

GTU Department of Computer Engineering
CSE 222/505 - Spring 2021
Homework 1 Report

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1. SYSTEM REQUIREMENTS

The Furniture Shop automatic system includes some branches and with specific kind of products. There will be three types of user (customer, branch employee, administrator). All three user has specific kind of task they can perform.

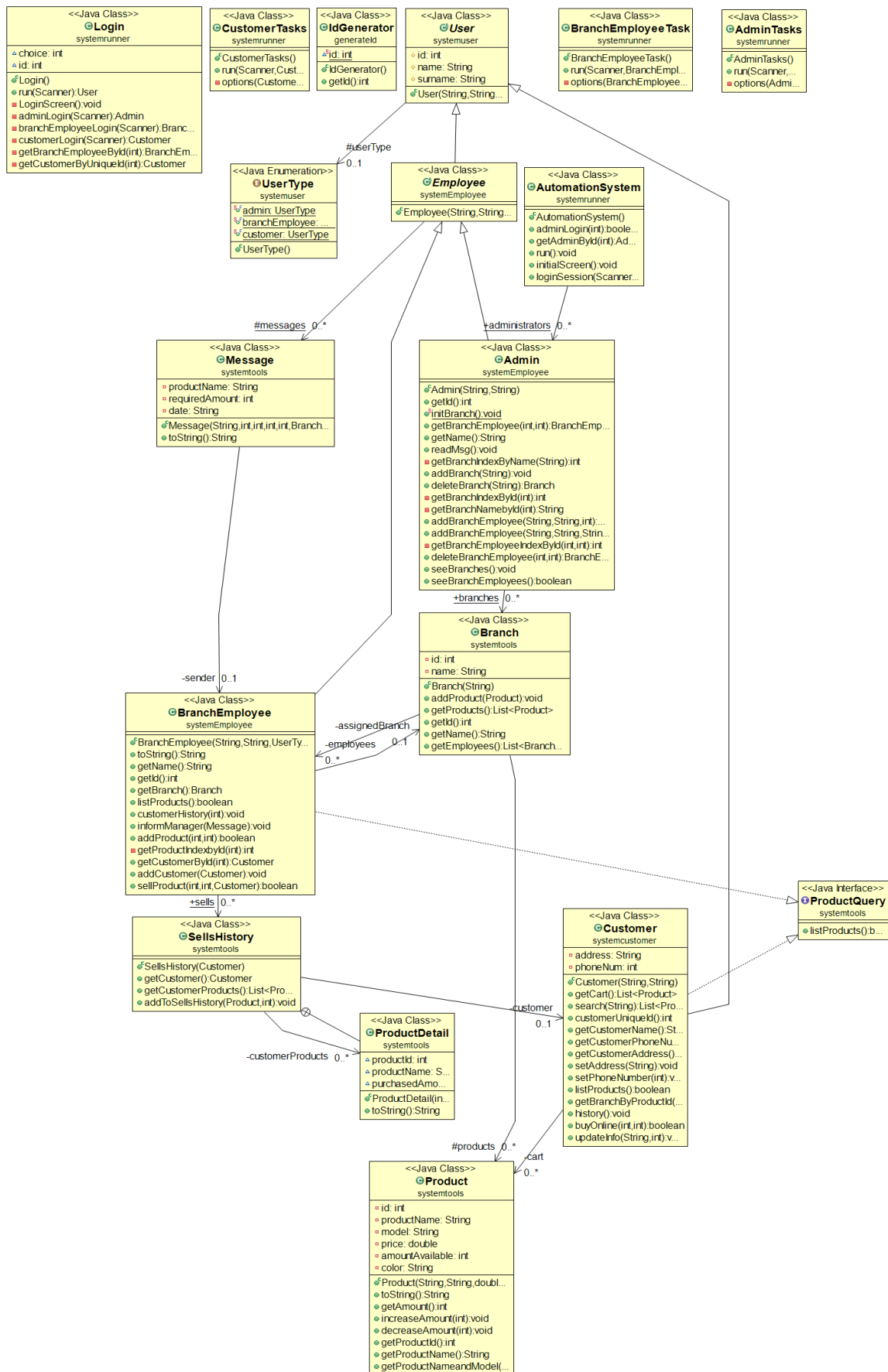
Admin can add / remove branch or branch employee and check messages about product sent by branch employee. Admin can also keep track of all branch employees at once.

