Vision-A Preliminary Eye Examination Android Application

by

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Abstract

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Vision is most important part of our life. Without vision life becomes so hard. There are many people who are blind people due to less facilities and treatment. The Vision application is a portable eye examination kit which use to check the vision. This application contains six types various tests which is used to examine the vision power. Vision application also contains Doctor information, NGOs(Non Governmental Organisations) information and feedback of patient, medical information, and manual about application. Vision is preliminary eye examination application. It just gives suggestions to patient to meet doctor. The tests give the result to patient and according to the result, vision power of patient is decided. These tests namely Visual acuity, Ishihara colour blindness, Amsler grid test, Duochrome test,picture test, landolt test are used to check particular diseases.

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Chapter 1

INTRODUCTION

1.1 Introduction of project

There are 285 million people worldwide are visually impaired. 39 million of these people are blind. 80 percent of blindness is avoidable. A solution on this problem is to create an application which is a smart phone based system for comprehensive eye examination in even the remotest of settings. It is easy to use, affordable and portable. [1][2]

We are developing smart phone based application named,"Vision-A Preliminary Eye Examination Android Application". We aim to test the eyes of people with an android application on smart phones and tablet PC's. Our vision is to empower all health workers to diagnose eye diseases and simplify managing and monitoring treatment of patients, anywhere in the world. In existing system a complete eye exam involves a series of tests designed to evaluate your vision and check for eye diseases. Your eye doctor may use a variety of instruments, shine bright lights directly at your eyes and request that you look through an array of lenses. Each test during an eye exam evaluates a different aspect of your vision or eye health. Some people shouldn't wait until they are 40 to have a comprehensive eye exam. If you have an eye disease or if you have a risk factor for developing one, such as diabetes, high blood pressure or a family history of eye disease, you should see an ophthalmologist (Eye M.D) even if you are younger than 40.[3][4]

Upon examining your eyes, your Eye M.D. can tell you how often you should undergo an eye exam. As you age, it's especially important that you have your eyes checked regularly because your risk for eye disease increases. If you are 65 or older, make sure you have your eyes checked every year or two for signs of age-related eye diseases such as cataracts, age-related macular degeneration and glaucoma. So for preliminary result user can use the Vision application because this application tells the user whether to meet ophthalmologist.[5]

An eye examination is a series of tests typically performed by an ophthalmologist, optometrist and orthodontist to check vision. Examination of the eye is of paramount importance in diagnosis of eye disease. So we want to implement eye examination application on smart phone which will be very useful and user friendly. This is a real time application, where a person will know about his vision power in few seconds. People can check their eyes by simply using the application. One can easily interact with this application. This application works offline which once installed will not require internet. The application can be used even in the remote areas where there will be no network. By harnessing mobile phone apps, hardware and rigorous scientific testing, we are creating an easy to use, affordable and portable system for testing eyes anywhere in the world[2].

Chapter 2

LITERATURE REVIEW

2.1 Ophthalmologist View

We met Dr. Rajkumar Patil and Dr. Narayan Pujari to collect information regarding diagnosis of eye diseases. After discussing about various eye diseases diagnostic tests, we come to know that the visual acuity test gives 90% result about the vision power. The disease of eyes may be caused due to diabetes, heart problem and blood pressure. For uneducated people, there are different tests such as showing the images of animal, showing the circle and ask them where the circle is bending (Landolt test). For children there are different tests and there is special Ophthalmologist to treat the children. An application for android is just a preliminary test and it does not give accurate result about eye.

2.2 Existing System

Eye doctors currently prescribe glasses and contact lenses using measurements obtained with the phoropter, an instrument that has changed little since it was introduced in the early 1900s. During a conventional vision test, the patient looks through the phoropter at an eye chart while the doctor dials different corrective lenses into position. The patient is asked to choose which set of lenses provides the clearest view of letters on the eye chart.[6]

2.2.1 Snellen Chart

A Snellen Chart is an eye chart used by eye care professionals and others to measure acuity. The traditional Snellen chart is printed with eleven lines of block letters. The

first line consists of one very large letter, which may be one of several letters, for example E, H, or N. Subsequent rows have increasing numbers of letters that decrease in size. A person taking the test covers one eye from 20 ft. away, and reads aloud the letters of each row, beginning at the top. The smallest row that can be read accurately indicates the visual acuity in that eye.[7]

2.2.2 Ishihara Color

The Ishihara Colour test is a test to determine if a patient has colour blindness. It was named after Dr. Shinobu Ishihara who first published the test in 1917 as a professor at the University of Tokyo. The test is made up of a series of circles comprising many small coloured dots, called Ishihara Plates. Certain coloured dots within each circle combine to form a number or pattern âĂŞ the ability to correctly determine the number or pattern reveals whether or not a person may be colour blind.[8][9]

2.2.3 Amsler grid

The Amsler grid is a tool that eye doctors use to detect vision problems resulting from damage to the macula (the central part of the retina) or the optic nerve. For this test wear the glasses you normally wear when reading. View the chart at arms distance and cover one eye. With the uncovered eye, stare at the white dot in the centre of the grid.[10]

2.2.4 Duochrome Test

A Duochrome Test is a test commonly used to refine the final sphere in refraction, which makes use of the chromatic aberration of the eye. The patient is asked to compare the clarity of the letters on the green and the red side.

2.3 Proposed Work

Vision- a preliminary eye examination android application consist various tests such as Visual acuity, Ishihara colour test, Amsler grid test, Duochrome test, Landolt test and Picture test for children. Information about NGOs (Non Governmental Organisation) which are devoted for the cause of eye-care, prevention of eye diseases is also provided in the application. Doctor information which contains information about doctors for example addresses of eye hospitals, specialization of doctors, education and which facilities

are provided in their hospitals. Medical information gives information about the eye diseases, various tests and medicines. Application contains registration form and feedback form so doctors and NGOs can maintain their patient's information.

