Proposal on

FIN

(Friend In Need)

Prepared for
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Tashreef Muhammad, Adjunct Faculty

Prepared by
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Kh. Rifat Amin, 180204116
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S.M Tasnimul Hasan, 180204142

Date: 08/03/2022

Ahsanullah University of Science and Technology

Department of Computer Science and Engineering

Executive Summary

FIN App is basically an emergency application for mass people. Through this app users will get help in various kind of emergency situations.

There are lot of people who face problems in finding blood donors when needed. Sometimes blood banks are out of blood. They have to contact with lot of people then. Even though there are lot of people around us who donates blood, we can't find their information when needed.

Another kind of emergency situation we face to find locations. When people go to any new area, they have no idea about that place. Sometimes people get lost, or may face any kind of dangerous situation. They might need to reach people immediately or need to reach nearby help station.

We need a friend who can help us whenever we need. We may face this kind of difficulty in our everyday life. But people are busy with their own life. How can anyone be standby with a person! So, we came up with a solution. Every person of these days carries phone with them. So, we are building an android app which can help a person like a "Friend In Need".

Table of Contents

Contents	Page no

Letter of Transmittal

March 8, 2022

A. K. M. Ahsanul Hoque

Assistant professor

Ahsanullah University of Science and Technology

Tejgaon Industrial Area, Dhaka

Subject: Submission of project proposal on android app FIN

Sir,

We are submitting herewith our project proposal entitled 'FIN' as partial fulfillment of the CSE 3224 course requirements.

This project proposal details our android app description, project background, objectives, working process method, client communication, work plan, estimation, feasibility analysis, project modeling, construction requirements and so on.

We hope that this proposal will thoroughly reflect our project plan. If you have any additional questions that you want to ask, feel free to contact us anytime. Please review the report and let us know your thoughts.

Sincerely,

Kh. Rifat Amin, ID: 180204116

Fazlay Elahi Safin, ID: 180204119

Sanjida Aziz Tonny, ID: 180204122

Md Zahidul Haque, ID: 180204136

S. M Tasnimul Hasan, ID: 180204142

Introduction

a. Project Introduction:

This app is to provide Emergency services, which helps a person to find a Hospital, Police Station, Pharmacy, ATM Booth and Filling Stations nearest to his location. In this location-based system, our app will use GPS to detect the person's live location. Person can send his/her current location to anyone via SMS by one tap. Even if he doesn't have an active internet connection then a SOS number will be just one click away. A person can log in to get more features. Through this app person can find blood donor according to his/her need. All over this is a project for a person's emergency and need.

b. Team Introduction:

1. Name: **Kh. Rifat Amin**

   ID: 180204116

2. Name: **Fazlay Elahi Safin**

   ID: 180204119

3. Name: **Sanjida Aziz Tonny**

   ID: 180204122

4. Name: **Md Zahidul Haque**

   ID: 180204136

5. Name: **S.M Tasnimul Hasan**

   ID: 180204142

Background of the Study

Project Background:

Every day we open newspaper or TV channel or social media, we see news of accidents, rape, murder, snatching, theft etc. During pandemic situation this kind of tragedy has become very common. Different reasons are behind these incidents. Unfortunately, in our country, safety issues are very disregarded.

Some of these tragic scenarios may needed help. Maybe victims could survive if they could get that help. Thinking of mass people's safety, we have chosen this project which can help people and they can suffer less.

Objectives

a. Primary Objective:

In our busy life every person has to go out. People go to different places. Whether the place is unknown or known people may face difficulty or fall to any emergency situation.

Emergency situations can arise at anytime and anywhere. Usually, we seek helps from our friends, family, relatives. But in our busy life how can anyone be able to do help every time needed. People wish to have a friend who can help whenever he/she need. So, to accomplish people's demand we've decided to create an app which can help in our needed time and emergency situations.

b. Secondary Objectives:

We wanted to build an app where all the necessary information for emergency situation can be found in one place. And people can be able to use all of these features easily. Thus, life can become easier and safer to live

Methodology

Process Model:

A process is a collection of activities, actions and tasks that are performed when some work product is to be created. It enables the people doing the work to pick and choose the appropriate set of work actions and tasks... Software development process defines which member of the development team is doing which part, the timing in relation to other activities and the details and steps in the activity. Communication, planning, modeling, constructions, deployment these are the basic phase of process. All of these phases together called process model. There are different types of process models based on the sequence and intercommunication between these phases. Ex: Traditional process models, Agile Models, The unified process etc.

In traditional process models, the flow of development is unidirectional, from communication to clients and then to planning and development, then to testing and maintenance. This model is based on pre-organized phases of the software development life cycle. Some traditional models are:

1. Waterfall Model

2. Incremental Model

3. Prototyping Model

4. Spiral Model

In this project we will use a Traditional process Models and that is **Incremental** Model. In this model-

- Multiple independent deliveries are identified.

- Within an increment, work flow is linear within an increment and is staggered between increments.

- focuses on an operational product with each increment

- Iterative in nature.

- Provides a needed set of functionalities sooner while delivering optional

components later

- Useful when staffing is too short for a full-scale development and when requirements are well understood.
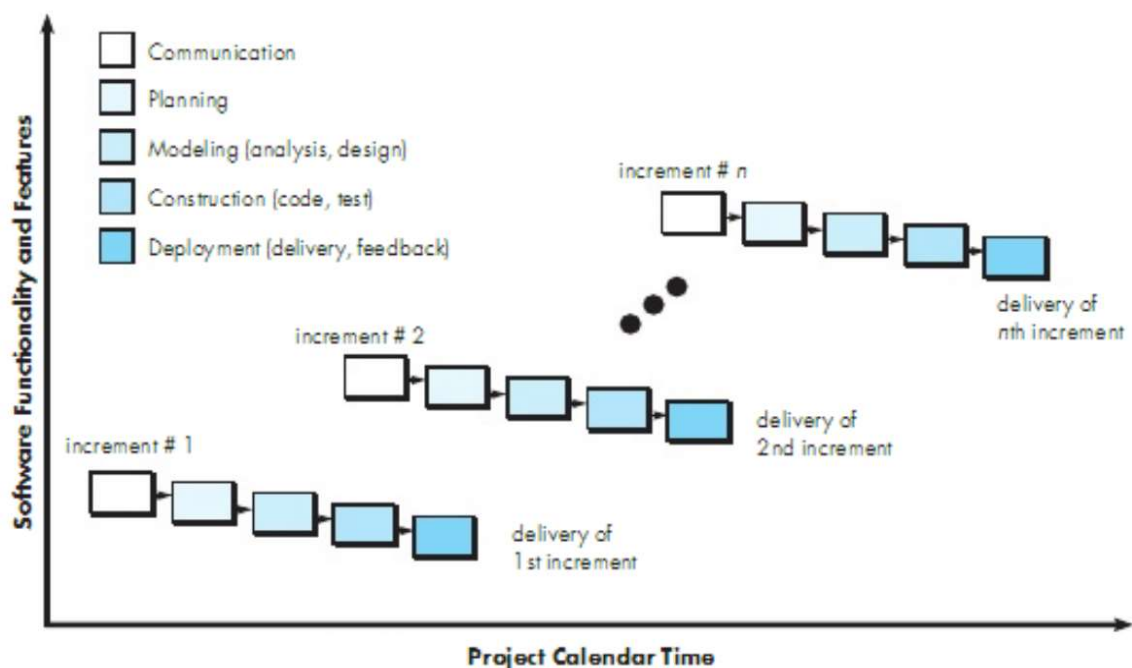

Figure: Incremental Model

In our project, work will be divided into some modules. Each module will be done independently by different team members. These individual work modules will perform all phases of process separately. As our project requirements has been well understood and identified this process model will be useful for us. So, we have chosen incremental process model for our project.
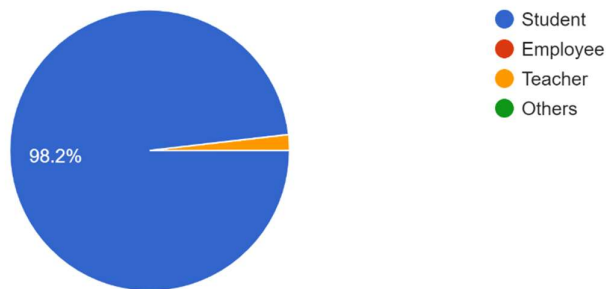
The Project

1. Communication

Survey

To have a better understanding of how "FIN" appears to its target audience, as well as what they think about the current situation. The poll was conducted via social media. The results of our poll are listed below.

