American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science &Technology (FST) Summer 22 23

Section: E

Software Quality Assurance and Testing

HOSPITAL MANAGEMENT SYSTEM

A Report submitted
By

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Under the supervision of

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Checked By Industry Personnel

Name:

Designation:
Company:

Sign:
Date:

Software Test Plan

for

<Project>

Version 1.0 approved

Prepared by <MD QUANET UL AHKAM ROKON

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<10.08.2023>

Table of Contents

Revision History

Revision	Date	Updated by	Update Comments
0.1	2023.08.05	MD QUANET UL AHKAM ROKON	First Draft
0.2	2023.08.06	MD QUANET UL AHKAM ROKON	Second Draft
0.3	2023.08.06	MD ADNAN AHAMED	Third Draft
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0.5	2023.08.08	SHAMMO, MD MOSTAK SHARIAR	Fifth draft
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0.7	2023.08.09	SHAMMO, MD MOSTAK SHARIAR	Seventh Draft
0.8	2023.08.10	SADMAN AHMED	Eighth Draft
0.9	2023.08.10	SADMAN AHMED	Ninth Draft

1. TEST PLAN IDENTIFIER:RS-MTP01.3

2. REFERENCES

○ Software Engineering Course slides ○
Software Quality and Testing Course slides ○
Selenium Testing

3. INTRODUCTION

Background to the Problem

- Write the background description that helps putting the project into the right context of a problem domain and gives everyone involved a common view of the project
- What is the root cause of this problem? why is this problem is so important to consider?

Solution to the Problem

- What are the solutions you are going to propose to deal with the problem? why is this solution is particularly appropriate to solve the problem? Is the solution feasible to the meet the business objective? ○ Provide a short description of the software being specified and its purpose, including relevant benefits, objectives, and goals
- Existing studies presented in the problem area. What are the existing software solutions are available to solve the aforementioned problem?

4. REQUEIREMNT SPECIFICATION

4.1 System Features

- List down the system functional requirements that describes the system's functionalities
- Example

  1. System Login

  Functional Requirements

  1.1 The software shall allow users to login with their given username and password

  1.2 If the username and/or password has been inserted wrong for more than three times, the random verification code will be generated by the system to retry login.

  1.3 If the number of login attempt exceed its limit (5 times), the system shall block the user account login for one hour *[optional function]*

  Priority Level: High

Precondition: user have valid user id and password

4.2 System Quality Attributes

Several attributes can be employed to characterize quality. When a product is user-friendly and encompasses essential features, it is considered to possess high quality. Quality Assurance aims to prevent defects, while Quality Control Activities strive to identify them in products and services. The objective of assurance activities is to proactively prevent the manifestation of flaws, as outlined in the subsequent points for ensuring optimal quality across the company's offerings.

1. Reliability: Evaluating the product's dependability involves assessing its resilience in various scenarios. Accuracy and consistent outcomes are vital. The product's performance across diverse environments dictates its reliability.

2. Maintainability: Simplifying the management of product versions is crucial. The code of the existing system should facilitate easy additions for development and seamless upgrades for new features and technologies. Maintenance should be cost-effective and uncomplicated, allowing for straightforward software adjustments and bug fixes.

3. Usability: Usability assessment involves ease of use, learning, and navigation. The website should be user-friendly and simple to comprehend. The system must be intuitive in terms of input, operation, and output interpretation, aligning with consistent user interface standards. Novice users should find it easy to learn and navigate the system.

4. Portability: Measuring portability entails considerations of cost, technical challenges, and behavioral issues during the process. It addresses the potential difficulties and expenses associated with moving the system.

5. Efficiency: A significant aspect of system quality, efficiency is determined by how swiftly a system completes tasks. The system should optimize its use of CPU power, disk space, and memory. Consuming excessive resources can lead to reduced user performance and label the system as inefficient, rendering it unsuitable for real-time applications.

6. Testability: The system should be readily testable, allowing easy error identification. If necessary, it should be divisible into components for testing purposes.

In summary, the attributes mentioned contribute to comprehensive quality assurance and control, ensuring the company's products maintain high standards and meet user expectations.

