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

Section: H
Software Quality Assurance and Testing

PROJECT TITLE:

Easy Health Services

A Report Submitted
By

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Under the supervision of

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Revision History

Revision	Date	Updated by	Update Comments
0.1	2023.4.13	Shah Sanzida Masiat	First Draft
0.2	2023.4.14	Nusrat Jahan Ananna	Second Draft
0.3	2023.4.17	Md Oli Ullah Rafi	Third Draft
0.4	2023.4.20	Shamsidhduha Shafil	Fourth Draft
0.5	2023.4.25	Nusrat Jahan Ananna	Fifth Draft
0.6	2023.4.28	Shah Sanzida Masiat	Final

1. TEST PLAN IDENTIFIER: RS-MTP01.3

2. REFERENCES

1) Software Requirement Specification (SRS) Document
2) https://mockflow.com/

3. INTRODUCTION

Background to the Problem

The delivery of public services, including healthcare, must be done so safely and effectively in the modern world. The ambulance service industry in Bangladesh still needs to develop in these contemporary times, as technology is used primarily in many facets of life. In Bangladesh, it can be challenging for people to contact an ambulance. Although there are more ambulance services in cities than in rural regions, both urban and rural residents struggle with a lack of emergency ambulance services. In Bangladesh, there are two types of ambulance services: those provided directly from the hospital and those provided by private companies. Due to high demand, hospital-based services are frequently unavailable, and they are more expensive than private services. Private services can be accessed quickly, but they quite often lack proper medical personnel. Ambulances are booked through mobile phone calls in this country, and often the contact numbers are unreachable or engaged, wasting valuable time, and endangering the patient's life. People nowadays can contact ambulance services via 999, but because it requires a number of call transfers before booking an ambulance, this service isn't very reliable in an urgent situation. As a result, I believe Bangladesh must expand this sector in order to provide people with easy access to emergency ambulance services. Although there is a mobile application in Bangladesh that provides ambulance service, it has limited features and is only available in one area. We plan to implement a mobile-based application that will provide emergency ambulance services in Bangladesh. We can use it to improve emergency ambulance service, allowing people to access emergency ambulance services more conveniently.

Solution to the Problem

In Bangladesh, the emergency medical services frequently lack qualified medical personnel; thus, they provide only basic first aid and transportation assistance. Other countries provide competent emergency medical workers who can provide the emergency department doctor with a general overview of the patient's condition. People who work in emergency medicine should take a legitimate medical course where they learn how to stabilize patients' conditions and assess emergency patients. Our application will help people to access ambulance services easily without facing any hassles. The main goals of our application are:

- To help people access emergency ambulance services more conveniently.
- To improve healthcare system and help monetize medical services.
- To help emergency cases/accidents/natural disasters.

Our application is called “Easy Health”. Two different ambulance call types will be available on this app, which will function similarly like Uber. First is a significant condition (heart disease, diabetes, respiratory problems, trauma attacks, etc.) that requires an emergency call, while second is less critical (patient transportation from hospital to home, transferring a disabled patient to hospital for checkup etc.) ambulance call. The application will have an additional interface for diseases, where consumers will see disease symptoms, prevention, and treatments. This application will also offer a first aid course for people free of cost. We plan to implement it to lessen the crowd and pressure in hospitals because often ambulances are misused due to the lack of first aid education.

4. REQUEIREMNT SPECIFICATION

4.1 System Features

1) System Registration

Functional Requirements

i) The software must allow users to register with the necessary information.
ii) If the username is not unique, the system will prompt the user to try registration with a different username again.

Priority Level: High

Precondition: Not applicable.

2) System Login

Functional Requirements

i) Users must be able to log in using their assigned username and password.
ii) If the username and/or password have been entered incorrectly more than three times, the random verification code will be generated by the system to retry login.

Priority Level: High

Precondition: The user must have a valid user ID and password.

