

**GIT Department of Computer Engineering**  
**CSE 222/505 - Spring 2021**  
**Homework #1 Report**

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## SYSTEM REQUIREMENTS

### Functional Requirements

#### ➤ Administrator;

Must add branch.

Requirements:

- Branch Name

Can remove branch.

Can add branch employee.

Requirements:

- Employee Name
- Employee Surname
- Employee Email
- Employee Password

Can remove branch employee.

Can list branches.

Can list branch employees.

#### ➤ Branch Employees;

Can add new product.

Requirements:

- Product Type
- Model Name
- Color Name

Can remove product.

Can make sales.

Can access the customer order.

➤ **Customers;**

Can see list of product.

Can search product.

Can shop online.

Can view preview order.

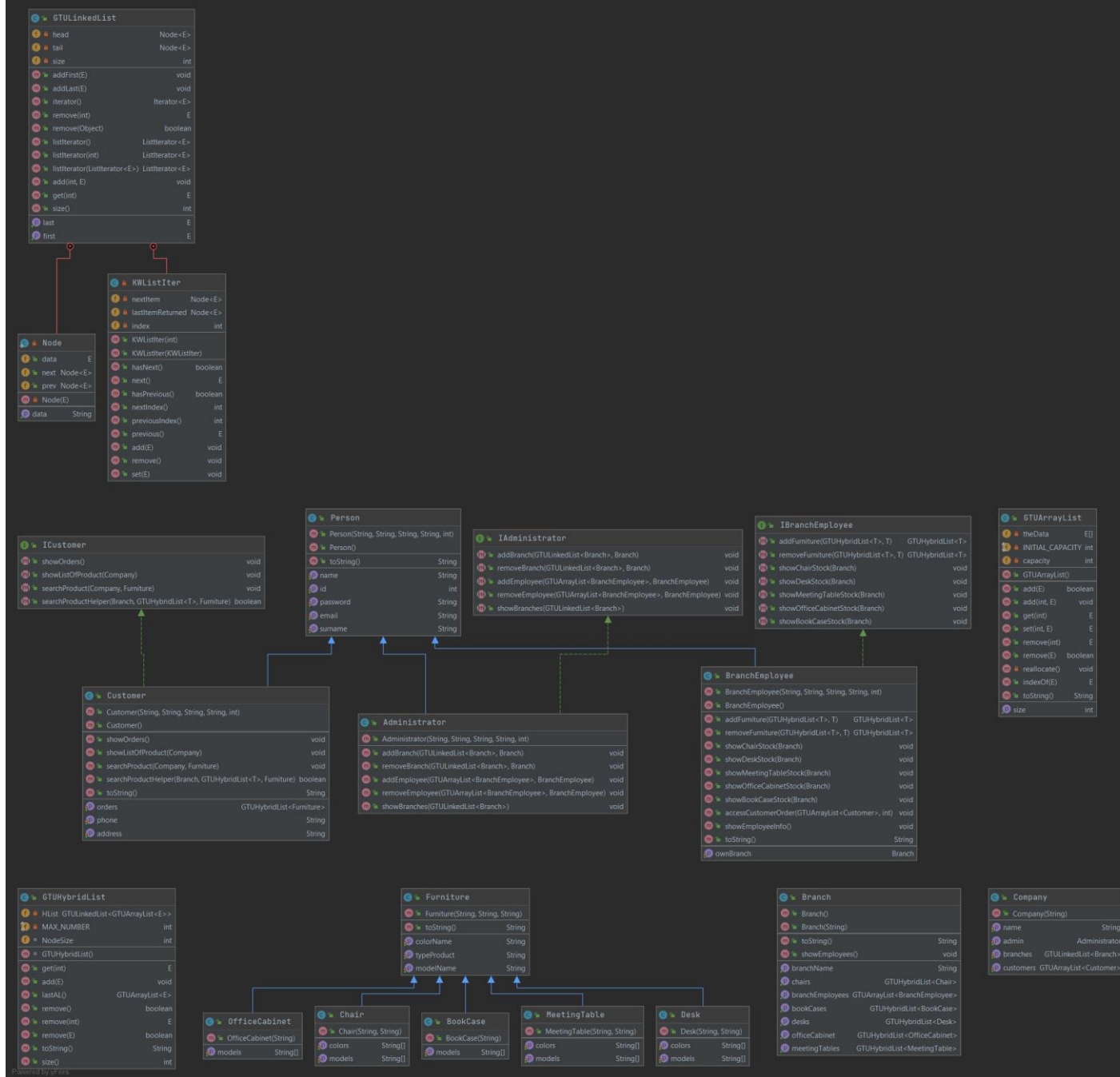
## **Non-Functional Requirements**

### **Portability,Security,Reusability**

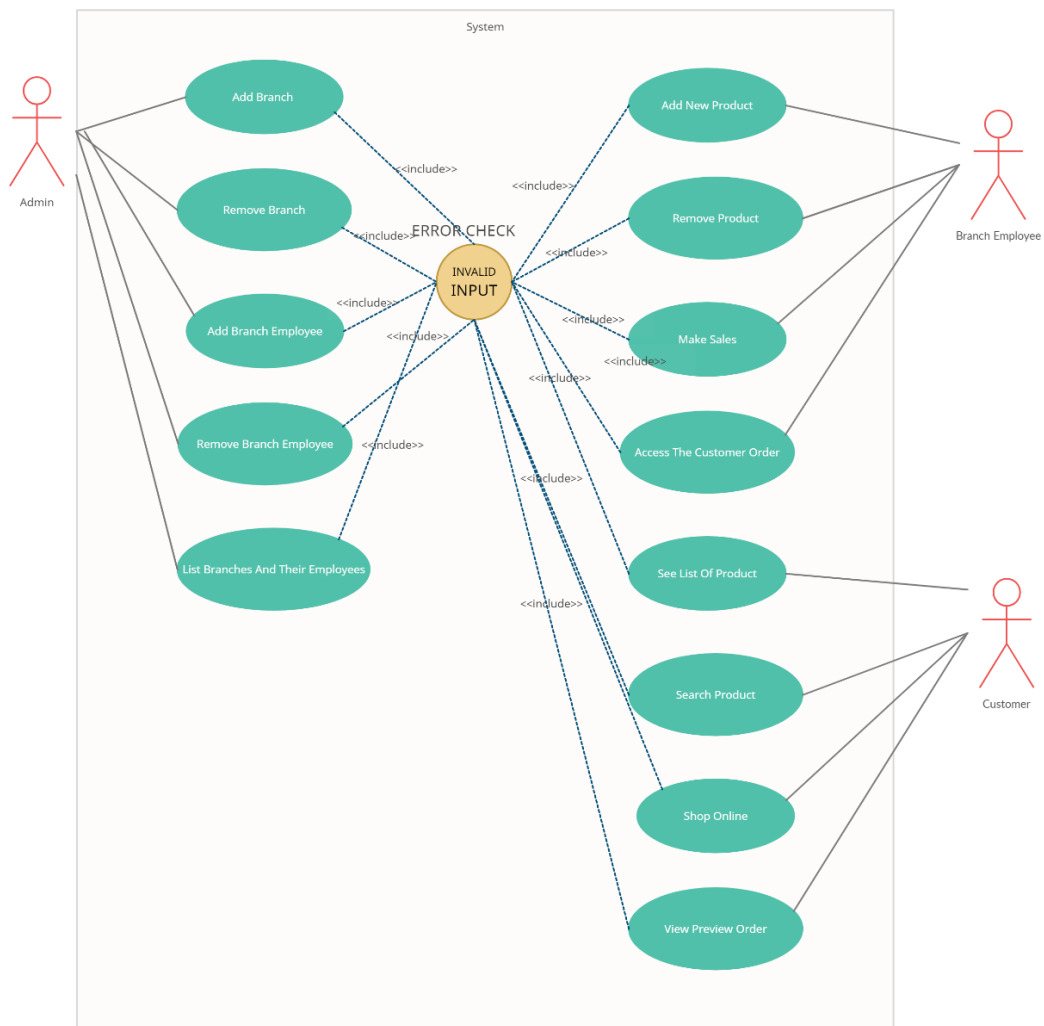
- All Branches belong to Company .
- Branch Employees belong to their Branches.
- Products belong to their Branches.
- Customers belong to Company directly
- Only Administrator create Branches
- Only Branch Employee create Products

