TEST SPECIFICATION REPORT

Course	BLG-411E Software Engineering
CRN	13330
Year/Semester	2017-2018 Fall
Project Name	Transportation Management Optimization
Team Members	GROUP 30 Student Number Student Name 150160537 Okan YILDIRIM 150160531 Fatih YILMAZ 150160530 Özgür AKTAŞ 150160546 Hasan Emre ARI 941515004 Ali UÇAR
Submission Date	17/12/2017

1. INTRODUCTION

It is inevitable fact that testing phase is one of the most important part of software projects to achieve success. Today's most of software projects fail and cause variety of lost unfortunately. Statistical studies shows testing importance to us. This document is Test Specification Report of Transportation Management Optimization Project. This report measures the success of the project and give details about the tests for all modules of system.

1.1 Goal

Aim of the this report is explain results of variety tests which are applied on Transportation Optimization Management Project. Thanks to the these tests, we solved the bugs and errors came across and make the project better in terms of meet the customer requirement, performance and usability. Before starting the tests, we determined the our test strategies according to features of Transportation Management Optimization Project. In this way, we completed the test properly and measure the test if the project achieve success or not.

1.2 Contents and Organization

1.2.1 Test Plan
In this document, the first given part test plan. The contents of this part are given below:
- ✓ Testing Strategies
- ✓ Test Subjects
- ✓ Equivalence Partitioning

We explained motivation of preferred testing methods and components in this part. Additionally, we discussed the correct and incorrect user inputs in detail in this part.

1.2.2 Unit Tests
We gave all test case of user stories' list and "script for unit testing" for every user scenario in unit test part. In other words, we want to show all the possibilities that the users may encounter and the possible errors and necessary warning messages they will face. All test cases maps to use cases on the Requirement Specification Report.
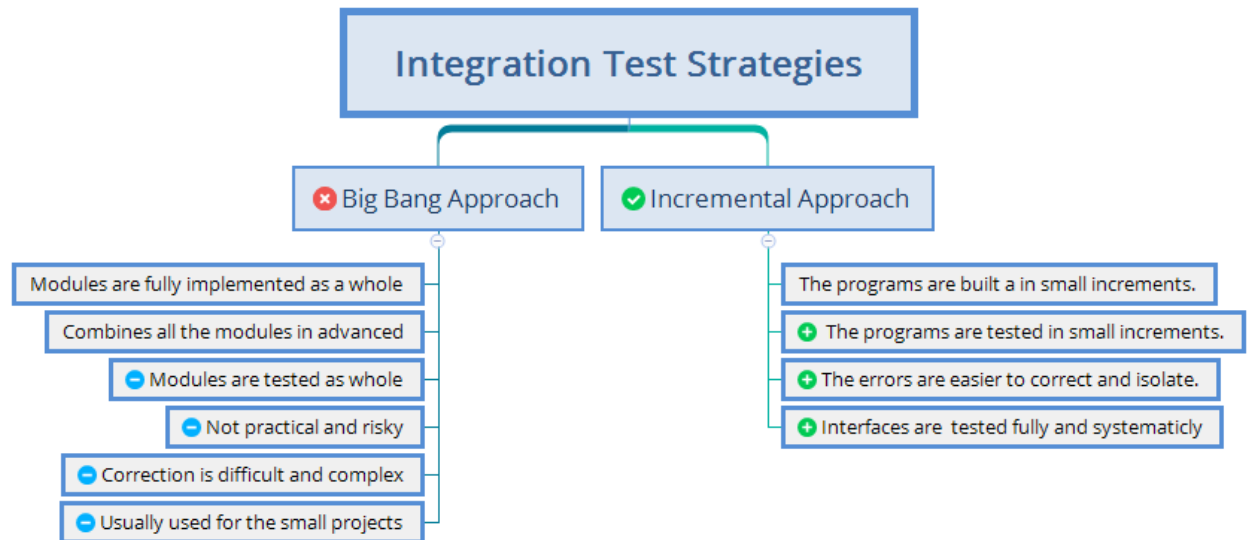
1.2.3 Additional Tests
As an additional test, three tests were applied for our project. The first test is the performance test. This test is important for determining the bottleneck of the system. For this purpose, it provides control over how the resources of the system are distributed. Secondly, the load / stress test system shows how long the system can withstand increasing users. It also shows how long the system can recover after a crash. Finally, the acceptance test is checked to see if the project for the requirements agreed with the test client matches. Explanations and discussions of the tests made are shown in the document.
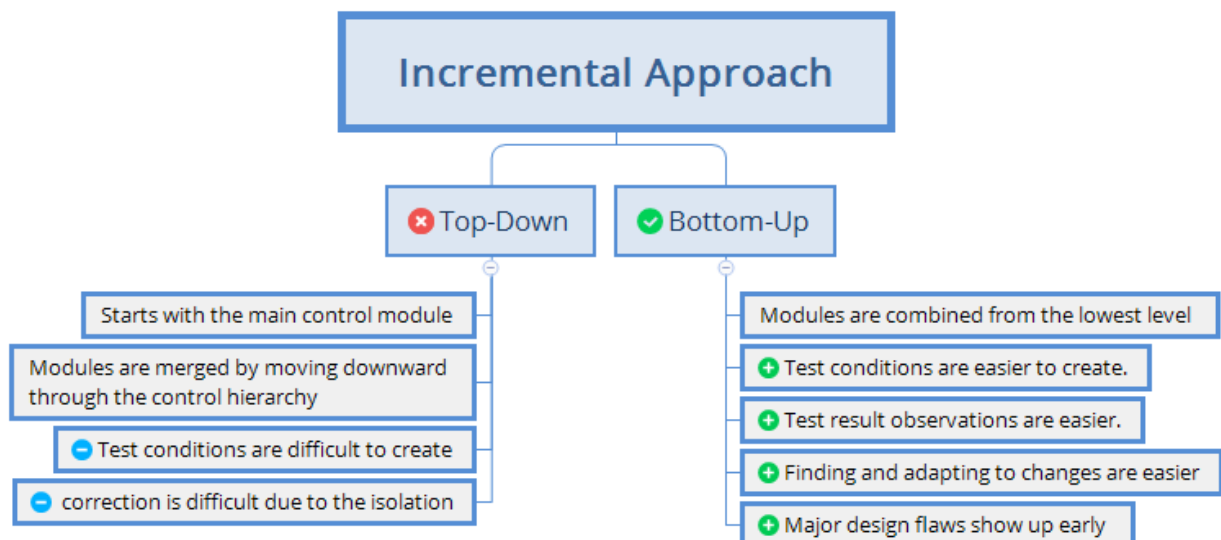
2. TEST PLAN
2.1 Test Strategy

