ShipmentSent class too.

I keep this Administrators, Branch employee, Transportation personnel and Custumers in System class with array.

ShipmentSent same as a package.

I test all methods in main and print the resuts.

Here are my output of program:

```
public class CargoSystem {  
    private Branch[] Branches=new Branch[10];  
}
```

```
"C:\Program Files\Java\jdk-13.0.2\bin\java.exe" -Didea.launcher.port=51224 "-Didea.launcher.bin.path=C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2  
Admin Created:  
Name:Yasir Surname:Fidan PhoneNumber:5539883345 Email:yasirfidan@windowslive.com Username:admin1 Password:adminpass1 PersonalID:1100  
  
After Branch1 added System has these Branches:  
BranchID: 1 BranchAddress=Turkey-Kocaeli-110  
  
After Branch 2 and Branch 3 added System has these Branches:  
BranchID: 1 BranchAddress=Turkey-Kocaeli-110  
BranchID: 1200 BranchAddress=Germany-Berlin-32  
BranchID: 1000 BranchAddress=England-London-11  
  
After Branch2 removed System has these Branches:  
BranchID: 1 BranchAddress=Turkey-Kocaeli-110  
BranchID: 1000 BranchAddress=England-London-11  
  
After BranchEmp1,BranchEmp2 and BranchEmp3 added System has these BranchEmployees:  
Name:Mehmet Surname:Yildiz PhoneNumber:5453321674 Email:mehmet@gmail.com EmployeeID:1 WorkingPlace:Turkey-Turkey-110  
Name:Ali Surname:Demir PhoneNumber:5256769843 Email:alidemir1997@gmail.com EmployeeID:2 WorkingPlace:Turkey-Turkey-110  
Name:Mustafa Surname:Celik PhoneNumber:2124565476 Email:musticelik@hotmail.com EmployeeID:5 WorkingPlace:England-England-11  
  
After BranchEmp2 removed My System has these BranchEmployees:  
Name:Mehmet Surname:Yildiz PhoneNumber:5453321674 Email:mehmet@gmail.com EmployeeID:1 WorkingPlace:Turkey-Turkey-110  
Name:Mustafa Surname:Celik PhoneNumber:2124565476 Email:musticelik@hotmail.com EmployeeID:5 WorkingPlace:England-England-11  
  
After Add TrasportationPersonnell my System has these TransportationPersonnell  
Name:Ayşe nur Surname:sahin Email:aysenur@windowslive.com PhoneNumber:7840322 TPersonalID:1
```

Firstly, I created an administration object called Admin1 and prints its data fields to the screen. Then I created 3 Branches objects called Branch1, Branch2, Branch3. Then with Admin1 I added Branch1 to the system and prints all Branches that System has. After that I added Branch2 and Branch3 objects too via to admin and prints all Branches that my system has. Then admin remove Branch2 with Admin.removeBranchToSystem method so there is no Branch2 in my system anymore. Then i print branches that system has to Show branch2 removed.

After that, I created BranchEmployee object called BranchEmp1, BranchEmp2, BranchEmp3. Then again with admin1 object I add this employees to the system and print the all BranchEmployees that system has. Then with admin1 I removed BranchEmp2 to the system and prints all BranchEmployee objects that system has to Show BranchEmp2 removed successfully.

Again, I created Transportation Personnel object called TrasportationPersonnel1 and TransportationPersonnel2, then with admin1 I added TransportationPersonnel1 to the system and prints all TransportationPersonnel object that system has.

```
public class CargoSystem {  
    private Branch[] Branches=new Branch[10];  
}
```

