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A Mini Project Report on

“BLOOD BANK”

Submitted in partial fulfillment of the requirements as a part of the

Mobile Application Development Laboratory with Mini Project (18CSMP68)

For the award of degree of

Bachelor of Engineering in Information Science and Engineering

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CERTIFICATE

This is to certify that the mini project report entitled **BLOOD BANK** has been successfully completed by **RAMYA A** bearing USN **1RN20IS412**, **NAYANA KR** bearing USN **1RN20IS411** and **SHALINI S** bearing USN **1RN20IS414**, presently VI semester students of **RNS Institute of Technology** in partial fulfillment of the requirements as a part of the **Mobile Application Development Laboratory (18CSMP68)** for the award of the degree of **Bachelor of Engineering in Information Science and Engineering** under **Visvesvaraya Technological University, Belagavi** during academic year **2021 – 2022**. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report and deposited in the departmental library. The mini project report has been approved as it satisfies the academic requirements as a part of Mobile Application Development Laboratory.

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Name of the Examiners

Signature with date

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ABSTRACT

The Blood Donation Agent is to create an e-Information about the donor and organization that are related to donating the blood. Through this application any person who is interested in donating the blood can register himself in the same way if any organization wants to register itself with this site that can also register. Moreover if any general consumer wants to make a request for blood online he can also take the help of this site. Admin is the main authority who can do addition, deletion and modification if required.

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ABBREVIATIONS

iOS - iPhone Operating System

Inc. - Incorporated

OS - Operating System

SDK - Software Development Kit

HTML - Hyper Text Markup Language

SQL - Structured Query Language

API - Application Programming Interface

DVM - Dalvik Virtual Machine

JVM - Java Virtual Machine

IDE - Integrated Development Environment

BMP - BitMaP (Image Format)

RAM - Random Access Memory

XML - Extensible Markup Language

UI - User Interface

LSB - Least Significant Bit

DDMS - Dalvik Debug Monitor Server

Chapter 1

INTRODUCTION TO ANDRIOD

1.1 History

In past mobile phones were used only to make calls but with the introduction of smartphone the mobile phone has evolved to a low powered hand held processing system. This evolution was caused by the operating system for the mobile phones making them smart that have processing and storage of their own. Now the mobile provides numerous functionalities from calling to texting, multimedia sharing, emails, socializing applications, word processor, excel sheets to various multiplayer games and much more.

The operating system for these hand held devices are iOS by Apple Inc., Windows by Windows Inc. and Android by Google. Among the competitors in smartphone operating system industry Android holds the largest market share in terms of units shipped worldwide and number of users.

Android is an open source operating system based on Linux kernel on which applications run on an application framework that controls the activities supported by the libraries and Dalvik virtual machine which compiles and converts all java class files into a single file. There can be number of virtual machines running simultaneously on a single device handling different applications or instances of an application.

Android operating system provides memory management, process management to the applications and services running. Each release of android improved user experience and brought enhanced features. In 2012 Android became the most popular operating system for mobile devices, surpassing Apple's iOS, and, as of 2020, about 75 percent of mobile devices run Android.

1.2 Android Versions

The development of the Android operating system was started in 2003 by Android, Inc. Later on, it was purchased by Google in 2005. The beta version of Android OS was released on November 5, 2007, while the software development kit (SDK) was released on November 12, 2007.

The first Android mobile was publicly released with Android 1.0 of the T-Mobile G1 (aka HTC Dream) in October 2008. The first Android version which was released under the numerical order format was Android 10.