There are main two types of test strategy: Big Bang Approach and Incremental Approach. Advantages and disadvantages of these two approach is given below:

Our project is not small scale project to use Big Bang Approach so that it is not practical for our project. Moreover, it is difficult to diagnose where error was originated. On the other hand, Incremental Approach is more useful in a way to detect errors step by step and solve them one by one. Solving these errors are easier too. Consequently, we prefer to use Incremental Approach

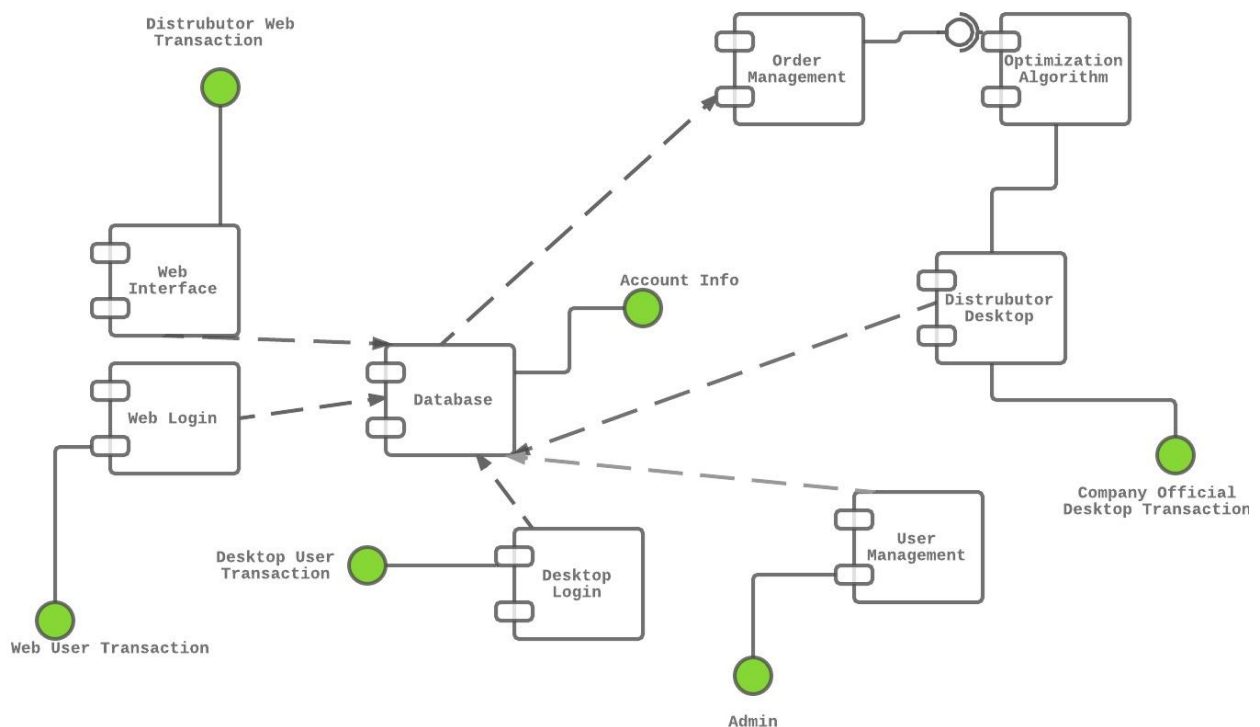Incremental Approach is divided on to two sub approach as following below:

Our system consists of two main module and each module is dependent on database. Therefore, Bottom-Up strategy is more reasonable to use for our project in terms of

detecting the errors on components. Moreover, we implemented our project in Object Oriented Programming approach so that testing is different objects are used. On Testing, firstly combining objects and then construct the real world is more proper with Bottom-Up strategy. According to the given cons and pros above for Top-Down and Bottom-Up strategies, we prefer to use Bottom-Up strategy. These are our motivation aspects.

2.2 Test Subjects

This part will be prepared based on the Component Diagram on the Design Specification Report.

Test Subjects

Components	In Charge Item	Tests	Explanation
Web Interface Web Login	Pool Point User	Login, Giving order, order status, edit order, edit user profile	General Login test, edit profile, giving an order and edit it.
Desktop Login	Company Official	Login, forget username connection.	General Login test, edit profile, and company official is not authorized for user management tool.

User Management	Admin	Login, Managing User, User List	Admin is only authorized person to add and delete and update user profile. Admin list all users.
Order Management	Company Official	List order with its detail, sort them, select some of them to transfer list	Company official can manage to orders to transportation.
Optimization Algorithm	Company Official	Phase1, Phase2, Phase3	Optimization algorithm gives the best solution for all phases.
Database	Admin	Authorization Operations, General Allowances, Database Flow Control	General Load, Volume Stress testing such as big amount of data attacks, Threshold testing.

2.2.1. Web Interface, Web Login Components

Un authorized user cannot sign in. All users can just be added by admin from desktop application. A web user cannot give an order more than 300 package of one product. Input data should be valid for every entry. A web user cannot change him user type.

Web user cannot edit him order which status is confirmed. Web user can edit order which status is pending.

2.2.2. Desktop Login

There are two types of user here, company official and admin. Company official cannot see user management interface. Company 5official cannot change him user type. Admin can change user type.

2.2.3. User Management

Admin is only authorized person to add and delete and update user profile. Admin list all users.

Admin cannot delete himself. Admin cannot create user with same username which is already exist. Admin cannot create a username which text is beginning with numbers 123abc exc. Abc123 is true. 123Abc is false.

2.2.4. Order Management

Company official cannot delete an order which is confirmed and transferred.

2.2.5. Optimization Algorithm

Each transfer plan should start from city A which is factory there and end at city A.

Optimization algorithm assume that each pool point has one order per week. So if a pool point wants to order twice, it should be added to older one.

Optimization algorithm is tested for all phases. (Phase 1, Phase 2, Phase 3).

2.3 Equivalence Partitioning

Input	Valid Equivalence Classes	Invalid Equivalence Classes
String Username **(For both WEB Application and Desktop Application)**	✓ [A-Z] ✓ [a-z] ✓ [0-9] ✓ [?,!,$, -, _,#,}] Example: Okan152?#	✓ Non-ASCII characters ✓ Non-alphabetic characters ✓ Turkish characters ✓ Characters are not supported by keyboard Example: [♦, ♣, ç,ğ,I,İ,ö,ş,ü,ي , ا]
String Password **(For both WEB Application and Desktop Application)**	✓ [A-Z] ✓ [a-z] ✓ [0-9] ✓ [?,!,$, -, _,#,}] ✓ Turkish characters Example: Özgür152?#	✓ Non-ASCII characters ✓ Non-alphabetic characters ✓ Characters are not supported by keyboard Example: [♦, ♣,ي , ا]
Integer Length of Username **(For both WEB Application and Desktop Application)**	0< Length of Username <26 Example: E	✓ 0>Length of Username ✓ Length of Username >26 Example: Empty value
Integer Length of Password **(For both WEB Application and Desktop Application)**	0< Length of Password <26 Example: Özgür152?#OKan152?#189456	✓ 0>Length of Username ✓ Length of Username >26 Example: Özgür152?#OKan152?#189456Q
Integer Amount of Product (For Milk, Yoghurt and Cheese)	0<Amount of Product <301 Example:	✓ 0> Amount of Product ✓ Amount of Product >301

(For both giving order and edit order)	Özgür152?#	✓ Non alphanumerical characters

3. UNIT TESTS

3.1 Test Cases

1.1.1. Desktop Test Cases

USE CASE: LOGIN

Scenario: Trying to login with empty username and password

     Given I am on the "**Login**" page

     And I don't fill "**Username**"

     And I don't fill "**Password**"

     And I click "**Login**" button

     Then I should get "**Please Enter Your Information..!** " error

Scenario: Trying to login with empty username

     Given I am on the "**Login**" page

     And I don't fill "**Username**"

