



Mekelle University
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Requirement analysis and System Design document for Mobile application development for adolescent and youth

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1. Introduction

1.1 Purpose

The adolescent and youth mobile app is basically a software system platform that enables adolescents and youths to get up-to-date sexual and health reproductive educational information, electronically communicate and get advice from verified professionals confidentially. Besides, the system will support automatic generation of different reports and notifications for different stakeholders as required. The **Version-1.0** of the **mobile application** will integrate three different stakeholders which are the health professionals, health institution, and public users. The public users are the adolescent and young stars who demand different types of sexually related information and help. The mobile apps should be developed for iOS and android mobile operating systems and easily integrated with the central server and storage.

1.2 Intended Audience

The intended audience of this mobile application platform are mainly adolescents and youths, health professionals and health institutions.

1.3 Scope

The mobile application platform will be applicable only for smart mobile phone (both IOS and Android) users.

1.4 Definitions and Acronyms

STI	Sexually Transmitted Disease
FAQ	Frequently Asked Questions
SRH	Sexual and Reproductive Health
ROFO	Rate Of Failure Occurrence
HTTPS	Hypertext Transfer Protocol Secure
GPS	Global Positioning System
MTTF	Mean Time To Failure

2. Overall Description

2.1 Assumptions and Dependencies

The proposed mobile application will be compatible with following:

Device	Version	OS
Smartphone	V 4.3 and above	Android
iPhone	V 9 and above	iOS

3. System Features and Requirement

3.1 Functional Requirements

3.1.1 Information and education

The developed mobile application will serve as a source of useful information and knowledge for adolescents and youths. Important information related to basic sexual and reproductive health will be posted by volunteer health professionals on the application and adolescents will get those information as a source of knowledge and education.

3.1.2 Multilingual

The mobile application is designed to give service to its users in a multilingual user interface. Currently the application user interface languages will be Amharic and English. As the system design of the application is designed in a flexible way that any language can be added at any time after the application is deployed, we will expand the user interface languages to Afaan-oromoo, Tigrigna, Somali, Afar and other languages in our country.

3.1.3 Sexual Reproductive Health (SRH)

As the primary objective of developing the application is to make sexual and reproductive health information easily accessible to adolescents and youths in our country, the application will have module where health professionals post such information to read by adolescents and youths to build their awareness on how to prevent sexual and reproductive health risks and increase the utilization of available services. There is high fear and grace to report violence like sexual harassment and rape in person, the mobile app will be a medium to report such inhuman acts to legal bodies.

3.1.4 Assistance Request

The mobile app will have a feature that it's users can request any assistance to their nearby health institutions or youths and adolescent consulting bureaus. First all health institutions and youth consulting bureaus will be registered to the application and when any one from the application user requests help and consultations related to sexual and reproductive health issues the message will be sent to the nearby health institution according to his location using mobile GPS.

3.1.5 Locating nearby Health Institutions on google map

First all health institutions will register to the application including their GPS location. Then any user of the application can locate nearby Health institutions by comparing his current location using mobile GPS.

3.1.6 Data collection and reporting

A lot of data will be collected when the application is used by its users (youths and adolescents). The data will be analyzed and reports will be generated that are important to transform the health system related to sexual and reproductive health in our country.