Run: Main

```
After Add TrasportationPersonnell my System has these TransportationPersonnell  
Name:Ayse nur Surname:sahin Email:aysenur@windowslive.com PhoneNumber:7840322 TPersonnalID:1  
  
After Add TrasportationPersonnell2 my System has these TransportationPersonnell  
Name:Ayse nur Surname:sahin Email:aysenur@windowslive.com PhoneNumber:7840322 TPersonnalID:1  
Name:Elif Surname:ozcelik Email:elifozcelik@gtu.edu.tr PhoneNumber:5673323 TPersonnalID:3  
  
After Remove Tpersonnell my system has these Tpersonnell  
Name:Elif Surname:ozcelik Email:elifozcelik@gtu.edu.tr PhoneNumber:5673323 TPersonnalID:3  
  
After BranchEmployee3 add customers my System has these customers:  
Name:Yavuz Surname:Aslan PhoneNumber:8653321 Email:yaslan@hotmail.com TrackingNumber:112  
Name:Muhammed Surname:Uzun PhoneNumber:7671239 Email:murun78@ytu.edu.tr TrackingNumber:115  
Name:Berke Surname:Savas PhoneNumber:9086723 Email:berkesavas@gmail.com TrackingNumber:200  
  
After BranchEmployee3 remove Customer 2 in the System My System has these customers:  
Name:Yavuz Surname:Aslan PhoneNumber:8653321 Email:yaslan@hotmail.com TrackingNumber:112  
Name:Berke Surname:Savas PhoneNumber:9086723 Email:berkesavas@gmail.com TrackingNumber:200  
  
First Packages Info  
Package1 Info:unknown  
Package2 Info:unknown  
Package3 Info:Yolda  
  
After BranchEmployee3 chance the Informations of Packages:  
Package1 Info:PackageOnTheRoad  
Package2 Info:PackageOnTheRoad  
Package3 Info:unknown
```

After adding TransportationPersonnel1 object to the system, I added TransportationPersonnel2 object to the system too and prints all TransportationPersonnel objects that system has. So it prints TransportationPersonnel1 and TransportationPersonnel2. After that I removed TransportationPersonnel1 with admin then print all TransportationPersonnel system has so its only prints Transportation2 because there was only TransportationPersonnel2 in the system. So I test all methods that admin can do in system.

Secondly, I created 3 Customer for my system. And using my BranchEmployee I added this customers to the system and prints all customers that system has to the screen. Then BranchEmployee3 removed Customer2 in the system and again all print all customers to the system has. so it prints only customer1 and customer3 so my branch employees can add and remove customers to the system succesfully.

After adding/removing customer I created 3 packages and prints its informations to the screen than via to BranchEmployees I changed its Informations and prints their Informations after the change. So as you can see BranchEmployees changed packages informations succesfully

```
public class CargoSystem {  
    private Branch[] Branches=new Branch[10];  
}
```

