Gebze Technical University

Computer Engineering

CSE222-2021-SPRING

Homework-6 Report

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1)INTRODUCTİON

1.1)Problem Definition

In this homework , we are asked to implement the

- ArrayList
- LinkedList
- Queue
- Tree
- Hash Table

and some functions and write them.

1.2- System Requirements

From the definition of the problem, the solution of this problem is the creation of an e-commerce system and a system consisting of customers and traders belonging to this system with data in file.

1.2.1-Users of the System

The two types of users, customer and trader are all people that is going to log-in to the e-commerce system and perform actions.
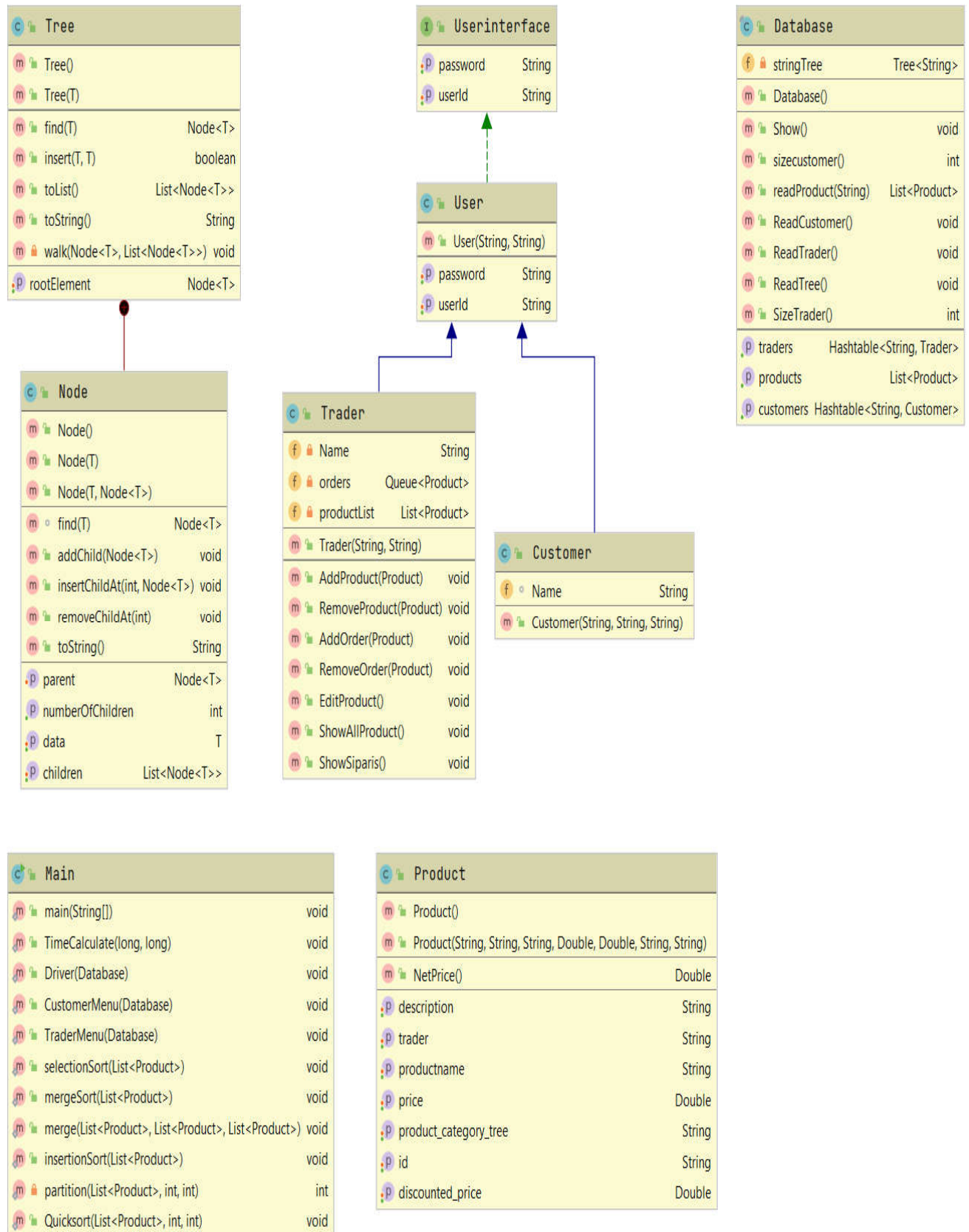
They need an identification system that can separate users from each other and does not allow other people to login as other users. These requirements create a need for a menu.