I would define myself as _
55 responses

- Student
- Employee
- Teacher
- Others

98.2%

We're attempting to determine which aspects of our website are of interest to visitors. This website appears to be of interest to students and teachers alike.

I am aged between _
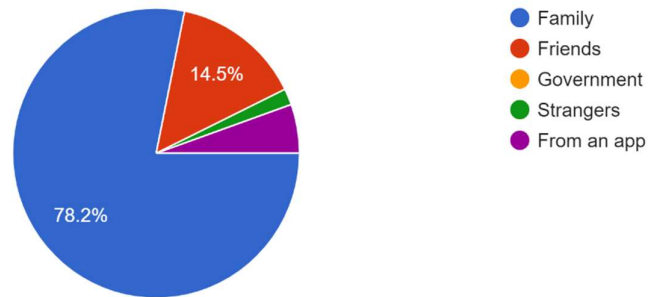55 responses

- 14-18
- 19-25
- 26-30
- 30+

94.5%
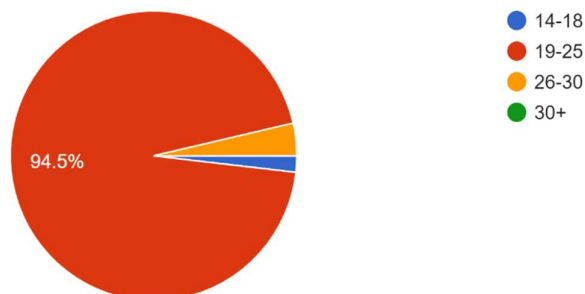
We're attempting to determine which age groups are interested in our website. People between the ages of 19 and 25 appear to be the most interested, followed by those under the age of 25.

When you are in some emergency to whom do you contact/ where do you get help from ?

55 responses

- Family
- Friends
- Government
- Strangers
- From an app

14.5%

78.2%

Have you ever faced problem finding blood for an emergency patient ?

55 responses
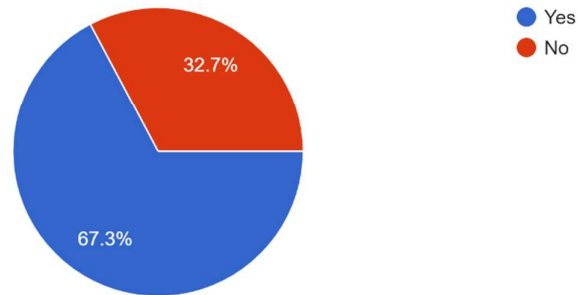
- Yes
- No

32.7%

67.3%

Do you think an emergency app is needed which provide services such as (nearest police station, hospital, fire service, atm booth, filling station, blood donation etc.)?

55 responses

- Yes
- No

94.5%
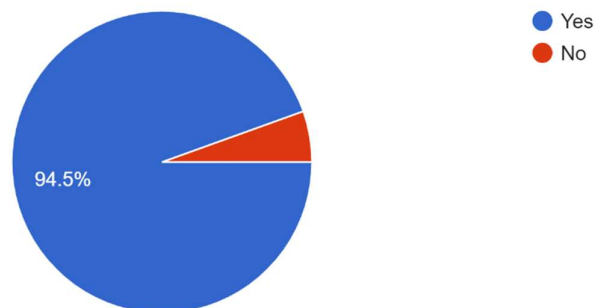
Do you use smart watch ?

55 responses

2. Planning
a. PERT

FIN

PERT CHART

Identify specifications: 1 days

Collecting materials: 5 days

UI Design: 4days

Gps system: 7 days

Verifying data:2days

Construct Database: 4 days

Blood Bank Design

Prototype project display: 2 days

Release Information: 1 day

Navigation Bar

Display Project: 2 days

Unites: Days
Slack: Total Slack

FIN
CPM CHART

Identify specifications: 1 days
Collecting materials: 5 days
UI Design: 4days
Gps system: 7 days
Verifying data:2days
Construct Database: 4 days
Blood Bank Design
Prototype project display: 2 days
Release Information: 1 day
Navigation Bar
Display Project: 2 days

Critical Path
1->2->3->6->8->9->10
Unites: Days
Slack: Total Slack

c. Gantt Chart / Time Chart

PROJECT TIMELINE

Tasks

Week 1   Week 2   Week 3   Week 4   Week 5   Week 6   Week 7

Basic Idea and structure

Initial designing of prototype structure

Development of Web app

Adding features

Testing,Bugfix and Publish

d. Project Planning

We have planned our project with five processes. Those area given below

i. We will have full basic idea of project and structures within 1 week.

ii. Then initial design for the project structure in between week 1 to week 3

iii. Then the development of the project will be starting from end of the week 2 to week 6

iv. Then features addition will be completed between end of the week 2 to middle of the week 6

v. Then end of the 5th week to final 7th week we will be fixing bugs and then submit the project.

e. Software Estimation
1. FP Estimation

Measurement Parameter	Count		Weighing factor
1. Number of external inputs (EI)	24	*	4 = 96
2. Number of external outputs (EO)	46	*	4 = 184
3. Number of external inquiries (EQ)	8	*	6 = 48
4. Number of internal files (ILF)	4	*	10 = 40
5. Number of external interfaces (EIF) Count-total →	2	*	5 = 10 378

So, sum of all f_i (i ← 1 to 14) = 4 + 1 + 0 + 3 + 5 + 4 + 4 + 3 + 3 + 2 + 2 + 4 + 5 = 43

FP = Count-total * [0.65 + 0.01 *$\sum(f_i)$]
= 378 * [0.65 + 0.01 * 43]
= 378 * [0.65 + 0.43]
= 378 * 1.08 = 408

2. Process Based Estimation

The most common technique for estimating a project is to base the estimate on the process that will be used. That is, the process is decomposed into a relatively small set of tasks and the effort required to accomplish each task is estimated. Like the problem-based techniques, process-based estimation begins with a delineation of software functions obtained from the project scope. A series of software process activities must

be performed for each function. Functions and related software process activities may be represented as part of a table.

f.Project Estimation

We plan to finish our project in 7 weeks as per lab timing. This project has a lot of area for improvement in the future. The risk about this project is to eliminate the threats that have been on other similar applications and websites also data safety of users. But we are making the best possible way to avoid this issue.

g.Cost Benefit Analysis

The cost of this project we initially find out that would be:

Costs	In 12 Months (BDT)
Upload In Play Store	5000
Software Engineer	100,000 (1 Month)
App Developer	65,000
Advertisement	40,000
Hidden Cost	30,000
Maintenance Cost	50,000
Total	**290,000**

The cost of the project is based on our work time. We will be working 20 hours weekly. So based on it, the cost of this project is 290,000 Taka BDT in the starting year.

h. Training

Software Engineering Training customized as Software Requirements, Definition, Development & Management Training. This is intended for those wishing to learn about the best software engineering practices. It means the practical introduction to software development and specifically methods to elicit, analyze, define and manage requirements. Software Engineering Training teaches One about the technical best practices, and how, in a changing environment, to communicate and manage requirements.

Who should do this:

- Software developers
- Software engineers
- System engineers
- Test engineers
- Project Managers (PM)
- Testing, Verification & Validation and Configuration PM

i.Risk Analysis

Risk analysis in software testing is an approach to software testing where software risk is analyzed and measured. Traditional software testing normally looks at relatively straight-forward function testing . A software risk analysis looks at code violations that present a threat to the stability, security, or performance of the code. Complex applications using multiple frameworks and languages can present flaws that are extremely difficult to find and tend to cause the largest software disruptions.

j.Resource requirements

Resources we will need:
- 2 System Analyst and planner
- 3-5 Programmers

k. Feasibility Study

i. Operational Feasibility

- **Control:** The data of users will remain secured throughout this application; the risk of data loss will be minimized.
- **Efficiency:**
  - Firebase database and Android Studio software will be used throughout this application, therefore the soft-wares will make sure the application performs efficiently.
  - Maximum best output is provided to this application.
- **Services:**
  - User can create an account to access all the features
  - User can search for nearby Hospital, Police Station, Pharmacy, ATM Booth & Fuel Station when they need emergency

ii. Economical Feasibility

We have drafted a break-even analysis temporarily.

Year	Costs	Profit (BDT)	Net Profit (BDT)
1st Year	290,000	180,000	-110,000
2nd Year	290,000	320,000	30,000
3rd Year	290,000	470,000	180,000

    iii.   **Technical Feasibility**
- Assessing technical feasibility includes evaluating the ability of computer hardware and software to handle workloads adequately.
- Estimating Workloads and database or storage capacity.

    iv.   **Legal Feasibility**
    At this time, there are no potential legal or copyright difficulties with our project.

