



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

A Medical Software

A Software Engineering Project Submitted By:

Semester: Spring_24_25		Section: P	Group Number: 04	
SN	Student Name	Student ID	Contribution (CO3+CO4)	Individual Marks
01	Yea Ahmed Nipul	22-48584-3		
02	Mahmodul Hasan Moein	22-48746-3		
03	Naimul Islam	22-48900-3		
04	Akib Ashfaq	22-48928-3		
05	Md Mridul Ali	22-48929-3		

The project will be evaluated for the following Course Outcomes

CO3: Select appropriate software engineering models, project management roles, and their associated skills for the complex software engineering project and evaluate the sustainability of developed software, taking into consideration the societal and environmental aspects	Total Marks	
	[5 Marks]	
	[5Marks]	
	[5Marks]	
	[5Marks]	
CO4: Develop a project management plan to manage software engineering projects following the principles of engineering management and economic decision process	Total Marks	
	[5Marks]	
Develop the project plan, its components of the proposed software products	[5Marks]	

Identify all the activities/tasks related to project management and categorize them within the WBS structure. Perform detailed effort estimation correspond with the WBS and schedule the activities with resources	[5Marks]	
Identify all the potential risks in your project and prioritize them to overcome these risk factors.	[5Marks]	
CO5: Perform as an effective team member or leader in diverse team settings and solve multi-disciplinary problems in the computer science and engineering domain	Total Marks	
Taking project responsibility: perform assigned tasks on time independently	[5 Marks]	
Contribution to project group meetings, sharing fruitful ideas	[5Marks]	
Positive attitude towards group work, collaboration, compromise, helping others to understand their project work responsibility	[5Marks]	
Showing respect and value towards other team member's opinion	[5Marks]	

Description of Student's Contribution in the Project work

Student Name: Yea Ahmed Nipul

Student ID: 22-48584-3

Contribution in Percentage (%): 20 %

Contribution in the Project:

- Effort Estimation (COCOMO)
- Risk Management Plan

Signature of the Student

Student Name: Mahmodul Hasan Moein

Student ID: 22-48746-3

Contribution in Percentage (%): 20 %

Contribution in the Project:

- Effort Estimation (COCOMO)
- Risk Management Plan

Signature of the Student

Student Name: Naimul Islam

Student ID: 22-48900-3

Contribution in Percentage (%): 20 %

Contribution in the Project:

- System Interface Design (UI/UX)

Signature of the Student

Student Name: Akib Ashfaq

Student ID: 22-48928-3

Contribution in Percentage (%): 20 %

Contribution in the Project:

- Test Cases & Test Plan
- Gantt Chart

Signature of the Student

Student Name: Md Mridul Ali

Student ID: 22-48929-3

Contribution in Percentage (%): 20 %

Contribution in the Project:

- Test Cases & Test Plan
- Work Breakdown Structure (WBS)

Signature of the Student

9:41

9:41

9:41

Quit



Your trusted health care & medical support

Stay healthy with MediHope.
Book doctors, call ambulances, and manage your health - all from your phone.



Lets get started

Login to enjoy the features we've provided,
and stay healthy!

[Emergency Login](#)

[Login / Sign Up](#)

[Next →](#)

9:41

9:41

9:41

[Previous](#)

Emergency Log in

9:41

9:41



Phone number

[Phone Number](#)

[Next →](#)



OTP

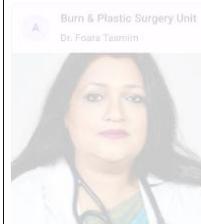
[OTP](#)

[Verify →](#)

Doctor Consultation

Emergency Ambulance Callout

Famous Doctors



MBBS (DMC), MSc
LABAID Cardiac Hospital
House: 01, Road: 04, Dhanmondi, Dhaka-1205, Bangladesh.

Nearby Hospital Location

Medical Record



MBBS, D-Cert(DU), FACC, FSCAI (America)
Ihs Sina Diagnostic & Imaging Centre
Dhanmondi
House: 4B, Road: 9/A, Dhanmondi, Dhaka-1209

[Home](#) [Saved](#) [Updates](#) [Settings](#)

9:41

You are in Emergency Service mode
Feature Not accessible

Alert

Famous Doctors

- Burn & Plastic Surgery Unit
Dr. Foza Tasnim
- Cardiology
Prof. Dr. M.A. Baqui
- MBBS, D-Card(DU), FACC, FSCAI (America)
Ion Sina Diagnostic & Imaging Center, Dharmoondhi, House #3, Road 9/A, Dhamundi, Unaka-1209