3) Request for ambulance

Functional Requirements

i) Users will be able to request ambulance with a location and description using the software.
ii) If no location is specified, the system should reject the request and instruct the user to try again with a more precise location.
iii) Adding the condition of the patient (Critical/ Less critical)

Priority Level: High

Precondition: User must have valid account

4) Calling/Messaging for approximate time

Functional Requirements

i) The software allows user to call and send message to the ambulance driver for details about approximate arrival time of the ambulance.

Priority Level: High

Precondition: User must have valid account

5) Request for payment

Functional Requirements

i) User can payment their charges through the software. Three ways to get payment 1. Bkash/ Nagod 2. Banking 3. Cash on service.

Priority Level: Medium

Precondition: User must have valid account

6) Applying for First-aid course

Functional requirements

i) User can apply for the first-aid course through the software. They must register to take the course.

Priority level : Medium

Precondition: User must have valid account

7) User Account

Functional requirements

i) Users can see their rating points.
ii) System shall allow the user to track their booked ambulance.
iii) System also allows the user to add or remove a coupon for a discount.
iv) The system shall allow the user to update their payment options.
v) System shall allow the user to access available account security options.

Priority Level: Medium.

Precondition: The user must be logged in to the system.

8) Settings & Privacy

Functional Requirements

i. The system shall allow the user to update their location settings.

ii. The system also allows the user to choose their preferred languages.
iii. System shall allow the user to delete or deactivate their profile/account.
Priority Level: High.
Precondition: The user must be logged in to the system.

9) Account Security

Functional Requirements

i. The system shall allow the user to change or update their password.

Priority Level: High

Precondition: The user must be logged in to the system

4.2 System Quality Attributes

1. **Usability:** The system must be user-friendly. The system should be intuitive and simple to navigate.
2. **Efficiency**: The system should maximize the capacity and memory of the processor. Any task should be completed with optimal efficiency.
3. **Security:** System security should be sufficient to prevent unauthorized access to system functions in order to prevent information loss, protect data privacy, and safeguard the system against viruses.
4. **Modularity:** The system's every block of code must be under separate and acceptable modules.
5. **Testability:** The system should be simple to test and identify flaws.
6. **Flexibility:** The system should be flexible enough to be modified.
7. **Reusability:** Code library classes should be general enough to be utilized on multiple versions of an application or new projects.