3. Modeling:

a. Project Features
- Hospital Service
- Police station Service
- Fire Service
- Pharmacy
- ATM Booth
- Fuel Station
- Location Sending to Emergency Contact
- Blood bank

b. Function Definations and Description

Function Name	Hospital
Description	In this location-based system, our app will use GPS to detect persons live location. Users can find near-by hospitals in any emergency situation
Precondition	None or Login

Function Name	Pharmacy
Scenario	In this location-based system, our app will use GPS to detect persons live location. Users can find near-by pharmacies from anywhere
Precondition	None or Login

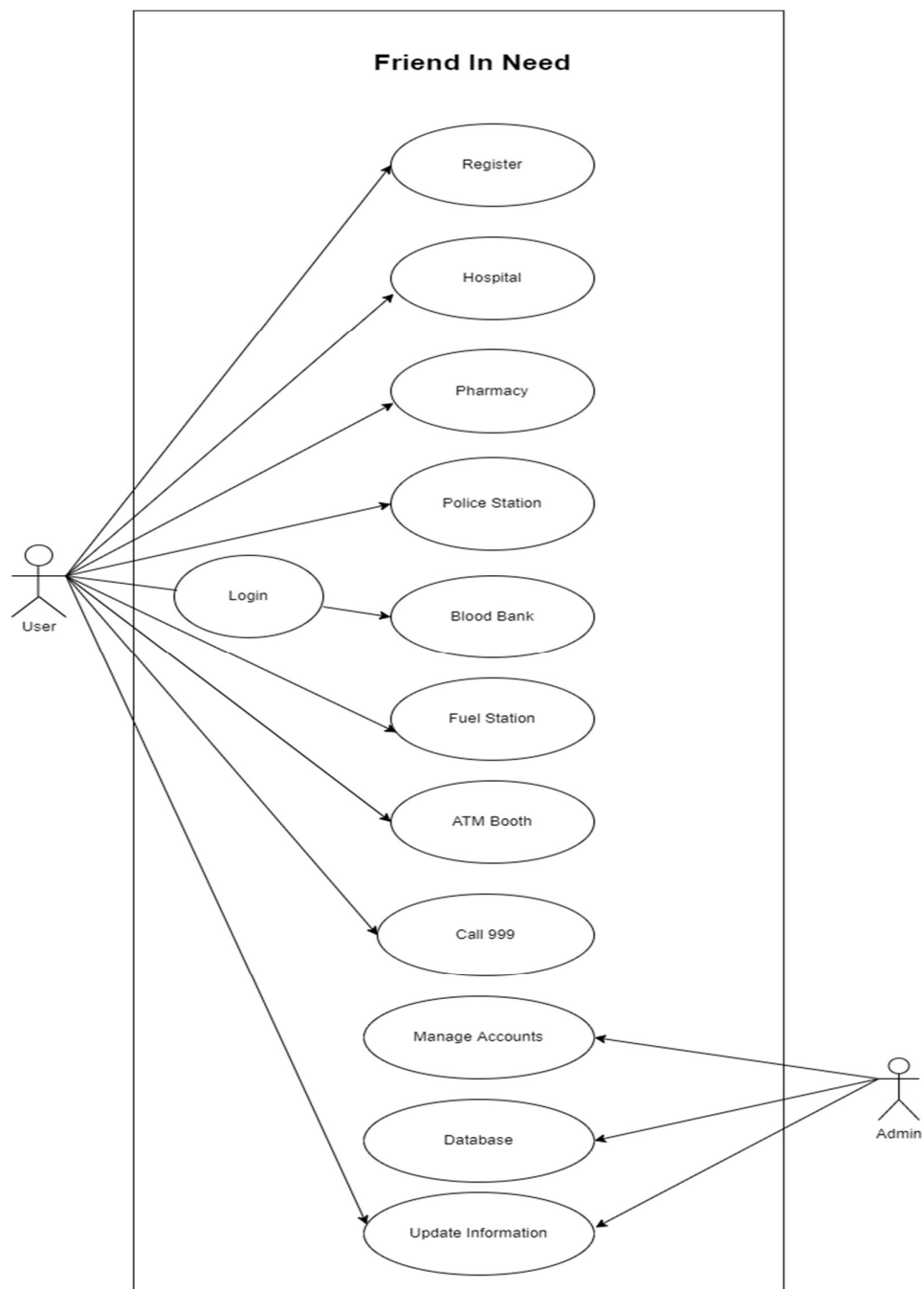| Function Name	ATM Booth
Scenario	In this location-based system, our app will use GPS to detect persons live location. Users can find the nearest location of their desired ATM booths
Precondition	None or Login

Function Name	Police Station
Scenario	In this location-based system, our app will use GPS to detect persons live location. Users can contact any near-by police station for any emergency need
Precondition	None or Login

Function Name	Fuel Station
Scenario	In this location-based system, our app will use GPS to detect persons live location. Users can search for the nearest location of fuel stations
Precondition	None

Function Name	Call 999
Scenario	If the user doesn't have an active internet connection, then he/she can use government emergency helpline service 999
Precondition	None

Function Name	Blood Bank
Scenario	User can locate blood donor according to his need
Precondition	Login

c. Use Case Diagram

c.i. Use case narratives

ID:	5001
Title:	Hospital
Description:	In this location-based system, our app will use GPS to detect persons live location. Users can find near-by hospitals in any emergency situation
Primary Actor:	User
Preconditions:	Android Device, Internet Connection & Login
Postconditions:	Install/Update google map from play store
Main Success Scenario:	Users can find near-by hospitals in any emergency situation at anywhere
Extensions:	If the user doesn't have internet connection, he/she will not be able to access this feature
Frequency of Use:	Always when user need
Status:	Under Development
Owner:	S. M. Tasnimul Hasan
Priority:	High

ID:	5002
Title:	Pharmacy
Description:	In this location-based system, our app will use GPS to detect persons live location. Users can find near-by pharmacies from anywhere
Primary Actor:	User
Preconditions:	Android Device, Internet Connection & Login
Postconditions:	Install/Update google map from play store
Main Success Scenario:	Users can find near-by pharmacies in any emergency situation at anywhere
Extensions:	If the user doesn't have internet connection, he/she will not be able to access this feature
Frequency of Use:	Always when user need
Status:	Under Development
Owner:	Sanjida Aziz Tonny
Priority:	High

ID:	5003
Title:	ATM Booth
Description:	In this location-based system, our app will use GPS to detect persons live location. Users can find the nearest location of their desired ATM booths
Primary Actor:	User
Preconditions:	Android Device, Internet Connection & Login
Postconditions:	Install/Update google map from play store
Main Success Scenario:	Users can find the nearest location of their desired ATM booths at anywhere
Extensions:	If the user doesn't have internet connection, he/she will not be able to access this feature
Frequency of Use:	Always when user need
Status:	Under Development
Owner:	Md Zahidul Haque
Priority:	High

ID:	5004
Title:	Police Station
Description:	In this location-based system, our app will use GPS to detect persons live location. Users can contact any near-by police station for any emergency need
Primary Actor:	User
Preconditions:	Android Device, Internet Connection & Login
Postconditions:	Install/Update google map from play store
Main Success Scenario:	Users can contact any near-by police station for any emergency need at anywhere
Extensions:	If the user doesn't have internet connection, he/she will not be able to access this feature
Frequency of Use:	Always when user need
Status:	Under Development
Owner:	Fazlay Elahi Safin
Priority:	High

ID:	5005
Title:	Fuel Station
Description:	In this location-based system, our app will use GPS to detect persons live location. Users can search for the nearest location of fuel stations
Primary Actor:	User
Preconditions:	Android Device, Internet Connection & Login
Postconditions:	Install/Update google map from play store
Main Success Scenario:	Users can search for the nearest location of fuel stations at anywhere
Extensions:	If the user doesn't have internet connection, he/she will not be able to access this feature
Frequency of Use:	Always when user need
Status:	Under Development
Owner:	Fazlay Elahi Safin & Kh Rifat Amin
Priority:	High

ID:	5006
Title:	Call 999
Description:	If the user doesn't have an active internet connection, then he/she can use government emergency helpline service 999
Primary Actor:	User
Preconditions:	Android Device
Postconditions:	Install/Update google map from play store
Main Success Scenario:	User can use government emergency helpline service 999 when they don't have internet connection
Extensions:	None
Frequency of Use:	Always when user need
Status:	Under Development
Owner:	Kh Rifat Amin & Sanjida Aziz Tonny
Priority:	High