Run: Main

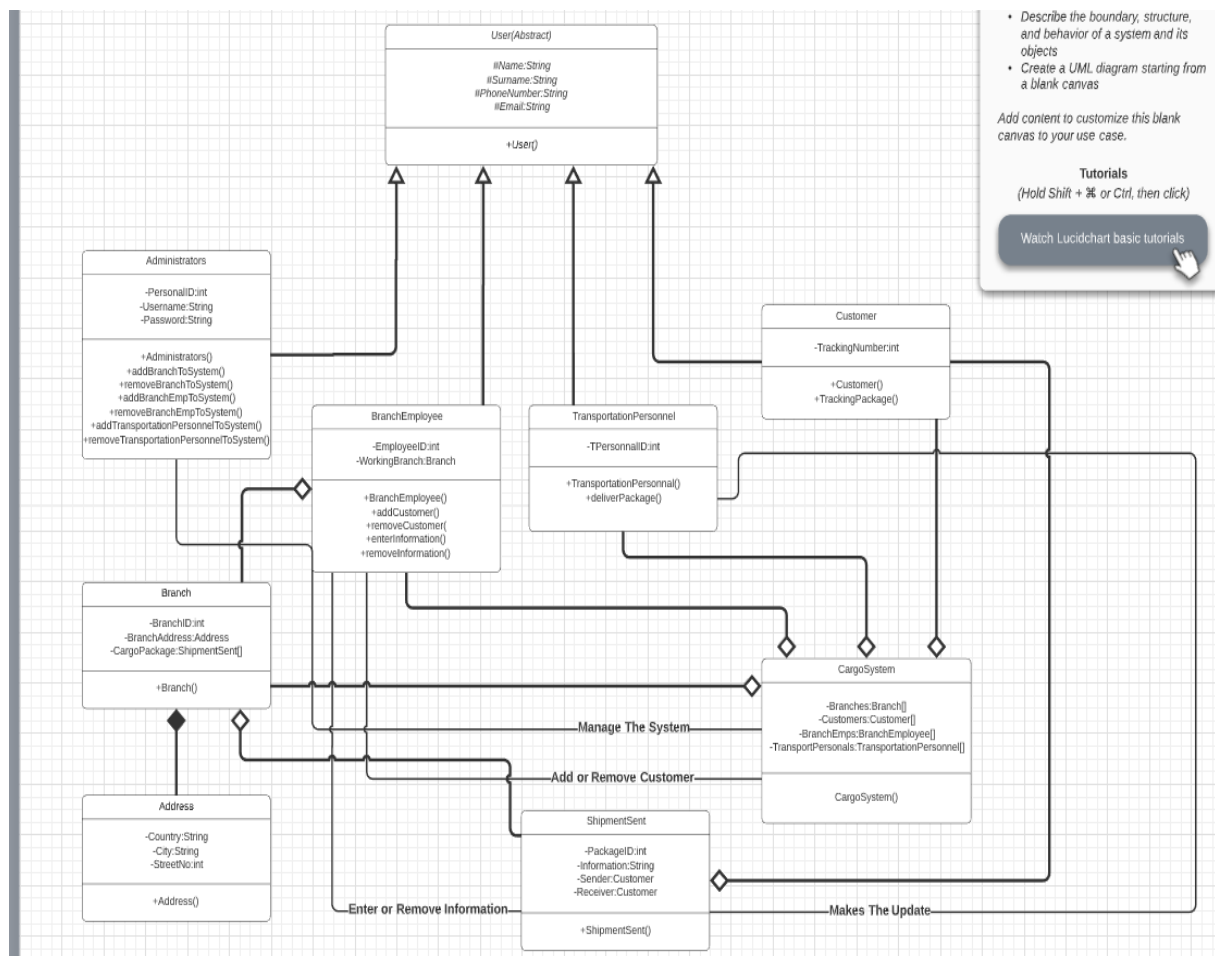
```
After BranchEmployee3 remove Customer 2 in the System My System has these customers:  
Name:Yavuz Surname:Aslan PhoneNumber:8653321 Email:yaslan@hotmail.com TrackingNumber:112  
Name:Berke Surname:Savas PhoneNumber:9086723 Email:berkesavas@gmail.com TrackingNumber:200  
  
First Packages Info  
Package1 Info:unknown  
Package2 Info:unknown  
Package3 Info:Yolda  
  
After BranchEmployee3 chance the Informations of Packages:  
Package1 Info:PackageOnTheRoad  
Package2 Info:PackageOnTheRoad  
Package3 Info:unknown  
  
After Tpersonnell deliver the package  
Package2 Info:PackageDelivired  
  
Customer1 try to check package1 with his Tracking Number:  
This Package Sender Information:  
Sender Name:Yavuz Sender Surname:Aslan  
This Package Receiver Information:  
Receiver Name:Berke Receiver Surname:Savas  
Package Current Status:PackageOnTheRoad  
  
Process finished with exit code 0
```

After that, When the package arrived to the customer my TransportationPersonnel change package Information to the “PackageDelivired”.

And Customers can check their Package Sender informations,Recive Informations and package status With using their TrackingNumber.I write a method that take this Tracking number and check all Packages if its find prints these informations.