Chapter 3

OBJECTIVE AND SCOPE

3.1 Objective and Scope

3.1.1 Objectives

Our main objective is to implement an a preliminary eye test android application on smart phones and tablets.

3.1.2 Scope

The Scope of our proposed system are:

- Implementing Visual acuity tests (based on a Snellen chart, numbers and text, with black or white background)

- Implementing an Ishihara Color Blindness test.

- Implementing an Amsler grid tests.

- Implementing a Duochrome Test.

- Implementing a Landolt Test.

- Implementing picture test for child between ages 3-5.

- Providing NGO Names.

- Preparing manual of Vision application.

- Giving information of eye specialist doctors.

- Providing medical information about eye.

- Providing registration and feedback forms which helps the doctors and NGOs.

3.1.3 Out of Scope

- This application is preliminary test. For better result can use 3D adaptor printer for scanning Retina. We are not using 3D adaptor printer because this is very expensive.

Chapter 4

REQUIREMENT ANALYSIS

4.1 Hardware Requirement

Development PC Configuration:

- Processor: Recommended: Pentium IV and above

- RAM: Recommended: minimum 1GB and above

Client PC Configuration:

- Tablet PC

4.2 Software Requirement

Development PC configuration:

- Operating System: Windows 7 (For a 32-bit and 64-bit operating system) or Windows XP Professional or Windows 8.

- Platform

    - Front End: Eclipse Editor
    - Back End: SQLite database storage, MySQL

Client PC configuration:

- Android operating system. Minimum required SDK- API8: Android 4.03.-4.04(Ice cream sandwich) Targeted SDK-API 16: Android 4.2(Jelly Bean) and above.

4.3 Tools and Technologies

- **SQLite Database System**

  SQLite is developed by the D. Richard Hipp. SQLite is a relational database management system contained in a C programming library. In contrast to other database management systems, SQLite is not a separate process that is accessed from the client application, but an integral part of it. SQLite is ACID-compliant and implements most of the SQL standard, using a dynamically and weakly typed SQL syntax that does not guarantee the domain integrity. SQLite is a popular choice as embedded database for local/client storage in application software such as web browsers. It is arguably the most widely deployed database engine, as it is used today by several widespread browsers, operating systems, and embedded systems, among others. SQLite has bindings to many programming languages.

- **MySQL 5.5.27**

  1. MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed, and supported by MySQL AB, which is a Swedish company. MySQL is becoming so popular because of many good reasons:

  2. MySQL is released under an open-source license. So you have nothing to pay to use it.

  3. MySQL is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages.

  4. MySQL uses a standard form of the well-known SQL data language.

  5. MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc.

  6. MySQL works very quickly and works well even with large data sets.

  7. MySQL is very friendly to PHP, the most appreciated language for web development.

  8. MySQL supports large databases, up to 50 million rows or more in a table. The default file size limit for a table is 4GB, but you can increase this (if your operating system can handle it) to a theoretical limit of 8 million terabytes (TB).

  9. MySQL is customisable. The open-source GPL license allows programmers to modify the MySQL software to fit their own specific environments.

- **Eclipse studio: android IDE**
  Version:-Android Developer Tools
  Build: v22.0.5-757759

  Android software development is the process by which new applications are created
  for the Android operating system. Applications are usually developed in the Java
  programming language using the Android Software Development Kit, but other
  development tools are available

- Eclipse:
  In computer programming, Eclipse is an integrated development environment (IDE).
  It is developed by Eclipse Foundation. The stable release is Stable release 4.4.1
  (Luna) / 26 September 2014. It contains a base workspace and an extensible plug-
  in system for customising the environment. Written mostly in Java, Eclipse can
  be used to develop applications. By means of various plug-INS, eclipse may also
  be used to develop applications in other programming languages: Ada, ABAP,
  C, C++, COBOL, FORTRAN, Haskell, JavaScript, Lasso, Natural, Perl, PHP,
  Prolog, Python, R, Ruby (including Ruby on Rails framework), Scala, Clojure,
  Groovy, Scheme, and Erlang. It can also be used to develop packages for the
  software Mathematica. Development environments include the Eclipse Java de-
  velopment tools (JDT) for Java and Scala, Eclipse CDT for C/C++ and Eclipse
  PDT for PHP, among others. The initial codebase originated from IBM Visual
  Age. The Eclipse software development kit (SDK), which includes the Java de-
  velopment tools, is meant for Java developers. Users can extend its abilities by
  installing plug-ins written for the Eclipse Platform, such as development toolkits
  for other programming languages, and can write and contribute their own plug-in
  modules. Released under the terms of the Eclipse Public License, Eclipse SDK is
  free and open source software (although it is incompatible with the GNU General
  Public License). It was one of the first IDEs to run under GNU Class path and it
  runs without problems under Iced Tea.

- Android Operating System:
  Android is a mobile operating system (OS) based on the Linux kernel and currently
  developed by Google OHA. With a user interface based on direct manipulation,
  Android is designed primarily for touch screen mobile devices such as smart phones
  and tablet computers, with specialized user interfaces for televisions (Android TV),
  cars (Android Auto), and wrist watches (Android Wear). The OS uses touch inputs
  that loosely correspond to real-world actions, like swiping, tapping, pinching, and
  reverse pinching to manipulate on-screen objects, and a virtual keyboard. Despite
  being primarily designed for touch screen input, it also has been used in game

consoles, digital cameras, and other electronics. Android is the most popular mobile OS. As of 2013, Android devices sell more than Windows, iOS, and Mac OS devices combined, with sales in 2012, 2013 and 2014 close to the installed base of all PCs. As of July 2013 the Google Play store has had over 1 million Android apps published, and over 50 billion apps downloaded. A developer survey conducted in AprilâĂŞMay 2013 found that 71% of mobile developers develop for Android. At Google I/O 2014, the company revealed that there were over 1 billion active monthly Android users (that have been active for 30 days), up from 538 million in June 2013. Android's source code is released by Google under open source licenses, although most Android devices ultimately ship with a combination of open source and proprietary software. Initially developed by Android, Inc., which Google backed financially and later bought in 2005, Android was unveiled in 2007 along with the founding of the Open Handset Alliance a consortium of hardware, software, and telecommunication companies devoted to advancing open standards for mobile devices. The Android's Initial release is in September 23, 2008 and the latest release is in the 4.4.4 KitKat / June 19, 2014. The first release of android is Alpha (1.0). We are using the Android 4.0 "Ice Cream Sandwich" in our project. The brief description of android 4.0 is here.

