



American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

Fall 22 23

Section: C

Software Quality Assurance and Testing

Hospital Management System

A Report submitted by:

SN	Student Name	Student ID
1	MD. ALI HAIDAR	19-40801-2
2	MD. TANVIR AHMED	19-40853-2
3	MD. MEHBUB UL ISLAM	19-41124-2

Under the supervision of

ABHIJIT BHOWMIK

Faculty Of Science & Technology

Software Test Plan

Hospital Management System

Version 1.0 approved

Prepared by MD. ALI HAIDAR, MD. TANVIR AHMED, MD. MEHBUB UL ISLAM

American International University-Bangladesh

Date created:13.12.2022

Table of Contents

Revision History	3
1. TEST PLAN IDENTIFIER: RS-MTP0111	5
2. REFERENCES.....	4
3. INTRODUCTION.....	4
Background to the Problem	4
Solution to the Problem.....	4
4. REQUIREMENT SPECIFICATION	5
4.1 System Features	5
4.2 System Quality Attributes	6
4.3 System Interface.....	7
4.4 Project Requirements	11
5. FEATURES NOT TO BE TESTED	15
6. TESTING APPROACH	15
6.1 Testing Levels.....	15
6.2 Test Tools	19
7. TEST CASES/TEST ITEMS	23
8. ITEM PASS/FAIL CRITERIA.....	26
9. TEST DELIVERABLES	26
10. STAFFING AND TRAINING NEEDS	26
11. RESPONSIBILITIES	26
12. TESTING SCHEDULE.....	27
13. PLANNING RISKS AND CONTINGENCIES	27

Revision History

Revision	Date	Updated by	Update Comments
01	02.12.2022	MD. ALI HAIDAR	Project review
02	02.12.2022	MD. MEHBUB UL ISLAM	Introduction
03	03.12.2022	MD. TANVIR AHMED	Requirement specification
04	05.12.2022	MD. ALI HAIDAR, MD. TANVIR AHMED	System Quality Attributes, System Interface
06	08.12.2022	MD. ALI HAIDAR, MD. MEHBUB UL ISLAM, MD. TANVIR AHMED	Testing Schedule, Test Case
07	13.12.2022	MD. ALI HAIDAR, MD. MEHBUB UL ISLAM, MD. TANVIR AHMED	Project Requirements, Test Tools

1. TEST PLAN IDENTIFIER:RS-MTP0111

2. REFERENCES

1. Introduction
 - Quality objective
 - Module Name
 - Test Priority
 - Role and Responsibilities
2. Test Methodology
 - Test Levels
 - Test Data
 - Test completeness
3. Test Deliverables
4. Testing Tools
5. Test Environment

3. INTRODUCTION

This document is master test plan for Hospital Management System which is developed by us. This is a details test plan which will check different components of the system under specified conditions to verify that it satisfies specified requirements. This document includes test items, software risk issues, features which will be tested, approach of the tests etc.

Background to the Problem

- Managing manually at a relatively low processing rate.
- In hospitals, manually managing information is highly expensive.
- Information managed manually in hospitals has very low data security.
- Handling Quality and Compliance manually at a hospital is challenging.

Solution to the Problem

- The hospital management system improves the efficiency of all processes and increases staff access to their job for improved outcomes.
- Hospital employees save their time.
- In any location in the world, hospital professionals can check for updates.
- The use of a hospital management system will aid in the reduction of numerous errors, including missed billing, operational failure, clinical errors, cost leaks, missed appointments, and many more.

- Better Collaboration & Communication. Care soft is greatly beneficial to the doctors and other staff members as they will connect and communicate easily with this HMS software.

4. REQUEIREMNT SPECIFICATION

4.1 System Features

❖ Login system.

- The software shall allow users to login with their given username and password.
- 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.
- If the number of login attempt exceed its limit (5 times), the system shall block the user account login for one hour

Priority Level: High

Precondition: user have valid user id and password

❖ The software support multiple users at a time

- The software shall allow multiple users at a time.
- Multiple users will check updated at same time.
- If the number of customers exceed 500 then it will crash.

Priority level: Medium

❖ System registration

- The software shall allow users to registration by providing their email username and password.
- If the username already uses by anyone then the system shall give an error.
- Without giving proper username user shall not register.

Priority level: High

Precondition: User must have filled all required fields

❖ This software stores all user's information

- After making registration the system shall store the information of the user.
- The system must store patient information after registration.

Priority level: Medium

- ❖ Admin can edit and update all the information
 - The software shall allow the admin to update or delete any kind of information.
 - The software shall notify the user when the admin edits or update the transition history. Without the approval admin cannot edit the transition history.

Priority level: Medium

- ❖ Add delete and update products status.
 - The software shall allow the admin to add delete or update information.
 - If the product already added then the software shall give an error. Then the admin only able to edit or update the information

Priority level: Medium

- ❖ This software support online transaction.
 - The software shall allow patients to pay online. to login with their given username and password.
 - Without giving the proper transition input the system shall not allow patients to leave the hospital.
 - After making the transition the software shall store the payment history

Priority level: High

- ❖ This System track Doctor appointment availability information
 - The System will keep track of the doctor's availability, and the administrator can schedule an appointment for the patient.

Priority level: Medium

- ❖ This software store Inventory Management information
 - The system will monitor inventory availability, and it appears that the administrator can maximize use for the benefit of the personnel and patients.
 - Admin can put into action a strategy to manage hospital inventories.

Priority level: Low

4.2 System Quality Attributes

- **Security:** It is extremely secure to prevent data exposure or system hacking. As a data collector, this technology will record patient data and encrypt medical records so that patients can access them via SMS and WhatsApp.

- **Reliability:** This software can service 7/24.
- **Usability:** A trained user can registration and applied for doctor appointment within 3 minutes hospital management system
- **Efficiency:** A 64-bit operating system like Windows 10 or later and 4 GB RAM or more.
- **Maintainability:** There should be scope for system change amplification and correction in any emerging situation. A maintenance programmer shall be able to modify existing feature to make change or correct any feature.