Branch employee can add / remove product (mainly increase or decrease product quantity), can inform admin panel if they need any product in a branch if products run out of stock. Branch employee also sell product to a customer. They can also inquire about a customer's purchase history.

Customer interact with the system by searching for a product or look at the all products. They can also look in which branch a product exist. Customer should have the capability to buy product online and keep track of his/her purchase history.

These are the main things the system should have to perform all the task automatically. To resolve all these problem I tried to follow a systematic way explained below.

2. CLASS DIAGRAMS



Use Case Diagram :



3. PROBLEM SOLUTION APPROACH

To hold branch information I have Branch class. There are there different classes for three kinds of user. There is product class to hold information about the product. This is the main backbone of the automation system.

Besides to help those classes I have some extra classes e.g: Message class to make sure message between administrator and employees are handled in a formal way. There is a IdGenerator class to create some random id. SellHistory class to keep track of sales in a more maintainable manner .

Mostly the system needs administrator to perform some specific task , same for customers and branch employee. To layout their task gracefully I added those option in systemrunner package. Ultimately using this system the shopping system will run automatically.

As humans we can make error. So I tried to make all possible error a system user can make and inform the user about their error. The system can be run by a user without any prior knowledge. For that I added all the options clearly with instructions.

4. TEST CASES

Case 1 : Register as Admin

Case 2 : Login as Admin with correct credential

Case 3 : Login as Admin with Invalid credential

Case 4: Add Branch

Case 5: Add Branch with same name as existing Branch (duplicate name not allowed)

Case 6: Remove Branch

Case 7: See Branches

Case 8: Add Branch Employee and assign a branch to employee

Case 9: Add Branch Employee and assign to an invalid branch

Case 10: Remove Branch Employee

Case 11: See Branch Employee

Case 12: check messages sent by branch employees

Case 13: Login as Branch Employee with valid credential

Case 14: Login as Branch Employee with invalid credential

Case 15: See Products of a Branch

Case 16: Inform manager about shortage of a product

Case 17: Add product(increase a product amount) with valid product id

Case 18: Add product by providing invalid product id

Case 19: Sell Product to a new Customer

Case 20: Sell Product to an existing customer

Case 21: Sell Product when product is in stock

Case 22: Sell a product when product is not enough in stock

Case 23: Login as Customer with valid credential

Case 24: Search Product by Product Name (case sensitive)

Case 25: Search Product by a product name which is not in store

Case 26: List of all product in the system

Case 27 : Find a product's branch by product id

Case 28: Shop Online

Case 29: Shop online when product is not enough in the store

Case 30: Shopping history of a Customer

Case 31: Update Billing address for online buying

Case 32: Invalid input check when taking input from user

5. RUNNING AND RESULTS

Test Case	Expected Output	Result	Screenshot
Cas e 1	Admin should register to system and get a code to login to system	pass	<pre> ---Welcome--- 1. Login 2. Register as Admin 0. Exit Enter your choice : 2 ---Register as Admin-- Enter your name : sarwar Enter your surname : hossain your admintrative login code is '38' ---Welcome--- 1. Login 2. Register as Admin 0. Exit Enter your choice : </pre>
Cas e 2	Show welcome screen to admin user	Pass	<pre> ---Login--- 1. Login as Admin 2. Login as Branch Employee 3. Login as Customer 0. Exit Enter your choice : 1 ---Admin Login--- Please Enter Your Secret Login Code : 38 ---Welcome sarwar--- 1. Add Branch 2. Remove Branch 3. See Branches 4. Add Branch Employee 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : </pre>
Cas e 3	Print invalid credential as output	Pass	

			<pre> ---Login--- 1. Login as Admin 2. Login as Branch Employee 3. Login as Customer 0. Exit Enter your choice : 1 ---Admin Login--- Please Enter Your Secret Login Code : 40 Invalid Credential !!! </pre>
Cas e 4	Branch added message	pass	<pre> 1. Add Branch 2. Remove Branch 3. See Branches 4. Add Branch Employee 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : 1 Please Enter the Branch Name : Rajshahi Rajshahi added as new branch </pre>
Cas e 5	Branch already exists warning message	Pass	<pre> 1. Add Branch 2. Remove Branch 3. See Branches 4. Add Branch Employee 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : 1 Please Enter the Branch Name : Birampur Branch already exists !!! </pre>