- Android 4.0 "Ice Cream Sandwich":
  Android 4.0 "Ice Cream Sandwich" is a version of the Android mobile operating system developed by Google. Unveiled on October 19, 2011, Android 4.0 builds upon the significant changes made by the tablet-only release Android 3.0 "Honeycomb", in an effort to create a unified platform for both smart phones and tablets, whilst simplifying and modernising the overall Android experience around a new set of human interface guidelines. As part of these efforts, Android 4.0 introduced a new visual appearance codenamed "Holo", which is built around a cleaner, minimalistic design, and a new default typeface named Robot.

- **SDK**
  The Android software development kit (SDK) includes a comprehensive set of development tools. These include a debugger, libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Currently supported development platforms include computers running Linux (any modern desktop Linux distribution), Mac OS X 10.5.8 or later, and Windows XP or later. For the moment one can also develop Android software on Android itself by using the AIDE - Android IDE - Java, C++ app and the Java editor app. The officially supported integrated development environment (IDE) is Eclipse using the Android Development Tools (ADT) Plug-in, though IntelliJ IDEA IDE (all editions) fully supports Android development out of the box, and Net Beans IDE also supports Android

development via a plug-in. Additionally, developers may use any text editor to edit Java and XML files, then use command line tools (Java Development Kit and Apache Ant are required) to create, build and debug Android applications as well as control attached Android devices (e.g., triggering a reboot, installing software package(s) remotely).

Chapter 5

SYSTEM DESIGN

5.1   An Overview of UML

THE UML LANGUAGE

A language provides a vocabulary and the rules for combing words in that vocabulary for the purpose of the communication. A modelling language is a language whose vocabulary and rules focus on conceptual and physical representation of a system. A modelling language such as the UML is thus a standard language for software blueprints. In this context, specifying means building models that are precise, unambiguous, and complete. In particular, the UML addresses the specification of all the important analysis, design and implementation decision that must be made in developing and deploying a software intensive system. The UML is not a visual programming language, but its model can be directly connected to a verity of programming languages. This means that its possible to map from a model in the UML to a programming language such as java, cpp, or visual basic or even to tables in a relational database. Things that are best expressed graphically are done so graphically in the UML, whereas things that best expressed textually are done so in the programming language. A healthy software organisation produces all sorts of artefacts in addition to raw executable code. These artefacts include requirements, architecture, design, source code, project plans, tests, prototypes, releases. The UML addresses the documentation of a systems architectures and all of its details. The UML also provides for expressing requirements and for tests. Finally, The UML provides a language for modelling the activities of project planning and release management.[11]

5.2 Goals of UML

The primary goals in the design of the UML were:

- Provide users with a ready-to-use, expressive visual modelling language so they can develop and exchange meaningful models. Provide extensibility and specialisation mechanisms to extend the core concepts.

- Be independent of particular programming languages and development processes.Provide a formal basis for understanding the modelling language

- Encourage the growth of the OO tools market.

- Support higher-level development concepts such as collaborations, frameworks, patterns and components.

- Integrate best practices

5.3 A Conceptual Model of UML

To understand the UML, you need to form a conceptual model of the language, and this requires learning three major elements: the UML basic building blocks, the rules that dictate how those building blocks may be put together, and some mechanisms that apply throughout the UML. Once you have grasped these ideas, you will be able to read UML models and create some basic ones. As you gain more experience in applying the UML, you can build on this conceptual model, using more advanced features of the language.[11]

5.3.1 Building Blocks of UML

The vocabulary of the UML encompasses three kinds of building blocks:

- Things

- Relationships

- Diagrams

These are the abstractions that are first-class citizens in a model; relationships tie these things together; diagrams groups interesting collections of things.

5.4   Diagrams in UML

A diagram is the graphical presentation of a set of elements, most often rendered as a connected graph of vertices (things) and arcs (relationships). You draw diagrams to visualising a system from different perspectives, so a diagram is a projection into a system. For all but the most trivial systems, a diagram represents an elided view of the elements that make up a system. The same element may appear in all diagrams. In theory, a diagram may contain any combination of things and relationships. The views that comprise the architecture of software intensive system. For this reason, the UML includes following diagrams:

- Use case diagram

- Class diagram

- Sequence diagram

- Deployment diagram

5.5   Use Case Diagram

A use case diagram is a diagram that shows a set of use cases and actors and their relationships. A use case diagram is a just special kind of diagram and shares the same common properties as do all other diagram-a name and graphical contents.

5.5.1   Contents

Use case diagrams commonly contain

- **Use Case**

  Use case is a description of a set of sequence of actions that a system performs that yields an observable result of value to a particular actor. A use case is rendered as an ellipse with solid lines usually including its name.
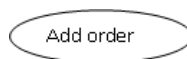
FIGURE 5.1: Use Cases

- **Actors**

  An actor represents a role that an outsider takes on when interacting with the business system. For instance, an actor can be a customer, a business partner, a supplier, or another business system and every actor has a name.

- **Dependency, generalization, and association relationships.**

  A dependency is a semantic relationship between two things in which a change to one thing may affect the semantics of the other thing.

  ························▶

  FIGURE 5.2: dependencies

  A *generalization* is a relationship in which objects of specialized elements (the child) are substitutable for objects of the generalized element.