# USE CASE AND CLASS DIAGRAMS

## CLASS DIAGRAM



## USE CASE DIAGRAM



## PROBLEM SOLUTION APPROACH

First of all, we were asked to write the linked list, array list and hybrid list class. I was aware that this transformation would be more appropriate since I used containers in the first assignment. First, I wrote the linked list and array list classes in the book, and then provided the necessary transformations in the automation system. I wrote the Hybrid class using these two classes. I used the Linked List class for branches, the array list class for users in the system, and the Hybrid class for furniture in the system.

## TEST CASES

### Add A Branch

- 1 - Add A Branch
- 2 - Remove A Branch
- 3 - Add A Branch Employee
- 4 - Remove A Branch Employee
- 5 - Query Products Need To Be Supplied
- 6 - Show Branches And Their Employees
- 0 - Exit

Enter Your Choice:

1

1.Branch = Ankara

2.Branch = Istanbul

3.Branch = Izmir

4.Branch = Antalya

Enter Branch Name for Add Branch :

Bursa

Branch Added...

1.Branch = Ankara

2.Branch = Istanbul

3.Branch = Izmir

4.Branch = Antalya

5.Branch = Bursa

### Remove A Branch

Welcome Admin!

1 - Add A Branch

2 - Remove A Branch

3 - Add A Branch Employee

4 - Remove A Branch Employee

5 - Query Products Need To Be Supplied

6 - Show Branches And Their Employees

0 - Exit

-----

Enter Your Choice:

2

1.Branch = Ankara

2.Branch = Istanbul

3.Branch = Izmir

4.Branch = Antalya

5.Branch = Bursa

Enter Branch number for Remove Branch :

Enter Your Choice:

1

1.Branch = Istanbul

2.Branch = Izmir

3.Branch = Antalya

4.Branch = Bursa

### Add Branch Employee

Welcome Admin!

1 - Add A Branch

2 - Remove A Branch

3 - Add A Branch Employee

4 - Remove A Branch Employee

5 - Query Products Need To Be Supplied

6 - Show Branches And Their Employees

0 - Exit

-----

Enter Your Choice:

3

Enter Branch Employee Information For Add Branch Employee

Employee Name:

Erdi

Employee Surname:

Bayır

Employee Email:

erdi123

Employee Password:

erdi123

1.Branch = Istanbul

2.Branch = Izmir



3.Branch = Antalya

4.Branch = Bursa

Enter Your Choice:

1

1.Branch = Istanbul

1. Employee -> Name: Erdi Surname: Bayır Email: erdi123 Password: erdi123

2.Branch = Izmir

3.Branch = Antalya

4.Branch = Bursa

1 - Add A Branch

2 - Remove A Branch

3 - Add A Branch Employee

4 - Remove A Branch Employee

5 - Query Products Need To Be Supplied

6 - Show Branches And Their Employees

0 - Exit

-----

Enter Your Choice:

3

Enter Branch Employee Information For Add Branch Employee

Employee Name:

Taner

Employee Surname:

Bayır

Employee Email:

taner123

Employee Password:

taner123

1.Branch = Istanbul

1. Employee -> Name: Erdi Surname: Bayır Email: erdi123 Password: erdi123

2.Branch = Izmir

3.Branch = Antalya

4.Branch = Bursa

Enter Your Choice:

1

1.Branch = Istanbul

1. Employee -> Name: Erdi Surname: Bayır Email: erdi123 Password: erdi123

2. Employee -> Name: Taner Surname: Bayır Email: taner123 Password: taner123

2.Branch = Izmir

3.Branch = Antalya

4.Branch = Bursa

-----  
Welcome Admin!

1 - Add A Branch

2 - Remove A Branch

3 - Add A Branch Employee

4 - Remove A Branch Employee

5 - Query Products Need To Be Supplied

6 - Show Branches And Their Employees

0 - Exit

-----  
Enter Your Choice:

2

1.Branch = Istanbul

1. Employee -> Name: Erdi Surname: Bayır Email: erdi123 Password: erdi123

2. Employee -> Name: Taner Surname: Bayır Email: taner123 Password: taner123

2.Branch = Izmir

3.Branch = Antalya

4.Branch = Bursa

Enter Branch number for Remove Branch :

Enter Your Choice:

3

1.Branch = Istanbul

1. Employee -> Name: Erdi Surname: Bayır Email: erdi123 Password: erdi123

2. Employee -> Name: Taner Surname: Bayır Email: taner123 Password: taner123

2.Branch = Izmir

3.Branch = Bursa

### Remove Branch Employee

Welcome Admin!

1 - Add A Branch

2 - Remove A Branch

3 - Add A Branch Employee

4 - Remove A Branch Employee

5 - Query Products Need To Be Supplied

6 - Show Branches And Their Employees

0 - Exit

-----

Enter Your Choice:

4

1.Branch = Istanbul

1. Employee -> Name: Erdi Surname: Bayır Email: erdi123 Password: erdi123

2. Employee -> Name: Taner Surname: Bayır Email: taner123 Password: taner123

2.Branch = Izmir

3.Branch = Bursa

Select Branch For Remove Employee

Enter Your Choice:

1

1. Employee -> Name: Erdi Surname: Bayır Email: erdi123 Password: erdi123

2. Employee -> Name: Taner Surname: Bayır Email: taner123 Password: taner123

Enter Your Choice:

1

1.Employee -> Name: Taner Surname: Bayır Email: taner123 Password: taner123

### Show Branches And Their Employees

Welcome Admin!