4.3 System Interface

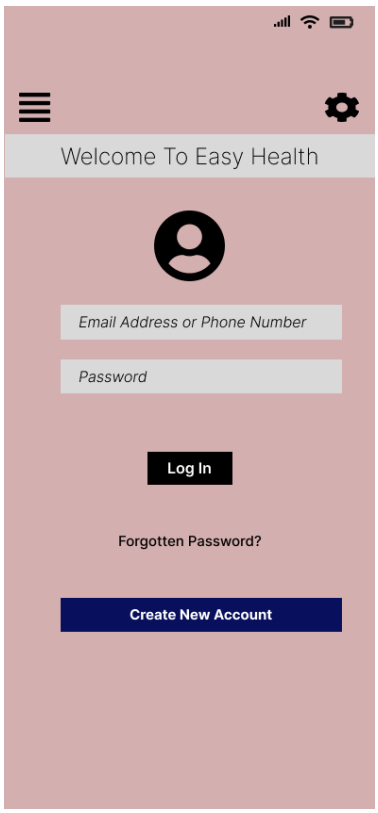

Figure 1: Home page

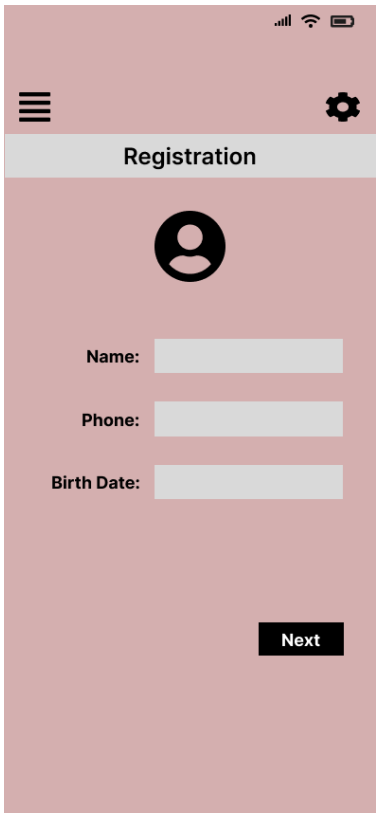

Figure 2: Registration page 1

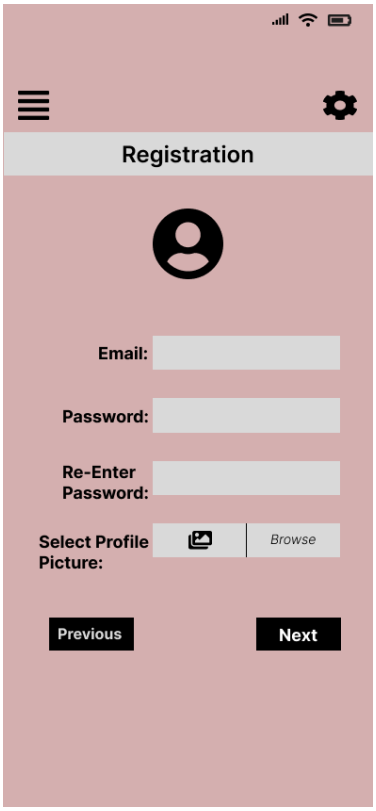

Figure 3: Registration page 2

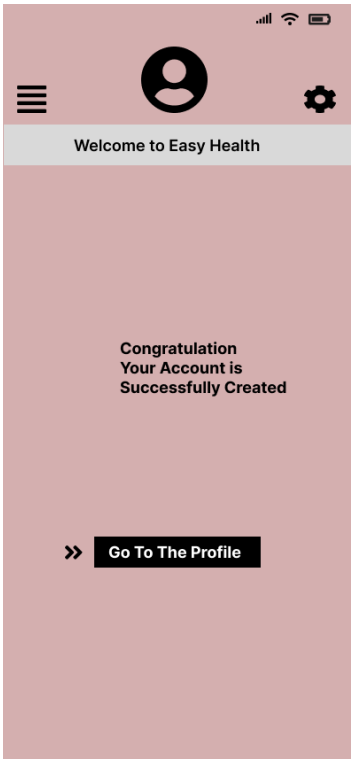

Figure 4: Registration page 3

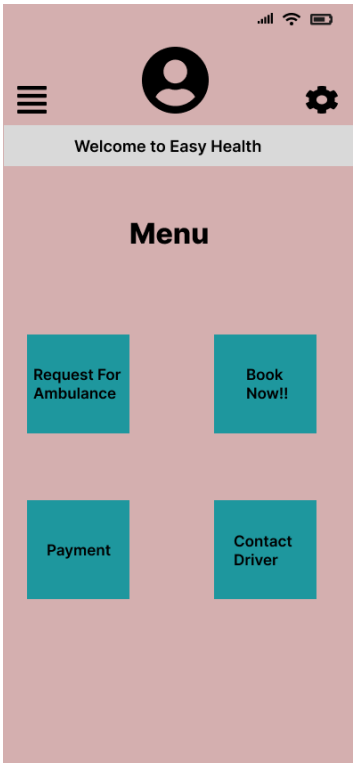

Figure 5: Menu

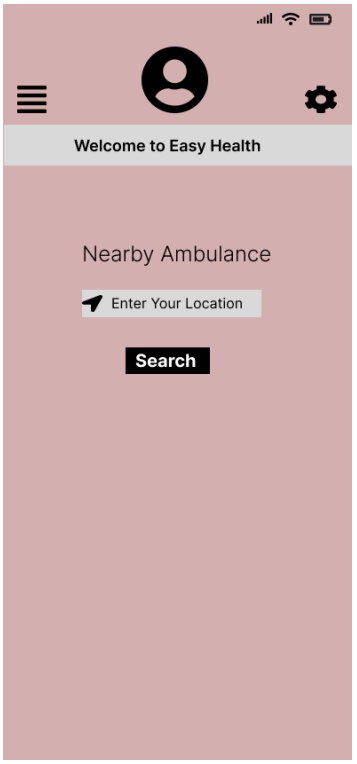

Figure 6:

Nearby

ambulance

search

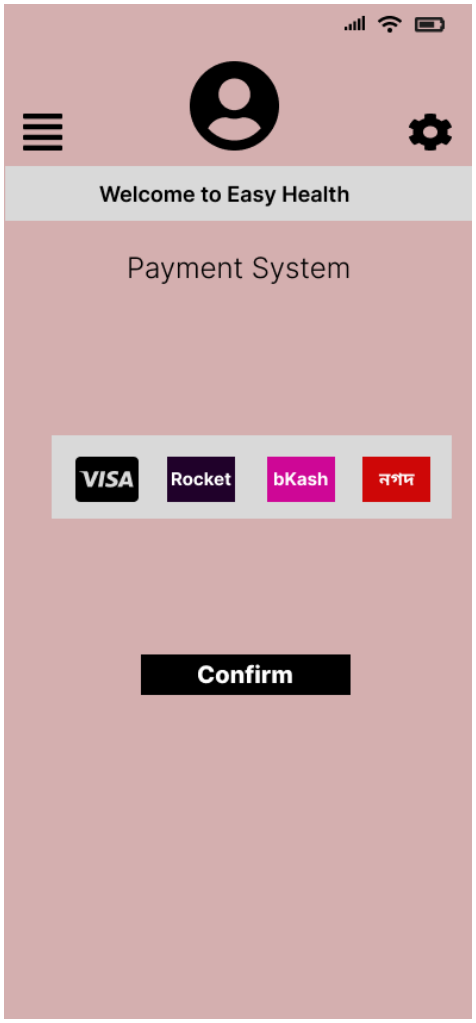

Figure 7: Payment method

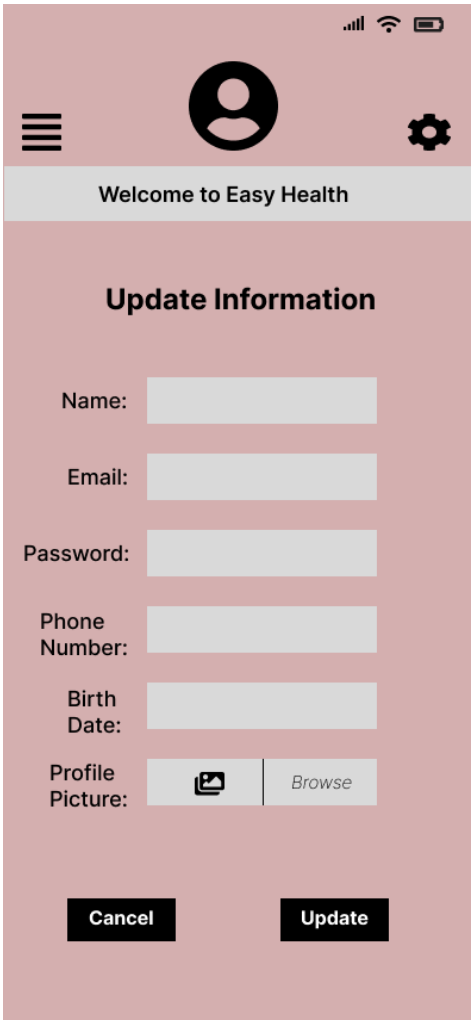

Figure 8: Update information

4.4 Project Requirements

i) The source code must be in java language.
ii) For software databases, shall use an Oracle database server, but other databases are also acceptable.
iii) For software development, shall use Android studio.
iv) For testing, shall use Selenium Automation.
v) The software size is maximum 250MB.

