
# American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science &Technology (FST)

Summer 21 22

Section: E

Software Quality Assurance and Testing

## Prescription Hub

A Report submitted
By


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Under the supervision of


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# Software Test Plan

for

# <Prescription Hub>

Version 1.0 approved

Prepared by <Noor Mohammad Talukder, Ariful Islam Marfy,

Mohmammad Maruful Islam, Sazia Rahman>

<American International University-Bangladesh>

<10 August 2022>

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# Revision History

| Revision | Date | Updated by | Update Comments |
|---|---|---|---|
| 0.1 | 2022.08.02 | Noor Mohammad Talukder | Existing studies reference added |
| 0.2 | 2022.08.03 | Ariful Islam Marfy | System feature updated |
| 0.3 | 2022.08.04 | Mohammad Maruful Islam | Test cases fixed. |
| 0.4 | 2022.08.05 | Sazia Rahman | Reference Add |
| 0.5 | 2022.08.06 | Noor Mohammad Talukder | More information added in background studies. |
| 0.6 | 2022.08.07 | Ariful Islam Marfy | System Interface fixed. |
| 0.7 | 2022.08.08 | Mohammad Maruful Islam | Cost analysis fixed. |
| 0.8 | 2022.08.9 | Sazia Rahman | Feature not to be tested is fixed. |
| 0.9 | 2022.08.10 | Noor Mohammad Talukder | Test plan is prepared. |

# 1. TEST PLAN IDENTIFIER:RS-MTP01.3

# 2. REFERENCES


- https://www.selenium.dev/documentation/
- Software Quality Testing Course Slide.
- Zishan, Hossain, Mohamed, Sharun (2019). The Scenario of e-Health Systems in Developing Countries (Bangladesh and Malaysia). *International Journal of Recent Technology and Engineering (IJRTE), 8*(1C2), 1138–1143.
- Khan, Al Amin(2021). A study on digital transformation in the healthcare sector of Bangladesh: Current scenario and the future roadmap. *Journal of Governance and Accountability Studies (JGAS), 1*(2), 163–176. https://doi.org/10.35912/jgas.v1i2.747


# 3. INTRODUCTION

## Background to the Problem

We are familiar with e-health. e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In present scenario of our country it is hectic work for person to carry his all medical history with him while he is travelling or move from place to place. Often, we see a patient lost his import documents or other medical reports. It is become more hectic when a patient goes to foreign country and he found his important medical document is missing. The root cause of this problem can be there is centralized server or missing of ICT based solution where a patient can store or keep his medical history or documents. We know health is one of the fundamental rights of human beings. It is the right of patients to get proper treatment but this can be hampered if there is no proper documentation of a patients and as a result a doctor can not take a decision while a patient need emergency treatment.

## Solution to the Problem

E-health is one of the trending topics in the present world. Using e-health services, common people can get health services using the internet or other platform from home. Bangladesh also introduced e-health services for its citizens for getting the best output of e-health. To overcome the specified

problem in our project we can make a web-based software where patients can easily login and upload his medical history. Not only that from his data using datamining techniques our web application can notify him if he has any serious medical issue or not. On the other hand, web applications allow multiple users access to the same version of an application. Web apps don't need to be installed. Web apps can be accessed through various platforms such as a desktop, laptop, or mobile. Our solution feasible with business objectives because a web application reduces costs for both the end-user and the business. Web applications are always up to date because updates are applied centrally.

The main purpose of our proposed web-based software is centralized all information a patient in a server where he can get access of his all medical history. Not only that if he allows her prescription and medical history can be access by connected doctors or pharmaceuticals shops. By this a patient can save his time, cost and get emergency treatment if he is missing any of the missing documents. The goal of our project is to provide a safe place where a patient's information will be safe and can accessible by doctors by his permission to provide ensure the health rights to citizens. The goals of our project are to make a web-based application where people will login and can save his medical information. He can also get notification if he has any medical issues. With the project development our aim is to connect the pharmaceuticals company and doctors for the benefits of patients.

As our proposed project is related to e-health there are several papers published which are related to e-health. According to Zishan, Hossain, Mohamed, Sharun (2019) the scenario of e-Health Systems in Bangladesh and Malaysia. This research includes the current scenario of e-health service and what are the main obstacles in e-health service in those countries. This research also includes the important steps that are taken by government and also the probable solution of e-health service's problem. The research from Khan, Al Amin (2021) includes the digital transformation in health care service in Bangladesh. This research finds out current digital transformation in health services and the challenges. It also includes what are the positive attitude towards the development of e-health systems, followed by an understanding of the current healthcare system, and how new technologies could solve problems associated with the current healthcare delivery environment. Not only that we find a website which deal with single point of service for all prescription needs, providing continuity and a high level of service to all patients. It will simplify and streamline the prescription service, reducing wastage, liaising with pharmacies, synchronizing repeat prescriptions, undertaking medication reviews and empowering patients to take control of their prescriptions and medications.

