

**GTU Department of Computer
Engineering CSE 222/505 - Spring 2021
Homework 3 Report**

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1. SYSTEM REQUIREMENTS

First of all, a company must be created. When creating the company, the name of the company and the name and surname of the administrator should be determined.

```
public Company(String companyName, String adminName, String adminSurname)
```

Person

All persons can shows products in all branches.

```
public abstract void showProducts()
```

Administrotor

Can add and delete Branch.

For adding Branch, branch name and its id important.

For deleting a Branch just Branch ID is sufficient.

```
void addBranch(String name,int branchID)
void deleteBranch(int branchID)
```

Can add and employee to branch.

For adding employee to branch name, surname, employee ID and branch ID are neccesary.

For deleting an employee its ID and Branch ID(to know where he/she Works) is sufficient.

```
void addEmployee(String name, String Surname, int id, int branchID)
void deleteEmployee(int branchID, int id)
```

Employee

Can add a product where he/she works.

For adding a new product its name, model, color, number(Stock), ID and branch ID(to which branch) are neccesary.

For deleting a product its product ID, number(which will be deleted), employee ID(who deletes) and Branch id(from which branch) are important.

```
void addProduct(String name, String model, String color, int number, int
productID,int branchID);
void deleteProduct(int productID, int number,int employeeID,int branchID);
```

An employee can add a Customer to Company System.

For adding a customer to system, name, surname, customer information(mail,address,phone), customer id and its password are necessary.

```
void addCustomer(String name,String Surname, CustomerInfo info, int customerID, int password)
```

Employee can add an order to a customer.

For adding an order, branch ID(where product will be purchased), product ID(which product), number and customer ID(order to whom) are necessary.

```
void addOrder(int branchID,int productID,int number,int customerID)
```

An employee can get Customer information.

For this customer ID is necessary.

```
void showCustomerInfo(int customerID)
```

Customer

A customer can add an order to yourself.

For adding an order, branch ID(where product will be purchased), product ID(which product), number and customer ID(order to whom) are necessary.

```
void addOrder(int branchID,int productID, int number,int customerID)
```

A customer can search a product from all branches.

For search a product product name is necessary.

```
void searchProduct(String productName)
```

A customer can show previous orders yourself.

For this own ID is necessary.

```
void showOrders(int customerID)
```

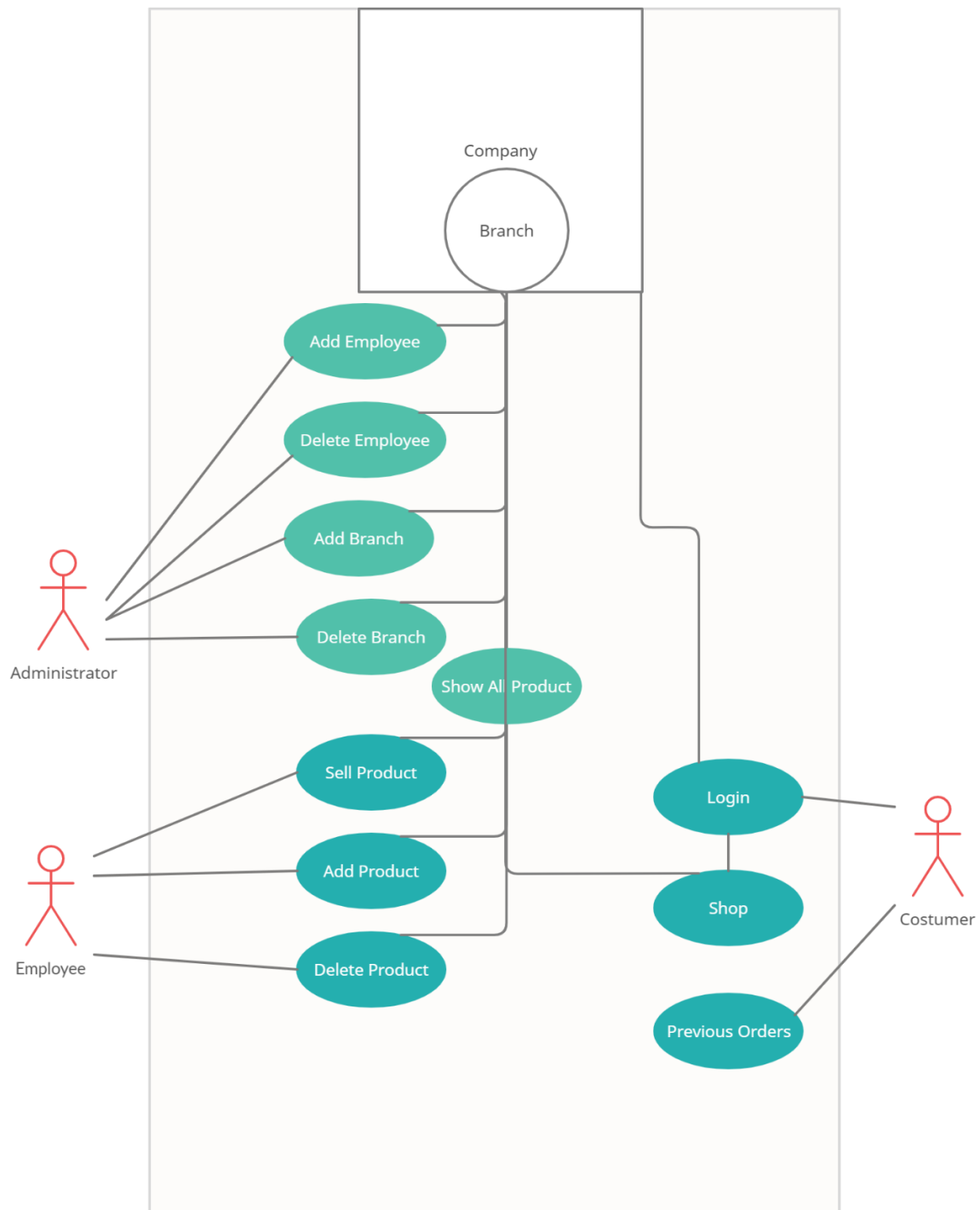
A customer can show all information about himself/herself.