4.3 System Interface

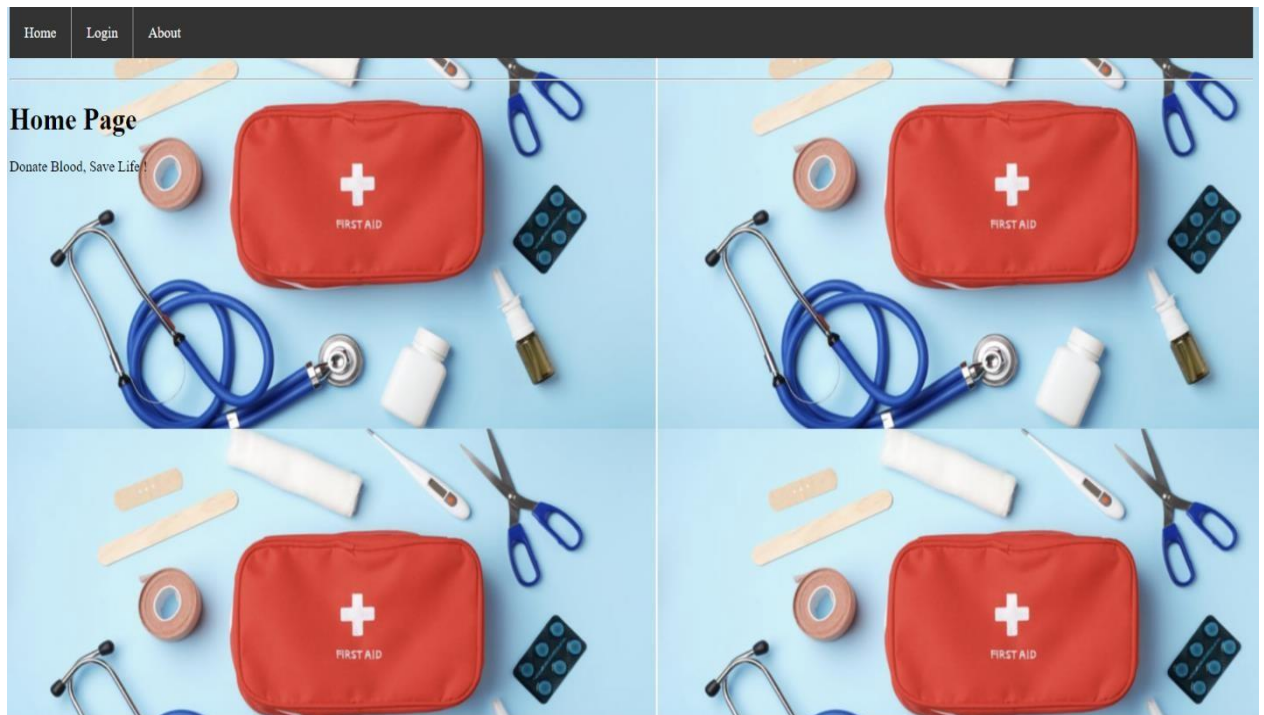


Figure 4.3.1: Home page Module of Hospital Management System.

Sign Up

Name:

Username:

Email:

Password:

Select User: None ▼

Figure 4.3.2: Registration/Sign Up page Module of Hospital Management System.

Login Page

Login Form

User Name

Password

Haven't signed up yet? [Sign Up](#)

[Back](#) [Logout](#)

Figure 4.3.3: Login page Module of Hospital Management System.

ali123's Info

Request Approval

Profile

Appointment List

Patient List

Prescription

Logout

UserName: ali123

First Name: First Name

Last Name: Last Name

Gender: ☐ Male ☐ Female

Address:

Register

First Name

ali

Last Name

haidar

Gender

Male

Address

215/8,Block C, Basundhara Residential Area,Dhaka

Figure 4.3.4: Doctor page Module of Hospital Management System.

Back Logout

Admin page

•

•

•

•

•

•

•

DoctorProfile

DoctorRequest

NurseProfile

NurseRequest

PatientProfile

Appointmentlist

Feedback

Figure 4.3.5: Admin page Module of Hospital Management System.

Welcome ali1234

Request Approval
Profile
Check Appointment
Patient List
See Patient Reports
Logout

Id	Username	First Name	Last Name	Gender	Address
74	SarafatMurshid321	Sarafat	Murshid	Male	215/8,Block C, Basundhara Residential Area,Dhaka

Figure 4.3.6: Nurse page Module of Hospital Management System.

Welcome ali12345

Profile
Request For Appoinment
Prescription
Send feedback
Logout

ID:

PatientName:

DoctorName:

Appointment Date:

Reset

Book Appoinment

ID	Doctor Name
1	sml
70	SarafatMurshid
71	SarafatMurshid1234
72	ali123

Figure 4.3.7: Patient page Module of Hospital Management System.

4.4 Project Requirement.

❖ Environment & resource needs

- Microsoft Windows 7 with Service Pack 1 or higher.
- Intel Core i3 or higher. (The 7th generation)
- 4 GB of RAM (minimum).
- 128 GB of free disk space for installation, plus extra space for temporary files during test runs.
- Mouse and keyboard

❖ Software Requirements:

- Automated Testing tool: selenium.
- Web Browsers: Internet Explorer/ Mozilla Firefox/ Google Chrome.
- Database: MySQL 5.7.12, 8.0.12+ (see note below on MySQL 8 support. PostgreSQL 10.0+.
- Eclipse/Microsoft Visual Studio, /Microsoft Visual Studio code.
- AS/400

Increases Customer Satisfaction

Every business is driven by how well they deliver for their customers. This is especially true in the competitive software industry. How does your team know that your product meets customer expectations for functionality, user interface (UI), integrations, and other requirements? That's where software testing comes in. When done with the right software testing tools and approach, teams can directly link functional and technical requirements with test scripts and, ultimately, the final product. In doing so, development teams can ensure that their products work well with the intended platforms, offer intuitive and clean interfaces, and integrate into existing technology ecosystems. This builds your brand's reputation, satisfies the customer, and keeps them coming back for more.

Prevents Unworkable Designs

For a business to be profitable, potential profits must outweigh costs. Instead of making estimates, creating a prototype and performing software testing against it can help organizations assess the viability of a product before investing significant financial and human resources into the project. This data can then be used to make more informed decisions about the design's return on investment.

4.5 Ensures Software Meets Quality Standards

Every product is unique. However, there are baseline quality standards—defined by independent regulations or best practices—that every product must meet. Established software testing practices ensure these standards are met, helping define test case templates, create testing schedules, structure tests, and provide feedback-collection tools to track defects. Combined, these practices help organizations avoid the costly patches and reputational damage that come with deploying software that does not meet established or customer standards.

4.6 Enhances End-User Experience

Software developers can only provide their view of how well a product meets its defined requirements. With test case, developers can ensure a product is easy to integrate into end-user workflows. This offers further confirmation that it is fit for purpose and fulfills a customer's needs.

4.7 Builds Long-Term Profitability

Finally, software testing helps with profitability by creating a process to identify bugs and defects before customers do, limiting potential financial, human resource, and brand costs.

In fact, according to one study, most defects cost more to fix than it would have cost to prevent them—about 30 times more.

4.8 Bringing It All Together

With increased pressure to deliver products to customers faster and with more features, it testing. However, this perspective fails to recognize all of the direct and indirect costs that defective or under performing products can have on your organization's bottom line. Fortunately, getting started with structured software testing can be easier and more efficient than you think when driven by the right test management tool. Industry-leading test management tools like Test case are specifically designed for software testing and packed with the features developers and testers need to focus less on administrative tasks and more on delivering value.