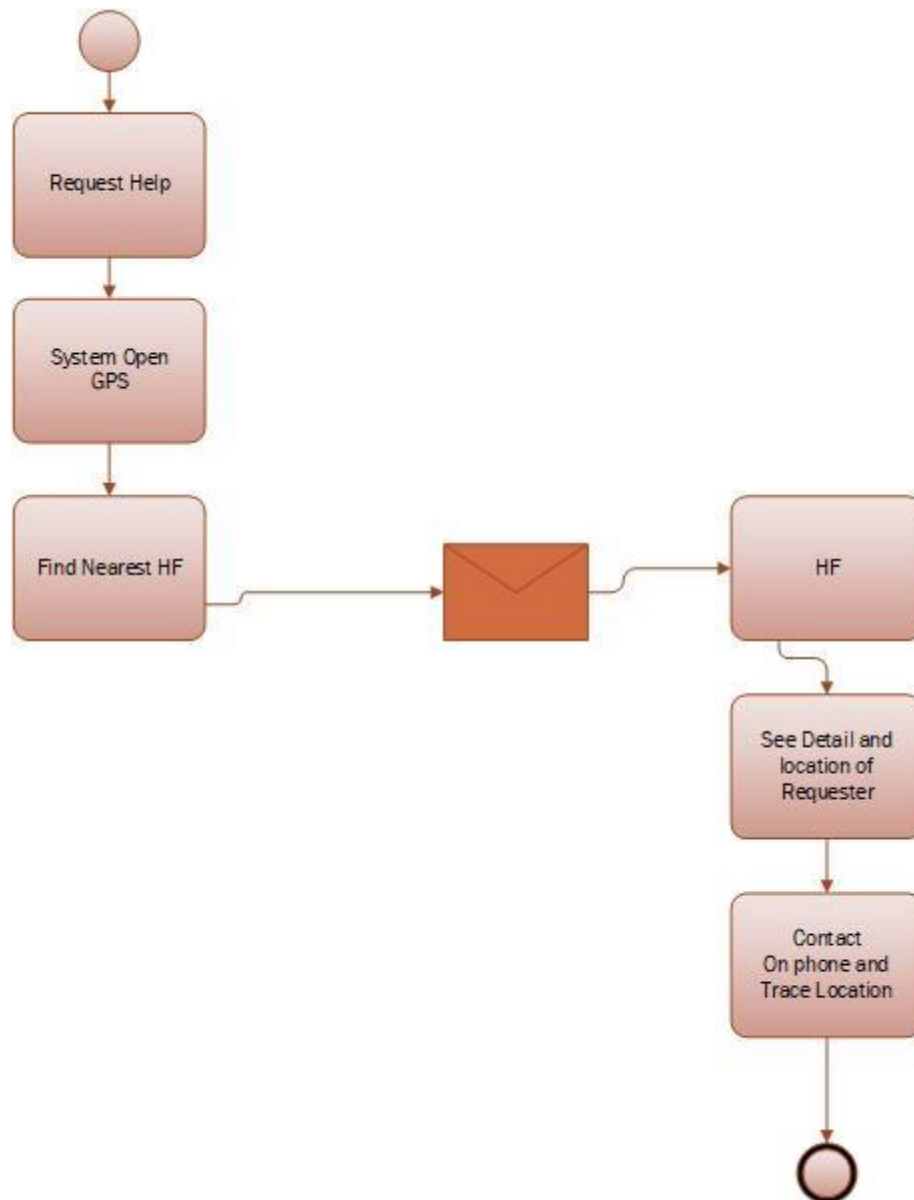


Figure 1 Request Assistance for Health facility by adolescents and youth

3.1.7 Actors

The main actors of the mobile application will be

1. Public user - is any person that installs the application and can contents information related to sexual and reproductive health.
2. Registered user - those are users that registered to the application by entering their personal information. These users will have additional accessibilities that public users cannot do. They can

chat and ask questions to health professionals, can request assistance from nearby health institutions and youth & adolescent bureaus, getting rewards from automated questions and answers and other related tasks.

3. Health professionals - are registered and confirmed persons by their profession. They can be Doctors, Nurses, Psychologists, Physiatrists or other related health professionals.
4. Administrators - are users that have the highest privilege on the application. Those are the users that register health institutions and youth & adolescent bureaus to the system, confirm health professionals' accounts, post information related to sexual and reproductive health and control over all the applications management.

3.1.8 Community Service

The application will have a module that generates contribution certificates to Health professionals according to the number of articles they posted and the ratings they get from the application users.

3.1.9 Automated question and answer application

The mobile app platform will provide different multiple choice questions so that adolescents and youth can answer to evaluate and enhance their awareness about STDs, sexual education and reproductive health. Through question and answer s can easily capture and internalize the awareness creation lectures provided by the mobile app. Upon answering these questions, the mobile app will provide new questions which the user has not tried.

