

American International University-Bangladesh (AIUB)  
Department of Computer Science  
Faculty of Science &Technology (FST)  
Sprint 22 23

Section: G  
Software Quality Assurance and Testing

Smart Health Care System

A Report submitted

By

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Lecturer

Software Test Plan

for

Smart Health Care System

Version 1.0 approved

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27 April, 2023

**Checked By Industry Personnel**

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# Revision History

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| --- | --- | --- | --- |
| Revision | Date | Updated by | Update Comments |
| 0.1 | 2023.04.15 | Nafisa Hossain | First Draft |
| 0.2 | 2023.04.16 | Sadman Akib | Second Draft |
| 0.3 | 2023.04.18 | Izaz Siddique | Third Draft |
| 0.4 | 2023.04.21 | Nafisa Hossain | Fourth Draft |
| 0.5 | 2023.04.23 | Sadman Akib | Fifth Draft |
| 0.6 | 2023.04.25 | Izaz Siddique | Sixth Draft |
| 0.7 | 2023.04.29 | Sadman Akib | Seventh Draft |
| 0.8 | 2023.04.29 | Izaz Siddique | Eighth Draft |
| 0.9 | 2023.04.29 | Nafisa Hossain | Ninth Draft |

# TEST PLAN IDENTIFIER:RS-MTP01.3

# REFERENCES

Software Quality and Testing Course PowerPoint Slides

# INTRODUCTION

## Background to the Problem

Healthcare is one of the basic needs of human life. But unfortunately, our country is not ensuring this service in a public way. All over the country, especially in the marginal areas people are falling into grave health risks due to lack of communication, travel problems, lack of public awareness, lack of emergency health care, disease and lack of public awareness about health care. The steps taken by various organizations and government initiatives are not carrying the expected results.

The root cause of this problem is the communication gap, emergency transportation, and lack of basic health knowledge among the mass people.

## Solution to the Problem

We will basically create direct communication between the patient and the doctor to ensure

patient care in an emergency. We will provide general knowledge about what to do in the initial

case of different diseases. If the patient needs to be rushed to any hospital, we will arrange for

emergency transportation.

As per we said that our software will fill the gaps in communication that they have in the field of

health and users will be aware of health as well as increase their general knowledge about

various diseases. It will lead to more research in science and people will be excited to do

research on it. With the recent deteriorating state of health in our country and the poor state of communication in the health sector, the Minister of Health in Parliament has given us some guidelines to overcome this situation. With these issues in mind and to address these issues, we have developed a tool that will be used to improve the country's health system and, above all, to

ensure health care. In this blog system there are so many features. A user can create any post. Post is basically a text where he/she can write anything he/she wants. User can read others post, update his/her own post and delete his/her own post.

There are some mobile base applications to solve this problem but they are not cover the all fields lacking in our health sector but we have integrated all the things that are ensuring good health.

# REQUEIREMNT SPECIFICATION

## System Features

1. System Login  
Functional Requirements

* 1. The software allows users to login with their given username and password If the inserted data has been invalid, then the system will show a message that giver data are not valid and then give another chance to log in.
  2. If the username and/or password has been inserted wrong more than five times,the software will lock the system for two minute and after that the system asked to the user for their mobile number or email what they set during registration and then provide a verification code to the mobile number or email to retry login.

Priority Level: High  
Precondition: user have valid user id and password

2. Update Profile  
Functional Requirements

* 1. After login into the ID user can set his/her age gender location.
  2. User can also set any kind of Medical issues if he/she had it before.
  3. If User can set multiple contact number in case some kind of network issue.\
  4. System will verify if the number is correct or not and send a message if invalid number.  
       
      Priority Level: Medium  
     Precondition: User must register with Phone No./Gmail.

3. Emergency Call   
Functional Requirements

* 1. The software should provide an emergency call button for user.
  2. This emergency call button will work as an emergency phone call from where the users can get access to the hospitals easily.
  3. User can provide any location to search for the number for the required service.

Priority Level: High  
Precondition: User need to be a registered member first.

4. Emergency Vehicle   
Functional Requirements

* 1. User can call emergency vehicle for health service.
  2. This will allow user to choose different kind of vehicle like ambulance, air ambulance etc.
  3. This system will also work under a certain location chosen by user.
  4. System will send a message to both consumer and provider when the vehicle is confirmed for the service.

Priority Level: Medium  
Precondition: User need to be registered and within the service location and valid phone number.

5. Medicine Delivery  
Functional Requirements

* 1. User can directly search for medicine writing the name of it.
  2. All the shop list containing the desired medicine will be shown as list.
  3. Users can select medicine for order.
  4. System will send a message if the medicine is not available in the shop

Priority Level: High  
Precondition: User need to be registered and within the service location and valid phone number.