Constructive Cost Model

Software project type: Organic; [p=1.05]
Coefficient<Effort Factor> = 2.4
Effort = PM =
So, P = 1.05 and T = 0.38
SLOC = 25000 Lines
Persons-months, PM = Coefficient<Effort Factor> * (SLOC / 1000) ^{P} = 2.4 * (15000/1000)^1.05 = 41.22
Development time, DM = 2.50 * (PM) ^T
= 2.50 * (41.22) ^0.38
= 10.27 = 11 months
= 1760 Working hours in total (Per week 40 hours)
Required number of people, ST = PM/DM
= 41.22/11
= 3.74 = 4 people

Budgeting

Developer/Tester salary of 11 months:
Per employee salary per month = 40000 Taka = 400 Taka per hour
Total salary = 400 * 1760 = **7, 04, 000 Taka**
Requirement analysis:
Required time = 1 month = 25 working days = 200 working hour
Requirement analysis person's per hour salary = 250 Taka
Total requirement analysis salary = 250 * 200 = **50,000 Taka**
Transportation cost: **15,000 Taka** (Approximate)
Hardware expense: **1, 20, 000 Taka** (Approximate)
Rent expenses:
Total in 11 months = **1, 65, 000 Taka** [Per month = 15,000 Taka]
Total utilities in 11 months: **15,000 Taka** (Approximate)
Maintenance (Till 4 months after delivery):
Cost per hour = 1,200 Taka
Total estimated time needed for maintenance = 40 hours
Total estimated maintenance cost = 1,200 * 40 = **48,000 Taka**
Project manager's salary of 11 months:
Per month salary = 40,000 Taka
Total salary = 40,000 * 11 = **4, 40, 000 Taka**
Accountant's salary of 11 months:
Per month salary = 12,000 Taka
Total salary = 12, 000 * 11 = **1, 32, 000 Taka**
Total expense: 7, 04, 000 + 50,000 + 15,000 + 1, 20, 000 + 1, 65, 000 + 15,000 + 48,000 + 4, 40, 000 + 1, 32, 000 = **1, 689, 000 Taka**
Profit: 25% of total expense = 1, 689, 000 * 25% = 4, 22,250 Taka

Total budget: 1,689, 000 + 4, 22,250 = **2, 411, 250 Taka**

5. FEATURES NOT TO BE TESTED

1. Networks
2. Hardware
3. Users' registration information (Name, Address, Phone number)

6. TESTING APPROACH

6.1 Testing Levels

The testing for the "Easy Health" 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.

i) UNIT Testing: Initially, we'll conduct unit testing during system development. In this testing, we will test different software modules. Occasionally, the developer may also test the product as a whole. The code will be inspected line by line by the programmer using a few ways. It will be a "white box" test in which no code execution is performed.

ii) SYSTEM/INTEGRATION Testing: Then, in the second section, we will do the integration. During this testing, we will ensure that all software components are logically integrated, tested as a group, and functioning properly. This level of testing seeks to identify weaknesses in how different software components interact when they are combined. In this step, we will implement "bottom-up integration."

iii) ACCEPTANCE Testing: Our testing concludes with acceptance testing. The purpose of this testing is to determine whether or not our product is acceptable. This test will determine if any defects were overlooked during the functional testing phase. This level will utilize the "Black Box Testing" methodology. After that, we may conduct unit tests once again.

6.2 Test Tool

1) The Selenium Web driver Tool will be used for automated testing. We utilize this instrument to discover errors and verify that our systems are of high quality, responsive, progressive, and consistent.

2) Jira project management tool will be used to share documents, communicate with team members, to keep track of schedule and planning, the progress of the testing project and so on.

6.3 Meeting

The test team will meet once 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 in different weeks. Additional meetings can be called as required for emergency situations.