1 - Add A Branch

2 - Remove A Branch

3 - Add A Branch Employee

4 - Remove A Branch Employee

5 - Query Products Need To Be Supplied

6 - Show Branches And Their Employees

0 - Exit

-----  
Enter Your Choice:

6

--Branches And Their Employees--

1.Branch = Istanbul

1. Employee -> Name: Taner Surname: Bayır Email: taner123 Password: taner123

2.Branch = Izmir

3.Branch = Bursa

### Login Branch Employee Control

Enter Your Choice:

2

Enter Email:

taner123

Enter Your Password

taner123

Welcome Taner

Your Branch is Istanbul

### Add New Product

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

-----  
Enter Your Choice:

2

-----

Product Types

1 - Chair

2 - Desk

3 - Meeting Table

4 - Office Cabinet

5 - Book Case

-----

Enter Your Choice:

1

1.Plastic

2.Wooden

3.Steel

4.Cardboard

5.Supreme

6.Office

7.Modern

Enter Your Choice:

2

1.Blue

2.Black

3.Yellow

4.Grey

5.White

Enter Your Choice:

3

-----

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

-----

Enter Your Choice:

2

-----

Product Types

1 - Chair

2 - Desk

3 - Meeting Table

4 - Office Cabinet

5 - Book Case

-----

Enter Your Choice:

3

1.Sketchup

2.Wooden

3.Office

4.Room

5.Modern

6.Steel

7.Cardboard

8.Plastic

9. Mini

10. Old

Enter Your Choice:

1

1. Blue

2. Black

3. Grey

4. White

Enter Your Choice:

4

-----

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

-----

Enter Your Choice:

1

..... Branch = Istanbul .....

(Chairs)

1. Chair -> Wooden - Yellow

(Desks)

No desk in stock!!

(Meeting Tables)

1. Meeting Table -> Sketchup - White



(Office Cabinets)

No office cabinet in stock!!

(Book Cases)

No book case in stock!!

-----

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

-----

Enter Your Choice:

2

-----

Product Types

1 - Chair

2 - Desk

3 - Meeting Table

4 - Office Cabinet

5 - Book Case

-----

Enter Your Choice:

1

1.Plastic

2.Wooden

3.Steel

4.Cardboard

5.Supreme

6.Office

7.Modern

Enter Your Choice:

1

1.Blue

2.Black

3.Yellow

4.Grey

5.White

Enter Your Choice:

4

-----

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

-----

Enter Your Choice:

1

..... Branch = Istanbul .....

(Chairs)

1.Chair -> Wooden - Yellow

2.Chair -> Plastic - Grey

(Desks)

No desk in stock!!

(Meeting Tables)

1.Meeting Table -> Sketchup - White

(Office Cabinets)

No office cabinet in stock!!

(Book Cases)

No book case in stock!!

-----

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

[Remove Product](#)

Enter Your Choice:

3

Select Product Type For Remove

1 - Chair

2 - Desk

3 - Meeting Table

4 - Office Cabinet

5 - Book Case

Enter Your Choice:

1

(Chairs)

1.Chair -> Wooden - Yellow

2.Chair -> Plastic - Grey

Enter Your Choice:

2

Chair Deleted

-----

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

-----

Enter Your Choice:

1

..... Branch = Istanbul .....

(Chairs)

1.Chair -> Wooden - Yellow

(Desks)

No desk in stock!!

(Meeting Tables)

1.Meeting Table -> Sketchup - White

(Office Cabinets)

No office cabinet in stock!!

(Book Cases)

No book case in stock!!

[Make Sells](#)

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

-----

Enter Your Choice:

4

Make Sells

-----

Enter Customer Email:

aydin123

Enter Customer Password:

aydin123

-----

There is no such a customer.You are directed to create a user menu...

Please Enter User Information

[Create Customer](#)

Enter Name:

Aydin

Enter Surname:

Bayir

Enter Mail:

aydin123

Enter Password:

aydin123

-----  
Id: 1 Name: Aydın Surname : Bayır Email : aydin123 Password : aydin123

Select Branch For Make Sales

Choose Branch:

1.Istanbul

2.Izmir

3.Bursa

Enter Your Choice:

1  
-----

Choose Product Type:

1 - Chair

2 - Desk

3 - Meeting Table

4 - Office Cabinet

5 - Book Case

0 - Exit  
-----

Enter Your Choice:

1

(Chairs)

1.Chair -> Wooden - Yellow

Select Product For Buy

Enter Your Choice:

1

Enter Address:

Istanbul

Enter Phone Number:

05555555

Your order has been completed...

-----

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

-----

Enter Your Choice:

1

..... Branch = Istanbul .....

(Chairs)

No chair in stock!!

(Desks)

No desk in stock!!

(Meeting Tables)

1.Meeting Table -> Sketchup - White

(Office Cabinets)

No office cabinet in stock!!

(Book Cases)

No book case in stock!!

[Access To Customer Order By Customer Number](#)

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales

5 - Access The Customer Order

0 - Exit

-----

Enter Your Choice:

5

Order List

Customer Number

Enter Your Choice:

1

Aydın Bayır Orders

-----

1.Order Information

Product Type : Chair

Model Name : Wooden

Color Name : Yellow

Address : Istanbul

Phone Number : 05555555

-----

-----

1 - Inquire About The Product In Stock

2 - Add New Product

3 - Remove Product

4 - Make Sales



5 - Access The Customer Order

0 - Exit

-----

Enter Your Choice:

0

[Login Customer](#)

Welcome Amazon Furniture Store System

1 - Login As Administrator

2 - Login As Brach Employee

3 - Subscribe To The System As Customer

4 - Login As Customer

0 - Exit

Enter Your Choice:

4

Enter Email:

aydin123

Enter Your Password:

aydin123

-----

Welcome Aydin

[See List Of Product](#)

1 - See List Of Products

2 - Search Product

3 - Shop Online

4 - View Preview Order

0 - Exit

-----

Enter Your Choice:

1

.....Istanbul .....

(Chairs)

No chair in stock!!

(Desks)

No desk in stock!!

(Meeting Tables)

1.Meeting Table -> Sketchup - White

(Office Cabinets)

No office cabinet in stock!!

(Book Cases)

No book case in stock!!

.....Izmir .....

Izmir Branch doesnt have any stock!

.....Bursa .....

Bursa Branch doesnt have any stock!

[Search Product](#)

Welcome Aydın

1 - See List Of Products

2 - Search Product

3 - Shop Online

4 - View Preview Order

0 - Exit

-----

Enter Your Choice:

2

-----  
Select Product Type For Search:  
-----

Product Types

1 - Chair

2 - Desk

3 - Meeting Table

4 - Office Cabinet

5 - Book Case  
-----

Enter Your Choice:

3

1.Sketchup

2.Wooden

3.Office

4.Room

5.Modern

6.Steel

7.Cardboard

8.Plastic

9.Mini

10.Old

Enter Your Choice:

1

1.Blue

2.Black

3.Grey

4.White

Enter Your Choice:

4

Branches with stock related to Meeting Table Sketchup Product:

1.Istanbul Branch

[Shop Online](#)

Welcome Aydın

1 - See List Of Products

2 - Search Product

3 - Shop Online

4 - View Preview Order

0 - Exit

-----

Enter Your Choice:

3

Choose Branch:

1.Istanbul

2.Izmir

3.Bursa

Enter Your Choice:

1

-----

Choose Product Type:

1 - Chair

2 - Desk

3 - Meeting Table

4 - Office Cabinet

5 - Book Case

0 - Exit

-----

Enter Your Choice:

3

(Meeting Tables)

1.Meeting Table -> Sketchup - White

Select Product For Buy

Enter Your Choice:

1

Enter Address:

Istanbul

Enter Phone Number:

055555555

Your order has been completed...