Meditech General Hospital
মেডিটেক জেনারেল হাসপাতাল
3.3 ★★★★★ (41)
General hospital •

Kurmitola General Hospital
কুর্মিটোলা জেনারেল হাসপাতাল
4.3 ★★★★★ (1,625)
Government hospital •

Home **Saved** **Updates** **Settings**

9:41

← Kurmitola General Hospital

Arrival 7:44 PM

The Driver is on the way to the pickup point

Basic Life Support □ 2
Ambulance for the transfer of low-risk patients \$ 20.00

Mobile ICU □ 2
Ambulance for the care of high-risk patients \$ 20.00

General Purpose □ 2
Ambulance for the transfer of low-risk patients \$ 5.93

Basic Life Support service (\$20.00)

Ambulance

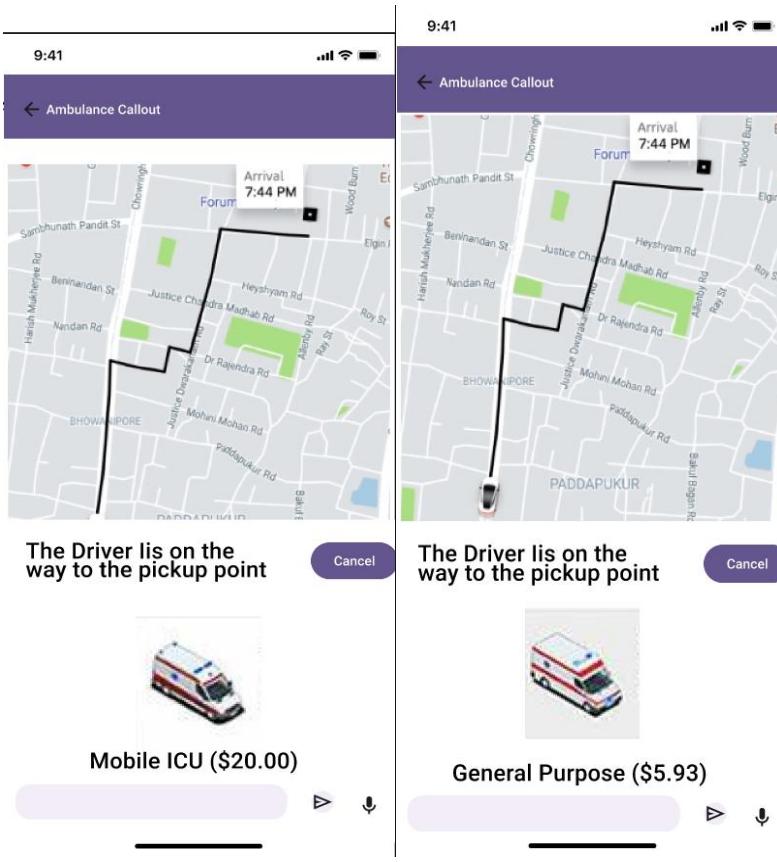
9:41

← Ambulance Callout

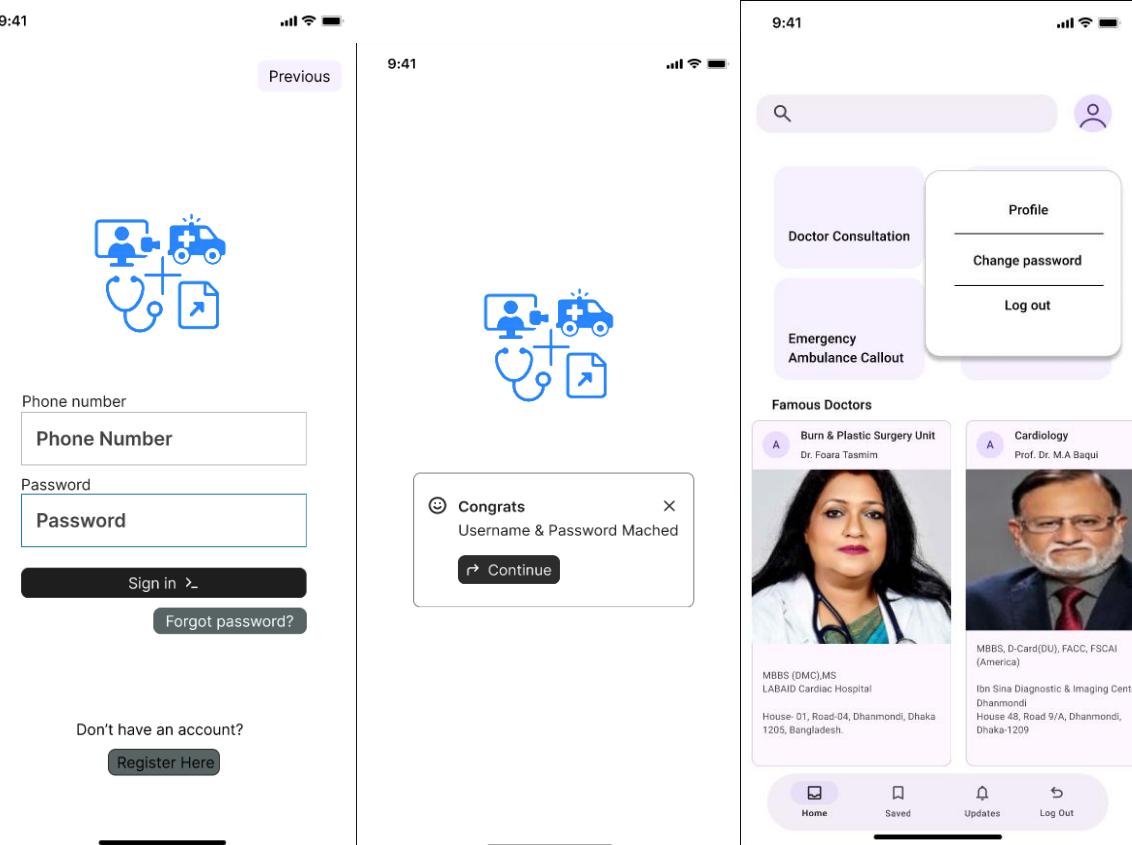
Arrival 7:44 PM

Kurmitola General Hospital
কুর্মিটোলা জেনারেল হাসপাতাল
4.3 ★★★★★ (1,625)
Government hospital •

Meditech General Hospital
মেডিটেক জেনারেল হাসপাতাল
3.3 ★★★★★ (41)
General hospital •



Regular Log in



9:41

Doctor Consultation

Nearby Hospital Location

Emergency Ambulance Callout

Medical Record

Famous Doctors

A Burn & Plastic Surgery Unit
Dr. Foara Tasmin

A Cardiology
Prof. Dr. M.A Baqui

MBBS (DMC),MS
LABAID Cardiac Hospital

House-01, Road-04, Dhanmondi, Dhaka 1205, Bangladesh.

MBBS, D-Card(DU), FACC, FSCAI (America)

Ibn Sina Diagnostic & Imaging Cent
Dhanmondi
House 48, Road 9/A, Dhanmondi,
Dhaka-1209