For this customer id is necessary.

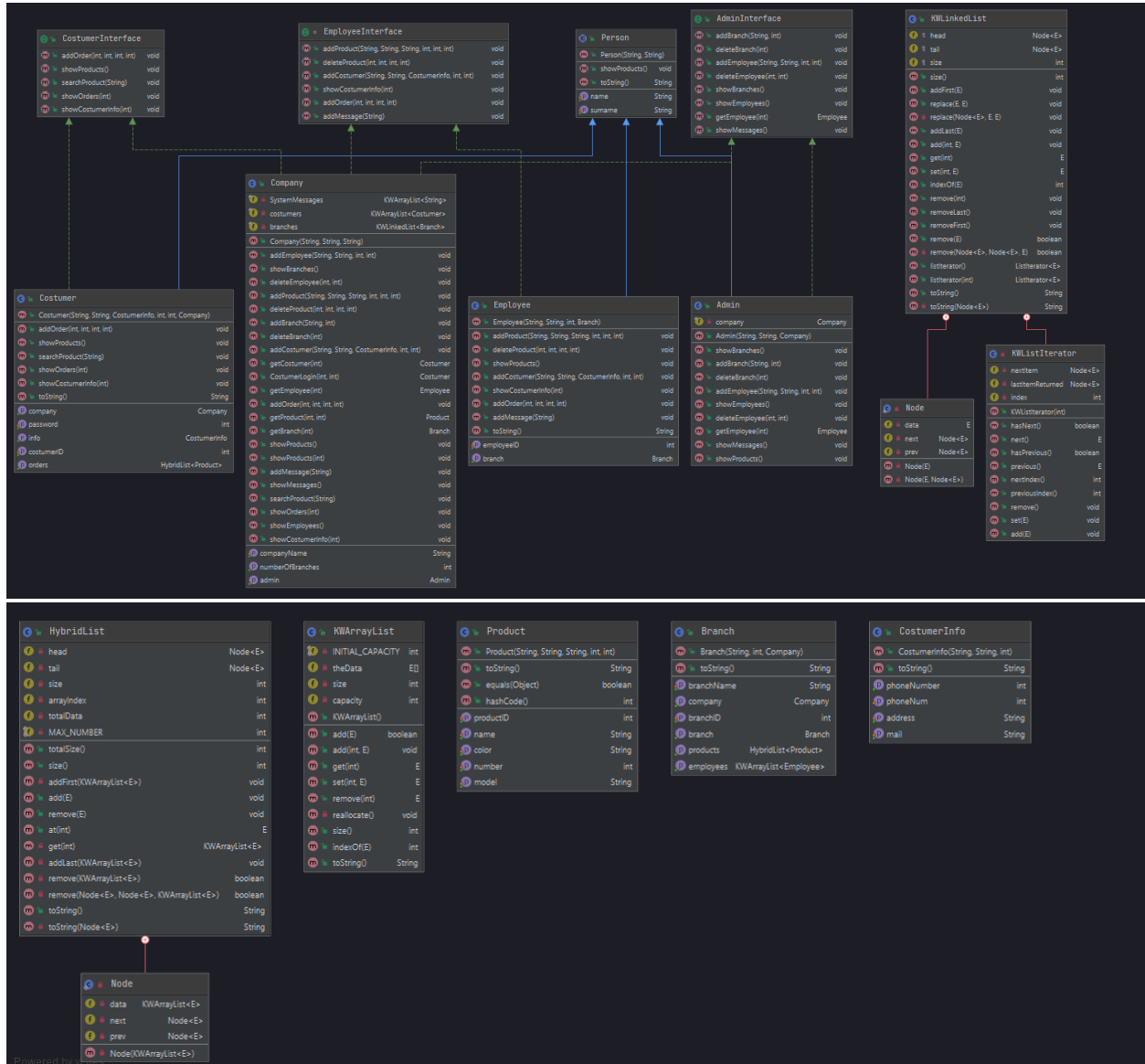
```
void showCustomerInfo(int customerID)
```