[View Preview Order](#)

Welcome Aydın

1 - See List Of Products

2 - Search Product

3 - Shop Online

4 - View Preview Order

0 - Exit

-----

Enter Your Choice:

4

Aydın Bayır Orders

-----

1. Order Information

Product Type : Chair

Model Name : Wooden

Color Name : Yellow

Address : Istanbul

Phone Number : 0555555555

-----

-----

2. Order Information

Product Type : Chair

Model Name : Sketchup

Color Name : White

Address : Istanbul

Phone Number : 0555555555

-----

-----

Welcome Aydın

1 - See List Of Products

2 - Search Product

3 - Shop Online

4 - View Preview Order

0 - Exit

-----

Enter Your Choice:

0

-----

Welcome Amazon Furniture Store System

- 1 - Login As Administrator
- 2 - Login As Brach Employee
- 3 - Subscribe To The System As Customer
- 4 - Login As Customer
- 0 - Exit

Enter Your Choice:

0

### Error Handling Test Case

Welcome Amazon Furniture Store System

- 1 - Login As Administrator
- 2 - Login As Brach Employee
- 3 - Subscribe To The System As Customer
- 4 - Login As Customer
- 0 - Exit

Enter Your Choice:

dsfds

Invalid number!

Enter Your Choice:

6

Enter Your Choice:

1

-----

Welcome Admin!

- 1 - Add A Branch
- 2 - Remove A Branch
- 3 - Add A Branch Employee
- 4 - Remove A Branch Employee

5 - Query Products Need To Be Supplied

6 - Show Branches And Their Employees

0 - Exit

-----

Enter Your Choice:

sfsf

Invalid number!

Enter Your Choice:

7

Enter Your Choice:

-2

Enter Your Choice:

2

1.Branch = Ankara

2.Branch = Istanbul

3.Branch = Izmir

4.Branch = Antalya

Enter Branch number for Remove Branch :

Enter Your Choice:

sad

Invalid number!

Enter Your Choice:

5

Enter Your Choice:

-1

Enter Your Choice:

2



1.Branch = Ankara

2.Branch = Izmir

3.Branch = Antalya

## 1. DRIVER TEST RESULTS

```
1 - Test Driver
2 - User Interface Menu
0 - Exit
Enter Your Choice:
1

----- TEST DRIVER FOR AUTOMATION SYSTEM -----
Company Created...
Administrator Created...
Show All Branches and Their Employees...
1.Branch = Ankara
2.Branch = Istanbul
3.Branch = Izmir
4.Branch = Antalya
New Branch Bursa added...
Show All Branches and Their Employees...
1.Branch = Ankara
2.Branch = Istanbul
3.Branch = Izmir
4.Branch = Antalya
5.Branch = Bursa
New Branch Mersin added...
Show All Branches and Their Employees...
1.Branch = Ankara
2.Branch = Istanbul
3.Branch = Izmir
4.Branch = Antalya
5.Branch = Bursa
6.Branch = Mersin
Izmir branch is removed...
Show All Branches and Their Employees...
1.Branch = Ankara
2.Branch = Istanbul
3.Branch = Antalya
4.Branch = Bursa
5.Branch = Mersin
Branch Employee Erdi is added
Show All Branches and Their Employees...
1.Branch = Ankara
    1.Employee -> Name: Erdi Surname: Bayir Email: erdi123@gmail.com Password: erdi123
2.Branch = Istanbul
3.Branch = Antalya
4.Branch = Bursa
5.Branch = Mersin
Branch Employee Baran is added
Show All Branches and Their Employees...
1.Branch = Ankara
    1.Employee -> Name: Erdi Surname: Bayir Email: erdi123@gmail.com Password: erdi123
    2.Employee -> Name: Baran Surname: Celik Email: baran123@gmail.com Password: baran123
2.Branch = Istanbul
3.Branch = Antalya
4.Branch = Bursa
5.Branch = Mersin
Branch Employee Erdi is removed
Show All Branches and Their Employees...
1.Branch = Ankara
    1.Employee -> Name: Baran Surname: Celik Email: baran123@gmail.com Password: baran123
2.Branch = Istanbul
3.Branch = Antalya
4.Branch = Bursa
5.Branch = Mersin
Show Furniture Stock...
----- Branch = Ankara -----
    (Chairs)
    (Desks)
    (Meeting Tables)
    (Office Cabinets)
    (Book Cases)
Added Some Furnitures the system....
```

```
Show Furniture Stock...
----- Branch = Ankara -----
    (Chairs)
1.Chair -> Plastic - Black
2.Chair -> Wooden - White
3.Chair -> Wooden - Blue
4.Chair -> Steel - White
5.Chair -> Steel - White
    (Desks)
1.Desk -> Computer - Blue
2.Desk -> Computer - White
    (Meeting Tables)
1.Meeting Table -> Sketchup - Grey
    (Office Cabinets)
1.Office Cabinet -> Room
    (Book Cases)
1.Book Case -> Wooden
Wooden White Chair is removed from system...
Show Furniture Stock...
----- Branch = Ankara -----
    (Chairs)
1.Chair -> Plastic - Black
2.Chair -> Wooden - Blue
3.Chair -> Steel - White
4.Chair -> Steel - White
    (Desks)
1.Desk -> Computer - Blue
2.Desk -> Computer - White
    (Meeting Tables)
1.Meeting Table -> Sketchup - Grey
    (Office Cabinets)
1.Office Cabinet -> Room
    (Book Cases)
1.Book Case -> Wooden
Customer Created...

Access To Customer order by Branch Employee...
-----Taner Bayir Orders -----
There is no orders!!!
Search Product...
Branches with stock related to Chair Plastic product:
1.Ankara Branch
Make Sales Operation...
Show Furniture Stock...
----- Branch = Ankara -----
    (Chairs)
1.Chair -> Wooden - Blue
2.Chair -> Steel - White
3.Chair -> Steel - White
    (Desks)
1.Desk -> Computer - Blue
2.Desk -> Computer - White
    (Meeting Tables)
1.Meeting Table -> Sketchup - Grey
    (Office Cabinets)
1.Office Cabinet -> Room
    (Book Cases)
1.Book Case -> Wooden
Access To Customer order by Branch Employee...
-----Taner Bayir Orders -----
-----
1.Order Information
Product Type : Chair
Model Name : Plastic
Color Name : Black
Address : Istanbul/Kadikoy
Phone Number : 0535 535 35 33
-----
Access To Customer order by Customer...
```

```

Access To Customer order by Customer...
-----Taner Bayir Orders -----
-----
1.Order Information
Product Type : Chair
Model Name : Plastic
Color Name : Black
Address : Istanbul/Kadikoy
Phone Number : 0635 535 35 33
-----
Show List Of Product by Customer...
----- Ankara -----
    (Chairs)
1.Chair -> Wooden - Blue
2.Chair -> Steel - White
3.Chair -> Steel - White
    (Desks)
1.Desk -> Computer - Blue
2.Desk -> Computer - White
    (Meeting Tables)
1.Meeting Table -> Sketchup - Grey
    (Office Cabinets)
1.Office Cabinet -> Room
    (Book Cases)
1.Book Case -> Wooden
----- Istanbul -----
Istanbul Branch doesnt have any stock!
----- Antalya -----
Antalya Branch doesnt have any stock!
----- Bursa -----
Bursa Branch doesnt have any stock!
----- Mersin -----
Mersin Branch doesnt have any stock!