4.3 System Interface

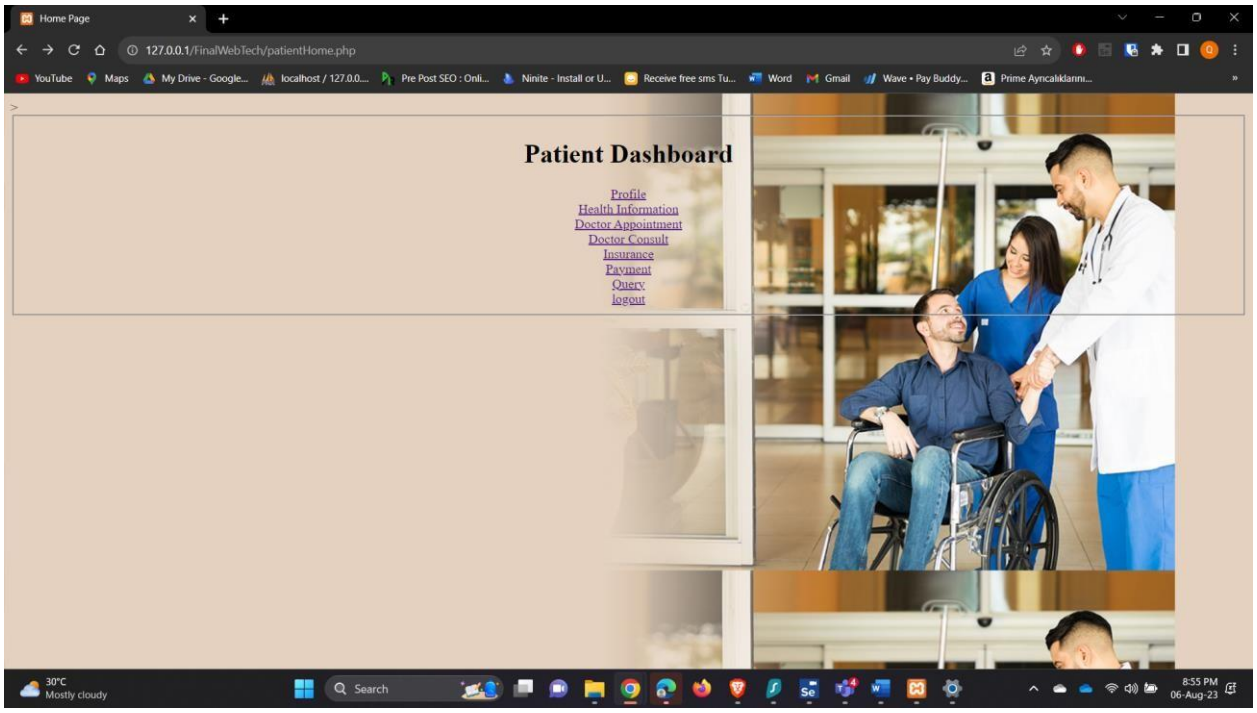

Figure: System Interface

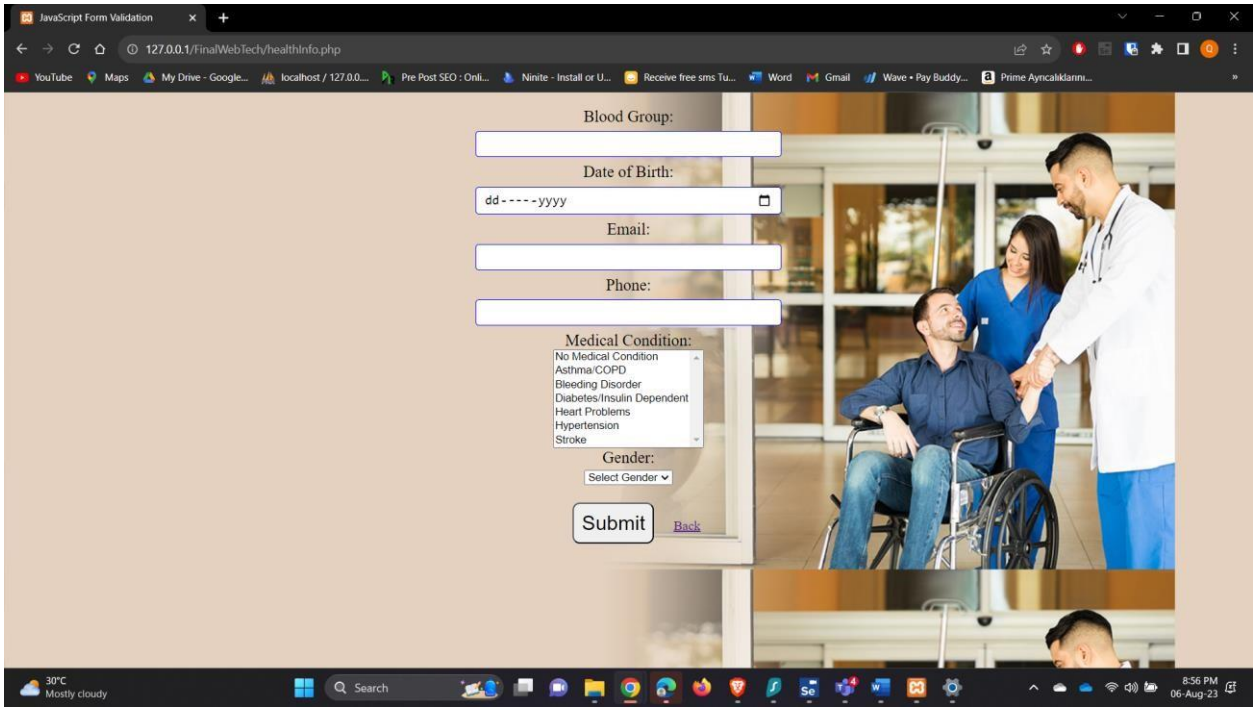

Figure: System Interface

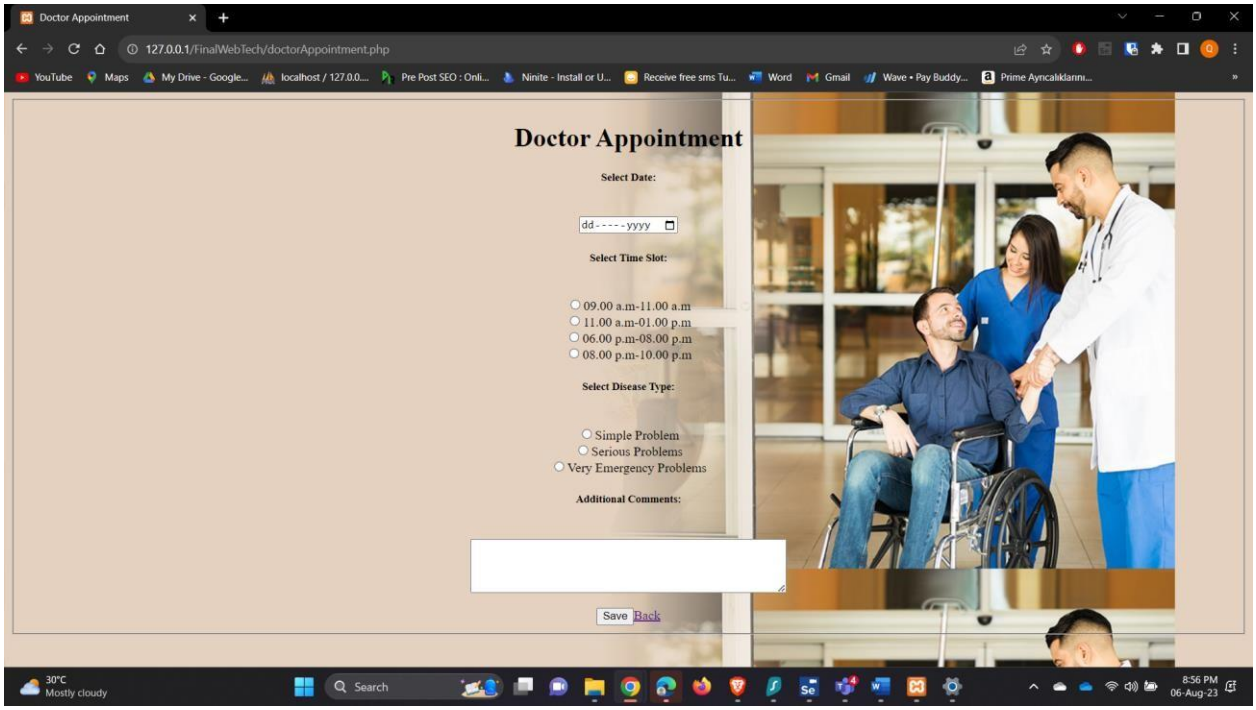

Figure: System Interface

4.4 Project Requirements

Project constraints are the general limitations of a project, including time, costs and risks. Understanding project constraints is important because they affect project performance.

Time: To finish our project we need 5.5 months or 440 working hours.

Cost: To build this project we need approximately 437360 bdt

Resources:

Project Type: Organic

Coefficient < Effect Factor>: 2.4 [P=1.05; T=0.38]

Source Line of Code: SLOC= 4000 Lines

Persons Months, PM = Coefficient < Effect Factor>*(SLOC/1000) ^{P}

=2.4*(3000/1000) $^{1.05}$

= 7.6

Development Time, **DM** = 2.50*(PM)^{T}

= 2.50*(7.6) $^{0.38}$

= 5.4

= 5.5 months

= 5.5*10*8 working hours

= 440 working hours

Required People, **ST** = PM/DM

=7.6/ 5.5

=1.4

=2

Developer Salary in 2 Months:

Developer Salary per Working Hour = 400 bdt

Total Developer Salary = 400*440 BDT

=176000 BDT

Requirements Analysis:

Time needed = 10 days (8 working days)

= 8*8 Working hours

= 64 Working hours

Requirement Analysis Person's Hourly wage= 350 bdt

Total Requirement Analysis Expense = 350*64 bdt

= 22400 bdt

Transportation Cost:

Estimated Cost for transportation=8000 bdt

Training and Hardware Expense:

Estimated Cost for Training and Hardware =40000 bdt

Rent Expenses:

Rent per month= 8000 bdt

Total rent in 2 months = 2*8000 bdt

=16000 bdt

Utilities Cost:

Total utilities bill in 2 months =6000 bdt

Maintenance (Till 6 months after delivery):