Code name	Version numbers	API level	Release date
No codename	1.0	1	September 23, 2008
No codename	1.1	2	February 9, 2009
Cupcake	1.5	3	April 27, 2009
Donut	1.6	4	September 15, 2009
Éclair	2.0 - 2.1	5 - 7	October 26, 2009
Froyo	2.2 - 2.2.3	8	May 20, 2010
Gingerbread	2.3 - 2.3.7	9 - 10	December 6, 2010
Honeycomb	3.0 - 3.2.6	11 - 13	February 22, 2011
Ice Cream Sandwich	4.0 - 4.0.4	14 - 15	October 18, 2011
Jelly Bean	4.1 - 4.3.1	16 - 18	July 9, 2012
KitKat	4.4 - 4.4.4	19 - 20	October 31, 2013
Lollipop	5.0 - 5.1.1	21- 22	November 12, 2014
Marshmallow	6.0 - 6.0.1	23	October 5, 2015
Nougat	7.0	24	August 22, 2016
Nougat	7.1.0 - 7.1.2	25	October 4, 2016
Oreo	8.0	26	August 21, 2017
Oreo	8.1	27	December 5, 2017
Pie	9.0	28	August 6, 2018
Android 10	10.0	29	September 3, 2019
Android 11	11	30	September 8, 2020

Table 1.1 Android Versions

1.3 Android Architecture

Android operating system is a stack of software components which is roughly divided into five sections and four main layers as shown below in the architecture diagram.