3.1.10 Reward and recognition

To empower and motivate the youths to use the mobile app frequently individuals who answered most questions or scored most are going to be identified by the mobile app and will be rewarded accordingly. This will have a great role to promote the mobile app and increase the number of youths and adolescents who use this mobile app.

3.1.11 Chat Box

Youths want confidentiality, since they can't feel comfort and can't get courage to post on social media or ask someone else in person about sexual and reproductive health. They might need a secret advisor. The

mobile app will have a secret chat room functionality. This enables adolescents and youths to chat with health professionals about their doubts and the health professionals can consult the intended adolescent or youth through the secret chat room. The audio and text based questions posted by individuals will be displayed to the health professionals, they can view the texts and listen to the audios and react and answer accordingly.

3.1.12 Recognition for Health professional

Same as public users, the authorized health professionals who participated in advisory services either through posting relevant education and information on the mobile app or in the secret chat room are going to be rated by the beneficiaries of the mobile app. Health professionals with high ratings are going to be identified by the mobile app and will be rewarded accordingly.

3.1.13 View Rating

The health professionals can view their ratings and know their status whether they are participating in the mobile app well or not, when they know their status they will improve their usage and get more ratings from the beneficiaries. And also to identify highly rated health professionals the rating value will be displayed on admin users.

3.1.14 FAQ

There will be FAQ section to depict most frequently asked questions and their answers and also common scientifically studied doubts, myths about STDs, sex and reproductive health.

3.1.15 Forum by category

Forum is a section where anyone can submit his/her question to the public and anyone can discuss to answer the question. To avoid mixing up contents of different issues the questions will have different categories and any interested individuals can browse the category they are interested in, in addition the health professionals and public users can easily identify categories of the forum so that they can answer questions that belong to their profession or prior experience.

3.1.16 Posts

Authorized health professionals can post any information and articles that help on improving awareness of youths and adolescents. These articles are going to be accessed by the individuals who use the mobile app. Graphics contents are easy to memorize and internalize, the graphics animations and videos will be displayed in the mobile app. youths and adolescents can see these animations and videos and learn easily.

3.2 External Interface Requirements

3.2.1 User Interfaces

The user interface should strictly follow consistent procedures and GUI standards or product family style guides, screen layout constraints, standard buttons and functions, keyboard shortcuts, error message display standards, and so on.

3.2.2 Software Interfaces

The mobile app platform will be integrated with google map for finding geolocation of the nearest health facilities on the map. Any system user adolescents and youths can easily use this functionality to get confidential in person advising and counseling.

3.2.3 Communications Interfaces

The mobile application platform will use Model-View-Controller (MVC) architecture. MVC is one of the most common approaches to building a mobile app architecture. Being a layer-based pattern, MVC separates user interface functionality from business/application/domain logic. Therefore, the communication protocol between the view (the app) and the business layer will be via Hypertext Transfer Protocol Secure (**HTTPS**).



Figure 3 Use case diagram for language switcher, Certificate generation and others

3.3.1.1 Signup

NB: Health and related professionals, adolescents and youths should be registered to access many functionalities confidentially.

Use case Id	UC1
Use case name	Signup
Objective	Any users should be signed up to access additional functionality of the system
Priority	High

Actors	Health professionals
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. The users navigate and click on the sign up link 2. The system displays the sign up form 3. The users fill its demographic details (Full Name, age, phone number, email address, username and password) 4. The system checks and validate for unique username and strong password 5. The system users must accept the software use agreement 6. The users click the submit or register button to get registered 7. The system validates all the mandatory fields and display an error message 8. The system adds the users details into the central server database. 9. The registered user can login into the system (UC2)
Preconditions	Any public users willing to register in the system.
Post conditions	Successful registration messages will be displayed on the screen as well as sent into their email. The page will redirect him into the login page
Notes/Issues	The registered health professional should be verified by submitting their documents to provide a service.