ID:	5007
Title:	Blood Bank
Description:	Users can locate blood donor according to his need
Primary Actor:	User
Preconditions:	Android Device, Internet Connection & Login
Postconditions:	Install/Update google map from play store
Main Success Scenario:	Users can find blood donor in emergency situation
Extensions:	If the user doesn't have internet connection, he/she will not be able to access this feature
Frequency of Use:	Always when user need
Status:	Under Development
Owner:	S. M. Tasnimul Hasan & Md Zahidul Haque
Priority:	High
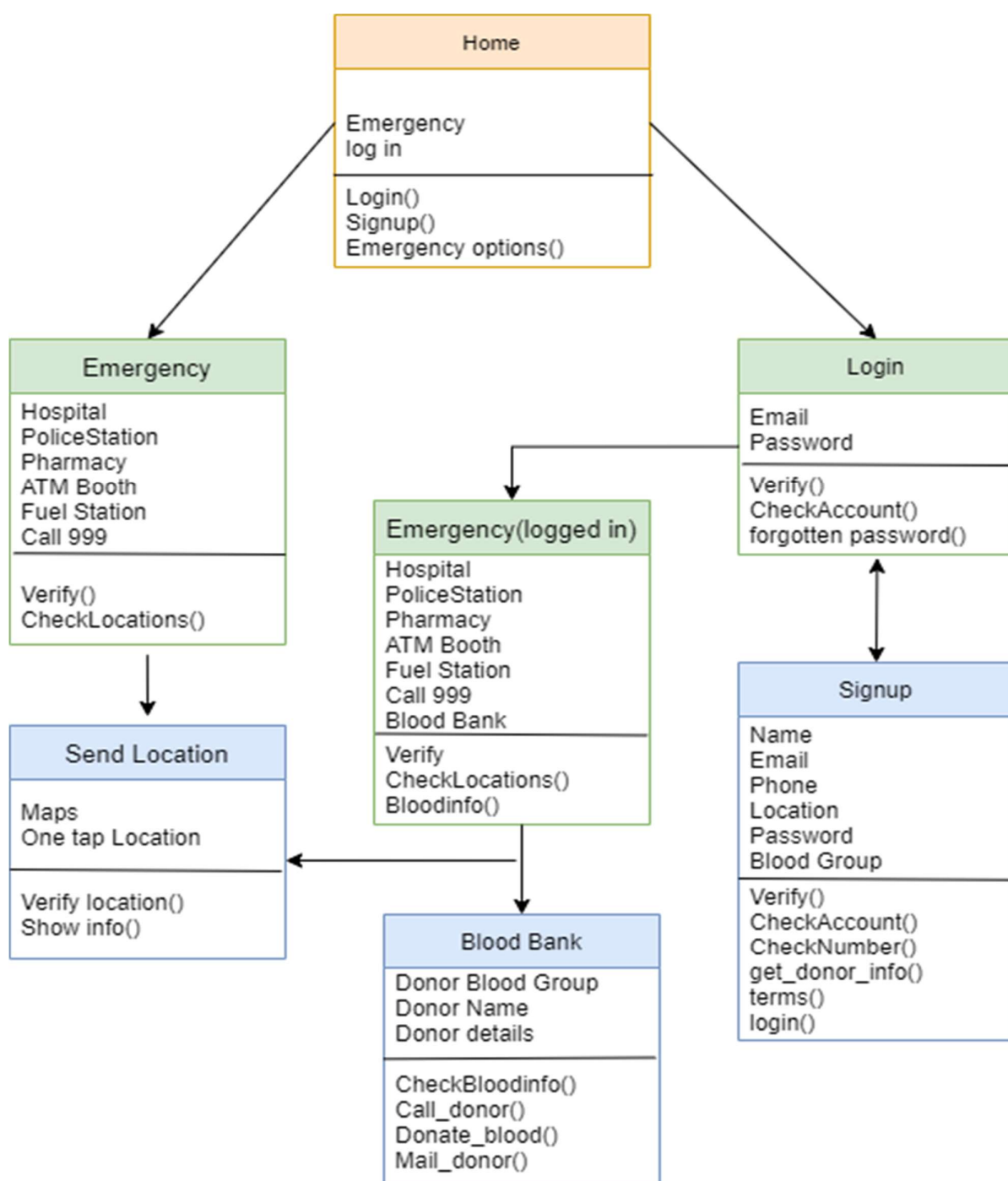
Class: Home	
Home page for user after opening the application	
Responsibility:	**Collaborator:**
Creates user interface after opening the app	Emergency
Shows options of emergency and login	Login

Class: Emergency	
Emergency services without login	
Responsibility:	**Collaborator:**
Shows nearby Hospital, Police station, Pharmacy, ATM booth, Fuel station	Send Location
Direct Call to 999	
Shows send location service option	

Class: Send Location	
Sending current location by one tap	
Responsibility:	**Collaborator:**
Choose contact number from phone	
Enter phone number manually	
Get current location and send to selected number	

Class: Login	
User interface for login	
Responsibility:	**Collaborator:**
Takes user input for email and password.	Signup
Recovers password if forgotten	Emergency
Shows option for creating new account	

Class: Signup	
User interface for login	
Responsibility:	**Collaborator:**
Takes user input for name, email, phone no, location, blood group, password	Login
Saves information as blood donor	
Creates new user account	

Class: Emergency(logged in)	
Emergency services logged in users	
Responsibility:	**Collaborator:**
Shows nearby Hospital, Police station, Pharmacy, ATM booth, Fuel station	Send Location
Direct Call to 999	Blood Bank
Shows blood bank service option	
Shows send location service option	

Class: Blood bank	
Finding Blood donor from different groups	
Responsibility:	**Collaborator:**
Selects specific blood group	
Shows donors from selected group	
Gives detailed information about donors	