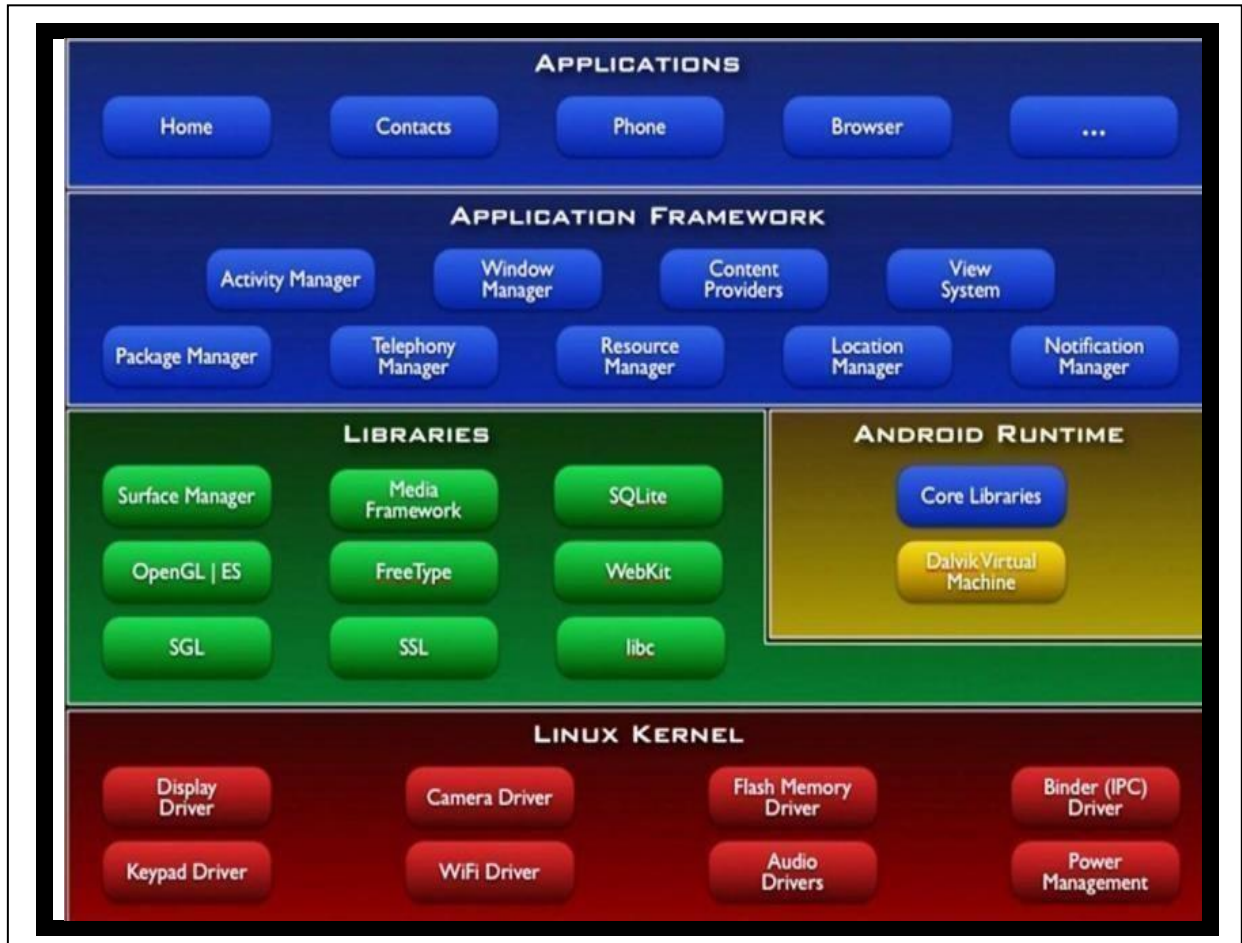


Figure 1.1 Android Architecture diagram

- ❖ **Linux Kernel:** This is the layer at the very bottom of the Android architecture. All other layers run on top of the Linux kernel and rely on this kernel to interact with the hardware. This layer contains all the essential hardware drivers which help to control and communicate with the hardware. It provides the basic functionality like Process Management, Memory Management and Device Management like Camera, Display, Flash etc.
- ❖ **Libraries:** This is a set of common functions of the application framework that enables the device to handle different types of data. Some of the most important set of libraries that are included are – Web kit which is the browser engine to display HTML, OpenGL used to render 2- D or 3-D graphics on to the screen, SQLite which is a useful repository for storing and sharing of application data.

A summary of some key core Android libraries available to the Android developer is as follows

- `android.app` – Provides access to the application model and is the cornerstone of all Android applications.
- `android.content` – Facilitates content access, publishing and messaging between applications and application components.
- `android.database` – Used to access data published by content providers and includes SQLite database management classes.
- `android.opengl` – A Java interface to the OpenGL ES 3D graphics rendering API
- `android.os` – Provides applications with access to standard operating system services including messages, system services and inter-process communication.
- `android.text` – Used to render and manipulate text on a device display.
- `android.view` – The fundamental building blocks of application user interfaces.
- `android.widget` – A rich collection of pre-built user interface components such as buttons, labels, list views, layout managers, radio buttons etc.
- `android.webkit` – A set of classes intended to allow web-browsing capabilities to be built into applications.

❖ **Android Runtime :** The Android runtime mainly consist of the Dalvik Virtual Machine (DVM). DVM is very much like the standard Java Virtual Machine (JVM) except that it is optimized for mobile devices that have low processing power and low memory. DVM generates a.dex file from the .class file at compile time and provides higher efficiency in low resources devices. Each application has its own process and an instance of DVM. Android runtime also provides core libraries that enable the Android developers to create applications using the Java language.

❖ **Application Framework :** The Android runtime mainly consist of the Dalvik Virtual Machine (DVM). DVM is very much like the standard Java Virtual Machine (JVM) except that it is optimized for mobile devices that have low processing power and low memory. DVM generates a.dex file from the .class file at compile time and provides higher efficiency in low resources devices. Each application has its own process and an instance of DVM. Android runtime also provides core libraries that enable the Android developers to create applications using the Java language.

- ❖ **Applications :** This is the topmost layer in the architecture and the layer where the application that we develop fits in. This layer provides several pre-installed applications that are default for certain things like Contacts Books, Browser etc..

1.4 Android Studio Installation

Android Studio is the official integrated development environment (IDE) for Android application development. It is based on the IntelliJ IDEA, a Java integrated development environment for software, and incorporates its code editing and developer tools.

To support application development within the Android operating system, Android Studio uses a Gradle-based build system, emulator, code templates, and GitHub integration. Every project in Android Studio has one or more modalities with source code and resource files. These modalities include Android app modules, Library modules, and Google App Engine modules.