Home Saved Updates Log Out

9:41

Doctor Consultation

Contact For Home Doctor

Doctor List

Home Saved Updates Settings

9:41

Home Doctor Consultation

Medihope

00.05

9:41

← Medical Record

Eye Consultation
22/3/25 - 141 KB

Kidney Consultation
22/3/25 - 141 KB

9:41

← Medical Record

View documents Upload Documents

Download Documents

Explore Saved Updates Settings

9:41

← Doctor List

A Burn & Plastic Surgery Unit
Dr. Foara Tasmin

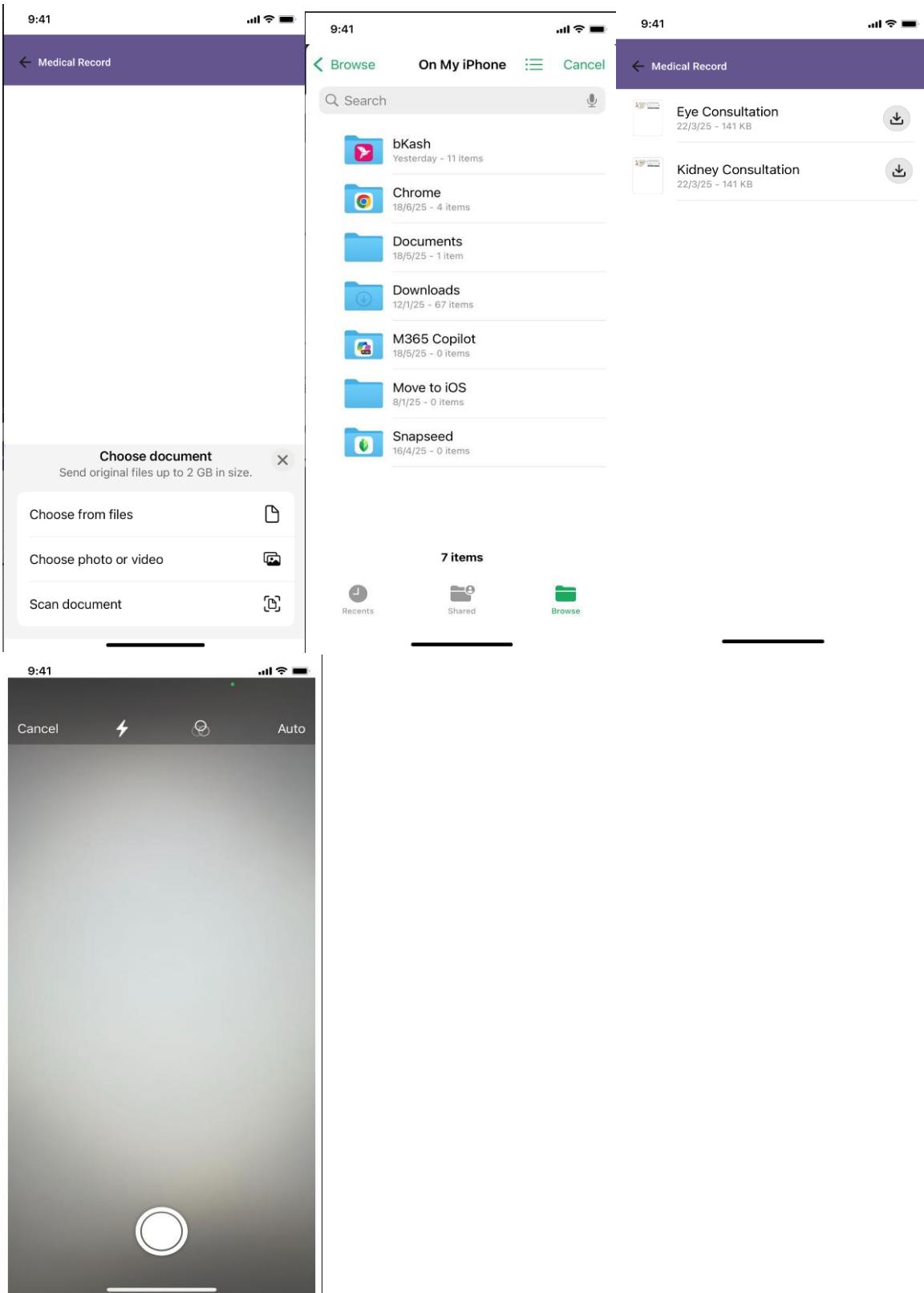
MBBS (DMC),MS
LABAID Cardiac Hospital

House-01, Road-04, Dhanmondi, Dhaka 1205, Bangladesh.

A Cardiology
Prof. Dr. M.A Baqui

MBBS, D-Card(DU), FACC, FSCAI (America)

Ibn Sina Diagnostic & Imaging Center,
Dhanmondi
House 48, Road 9/A, Dhanmondi,
Dhaka-1209



Test Cases & Test Plan:

Our developed software will be operated in Mobile. Here is the list of modules of system that can be tested, for testing we used **Black box** testing.

1. Emergency Login
2. Login
3. Registration
4. Additional Information
5. Change Password
6. Profile
7. Logout
8. Doctor Consultation
9. Emergency Ambulance Callout
10. Medical Record
11. View Documents
12. Upload Documents
13. Download Documents

Test Case Design:

Test case for Emergency Login:

Project Name: Medi Hope	Test Designed date:01/05/2025 Test Executed by: 01/05/2025			
Test Case ID:M100				
Test Priority (Low, Medium, High): High				
Module Name: Emergency Login				
Test Title: Verify Emergency Login with Phone Number and OTP				
Description: Test app Emergency Login				
Precondition (If any): Press next button on intro home page				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1.Go to app 2.Enter the Phone Number 3.Click Next button 4.Enter OTP 5.Click Verify button	Phone Number:013*****71 OTP:9999	User should go to emergency home page	As expected	Pass