1.2.2 "Database class" of System

Since the entire system is based on the customer and the traders, the system has beneficially used the users in the system and all their necessary information to be stored in the Database class. When all these features are combined as a data type, the system can use this data type to store the necessary information about these users.

2) Class Diagram

Tree
- m Tree()
- m Tree(T)
- m find(T)   Node<T>
- m insert(T, T)   boolean
- m toList()   List<Node<T>>
- m toString()   String
- m walk(Node<T>, List<Node<T>>) void
- p rootElement   Node<T>

Node
- m Node()
- m Node(T)
- m Node(T, Node<T>)
- m find(T)   Node<T>
- m addChild(Node<T>)   void
- m insertChildAt(int, Node<T>) void
- m removeChildAt(int)   void
- m toString()   String
- p parent   Node<T>
- p numberOfChildren   int
- p data   T
- p children   List<Node<T>>

Userinterface
- p password   String
- p userId   String

User
- m User(String, String)
- p password   String
- p userId   String

Trader
- f Name   String
- f orders   Queue<Product>
- f productList   List<Product>
- m Trader(String, String)
- m AddProduct(Product)   void
- m RemoveProduct(Product) void
- m AddOrder(Product)   void
- m RemoveOrder(Product)   void
- m EditProduct()   void
- m ShowAllProduct()   void
- m ShowSiparis()   void

Customer
- f Name   String
- m Customer(String, String, String)

Database
- f stringTree   Tree<String>
- m Database()
- m Show()   void
- m sizecustomer()   int
- m readProduct(String)   List<Product>
- m ReadCustomer()   void
- m ReadTrader()   void
- m ReadTree()   void
- m SizeTrader()   int
- p traders   Hashtable<String, Trader>
- p products   List<Product>
- p customers   Hashtable<String, Customer>

Main
- m main(String[])   void
- m TimeCalculate(long, long)   void
- m Driver(Database)   void
- m CustomerMenu(Database)   void
- m TraderMenu(Database)   void
- m selectionSort(List<Product>)   void
- m mergeSort(List<Product>)   void
- m merge(List<Product>, List<Product>, List<Product>) void
- m insertionSort(List<Product>)   void
- m partition(List<Product>, int, int)   int
- m Quicksort(List<Product>, int, int)   void

Product
- m Product()
- m Product(String, String, String, Double, Double, String, String)
- m NetPrice()   Double
- p description   String
- p trader   String
- p productname   String
- p price   Double
- p product_category_tree   String
- p id   String
- p discounted_price   Double

3) Problem Solution Approach

Data is read from the given file and different files are created according to this data. (Product.txt, Customer.txt, Trader.txt)

These files are then read for each user. Customers and traders are stored in the hashtable structure. A general tree structure was created for product categories. There can be more than one category and product under a category in this tree.

- ArrayList →It was used to store products read from the file. It is fast because it is just adding.
- LinkedList→It was used to store more than one child in the general tree structure.
- Queue→Used to store the customer's orders, to process the previously placed order first.
- Tree→Used to categorize the product. As it is faster to search and list
- Hash Table→Used to store customers and traderts. To avoid adding more than one person with the same id and name.