Expense per hour = 500 bdt

Total Estimated Time needed for maintenance = 72 hours Total

Estimated maintenance cost =72*500 bdt

=36000 bdt

Miscellaneous:

Total Miscellaneous cost =8000 bdt Total

Estimated Expense:

Total Estimated cost = 176000+ 22400+ 8000+ 40000+ 16000+ 6000+ 36000+ 8000

= 312400 bdt

Profit:

40% of total estimated expense = 312400*40% bdt

=312400+124960

Project Budget: (312400+124960) bdt = 437360 bdt

5. FEATURES NOT TO BE TESTED

The following is a list of the areas that will not be specifically addressed. All testing in these areas will be indirect as a result of other testing efforts. For example:

- PC based spreadsheet analysis applications using Reassigned Sales data. Because these applications are completely under the control of the customer and are outside the scope of this project. The necessary data base format information will be provided to the customers to allow them to extract data. Testing of their applications is the responsibility of the application maintainer/developer.
- Each users ID & PASSWORD will not be tested as it's confidential. o Any kind of transactions will not be calculated.

6. TESTING APPROACH

6.1 Testing Levels

- The testing for the SMS project will consist of Unit, System/Integration (combined) and Acceptance test levels. It is hoped that there will be at least one full time independent test person for system/integration testing. However, with the budget constraints and timeline established; most testing will be done by the test manager with the development teams' participation.

- UNIT Testing will be done by the developer and will be approved by the development team leader. Proof of unit testing (test case list, sample output, data printouts, defect information) must be provided by the programmer to the team leader before unit testing will be accepted and passed on to the test person. All unit test information will also be provided to the test person.

- SYSTEM/INTEGRATION Testing will be performed by the test manager and development team leader with assistance from the individual developers as required. No specific test tools are available for this project. Programs will enter into System/Integration test after all critical defects have been corrected. A program may have up to two Major defects as long as they do not impede testing of the program (I.E. there is a work around for the error).

- ACCEPTANCE Testing will be performed by the actual end users with the assistance of the test manager and development team leader. The acceptance test will be done in parallel with the existing manual ZIP/FAX process for a period of one month after completion of the System/Integration test process.

6.2 Test Tools

The only test tools to be used are the standard AS/400 provided utilities and commands.

- The Program Development Manager (PDM) will be used as the source version configuration management tool in conjunction with the in-house check-in/check-out control utility. The check-in/out utility is part of each developer's standard AS/400 access menu.

- The initial prototypes for the new screens will be developed using the AS/400 Screen Design Aid (SDA). The initial layout and general content of the screens will be shown to the sales administration staff prior to proceeding with testing and development of the screens.

- The 'Selenium IDE' – testing tool has been used to build test cased and test our website. Selenium IDE has been used because it supports automated testing. We will perform manual testing initially, and then we will perform automation testing. The most crucial tool for automation testing is Selenium. Selenium is an open-source, free framework for assessing web applications across a variety of platforms and browsers. Scripts for Selenium tests can be written in a variety of programming languages, including PHP, Java, C#, Python, and others.