PROCEDURE TO BE FOLLOWED TO DOWNLOAD AND INSTALL ANDROID STUDIO:

STEP 1 : Android Studio and the Software Development Kit can be downloaded directly from any web browser using the below link.

<https://developer.android.com/studio>

STEP 2 : Android Studio is available for Mac, Windows, and Linux desktop platforms.

Windows

To install Android Studio on Windows, proceed as follows:

- i. If you downloaded an .exe file (recommended), double-click to launch it. If you downloaded a .zip file, unpack the ZIP, copy the android-studio folder into your Program Files folder, and then open the android-studio > bin folder and launch studio64.exe (for 64-bit machines) or studio.exe (for 32-bit machines).
- ii. Follow the setup wizard in Android Studio and install any SDK packages that it recommends.

Mac

To install Android Studio on your Mac, proceed as follows:

- i. Launch the Android Studio DMG file.
- ii. Drag and drop Android Studio into the Applications folder, then launch it.

- iii. Select if you want to import previous Android Studio settings, then press OK
- iv. The Android Studio Setup Wizard guides you through the rest of the setup, which includes downloading Android SDK components that are required for development.

Linux

To install Android Studio on Linux, proceed as follows:

- i. Unpack the .zip file you downloaded to an appropriate location for your applications, such as within /usr/local/ for your user profile, or /opt/ for shared users. If you're using a 64-bit version of Linux, make sure you first install the required libraries for 64-bit machines.
- ii. To launch Android Studio, open a terminal, navigate to the android-studio/bin/ directory and execute studio.sh.
- iii. Select whether you want to import previous Android Studio settings or not, then click OK.
- iv. The Android Studio Setup Wizard guides you through the rest of the setup, which includes downloading Android SDK components that are required for development.

Chapter 2

INTRODUCTION TO PROJECT

2.1 About the Project

The idea behind this project is to create an application that would assist people with visual impairment in analyzing their surroundings. To analyze their surroundings all they have to do is to take a picture with their mobile phone and application will automatically learn the contents/objects in the picture and will provide voice assistance, about the types of objects nearby. But there might be one catch that how visually impaired people will operate this application. Well, all they have to do is to open this application with the help of any virtual assistance on their mobile device and after that, for taking the picture they can use any one of the volume keys or the camera button. Then that captured picture will be made available to a pre-trained Convolutional Neural Network (CNN) and all the detected objects in that picture will get labeled. Those labels will then be passed onto a Text to Speech engine which by analyzing and processing the text using Natural Language Processing (NLP) converts the text into speech.

2.2 Existing System

According to the study related to blind user employment, if blind users are provided with appropriate system, environment, service support, and assistive technology, they will perform tasks well. Compared to people in general, the blind people have low levels of space judgment, shape perception, and physical intelligence. On the other hand, they possess similar or higher level of learning ability, linguistic skills, numeracy, and work perceptivity. In other words, blind users have advantage on task based knowledge such as learning ability, linguistic skills, numeracy, and work perceptivity. Blind people have no or only very limited access to visual communication modes. Therefore, technical support is required to present information which was originally intended to be received by the visual mode in to other mode

2.2 Limitation of Existing System

It is difficult for people who are blind or have low vision to recognize people in a variety of social interactions. Sole reliance on voice recognition may be difficult in some circumstances, and impossible in other circumstances, e.g., people within a group who do not speak. The inability to identify people during group meetings is a disadvantage for blind people in many professional and educational situations. The societal benefit of the proposed device is that, if successful, it will improve the access, integration, and independence of the blind or severely visually impaired individuals in workplace or educational settings. Some of the major limitations that persons with visual impairments face are:

- To access written information
- To operate devices with complex user interfaces
- To get orientation and mobility support