2.

USE CASE AND CLASS DIAGRAMS



CLASS DIAGRAM



3. PROBLEM SOLUTION APPROACH

The project consists of an automation system that sells furniture products. There are 3 different users in this system. These users are administrators, branch employees, and customers. I chose the java programming language to create the project. First, I gathered the common features of these users in Person class and created is-A relations between users. The main problem for creating this system was where to keep information and access issues. That's why I created a Company class where all the information and transactions take place. I created a has-A relation between system users and this class. Since branches contain their own workers and products, I created a separate Branch class and created a has-A relation with the Company class. I implemented my own container class, which does the necessary operations to keep these classes I created as arrays.

4. RUNNING AND RESULTS

First company created with an administrator.

```
Company company = new Company( companyName: "abk", adminName: "Bahadır", adminSurname: "Kilinc");
Admin admin = company.getAdmin();
```

Administrator adds four branches to company

```
admin.addBranch( name: "Maltepe", branchID: 1997);
admin.addBranch( name: "Kartal", branchID: 1998);
admin.addBranch( name: "Pendik", branchID: 1999);
admin.addBranch( name: "Tuzla", branchID: 2000);
admin.showBranches();
```

```
ADMIN CREATES BRANCHES

Branch Name : Maltepe Branch ID : 1997

Branch Name : Kartal Branch ID : 1998

Branch Name : Pendik Branch ID : 1999

Branch Name : Tuzla Branch ID : 2000
```

Administrator adds employees to company.

```
admin.addEmployee( name: "Selin", Surname: "Bakan", id: 100, branchID: 1997);
admin.addEmployee( name: "Aslan", Surname: "Kalin", id: 101, branchID: 1997);
admin.addEmployee( name: "Melek", Surname: "Usta", id: 102, branchID: 1998);
admin.addEmployee( name: "Yeliz", Surname: "Derin", id: 103, branchID: 1998);
admin.addEmployee( name: "Ezgi", Surname: "Salman", id: 104, branchID: 1999);
admin.addEmployee( name: "Cem", Surname: "Canal", id: 105, branchID: 1999);
admin.addEmployee( name: "Utku", Surname: "Tok", id: 106, branchID: 2000);
admin.addEmployee( name: "Kaan", Surname: "Talas", id: 107, branchID: 2000);
admin.showEmployees();
```

```

ADMIN CREATES AND ADDS EMPLOYEES TO BRANCHES

Maltepe
Name : Selin      Surname : Bakan EmployeeID : 100
Name : Aslan      Surname : Kalin EmployeeID : 101
Kartal
Name : Melek      Surname : Usta EmployeeID : 102
Name : Yeliz      Surname : Derin EmployeeID : 103
Pendik
Name : Ezgi Surname : SaLman EmployeeID : 104
Name : Cem Surname : CanaL EmployeeID : 105
Tuzla
Name : Utku Surname : Tok EmployeeID : 106
Name : Kaan Surname : Talas EmployeeID : 107