Post Condition: User will login to the system(emergency home page) with some feature locked.				

Test case for Login:

Project Name: Medi Hope	Test Designed date: 01/05/2025 Test Executed by: 01/05/2025			
Test Case ID:M100				
Test Priority (Low, Medium, High): High				
Module Name: Login				
Test Title: Verify Login with Phone Number and Password				
Description: Test app Login				
Precondition (If any): Press next button on intro page.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to app 2.Enter the Phone Number 3.Enter Password 4.Click Sign in	Phone Number:013*****71 Password:1032#\\$M	User should go to home page	As expected	Pass
Post Condition: User will login to the system(home page) with their accessible feature (Paid or free)				

Test case for Registration:

Project Name: Medi Hope		Test Designed date: 01/05/2025 Test Executed by: 01/05/2025		
Test Case ID:M100				
Test Priority (Low, Medium, High): High				
Module Name: Registration				
Test Title: User can registration with they are Phone Number and Password				
Description: Test app Registration				
Precondition (If any): If, User have no account				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to app, click login/signup 2.Have no account click Registration here 3.Enter Phone Number 4.Give Password 5.Click Register button	Phone Number:013*****71 Password:103240M\$@71	User should go to Additional information page	As expected	Pass
Post Condition: After successfully registered, User have to put they are additional information.				