     And I fill "**Password**" correctly

     And I click " **Login** " button

     Then I should get "**Please Enter Your Information..!** " error

Scenario: Trying to login with empty password

     Given I am on the "**Login**" page

     And I fill "**Username**" correctly

     And I don't fill "**Password**"

     And I click " **Login** " button

     Then I should get "**Please Enter Your Information..!** " error

Scenario: Trying to login with wrong username and password

> **Given** I am on the "**Login**" page
>
> **And** I fill "**Username**" wrong
>
> **And** I fill "**Password**" wrong
>
> **And** I click " **Login** " button
>
> **Then** I should get " **Username or Password is invalid** " error

Scenario: Trying to login with wrong username

> **Given** I am on the "**Login**" page
>
> **And** I fill "**Username**" wrong
>
> **And** I fill "**Password**" correctly
>
> **And** I click " **Login** " button
>
> **Then** I should get " **Username or Password is invalid** " error

Scenario: Trying to login with wrong password

> **Given** I am on the "**Login**" page
>
> **And** I fill "**Username**" correctly
>
> **And** I fill "**Password**" wrong
>
> **And** I click " **Login** " button
>
> **Then** I should get " **Username or Password is invalid** " error

Scenario: Trying to login with correct username and password

> **Given** I am on the "**Login**" page
>
> **And** I fill "**Username**" correctly
>
> **And** I fill "**Password**" correctly
>
> **And** I click " **Login** " button
>
> **Then** I should see "**Main**" page

USE CASE: MAIN PAGE

Scenario: Clicking the manage order tab

    Given I am on the "**Main**" page

    And I click the "**Manage Order** " tab

    Then I should see the "**Manage Order** " page

    And I should see the all orders has pending and confirmed statuses

    And I can sort all orders by their Number, Distributor, Product, Amount, Status, Date

Scenario: Clicking the order history tab

    Given I am on the "**Main**" page

    And I click the "**Order History**" tab

    Then I should go to the "**History** " of orders

    And I should see the all orders has transformed status

    And I can sort all orders by their Number, Distributor, Product, Amount, Status, Date

Scenario: Clicking the route draw tab

    Given I am on the "**Main**" page

    And I click the "**Route Draw** "tab

    Then I should go to the "**Route Draw** " page

    And I can sort all orders by their Number, Distributor, Product, Amount, Status, Date

USE CASE: MANAGE ORDERS

Scenario: Clicking the check box to the left of the orders

    Given I am on the "**Manage Orders**" page

    And I click the check box to the left of the orders

    Then The tick appears in the box

    And I click the same check box to the left of the orders

Then The tick disappears in the box

Scenario: Clicking the Select All button

   Given I am on the "**Manage Orders**" page

   And I click "**Select All**" button

   Then The ticks appear in the all check boxes to the left of the orders

   And I click "**Select All**" button again

   Then There is no change on screen

Scenario: Clicking the Deselect All button when all boxes are selected

   Given I am on the "**Manage Orders**" page

   And I click "**Deselect All**" button

   Then The ticks disappear in the all check boxes to the left

   And I click "**Deselect All**" button again

   Then There is no change on screen

Scenario: Clicking the Confirm button

   Given I am on the "**Manage Orders**" page

   And I select some orders

   And I click "**Confirm** " button

   Then These orders which I select become confirmed in "**Database**"

USE CASE: ROUTE DRAW

Scenario: Clicking the Draw Route button

   Given I am on the "**Route Draw**" page

   And I click " **Draw Route** " button

   Then An output seems on screen which will be given to chauffeur

1.1.2. Website Test Cases

USE CASE: LOGIN

Scenario: Trying to login with empty username and password

      Given I am on the "**Login**" page

      And I don't fill "**Username**"

      And I don't fill "**Password**"

      And I click "**Sign in**" button

      Then I should get "**Please Enter Your Information..!** " error

Scenario: Trying to login with empty username

      Given I am on the "**Login**" page

      And I don't fill "**Username**"

      And I fill "**Password**" correctly

      And I click "**Sign in**" button

      Then I should get "**Please Enter Your Information..!** " error

Scenario: Trying to login with empty password

      Given I am on the "**Login**" page

      And I fill "**Username**" correctly

      And I don't fill "**Password**"