```

## 2. User Interface Menu Results

```

Welcome Amazon Furniture Store System
1 - Login As Administrator
2 - Login As Brach Employee
3 - Subscribe To The System As Customer
4 - Login As Customer
0 - Exit
Enter Your Choice:
1
-----
Welcome Admin!
1 - Add A Branch
2 - Remove A Branch
3 - Add A Branch Employee
4 - Remove A Branch Employee
5 - Query Products Need To Be Supplied
6 - Show Branches And Their Employees
0 - Exit
-----
Enter Your Choice:
1
1.Branch = Ankara
2.Branch = Istanbul
3.Branch = Izmir
4.Branch = Antalya
Enter Branch Name for Add Branch :
Bursa
Branch Added...
1.Branch = Ankara
2.Branch = Istanbul
3.Branch = Izmir
4.Branch = Antalya
5.Branch = Bursa

```

```
Welcome Admin!
1 - Add A Branch
2 - Remove A Branch
3 - Add A Branch Employee
4 - Remove A Branch Employee
5 - Query Products Need To Be Supplied
6 - Show Branches And Their Employees
0 - Exit
-----
Enter Your Choice:
1
1.Branch = Ankara
2.Branch = Istanbul
3.Branch = Izmir
4.Branch = Antalya
5.Branch = Bursa
Enter Branch number for Remove Branch :
Enter Your Choice:
1
1.Branch = Istanbul
2.Branch = Izmir
3.Branch = Antalya
4.Branch = Bursa
-----
Welcome Admin!
1 - Add A Branch
2 - Remove A Branch
3 - Add A Branch Employee
4 - Remove A Branch Employee
5 - Query Products Need To Be Supplied
6 - Show Branches And Their Employees
0 - Exit
-----
Enter Your Choice:
```

```
Enter Branch Employee Information For Add Branch Employee
Employee Name:
Erdi
Employee Surname:
Bayır
Employee Email:
Erdi123
Employee Password:
erdi123
1.Branch = Istanbul
2.Branch = Izmir
3.Branch = Antalya
4.Branch = Bursa
Enter Your Choice:
1
1.Branch = Istanbul
    1.Employee -> Name: Erdi Surname: Bayır Email: Erdi123 Password: erdi123
2.Branch = Izmir
3.Branch = Antalya
4.Branch = Bursa
-----
Welcome Admin!
1 - Add A Branch
2 - Remove A Branch
3 - Add A Branch Employee
4 - Remove A Branch Employee
5 - Query Products Need To Be Supplied
6 - Show Branches And Their Employees
0 - Exit
-----
Enter Your Choice:
3
Enter Branch Employee Information For Add Branch Employee
Employee Name:
Toner
Employee Surname:
```

```

Employee Surname:
bayır
Employee Email:
taner123
Employee Password:
taner123
1.Branch = Istanbul
    1.Employee -> Name: Erdi Surname: Bayır Email: Erdi123 Password: erdi123
2.Branch = Izmir
3.Branch = Antalya
4.Branch = Bursa
Enter Your Choice:
1
1.Branch = Istanbul
    1.Employee -> Name: Erdi Surname: Bayır Email: Erdi123 Password: erdi123
    2.Employee -> Name: taner Surname: bayır Email: taner123 Password: taner123
2.Branch = Izmir
3.Branch = Antalya
4.Branch = Bursa
-----
Welcome Admin!
1 - Add A Branch
2 - Remove A Branch
3 - Add A Branch Employee
4 - Remove A Branch Employee
5 - Query Products Need To Be Supplied
6 - Show Branches And Their Employees
0 - Exit
-----
Enter Your Choice:
4
1.Branch = Istanbul
    1.Employee -> Name: Erdi Surname: Bayır Email: Erdi123 Password: erdi123
    2.Employee -> Name: taner Surname: bayır Email: taner123 Password: taner123
2.Branch = Izmir
3.Branch = Antalya
4.Branch = Bursa

```

```

1.Branch = Istanbul
    1.Employee -> Name: Erdi Surname: Bayır Email: Erdi123 Password: erdi123
    2.Employee -> Name: taner Surname: bayır Email: taner123 Password: taner123
2.Branch = Izmir
3.Branch = Antalya
4.Branch = Bursa
Select Branch For Remove Employee
Enter Your Choice:
1
    1.Employee -> Name: Erdi Surname: Bayır Email: Erdi123 Password: erdi123
    2.Employee -> Name: taner Surname: bayır Email: taner123 Password: taner123
Enter Your Choice:
1
    1.Employee -> Name: taner Surname: bayır Email: taner123 Password: taner123
-----
Welcome Admin!
1 - Add A Branch
2 - Remove A Branch
3 - Add A Branch Employee
4 - Remove A Branch Employee
5 - Query Products Need To Be Supplied
6 - Show Branches And Their Employees
0 - Exit
-----
Enter Your Choice:
6
--Branches And Their Employees--
1.Branch = Istanbul
    1.Employee -> Name: taner Surname: bayır Email: taner123 Password: taner123
2.Branch = Izmir
3.Branch = Antalya
4.Branch = Bursa
-----
Welcome Admin!
1 - Add A Branch
2 - Remove A Branch

```

#### Branches And Their Employees

1.Branch = Istanbul  
1.Employee -> Name: taner Surname: bayır Email: taner123 Password: taner123  
2.Branch = Izmir  
3.Branch = Antalya  
4.Branch = Bursa

-----  
Welcome Admin!

- 1 - Add A Branch
- 2 - Remove A Branch
- 3 - Add A Branch Employee
- 4 - Remove A Branch Employee
- 5 - Query Products Need To Be Supplied
- 6 - Show Branches And Their Employees
- 0 - Exit

-----  
Enter Your Choice:

2

1.Branch = Istanbul  
1.Employee -> Name: taner Surname: bayır Email: taner123 Password: taner123  
2.Branch = Izmir  
3.Branch = Antalya  
4.Branch = Bursa

Enter Branch number for Remove Branch :

Enter Your Choice:

4

1.Branch = Istanbul  
1.Employee -> Name: taner Surname: bayır Email: taner123 Password: taner123  
2.Branch = Izmir  
3.Branch = Antalya

-----  
Welcome Admin!