  An *association* is a structural relationship that describes a set of links, a link being connection among objects

  Like all other diagrams, use case diagram may contain notes and constraints.

5.5.2 Common uses

Use case diagram typically contain in one of two ways.

- To model the context of the system

  Hear system involves drawing line around the whole system and actors outside of the system and interact with it.

- To model the requirement of a system

  Hear specifies what the system should do, independent of how that system should do.

5.5.3 Use-Case Diagram
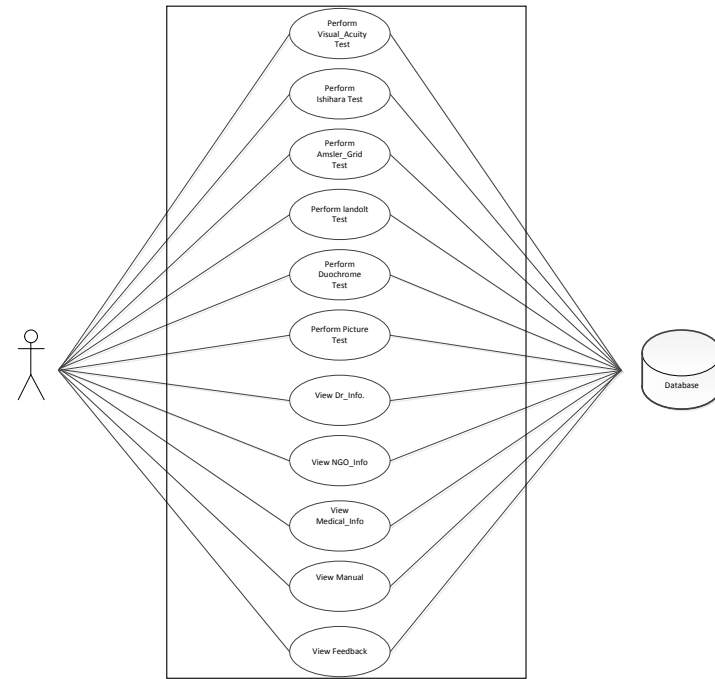
FIGURE 5.3: Use case diagram for Vision application.

5.5.4 Use-Case Scenarios

USE CASE	USE CASE SCENARIO
Perform Visual Acuity Test	1) Open Visual Acuity Test. 2) First slide will display. 3) If click on next, display next image Continue until last image and at last display result.
	Alternate flow 1) If click on stop, display the result.
Perform Ishihara Color Blindness Test	1) Open Ishihara Color Blindness Test. 2) First slide will display. 3) If click on next, display next image Continue until last image and at last display result.
	Alternate flow 1) If click on stop, display the result.
Perform Amsler Grid Test	1) Open Amsler Grid Test. 2) First slide will display. 3) If click on next, display next image Continue until last image and at last display result.
	Alternate flow 1) If click on stop, display the result.

Table 5.1 – continued from previous page

USE CASE	USE CASE SCENARIO
Perform Duochrome Test	1) Open Duochrome Test. 2) First slide will display. 3) If click on next, display next image Continue until last image and at last display result.
	Alternate flow 1) If click on stop, display the result.
Perform Landolt Test	1) Open Landolt Test. 2) First slide will display. 3) If click on next, display next image Continue until last image and at last display result.
	Alternate flow 1) If click on stop, display the result.
Perform Picture Test	1) Open Picture Test. 2) First slide will display. 3) If click on next, display next image Continue until last image and at last display result.
	Alternate flow 1) If click on stop, display the result.

Table 5.1 – continued from previous page

USE CASE	USE CASE SCENARIO
View Doctor Information	1) Open Doctor Information. 2) Three options will display on form as, View Doctor information, Registration, Update my profile 3) If user select view Doctor info. 4) Information display on form.
	Alternate flow 1)If user select registration 2)Register form will display 3)User fills register form and submits.
	Alternate flow 1) If user select update my profile. 2) User will update information.
View NGO Information	1) Open NGO Information. 2) Three options will display on form as, View NGO information, Registration, Update my profile 3) If user select view NGO info. 4) Information display on form.
	Alternate flow 1)If user select registration

Table 5.1 – continued from previous page

USE CASE	USE CASE SCENARIO
	2)Register form will display 3)User fills register form and submits.
	Alternate flow 1) If user select update my profile. 2) User will update information.
View Medical Information	1) Open Medical Information. 2) Medical information will display on form.
View Manual	1) Open Manual. 2) Manual will display information about application.
View Feedback	1) Open Feedback Form. 2) Select Write feedback form. 3) Fill feedback form. 4) Submit feedback form.
	Alternate flow 1) If select Submit feedback form. 2) Submit feedback to NGOs database.

TABLE 5.1: Use Case Scenarios

5.6   Sequence Diagram

5.6.1   Contents

Sequence diagram commonly contains

- Objects

- Links

- Messages

5.6.2   Definition and Overview

A *sequence* diagram is an interaction diagram that emphasizes the time ordering of messages. A sequence diagram shows a set of objects and the messages sent and received by those objects. The objects are typically named or anonymous instances of classes, but may also represent instances of other things, such as collaborations, components, and nodes. You use sequence diagrams to illustrate the dynamic view of a system. An Actor models a type of role played by an entity that interacts with the subject (e.g., by exchanging signals and data), but which is external to the subject (i.e., in the sense that an instance of an actor is not a part of the instance of its corresponding subject). Actors may represent roles played by human users, external hardware, or other subjects. Note that an actor does not necessarily represent a specific physical entity but merely a particular facet (i.e., "role") of some entity that is relevant to the specification of its associated use cases.

Sequence diagram have two features that distinguish them from collaboration diagrams.