e.Sequence Diagram
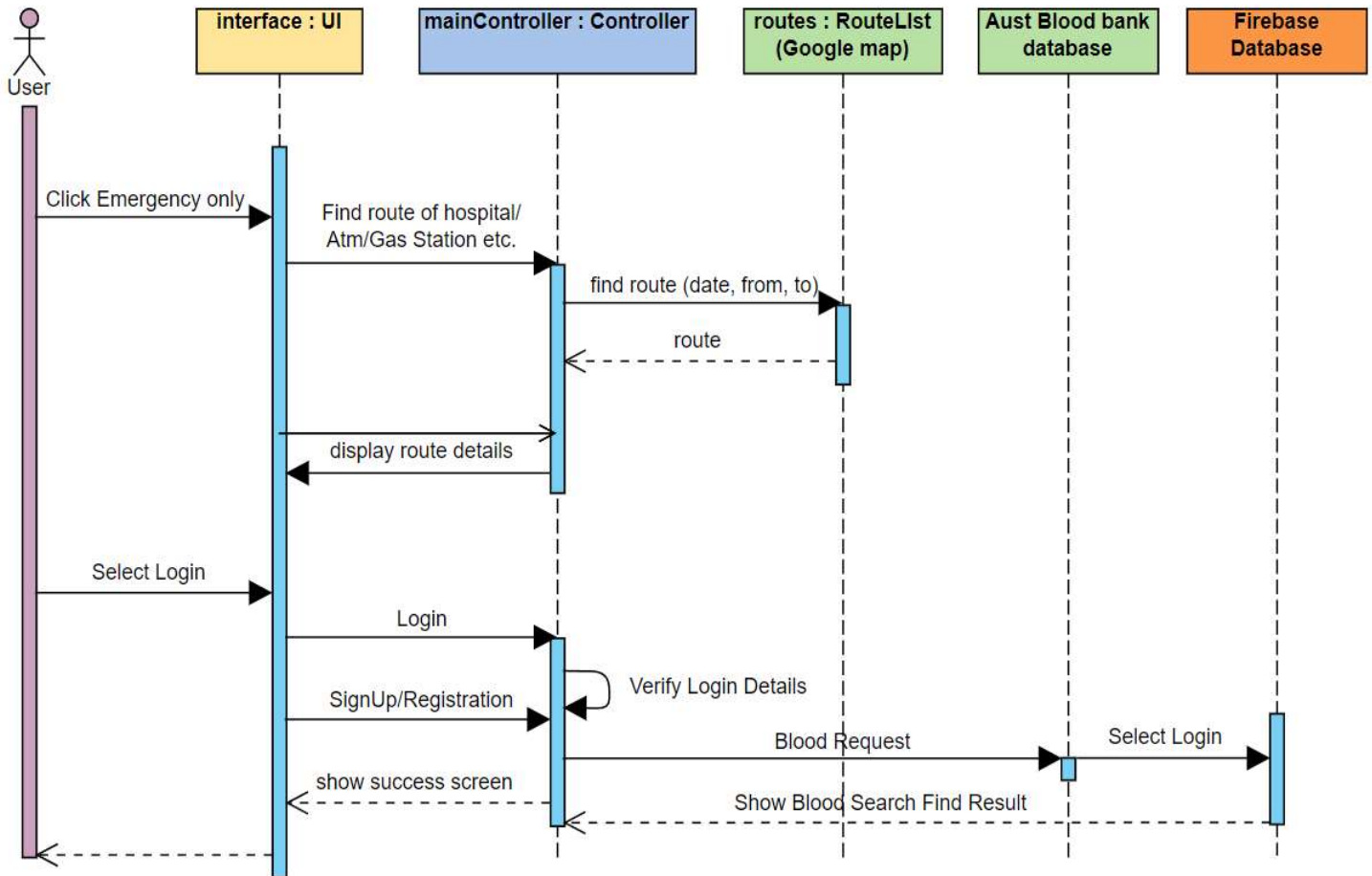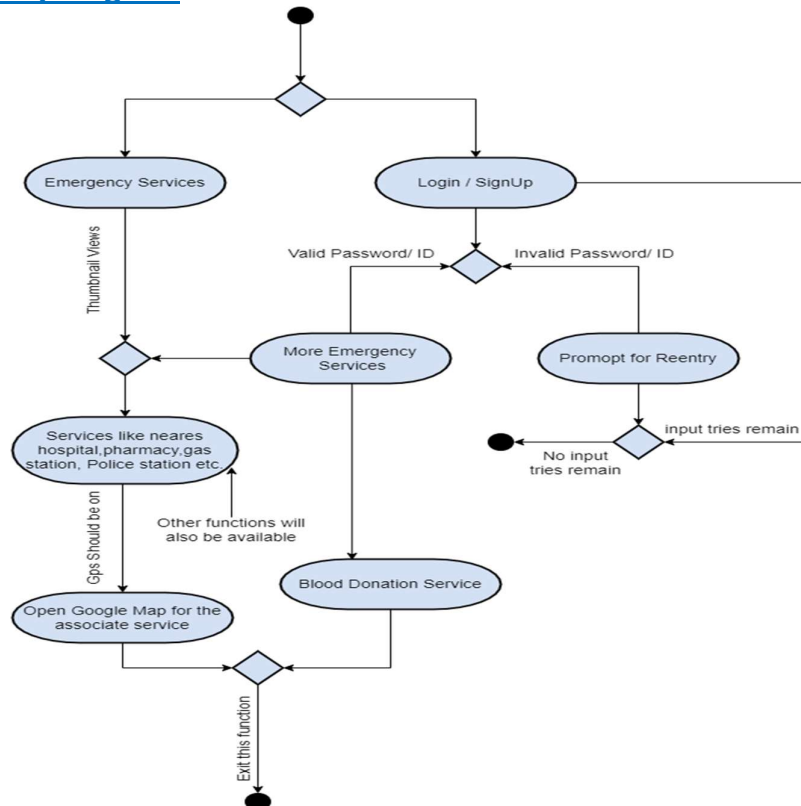
f.Activity diagram
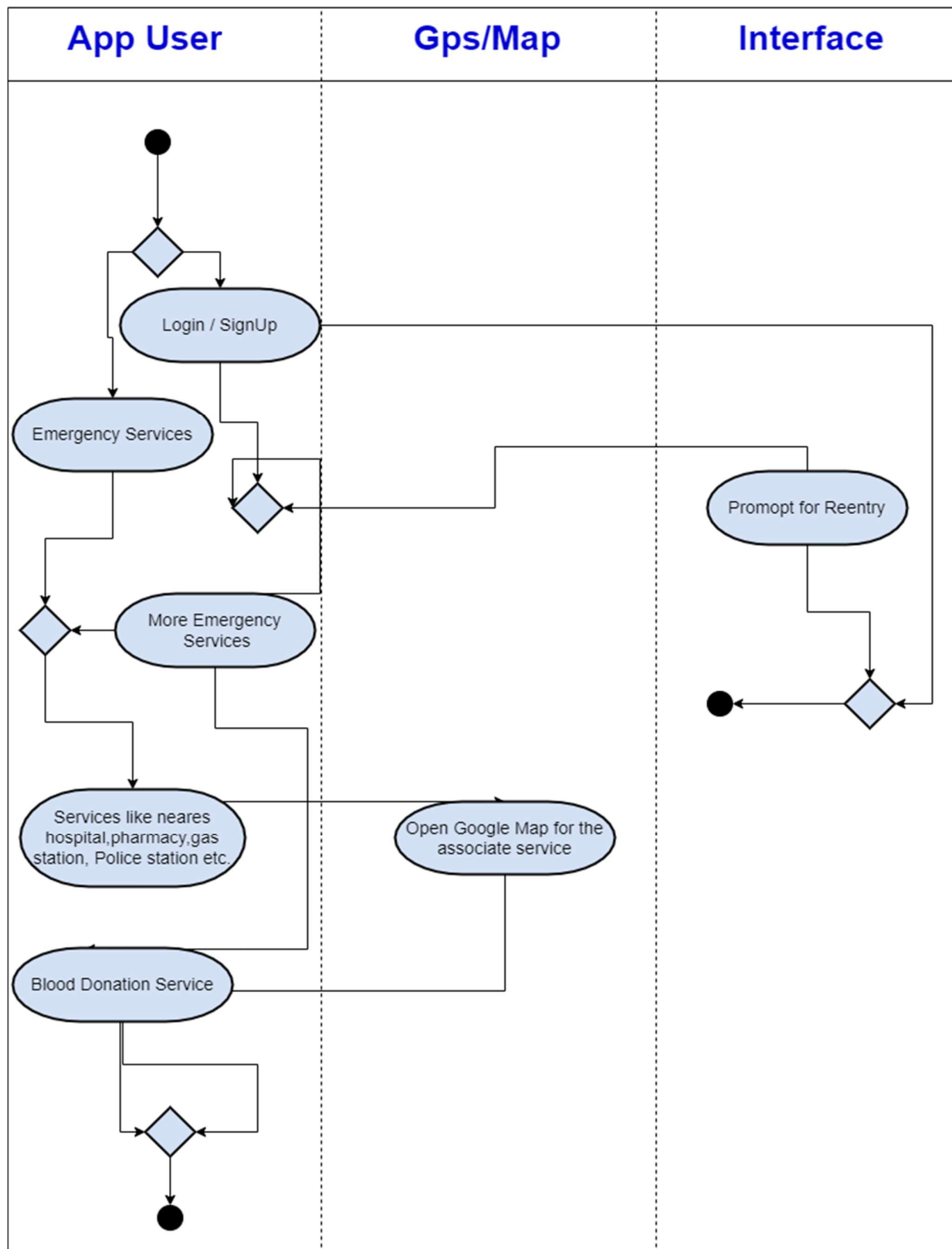
h. Collaboration Diagram
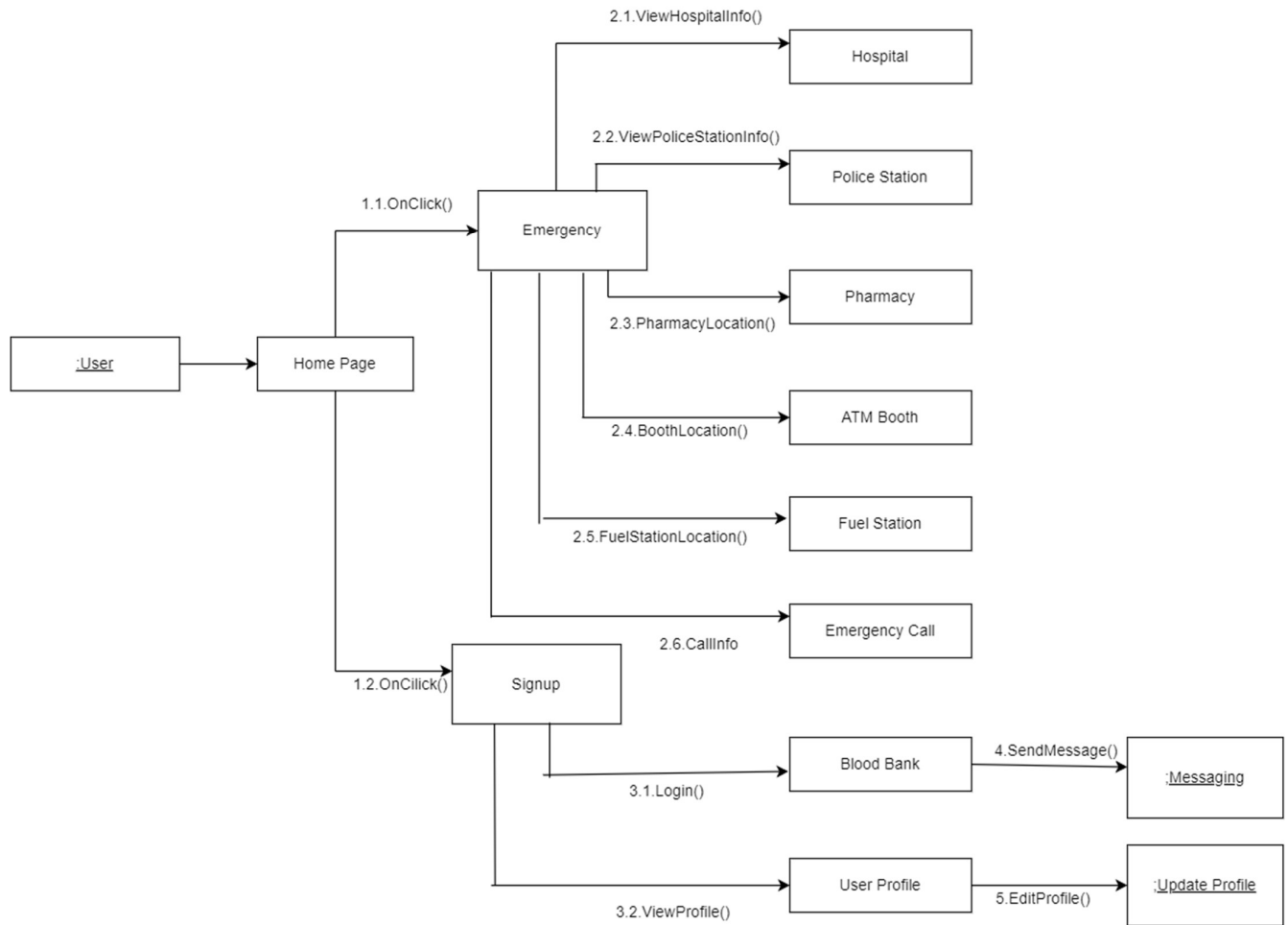
i. Data Flow diagram
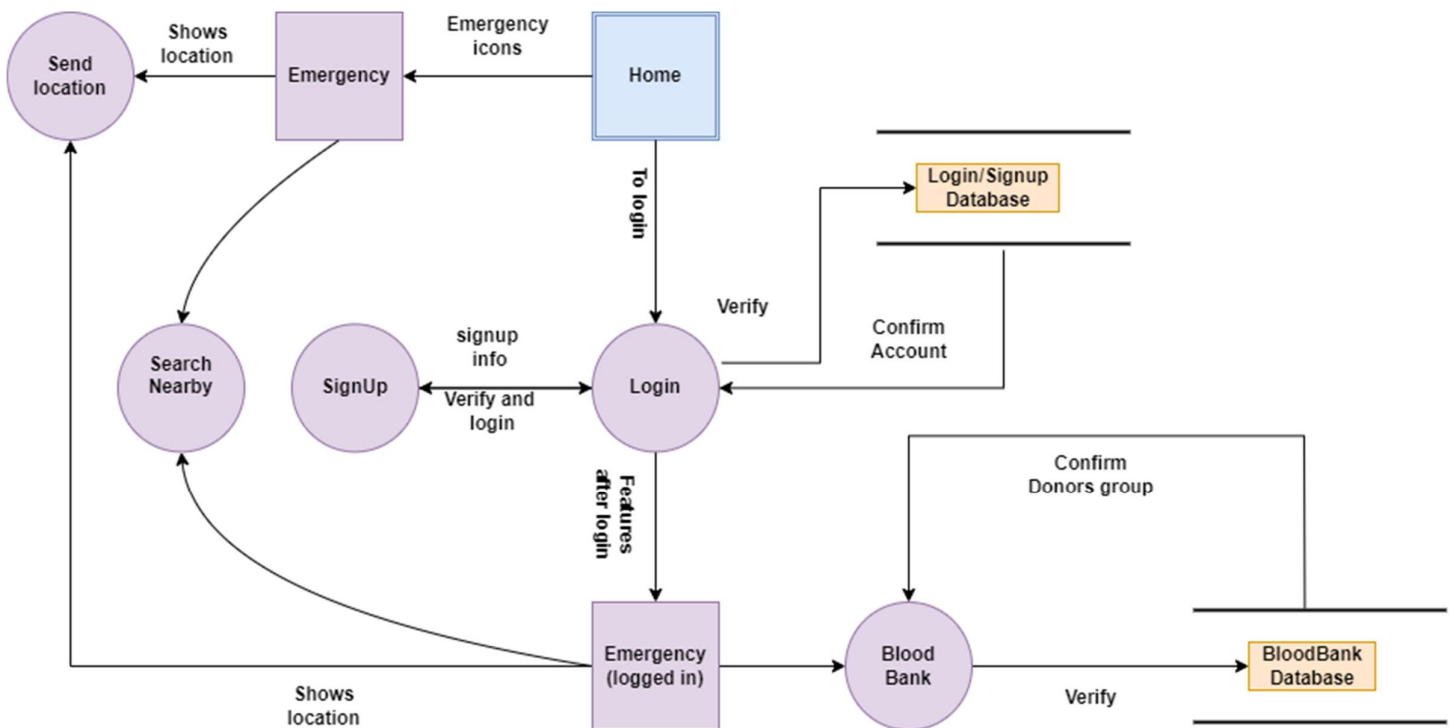
j.Architecture Flow diagram
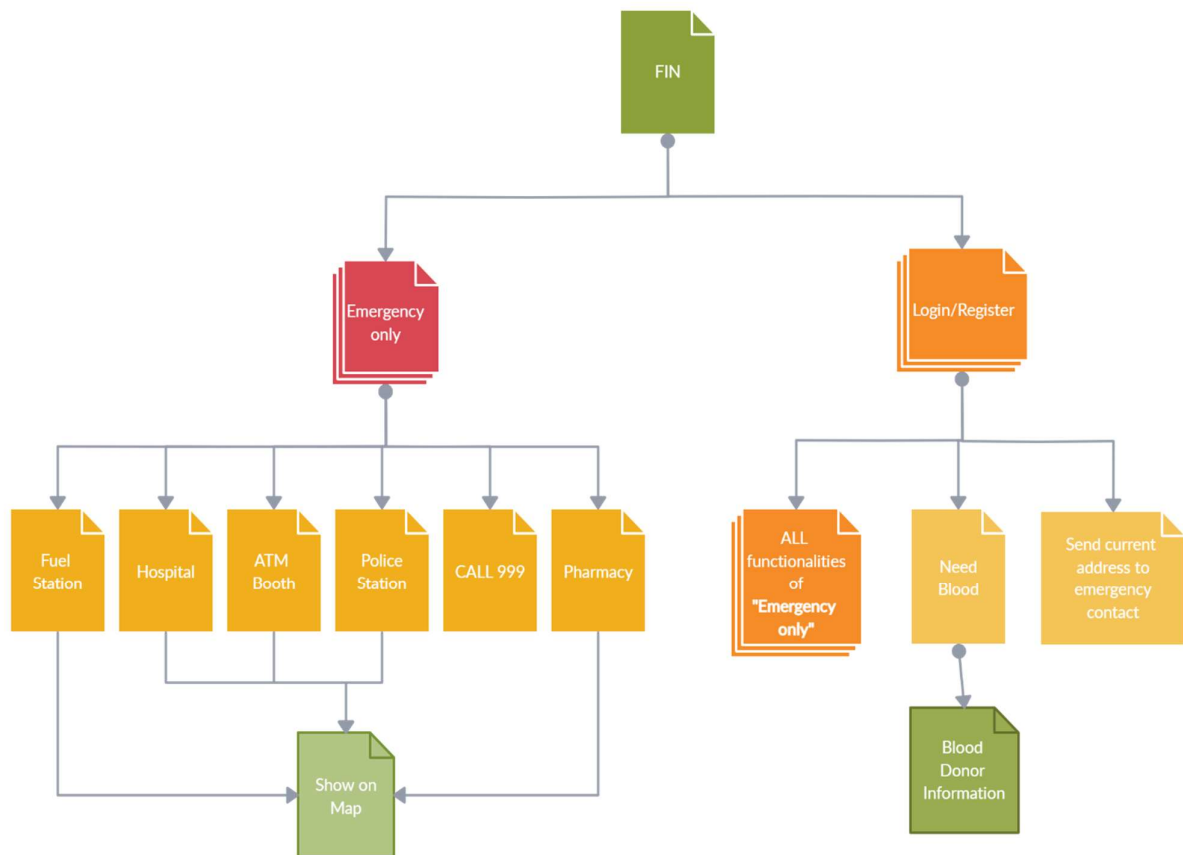
k.UI/UX diagram
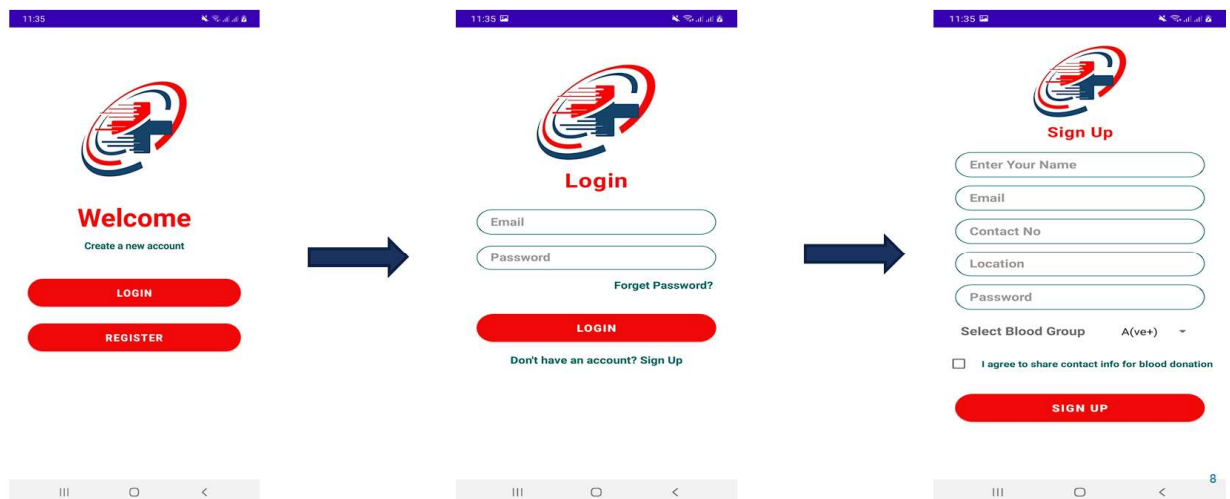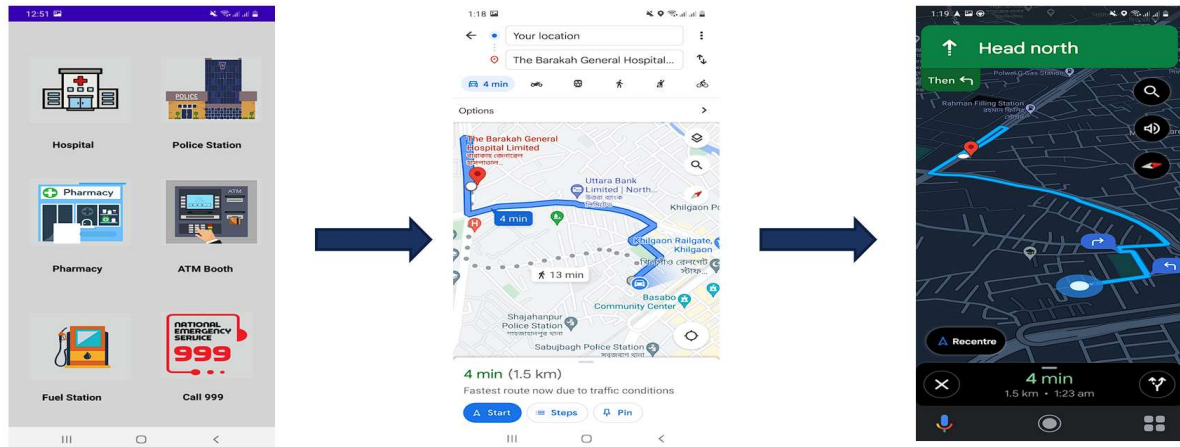
I. Entities and Attributes