- 1 - Add A Branch
- 2 - Remove A Branch
- 3 - Add A Branch Employee
- 4 - Remove A Branch Employee
- 5 - Query Products Need To Be Supplied

- 6 - Show Branches And Their Employees
- 0 - Exit

-----  
Enter Your Choice:

0

-----  
Welcome Amazon Furniture Store System

- 1 - Login As Administrator
- 2 - Login As Brach Employee
- 3 - Subscribe To The System As Customer
- 4 - Login As Customer
- 0 - Exit

Enter Your Choice:

2

Enter Email:

taner123

Enter Your Password

taner123

Welcome taner

Your Branch is Istanbul

- 
- 1 - Inquire About The Product In Stock
  - 2 - Add New Product
  - 3 - Remove Product
  - 4 - Make Sales
  - 5 - Access The Customer Order
  - 0 - Exit

-----  
Enter Your Choice:

2

-----  
Product Types

- 1 - Chair
- 2 - Desk
- 3 - Meeting Table
- 4 - Office Cabinet

```
-----
Product Types
1 - Chair
2 - Desk
3 - Meeting Table
4 - Office Cabinet
5 - Book Case
-----
Enter Your Choice:
1
1.Plastic
2.Wooden
3.Steel
4.Cardboard
5.Supreme
6.Office
7.Modern
Enter Your Choice:
2
1.Blue
2.Black
3.Yellow
4.Grey
5.White
Enter Your Choice:
3
-----
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
Enter Your Choice:
```

```
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
Enter Your Choice:
2
-----
Product Types
1 - Chair
2 - Desk
3 - Meeting Table
4 - Office Cabinet
5 - Book Case
-----
Enter Your Choice:
3
1.Sketchup
2.Wooden
3.Office
4.Room
5.Modern
6.Steel
7.Cardboard
8.Plastic
9.Mini
10.Old
Enter Your Choice:
1
1.Blue
2.Black
3.Grey
4.White
Enter Your Choice:
```



```
Enter Your Choice:
1
1.Blue
2.Black
3.Grey
4.White
Enter Your Choice:
4
-----
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
Enter Your Choice:
1
----- Branch = Istanbul -----
    (Chairs)
1.Chair -> Wooden - Yellow
    (Desks)
No desk in stock!!
    (Meeting Tables)
1.Meeting Table -> Sketchup - White
    (Office Cabinets)
No office cabinet in stock!!
    (Book Cases)
No book case in stock!!
-----
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
```

```
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
```

-----  
Enter Your Choice:

2

-----  
Product Types

```
1 - Chair
2 - Desk
3 - Meeting Table
4 - Office Cabinet
5 - Book Case
```

-----  
Enter Your Choice:

1

```
1.Plastic
2.Wooden
3.Steel
4.Cardboard
5.Supreme
6.Office
7.Modern
```

Enter Your Choice:

1

```
1.Blue
2.Black
3.Yellow
4.Grey
5.White
```

Enter Your Choice:

4

-----

```

3.Yellow
4.Grey
5.White
Enter Your Choice:
4
-----
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
Enter Your Choice:
1
----- Branch = Istanbul -----
      (Chairs)
1.Chair -> Wooden - Yellow
2.Chair -> Plastic - Grey
      (Desks)
No desk in stock!!
      (Meeting Tables)
1.Meeting Table -> Sketchup - White
      (Office Cabinets)
No office cabinet in stock!!
      (Book Cases)
No book case in stock!!
-----
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
Enter Your Choice:

```

```

3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
Enter Your Choice:
3
Select Product Type For Remove
1 - Chair
2 - Desk
3 - Meeting Table
4 - Office Cabinet
5 - Book Case
Enter Your Choice:
1
      (Chairs)
1.Chair -> Wooden - Yellow
2.Chair -> Plastic - Grey
Enter Your Choice:
3
Chair Deleted
-----
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
Enter Your Choice:
1
----- Branch = Istanbul -----
      (Chairs)
1.Chair -> Wooden - Yellow
      (Desks)
No desk in stock!!
      (Meeting Tables)

```

```
1.Chair -> Wooden - Yellow
(Desks)
No desk in stock!!
(Meeting Tables)
1.Meeting Table -> Sketchup - White
(Office Cabinets)
No office cabinet in stock!!
(Book Cases)
No book case in stock!!
-----
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
Enter Your Choice:
4
Make Sells
-----
Enter Customer Email:
aydin
Enter Customer Password:
bayir
-----
There is no such a customer.You are directed to create a user menu...
Please Enter User Information
-----
Enter Name:
Aydin
Enter Surname:
Bayir
Enter Mail:
aydin123
Enter Password:
aydin123
```

```
Select Branch For Make Sales
Choose Branch:
1.Istanbul
2.Izmir
3.Antalya
Enter Your Choice:
1
-----
Choose Product Type:
1 - Chair
2 - Desk
3 - Meeting Table
4 - Office Cabinet
5 - Book Case
0 - Exit
-----
Enter Your Choice:
1
(Chairs)
1.Chair -> Wooden - Yellow
Select Product For Buy
Enter Your Choice:
1
Enter Address:
Istanbul
Enter Phone Number:
0555555555
Your order has been completed...
-----
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
Enter Your Choice:
```

```
Enter Your Choice:
1
----- Branch = Istanbul -----
    (Chairs)
No chair in stock!!
    (Desks)
No desk in stock!!
    (Meeting Tables)
1.Meeting Table -> Sketchup - White
    (Office Cabinets)
No office cabinet in stock!!
    (Book Cases)
No book case in stock!!
-----
1 - Inquire About The Product In Stock
2 - Add New Product
3 - Remove Product
4 - Make Sales
5 - Access The Customer Order
0 - Exit
-----
```

```
Enter Your Choice:
5
Order List
```

```
Customer Number
Enter Your Choice:
1
Aydın Bayır Orders
-----
1.Order Information
Product Type : Chair
Model Name : Wooden
Color Name : Yellow
Address : Istanbul
Phone Number : 0555555555
```

```
-----
Enter Your Choice:
3
-----
Welcome Amazon Furniture Store System
1 - Login As Administrator
2 - Login As Branch Employee
3 - Subscribe To The System As Customer
4 - Login As Customer
0 - Exit
Enter Your Choice:
4
Enter Email:
aydin123
Enter Your Password:
aydin123
-----
Welcome Aydın
1 - See List Of Products
2 - Search Product
3 - Shop Online
4 - View Preview Order
0 - Exit
-----
```

```
Enter Your Choice:
1
----- Istanbul -----
    (Chairs)
No chair in stock!!
    (Desks)
No desk in stock!!
    (Meeting Tables)
1.Meeting Table -> Sketchup - White
    (Office Cabinets)
No office cabinet in stock!!
    (Book Cases)
No book case in stock!!
```

```
Enter Your Choice:
2
-----
Select Product Type For Search
-----
Product Types
1 - Chair
2 - Desk
3 - Meeting Table
4 - Office Cabinet
5 - Book Case
-----
Enter Your Choice:
5
1.Sketchup
2.Wooden
3.Office
4.Room
5.Modern
6.Steel
7.Cardboard
8.Plastic
9.Mini
10.Old
Enter Your Choice:
1
1.Blue
2.Black
3.Grey
4.White
Enter Your Choice:
4
Branches with stock related toMeeting Table Sketchupproduct:
1.Istanbul Branch
-----
Welcome Aydin
```

```
Welcome Aydin
1 - See List Of Products
2 - Search Product
3 - Shop OnLine
4 - View Preview Order
0 - Exit
-----
Enter Your Choice:
3
Choose Branch:
1.Istanbul
2.Izmir
3.Antalya
Enter Your Choice:
1
-----
Choose Product Type:
1 - Chair
2 - Desk
3 - Meeting Table
4 - Office Cabinet
5 - Book Case
0 - Exit
-----
Enter Your Choice:
3
(Meeting Tables)
1.Meeting Table -> Sketchup - White
Select Product For Buy
Enter Your Choice:
1
Enter Address:
Istanbul
Enter Phone Number:
0555555555
Your order has been completed...
```

```

Your order has been completed...
-----
Welcome Aydin
1 - See List Of Products
2 - Search Product
3 - Shop Online
4 - View Preview Order
8 - Exit
-----
Enter Your Choice:
8
-----
Aydin Bayir Orders
-----
1.Order Information
Product Type : Chair
Model Name : Wooden
Color Name : Yellow
Address : Istanbul
Phone Number : 055555555
-----
2.Order Information
Product Type : Chair
Model Name : Sketchup
Color Name : White
Address : Istanbul
Phone Number : 055555555
-----
Welcome Aydin
1 - See List Of Products
2 - Search Product
3 - Shop Online
4 - View Preview Order
8 - Exit