Test case for Addition Information:

Project Name: Medi Hope		Test Designed date: 01/05/2025 Test Executed by: 01/05/2025
Test Case ID:M100		
Test Priority (Low, Medium, High): Medium		
Module Name: Additional Information		
Test Title: User have to add they are Name, surname, Phone number, Full Address		

Description: Test app Additional Information				
Precondition (If any): After successfully registered				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to app 2.Enter the Name 3.Enter the surname 4.Enter Phone number 5.Enter Full Address 6.Click Submit button.	Name: Nipul Surname: Yeah Phone number: 013*****45 Full Address: Nazira bazar	User should go to home page	As expected	Pass
Post Condition: User will go to the home page and able to see which kind of services user can take from this app.				

Test case for Change Password:

Project Name: Medi Hope	Test Designed date: 01/05/2025 Test Executed by: 01/05/2025			
Test Case ID:M100	Test Designed date: Test Executed by:			
Test Priority (Low, Medium, High): High	Test Designed date: Test Executed by:			
Module Name: Change Password				
Test Title: Change password with current, new and confirm password				
Description: Test app Change Password				
Precondition (If any):				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1.Go to profile and click change password 2.Enter current password 3.Enter new password 4.Enter confirm password 5.Click Reset password button 6.Click Continue button	Current password:103240M\$@71 New Password:1612678224@# Confirm Password: 1612678224@#	After clicking the reset password button user will see the pop-up message (password updated) and after clicking the continue button user will go to the home page	As expected	Pass
Post Condition: User will go to the home page and able to see which kind of services user can take from this app.				

Test case for Profile:

Project Name: Medi Hope	Test Designed date: 01/05/2025 Test Executed by: 01/05/2025			
Test Case ID:M100				
Test Priority (Low, Medium, High): Medium				
Module Name: Profile				
Test Title: User able to see they are information				
Description: Test app Profile				
Precondition (If any): Go to the Home page and click user icon				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1.Go to Home page 2.Click user icon then click Profile		User should go to they are Information page	As expected	Pass
Post Condition: User able to see they are information.				

Test case for Logout:

Project Name: Medi Hope	Test Designed date: 15/05/2025 Test Executed by: 15/05/2025			
Test Case ID:M100				
Test Priority (Low, Medium, High): Medium				
Module Name: Logout				
Test Title: User can logout they are account from the system.				
Description: Test Logout				
Precondition (If any): Go to the Home page and click user icon				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to the home page 2. Click user icon then click Profile	Phone Number:013*****71 OTP:9999	User should go out from the System	As expected	Pass
Post Condition: User will go out from the System.				

Test case for Doctor Consultation:

Project Name: Medi Hope		Test Designed date: 15/05/2025 Test Executed by: 15/05/2025		
Test Case ID:M100				
Test Priority (Low, Medium, High): Medium				
Module Name: Doctor Consultation				
Test Title: User able to show Doctor List and Contact for Home Doctor				
Description: Test app Doctor Consultation				
Precondition (If any): Go to the Home page				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to the Home page 2.Click Doctor Consultation module		User should go to the Doctor list and Contact for Home Doctor page.	As expected	Pass
Post Condition: User will go to the Doctor list and Contact for Home Doctor page.				

Test case for Emergency Ambulance Callout:

Project Name: Medi Hope		Test Designed date: 15/05/2025 Test Executed by: 15/05/2025		
Test Case ID:M100				
Test Priority (Low, Medium, High): Medium				
Module Name: Emergency Ambulance Callout				
Test Title: User able to see Ambulance list				
Description: Test app Emergency Ambulance Callout				
Precondition (If any): Go to the Home page				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1.Go to the home page 2.Click Emergency Ambulance Callout		User should go to Ambulance list page	As expected	Pass
Post Condition: User able to see Ambulance list.				

Test case for Medical Record:

Project Name: Medi Hope	Test Designed date: 15/05/2025 Test Executed by: 15/05/2025			
Test Case ID:M100				
Test Priority (Low, Medium, High): Medium				
Module Name: Medical Record				
Test Title: User able to see View Documents, Upload Documents and Download Documents				
Description: Test app Medical Record				
Precondition (If any): Go to the Home page				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to the home page 2.Click Medical Record module		User should go to View Documents, Upload Documents and Download Documents page	As expected	Pass
Post Condition: User will go to the View Documents, Upload Documents and Download Documents page.				