4)Test Case

a) Main menu design for entering the system.

```
###Make User Selection####
1-CustomerMenu
2-TraderMenu
3-DriverMenu
4-Exit MainMenu
```

b) Customer menu design for entering the system

```
***CustomerMenu***
**You Need To Enter UserID And Password For Customer Operation
Enter UserId
Ferdi123
Enter The Password
123456
1-Search Product By Name
2-Sort Product
3-Filter Product
4-Show Traders Product
5-Exit CustomerMenu
Enter The Choice
I
```

c) Sort menu design for sort the product

```
Choose How You Want to Sort the Products
1-By Price
2-By Name
3-By Discount
|
```

Result:

1-Sort By Price:

```
ID:SOFEE7ADPUPX9MTW Name:Durian Leather 1 Seater Sofa Price:69300.0
ID:JCKEAEA7REDBGJVY Name:The Curve Full Sleeve Solid Men's Quilted Jacket Price:69999.0
ID:BMDEGVYDBZ7NHRZH Name:NITGEN eNBioAccess T5-HID Time & Attendance, Access Control, Door Locks Price:71687.0
ID:SOFE94HW8TPTGPNX Name:Durian Clinton/A/3 Leather 3 Seater Sofa Price:73500.0
ID:SOFEE7ACTFUYMFGG Name:Durian Fabric 3 Seater Sofa Price:73800.0
ID:SOFE8HPYHFDGPFHV Name:Durian Tulsa Leatherette 3 Seater Sofa Price:75300.0
ID:SOFEE7ACZNC57QYQ Name:Durian Fabric 2 Seater Sofa Price:84300.0
ID:SOFECYFACHZTHA2C Name:Durian Harmony/2 Fabric 2 Seater Sofa Price:85500.0
ID:SOFEDVYZRHJG8J3F Name:ARRA Solid Wood 7 Seater Sofa Price:86500.0
ID:SOFEE7ACDGRPDWGZ Name:Durian Fabric 3 Seater Sofa Price:93600.0
ID:WATEA6UGFGKZKDJC Name:TAG Heuer CAU1116.BA0858 Formula 1 Analog Watch  - For Boys, Men Price:107750.0
ID:SOFECYFAGGVMMWS7 Name:Durian Dream/2 Leather 2 Seater Sofa Price:108000.0
ID:SOFE8HPYX66KMC3A Name:Durian Helena Fabric 3 Seater Sofa Price:108900.0
ID:SOFE8HPYPJPUUZ3H Name:Durian Helena Fabric 3 Seater Sofa Price:108900.0
ID:ACCEEV5UV5NV4PKZ Name:Audeze Lcd2 In Bamboo, High Quality Planar Magnetic Headphone Headphones Price:116292.0
ID:SOFECYFAH37ZKUKW Name:Durian Club/3 Leather 3 Seater Sofa Price:162000.0
ID:WATEAK8SE2RUK7GM Name:Cartier W6701005 Analog Watch  - For Boys, Men Price:201000.0
ID:SOFEE7AC7XCYXDVC Name:Durian Leather 2 Seater Sofa Price:204600.0
ID:SOFECYFA8R8T5HNG Name:Durian Laze/3 Leather 3 Seater Sofa Price:217500.0
ID:SOFEE7ACBVAGKYUV Name:Durian Leather 2 Seater Sofa Price:250500.0
ID:WATE9DX9E4YSRJSY Name:Breitling AB011010/BB08 131S Chronomat 44 Analog Watch  - For Boys, Men Price:571230.0
```