```

## Time Complexity Analysis

### Administrator Class

```

public void addBranch(GTULinkedList<Branch> branches, Branch newBranch){
    branches.add(newBranch); → Q(1)
}

/**
 * Remove branch from furniture company system.
 * @param branches array of branches in company system
 * @param removeBranch Array element to delete from branches
 */
public void removeBranch(GTULinkedList<Branch> branches, Branch removeBranch){
    branches.remove(removeBranch); → Q(N)
}

/**
 * Add Employee to company system
 * @param employees array of branch employees in company system
 * @param newEmployee new element of employee array
 */
public void addEmployee(GTUArrayList<BranchEmployee> employees, BranchEmployee newEmployee){
    employees.add(newEmployee); → Q(1)
}

/**
 * Remove Employee from company system
 * @param employees array of branch employees in company system
 * @param removeEmployee array element to delete from branch employees
 */
public void removeEmployee(GTUArrayList<BranchEmployee> employees, BranchEmployee removeEmployee){
    employees.remove(removeEmployee); → Q(N)
}

```

Add method of linkedlist  $Q(1)$  and remove method of linkedlist  $Q(n)$

$n$  = size of linkedlist

So,

addBranch  $\Rightarrow T(n) = Q(1)$

removeBranch  $\Rightarrow T(n) = Q(n)$

addEmployee  $\Rightarrow T(n) = Q(1)$

removeEmployee  $\Rightarrow T(n) = Q(n)$

```

public void showEmployees() {
    for (int j = 0 ; j < BranchEmployees.getSize();j++){
        BranchEmployee tempEmployee = (BranchEmployee) BranchEmployees.get(j);
        System.out.print("\t");
        System.out.print(j+1 + ".");
        tempEmployee.showEmployeeInfo();
    }
}

```

Annotations for complexity analysis:

- $Q(t) * Q(m) = Q(n * m)$  (for the loop)
- $Q(1)$  (for `BranchEmployees.get(j)`)
- $Q(1)$  (for `System.out.print("\t")`)
- $Q(1)$  (for `System.out.print(j+1 + ".");`)
- $Q(m)$  (for `tempEmployee.showEmployeeInfo();`)

$n$  = size of branch employees

$m$  = size of branches

showBranches  $\Rightarrow T(n,m) = Q(n * m)$  because

showEmployees  $\Rightarrow T(n) = Q(m)$  and we have for loop until size of branch employees  $Q(n)$

### Branch Employee Class

```

public <T> GTUHybridList<T> addFurniture(GTUHybridList<T> furnitures, T newFurniture){
    furnitures.add(newFurniture);
    return furnitures;
}

/**
 * Add Furniture To Company System.
 * @param furnitures takes furniture array
 * @param deleteFurniture takes new furniture for add to system
 * @return new furniture array
 */
public <T> GTUHybridList<T> removeFurniture(GTUHybridList<T> furnitures, T deleteFurniture){
    furnitures.remove(deleteFurniture);
    return furnitures;
}

/**
 * Show Stock of Chairs In System.
 * @param ownBranch takes branch object of current employee for show products
 */
public void showChairStock(Branch ownBranch){
    System.out.println("    (Chairs)");
    if (ownBranch.getChairs().size() == 0){
        System.out.println("No chair in stock!!");
    }
    else {
        for (int i = 0; i < ownBranch.getChairs().size(); i++) {
            Chair tempChair = (Chair) ownBranch.getChairs().get(i);
            System.out.println(i + 1 + ".Chair -> " + tempChair.getModelName() + " - " + tempChair.getColorName());
        }
    }
}

```

Annotations for complexity analysis:

- $Q(1)$  (for `furnitures.add(newFurniture);`)
- $Q(n)$  (for `furnitures.remove(deleteFurniture);`)
- $Q(1)$  (for `System.out.println(" (Chairs)");`)
- $Q(1)$  (for `if (ownBranch.getChairs().size() == 0){`)
- $Q(n)$  (for `for (int i = 0; i < ownBranch.getChairs().size(); i++) {`)
- $Q(n)$  (for `Chair tempChair = (Chair) ownBranch.getChairs().get(i);`)
- $Q(1)$  (for `System.out.println(i + 1 + ".Chair -> " + tempChair.getModelName() + " - " + tempChair.getColorName());`)