# 4. REQUEIREMNT SPECIFICATION

## **4.1** System Features

**1. System Registration**

Functional requirement

1.1 Open an account by doing registration

1.2 Provide Name, Phone number, Email, Password, Address etc.

1.3 verify Email

1.4 Submit and create

Priority Level:  High

Precondition: Verify all information

**2.System Login**

Functional requirement

2.1 The system will allow the user to enter with the correct email and password.

2.2 If user's failure to provide correct mail and password then users can reset the password by sending verification code through the email.

Priority Level: High

Precondition: User have valid email and password

**3.Prescription Upload**

Functional requirement

3.1 The system will allow the user to upload his medical documents.

3.2 The system will allow user to see his uploaded medical documents.

Priority level: High

Precondition: User must have logged in.

## **4.2** System Quality Attributes

Quality can be characterized in various ways. Quality is characterized diversely by every person. At long last, some standard procedures ought to be set. On the off chance that an item is easy to understand and contains the fundamental functionalities, it is all supposed to be of great. Quality Control Activities are pointed toward tracking down imperfections in items and administrations,

while Quality Assurance is pointed toward forestalling them. The reason for Assurance Activities or Attributes is to forestall the presentation of imperfections. Then as displayed, the accompanying can be utilized to guarantee the best quality for the organization's all's items in the statement.

**Reliability:** Check to see if the product is durable enough to withstand any situation. Also, the results should be correct on a consistent basis. Product reliability is determined by how well a project performs in various working environments and conditions.

**Maintainability:** The product's various versions should be simple to maintain. It should be simple to add code to an existing system for development, as well as to upgrade for new features and technologies as they become available. Maintenance should be both inexpensive and simple. The system is simple to maintain, and adding changes to the software or resolving flaws is simple.

**Usability:** This can be assessed in terms of usability. The application should be simple to use. It should also be simple to learn. The navigation should be straightforward. This can be assessed in terms of usability. The application should be simple to use. It should also be simple to learn. The navigation should be straightforward. The system must be simple to use in terms of input preparation, operation, and output interpretation. Ensure that our other frequently used systems have consistent user interface standards or practices. The system is simple to learn for new or occasional users.

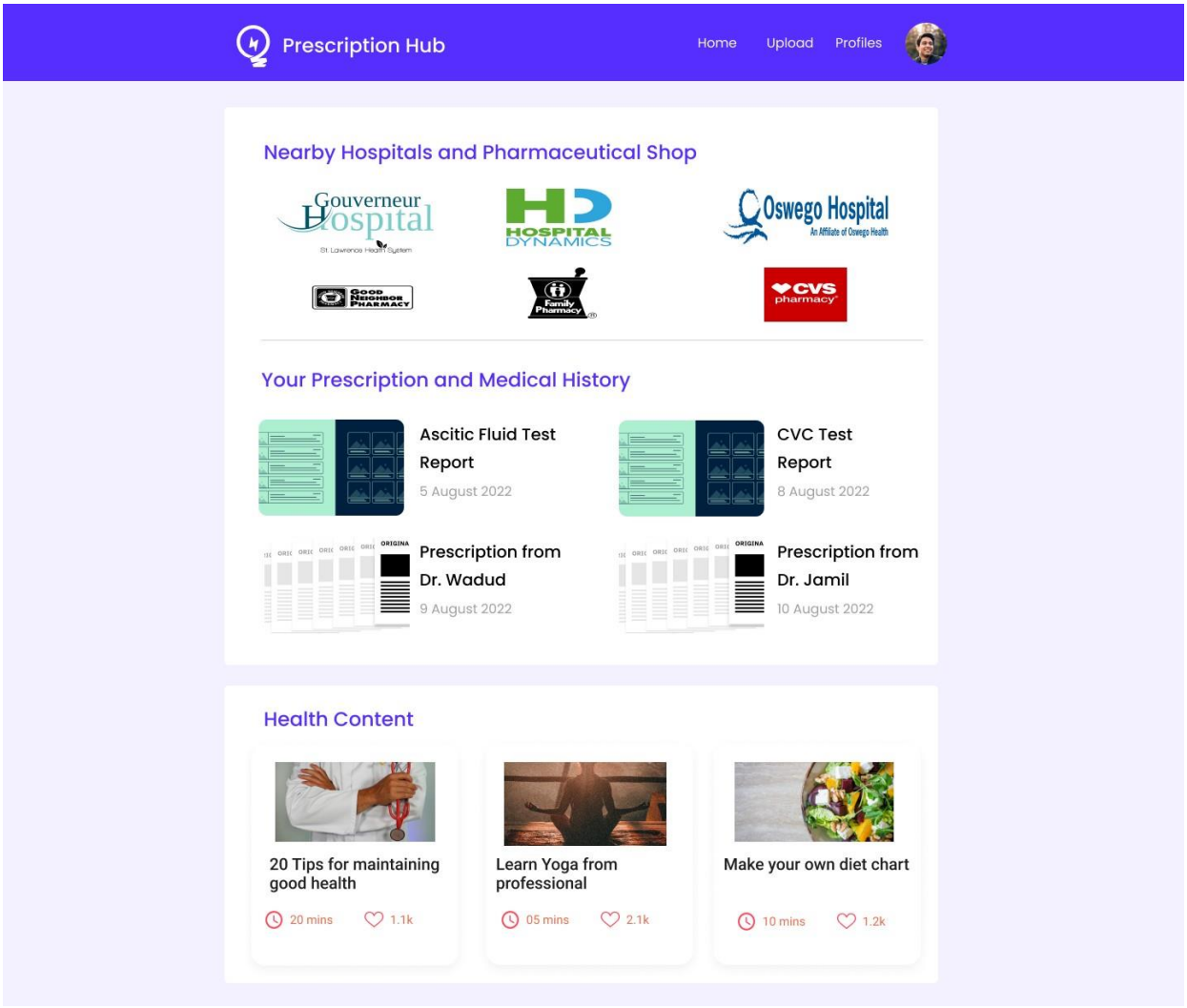
**Portability:** Costing concerns connected to porting, technical challenges related to porting, and behavioral issues related to porting can all be measured.