## System Quality Attributes

* List down the quality attributes that describes how well the system should perform.

**QA1.Availability**: The system shall be at least 99.5 percent available on every seven days a week between 12.00 am to 11.59 pm at local time.

**Priority level:** High

**Precondition:** Must have maintainability attribute

**Cross-reference:** QA-5

**QA 2.**  **Efficiency**: There are at least 3.0 percent of the processor capacity, disk space 1.5 MB/S, memory 90MB and communication bandwidth 512kbps shall be available to properly run this system.

**Priority level:** High

**Precondition:** N/A

**Cross-reference:** QA-3

**QA 3.** **Flexibility**: A maintenance programmer who has at least 6 months of experience shall be able to add new feature and function including code, modifications and testing into the system with no more than two hours.

**Priority level:** Medium

**Precondition:** N/A

**Cross-reference:** QA-2, QA-4, QA-5

**QA 4.** **Integrity**: When user try to login into the system, there shall have to two step verification. One step is while user try to login into the system, the system will send a verification code to the user via mail and user shall have to use that verification code to login and the second step is user shall have to use their own password while they create the password to sign up this system.

**Priority level:** High

**Precondition:** N/A

**Cross-reference:** QA-2

**QA 5. Reliability**: The system shall no more than three experimental runs out of 800 can be lost.

**Priority level:** High

**Precondition:** N/A

**Cross-reference:** QA-1, QA-2, QA-3

## System Interface

|  |
| --- |
|  |
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## Project Requirements

Time: By using COCOMO (CONSTRUCTIVE COST MODEL)

Our software project type: Organic

That means P=1.05 , T=0.38

Coefficient<Effort Factor> = 2.4

We know,

Effort = PM

Here,

SLOC = 17000 Lines

PM = Coefficient<Effort Factor> \* (SLOC / 1000) P = 2.4 \* (17000/1000)^1.05 = 47.00

Development time, DM = 2.50 \* (PM) ^T

= 2.50 \* (47) ^0.38

= 11.19 = 12months

Required number of people, ST = PM/DM

= 47/12

= 3.92 = 4 people

Resources: We need 4 developers to create this software.

Environment: We need workspace where 4 people can work together.

Budget: Considering all kind of equipment the budget is around 300K (tk)

# FEATURES NOT TO BE TESTED

The following is the list of the features not to be tested:

* Logout of accounts.
* Create, update, or delete patient records.
* Maintenance of the Doctor records, account records, and Medicine database records
* Change profile information of the user.
* Network facilities.

# TESTING APPROACH

## Testing Levels

* **UNIT Testing:** First we will do the Unit Testing during our system development. In this testing we will tests individual software modules and see whether the individual system module has error or not. This testing methodology is done by the software developers and QA staff. This testing goal is to ensure that each unit of software code works as intended. In this step, we will follow “White Box Testing” technique.
* **Integration Testing:** After that in the second part we will do the Integration. In this testing we will make sure that all the software modules are integrated logically and tested as a group and working correctly. The goal of this level of testing is to find flaws in the way various software modules interact when they're integrated. In this step, we will follow the “Bottom-up Integration” technique.
* **System Testing**: Then we will do the system testing. Through the system testing we will test of full-featured, fully integrated system. Then we will verify if it meets all the requirement. Black-box testing falls under this condition. So, in this level, we will follow “Black Box Testing” technique.
* **Acceptance Testing:**  The last phase of our testing is Acceptance Testing. We will do this Testing for checking the acceptability of our product. This test will be done to check whether any defect missed during the functional testing phase. In this level, we will follow the “Black Box Testing” technique. After that, we may run unit tests again.

## 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.
* Click Up: Click Up can be used to manage test cases by creating and assigning tasks to testers and tracking their progress. This can help ensure that all test cases are executed and completed on time.
* Selenium Web driver: Selenium WebDriver is a popular tool for automated testing of web applications. Its usefulness in software testing lies in its ability to test web applications across multiple browsers and operating systems, automate regression testing, run tests in parallel, integrate with other testing tools and frameworks, and enable testers to reproduce and investigate issues.

## 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.

# TEST CASES/TEST ITEMS

**Test case for Login:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project Name: Smart Health Care System | | | Test Designed by: Izaz Siddique | | |
| Test Case ID: SHC\_1 | | | Test Designed date:18.04.2023 | | |
| Test Priority (Low, Medium, High): Medium | | | Test Executed by: Izaz Siddique | | |
| Module Name: Patient Login Session | | | Test Execution date:18.04.2023 | | |
| Test Title: Verify login with valid mobile number and password | | |  | | |
| Description: Test website login page | | |  | | |
| Precondition (If any): User must have registered into the website | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Go to the website 2. Enter mobile number 3. Enter password 4. Click “Submit” button | Mobile: 01521568222  Password: Ahmedakib | 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. | | | | | |