3.3.1.2 Login

Use case Id	UC2
Use case name	Login
Objective	Registered users must be authenticated and authorized

Priority	High
Actors	All registered users
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. The registered user navigates into the login page 2. The registered user fills username and password 3. The registered user clicks the login button 4. The system authenticates and authorized the users 5. If a user successfully login, he will have redirected into the timeline 6. Different menus and tabs will be accessible according to his privilege and authorization.
Preconditions	Any registered users can login into the system
Post conditions	Successful login messages will be displayed on the screen and will redirect him into his timeline page
Notes/Issues	The registered health professional should be verified by submitting their documents to provide service.

3.3.1.3 Logout

Use case Id	UC3
Use case name	Logout
Objective	Login users must logout to destroy their session and local storage variables
Priority	High
Actors	All logged in users
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. The logged in users should navigate and click on the logout button

	<ol style="list-style-type: none"> The system will destroy the session or local storage variables related to the user. The user will be redirected into the public page by the system.
Preconditions	Logged in users into the system.
Post conditions	Successful logout messages will be displayed on the screen and will redirect him into the public page.
Notes/Issues	

3.3.1.4 Account Verification Request

Use case Id	UC4
Use case name	Account verification Request by Health and related Professional
Objective	Health professionals should be signed up and verified to provide services to the adolescents and youths.
Priority	High
Actors	Health and related professionals
Flow of Events	<p>Basic Flow</p> <ol style="list-style-type: none"> The health professional should sign up and login into the system The logged in users will complete his profile by filling necessary additional fields like, health facility, position, graduation year, graduated university, field of study, The user could upload multiple documents that verify his qualification and license

	<ol style="list-style-type: none"> 4. The health professional (user) will click the submit button 5. The system validates all the mandatory fields and display an error message 6. The system adds the health professional details into the central server database. 7. The status of the user will be Pending until verified by the system admin and approved 8. Pending users cannot perform privileged activities.
Preconditions	Any health or related field professional who is signed up and willing to verify their accounts to provide health services to the adolescents and youths.
Post conditions	Successful message for updating his profile as well as the uploaded files can be viewed and accessed by the user.
Notes/Issues	The registered health professional status should remain Pending until approval by the system Admin. However, the registered health professional will have access to the resources that any registered user can access but not to those which need verification.

3.3.1.5 Admin user registration and verification

Use case Id	UC5
Use case name	Admin user registration and verification
Objective	Registration of admin users
Priority	High
Actors	Admin
Flow of Events	Basic Flow

	<ol style="list-style-type: none"> 1. The first admin user will be registered by the software developers manually. 2. A verified admin user can register and verify a new Admin by providing username. 3. The system validates unique username 4. The system will automatically generate and send a password, and account verification link to the registered users email. 5. The system can handle N-system Admin users 6. Any admin registration process should log: registered by, timestamp and other required fields
Preconditions	Registered and verified admin user is required to create another user as an Admin.
Post conditions	Display successful message or error notification to the screen, forward the page to the list of admin users, send email notification to the registered users.
Notes/Issues	The registered user must have an email address

3.3.1.6 Account Approval

Use case Id	UC6
Use case name	Account verification and approval for Health and related Professional by system Admin
Objective	Health and related professionals' requests should be verified and approved by the system Admin to provide services to adolescents and youths.
Priority	High
Actors	Admin
Flow of Events	Basic Flow

1. The system admin clicks on the pending request link and view list of requests for verification.
2. The system admin views the detailed information filled and the document uploaded by the requester.
3. The admin either approves or rejects the request by writing his remark and clicking the Approve or Reject button.
4. If the request is approved, a remark is optional and a successful approval message should be displayed for the system admin.
5. The status of the system user should be changed from Pending to Approved.
6. The approved requests should be removed from the pending list, and added and displayed in the approved lists.
7. If the request is rejected, writing a remark for the system user to modify the approval requirements accordingly is mandatory.
8. Rejected requests should be removed from the pending list and added and displayed in the Rejected list and notification should be sent into the system user.
9. If rejected the status of the user should be changed from pending to Rejected but still can access what a registered user can access.
10. Rejected accounts, remark, admin details, timestamp should be logged into an appropriate file or database table for future reference.
11. The system admin and the requester can see the log details ordered by time.