Chapter 2

Requirement Analysis

System Requirements

2.1 Hardware Requirements:

- The hardware requirements are very minimal and the program can be run on most of the machines
- Processor : Qualcomm Snapdragon processor
- Processor Speed : 1.4 GHz
- RAM : 2 GB
- Storage Space : 10 GB
- Display Resolution : 1024*768
- I/O Elements : Camera, Speaker, Microphone, GPS
- Network : 5 Mbps

2.2 Software Requirements:

Operating System : Android / iOS

2.3 Functional Requirements

2.3.1 Major Entities

- The System should assist people with visual impairment in analyzing their surroundings by providing voice assistance.
- The System should detect objects in the user's surroundings. It can inform the user about the obstacles in his pathway which helps him/her to navigate from one place to another saving him from accidents.

2.3.2 Flutter Framework architecture

Dart is a client-optimized programming language for apps on multiple platforms. It is developed by Google and is used to build mobile, desktop, server, and web applications. Dart is an object oriented, class-based, garbage-collected language with C-style syntax. Dart can compile to either native code or JavaScript. It supports interfaces, mixins, abstract classes, reified generics, and type inference. Whether you're creating a mobile app, web app, command-line script, or server-side app, there's a Dart solution for that. Flexible compiler technology lets you run Dart code in different ways, depending on your target platform and goals: $x = a + b$.

Dart Native

For programs targeting devices (mobile, desktop, server, and more), Dart Native includes both a Dart VM with JIT (Just-In-Time) compilation and an AOT (Ahead-Of-Time) compiler for producing machine code.

Dart Web

For programs targeting the web, Dart Web includes both a development time compiler (dartdevc) and a production time compiler (dart2js).

Chapter 3

System Design

3.1 System Architecture

The project consists of the following parts as shown in figure 3.1

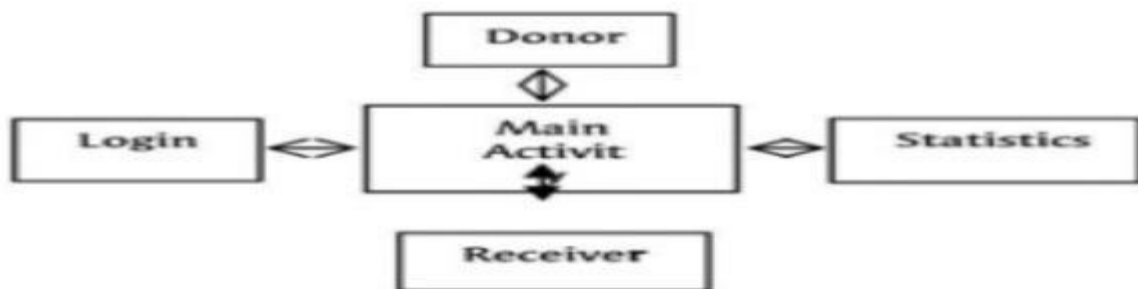


Figure 3.1: Face Recognition

3.1.1 Face Recognition

is done by extracting the facial features of a person and comparing it with the given database. Mobile FaceNet CNN Model algorithm and MS1M-refine-v2 and VGGFace2 datasets by Insight face are used for Face Recognition it is shown in figure.

3.1.2 Text-To-Speech

The Text-To-Speech (TTS) synthesis procedure consists of two main phases. The first is text analysis, where the input text is transcribed into a phonetic or some other linguistic representation, and the second one is the generation of speech waveforms, where the output ?? All speech-to-text systems rely on at least two models: an acoustic model and a language model. In addition,