```

Employees adds products to branch.

```

Employee employee = admin.getEmployee( employeeId: 100);
/* employees adds product to Branches */
employee.addProduct( name: "Office Chair", model: "Tunn", color: "Sienna", number: 5, productId: 200, employee.getBranch().getBranchID());
employee.addProduct( name: "Office Chair", model: "Delta", color: "Maroon", number: 4, productId: 201, employee.getBranch().getBranchID());
employee.addProduct( name: "Office Chair", model: "Maxi", color: "Rosewood", number: 3, productId: 202, employee.getBranch().getBranchID());
employee.addProduct( name: "Office Cabinet", model: "Orbit", color: "White", number: 2, productId: 605, employee.getBranch().getBranchID());
employee.addProduct( name: "Office Cabinet", model: "Ridge", color: "Brown", number: 3, productId: 606, employee.getBranch().getBranchID());
employee.addProduct( name: "Office Cabinet", model: "Slime", color: "Black", number: 2, productId: 607, employee.getBranch().getBranchID());
employee.addProduct( name: "Office Chair", model: "Tagix", color: "Azure", number: 2, productId: 203, employee.getBranch().getBranchID());
employee.addProduct( name: "Book Case", model: "Fallacy", color: "Sienna", number: 6, productId: 509, employee.getBranch().getBranchID());
employee.addProduct( name: "Office Desk", model: "Rio", color: "Brown", number: 9, productId: 304, employee.getBranch().getBranchID());

```

```

Branch Name : Maltepe Branch ID : 1997

Product Name : Office Chair Model : Tunn      Color : Sienna  Stock No : 5   Product ID : 200
Product Name : Office Chair Model : Delta     Color : Maroon   Stock No : 4   Product ID : 201
Product Name : Office Chair Model : Maxi      Color : Rosewood Stock No : 3   Product ID : 202
Product Name : Office Cabinet Model : Orbit    Color : White    Stock No : 2   Product ID : 605
Product Name : Office Cabinet Model : Ridge    Color : Brown    Stock No : 3   Product ID : 606
Product Name : Office Cabinet Model : Slime    Color : Black    Stock No : 2   Product ID : 607
Product Name : Office Chair Model : Tagix      Color : Azure    Stock No : 2   Product ID : 203
Product Name : Book Case   Model : Fallacy Color : Sienna  Stock No : 6   Product ID : 509
Product Name : Office Desk Model : Rio Color : Brown   Stock No : 9   Product ID : 304

```

Employees registers then shows informations a costumer.

```

CustomerInfo info1 = new CustomerInfo( email: "@gmail", address: "istanbul", phoneNumber: 789);
Employee employee = admin.getEmployee( employeeId: 107);
employee.addCustomer( name: "Nazan", Surname: "Cam", info1, customerId: 1234, password: 1234);
employee.showCustomerInfo( customerId: 1234);

```

```

Customer Information

Name : Nazan      Surname : Cam   ID : 1234   Password :1234
Mail : @gmail     Address : istanbul Phone Number : 789

There is no order!

```

Customer login the system and search a product with a name.

```

Customer customer1 = company.CustomerLogin( customerId: 1234, password: 1234);
customer1.searchProduct( productName: "Office Desk");

```

```

Branch Name : Maltepe Branch ID : 1997
Product Name : Office Desk Model : Rio Color : Brown Stock No : 9 Product ID : 304
Branch Name : Kartal Branch ID : 1998
Product Name : Office Desk Model : Plan Color : Brown Stock No : 5 Product ID : 300
Branch Name : Kartal Branch ID : 1998
Product Name : Office Desk Model : Link Color : Azure Stock No : 6 Product ID : 301
Branch Name : Kartal Branch ID : 1998
Product Name : Office Desk Model : Forma Color : Maroon Stock No : 7 Product ID : 302
Branch Name : Tuzla Branch ID : 2000
Product Name : Office Desk Model : Napa Color : Black Stock No : 8 Product ID : 303
Branch Name : Tuzla Branch ID : 2000
Product Name : Office Desk Model : Rio Color : Brown Stock No : 9 Product ID : 304