Preconditions	Any health or related field professional who is signed up should send an approval request to the admin.
Post conditions	Displaying successful Reject or Approval message to the system user and notification to the requester.
Notes/Issues	The registered health professional status should remain Pending until approval by the system Admin. However, the registered health professional will have access to the resources that any registered user can access but not to those which need verification.

3.3.1.7 Email Verification

Use case Id	UC7
Use case name	Email Verification
Objective	Any registered user who has filled his email address must be verified.
Priority	High
Actors	Any users in registration process
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. The user fills his email address 2. The system sends a verification link into the email address 3. The user login to his email address and click on the email verification link 4. The system verifies the user email address in the database for future use. 5. Display a successful message to the user
Preconditions	Any users who filled email address during registration

Post conditions	Successful email verification message
Notes/Issues	There might be users who have no email address.

3.3.1.8 Password Reset

Use case Id	UC8
Use case name	Password Reset
Objective	Any registered user who have verified his email address can reset his password
Priority	High
Actors	Admin, registered users and health professionals (All registered users)
Flow of Events	<p>Basic Flow</p> <ol style="list-style-type: none"> 1. Click on the reset password link or button 2. The system displays an email input box 3. The user enters his verified email and click submit 4. The system checks if the email is verified. If verified send the password reset link to his email and display a message. 5. If the email is not verified, display an error message that the email is not verified or invalid. 6. The user will login to his email address and click the password reset code 7. The system displays a page for a new password and confirmation password

	<ol style="list-style-type: none"> 8. If the password matches, update the password and display a successful message to the user and forward him to the login page 9. Else if the password didn't match display an error message.
Preconditions	Any registered system user who has forgotten his password.
Post conditions	Successful password change and redirect to the login page
Notes/Issues	Any registered user may want to remember his password by the system for the next login.

3.3.1.9 Posting contents

Use case Id	UC9
Use case name	Posting contents
Objective	Posting sexual and reproductive health contents
Priority	High
Actors	Admin, Health professionals, Health institutions , youth and adolescent bureaus
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. First any of the actors have to log in to their account 2. Click on the Post contents link 3. The system displays the form to post a content 4. Carefully fill the forms. The content to be posted can be Text, Pictures, Animated gifs or videos 5. Click the button Post
Preconditions	Any of the actors have to login to the mobile application

Post conditions	Display successful message or error notification to the screen, forward the page to the posts timeline
Notes/Issues	

3.3.1.10 Language Switcher

Use case Id	UC10
Use case name	Language switch
Objective	Switching language of the application user interface
Priority	LOW
Actors	Any user
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the button switch language located on the top of the screen 2. The system will show available languages 3. Select the language you need
Preconditions	
Post conditions	The user interface of the application will be changed to the selected language
Notes/Issues	

3.3.1.11 Request assistance

Use case Id	UC11
Use case name	Request assistance
Objective	Request for help to nearby health institution or adolescent bureaus

Priority	LOW
Actors	Registered users
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the link help request 2. System will display a form to fill help request message 3. Fill the form 4. Click the button submit
Preconditions	The registered user must be logged to his/her account
Post conditions	<p>Display successful message or error notification to the screen, redirect the page to the home page.</p> <p>The system sends to nearby health institutions by comparing the sender's location using mobile GPS.</p>
Notes/Issues	

3.3.1.12 Accept Request assistance

Use case Id	UC12
Use case name	Accept request assistance
Objective	Accepting requests from youths and adolescents by health institutions
Priority	Medium
Actors	Health professionals that work on health institutions
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the link incoming requests 2. System will show list of requests that come from nearby users

	<ol style="list-style-type: none"> 3. Select one request you want to accept 4. System will display request details 5. Click the button accept or write message for requester and click accept
Preconditions	The health professional must be logged to his account
Post conditions	Health professional details are saved to be seen by the requester
Notes/Issues	

3.3.1.13 Register Health facilities

Use case Id	UC13
Use case name	Register health facilities
Objective	Registering all health facilities
Priority	High
Actors	Admin
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the link health facilities 2. Click the button register health facilities 3. System will display health facility registration form 4. Fill the forms correctly 5. Select the health facility location from google map 6. Click the button register
Preconditions	Admin must be logged to his account
Post conditions	Display successful message or error notification to the screen, redirect the page to the registered health facilities page.