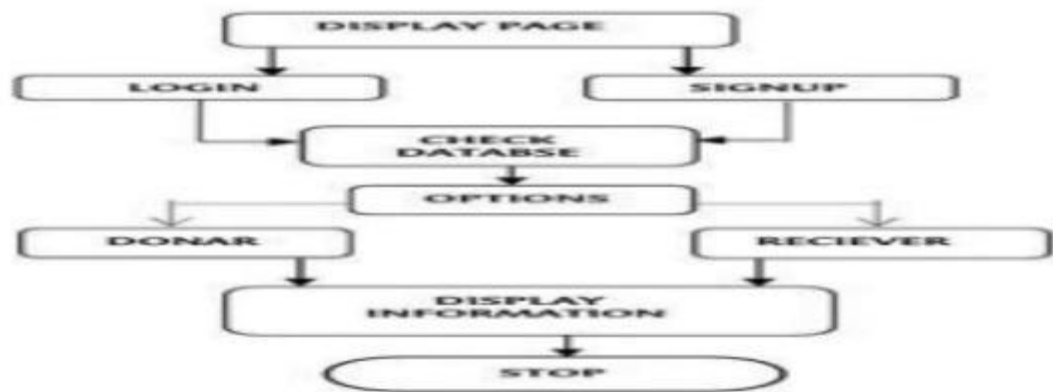


Figure 3.2: Text-to-Speech

large vocabulary systems use a pronunciation model. Speech-to-Text is implemented with Microsoft Cognitive Services Text-to-Speech API T In physics, the mass-energy equivalence is stated by the equation $E = mc^2$, discovered in 1905 by Albert Einstein. the other form of representing the same equation is, by using equation as a separate line. The equation 3.1 states mass equivalence relationship.

$$E = mc^2$$

Below mentioned algorithm 1 will help us to understand the concepts.