4.9 Table 1:Cost Analysis

Prog#	Program Size ProgSize)	No. Of Variable	No. of Test Requirements (nTestReq)	Reduction percentage= 100*(1 - nTestReq/ProgSize)%
1	42	3	8	80.9%
2	37	3	9	75.6%
3	27	2	5	81.4%
4	41	2	9	78%
5	38	2	7	81.5%
6	36	2	6	83.3%
7	33	2	7	78.7%
8	19	1	4	78.9%
9	18	2	3	83.3%

Table 1: The reduction percentage of the cost of software testing

Table 1 shows the reduction percentage of the test requirements. Column#2 shows the total number of test requirements which are demanded by the all-statements criterion and column#4 gives the number of the reduced test requirements. The reduction percentage is 83.3% for prog# 6 and prog# 9 and 75.6% for prog#2. It is clear that the reduction percentage isn't less than 75%. These results show the effectiveness of the proposed technique to reduce the cost of all-statements testing by reducing the number of the test requirements.

$$\begin{aligned}
 \blacktriangleright \text{ Effort} &= \text{PM} = \text{Coefficient} * (\text{SLOC}/1000) ^P \\
 &= 2.4(15000/1000) ^{1.05} \\
 &= 41
 \end{aligned}$$

$$\begin{aligned}
 \blacktriangleright \text{ Development time} &= \text{DM} = 2.50 * (\text{PM}) ^T \\
 &= 2.50 * (41) ^{.38} \\
 &= 10
 \end{aligned}$$

$$\begin{aligned}
 \blacktriangleright \text{ Required number of people} &= \text{ST} = \text{PM}/\text{DM} \\
 &= 41/10 \\
 &= 4
 \end{aligned}$$

- ▶ Designing & Coding=> $10 \times 22 \times 8$ [10 months, 22 days, 8h]
=1760 h

- ▶ Total salary (developing and testing team) = 1760×1100 [1h salary =1100tk]
= 1936000 taka [2 developer and 2 tester salary] (1 developer and 1 tester
salary =484000)

Per month salary = $(484000/10)$

=48400 taka (a1 developer)

Requirement Analysis= $15 \times 8 \times 600$ [15 days, 600 per hour salary]

= 72000 taka

- ▶ Maintenance
= $2 \times 4 \times 6 \times 2500$ [per week 2h, 6 month]
= 120000 taka

- ▶ Testing tool online subscription
= 10×5000
= 50000 taka

- ▶ Testing Cost
 $20000 \times 10 = 200000$ taka [per month 20000 taka]

- ▶ Utilities Expenses
 $3500 \times 10 = 35000$ taka

- ▶ Training/Hardware
= 3000×10
= 30000 taka

- ▶ Cost= $(1936000+72000+120000+50000+200000+35000+3000)$ taka
= 2416000 taka

- ▶ Profit margin= $241600 \times 15\%$
= 362400 taka

Pay bill (client)= 2778400 taka

5. FEATURES NOT TO BE TESTED

These are the features that will be used in future on the system.

- ❖ 24/7 service (Provide service in every single min in every situation).
- ❖ User interface is clean and user friendly.
- ❖ Display user interface is fully functional (Every single button works perfectly).
- ❖ Multiple service selected at a time.

6. TESTING APPROACH

6.1 Testing Levels

❖ Unit Testing



Figure 6.1.1: Admin Module.

[Back](#)

Doctor

Doctor details

ID:

User Name:

First Name:

Last Name:

Gender: ☐ Male ☐ Female

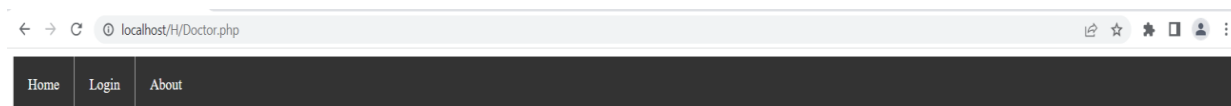
Address:

Warning: Undefined variable \$docprof in D:\xampp\htdocs\H Doctor.php on line 1158

Warning: foreach() argument must be of type array/object, null given in D:\xampp\htdocs\H Doctor.php on line 1158

Id	Username	First Name	Last Name	Gender	Address
----	----------	------------	-----------	--------	---------

Figure 6.1.2: Doctor Module.



Home Page

Donate Blood, Save Life !

Figure 6.1.3: Home page Module.

← → ↻ localhost/H/Doctor.php

[Homepage](#)
[Back](#)

Patient Profile

Patient details

Profile			
Id	Name	Date of Birth	Profile
02	Jahid Islam	01-01-1999	Jahid Islam

ID:

Name:

Profile:

Birth Date: Day Month Year

Figure 6.1.4: Patient Module.

❖ SYSTEM/INTEGRATION Testing

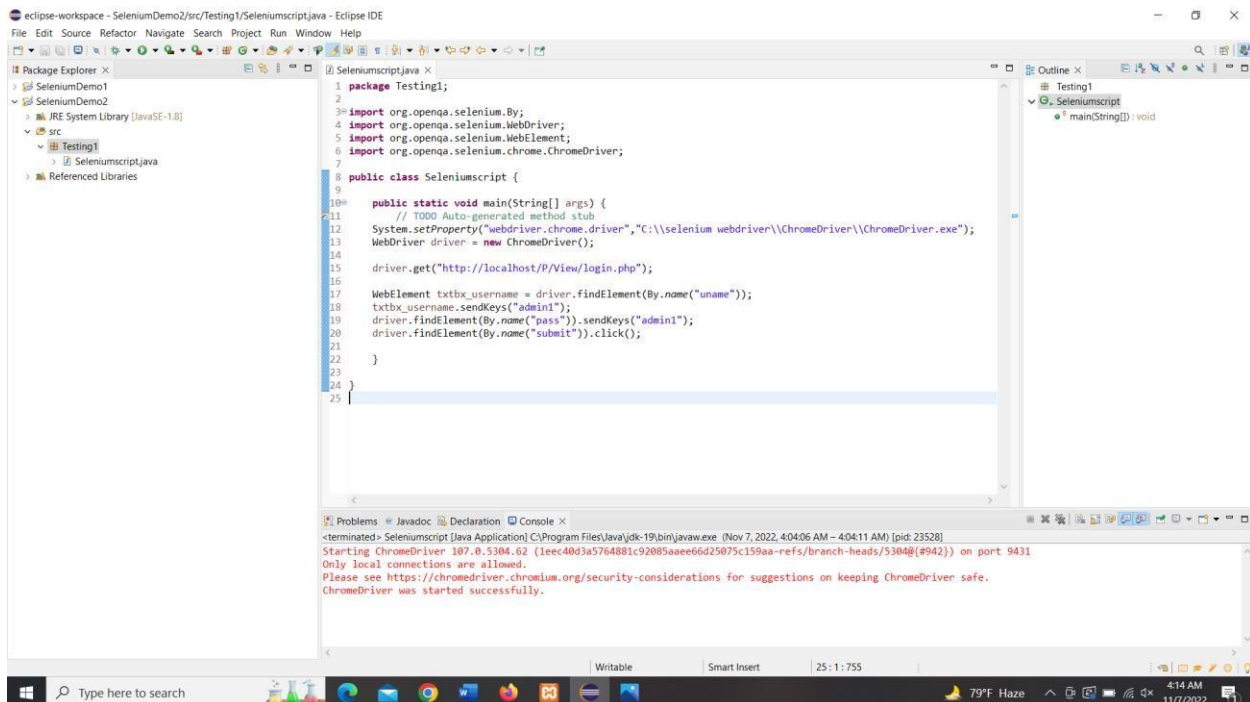


Figure 6.1.5: Login Module of Hospital Management System Testing using Selenium.