Notes/Issues	
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3.3.1.14 Assign users Health facilities

Use case Id	UC14
Use case name	Assign users to health facilities
Objective	Assigning health professionals to health institutions and youth and adolescent bureaus
Priority	High
Actors	Admin
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the link health facilities 2. Click the button assign professional on the health facilities wanted to be assigned 3. System will display a form to assign user to health facility 4. Search the health professional wanted to be assigned and select it 5. Click the button assign
Preconditions	Admin must be logged to his account
Post conditions	Display successful message or error notification to the screen, redirect the page to the health facilities list page.
Notes/Issues	

3.3.1.15 Question Preparation

Use case Id	UC15
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Use case name	Question preparation
Objective	To prepare questions by the system admin for youths and adolescents
Priority	High
Actors	Admin
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Admin clicks on the prepare questions link or button 2. The system displays a form and the admin selects and fill the question categories, target age group, age, sex, and other required fields. 3. The system prepares multiple choice questions and answers, points, allotted time for each question in the prepared format in the excel sheet. 4. Every point will be changed to coins based on predefined rules by the admin. 5. Click on the upload button to browse the prepared questions and answers 6. The system will validate the necessary fields 7. The system adds the prepared question and details into the database question banks.
Preconditions	The user that prepares the questions and answers must be an admin user.
Post conditions	The system displays a successful message or an error notification message
Notes/Issues	

3.3.1.16 Mock Exam

Use case Id	UC16
--------------------	------

Use case name	Mock Exam
Objective	Adolescents and youths should take mock exams to enhance their awareness about reproductive health.
Priority	High
Actors	Registered Users (Adolescents and youths)
Flow of Events	<p>Basic Flow</p> <ol style="list-style-type: none"> 1. The user must pull different exam categories to his phone for offline use at first 2. A registered user can take mock exams by entering into the exam session 3. The system displays different exam category to the user based on the registered user details like age, sex, interest and others. 4. The user selects category from the available list of categories 5. The system shuffles the available questions and picks one and display for the users, including the allotted time. 6. The user reads the question and select the appropriate answer 7. The system gives zero or full mark according the prior setting and answer 8. The system ticks right if the answer is correct 9. The system ticks wrong on the selected choice and highlights the answer for the user 10. Sound effect and animation during question and answer should be available.

	<p>11. The system should show the result and the point scored (transformed to coin) of the user on the exam page</p> <p>12. The question and answer session can be cancelled at any point during the exam.</p> <p>13. If the exam session is cancelled the system should display the result and should redirect the user into the main menu.</p> <p>14. The examinee can refresh the exam to restart again</p> <p>15. The examinee can see the best score he achieved in each category</p> <p>16. The top score of the examinee based on each category of the question and answer should be pushed into the central server</p> <p>17. The examinee should see the top 20 scorers of each exam question category throughout the country.</p>
Preconditions	The user should be a registered user and must pull all exam questions to his local storage for playing the game.
Post conditions	The system displays a successful message or an error notification message
Notes/Issues	The maximum score sent to the central server should be the exam taken for the first time.

3.3.17 Rewarding Top Scorers

Use case Id	UC17
Use case name	Rewarding top scorers
Objective	To reward and motivate top scorers of each exam category by government, NGO and volunteers.