Cas e 6	Branch removed message	Pass	<pre> 1. Add Branch 2. Remove Branch 3. See Branches 4. Add Branch Employee 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : 2 ---List of Branches--- Branch Id : 1 Branch Name : Birampur Branch Id : 2 Branch Name : Dinajpur Branch Id : 3 Branch Name : Rangpur Branch Id : 4 Branch Name : Dhaka Branch Id : 39 Branch Name : Rajshahi Please Enter the Branch Name to delete : Birampur Birampur branch is removed </pre>
Cas e 7	Show all the branches in the system	Pass	<pre> ---Welcome sarwar--- 1. Add Branch 2. Remove Branch 3. See Branches 4. Add Branch Employee 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : 3 ---List of Branches--- Branch Id : 1 Branch Name : Birampur Branch Id : 2 Branch Name : Dinajpur Branch Id : 3 Branch Name : Rangpur Branch Id : 4 Branch Name : Dhaka </pre>
Cas e 8	Adding a branch employee to system and give the employee a unique id to login into the system	Pass	

			<pre> 1. Add Branch 2. Remove Branch 3. See Branches 4. Add Branch Employee 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : 4 Please Enter Employee Name : Abdullah Please Enter Employee Surname: Sakib ---List of Branches--- Branch Id : 2 Branch Name : Dinajpur Branch Id : 3 Branch Name : Rangpur Branch Id : 4 Branch Name : Dhaka Branch Id : 39 Branch Name : Rajshahi Branch Id : 40 Branch Name : rajshahi Assign a branch to this employee(enter name/id of the branch) : 2 Employee Id : 41 (need this id to login later) </pre>
Case 9	Trying to assign a invalid branch to a branch employee will cause error	Pass	<pre> ---Branch Employees--- No Branch employees!!!. Try adding them first ---Welcome abdullah--- 1. Add Branch 2. Remove Branch 3. See Branches 4. Add Branch Employee 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : 4 Please Enter Employee Name : abdullah Please Enter Employee Surname: sakib ---List of Branches--- Branch Id : 1 Branch Name : Birampur Branch Id : 2 Branch Name : Dinajpur Branch Id : 3 Branch Name : Rangpur Branch Id : 4 Branch Name : Dhaka Assign a branch to this employee(enter name/id of the branch) : gebze Invalid Branch!!! </pre>

Cas e 10	Should print a employee removed message	Pass	<pre> 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : 5 ---Branch Employees--- Employee Id : 39 Name : abdullah sakib UserType : branchEmployee branchId : 1 branchName : Birampur Please Enter 'Id' of employee you want to delete : 39 Please Enter Employee's Branch Id : 1 abdullah sakib is removed !!! </pre>
Cas e 11	Should print all the branch employees	pass	<pre> 1. Add Branch 2. Remove Branch 3. See Branches 4. Add Branch Employee 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : 6 ---Branch Employees--- Employee Id : 44 Name : Sarwar Hossain UserType : branchEmployee branchId : 4 branchName : Dhaka </pre>
Cas e 12	Should read all the message sent by branch employee	Pass	<pre> 1. Add Branch 2. Remove Branch 3. See Branches 4. Add Branch Employee 5. Remove Branch Employee 6. See Branch Employees 7. Check Messages 0. Logout Enter your choice : 7 1 : We need 50 Book in Birampur branch posted by : 6 4 (id : 41) date : 5/5/2021 2 : We need 50 Book in Dhaka branch posted by : sarwar hossain (id : 42) date : 2/2/2021 </pre>

Cas e 13	should welcome branch employee	Pass	<pre> 1. Login as Admin 2. Login as Branch Employee 3. Login as Customer 0. Exit Enter your choice : 2 ---Branch Employee Login--- Please Enter Your Employee Id : 45 ---Welcome Sarwar Hossain--- 1. See Products 2. Meassage to Manager 3. Add Product 4. Sell Products (new customer) 5. Sell Product (existing customer) 6. Sales History of a customer 0. Logout Enter your choice :</pre>
Cas e 14	Should not allow to login as branch employee	Pass	<pre> 1. Login as Admin 2. Login as Branch Employee 3. Login as Customer 0. Exit Enter your choice : 2 ---Branch Employee Login--- Please Enter Your Employee Id : 42 Invalid Credential !!!</pre>
Cas e 15	Should print all the products in the branch	Pass	<pre> 1. See Products 2. Meassage to Manager 3. Add Product 4. Sell Products (new customer) 5. Sell Product (existing customer) 6. Sales History of a customer 0. Logout Enter your choice : 1 ---List of Products In Your Branch--- product id : 29 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 30 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 31 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 32 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 33 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 34 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 35 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 36 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _</pre>
Cas e 16	Should compose a message and send to administrator s	Pass	

			<pre> ---Branch Employee Login--- Please Enter Your Employee Id : 39 ---Welcome sarwar hossain--- 1. See Products 2. Message to Manager 3. Add Product 4. Sell Products (new customer) 5. Sell Product (existing customer) 6. Sales History of a customer 0. Logout Enter your choice : 2 Please name the product you need : office chair Please enter the required amount : 10 Please enter today's day (0 - 30) : 13 Please enter today's month (0 - 12) : 3 Please enter year (e.g:2021) : 2021 ---Welcome sarwar hossain---</pre>
Cas e 17	Should increase the amount of product and display product added message	Pass	<pre> 1. See Products 2. Message to Manager 3. Add Product 4. Sell Products (new customer) 5. Sell Product (existing customer) 6. Sales History of a customer 0. Logout Enter your choice : 3 ---List of Products In Your Branch--- product id : 29 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 30 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 31 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 32 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 33 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 34 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 35 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 36 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ Please enter the product id : 29 Enter amount you want to add : 50 Products added</pre>
Cas e 18	If product id is invalid then should show a message saying failed to add product	Pass	<pre> 1. See Products 2. Message to Manager 3. Add Product 4. Sell Products (new customer) 5. Sell Product (existing customer) 6. Sales History of a customer 0. Logout Enter your choice : 3 ---List of Products In Your Branch--- product id : 29 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 51 Color : red product id : 30 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 31 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 32 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 33 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 34 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 35 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 36 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ Please enter the product id : 28 Enter amount you want to add : 1 Failed to add Product !!!</pre>
Cas e 19	Should sell product to a new customer and print product sold	Pass	

	message		<pre> 1. See Products 2. Message to Manager 3. Add Product 4. Sell Products (new customer) 5. Sell Product (existing customer) 6. Sales History of a customer 0. Logout Enter your choice : 4 Please Enter Customer Name : Abdullah Please Enter Customer Surname : Sakib ---List of Products In Your Branch--- product id : 29 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 51 Color : red product id : 30 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 31 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 32 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 33 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 34 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 35 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 36 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ Please enter the product id : 29 Enter amount : 1 Product Sold !!! Customer's Unique Id : 47. Customer will use this ID to login in the system </pre>
Cas e 20	Should sell product to a existing customer if provide customer id	Pass	<pre> 1. See Products 2. Message to Manager 3. Add Product 4. Sell Products (new customer) 5. Sell Product (existing customer) 6. Sales History of a customer 0. Logout Enter your choice : 5 Please Enter Customer's Unique Id : 47 ---List of Products In Your Branch--- product id : 29 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 50 Color : red product id : 30 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 31 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 32 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 33 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 34 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 35 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 36 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ Please enter the product id : 29 Enter amount : 20 Product Sold !!! </pre>
Cas e 21	Shouldn't sell a product if not enough in stock	Pass	<pre> 1. See Products 2. Message to Manager 3. Add Product 4. Sell Products (new customer) 5. Sell Product (existing customer) 6. Sales History of a customer 0. Logout Enter your choice : 5 Please Enter Customer's Unique Id : 47 ---List of Products In Your Branch--- product id : 29 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 30 Color : red product id : 30 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 31 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 32 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 33 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 34 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 35 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 36 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ Please enter the product id : 29 Enter amount : 40 Not enough product in stock !!! </pre>
Cas e 22	Should show customers purchase history	Pass	