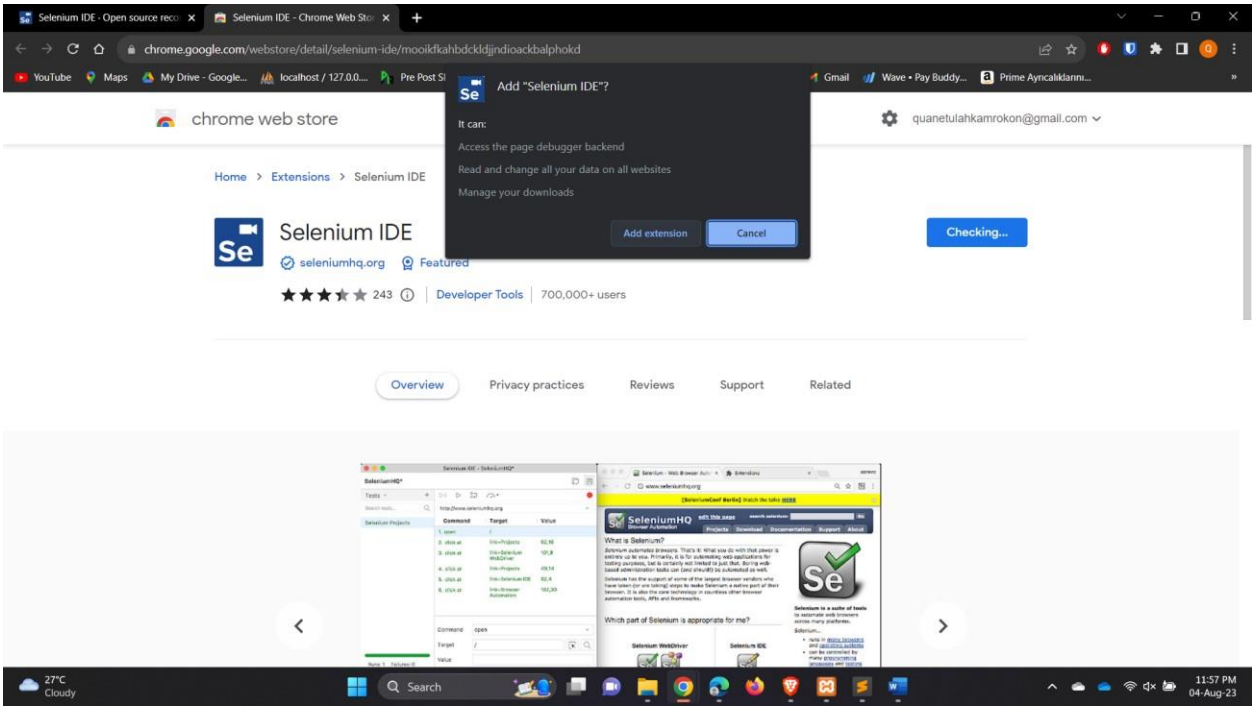

Figure: Adding selenium ide

- Grant Chart (https://www.onlinegantt.com)

6.3 Meetings

The test team will meet once in every week to evaluate progress to date and to identify error trends and problems as early as possible. The test team leader will meet with development and the project manager once every two weeks as well. These two meetings will be scheduled on different weeks. Additional meetings can be called as required for emergency situations.

7. TEST CASES/TEST ITEMS

Project Name: HOSPITAL MANAGEMENT SYSTEM	Test Designed by: MD QUANET UL AHKAM ROKON
Test Case ID: HMS_01	Test Designed date: 06.08.2023
Test Priority (Low, Medium, High): Medium	Test Executed by: MD QUANET UL AHKAM ROKON
Module Name: Login Session	Test Execution date: 06.08.2023
Test Title: verify login with valid username and password	
Description: Test website login page	

Precondition (If any): User must have valid username and password

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Enter username 3. Enter password 4. Click submit	UserID: 111 Password: A@12qwerty	User should login into the application	As expected,	Pass

Post Condition: User is validated with database and successfully login to account. The account session details are logged in the database.

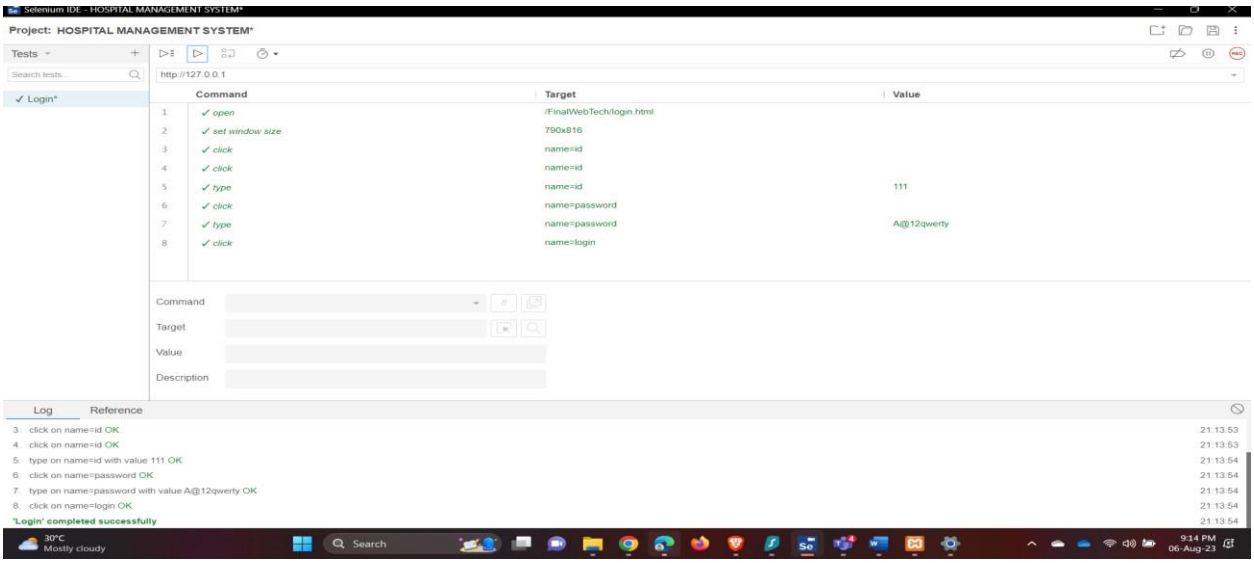

Figure: Testing Result

Project Name: HOSPITAL MANAGEMENT SYSTEM	Test Designed by: MD QUANET UL AHKAM ROKON
Test Case ID: HMS_02	Test Designed date: 06.08.2023
Test Priority (Low, Medium, High): Medium	Test Executed by: MD QUANET UL AHKAM ROKON
Module Name: Login Session	Test Execution date: 06.08.2023
Test Title: Verify login with valid username and incorrect password	
Description: Test the login page with a valid username and an incorrect password to ensure proper error handling.	