2-Sort By Name:

```
ID:SUSEEHDYHGRZDXGS Name:walletsnbags Y- Back Suspenders for Men Price:1199.0
ID:WLPEJ5VGBMZKHWAZ Name:wallskart Animation & Cartoons Wallpaper Price:599.0
ID:WLPEJ5VGMYBYGGX7 Name:wallskart Floral & Botanical Wallpaper Price:599.0
ID:BBAEJK8Z5UD97GTP Name:womaniya Alloy Bracelet Price:2000.0
ID:PBXEAZTCCAUM8TMT Name:www.thepaper.asia Anchor Anchor Art Metal Pencil Box Price:154.0
ID:PBXEAEN4R6HUGZJV Name:www.thepaper.asia Floral Floral Art Canvas Leather Pencil Box Price:375.0
ID:PBXEAJVRV5HNMDTR Name:www.thepaper.asia Floral Flower Art Canvas Pencil Box Price:375.0
ID:PBXEAJVRSJFJ2APN Name:www.thepaper.asia Floral Flowers Art Canvas Pencil Box Price:375.0
ID:PBXEAKA3AGPE4NRU Name:www.thepaper.asia Floral Flowers Art Canvas Pencil Box Price:375.0
ID:PBXEAKAESZQZKYFS Name:www.thepaper.asia Floral Flowers Art Canvas Pencil Box Price:375.0
ID:PBXEAHTCHTG62WSA Name:www.thepaper.asia Floral flowers Art canvas Pencil Box Price:375.0
ID:PBXEAJVRRK6MXXKH Name:www.thepaper.asia Flower Floral Art Canvas Pencil Box Price:375.0
ID:PBXEAXGWYNVUUQVY Name:www.thepaper.asia friends Friends Art Canvas Pencil Box Price:299.0
ID:SHOEG8BM8ZFYGPTP Name:xpert Running Shoes Price:999.0
ID:SLIEHUFTZFVFDGEZ Name:xy decor Cotton Sofa Cover Price:1699.0
ID:HJREGVMCEGGUDUE5 Name:youniqueshop Plastic, Stainless Steel Hand Juicer Price:810.0
ID:CWRE84EDSKFE8KF5 Name:zDelhi.com Car Washer Z1 Ultra High Pressure Washer Price:4499.0
ID:ACCEGP55JR26GS4U Name:zaidis data_cable USB Cable Price:150.0
ID:SFFEGYZKYEHUZACV Name:zasmina Slippers Price:700.0
ID:SFFEHF8EGEZHGVQ8 Name:zasmina Slippers Price:700.0
ID:UMBEGBPZVYPXJ62X Name: Tarkan Unique Style-2016 Umbrella Price:1999.0
```

3-Sort By Discounted_Price:

```
ID:SOFEDVYZAHXWYTGW Name:ARRA Solid Wood 5 Seater Sofa Price:51400.0 DiscountPrice:51400.0
ID:SOFEDVYZPCRAFKEQ Name:ARRA Solid Wood 6 Seater Sofa Price:53300.0 DiscountPrice:53300.0
ID:SOFEE7ACZNC57QYQ Name:Durian Fabric 2 Seater Sofa Price:84300.0 DiscountPrice:54795.0
ID:SOFECYFACHZTHA2C Name:Durian Harmony/2 Fabric 2 Seater Sofa Price:85500.0 DiscountPrice:55575.0
ID:SOFEDVYZSG7DTMYG Name:ARRA Solid Wood 4 Seater Sofa Price:57500.0 DiscountPrice:57500.0
ID:SOFEE7ACDGRPDWGZ Name:Durian Fabric 3 Seater Sofa Price:93600.0 DiscountPrice:60840.0
ID:SOFEDVYZMGY6UXFJ Name:ARRA Solid Wood 5 Seater Sofa Price:61800.0 DiscountPrice:61800.0
ID:SOFEDVYZ7SAGYGHC Name:ARRA Solid Wood 7 Seater Sofa Price:65900.0 DiscountPrice:65900.0
ID:SOFEDVYZTDGWBSMN Name:ARRA Solid Wood 6 Seater Sofa Price:68400.0 DiscountPrice:68400.0
ID:SOFECYFAGGVMMWS7 Name:Durian Dream/2 Leather 2 Seater Sofa Price:108000.0 DiscountPrice:70200.0
ID:SOFE8HPYPJPUUZ3H Name:Durian Helena Fabric 3 Seater Sofa Price:108900.0 DiscountPrice:70785.0
ID:SOFE8HPYX66KMC3A Name:Durian Helena Fabric 3 Seater Sofa Price:108900.0 DiscountPrice:70785.0
ID:SOFEDVYZRHJG8J3F Name:ARRA Solid Wood 7 Seater Sofa Price:86500.0 DiscountPrice:86500.0
ID:SOFECYFAH37ZKUKW Name:Durian Club/3 Leather 3 Seater Sofa Price:162000.0 DiscountPrice:105300.0
ID:WATEA6UGFGKZKDJC Name:TAG Heuer CAU1116.BA0858 Formula 1 Analog Watch  - For Boys, Men Price:107750.0 DiscountPrice:107750.0
ID:ACCEEV5UV5NV4PKZ Name:Audeze Lcd2 In Bamboo, High Quality Planar Magnetic Headphone Headphones Price:116292.0 DiscountPrice:116292.0
ID:SOFEE7AC7XCYXDVC Name:Durian Leather 2 Seater Sofa Price:204600.0 DiscountPrice:132990.0
ID:SOFECYFA8R8T5HNG Name:Durian Laze/3 Leather 3 Seater Sofa Price:217500.0 DiscountPrice:141375.0
ID:SOFEE7ACBVAGKYUV Name:Durian Leather 2 Seater Sofa Price:250500.0 DiscountPrice:162825.0
ID:WATEAK8SE2RUK7GM Name:Cartier W6701005 Analog Watch  - For Boys, Men Price:201000.0 DiscountPrice:201000.0
ID:WATE9DX9E4YSRJSY Name:Breitling AB011010/BB08 131S Chronomat 44 Analog Watch  - For Boys, Men Price:571230.0 DiscountPrice:571230.0
```