7. Test cases

Project Name: Easy Health		
Test Case ID: 1		
Test Priority (Low, Medium, High): High.		
Module Name: System login session.		
Test Title: Verify the Home Page feature.		
Description: Test to view website Home page.		
Precondition (If any): User must have valid username and password		
Test Steps	Test Data	Expected Results
1. Go to application log in page. 2. Enter user id. 3. Enter user password 4. Click submit	User Id: shahsanzida11@gmail.com Password: sanzida11	User can login into the application.
Post Condition: User have to contain a valid user id with a valid password with database to successfully login to his/her account. The account season details are logged in the database.		

Project Name: Easy Health			Test Designed by: Rafi	
Test Case ID: 2			Test Designed date: 13/4/23	
Test Priority (Low, Medium, High): High.			Test Executed by: rafi	
Module Name: Create New Account Session			Test Execution date: 25/4/23	
Test Title: New user with new Id & password.				
Description: Test website Create new Id feature.				
Precondition (If any): User must have valid email id or phone number.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Open the website account login page. 2. Click Create New Account. 3. Enter Email id or Phone number. 4. Enter Confirmation Code. 5. Enter New Password. 6. Click Submit.	Phone number: 01521698011 Code: 1610 New Password: rafi@2000	User should login into the webpage	As expected	Pass
Post Condition: User can successfully login to his/her account.				

Project Name : Easy Health			Test Designed by:Ananna	
Test CaseID:3			Test Designed date: 13/4/23	
Test Priority (Low, Medium, High): Medium.			Test Executed by: Ananna	
Module Name: Forgot Password Session			Test Execution date: 25/4/23	
Test Title: Provide user with new password.				
Description: Test website forgot password feature.				
Precondition (If any): User must have valid email id or phone number.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
7. Open the website account login page. 8. Click Forgot Password. 9. Enter Email id or Phone number. 10. Enter Confirmation Code. 11. Enter New Password. 12. Click Submit.	E-Mail: sumayea@gmail.com Code: 1610 New Password: Sum2022@	User should login into the webpage	As expected	Pass
Post Condition: User can successfully login to his/her account.				

Project Name: Easy Health			Test Designed by: Masiat	
Test Case ID: 4			Test Designed date: 13/4/23	
Test Priority (Low, Medium, High): Medium			Test Executed by: Masiat	
Module Name: Menu			Test Execution date: 25/4/23	
Test Title: Ambulance call request				
Description: User requests for ambulance				
Pre-Condition(If any) : User must be logged in to request for ambulance				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the website. 2. Log in. 3. Click on Menu 4. Request for ambulance 5. Choose the type of ambulance call	User menu Types of ambulance call : Critical/ Less Critical	User should see vehicle request option	As expected	Pass
Post Condition: User can successfully request for ambulance				

Project Name: Easy Health			Test Designed by: Shafil	
Test Case ID: 5			Test Designed date: 13/4/23	
Test Priority (Low, Medium, High): High			Test Executed by: Ananna	
Module Name: Available ambulance			Test Execution date: 25/4/23	
Test Title: Checking the availability of nearby ambulance				
Description: Customers books the ambulance				
Precondition (If any): User must request for ambulance and choose the type				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Open the website. 2.Log in as a customer 3. Menu 4. Request for ambulance > Done 4. Select nearby ambulance according to preference 5. Click Done	Select ambulance based on the available nearby ambulance	User will be able book their preferable ambulance	As expected	Pass
Post Condition: User can successfully see that they have booked the ambulance				

Project Name: Easy Health			Test Designed by: Rafi	
Test Case ID: 6			Test Designed date:13/4/23	
Test Priority (Low, Medium, High): High			Test Executed by: Rafi	
Module Name: Check payment methods.			Test Execution date: 25/4/23	
Test Title: Checking customers payment.				
Description: Customers payment methods checking feature.				
Precondition (If any): User must book an ambulance				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the website. 2.Log in 3. Book the ambulance 4. Click payment method 5. Choose payment method 7.Select -VISA/ BKASH / ROCKET /NAGAD 8.Enter your amount 9.Select agree 10. Place done	Payment method	User will be able to see all available payment method.	As expected	Pass
Post Condition: User can successfully see the payment notices.				