Entity	Attributes
User	user_id
	user_name
	user_phone
	user_mail
	user_password
	user_sex
Admin	admin_id
	User_id
	admin_name
	admin_mail
	admin_phone
Blood_Donor	donor_id
	User_id
	donor_BloodGroup
	donor_age
	donor_address
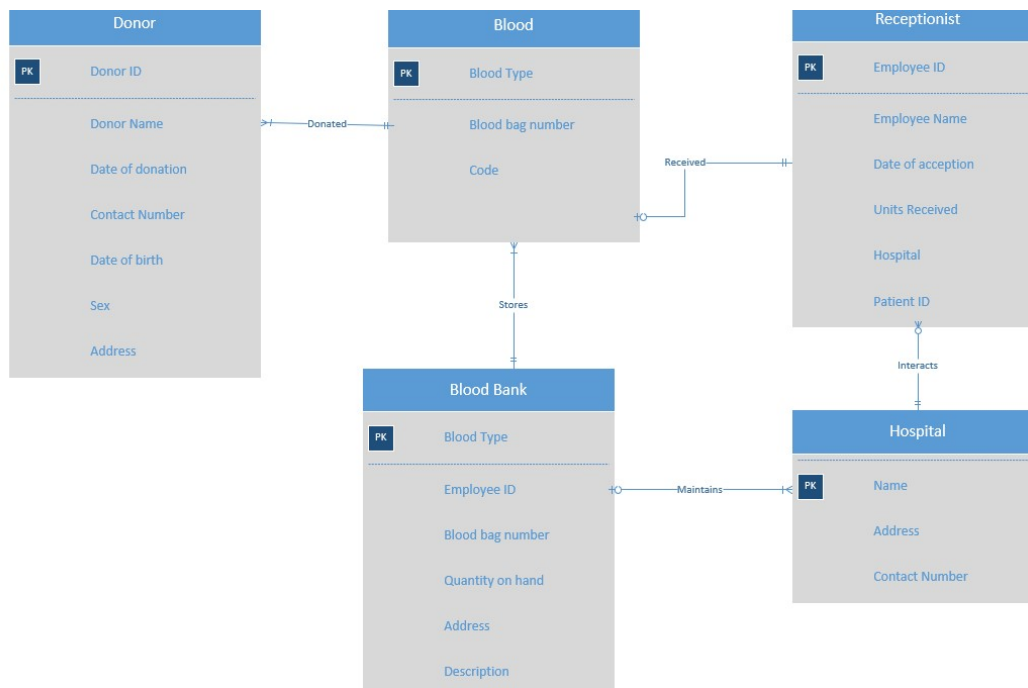
n.Normalization