Priority	Medium
Actors	Admin, Registered Adolescents and youths
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the link help request 4. System will display a form to fill help request message 5. Fill the form 5. Click the button submit
Preconditions	The registered user must be logged to his/her account
Post conditions	<p>Display successful message or error notification to the screen, redirect the page to the home page.</p> <p>The system sends to nearby health institutions by comparing the sender's location using mobile GPS.</p>
Notes/Issues	

3.3.1.18 Navigate nearby Health facilities

Use case Id	UC18
Use case name	Navigate nearby health facilities
Objective	Navigate nearby health facilities to youths and adolescents
Priority	High
Actors	Any
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the link find nearby health facilities 2. System shows nearby health facilities according to the user location using mobile GPS

Preconditions	
Post conditions	
Notes/Issues	

3.3.1.19 Secret Chat

Use case Id	UC19
Use case name	Secret chat
Objective	Chat between registered users and Health professionals
Priority	Medium
Actors	Registered users, Health professionals
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the link open chat 2. Select a user from the previous chat history or search the user you want to chat 3. Write the message 4. Click the button send
Preconditions	The actors must login to their account
Post conditions	System will show a confirmation the message is delivered or error notification the message is not sent.
Notes/Issues	

3.3.1.20 Add rating

Use case Id	UC20
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Use case name	Add rating
Objective	For adding rating to health professionals
Priority	Medium
Actors	Registered users, Public users
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. When the actors find the information, article, message helpful they click the rating stars on the bottom of the content
Preconditions	
Post conditions	System displays the rating they selected is added or error message
Notes/Issues	

3.3.1.21 Add FAQ

Use case Id	UC21
Use case name	Add FAQ
Objective	Add frequently asked questions
Priority	Medium
Actors	Admin
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Admin clicks FAQ link 2. Click on the Add new FAQ button 3. System displays a form for adding frequently asked questions 4. Fill the form correctly 5. Click save

Preconditions	Admin must login to his account
Post conditions	Display successful message or error notification to the screen, redirect to FAQ page.
Notes/Issues	

3.3.1.22 View FAQs

Use case Id	UC22
Use case name	View FAQs
Objective	View frequently asked questions
Priority	Medium
Actors	Any
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click on the FAQs link 2. System display the list of frequently asked questions 3. Select one of the questions in the list 4. System display the answer for the selected question
Preconditions	
Post conditions	
Notes/Issues	

3.3.1.23 Add Forums

Use case Id	UC23
Use case name	Add Forums

Objective	Add forums for discussion
Priority	Medium
Actors	Admin, Health professionals, Registered users
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the forums link 2. Click on create forum button 3. System displays a form for new forum creation 4. Fill the form contents 5. Click create form
Preconditions	Actors must login to their account
Post conditions	Display successful forum created message or error notification to the screen, redirect to forums page.
Notes/Issues	

3.3.1.12 View Forums

Use case Id	UC21
Use case name	View Forums
Objective	View forums created for discussion
Priority	Medium
Actors	Any
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click the forums link 2. System displays a list of created forms with their answers and discussions

Preconditions	
Post conditions	
Notes/Issues	

3.3.1.12 Add Comments

Use case Id	UC22
Use case name	Add comments
Objective	For adding comments on posts and forums
Priority	High
Actors	Admin, Health professionals, Registered users
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Click add comment button of post or forum you want add comment 2. System displays an input box for writing a comment 3. Write your comment 4. Click enter or the button submit
Preconditions	Actors must login to their account
Post conditions	Display successful comment added message or error notification to the screen, redirect to forums page.
Notes/Issues	

3.3.1.12 Generate Certificate

Use case Id	UC23
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Use case name	Generate certificate
Objective	Generate certificate for health professionals
Priority	Medium
Actors	Health professionals
Flow of Events	Basic Flow <ol style="list-style-type: none"> 1. Health professionals click on their profile 2. Click the button generate certificate 3. System generating health professional Certificate according to the rating they have and the contribution they made to the community
Preconditions	Actors must login to their account
Post conditions	Health professional can print their certificate
Notes/Issues	

3.4 Nonfunctional Requirements

3.4.1. Access Security

Access security is the extent to which the system is safeguarded against deliberate and intrusive faults from internal and external sources.

- The Authorized users shall be forced to change their password the next time they log in if they have not changed it within the length of time established as “password expiration duration.”
- Authorized Users must change the initially assigned login authentication information (password) immediately after the first successful login. The initial password may never be reused.
- The mobile app shall ensure that the only authorized users can access functionalities like consulting youths, and answering forum questions. The App shall distinguish between authorized and non-authorized users.
- The access permissions for system data may only be changed by the system’s data administrator.