      And I click "**Sign in**" button

      Then I should get "**Please Enter Your Information..!** " error

Scenario: Trying to login with wrong username and password

      Given I am on the "**Login**" page

      And I fill "**Username**" wrong

      And I fill "**Password**" wrong

      And I click "**Sign in**" button

      Then I should get " **Username or Password is invalid** " error

Scenario: Trying to login with wrong username

      Given I am on the "**Login**" page

And I fill "**Username**" wrong

And I fill "**Password**" correctly

And I click "**Sign in**" button

Then I should get " **Username or Password is invalid** " error

Scenario: Trying to login with wrong password

Given I am on the "**Login**" page

And I fill "**Username**" correctly

And I fill "**Password**" wrong

And I click "**Sign in**" button

Then I should get " **Username or Password is invalid** " error

Scenario: Trying to login with correct username and password

Given I am on the "**Login**" page

And I fill "**Username**" correctly

And I fill "**Password**" correctly

And I click "**Sign in**" button

Then I should go to "**Menu**" page

USE CASE: MENU

Scenario: Clicking to Give Order button

Given I am on the "**Menu**" page

And I click "**Give Order**" button

Then I should go to "**Give Order** " page

Scenario: Clicking to Edit Order button

Given I am on the "**Menu**" page

And I click "**Edit Order**" button

Then I should go to "**Edit Order** " page

Scenario: Clicking to Order History button

        Given I am on the "**Menu**" page

        And I click "**Order History**" button

        Then I should go to "**Order History**" page

Scenario: Clicking to User Account button

        Given I am on the "**Menu**" page

        And I click " **User Account** " button

        Then I should go to "**User Account**" page

Scenario: Clicking to Log out button

        Given I am on the "**Give Order**" page

        And I click "**Log out**" button

        Then I should go to "**Login**" page

USE CASE: ORDERING

Scenario: Trying to give order with correct amount

        Given I am on the "**Give Order**" page

        And I fill "**Milk amount**" correctly

        And I fill "**Cheese amount**" correctly

        And I fill "**Yoghurt amount**" correctly

        And I click "**Submit Order**" button

        Then The order should be record in "**Database** " with pending status

Scenario: Trying to give order with amount exceeding the upper limit

        Given I am on the "**Give Order**" page

        And I fill "**Milk amount**" with amount exceeding the upper limit

And I fill "**Cheese amount**" with amount exceeding the upper limit

And I fill "**Yoghurt amount**" with amount exceeding the upper limit

And I click "**Submit Order**" button

Then I should get "**Sorry, the maximum value was reached**" error
And The plus button doesn't allow to user to click

Scenario: Trying to give order with amount below the lower limit

Given I am on the "**Give Order**" page

And I fill "**Milk amount**" with amount below the lower limit

And I fill "**Cheese amount**" with amount below the lower limit

And I fill "**Yoghurt amount**" with amount below the lower limit

And I click "**Submit Order**" button

Then I should get " **Sorry, the minimum value was reached** " error
And The minus button doesn't allow to user to click

Scenario: Trying to give order twice

Given I am on the "**Give Order**" page

And I have an order with "pending" status previously

And I fill "**Milk amount**" correctly

And I fill "**Cheese amount**" correctly

And I fill "**Yoghurt amount**" correctly

And I click "**Submit Order**" button

Then The order shouldn't be record in "**Database** "
Then I should go to "**Edit Order**" page

Scenario: Clicking to back button

Given I am on the "**Give Order**" page

And I click "**Back**" button

Then I should go to "**Menu**" page

Scenario: Clicking to Log out button

Given I am on the "**Give Order**" page

And I click "**Log out**" button

Then I should go to "**Login**" page

USE CASE: EDIT ORDER

Scenario: Trying to edit order with amount exceeding the upper limit

Given I am on the "**Edit Order**" page

And There is one single order table with "pending" status

And I fill "**Milk amount**" with amount exceeding the upper limit

And I fill "**Cheese amount**" with amount exceeding the upper limit

And I fill "**Yoghurt amount**" with amount exceeding the upper limit

And I click "**Update Order**" button

Then I should get "**Sorry, the maximum value was reached**" error
And The plus button doesn't allow to user to click

And The order shouldn't be edited in "**Database** "
And There is no change in order table in "**Edit Order**" page

Scenario: Trying to edit order with amount below the lower limit

Given I am on the "**Edit Order**" page

And There is one single order table with "pending" status

And I fill "**Milk amount**" with amount below the lower limit

And I fill "**Cheese amount**" with amount below the lower limit

And I fill "**Yoghurt amount**" with amount below the lower limit

And I click "**Update Order**" button

Then I should get " **Sorry, the minimum value was reached** " error
And The minus button doesn't allow to user to click

And The order shouldn't be edited in "**Database** "
And There is no change in order table in "**Edit Order**" page
Scenario: Trying to edit order with correct amount

Given I am on the "**Edit Order**" page

And I fill "**Milk amount**" correctly

And I fill "**Cheese amount**" correctly

And I fill "**Yoghurt amount**" correctly

And I click "**Update Order**" button

Then The order should be edited in "**Database** "
And There is edited order in order table in "**Edit Order**" page

Scenario: Clicking to back button

Given I am on the "**Edit Order**" page

And I click "**Back**" button

Then I should go to "**Menu**" page

Scenario: Clicking to Log out button

Given I am on the "**Edit Order**" page

And I click "**Log out**" button

Then I should go to "**Login**" page

USE CASE: ORDER HISTORY

Scenario: Showing order history

Given I am on the "**Menu**" page

And I click "**Order History**" button
And I go to "**Order History**" page
Then I should see the "**History** " of orders