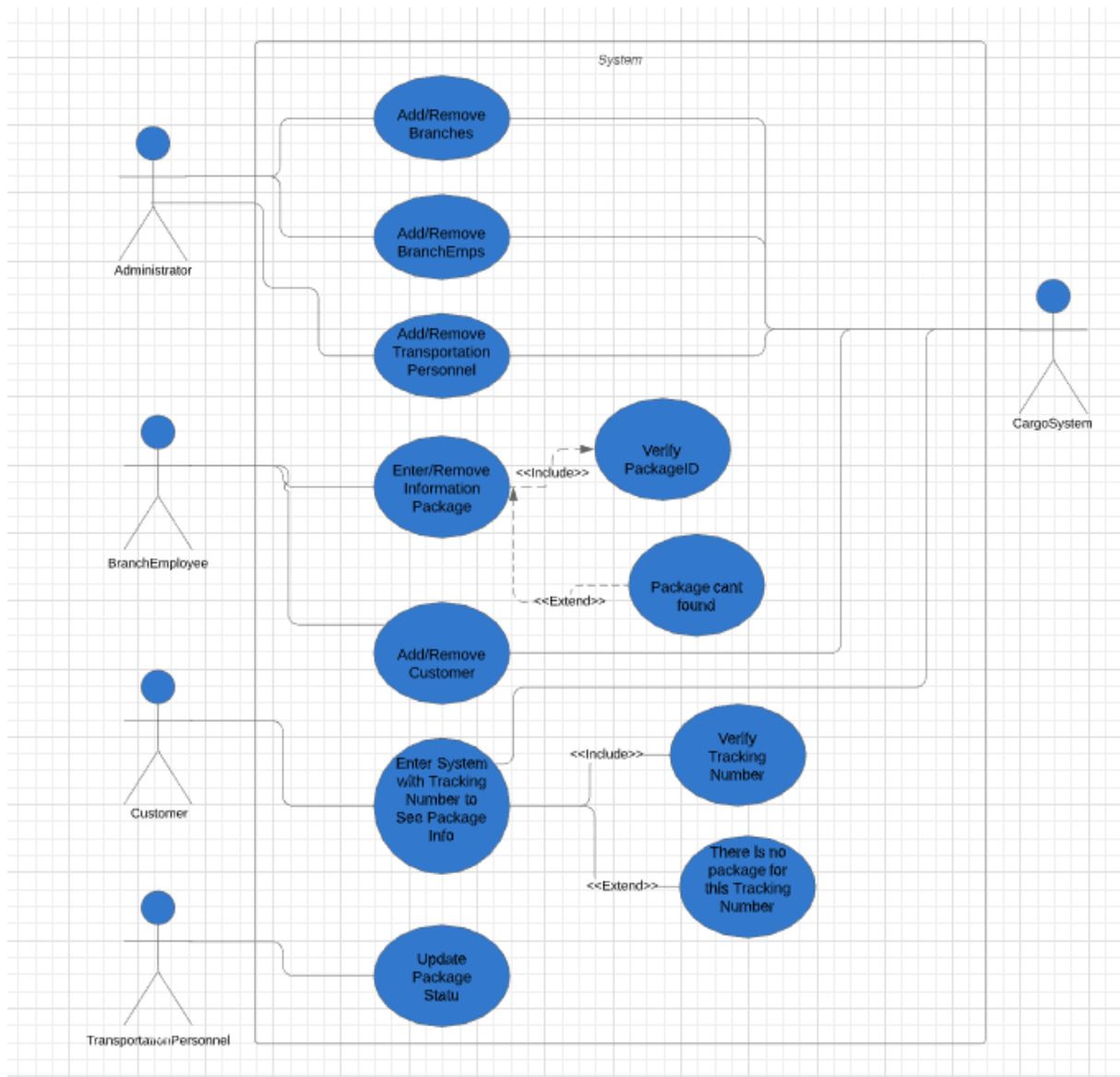
So in main I check all methods that users can.

Lets check my design with Class and Usecase diagrams:



I used LucidChart Diagram tools for drawing my class and use case diagrams.

In my design there are 9 classes. I derived Administrator, BranchEmployee, TransportationPersonnel, and Customer to the User class. These are the users of the system. For my system, I define the CargoSystem class. My CargoSystem class holds Branches, Customers, BranchEmployees, and TransportationPersonnals using an array. So there is a “has a” relation between CargoSystem with Branches, BranchEmps, TransportationPersonnals, and customers. Because of this, I used aggregation arrows. There is also aggregation between ShipmentSent and Customers because in ShipmentSent class, there are Sender and Receiver with Customer type. And I have a branch class and address class. All Branches have a BranchID, ShipmentSents array, and Address. There is a composition between Branch and Address because without Branch, there will be no Address. And I hold my shipmentSents(Packages) in the Branch class.



In my use case diagram there are 4 primary users for the system and a CargoSystem for response to methods in the system. An administrator can add/remove Branches, BranchEmployees and Transportation Personnel to the system. The system actor has a line between these methods because it responds to these methods.

Like administrators, Branch Employees can Enter/Remove information about packages and add/remove Customers to the system. The system has a line between add/remove customers because these customers hold in the system so there must be a response in the system actor. But there is no relationship between Enter/remove information about packages and the system, because in my design packages keep in Branch class. But Enter/remove information has include and extend relations in my use case diagram. Verify PackageID <<include>> because the system does this all the time but Package cant found <<extend>> because it doesn't work for all the time enter/remove information called.

Customer actor has Access to Enter system with its tracking number to see package information. Also there is a <<include>> and <<extend>> relation. There is a <<include>> relation with Verify Tracking number because my system always try to verify tracking number when a customer try to enter system with its tracking number to see a package status. But there is a <<extend>> relation

with There is no package for this tracking number because doesnt nesserry customer get this error always.

Lastly, there is TransportationPersonnel user that can update package statu but there is no respond with the system because packages keep in Branches not in the CargoSystem class.

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