**Correctness:** The application's functionality, internal calculations, and navigation should all be proper. This means that the app must meet all of the functional requirements.

**Efficiency:** A major system quality attribute that is measured in terms of the time it takes for the system to execute any task. For example, the system should make optimal use of CPU capability, disk space, and memory. If the system consumes all available resources, the user's performance will suffer, and the system would be deemed inefficient. It is impossible to employ a system in real-time applications if it is inefficient.

**Testability:** It should be simple to test and detect flaws in the system. It should be simple to break into different modules for testing if necessary.

## 4.3 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 8.5 months or 1498 working hours.
**Cost:** To build this project we need approximately 2443350 bdt.
**Resources:** We Laptop, desktop, Visual Studio as IDE, MS SQL Server as RDMS.

**Project type: Organic**

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

**Source Line of Code,** SLOC= 9000 Lines

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

= (2.4* (9000/1000)1.05

=24.108

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

=2.50*(24.108) 0.38

=8.378

=8.5 Months

=8.5*22*8 Working hours

=1498 Working hours

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

=24.108/8.5

=2.83

=3

**Developer Salary in 8.5 months:**

Developers salary per Working hour =800 bdt

Total Developers Salary= 800*1498 bdt

=1198400 bdt

**Requirements Analysis:**

Time needed =1 month (22 working days)

=22*8 Working hours

=176 Working hours

Requirement Analysis Person's Hourly wage= 500 bdt

Total Requirement Analysis Expense =500*176 bdt

= 88000bdt

**Transportation Cost:**

Estimated Cost for transportation=10000 bdt

**Training and Hardware Expense:**

Estimated Cost for Training and Hardware =100000 bdt

**Rent Expenses:**

Rent per month= 15000 bdt

Total rent in 8.5 months =8.5*15000 bdt

=127500 bdt

**Utilities Cost:**

Total utilities bill in 8.5 months =23000 bdt

**Maintenance (Till 6 months after delivery):**

Expense per hour =1000 bdt

Total Estimated Time needed for maintenance = 72 hours

Total Estimated maintenance cost =72*1000 bdt

=72000 bdt

**Miscellaneous:**

Total Miscellaneous cost =10000 bdt

**Total Estimated Expense:**

Total Estimated cost =1198400+88000+10000+100000+127500+23000+72000+10000 bdt

=1628900 bdt

**Profit:**

50% of total estimated expense =1628900*50% bdt

=814450 bdt

**Project Budget:** 1628900+814450 bdt = 2443350 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.
- 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.

- For this we used a tool called Selenium to test our project. As it is a web based automated testing tool our work will be easier and faster. The reasons behind to use Selenium are it is easy to use, it is user friendly, it accepts many programming languages, it accepts multiple OS, it is open source platform.