```

Customer adds an order and Show ow previous order.

```

customer1.addOrder( branchID: 1997, productID: 304, number: 2, customer1.getCustomerID());
customer1.showOrders(customer1.getCustomerID());

```

```

Product Name : Office Desk Model : Rio Color : Brown Stock No : 2 Product ID : 304

```

Administrator deletes an employee from branch.

```

admin.deleteEmployee( branchID: 1999, id: 105);

```

```

Maltepe
Name : Selin Surname : Bakan EmployeeID : 100
Name : Aslan Surname : Kalin EmployeeID : 101
Kartal
Name : Melek Surname : Usta EmployeeID : 102
Name : Yeliz Surname : Derin EmployeeID : 103
Pendik
Name : Ezgi Surname : Salman EmployeeID : 104
Tuzla
Name : Utku Surname : Tok EmployeeID : 106
Name : Kaan Surname : Talas EmployeeID : 107

```

An employee shows information of customer with id is 1234.

```

employee.showCustomerInfo( customerID: 1234);

```

```

Customer Information
Name : Nazan Surname : Cam ID : 1234 Password :1234
Mail : @gmail Address : istanbul Phone Number : 789

ORDERS
Product Name : Office Desk Model : Rio Color : Brown Stock No : 2 Product ID : 304

```

Employee lists products in her/his own branch.

```

employee.showProducts();

```



```
Tuzla
Product Name : Office Cabinet  Model : Bleed   Color : Black  Stock No : 4   Product ID : 600
Product Name : Office Cabinet  Model : Which   Color : Brown  Stock No : 3   Product ID : 601
Product Name : Office Desk     Model : Mapa   Color : Black  Stock No : 8   Product ID : 303
Product Name : Office Desk     Model : Rio    Color : Brown  Stock No : 9   Product ID : 304
Product Name : Office Cabinet  Model : Graze  Color : Brown  Stock No : 4   Product ID : 604
Product Name : Office Chair    Model : Fera   Color : Sienna Stock No : 4   Product ID : 205
Product Name : Office Chair    Model : Mira   Color : Maroon Stock No : 3   Product ID : 206
Product Name : Meeting Table   Model : Blame  Color : Black  Stock No : 3   Product ID : 405
Product Name : Meeting Table   Model : Sand   Color : White  Stock No : 2   Product ID : 406
Product Name : Meeting Table   Model : Touch  Color : Azure  Stock No : 3   Product ID : 407
Product Name : Book Case       Model : Tacky  Color : Maroon Stock No : 4   Product ID : 508
Product Name : Office Chair    Model : Carot  Color : Magenta Stock No : 6   Product ID : 204
Product Name : Book Case       Model : Tree   Color : Azure  Stock No : 6   Product ID : 511
Product Name : Book Case       Model : Comb   Color : Azure  Stock No : 4   Product ID : 503
Product Name : Book Case       Model : Vest   Color : Azure  Stock No : 4   Product ID : 507
```

An employee sells a product to a customer. Then get that customer information.

```
employee.addOrder(employee.getBranch().getBranchID(), productID: 511, number: 3, customerID: 1234);
employee.showCustomerInfo(customerID: 1234);
```

```
Customer Information

Name : Nazan      Surname : Cam    ID : 1234   Password :1234
Mail : @gmail     Address : istanbul Phone Number : 789

ORDERS

Product Name : Office Desk  Model : Rio  Color : Brown  Stock No : 2   Product ID : 304
Product Name : Book Case    Model : Tree  Color : Azure  Stock No : 3   Product ID : 511
```

Administrator deletes a Branch from Company.

```
admin.deleteBranch(branchID: 1998);
admin.showBranches();
```

```
AFTER ADMIN DELETES A BRANCH

Branch Name : Maltepe Branch ID : 1997

Branch Name : Tuzla Branch ID : 2000

Branch Name : Pendik Branch ID : 1999
```

Administrator shows the messages which are from Company.

```
admin.showMessages();
```

```
Messages to Administrator

-> Nazan Cam registered to the system with a customer number 1234
-> Hazal Erguvan registered to the system with a customer number 4567
-> 2 of the product number 304 ID sold from 1997 Branch
-> 3 of the product number 511 ID sold from 2000 Branch
```