Test case for View Documents:

Project Name: Medi Hope		Test Designed date: 15/05/2025 Test Executed by: 15/05/2025		
Test Case ID:M100				
Test Priority (Low, Medium, High): Medium				
Module Name: View Documents				
Test Title: User able to see their Documents				
Description: Test app View Documents				
Precondition (If any): Go to the Home page then click Medical record module				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to the home page 2.Click Medical Record 3.Click View Documents		User will see their Documents	As expected	Pass
Post Condition: User will go to the Documents Page.				

Test case for Upload Documents:

Project Name: Medi Hope		Test Designed date: 15/05/2025 Test Executed by: 15/05/2025		
Test Case ID:M100				
Test Priority (Low, Medium, High): Medium				
Module Name: Upload Documents				
Test Title: User able to Upload their Documents				
Description: Test app Upload Documents				
Precondition (If any): Go to the Home page then click Medical record module				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

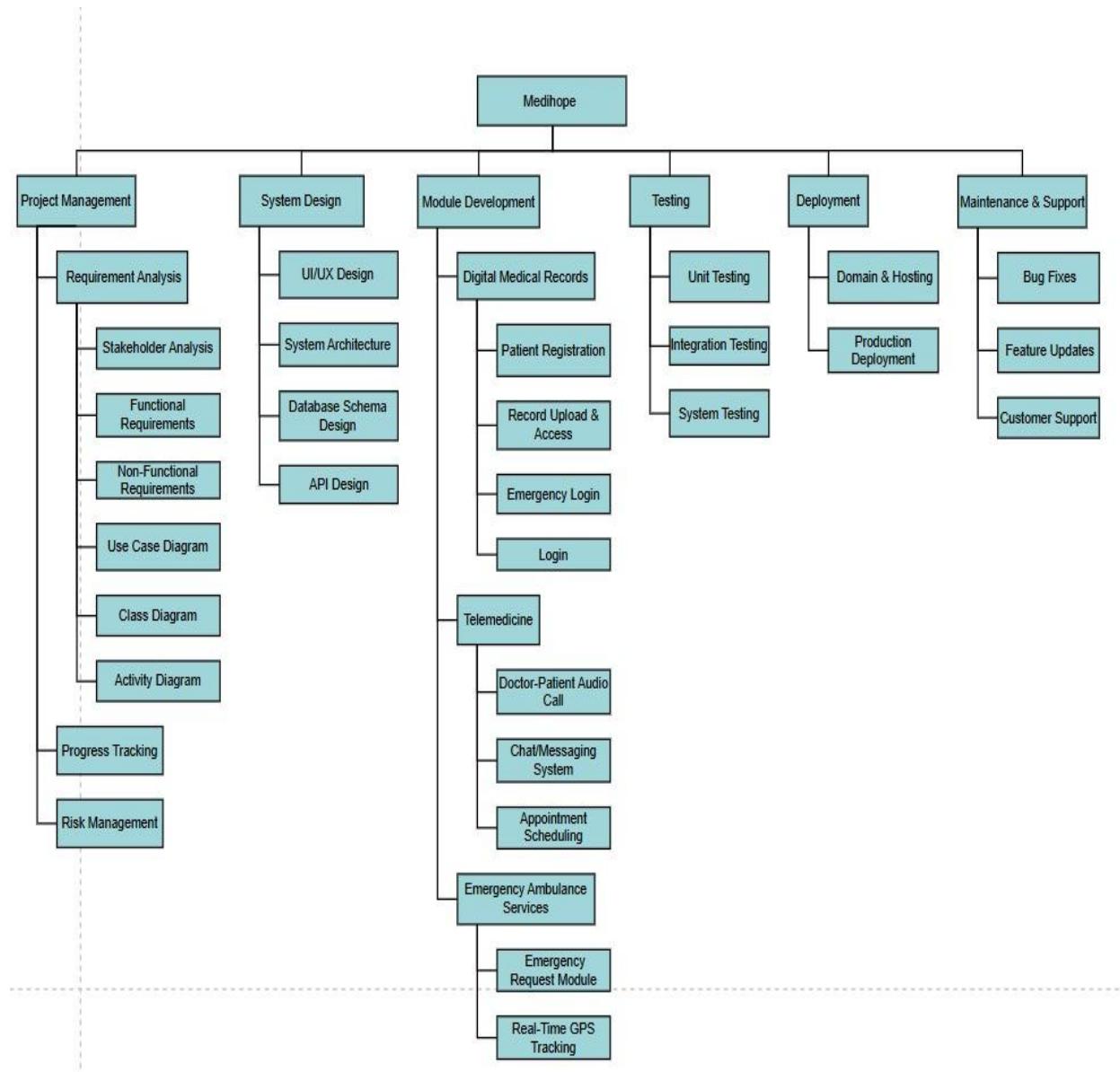
1.Go to home page 2. Click Medical Record 3.Click Upload Documents	Input file	User able to upload their Documents	As expected	Pass
Post Condition: User will go to the Upload Page.				