Normalization basically has three form :
1.First Normal Form(1NF)
2.Second Normal Form(2NF)
3.Third Normal Form(3NF)

First Normal Form(1NF)
For a table to be in the First Normal Form It should follow the rules below:
1.It should only have single valued attributes.
2.Values stored in a column should be of the same domain.
3.All the columns in a table should have unique names.
4.And the order in which data is stored, does not matter.

Second Normal Form(2NF)
For a table to be in the 2nd Normal form,
1.It should be in the First Normal form.
2.It should not have partial Dependency.

Third Normal Form(3NF)
For a table to be in the 3rd Normal form,
1.It should be in the Second Normal form.
2.It does not have Transitive Dependency.

Normalization of FIN database:
1. **User(User_id,User_name,User_phone,User_email,User_password, User_sex)**

{User_id}=>{User_name}{functional dependency exist,because two different User_name do not correspond to the same User_id.
{User_id}=>{User_phone}{functional dependency exist}.
{User_id}=>{User_email}{functional dependency exist}.
{User_id}=>{User_password}{functional dependency exist}.
{User_id}=>{User_sex}{functional dependency exist}.

The attributes of this table does not have sub attributes, it is in the First Normal form(1NF).As every no-primary key attribute is fully funtionally dependent on the primary key of the table and it is already in the 1st Normal form ,this table is now in second normal form.
Again the table is in second normal form and no non-primary key attribute is transitively dependent on the primary key, the table is now in 3rd Normal form.

2. **Admin(Admin_id,User_id,Admin_name,Admin_mail,Admin_phone)**

{Admin_id}=>{User_id}{functional dependency exist}.
{Admin_id}=>{Admin_name}{functional dependency exist}.
{Admin_id}=>{Admin_mail}{functional dependency exist}.
{Admin_id}=>{Admin_phone}{functional dependency exist}.