Precondition (If any): User must have a valid username and incorrect password.

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Enter username 3. Enter password 4. Click submit	UserID: 111 Password: A@123	User should receive an error message	As expected,	Pass

Post Condition: User should not be able to log in and should receive an appropriate error message.

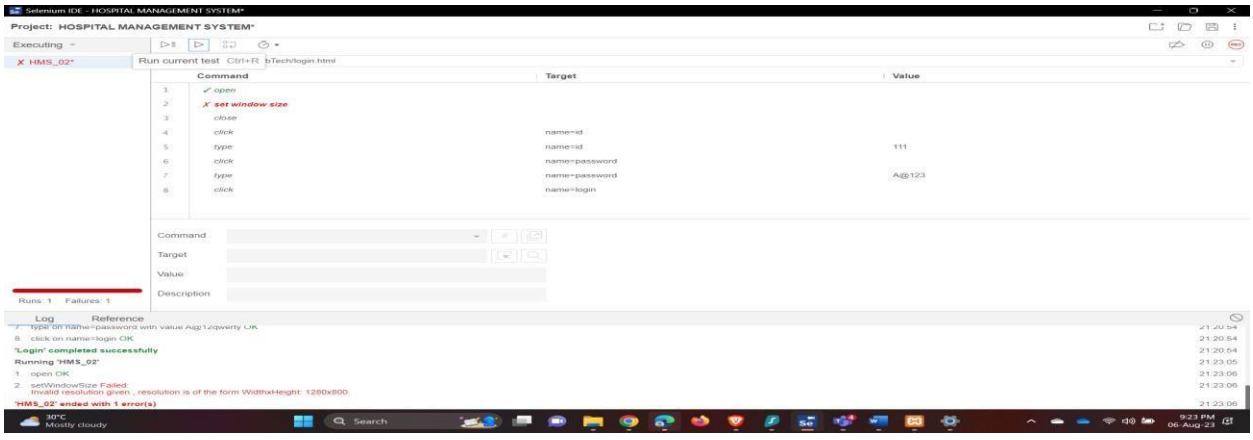

Figure: Testing Result

Project Name: HOSPITAL MANAGEMENT SYSTEM	Test Designed by: MD QUANET UL AHKAM ROKON
Test Case ID: HMS_03	Test Designed date: 06.08.2023
Test Priority (Low, Medium, High): Medium	Test Executed by: MD QUANET UL AHKAM ROKON
Module Name: Registration input field validation 1.0	Test Execution date: 06.08.2023
Test Title: Registration's E-mail Pattern Validation Checking	
Description: Testing username field functionality as an e-mail's pattern validation	
Precondition: Must land on sign up page.	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website's signup page 2. Enter username 3. Enter password 4. Enter confirm password 5. Click register button	UserID: 111 Password: A@12qwerty	User should able register successfully to the website	As expected,	Pass
Post condition: User can log in anytime using its username.				

Project Name: HOSPITAL MANAGEMENT SYSTEM	Test Designed by: MD QUANET UL AHKAM ROKON
Test Case ID: HMS_04	Test Designed date: 06.08.2023
Test Priority (Low, Medium, High): High	Test Executed by: MD QUANET UL AHKAM ROKON
Module Name: Login Feature Session	Test Execution date: 06.08.2023
Test Title: Login Forgot Password Feature Checking	
Description: Checking forgot password option working properly or not	
Precondition: Must be on the Login page. Username must be registered to database.	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Go to the website 2. 3. Go to login page Click forgot 4. password Enter correct username 5. Click reset password	UserID: 111	User should be able to reset password and get login info in email	As expected	Pass
Post condition: User should get login information's via email				

Project Name: HOSPITAL MANAGEMENT SYSTEM			Test Designed by: MD QUANET UL AHKAM ROKON	
Test Case ID: HMS_05			Test Designed date: 06.08.2023	
Test Priority (Low, Medium, High): Low			Test Executed by: MD QUANET UL AHKAM ROKON	
Module Name: Home Tab			Test Execution date: 06.08.2023	
Test Title: Checking "Home" tab				
Description: Checking if the tab working properly & jumps to Homepage				
Precondition: Must be on the Login page.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Go to login page 3. Click menu button 4. Click "Home" tab	UserID: 111	User should be able to access the site and explore the page	As expected,	Pass
Post condition: User should able to go from dashboard page to homepage				

Project Name: HOSPITAL MANAGEMENT SYSTEM			Test Designed by:	
Test Case ID: HMS_06			Test Designed date: 07.08.2023	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Logout Session			Test Execution date: 07.08.2023	
Test Title: Logout Functionality				
Description: Checking the logout functionality working				
Precondition: Must be on the Logged in				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Go to login page 3. Enter id & password 4. Shows homepage 5. Click menu button 6. Click log-out button	UserID: 111 Password: A@12qwerty	User should be able logout successfully	As expected,	Pass
Post condition: Goes back to the Log in page.				