Test case for Download Documents:

Project Name: Medi Hope	Test Designed date: 15/05/2025 Test Executed by: 15/05/2025			
Test Case ID:M100				
Test Priority (Low, Medium, High): Medium				
Module Name: Download Documents				
Test Title: User able to Download their Documents				
Description: Test app Download Documents				
Precondition (If any): Go to the Home page then click Medical record module				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Go to the home page 2. Click Medical Record 3.Click Download Documents		User able to upload their Documents	As expected	Pass
Post Condition: .				

Project Schedule & Effort Estimation:

Work Breakdown Structure (WBS) Diagram:



Effort Estimation (COCOMO):

Project category is Semi-Detached. Because medium size, moderately complex and team has mixed experience.

Software Project Type	Coefficient <Effort Factor>	P	T
Organic	2.4	1.05	0.38
Semi-detached	3.0	1.12	0.35
Embedded	3.6	1.20	0.32

PM: person-months needed for project (labor working hours)

SLOC: source lines of code = 20,000 (As this is a medium size project)

P: project complexity = 1.12 (semidetached)

DM: duration time in months for project (weekdays)

T: SLOC-dependent coefficient =0.35(semidetached)

ST: average staffing necessary.

$$\text{Effort} = \text{PM} = \text{Coefficient} * (\text{SLOC}/1000) ^ P =$$

$$= 3 * (20000/1000) ^ 1.12$$

$$= 85.96 \text{ Person-Months (labor working hours)}$$

$$\text{Development time} = \text{DM} = 2.50 * (\text{PM}) ^ T$$

$$= 2.50 * (85.96) ^ 0.35$$

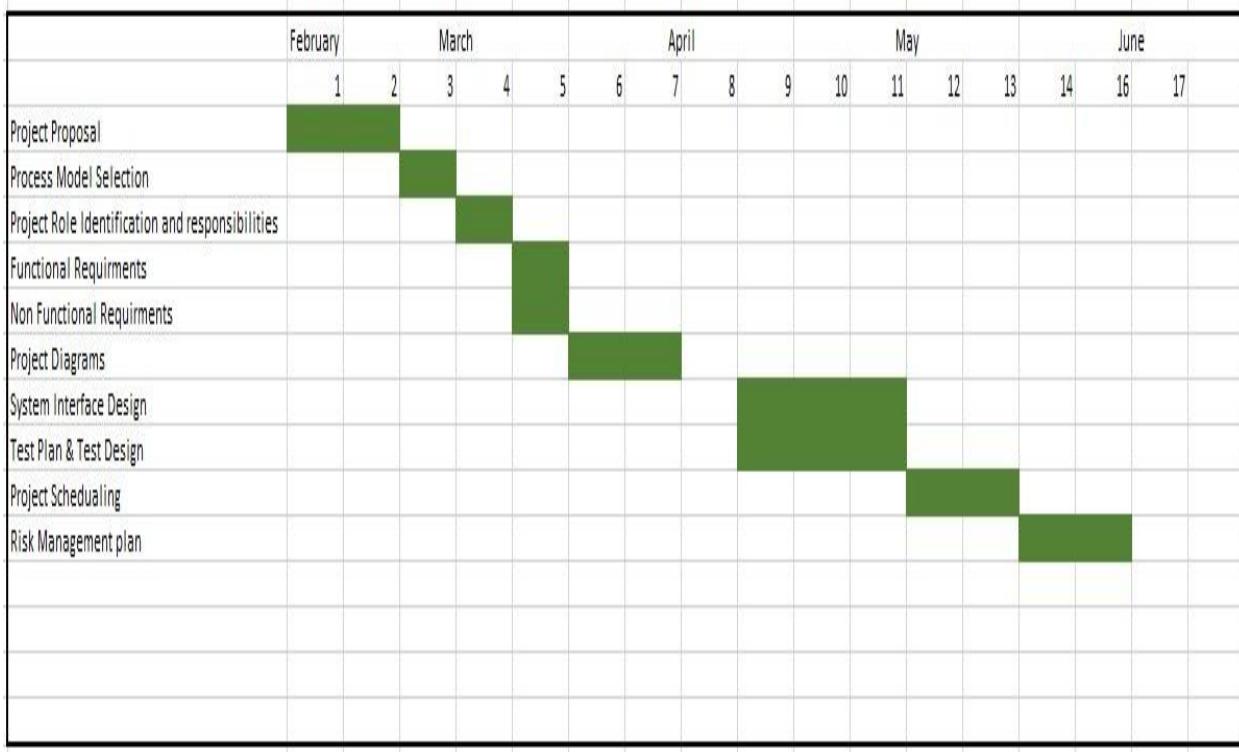
$$= 11.88 \text{ Months (weekdays)}$$

$$\text{Required number of people} = \text{ST} = \text{PM}/\text{DM}$$

$$= 85.96 / 11.88$$

$$= 7.23 \approx 8$$

Gantt Chart:



Risk Table

#	Risks	Category	Probability	Impact	RMM (Risk Monitoring, Mitigation, or Management)
1	Emergency login fails (e.g., delay or unresponsive during crises)	TE	80%	Critical (2)	Mitigation: Ensure high-priority server load balancing and test emergency login paths frequently.
2	Ambulance real-time tracking failure	TE	70%	Critical (2)	Monitoring: Implement health checks and backup GPS tracking systems.
3	Patient data breach (e.g., unencrypted records)	SE	50%	Catastrophic (1)	Mitigation: Encrypt data at rest and in transit, follow HIPAA/GDPR compliance, implement MFA.
4	Password reset vulnerabilities (token hijacking)	SE	40%	Catastrophic (1)	Mitigation: Secure token generation, expiration, and MFA during sensitive actions.