d) If someone who is not registered in the system wants to login, user Id warns that she is not in the system.

```
***CustomerMenu***
**You Need To Enter UserID And Password For Customer Operation
Enter UserId
156
Enter The Password
23
False Userid
###Make User Selection####
1-CustomerMenu
2-TraderMenu
3-DriverMenu
4-Exit MainMenu
|
```
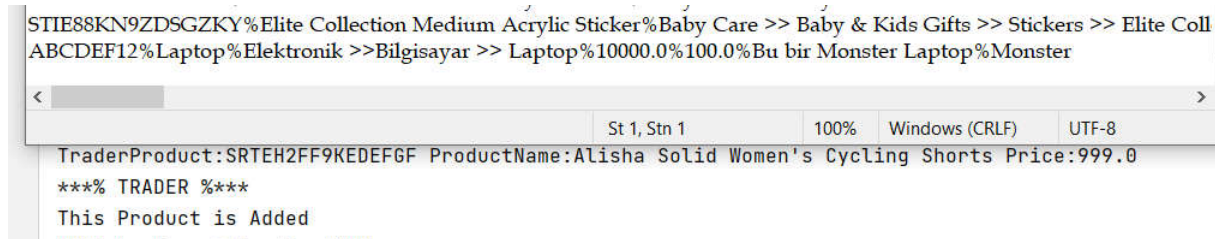
d) Searches by name in the system.

```
1-Search Product By Name
2-Sort Product
3-Filter Product
4-Show Traders Product
5-Exit CustomerMenu
Enter The Choice
1
Enter The Name Of Product
Alisha Solid Women's Cycling Shorts
This Product Found Price:999.0 and discountedPrice:379.0 NETPRICE=620.0
This Product Found Price:699.0 and discountedPrice:267.0 NETPRICE=432.0
This Product Found Price:1199.0 and discountedPrice:479.0 NETPRICE=720.0
This Product Found Price:1199.0 and discountedPrice:479.0 NETPRICE=720.0
This Product Found Price:999.0 and discountedPrice:379.0 NETPRICE=620.0
This Product Found Price:999.0 and discountedPrice:379.0 NETPRICE=620.0
```