**Test Case for Registration:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Project Name: Smart Health Care System | | | Test Designed by: Izaz Siddique | |
| Test Case ID: SHC\_2 | | | Test Designed date: 18.04.2023 | |
| Test Priority (Low, Medium, High): Medium | | | Test Executed by: Izaz Siddique | |
| Module Name: Registration Session | | | Test Execution date:18.04.2023 | |
| Test Title: Patient Register with valid mobile number,email and password and all other information | | | | |
| Description: Test website registration page | | | | |
| Precondition (If any): User must have a valid mobile number and email address. | | | | |
| Test Steps | Test Data | Expected Results | Actual Results | Status (Pass/Fail) |
| 1. Go to the website. 2. Click Register button. 3. Enter name. 4. Enter email. 5. Enter date of birth 6. Enter gender. 7. Enter password. 8. Repeat password. 9. Click submit | Name: Neon Islam  Email: neon@gmail.com  Mobile:01781726391  Dob: 12/14/2022  Gender: Male Age: 25  Password: Neon12345  Repeat password: Neon12345 | User should register himself/herself into the application. | As expected | Pass |
| Post Condition: User is validated with database and successfully registered an account. The account session details are stored in the database. | | | | |

**Test case for Appointment:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project Name: Smart Health Care System | | | Test Designed by:Sadman Akib | | |
| Test Case ID: SHC\_3 | | | Test Designed date:20.04.2023 | | |
| Test Priority (Low, Medium, High): Medium | | | Test Executed by: Sadman Akib | | |
| Module Name: Appointment Session | | | Test Execution date:20.04.2023 | | |
| Test Title: Take appointment using doctor name and mobile number. | | |  | | |
| Description: Test website Appointment page | | |  | | |
| Precondition (If any): User must have valid doctor name and mobile number | | | | | |
| Test Steps | Test Data | Expected Results | | Actual Results | Status (Pass/Fail) |
| 1. Go to the website. 2. Login as a patient 3. Click on “Appointment”. 4. Enter Doctor name. 5. Enter mobile number 6. Click submit | Doctor name: Manjuma Mim  Mobile: 01845678432 | User should take an appointment successfully | | As expected, | Pass |
| Post Condition: User is able to take an appointment of a doctor and this details is stored in database . | | | | | |

**Test case for Update patient profile:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project Name: Smart Health Care System | | | Test Designed by: Sadman Akib | | |
| Test Case ID: SHC\_4 | | | Test Designed date:20.04.2023 | | |
| Test Priority (Low, Medium, High): Medium | | | Test Executed by: Sadman Akib | | |
| Module Name: Update patient profile session | | | Test Execution date:20.04.2023 | | |
| Test Title: Update user profile with valid username, email, date of birth, and gender. | | |  | | |
| Description: Test website update patient 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. Login as patinet. 3. Click”update info”. | Re type name:Izaz Siddique Re type mobile number:01575267348  Re type email:sizaz886@gmail.com  Re type age:23 Re type gender: male  Re type DoB:25/4/2000 | Patient should update his/her profile of the application | | As expected, | Pass |
| Post Condition: User is validated with database and successfully update its profile. | | | | | |

**Test case for Update Doctor profile:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project Name: Smart Health Care System | | | Test Designed by:Nafisa Hossain | | |
| Test Case ID: SHC\_5 | | | Test Designed date:22.04.2023 | | |
| Test Priority (Low, Medium, High): Medium | | | Test Executed by: Nafisa Hossain | | |
| Module Name: Update doctor profile page | | | Test Execution date:22.04.2023 | | |
| Test Title: Update doctor profile with valid username, email, date of birth, and gender. | | |  | | |
| Description: Test website update doctor profile 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. Login as doctor. 3. Click”update info”. | Re type name:Nafisa Hossain Re type mobile number:01575212345  Re type email:nafisa86@gmail.com  Re type age:23 Re type gender: female  Re type DoB:5/3/2000 Re type Specialist: Neck Specialis | Doctor should update a post into the application | | As expected, | Pass |
| Post Condition: Doctor is validated with database and successfully update its profile. | | | | | |

# ITEM PASS/FAIL CRITERIA

Functional Requirements:

Pass: The Smart Health Care System correctly performs all functional requirements specified in the project requirements document.

Fail: The Smart Health Care System fails to meet any of the functional requirements specified in the project requirements document.

Non-Functional Requirements:

Pass: The Smart Health Care System meets all non-functional requirements specified in the project requirements document, such as performance, security, usability, and reliability.

Fail: The Smart Health Care System fails to meet any of the non-functional requirements specified in the project requirements document.

Integration Testing:

Pass: The Smart Health Care System correctly integrates with all required external systems and applications.

Fail: The Smart Health Care System fails to integrate with any required external systems and applications.