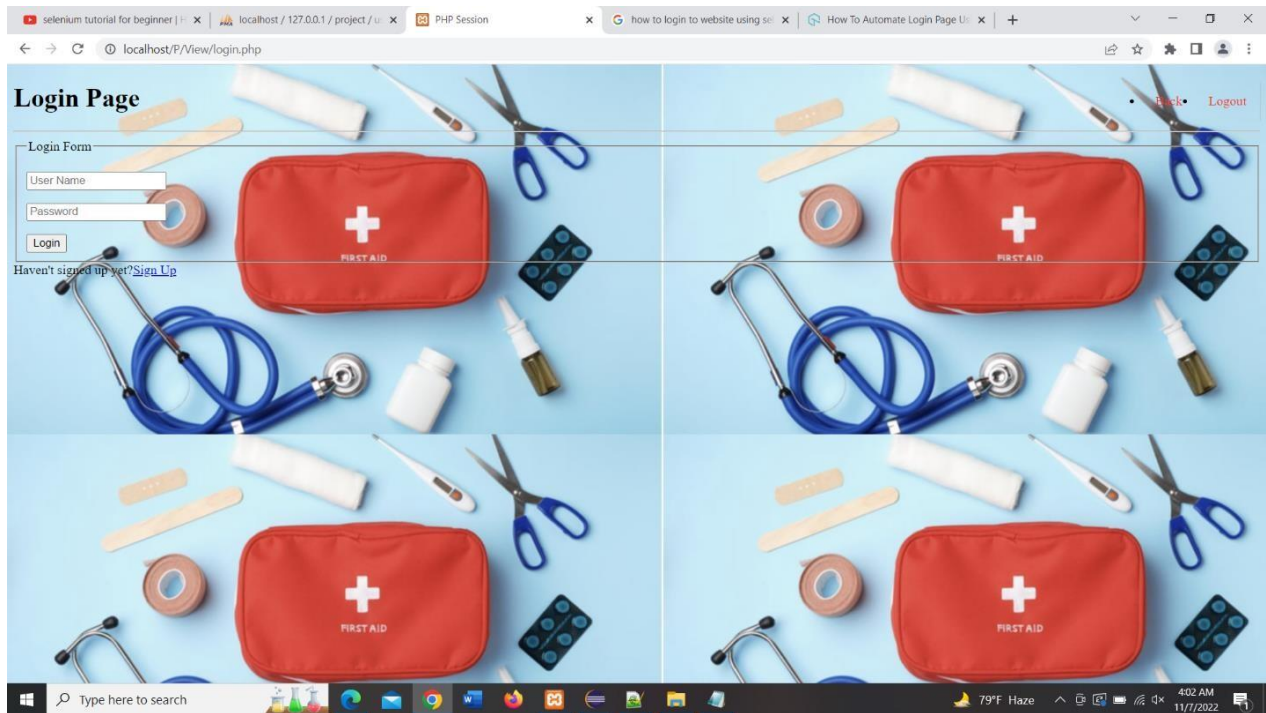


Figure 6.1.7: Automatic insert username and password and automatic login the software.

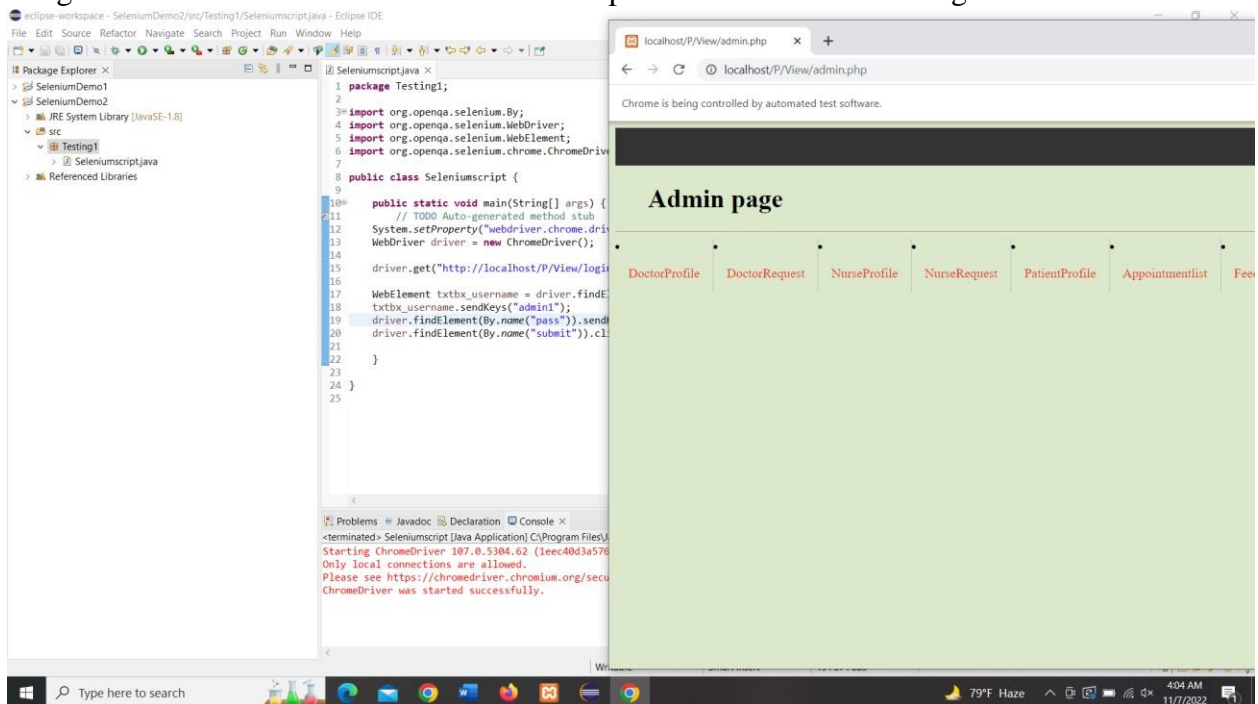


Figure 6.1.8: Admin Module of Hospital Management System Testing using Selenium.

❖ ACCEPTANCE testing

Test Plan:

Introduction: Acceptance Test plan for a unit
Acceptance Test Category: UAT For each category of acceptance criteria: <ul style="list-style-type: none">a. Operation environment: Visual Studio/Eclipse IDEb. Test case specification:<ul style="list-style-type: none">i. Test case Id: FSMS01ii. Test Title: verify Successful Registrationiii. Test objective: The user is successfully registered with the system.iv. Test procedure:<ul style="list-style-type: none">1. Go to the website2. Click Sign Up3. Filled All the fields4. Click Signup
Schedule:
Human resources:

6.2 Test Tools

❖ We use AS/400 for testing purpose

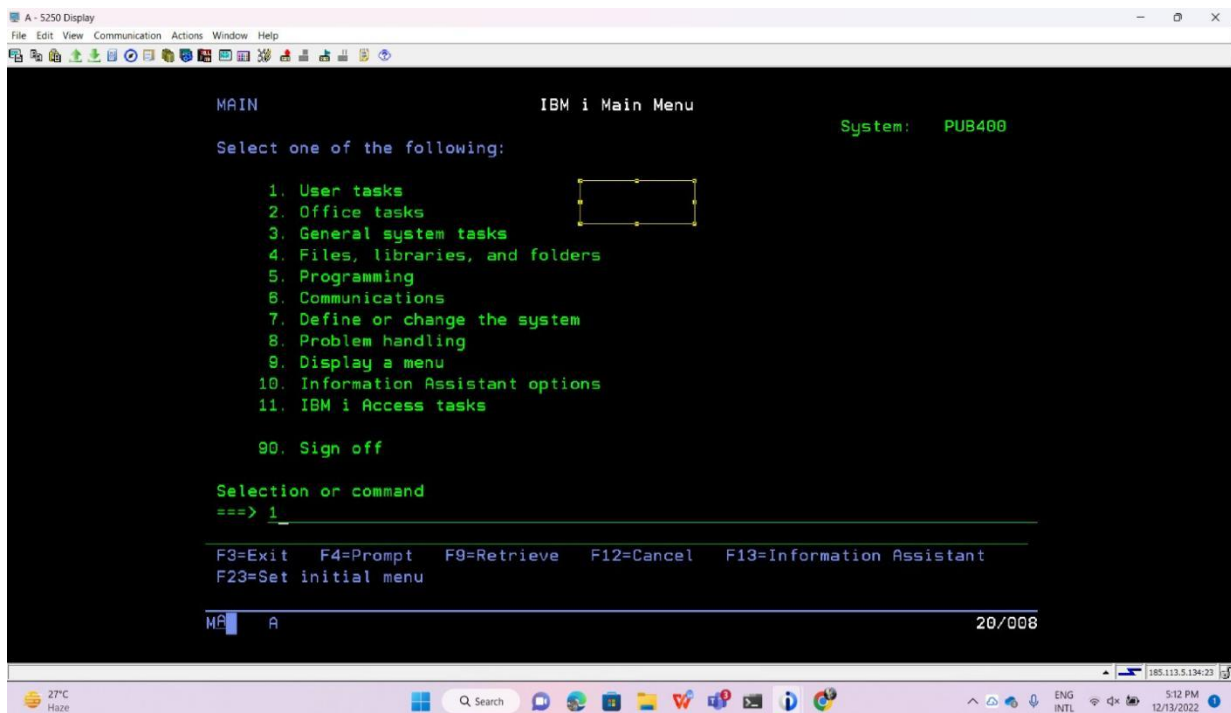


Figure 6.2.1: IBM I Main Menu of AS 400.

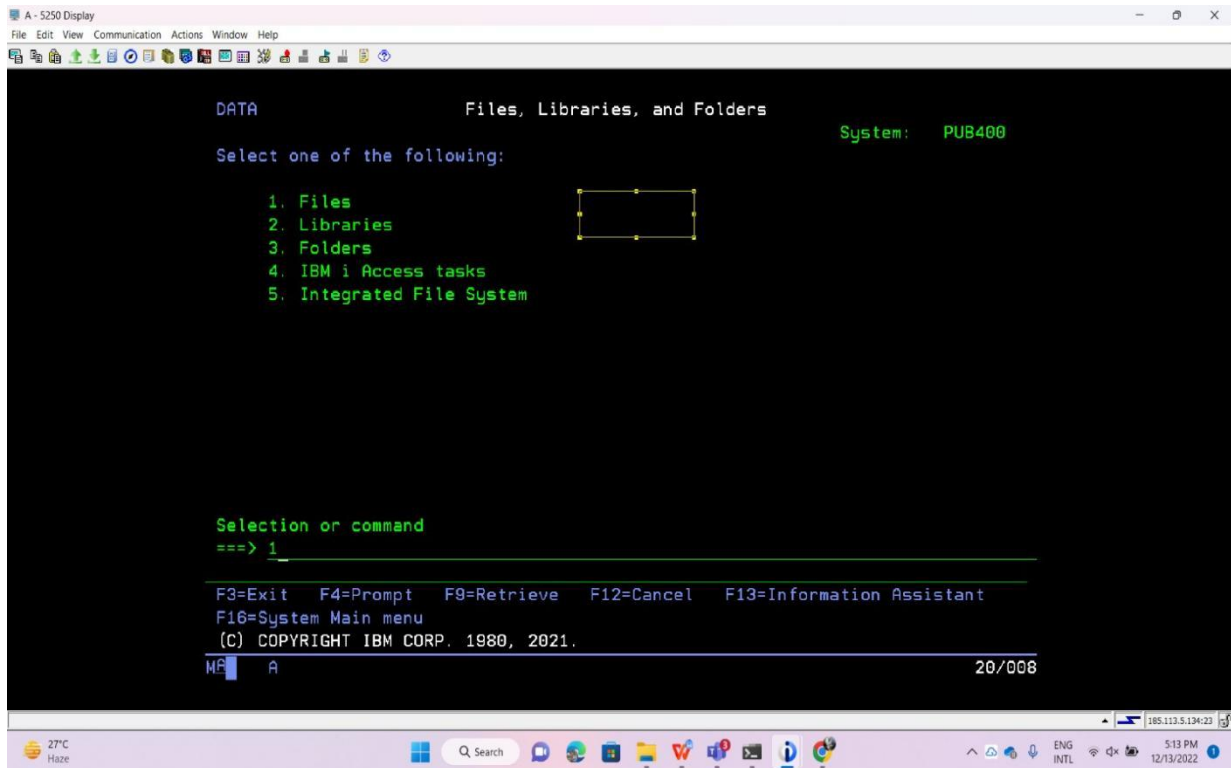


Figure 6.2.2: Files, Libraries and Folders of AS 400.