Project Name: Easy Health			Test Designed by: Ananna	
Test Case ID: 7			Test Designed date: 13/4/23	
Test Priority (Low, Medium, High): High			Test Executed by: Shafil	
Module Name: Contact driver			Test Execution date: 25/4/23	
Test Title: Contact driver using cellular call/ system chatting				
Description: Customers contact the ambulance driver for required information				
Precondition (If any):				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the website. 2.Log in 3. Menu 4. Request for ambulance 5. Book ambulance 6. Choose payment and place done 7. Contact driver	Contacting	User will be able to contact the ambulance driver using cellular call or system chatting	As expected	Pass
Post Condition: User can successfully interact with ambulance driver				

Project Name: Easy Health			Test Designed by: Shafil	
Test CaseID:8			Test Designed date: 13/4/23	
Test Priority (Low, Medium, High): Medium.			Test Executed by: Shafil	
Module Name: User information update			Test Execution date: 25/4/23	
Test Title: Updating user information				
Description: User can update their information				
Precondition (If any): User must have valid email id or phone number.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Open the website account login page. 2. Click update information button 3. Enter the information to be updated 4. Select submit 5. Verify using email address to get the information updated	Fill out the information that needs to be updated in the form.	User must successfully update their information	As expected	Pass
Post Condition: User can successfully update their informations.				

8. ITEM PASS/FAIL CRITERIA

The entrance criteria for each step of testing must be met before proceeding to the subsequent phase. The criteria for passing and failing are listed below.

1. In accordance with the stated scenario, the expected outcome must occur for the design to be deemed successful; otherwise, this criterion must be failed.
2. If an item is tested ten times and functions correctly nine times, but fails once, it will be called a fail case.
3. Crashing of the system will be deemed a failure scenario.
4. After submitting a query to the system, if the desired page does not show, it will be considered a failure.

9. TEST DELIVERABLES

a) Test Design Specifications
b) Acceptance test plan
c) System test plan
d) Integration test plans
e) Unit test plans

10. STAFFING AND TRAINING NEEDS

This part covers personnel and test job preparation. At least one full-time tester is recommended for system/integration and acceptance testing. Most employees will embrace challenging tasks. Job descriptions follow:

1) Project Manager: Responsible for the overall project execution. This includes drafting requirements and managing the testing cycle, among other tasks. Therefore, project managers need training in these areas.
2) Test Manager: Responsible for creating expert test strategies, evaluating test deliverables, managing test cycles, and recommending testing completion. Test managers must be qualified to evaluate professional standard test designs.
3) Test Engineer: Responsible for designing tests, creating test methods, generating test data, executing tests, constructing automated test strategies, and providing the test administrator with measurement information. Test engineers should therefore be able to plan and execute any test case using automated technologies.

11. RESPONSIBILITIES

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

12. TESTING SCHEDULE

1. Project Proposal
2. Requirement
3. Project Planning
4. System Design
5. Coding
6. Testing
7. Implement and Unit Testing
8. System Integration and Testing

Name/weeks	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20
1: Masiat										
2: Ananna										
3: Rafi										
4: Shafil										

Name/weeks	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
5,6: Masiat										
5,6: Rafi										
6,7: shafil										
7,8: Ananna										

13. PLANNING RISKS AND CONTINGENCIES

1) Software Failure: We will keep a primary and a backup hardware system up and running, and printers and workstations must be regularly serviced and kept in good shape.
2) Illness or Injury: Regular medical checkups are arranged for the employees.

14. APROVALS

Project Sponser – Masiat	Approved
Development Management- Ananna	Approved
EDI Project Manager- Shafil	Approved
RS Test Manager- Rafi	Approved
RS Development Team Manager- Masiat	Approved
Reassigned Sales- Shafil	Approved
Prder Entry EDI Team Manager- Rafi	Approved