Regression Testing:

Pass: All previously implemented functionality continues to work correctly after new changes or updates are made to the Smart Health Care System.

Fail: Previously implemented functionality is broken or does not work correctly after new changes or updates are made to the Smart Health Care System.

User Acceptance Testing:

Pass: The Smart Health Care System meets all acceptance criteria specified by the end-users or stakeholders.

Fail: The Smart Health Care System fails to meet any of the acceptance criteria specified by the end-users or stakeholders.

# 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

# STAFFING AND TRAINING NEEDS

Staffing Needs:  
1.Test Manager: A test manager who will be responsible for overseeing the testing activities, managing the testing team, and communicating the progress and results of testing to the project stakeholders.

2. Test Engineers: Test engineers who will be responsible for executing the test cases, documenting defects, and reporting on the results of the testing activities.

3. Automation Engineer: An automation engineer who will be responsible for developing and maintaining the automated test scripts used to execute the test cases.

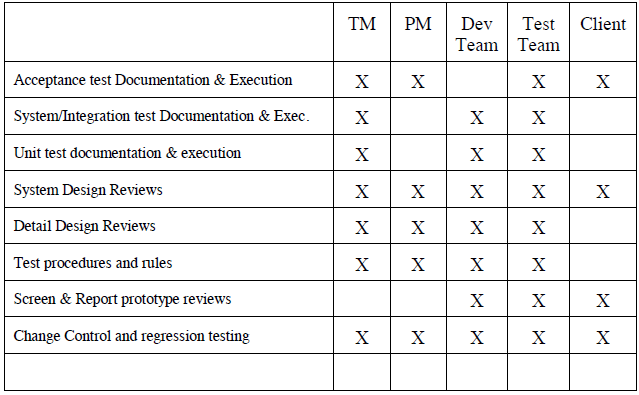
Training Needs:

1. Testing Methodologies: All testing team members need to be trained in the various testing methodologies, including manual and automated testing, to ensure that they can execute the test cases effectively.  
2. Testing Tools: Training on the testing tools, including test management tools, defect tracking tools, and automation tools, should be provided to ensure that the testing team can use these tools effectively.

3. Healthcare Regulations: The testing team should be trained on the relevant healthcare regulations, including HIPAA and GDPR, to ensure that they understand the requirements for protecting patient data and privacy.

4. Communication Skills: The test manager and quality analyst should be trained in effective communication skills to ensure that they can communicate the progress and results of the testing activities to the project stakeholders effectively.

# RESPONSIBILITIES



# TESTING SCHEDULE

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Month Task | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Documentation |  |  |  |  |  |  |  |  |  |  |  |  |
| Design |  |  |  |  |  |  |  |  |  |  |  |  |
| Codding |  |  |  |  |  |  |  |  |  |  |  |  |
| Test plan |  |  |  |  |  |  |  |  |  |  |  |  |
| Unit testing |  |  |  |  |  |  |  |  |  |  |  |  |
| Integration testing |  |  |  |  |  |  |  |  |  |  |  |  |
| System testing |  |  |  |  |  |  |  |  |  |  |  |  |
| Acceptance testing |  |  |  |  |  |  |  |  |  |  |  |  |
| Project completion |  |  |  |  |  |  |  |  |  |  |  |  |
| Feedback |  |  |  |  |  |  |  |  |  |  |  |  |

# PLANNING RISKS AND CONTINGENCIES

1. Risk: Delay in project timelines due to unforeseen issues during testing activities.

Contingency: Develop a contingency plan that includes adding additional resources to the testing team, identifying critical path activities and prioritizing them, and adjusting the testing schedule as needed.

2. Risk: Insufficient test coverage or inadequate testing methodologies may lead to inadequate testing of the Smart Health Care System.

Contingency: Develop a comprehensive test plan that includes all relevant testing methodologies and test cases that adequately cover all functional and non-functional requirements of the Smart Health Care System.

3. Risk: Inadequate testing infrastructure or tools may result in an inability to execute or track testing activities effectively.

Contingency: Evaluate and select the appropriate testing tools and infrastructure needed to support testing activities. Ensure that the testing tools and infrastructure are properly set up, configured, and maintained to prevent any issues during testing activities.

4. Risk: Data protection issues due to the sensitive nature of the healthcare data.

Contingency: Ensure that all testing activities adhere to the relevant data protection regulations, such as HIPAA and GDPR, and develop a comprehensive data anonymization strategy that protects patient privacy.

# APROVALS

|  |  |
| --- | --- |
| Project Sponser – | Approved |
| Development Management- | Approved |
| EDI Project Manager- | Approved |
| RS Test Manager- | Approved |
| RS Development Team Manager- | Approved |
| Reassigned Sales- | Approved |
| Prder Entry EDI Team Manager- | Approved |