Algorithm 1 An algorithm with caption

Require: $n \geq 0$

Ensure: $y = x^n y$

$X \leftarrow x$

$N \leftarrow n$

while $N \neq 0$ **do**

if N is even **then**

$X \leftarrow X \times X$

$N \leftarrow \frac{N}{2}$

else if N is odd **then**

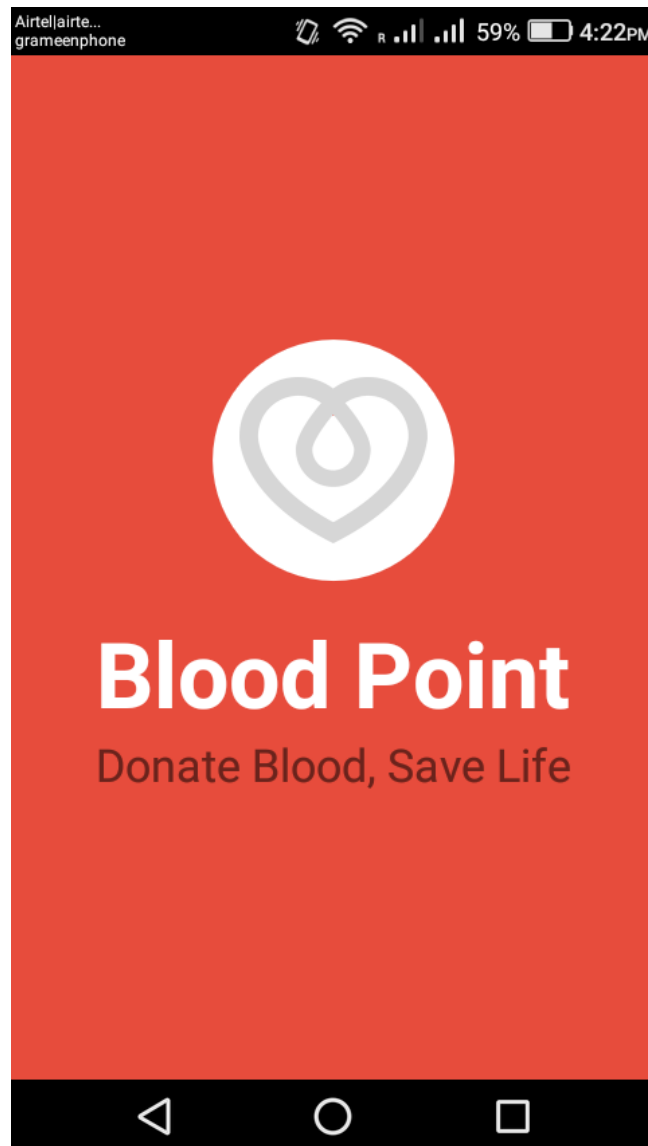
$y \leftarrow y \times X$

$N \leftarrow N - 1$

end if
end while

Chapter 4

RESULTS ANALYSIS



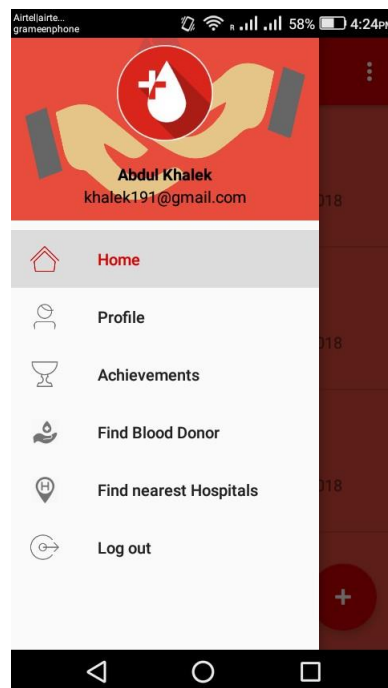


Figure 4.2: home page

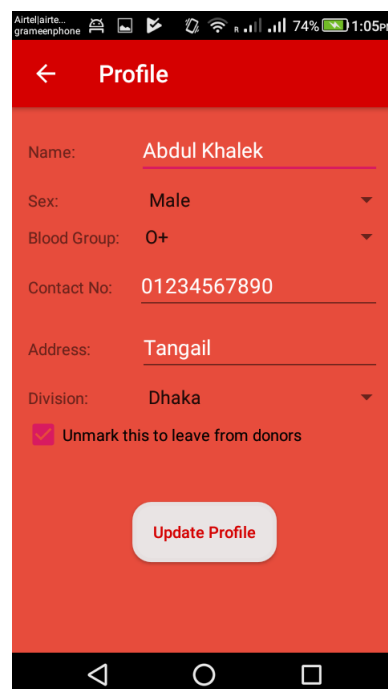


Figure 4.3: profile setting

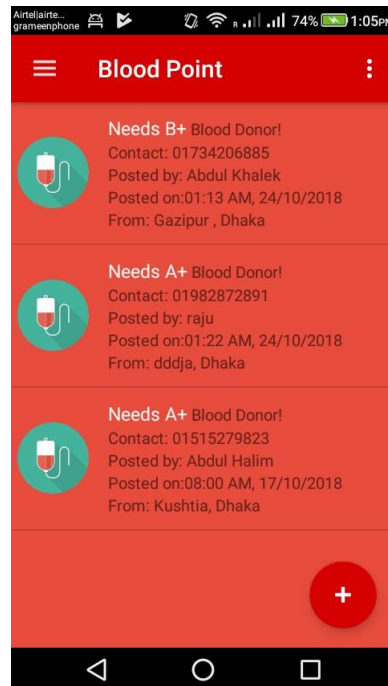


Figure 4.4: details

Chapter 5

CONCLUSION

In recent days, it is noticed the increase in blood request posts on social media such as Facebook, Twitter, and Instagram. Interestingly there are many people across the world interested in donating blood when there is a need, but those donors don't have an access to know about the blood donation requests in their local area. This is because that there is no platform to connect local blood donors with patients. BLOODR solves the problem and creates a communication channel through authorized clinics whenever a patient needs blood donation. It is a useful tool to find compatible blood donors who can receive blood request posts in their local area. Clinics can use this web application to maintain the blood donation activity. Collected data through this application can be used to analyse donations to requests rates in a local area to increase the awareness of people by conducting donations camps.

BLOODR Application can be developed to further improve user accessibility via integrating this application with various social networks application program interfaces (APIs). Consequently, users can login and sign up using various social networks. This would increase number of donors and enhances the process of blood donation.

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