e) It listed the products according to the price range given.

```
***Filter***
1-Filter by price
2-Filter by category
1
Enter Min Price
700
Enter Max Price
800
ID:ARPEGDHSXZJSHGSN Name:Bengal Blooms Rose Artificial Plant  with Pot Price:799.0 DiscountPrice:579.0
ID:BELEG68SBMZFFN5Z Name:Ligans NY Men Formal Black Genuine Leather Belt Price:795.0 DiscountPrice:695.0
ID:SHTEBY72FGKPYBRU Name:Discountgod Men's Checkered Casual Shirt Price:750.0 DiscountPrice:590.0
ID:WATEDFHARG4YSPCA Name:Srushti Art Jewelry Megnet_Led_Sport_BlackRed1 Digital Watch  - For Men, Women, Boys, Girls Price:799.0 DiscountPrice:200.0
ID:SHOECKEYCF73BXZX Name:Do Bhai Boots Price:799.0 DiscountPrice:699.0
ID:WATDXN6HPRHJ5H3A Name:Disney LP-1008 (Yellow) Analog Watch  - For Boys, Girls Price:795.0 DiscountPrice:795.0
ID:WATDG487YZTHEJZZ Name:Zoop C4040PP03 Digital Watch  - For Boys, Girls Price:750.0 DiscountPrice:750.0
ID:SHOEJKK3VZGHMT6T Name:ShoeBuzz Casuals Price:799.0 DiscountPrice:247.0
ID:SHIE9WHT4M9FHMB5 Name:Eshoppee Laughing Buddha For Success And Wealth Showpiece  -  12 cm Price:799.0 DiscountPrice:399.0
ID:TOPEAZ88AGF3KJHS Name:The Clove Casual 3/4 Sleeve Self Design Women's Top Price:800.0 DiscountPrice:399.0
ID:TOPE954FF9KJSZZN Name:Shilpkala Casual Cape Sleeve Printed Women's Top Price:799.0 DiscountPrice:799.0
ID:TOPE8DPRTAKVHKRW Name:Shilpkala Casual Bell Sleeve Printed Women's Top Price:799.0 DiscountPrice:799.0
ID:TOPE8DPRGZBFCGFG Name:Shilpkala Casual Bell Sleeve Printed Women's Top Price:799.0 DiscountPrice:799.0
ID:TOPECJFAHFF9PB94 Name:Kairaa Lounge Wear Sleeveless Embellished Women's Top Price:710.0 DiscountPrice:710.0
ID:TOPEBTGCPSWPYGRM Name:Hichkii Casual Cape Sleeve Embroidered Women's Top Price:799.0 DiscountPrice:499.0
ID:TOPEBRYGRZFGPMHP Name:Urban Fashion Bank Casual 3/4 Sleeve Solid Women's Top Price:700.0 DiscountPrice:355.0
ID:ACCEA9K5ZCDNRGXN Name:Totta Pouch for Sony Xperia M5 Dual Price:799.0 DiscountPrice:399.0
```

f) A new product has been added by the trader.

```
STIE88KN9ZDSGZKY%Elite Collection Medium Acrylic Sticker%Baby Care >> Baby & Kids Gifts >> Stickers >> Elite Coll
ABCDEF12%Laptop%Elektronik >>Bilgisayar >> Laptop%10000.0%100.0%Bu bir Monster Laptop%Monster
```
| | St 1, Stn 1 | 100% | Windows (CRLF) | UTF-8 |

```
TraderProduct:SRTEH2FF9KEDEFGF ProductName:Alisha Solid Women's Cycling Shorts Price:999.0
***% TRADER %***
This Product is Added
```

```
***TraderMenu***
Enter UserId
Traderr1
Enter The Password
Alisha
1-Add Product
2-Remove Product
3-Edit Product
4-ListOf Orders
5-Exit
Enter The Choice
1
Enter ProductID
ABCDEF123
Enter ProductName
Telefon
Enter Product_Tree With (>>)
Elektronik>>Telefon
Enter Product Description
Çok iyi telefondur
Enter TraderName Of Product
Ferdi
Enter The Price
1500
Enter The DiscountedPrice
250
This Product is Added
```

TraderID=Traderr1,Traderr2…

TraderPassword=TraderName