Project Name: HOSPITAL MANAGEMENT SYSTEM			Test Designed by:	
Test Case ID: HMS_07			Test Designed date: 07.08.2023	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Password Change			Test Execution date: 07.08.2023	
Test Title: Verify successful password change				
Description: Test the functionality to change the password for a user account.				
Precondition: Must be on the Logged in				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Go to the website 2. Go to login page 3. Enter id & password 4. Shows homepage 5. Navigate to the "Change Password" 6. section Enter current password 7. Enter new 8. password Re-enter new password for confirmation	Current Password: A@12qwerty New Password: A@qwerty12	Password should be changed successfully	As expected,	Pass
Post condition: User should be able to successfully log in using the new password. .				

Project Name: HOSPITAL MANAGEMENT SYSTEM			Test Designed by:	
Test Case ID: HMS_08			Test Designed date: 07.08.2023	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Profile Update			Test Execution date: 07.08.2023	
Test Title: Verify successful profile update				
Description: Test the functionality to update user profile information.				
Precondition: User must be logged in and have a valid userid.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Go to login page 3. Enter id & password 4. Shows homepage 5. Navigate to the "Edit Profile" section 6. Update profile information	UserName change: Admin Email: admin@gmail.com	Profile information should be updated successfully	As expected,	Pass
Post Condition: User's profile information should be updated with the new username and new email.				

Project Name: HOSPITAL MANAGEMENT SYSTEM	Test Designed by:
Test Case ID: HMS_09	Test Designed date: 07.08.2023
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Profile Update	Test Execution date: 07.08.2023
Test Title: Verify profile update with invalid email format	
Description: Test the functionality to update user profile information with an invalid email format.	
Precondition: User must be logged in and have a valid userid.	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Go to login page 3. Enter id & password 4. Navigate to the "Edit Profile" section 5. Update email with an invalid format (e.g., invalid_email) 6. Click the "Save Changes" button	Updated Email: invalid_email	User should receive an error message	As expected,	Pass
Post Condition: Profile information should not be updated, and the user should receive an appropriate error message.				

Project Name: HOSPITAL MANAGEMENT SYSTEM	Test Designed by:
Test Case ID: HMS_10	Test Designed date: 07.08.2023
Test Priority (Low, Medium, High): High	Test Executed by:
Module Name: Verify Password	Test Execution date: 07.08.2023
Test Title: Verify login with special characters in password	
Description: Test the login page with a valid username and a password containing special characters to ensure proper handling.	
Precondition: User must have a valid userid	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Go to the website 2. Go to login page 3. Enter id & password	UserID: 111 Password: Spec!al@123	User should login into the application	As expected,	Pass
Post Condition: User should be able to log in successfully.				

8. ITEM PASS/FAIL CRITERIA

The test process will be completed once the initial set of distributors have successfully sent in reassigned sales data for a period of one month and the new EDI data balances with the old ZIP/FAX data received in parallel. When the sales administration staff is satisfied that the data is correct the initial set of distributors will be set to active and all parallel stopped for those accounts.

9. TEST DELIVERABLES

- Acceptance test plan ○ System/Integration test plan ○ Unit test plans/turnover documentation ○ Screen prototypes ○ Report mock-ups
- Defect/Incident reports and summaries
- ○ Test logs and turnover reports

10. STAFFING AND TRAINING NEEDS

It is preferred that there will be at least one (1) full time tester assigned to the project for the system/integration and acceptance testing phases of the project. This will require assignment of a person part time at the beginning of the project to participate in reviews etc... and approximately four months into the project they would be assigned full time. If a separate test person is not available the project manager/test manager will assume this role. In order to provide complete and proper testing the following areas need to be addressed in terms of training.

- The developers and tester(s) will need to be trained on the basic operations of the EDI interface. Prior to final acceptance of the project the operations staff will also require complete training on the EDI communications process.
- The sales administration staff will require training on the new screens and reports.

11. RESPONSIBILITIES

	TM	PM	Dev Team	Test Team	Client
Acceptance test Documentation & Execution	X	X		X	X
System/Integration test Documentation & Exec.	X		X	X	
Unit test documentation & execution	X		X	X	
System Design Reviews	X	X	X	X	X
Detail Design Reviews	X	X	X	X	
Test procedures and rules	X	X	X	X	
Screen & Report prototype reviews			X	X	X
Change Control and regression testing	X	X	X	X	X

12. TESTING SCHEDULE

Time has been allocated within the project plan for the following testing activities. The specific dates and times for each activity are defined in the project plan timeline. The persons required for each process are detailed in the project timeline and plan as well. Coordination of the personnel required for each task, test team, development team, management and customer will be handled by the project manager in conjunction with the development and test team leaders. Schedule must be done using any PM tool.