Scenario: Clicking to back button

Given I am on the " **Order History** " page

And I click "**Back**" button

Then I should go to "**Menu**" page

Scenario: Clicking to Log out button

Given I am on the " **Order History** " page

And I click "**Log out**" button

Then I should go to "**Login**" page

USE CASE: UPDATE USER ACCOUNT

Scenario: Trying to update user account with wrong current password

Given I am on the " **User Account** " page

And I fill "**Current password**" wrong

And I fill "**New password**" with something

And I click "**Update Account**" button

Then I should get " **Please enter current password correct…!** " error

Scenario: Trying to update user account with empty new password

Given I am on the " **User Account** " page

And I fill "**Current password**" correctly

And I didn't fill " **New password** "

And I click "**Update Account**" button

Then I should get " **New password cannot be empty…!** " error

Scenario: Trying to change user account with correct information

Given I am on the " **User Account** " page

And I fill "**Current password**" correctly

And I fill " **New password** " with new password

And I click "**Update Account**" button

Then It should update my password in "**Database**"

Scenario: Clicking to back button

Given I am on the " **User Account** " page

And I click "**Back**" button

Then I should go to "**Menu**" page

Scenario: Clicking to Log out button

Given I am on the " **User Account** " page

And I click "**Log out**" button

Then I should go to "**Login**" page

1.2.   Scripts

3.2.1 WEB App. Scripts

Test Number	Test Description	Sample Input	Expected result
1	Empty username and password	Username: " " Password: " "	"Please enter your information" error message
2	Only username empty	Username: " " Password: "***" (While correct password formed by 3 three character.)	"Please enter your information" error message
3	Only password empty	Username: "Okan" Password: " "	"Please enter your information" error message
4	Wrong username and password	Username: "Okasdfan" Password:"*******"	"Username and password is invalid" error message
5	Only username wrong	Username: "Okasdfan" Password:"***" (While correct password formed by 3 three character.)	"Username and password is invalid" error message
6	Only password wrong	Username: "Okan" Password:"******"	"Username and password is invalid" error message
7	Username and password correct	Username: "Okan" Password:"***"	"No error" Go to Menu page

Test Number	Test Description	Sample Input	Expected result
1	Press "Give Order" button	Click	Go to "Give Order" page
2	Press "Edit Order" button	Click	Go to "Edit Order" page
3	Press "Order History" button	Click	Go to "Order History" page

4	Press "User Account" button	Click	Go to "User Account" page
6	Pressing "Logout" button	Click	Go to "Login" page

Test Number	Test Description	Sample Input	Expected result
1	Correct milk amount, cheese amount, yoghurt amount	Milk: "20" Cheese: "15" Password: "30"	The order should be record in database with pending status.
2	Milk amount, cheese amount, yoghurt amount exceeding the upper limit	Milk: "400" Cheese: "350" Password: "310"	"Sorry, the maximum value was reached" error message
3	Milk amount, cheese amount, yoghurt amount below the lower limit	Milk: "-30" Cheese: "-10" Password: "-20"	"Sorry, the minimum value was reached" error message
4	Trying to give order twice	Milk: "50" Cheese: "150" Password: "45"	Go to "Edit Order" page
5	Pressing "Back" button	-	Go to "Menu" page
6	Pressing "Logout" button	-	Go to "Login" page

Test Number	Test Description	Sample Input	Expected result
1	Wrong current password	Current Password:"*****"	"Please enter current password correctly" error message
2	Correct current password but new password is empty	Current Password:"***" New Password:" " (While current password formed by 3 three character.)	"New password cannot be empty" error message
3	Correct current and new password	Current password: "***" (While current password formed by 3 three character.) New password: "*****"	Current password updated to new password in database

4	Press "User Account" button	Click	Go to "User Account" page
6	Pressing "Logout" button	Click	Go to "Login" page

Test Number	Test Description	Sample Input	Expected result
1	User have an order in database for editing. Enter correct milk amount, cheese amount, yoghurt amount	Milk: "20" Cheese: "15" Password: "30"	The previous order should be changed in database with pending status.
2	User have an order in database for editing. Milk amount, cheese amount, yoghurt amount exceeding the upper limit	Milk: "400" Cheese: "350" Password: "310"	"Sorry, the maximum value was reached" error message. No changes were made in database.
3	User have an order in database for editing. Milk amount, cheese amount, yoghurt amount below the lower limit	Milk: "-30" Cheese: "-10" Password: "-20"	"Sorry, the minimum value was reached" error message. No changes were made in database.
5	Pressing "Back" button	-	Go to "Menu" page
6	Pressing "Logout" button	-	Go to "Login" page

3.2.2 Desktop App. Scripts

Test Number	Test Description	Sample Input	Expected result
1	Empty username and password	Username: " " Password: " "	"Please enter your information" error message
2	Only username empty	Username: " " Password: "***"	"Please enter your information" error message

		(While correct password formed by 3 three character.)	
3	Only password empty	Username: "Okan" Password: " "	"Please enter your information" error message
4	Wrong username and password	Username: "Hasandfan" Password:"*******"	"Username and password is invalid" error message
5	Only username wrong	Username: "Hasandfan" Password:"***" (While correct password formed by 3 three character.)	"Username and password is invalid" error message
6	Only password wrong	Username: "Hasan" Password:"******"	"Username and password is invalid" error message
7	Username and password correct	Username: "Hasan" Password:"***" (While correct password formed by 3 three character.)	"No error" Show the Manage Order Window

Test Number	**Test Description**	**Sample Input**	**Expected result**
1	Click the manage orders tab	Click	Showing weekly orders with number, distributor, amount, status and date.
2	Click the history tab	Click	Show orders from 7 days ago with number, distributor, amount, status and date.
3	Click route draw tab	Click	Show "confirmed" orders for drawing route with number, distributor, amount, status and date.

Test Number	Test Description	Sample Input	Expected result
1	Press the manage orders tab	Click	Showing weekly orders with number, distributor, amount, status and date.
2	Press the checkbox to the left of the orders or press the checkbox with the tick	Click	If checkbox is unselected, tick appear inside of box, if is not, tick is disappeared inside of checkbox
3	Press select all button	Click	If checkbox is unselected, tick is appeared inside of all checkbox, if isn't, nothing happen.
4	Press select all button	Click	If checkbox is selected, tick is disappeared inside of all checkbox, if isn't, nothing happen.
5	Press confirm button	Click	Selected orders status changed to "confirmed" in database.

Test Number	Test Description	Sample Input	Expected result
1	Click route draw button	Click	Showing output screen seems on screen which will be given to chauffeur

4. ADDITIONAL TESTS

4.1 Performance Test

Performance measurement on web app and desktop app.

Test	Explanation	Tools
Cpu Usage Test (Desktop) [attachment/ (Cpu Usage)AliBabasFarmDesktop.vsps]	Cpu usage performance diagnostics of desktop application	• Visual Studio Performance Profiler
Memory Profiling Test (Desktop) [attachment/ memoryprofiling)AliBabasFarmDesktop.vsps]	Memory usage performance diagnostics of desktop application	• Visual Studio Performance Profiler
Instrumentation Test (Desktop)[attachment/ (instrumentation)AliBabasFarmDesktop.vsps]	Function call counts and timing of desktop application	• Visual Studio Performance Profiler
Concurrency Test (Desktop))[attachment/ (concurrency)AliBabasFarmDesktop.vsps]	Detecting threads waiting other threads on desktop application	• Visual Studio Performance Profiler
Bandwidth Test (Server) [attachment/ perfTestLogin(web).PNG]	Bandwith test of web application	• LoadImpact
Cpu Usage Test (Server) [attachment/ perfTestLogin(web).PNG]	Cpu usage performance diagnostics of server.	• LoadImpact
Memory Profiling Test (Server) [attachment/ perfTestLogin(web).PNG]	Memory usage performance diagnostics of server.	• LoadImpact

4.2 Compatibility Test

Compatibility tests made on different browsers and different operating systems to verify that application runs on different platforms correctly.*[source1]*

Test	Explanation	Tools
Chrome	Testing the application using Chrome 62 and 59 x64 on Windows 10, Mac OS 10.9 and Nexus 6P / Android 7.0	• CrossBrowserTesting
Mozilla Firefox	Testing the application using Mozilla Firefox 57 on Windows 10	• CrossBrowserTesting
Opera	Testing the application using Opera 49 on Windows 10	• CrossBrowserTesting
Internet Explorer	Testing the application using IE 11 on Windows 10	• CrossBrowserTesting
Microsoft Edge	Testing the application using Microsoft Edge 16 on Windows 10	• CrossBrowserTesting
Safari	Testing the application using Safari 7 on Mac OS 10.9	• CrossBrowserTesting

4.3 Load Test

Testing the load capacity of the system by increasing the number of simulated users trying to access to the system

Test	Explanation	Tools
Concurrent User Access *[source2]*	Test up to 25 increasing number of users' access.	• LoadImpact
Concurrent User Login *[source3]*	Test up to 50 increasing number of users' login operation	• LoadImpact

4.4 Usability Test

Usability is defined as the degree of usage pleasure / satisfaction for the effective, efficient usage, within a functionality framework, of a product by certain users, for certain aims. The effective usage of a product is evaluated by the users proper use for certain aims and reaching the wholeness, the product being used efficiently, however, is evaluated by the measure of resources spent in reaching proper usage and wholeness. In accordance to this standard the definitions of gratification, user, mission, aim, usability test, which are the main components of usability studies, are defined as below:

Satisfaction: Being away from usage hardships and the positive attitude using the product.
User: The person who interacts with the interface.
Tasks: The actions necessary to reach the aim.
Aim / The Aimed Output: The action which the user wants to accomplish.

4.4.1 Usability Test:

The test is asking the user, who is a representative of the aimed mass to be going to use the interface, to perform the aimed tasks, and collecting the efficiency, effectiveness and satisfaction values during the process. After deciding on the aimed mass, that is, the users, the interface is put into use by asking them to perform the tasks commonly used on the interface or other important tasks to be reached for although they may not be used frequently.

In addition, eye trackers may be incorporated during the processes of usability, we don't have that equipment.

4.4.2 Usability Test Process:

We have two interfaces which the users interact with. One of them We Interface, which the pool point user order with, and the other one is web interface which the company official use it to manage orders and to transfer them.
We prepare tasks paper to test usability. The test includes two parts, one of them for desktop application, the other one for web application. The tasks are given below.

Web Application User Tasks
1.Open the company web page
2. Sign in on web page

3. Edit your user profile
4. Give an order includes Milk:200 package, Yogurt: 100package, Cheese:150 package
5. Edit your order, Milk:180 package, Yogurt: 80 package, Cheese:150 package
6. Please express the order status
7. Please list your order history
8. Sign out.
Desktop Application User Tasks
1. Open the company desktop application
2. Sign in on application
3. Assume that you are admin, please define a user and give a temporary password him.
4. Assume that you are admin, please delete a user , (Username : Fatih Pool Point: C)
4. Check the orders, select some of them to add transfer list
5. Please, draw transportation route
6. Please, express the transportation report and explain it.
6. Open the orders page, sort it by amount
7. Open the orders page, sort it by pool point
8. Please show order history
9. Sign out.

We test our two interface with 5 users which is unfamiliar that application. Firstly, we gave information about interfaces. After that they try to do that tasks. And the tester observe them while they try to do it.

All observations, we modify the interfaces. Because usability test aim is to make the interface, easy to learn, easy to use, easy to transfer old user experience to that interface.

In addition, eye trackers may be incorporated during the processes of usability, we don't have that equipment.

4.5 Acceptance Test

Testing the product to ensure software requirements have met.

Test	Description	Tools
Developer Team Test	Application requirements tested by developer team.	• Manuel Testing
Customer Test	Application requirements tested by customer.	• Manuel Testing

5. Attachments

*[source1]*https://app.crossbrowsertesting.com/public/if2e05a892a6baaf/screenshots/z0a337ac1df806dbd3d1

[source2] https://app.loadimpact.com/load-test/833f569b-d761-4e34-9f3f-4bde5afd932c?charts=type%3D1%3Bsid%3D__li_user_load_time%3A1%3BdataKey%3Dvalue%3B%3Btype%3D1%3Bsid%3D__li_bandwidth%3A1%3BdataKey%3Davg%3B%3Btype%3D1%3Bsid%3D__li_requests_per_second%3A1%3BdataKey%3Davg%3B%3Btype%3D1%3Bsid%3D__li_connections_active%3A1%3BdataKey%3Dvalue%3B%3Btype%3D8%3Bsid%3D__li_loadgen_cpu_utilization%3A1%3Bda

taKey%3Dvalue%3B%3Btype%3D8%3Bsid%3D__li_loadgen_memory_utilization%3A1%3BdataKey%3Dvalue&large-charts=type%3D1%3Bsid%3D__li_user_load_time%3A1%3BdataKey%3Dvalue%3B%3Btype%3D1%3Bsid%3D__li_clients_active%3A1%3BdataKey%3Dvalue&navigator=

[source3] https://app.loadimpact.com/load-test/a943a126-e6ed-41bb-b875-356ec4848bbf?charts=type%3D1%3Bsid%3D__li_bandwidth%3A1%3BdataKey%3Davg%3B%3Btype%3D1%3Bsid%3D__li_requests_per_second%3A1%3BdataKey%3Davg%3B%3Btype%3D1%3Bsid%3D__li_connections_active%3A1%3BdataKey%3Dvalue%3B%3Btype%3D8%3Bsid%3D__li_loadgen_cpu_utilization%3A1%3BdataKey%3Dvalue%3B%3Btype%3D8%3Bsid%3D__li_loadgen_memory_utilization%3A1%3BdataKey%3Dvalue%3B%3Btype%3D1%3Bsid%3D__li_failure_rate%3A1%3BdataKey%3Davg%3B%3Btype%3D1%3Bsid%3D__li_user_load_time%3A1%3BdataKey%3Dvalue&large-charts=type%3D1%3Bsid%3D__li_clients_active%3A1%3BdataKey%3Dvalue%3B%3Btype%3D1%3Bsid%3D__li_user_load_time%3A1%3BdataKey%3Dvalue

[source4] /Attachment