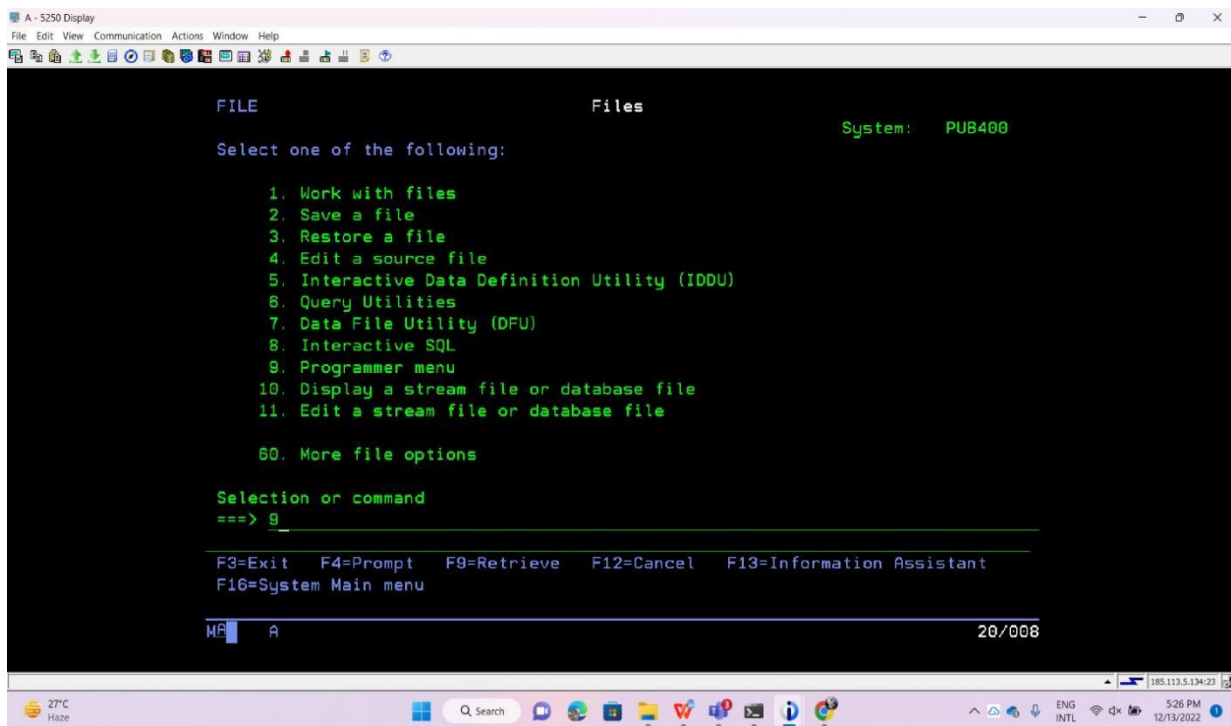


Figure 6.2.3: Files menu of AS 400.

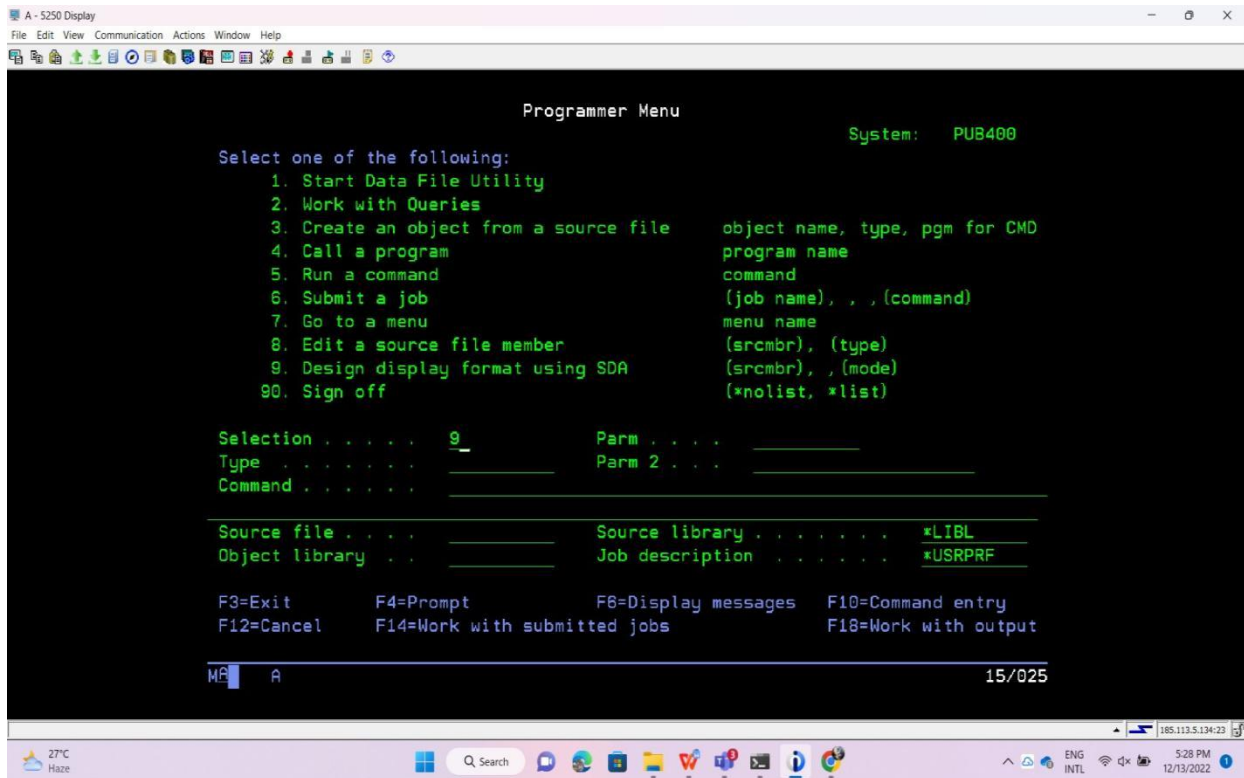


Figure 6.2.4: Programmer Menu of AS 400.

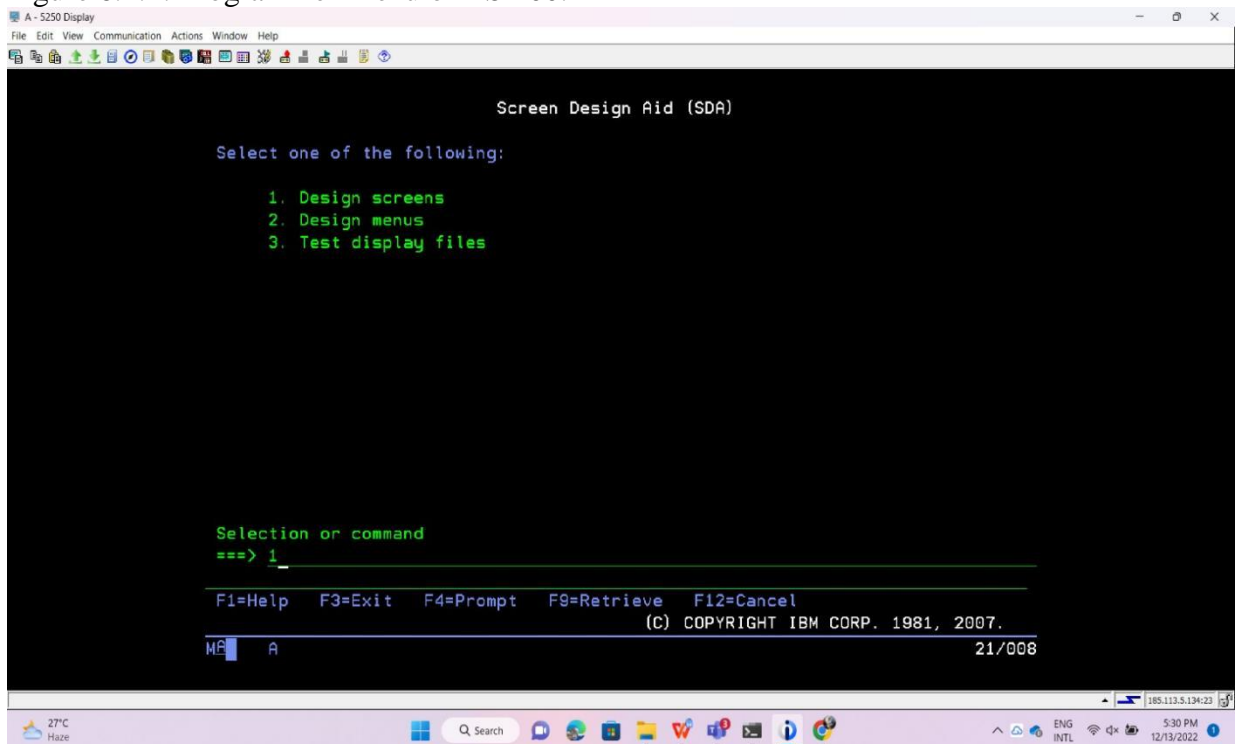


Figure 6.2.5: Screen Design Aid of AS 400.