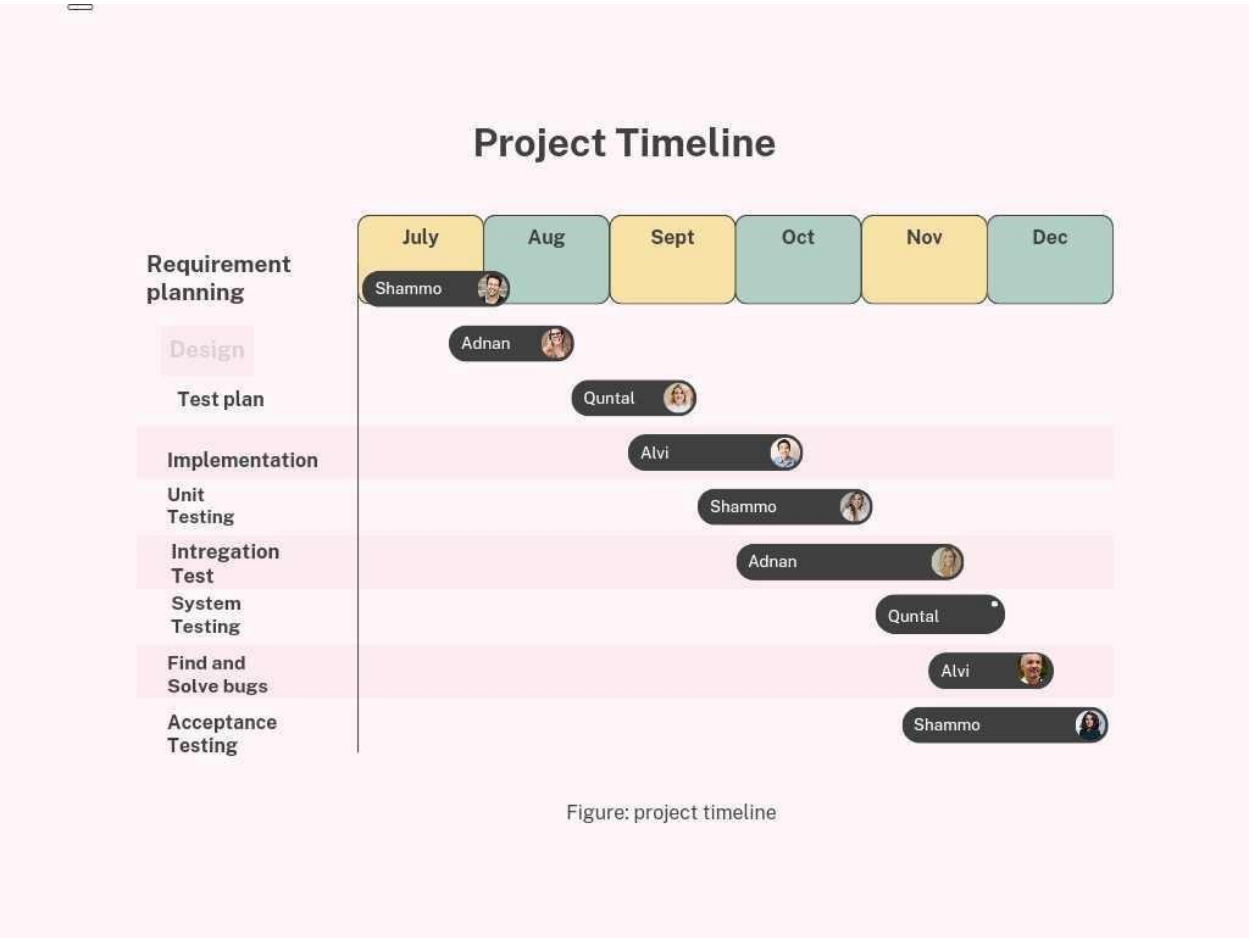

Figure: Testing Timeline

13. PLANNING RISKS AND CONTINGENCIES

- Limited Reassigned Sales staff. The Reassigned Sales administration staff currently has two positions unfilled. As a result of this staff shortage there may be delays in getting staff to review appropriate documents and to participate in the Acceptance test process. Should client staff become a problem, the appropriate dates for reviews and acceptance testing will slip accordingly. No attempt will be made to bypass any part of the review and testing processes.

14. APROVALS

Project Sponsor- MD QUANET UL AHKAM ROKON	Approved
Development Management- MD QUANET UL AHKAM ROKON	Approved
EDI Project Manager- MD ADNAN AHAMED	Approved
RS Test Manager- SHAMMO MD MOSTAK	Approved
SHARIAR	

RS development Team Manager- MD QUANET UL AHKAM ROKON	Approved
Reassigned Sales- SADMAN AHMED	Approved
Order Entry EDI Team Manager- MD ADNAN AHAMED	Approved