- Passwords shall never be viewable at the point of entry or at any other time.
- Each unsuccessful attempt by a user to access an item of data shall be recorded on an audit trail.
- Users shall receive notification of profile changes via preferred communication method of record when profile information is modified.

3.4.2. Availability

The degree to which users can depend on the system to be up (able to function) during “normal operating times”.

- The whole system functionality will be available 24/7 offline and Online contents
- The secret chat room is available 24/7 as long as there is an active consultant health professional.
- Unless the app non-operational, the app shall present a user with notification informing them that the app functionality is unavailable.
- The app is going to be published on play store and new installation and update of the app shall be immediately available.

3.4.3. Confidentiality

Confidentiality is the degree to which the app protects sensitive data and allows only authorized access to the data.

- When a youth secretly chats and gets consultancies it will never be viewable to someone else other than the consulting health professional.
- The system shall protect the privacy of all youths and adolescent’s confidential information. Confidential information is any information about an individual that may affect their personal moral, psychological and social situation if exposed.

3.4.4. Efficiency

The extent to which the app handles capacity, throughput, and response time.

- The App restart cycle must execute completely in a less time frame.

- The app shall send a chat message in a few seconds depending on the internet connection. And able user's chat unlimited message length.
- Any interface between a user and the app shall have a maximum response time of two seconds.
- Mobile app updates that are executed while users are active shall not cause a perceptible increase in response time for any function over the response time when no update process is executing.

3.4.5. Integrity

The degree to which the data maintained by the mobile app are accurate, authentic, and without corruption.

- All ratings and reward coin amounts must be accurate to two decimal places.
- Whenever a change is made to information stored in the app when offline, the fact of the change shall be recorded in a database or equivalent technology that is routinely backed up. This is intended to identify changed local information stored when offline in the event of the loss of a data.
- The integrity of the cached mobile app data against the central database area must be checked by the internal audit system twice per second; if inconsistencies in the data are detected, the app operation should be disabled.
- When the app is populated with new content, all mobile app users should get immediate updates of the published content when they are connected to the internet.

3.4.6. Reliability

The extent to which the mobile app consistently performs the specified functions without failure.

- The mobile app probability of failure shall be minimum as much as possible when performing different functionalities.
- The rate of failure occurrence (ROFO) per mobile app shall be minimum. Failure means the mobile app fails to operate to do some functionality, and the software must be restarted to correct the failure.
- The mean time to failure (MTTF) of the mobile app timing out due to connectivity shall be less. Failure means the mobile app must cancel the functionality or process, and must allow the app user to start over.

- The information update process shall roll back all related updates when any update fails to commit through the transaction processing system.
- The authorization and authentication of users' account credentials matching process shall require a 100-percent match to login to the mobile app.

3.4.7. Usability

The ease with which the user is able to learn, operate, prepare inputs, and interpret outputs through interaction with the mobile app.

- The mobile app shall be easy to use by adolescents, youth members of the public and health professionals.
- The vending product shall be able to be used by adolescents, youth members of the public and youths and adolescents who know national and international language without training since the app is going to support multilingual user interface.
- The mobile app is going to be installed and used for free so that anyone who has a smartphone can install and use it.
- The mobile app shall be self-explanatory and intuitive such that all users shall be able using the app easily.
- People with no training and no understanding of English shall be able to use the product since it will have a national language option.

3.4.8. Portability

The ease with which the mobile app can be transferred from its current mobile hardware to another.

- The app is easily portable from one mobile app to another using file sharing apps such as xender , cshare or bluetooth.
- The mobile app will behave as is when it is shared and installed on the new mobile phone.
- The mobile app shall be developed for both Android and IOS platforms.

4. System Architecture

The developed mobile app platform will have both offline and online features. The mobile app interacts with the business layer software to fetch and feed data into the central storage. The architecture that is under implementation is portrayed as the figure below:

