**GIT Department of Computer Engineering**

**CSE 222/505 - Spring 2021**

**Homework #1 Report**

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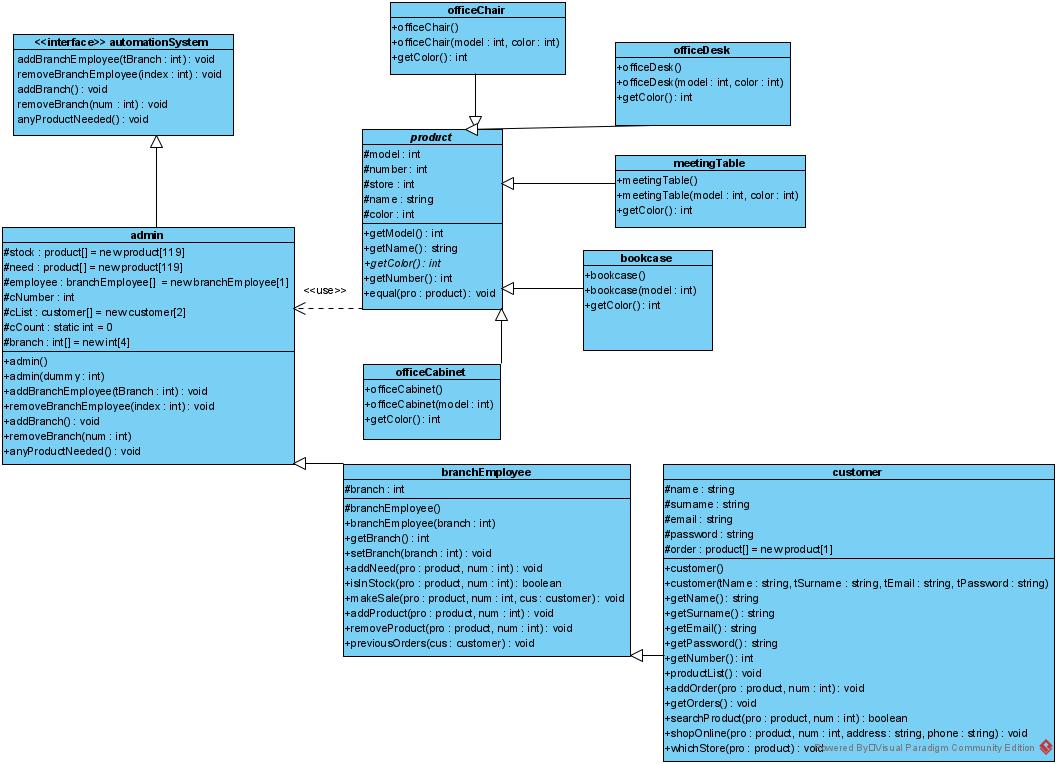
1. **SYSTEM REQUIREMENTS**

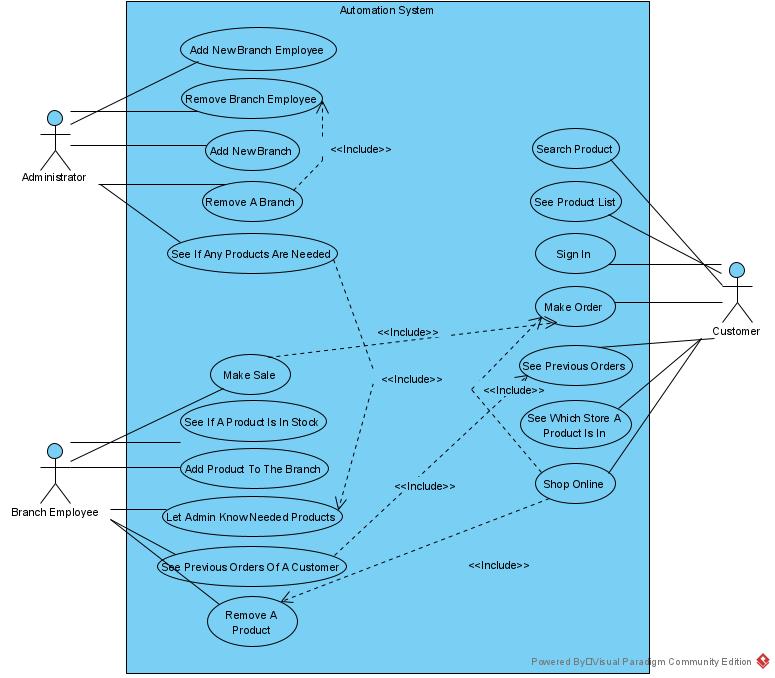
Automation system is an interface that declares some of the methods that is used. Admin implements automation system’s methods. Admin class can add branch employees, remove branch employees, add branches, remove branches, see if there are any products needed. Branch employee class extends admin class and can add needs, see if a product is in stock, make sales, add products to branches, remove products from branches and access a customer’s previous orders. Customer class extends branch employee class and can see the which products are in stock, make an order, see their own previous orders, see if a product is in stock, shop online and see which stores have the product they want.

Customers are logged into the system by entering their names, surnames, emails and passwords. These information should be valid and it is checked during this process. Branch employees manipulate customers’ information and operations. Admin can manipulate customers’ and branch employees’ information and operations. Abstract product class is used in place of every furniture in methods.

There is a different class hierarchy for the products. There are 5 categories of products and they all extend the abstract class “product”. Product field is abstract as the user cannot make an object of it but all the methods using an uncertain product have product as parameter. All furnitures have integers as fields representing their models and colors. Product class implements all the functions these 5 class needs (getters for furniture name, model and number) except for getColor() method. Bookcases and office cabinets don’t have a color field therefore it will cause an error if color of these furnitures tried to be used. So instead, these classes returns -1 as an indicator of not having a color field and this property is used frequently in automation system functions.

1. **USE CASE AND CLASS DIAGRAMS**





1. **PROBLEM SOLUTION APPROACH**

There are three main users of the automation system, therefore three classes. Automation system should be the interface they all will use. In an automation system, administrator should have access to everything that is happening in the system, to customers information and branch employee information. Likewise, branch employees should have access to customer information. That states the hierarchy should go from automation system to customer. “Customer” should be the subclass of “branch employee” and “branch employee” should be the subclass of “admin” while “admin” implements the interface “automation system”.

Most of the fields belong to the admin so while branch employees and customers are using them, admin should be able to manipulate all the information. All fields are protected because of this reason. Every class uses its own methods for its different tasks, but because of the hierarchy, they use each other’s methods while performing the tasks.

Products have model, color, number (how many of that product), store (which branch that product is in) fields. Name of a product just indicates its kind. Name field of an office cabinet is simply “Office Cabinet”. Stock, customer orders and needs are kept in product arrays. Customers are kept in a customer array. Branches are kept in an integer array.

1. **TEST CASES**

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| **TEST CASE ID** | **TEST SCENARIO** | **TEST STEPS** | **TEST DATA** | **EXPECTED RESULTS** | **ACTUAL RESULTS** | **PASS/FAIL** |
| TU01 | Add a new branch employee | Call branch employee constructor through the admin | Branch=2 | A new branch employee for branch 2 should be generated | As expected | Pass |
| TU02 | Check customer login with valid data | Call customer constructor | User’s name = Sena  User’s surname = Erdoğan  User’s e-mail = [s@gmail.com](mailto:s@gmail.com)  User’s password = 1234 | New customer should be generated and user should be informed of the new customer’s customer number | As expected | Pass |
| TU03 | Check customer login with invalid data | Call customer constructor | User’s name = myname  User’s surname = mysurname  User’s e-mail = NotAnEmail  User’s password = something | An e-mail should be in different forms of …@...com  This email doesn’t satisfy that, new customer shouldn’t be generated and an error message should be printed on the screen | As expected | Pass |
| TU04 | Add a new branch | Admin adds a new branch | There is no data needed.  The new branch’s number should be one more than the last branch. | There are 4 branches in total.  The new branch’s number should be 5. | As expected | Pass |
| TU05 | Add a new need with valid data | Branch employee adds a need | Product = Office Chair  Number = 13 | Product should be added to need array and user should be informed. | As expected | Pass |
| TU06 | Add a new need with invalid data | Branch employee adds a need | Product = Office Chair  Number = -2 | Product number cannot be less than 1.  Product cannot be added and the user should be informed. | As expected | Pass |
| TU07 | See if a product is in stock when it is not | Branch employee checks if the product is in stock | Product = Bookcase  Number = 2 | The user should be informed that the product is not in the stock. | As expected | Pass |

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| --- | --- | --- | --- | --- | --- | --- |
| TU08 | Try making sales with products that are not in the stock | Branch employee checks if the product is in stock | Product = Bookcase  Number = 4  Customer = customer2 | The user should be informed that the product is not in the stock. | As expected | Pass |
| TU09 | Add a product to the branch | Branch employee adds a product | Product = Office Chair  Number = 4 | The user should be informed that the product is added to the branch. | As expected | Pass |
| TU10 | Remove a product | Branch employee removes a product from the branch | Product = Office Cabinet  Number = 30 | The user should be informed that the product is removed from the branch. | As expected | Pass |
| TU11 | Shop online with valid data | Customer shops online | Product =  Office Cabinet  Number = 5  Address = A Galaxy Far Far Away  Phone = 12345678901 | The user should be informed that their order is successfully taken. | As expected | Pass |
| TU12 | Shop online with invalid data | Customer shops online | Product =  Office Cabinet  Number = 10  Address = Wonderland  Phone = 1234 | Phone number should consist of 11 digits. The user should be informed that and their order cannot be taken. | As expected | Pass |
| TU13 | Add a branch employee to a branch that does not exist | Admin adds a branch employee | Branch = 6 | The user should be informed that such branch does not exist | As expected | Pass |
| TU14 | Add a branch employee to a branch that does exist | Admin adds a branch employee | Branch = 4 | The user should be informed that the branch employee was successfully generated to work in specified branch | As expected | Pass |
| TU15 | Search a product that is not in the stock | Customer searches for the product | Product = Bookcase  Number = 2 | The user should be informed that the specified product is not in the stock | As expected | Pass |

1. **RUNNING AND RESULTS**