			<pre> 1. See Products 2. Meassage to Manager 3. Add Product 4. Sell Products (new customer) 5. Sell Product (existing customer) 6. Sales History of a customer 0. Logout Enter your choice : 6 Please Enter Customer's Unique Id : 47 ---Customer History--- customer id : 47 name : Abdullah Product id : 29 Product : office chair model : model 1 purchased amount : 21 </pre>
Cas e 23	if valid id is provided then should show welcome screen to customer	Pass	<pre> 1. Login as Admin 2. Login as Branch Employee 3. Login as Customer 0. Exit Enter your choice : 3 ---Customer Login--- Please Enter Your Unique Id : 47 ---Welcome Abdullah--- 1. Search Product 2. List of Products 3. Find a Product's Branch 4. Shop Online 5. Shopping History 6. Update billing address 0. Logout Enter your choice : </pre>
Cas e 24	Should print list of product in different branches if searched by product name	Pass	<pre> 1. Search Product 2. List of Products 3. Find a Product's Branch 4. Shop Online 5. Shopping History 6. Update billing address 0. Logout Enter your choice : 1 Please Enter a Product Name : book case ---Products by Search Query--- product id : 19 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 20 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 27 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 28 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 35 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ product id : 36 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : _ </pre>
Cas e 25	Should show warning message if product is not found	Pass	

			<pre> ---Customer Login--- Please Enter Your Unique Id : 41 ---Welcome setara--- 1. Search Product 2. List of Products 3. Find a Product's Branch 4. Shop Online 5. Shopping History 6. Update billing address 0. Logout Enter your choice : 1 Please Enter a Product Name : something weird No Product Found !!! </pre>
Cas e 26	Should print all the products in the system	Pass	<pre> 1. Search Product 2. List of Products 3. Find a Product's Branch 4. Shop Online 5. Shopping History 6. Update billing address 0. Logout Enter your choice : 2 ---List of All Products--- product id : 13 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 14 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 15 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 16 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 17 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 18 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 19 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : product id : 20 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : product id : 21 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 22 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 23 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 24 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 25 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : red product id : 26 Product Name : meeting table Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 27 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : product id : 28 Product Name : book case Model : model 1 Price : 1000.0 Available Amount : 1 Color : product id : 29 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 30 Color : red product id : 30 Product Name : office chair Model : model 1 Price : 1000.0 Available Amount : 1 Color : green product id : 31 Product Name : office desk Model : model 1 Price : 1000.0 Available Amount : 1 Color : red </pre>
Cas e 27	Should find a product's branch if valid product id is provided	Pass	<pre> 1. Search Product 2. List of Products 3. Find a Product's Branch 4. Shop Online 5. Shopping History 6. Update billing address 0. Logout Enter your choice : 3 Please Enter a Product id : 13 ---Product Available in following branch--- Branch Id : 2 Branch Name : Dinajpur </pre>
Cas e 28	For shop online if the billing address doesn't exist	pass	

	then will ask for it and then customer will be able to buy product if available in stock		1. Search Product 2. List of Products 3. Find a Product's Branch 4. Shop Online 5. Shopping History 6. Update billing address 0. Logout Enter your choice : 4 Enter your current Address : Birampur Enter your mobile number : 01715412057 Enter Product Id : 19 Enter Amount : 1 Product Purchased Successfully !!!
Case 29	If product is not sufficient of invalid product id is given then should print couldn't buy product	Pass	1. Search Product 2. List of Products 3. Find a Product's Branch 4. Shop Online 5. Shopping History 6. Update billing address 0. Logout Enter your choice : 4 ---Your current billing address and phone number--- Address : Birampur phone number : 1715412057 Enter Product Id : 19 Enter Amount : 50 Couldn't buy Product !!!
Case 30	Should print a customers purchase history	Pass	1. Search Product 2. List of Products 3. Find a Product's Branch 4. Shop Online 5. Shopping History 6. Update billing address 0. Logout Enter your choice : 5 ---Your Shopping History--- customer id : 44 name : Sarwar Product id : 29 Product : office chair model : model 1 purchased amount : 1 Product id : 19 Product : book case model : model 1 purchased amount : 1
Case 31	Customer should be able to	Pass	

	update his/her billing address		<pre> 1. Search Product 2. List of Products 3. Find a Product's Branch 4. Shop Online 5. Shopping History 6. Update billing address 0. Logout Enter your choice : 6 ---Your current billing address and phone number--- Address : Birampur phone number : 1715412057 Enter your current address : Dhaka Enter your phone number : 01715412057 Updated !!! </pre>
Case 32	For any kind of input mismatch will inform user about it by showing a warning message	pass	<pre> ---Welcome--- 1. Login 2. Register as Admin 0. Exit Enter your choice : abcd abcd is not a valid input !!! </pre>