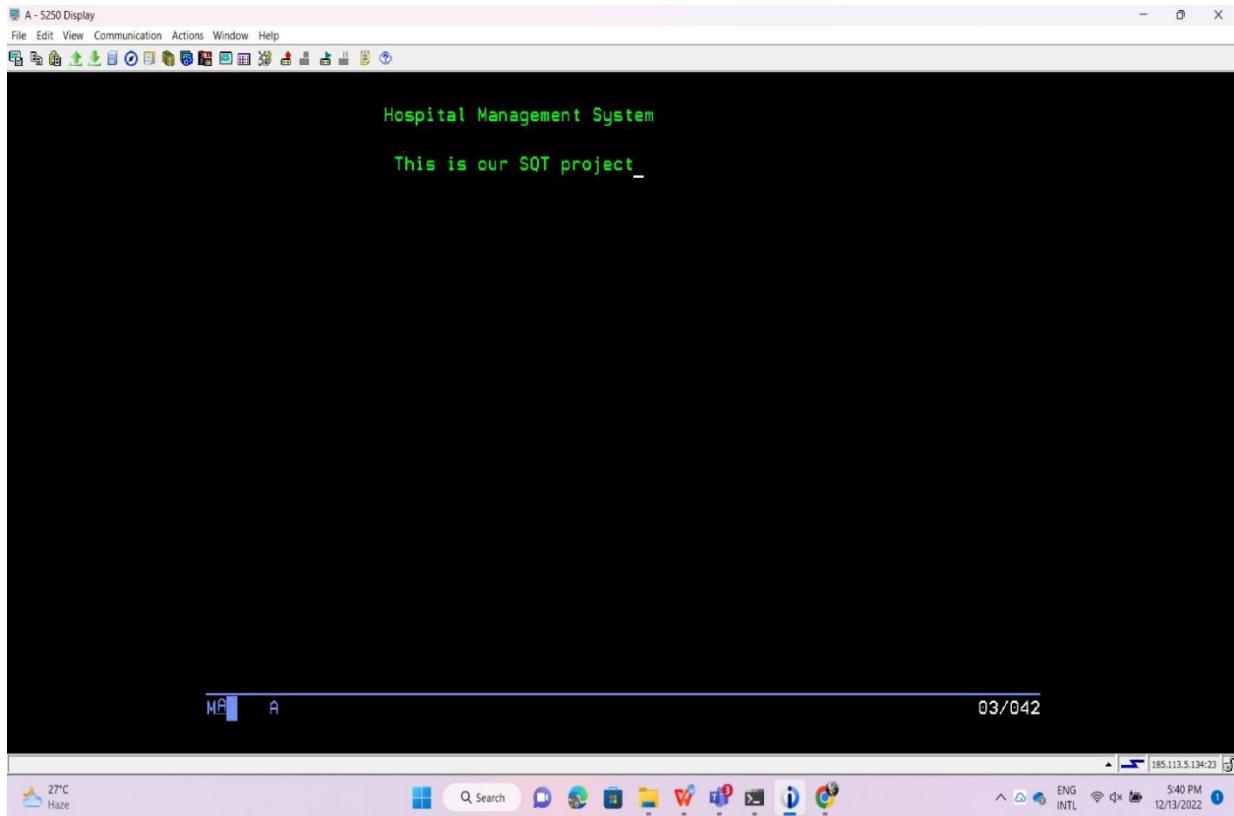


Figure 6.2.6: Hospital Management System in AS 400 screen.

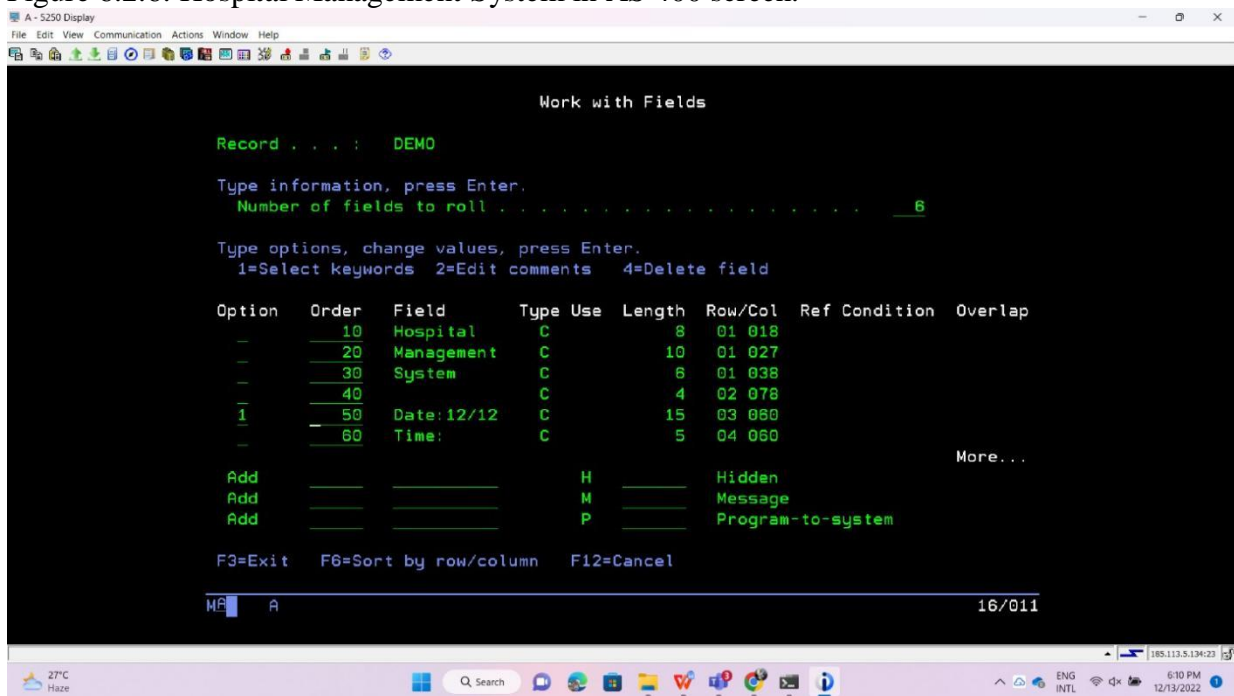


Figure 6.2.7: Work with Fields Menu of AS 400.

7. TEST CASES/TEST ITEMS

Project Name: Hospital Management System (HMS)		Test Designed by: MD. ALI HAIDAR, MD. MEHBUB UL ISLAM, MD. TANVIR AHMED		
Test Case ID: FSMS001		Test Designed date: 8.12.22		
Test Priority (Low, Medium, High): High		Test Executed by: MD. TANVIR AHMED		
Module Name: Login Session		Test Execution date: 12.12.2022		
Test Title: Verify login with valid username and password				
Description: Test HMS Login page				
Precondition: Valid username and password in System Database.				
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	Username: Haidar1 Password: 123	User should login into the doctor dashboard the application	As expected,	PASS
Post Condition: User is validated with database and successfully login to account.				