## **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: Prescription Hub | | | Test Designed by: Sazia Rahman | |
|---|---|---|---|---|
| Test Case ID: PH_1 | | | Test Designed date: 06/08/2022 | |
| Test Priority (Low, Medium, High): High | | | Test Executed by: | |
| Module Name: Login Session | | | Test Execution date: | |
| Test Title: Verify login with valid username and password | | | | |
| Description: Test website login page with valid user | | | | |
| 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<br>2. Enter email<br>3. Enter password<br>4. Click submit | email: user@abc.com<br><br>Password: 321 | User should login into the application | As expected, | |
| Post Condition: User is validated with database and successfully login to account. The account session details are logged in the database. | | | | |

Figure: Test case of login session

| Project Name: Prescription Hub | | | Test Designed by: Noor Mohammad Talukder | |
|---|---|---|---|---|
| Test Case ID: PH_2 | | | Test Designed date: 06/08/2022 | |
| Test Priority (Low, Medium, High): High | | | Test Executed by: | |
| Module Name: Register User | | | Test Execution date: | |
| Test Title: Register users with valid information | | | | |
| Description: Test website registration page with valid information | | | | |
| Precondition (If any): User must provide valid information | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Go to the website<br>2. Enter mail<br>3. Enter password<br>4. Enter address<br>5. Enter gender<br>6. Click submit | email: xyz@gmail.com<br><br>Password: 456<br><br>Gender: Male<br><br>Address: Dhaka | User data should save in data base and a verification mail send to the mail address. | | |
| Post Condition: User's information is saved into database successfully. User can login to the website providing mail and password. | | | | |

Figure: Test case of registration session

| | | | | |
|---|---|---|---|---|
| Project Name: Prescription Hub | | | Test Designed by: Mohammad Maruful Islam | |
| Test Case ID: PH_3 | | | Test Designed date: 12/08/2022 | |
| Test Priority (Low, Medium, High): High | | | Test Executed by: | |
| Module Name: Prescription upload | | | Test Execution date: | |
| Test Title: Verify whether the prescription is properly uploaded or not | | | | |
| Description: Test the functionality of prescription upload session | | | | |
| Precondition (If any): prescription must be in doc/pdf/jpg/jpeg/png format | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Go to the website<br>2. Enter title<br>3. Upload prescription<br>4. Enter details<br>5. Click submit | Title: CVC Report<br><br>Upload prescription<br><br>Details: This is CVC report details. | The prescription should be uploaded | | |
| Post Condition: Prescription should be uploaded and saved in the database, user can download or view the prescription in future. | | | | |

Figure: Test case of prescription upload session

| | | | | |
|---|---|---|---|---|
| Project Name: Prescription Hub | | | Test Designed by: Ariful Islam Marfy | |
| Test Case ID: PH_4 | | | Test Designed date: 12/08/2022 | |
| Test Priority (Low, Medium, High): High | | | Test Executed by: | |
| Module Name: Prescription Update/ Delete | | | Test Execution date: | |
| Test Title: Verify whether the module can update or delete the prescription. | | | | |
| Description: Test the functionality of update/delete session. | | | | |
| Precondition (If any): Existing prescription can only be modified or delete. | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Go to the website<br>2. Update/Delete title<br>3. Update/Delete prescription<br>4. Update/Delete description<br>5. Click submit | Title: CVC Report<br><br>Description: CVC report details updated. | Previous information should be replaced by the newly provided information | | |
| Post Condition: Newly provided information will be saved in database and previous information can not be seen in future. | | | | |

Figure: Test case of prescription update session

## 8. ITEM PASS/FAIL CRITERIA

The testing procedure will be completed once the initial set of test cases has been created in Selenium Web driver. All of the test cases are written in such a way that they must all be passed in order for the system to be finished.

## 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.
- The sales administration staff will require training on the new screens and reports.
- Selenium operation tutorial should be given to the team.

## 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.

| Task Name | Aug,22 | Sept,22 | Oct,22 | Nov,22 | Dec,22 | Jan,23 | Feb,23 | Mar,23 | Apr,23 |
|---|---|---|---|---|---|---|---|---|---|
| Documentation | | | | | | | | | |
| Design | | | | | | | | | |
| Test plan | | | | | | | | | |
| Unit Testing | | | | | | | | | |
| Integration Testing | | | | | | | | | |
| System Testing | | | | | | | | | |
| Acceptance Testing | | | | | | | | | |
| Project completion | | | | | | | | | |
| Feedback | | | | | | | | | |

## 13. PLANNING RISKS AND CONTINGENCIES

Risk and contingency planning are critical for achieving a successful project outcome. It is mostly utilized in project risk management for unusual instances. Governments and other corporate entities, on the other hand, develop contingency plans. Every organization has its own set of laws and regulations that it must adhere to in the case of a crisis. Policies to alleviate a disaster may also be included in the plan. As a result, it is critical to obey those regulations and do everything for the advantage of the company.

## 14. APROVALS

| | |
|---|---|
| Project Sponsor- Hamid Mia | Approved |
| Development Management-Noor | Approved |
| EDI Project Manager-Marfy | Approved |
| RS Test Manager-Maruful | Approved |
| RS development Team Manager- Maruful | Approved |
| Reassigned Sales- Sazia | Approved |
| Order Entry EDI Team Manager- Sazia | Approved |