$n$  = size of furnitures

addFurniture  $\Rightarrow T(n) = Q(1)$

removeFurniture  $\Rightarrow T(n) = Q(n)$

showChairStock = best case  $\rightarrow T(n) = Q(1)$

worst case  $\rightarrow T(n) = Q(n) * Q(n) = Q(n^2)$  then  $T(n) = O(n^2)$



```

public void showOfficeCabinetStock(Branch ownBranch){
    System.out.println("    (Office Cabinets)");
    if (ownBranch.getOfficeCabinet().size() == 0){
        System.out.println("No office cabinet in stock!!");
    }
    else {
        for (int i = 0; i < ownBranch.getOfficeCabinet().size(); i++) {
            OfficeCabinet tempCabinet = (OfficeCabinet) ownBranch.getOfficeCabinet().get(i);
            System.out.println(i + 1 + ".Office Cabinet -> " + tempCabinet.getModelName());
        }
    }
}

/**
 * Show Stock of Book Case In System.
 * @param ownBranch takes branch object of current employee for show products
 */
public void showBookCaseStock(Branch ownBranch){
    System.out.println("    (Book Cases)");
    if (ownBranch.getBookCases().size() == 0){
        System.out.println("No book case in stock!!");
    }
    else {
        for (int i = 0; i < ownBranch.getBookCases().size(); i++) {
            BookCase tempCase = (BookCase) ownBranch.getBookCases().get(i);
            System.out.println(i + 1 + ".Book Case -> " + tempCase.getModelName());
        }
    }
}

```

IntelliJ IDEA 2020.3.3 ava  
Update...

```

public void showDeskStock(Branch ownBranch){
    System.out.println("    (Desks)");
    if (ownBranch.getDesks().size() == 0){
        System.out.println("No desk in stock!!");
    }
    else {
        for (int i = 0; i < ownBranch.getDesks().size(); i++) {
            Desk tempDesk = (Desk) ownBranch.getDesks().get(i);
            System.out.println(i + 1 + ".Desk -> " + tempDesk.getModelName() + " - " + tempDesk.getColorName());
        }
    }
}

/**
 * Show Stock of Meeting Table In System.
 * @param ownBranch takes branch object of current employee for show products
 */
public void showMeetingTableStock(Branch ownBranch){
    System.out.println("    (Meeting Tables)");
    if (ownBranch.getMeetingTables().size() == 0){
        System.out.println("No meeting table in stock!!");
    }
    else {
        for (int i = 0; i < ownBranch.getMeetingTables().size(); i++) {
            MeetingTable tempTable = (MeetingTable) ownBranch.getMeetingTables().get(i);
            System.out.println(i + 1 + ".Meeting Table -> " + tempTable.getModelName() + " - " + tempTable.getColorName());
        }
    }
}

```

Other Show Stock methods like showChairStock has take  $O(n^2)$

showOfficeCabinetStock =>  $O(t) = O(n^2)$

showBookCaseStock =>  $O(t) = O(n^2)$

showDeskStock =>  $O(t) = O(n^2)$

showMeetingTableStock =>  $O(t) = O(n^2)$

```

public void accessCustomerOrder(GTUArrayList<Customer> customer,int selectedCustomer){
    Customer temp = (Customer) customer.get(selectedCustomer - 1);
    temp.showOrders();
}

/**
 * Show Employee Information.
 */
public void showEmployeeInfo() {
    System.out.println("Employee -> Name: " + name + " Surname: " + surname + " Email: " + email + " Password: " + password);
}

```

best case =  $Q(1)$

Then  $O(t) = O(n)$

showEmployeeInfo =  $Q(1) = O(1)$

## Customer Class

```

public void showOrders(){
    System.out.println( "----" + name + " " + surname + " Orders ----");
    if(orders.size() <= 0 ){
        System.out.println("There is no orders!!!");
    }
    for (int i = 0 ; i < orders.size(); i++){
        System.out.println("-----");
        System.out.println( i+1 + ".Order Information");
        Furniture tempFurniture = (Furniture) orders.get(i);
        System.out.println("Product Type : " + tempFurniture.getTypeProduct());
        System.out.println("Model Name : " + tempFurniture.getModelName());
        System.out.println("CoLoR Name : " + tempFurniture.getColorName());
        System.out.println("Address : " + address);
        System.out.println("Phone Number : " + phone);
        System.out.println("-----");
    }
}

```

n = size of orders

showOrders  $\Rightarrow T(n) = Q(n) * Q(1) = Q(n)$

```
public void showListOfProduct(Product company){
    for (int i = 0; i < company.getBranches().size(); i++) {
        Branch temp = (Branch) company.getBranches().get(i);
        System.out.println("-----" + temp.getBranchName() + "-----");
        if(temp.getBranchEmployees().getSize() != 0) {
            BranchEmployee tempEmployee = (BranchEmployee) temp.getBranchEmployees().get(0);
            tempEmployee.showChairStock(temp);
            tempEmployee.showDeskStock(temp);
            tempEmployee.showMeetingTableStock(temp);
            tempEmployee.showOfficeCabinetStock(temp);
            tempEmployee.showBookCaseStock(temp);
        }
        else
            System.out.println(temp.getBranchName() + " Branch doesn't have any stock!");
    }
}
```

M= size of Furnitures

N = size of Branches

showChairStock, showDeskStock etc. They are take  $O(m^2)$  time

getBranches().get(i) = take  $Q(n)$  time

We have also have loop take  $Q(n)$  time

Enter Else -> Best Case =  $T(n,m) = Q(n^2)$

Enter If -> Worst Case =  $T(n,m) = O(n^2 * m^2)$

So,  $T(n,m) = O(n^2 * m^2)$

```

public <T> boolean searchProductHelper(Branch currentBranch, GTUHybridList<T> array, Furniture searchObject){
    for (int i = 0 ; i < array.size(); i++){
        array.get(i).toString().equalsIgnoreCase(searchObject.toString());
        return true;
    }
    return false;
}

```

searchProductHelper =>  $T(n) = Q(n)$

```

public void searchProduct(Company company, Furniture searchObject){
    int counter = 0;
    System.out.println("Branches with stock related to" + " " + searchObject.typeProduct + " " + searchObject.getModelName() +
    for (int i = 0 ; i < company.getBranches().size(); i++){
        Branch tempBranch = (Branch) company.getBranches().get(i);
        if (searchObject.getTypeProduct().equals("Chair")){
            if(searchProductHelper(tempBranch,tempBranch.getChairs(),searchObject)) {
                counter++;
                System.out.println(counter + "." + tempBranch.getBranchName() + " Branch");
            }
        }
        if (searchObject.getTypeProduct().equals("Desk")){
            if(searchProductHelper(tempBranch,tempBranch.getDesks(),searchObject)) {
                counter++;
                System.out.println(counter + "." + tempBranch.getBranchName() + " Branch");
            }
        }
        if (searchObject.getTypeProduct().equals("Meeting Table")){
            if(searchProductHelper(tempBranch,tempBranch.getMeetingTables(),searchObject)) {
                counter++;
                System.out.println(counter + "." + tempBranch.getBranchName() + " Branch");
            }
        }
        if (searchObject.getTypeProduct().equals("Office Cabinet")){
            if(searchProductHelper(tempBranch,tempBranch.getOfficeCabinet(),searchObject)) {
                counter++;
            }
        }
    }
}

```

$n$  = size of branches

$m$  = size of Furnitures

$T(n,m) = Q(n) * (Q(m) + Q(m) + Q(m) \dots \text{for all furnitures}) = Q(n * m)$