Project Name: Hospital Management System (HMS)		Test Designed by: MD. ALI HAIDAR, MD. MEHBUB UL ISLAM, MD. TANVIR AHMED		
Test Case ID: FSMS003		Test Designed date: 8.12.22		
Test Priority (Low, Medium, High): High		Test Executed by: MD. MEHBUB UL ISLAM		
Module Name: Verify Crud operation for Admin panel		Test Execution date: 12.12.2022		
Test Title: Verify login with valid username and password				
Description: Add Doctor Function Test				
Precondition:				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Login Admin Module 3. Click Add Doctor 4. Filled Required Fields 5. Click Add Doctor	First Name: Jibon Last Name: Islam Username: Jibon Address: Dhaka	Add New Doctor Profile in System Database	As expected,	PASS
Post Condition: The user is successfully registered with the system.				

Project Name: Hospital Management System (HMS)		Test Designed by: MD. ALI HAIDAR, MD. MEHBUB UL ISLAM, MD. TANVIR AHMED		
Test Case ID: FSMS002		Test Designed date: 8.12.22		
Test Priority (Low, Medium, High): High		Test Executed by: MD. ALI HAIDAR		
Module Name: Test Registration Page		Test Execution date: 12.12.2022		
Test Title: Verify Successful Registration				
Description: Test HMS Sign Up page				
Precondition: User must have filled all required fields.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the website 2. Click Sign Up 3. Filled Required Fields 4. Click Signup	Name: Haidar Username: Haidar1 Email: Haidar1@gmail.com Password: 1234	User go to the System Login page	As expected,	PASS
Post Condition: The user is successfully registered with the system.				

8. ITEM PASS/FAIL CRITERIA

Item is considered as passed if it passes 95% of test cases of the test suite. Other it's considered a failure.

9. TEST DELIVERABLES

❖ The following will be delivered

- ✓ Test Plan
- ✓ Test Cases
- ✓ Test Scripts
- ✓ Test Data
- ✓ Execution Log
- ✓ Defect Report
- ✓ Test Summary Report
- ✓ Screen prototypes

10. STAFFING AND TRAINING NEEDS

Two full time professional experienced tester required for this project. Each of them trains a batch consist of five testers for this project.

11. RESPONSIBILITIES

Responsibility	Name
Test Plan Verification	
Preparing The Test Cases	MD. ALI HAIDAR, MD. MEHBUB UL ISLAM, MD. TANVIR AHMED
Unit Test Documentation &Execution	MD. ALI HAIDAR
Acceptance Test Documentation	MD. MEHBUB UL ISLAM
Validating Project changes	MD. ALI HAIDAR, MD. MEHBUB UL ISLAM, MD. TANVIR AHMED
System Test and ControlChanging	MD. TANVIR AHMED, MD. ALI HAIDAR
Test Documentation & Executionof Test Cases	MD. ALI HAIDAR, MD. MEHBUB UL ISLAM, MD. TANVIR AHMED

12. TESTING SCHEDULE

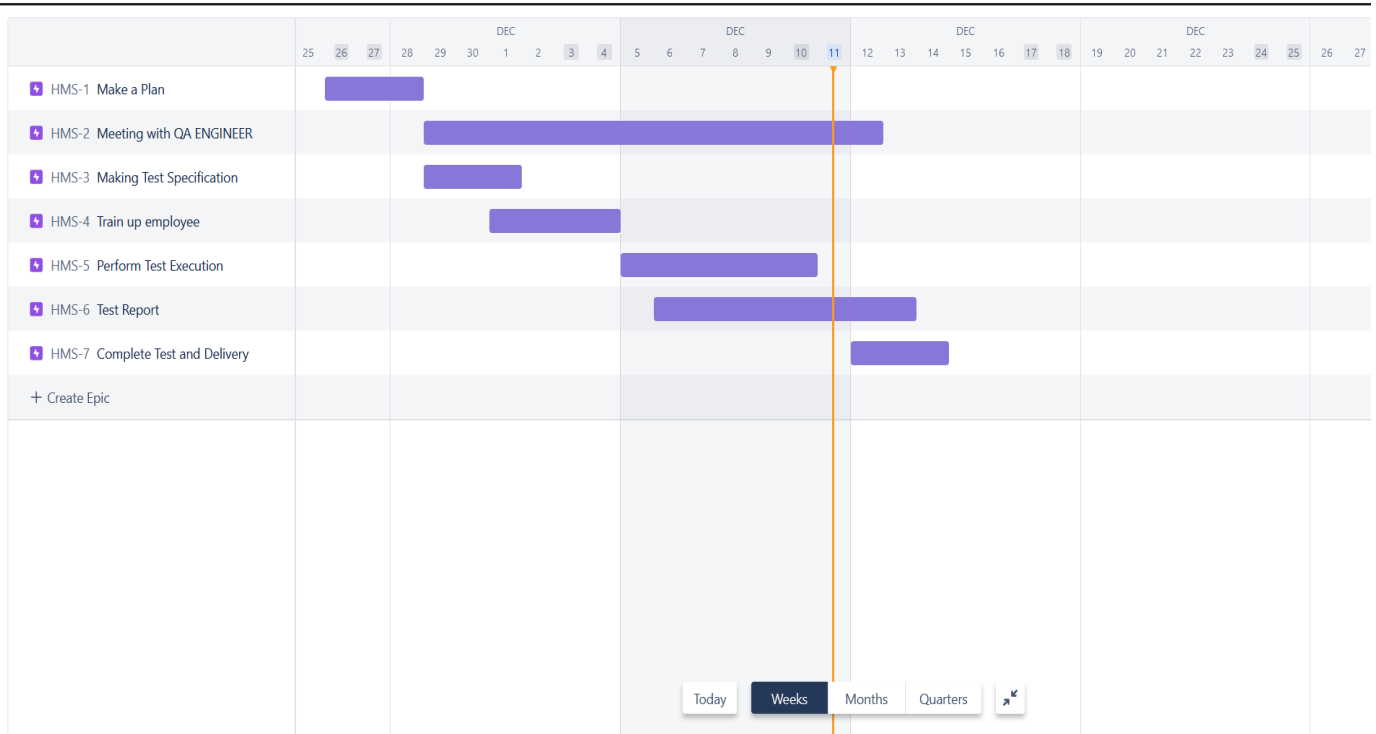


Figure 12.1: Testing Schedule for Hospital Management System.

13. PLANNING RISKS AND CONTINGENCIES

Risk	Mitigation Plan
Lack of required skill	Swap out for a skilled worker or provide job training
Late submission of information, delays in document approval	Meeting preparation and organization guidelines, including the early distribution of schedules and information
Incorrect or incomplete requirements	Dividing up the development process into brief iterations and regular displays of new functionality
Change in requirements during development	Fixing the basic requirement in contract
Tight time limits that influence the testing flow	Following the development schedule, timely notification of potential problems