5	Telemedicine session crashes during consultations	TE	60%	Critical (2)	Monitoring: Use performance logs and auto-scaling servers; optimize video compression.
6	Language misconfiguration (e.g., wrong language during emergency use)	PE	40%	Marginal (3)	Mitigation: Test multilingual modules; default to English if detection fails.
7	Role-based access issues (e.g., patients accessing doctor features)	DE	50%	Critical (2)	Management: Conduct regular RBAC testing; maintain audit logs.
8	Senior home-visit alerts not reaching doctors	TE	30%	Critical (2)	Mitigation: Implement push notification retries and fallback communication (SMS/email).
9	Broken navigation (e.g., wrong redirect after login)	SE	60%	Marginal (3)	Mitigation: Regular UI/UX testing and fallback navigation logic.
10	Cloud server crash leading to loss of access	DE	30%	Catastrophic (1)	Management: Use multi-region cloud redundancy and auto-recovery with 1-min recovery target.

9.2 Risk Analysis

High Probability Risks ($\geq 70\%$)

1. Emergency Login Failure

- **Probability:** 80%
- **Impact:** Critical (2)
- **Mitigation:** Prioritize uptime for emergency features. Conduct stress tests during peak times.

2. Ambulance Real-Time Tracking Failure

- **Probability:** 70%
- **Impact:** Critical (2)
- **Monitoring:** Use GPS fallback and real-time system health monitoring.

Moderate Probability Risks (30–70%)

1. Patient Data Breach

- **Probability:** 50%
- **Impact:** Catastrophic (1)
- **Mitigation:** Implement encryption, access control, and security audits.

2. Password Reset Vulnerabilities

- **Probability:** 40%
- **Impact:** Catastrophic (1)
- **Mitigation:** Time-sensitive secure tokens, MFA, IP/device checks.

3. Telemedicine Crash

- **Probability:** 60%
- **Impact:** Critical (2)
- **Monitoring:** Optimize backend for live video, implement auto-recovery.

4. Role-Based Access Errors

- **Probability:** 50%
- **Impact:** Critical (2)
- **Management:** Regular role testing, logging unauthorized access attempts.

5. Broken Navigation

- **Probability:** 60%
- **Impact:** Marginal (3)
- **Mitigation:** UX validation and robust redirect fallback.

6. Language Misconfiguration

- **Probability:** 40%
- **Impact:** Marginal (3)
- **Mitigation:** Manual override and accurate locale detection.

Low Probability Risks ($\leq 30\%$)

1. Home Visit Alerts Not Reaching

- **Probability:** 30%
- **Impact:** Critical (2)
- **Mitigation:** Multi-channel alerts with status tracking.

2. Cloud Crash/Data Loss

- **Probability:** 30%
- **Impact:** Catastrophic (1)
- **Management:** Redundant backups, auto-restart systems, multi-region hosting.