Everyone can show the products.

```
TestPolymorphism(admin);
```

Branch Name : Maltepe Branch ID : 1997

Product Name	:	Office Chair	Model :	Tunn	Color :	Sienna	Stock No :	5	Product ID :	200
Product Name	:	Office Chair	Model :	Delta	Color :	Maroon	Stock No :	4	Product ID :	201
Product Name	:	Office Chair	Model :	Maxi	Color :	Rosewood	Stock No :	3	Product ID :	202
Product Name	:	Office Cabinet	Model :	Orbit	Color :	White	Stock No :	2	Product ID :	605
Product Name	:	Office Cabinet	Model :	Ridge	Color :	Brown	Stock No :	3	Product ID :	606
Product Name	:	Office Cabinet	Model :	Slime	Color :	Black	Stock No :	2	Product ID :	607
Product Name	:	Office Chair	Model :	Tagix	Color :	Azure	Stock No :	2	Product ID :	203
Product Name	:	Book Case	Model :	Fallacy	Color :	Sienna	Stock No :	6	Product ID :	509
Product Name	:	Office Desk	Model :	Rio	Color :	Brown	Stock No :	7	Product ID :	304

Branch Name : Tuzla Branch ID : 2000

Product Name	:	Office Cabinet	Model :	Bleed	Color :	Black	Stock No :	4	Product ID :	600
Product Name	:	Office Cabinet	Model :	Which	Color :	Brown	Stock No :	3	Product ID :	601
Product Name	:	Office Desk	Model :	Mapa	Color :	Black	Stock No :	8	Product ID :	303
Product Name	:	Office Desk	Model :	Rio	Color :	Brown	Stock No :	9	Product ID :	304
Product Name	:	Office Cabinet	Model :	Graze	Color :	Brown	Stock No :	4	Product ID :	604
Product Name	:	Office Chair	Model :	Fera	Color :	Sienna	Stock No :	4	Product ID :	205
Product Name	:	Office Chair	Model :	Mira	Color :	Maroon	Stock No :	3	Product ID :	206
Product Name	:	Meeting Table	Model :	Blame	Color :	Black	Stock No :	3	Product ID :	405
Product Name	:	Meeting Table	Model :	Sand	Color :	White	Stock No :	2	Product ID :	406
Product Name	:	Meeting Table	Model :	Touch	Color :	Azure	Stock No :	3	Product ID :	407
Product Name	:	Book Case	Model :	Tacky	Color :	Maroon	Stock No :	4	Product ID :	508
Product Name	:	Office Chair	Model :	Carot	Color :	Magenta	Stock No :	6	Product ID :	204
Product Name	:	Book Case	Model :	Tree	Color :	Azure	Stock No :	3	Product ID :	511
Product Name	:	Book Case	Model :	Comb	Color :	Azure	Stock No :	4	Product ID :	503
Product Name	:	Book Case	Model :	Vest	Color :	Azure	Stock No :	4	Product ID :	507

Branch Name : Pendik Branch ID : 1999

Product Name	:	Office Cabinet	Model :	Wind	Color :	White	Stock No :	5	Product ID :	610
Product Name	:	Meeting Table	Model :	Union	Color :	White	Stock No :	2	Product ID :	402
Product Name	:	Meeting Table	Model :	Depth	Color :	Azure	Stock No :	4	Product ID :	403
Product Name	:	Book Case	Model :	Anger	Color :	Brown	Stock No :	4	Product ID :	500
Product Name	:	Book Case	Model :	Copper	Color :	Black	Stock No :	3	Product ID :	501
Product Name	:	Meeting Table	Model :	Guest	Color :	Black	Stock No :	2	Product ID :	400
Product Name	:	Meeting Table	Model :	Art	Color :	Maroon	Stock No :	3	Product ID :	404
Product Name	:	Office Cabinet	Model :	Rise	Color :	Brown	Stock No :	4	Product ID :	608
Product Name	:	Office Cabinet	Model :	Bake	Color :	Black	Stock No :	4	Product ID :	611
Product Name	:	Book Case	Model :	Force	Color :	Blue	Stock No :	5	Product ID :	510
Product Name	:	Book Case	Model :	Brick	Color :	Blue	Stock No :	3	Product ID :	504
Product Name	:	Book Case	Model :	Prose	Color :	Maroon	Stock No :	3	Product ID :	502

```
public static void TestPolymorphism(Person person){  
    |    person.showProducts();  
    }  
}
```