> The table is in first normal form.
> The table is in second normal form.
> The table is in third normal form.

3. **Blood_Donor(Donor_id,User_id,Donor_BloodGroup,Donor_age,Donor_Address)**

{Donor_id}=>{User_id}{functional dependency exist}.
{Donor_id}=>{Donor_BloodGroup}{functional dependency exist}.
{Donor_id}=>{Donor_age}{functional dependency exist}.
{Donor_id}=>{Donor_Address}{functional dependency exist}.
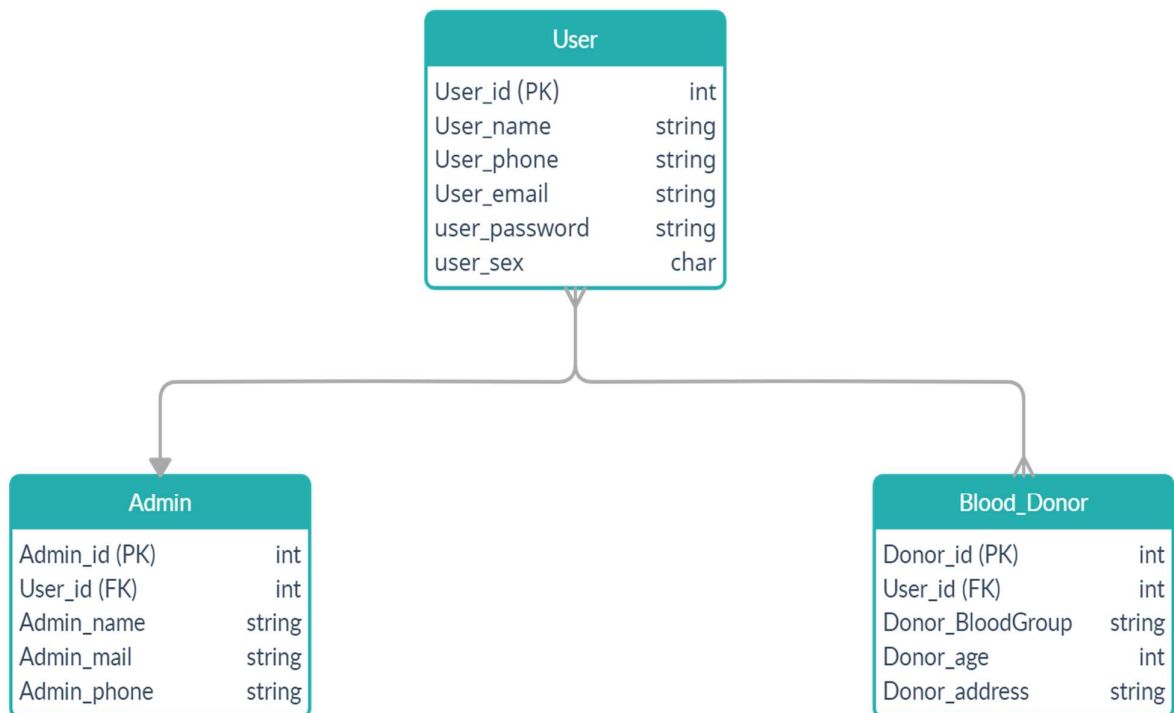
> The table is in first normal form.
> The table is in second normal form.
> The table is in third normal form.

o. Entity Mapping
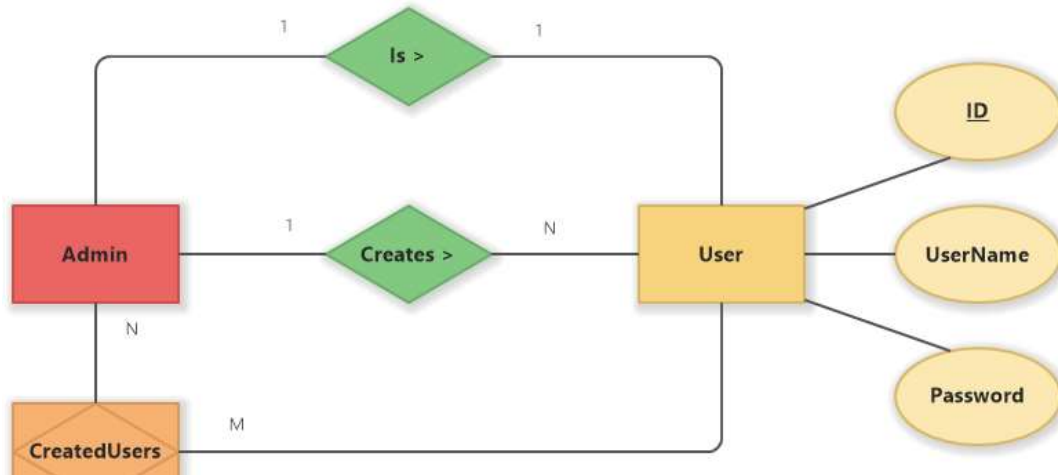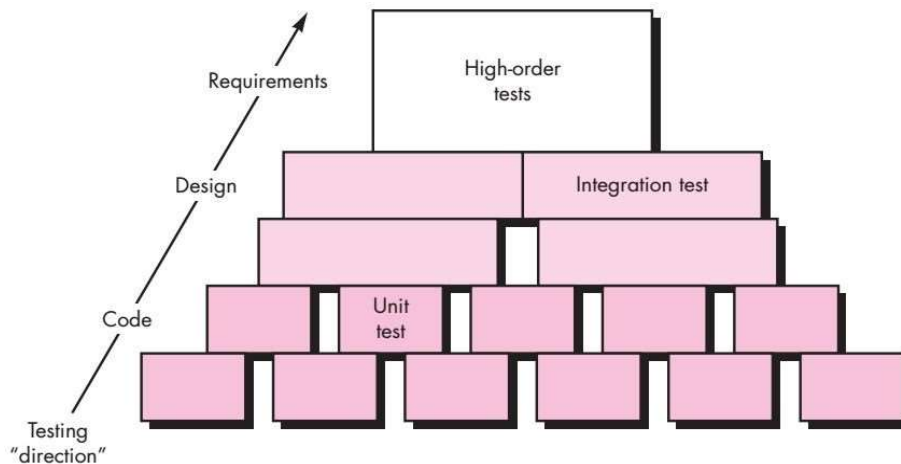

p. Entity Realtionship Diagram

4. Construction

a) Development Environment

    I.   **Framework:** Android Studio

    II.   **Language:** Java

    III.   **Database:** Firebase

b) Testing Strategy

- We begin by testing-in-the-small and move testing in the large
- For conventional Software
- The module (component) is our initial focus
- Integration of Modules follow

c) Testing Techniques

5. Deployment

a) Deployment

This application will be deployed in google play store in future. For right now we are providing drive link of the apk for installation of the app. Thus users can be benefited and also we will get customer review for future update.

b) AMC

Annual Maintenance Contract is all about the process to check the equipment's sold to the customers are well running and retaining the equipment keep running without any hazardous breakdowns happening. So we will keep track and record if "FIN" is harming any physical device anyhow.

c) Support and Maintenance

We Hope to continue supporting this application until October 2024. We will keep releasing updates until then and user feedbacks will be much appreciated for bug fixing.

6. Learning Experiences

There is no doubt working on projects help students to better understanding of theoretical concepts. But working on projects with elements of real world contributes even more to the connection between theory and practice. The involvement of real client requirements helped us to understand more deeply the specific of the system. Working as a

team on the project improved our soft skills. We also learned how to follow a strong schedule, how to maintain working model and procedures, how to share responsibilities, how to communicate with others.

All these issues are actual challenges of every real-world projects. Having encountered them in a project at academic environment gave us the opportunity to overcome obstacles with our lecturers in more structured and disciplined way, using a lot of useful practices, presented in the courses.

7. Conclusion

To Conclude, FIN will be our useful friend during emergency time. Our safety will be at our fingertips. Hopefully, our life will be safer than ever.

8. Bibliography / References:

- ❖ Yours for the making - Instructables
- ❖ Big Think - Smarter, Faster
- ❖ Goodreads | Meet your next favorite book

Appendix

1. I would define myself as _
2. I am aged between _
3. When you are in some emergency to whom do you contact / Where do you get help form?
4. Have you ever faced problem finding blood for an emergency patient?
5. Do you think an emergency app is needed which provide services such as (nearest police station, hospital, fire service, atm booth, filling station, blood donation etc.)?
6. Do you use smart watch?