- First, there is the object lifeline. An object lifeline is the vertical dashed line that represents the existence of an object over a period of time. So these objects are at the top of the diagram. With their lifelines drawn from the top of the diagram to the bottom

- Second, there is the focus of control. The focus of control is a tall, thin rectangle that shows the period of time during which an object is performing an action, either directly or through a subordinating procedure. The top of the rectangle is aligned with the start of the action; the bottom is aligned with its completion and also it can be marked by replay message. [11]

5.6.3 Sequence Diagrams
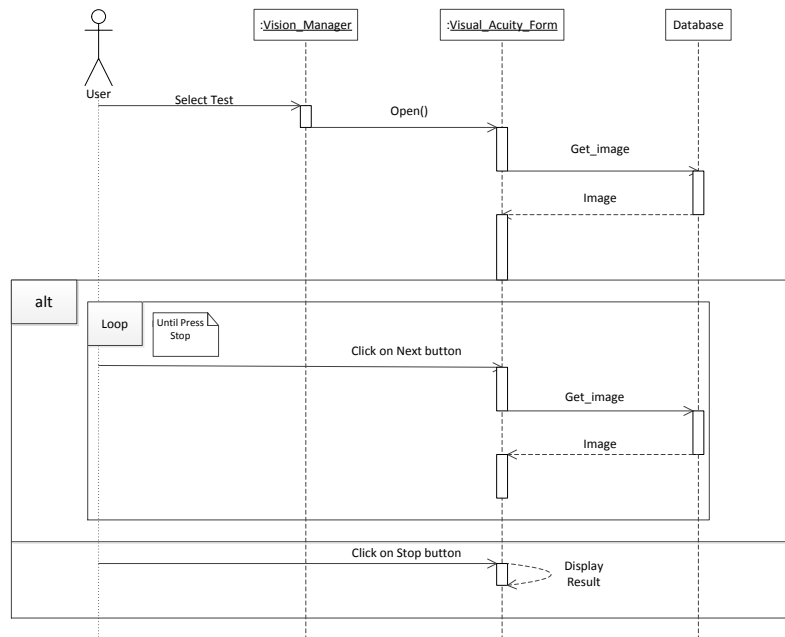
FIGURE 5.4: sequence diagram for Visual Acuity Test.
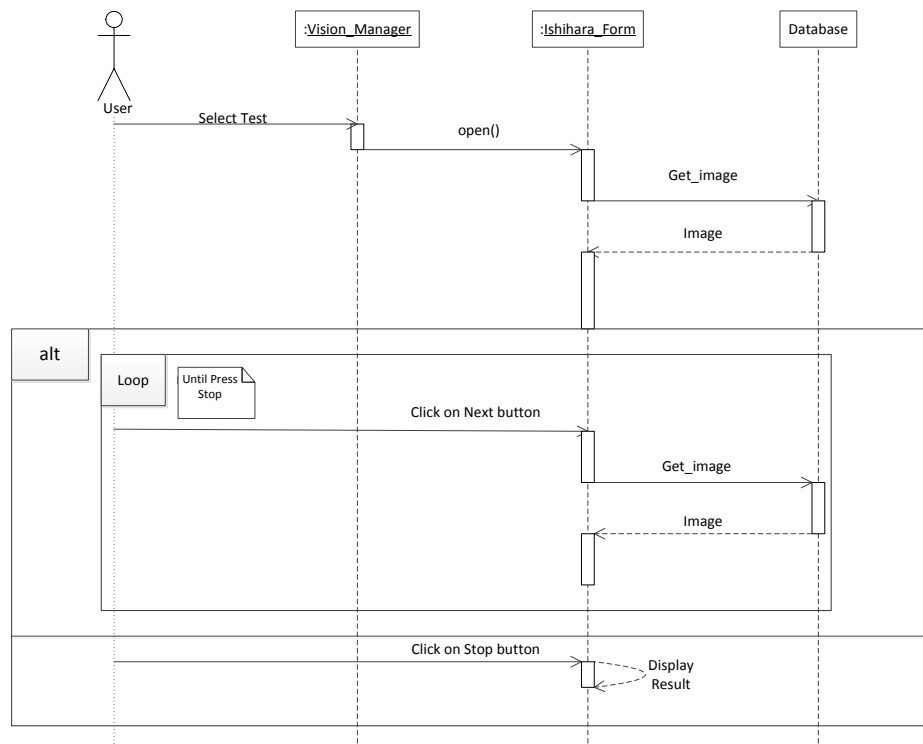
FIGURE 5.5: sequence diagram for Ishihara Color Blindness Test.

FIGURE 5.6: Sequence diagram for Amsler Grid Test.
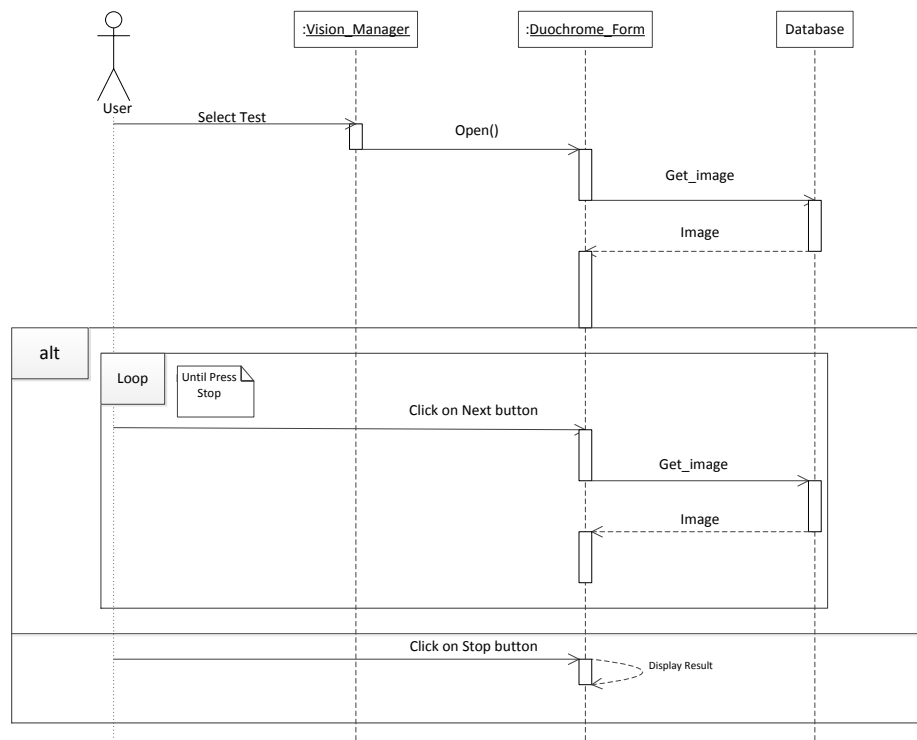
FIGURE 5.7: sequence diagram for Duochrome Test.

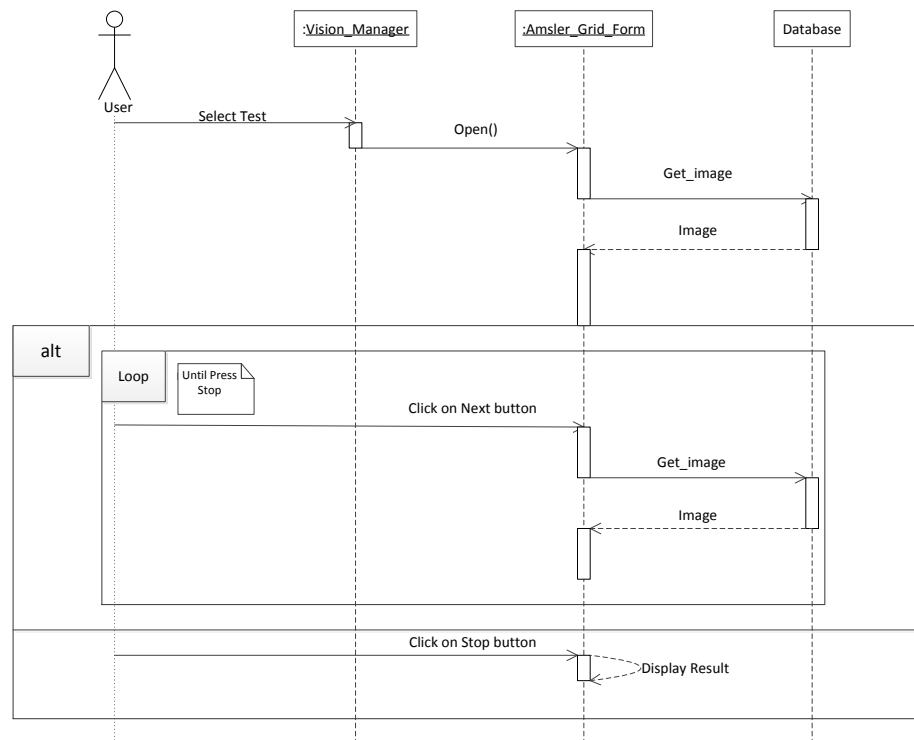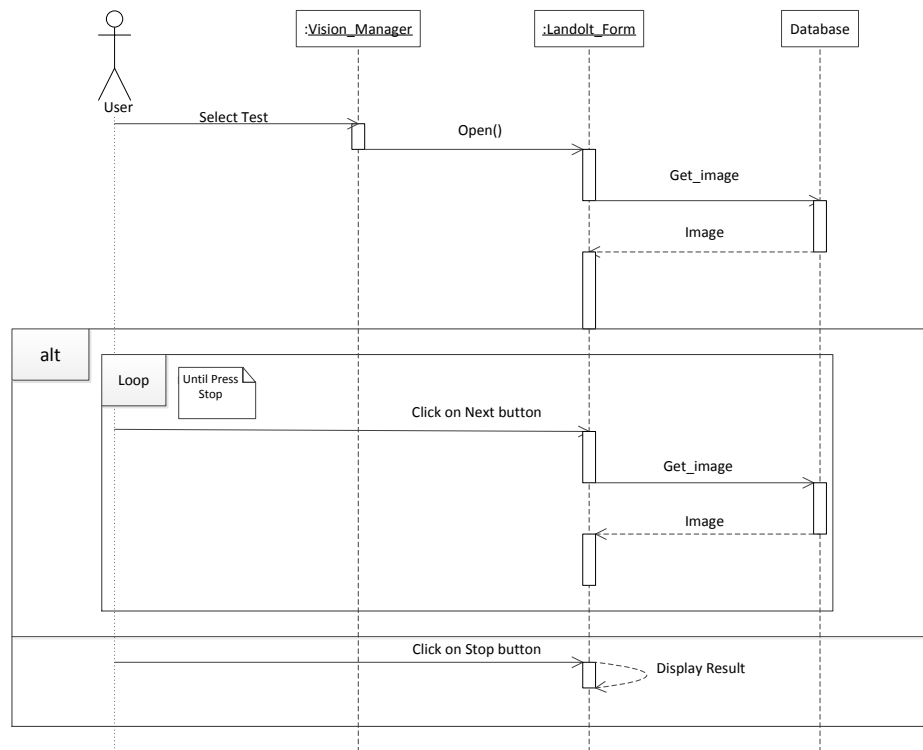FIGURE 5.8: Sequence diagram for Landolt Test.
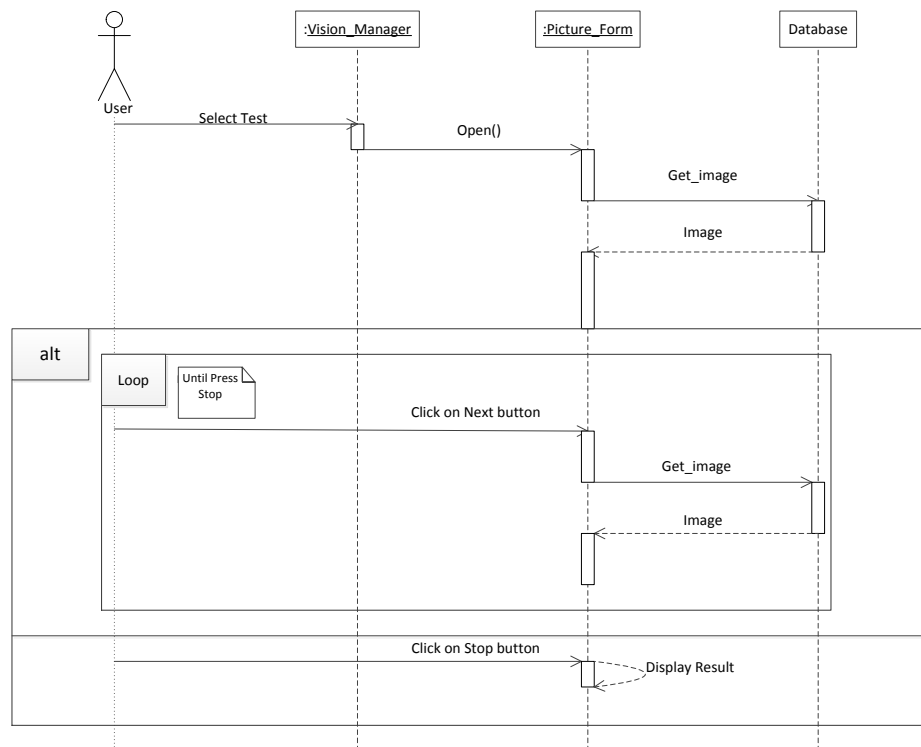
FIGURE 5.9: sequence diagram for Picture Test.
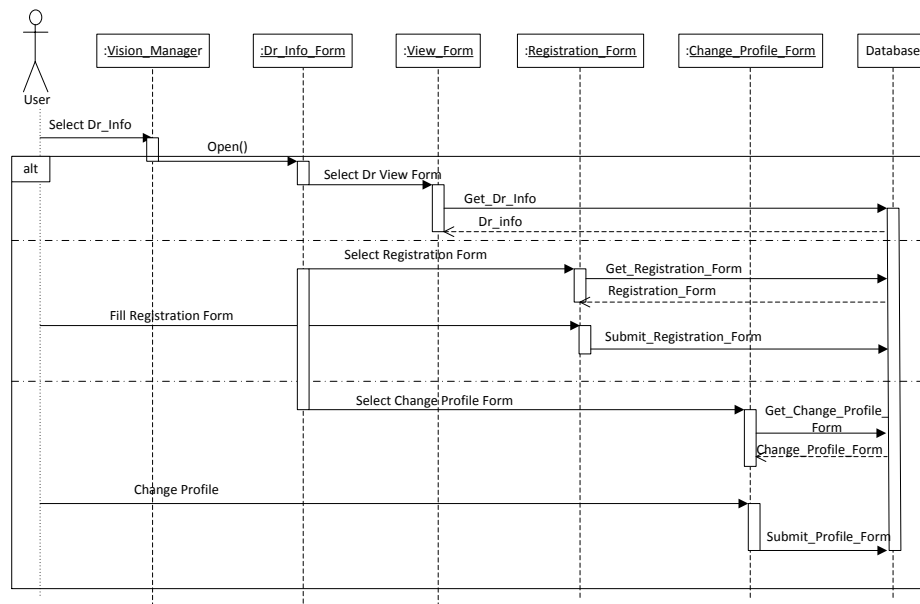
FIGURE 5.10: sequence diagram for Doctor Information.
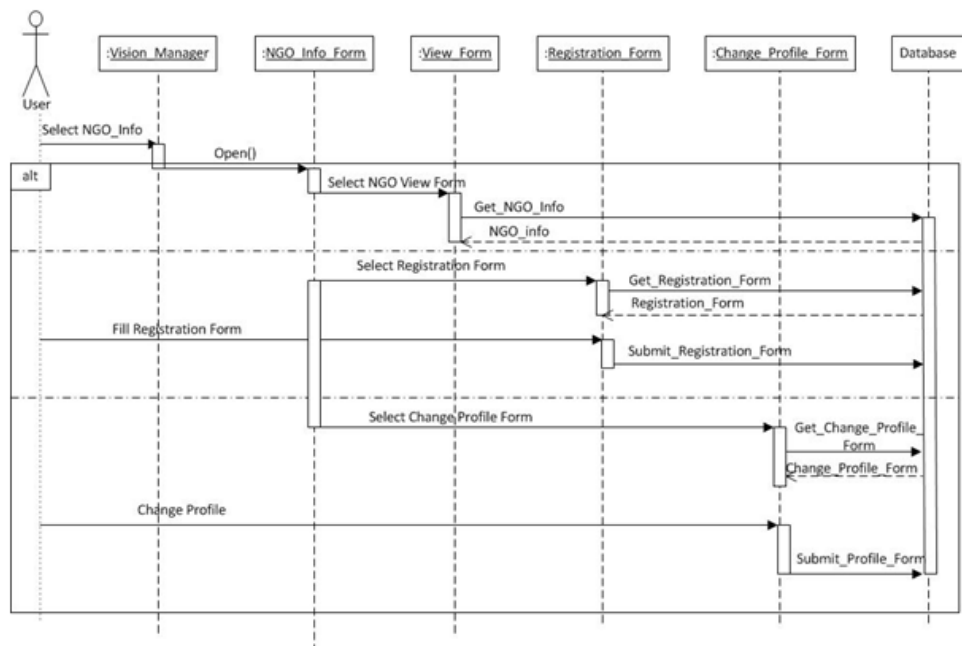
FIGURE 5.11: sequence diagram for NGO Information.
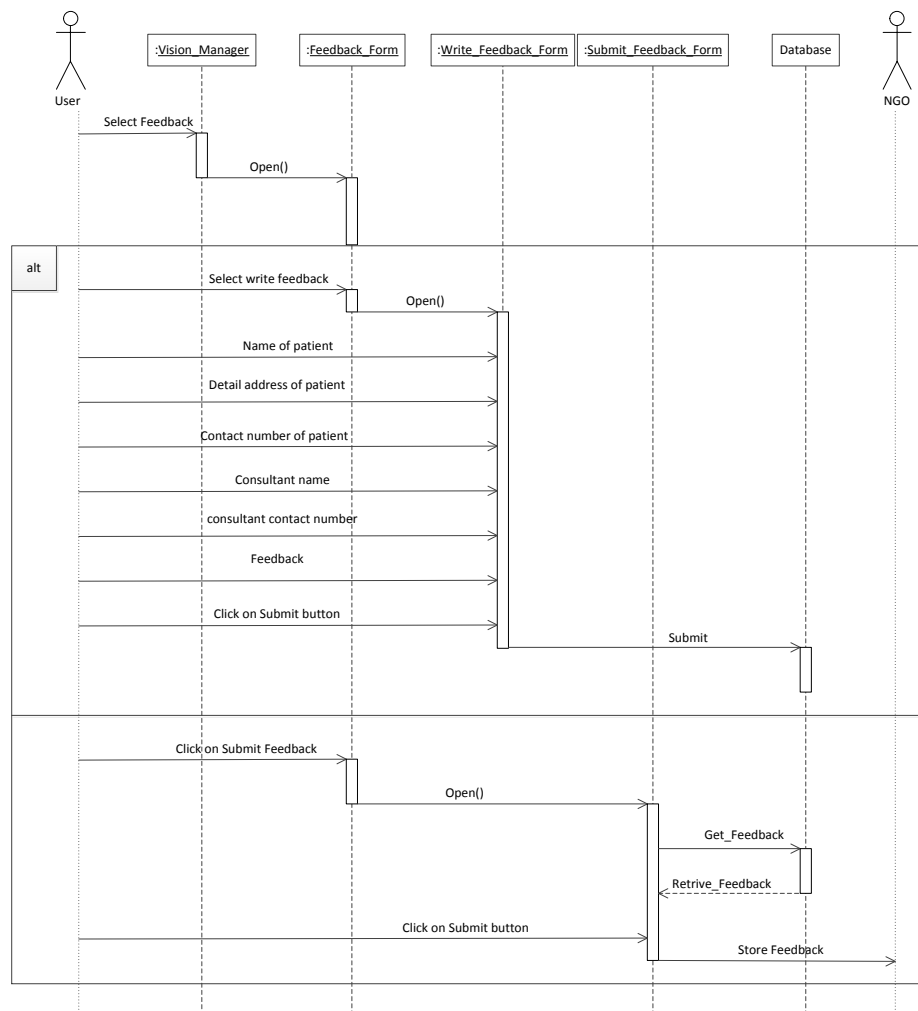
FIGURE 5.12: sequence diagram for Feedback.
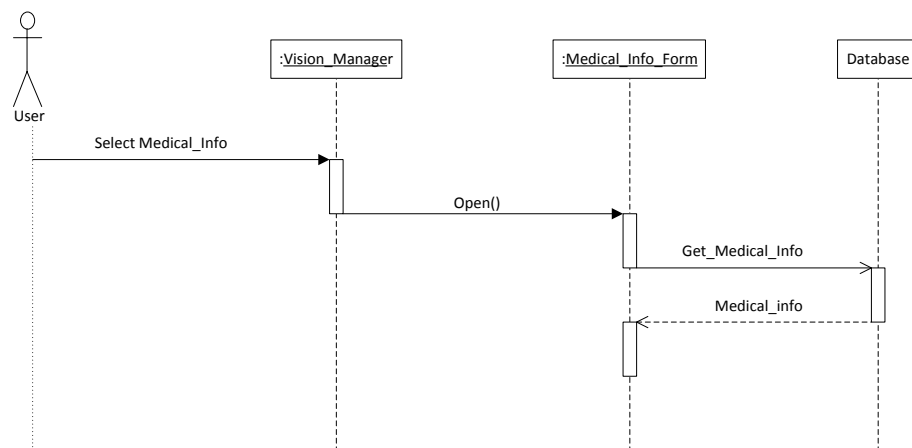
FIGURE 5.13: sequence diagram for Medical Information.
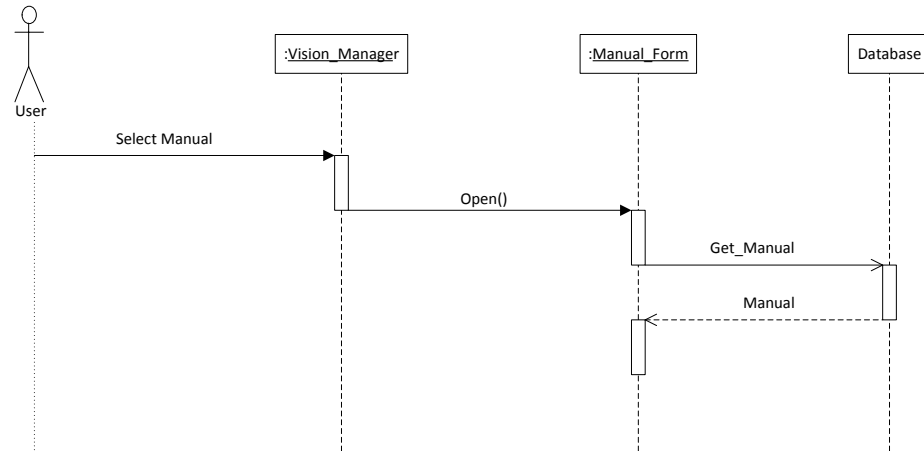
FIGURE 5.14: sequence diagram for Manual.

5.7 Class Diagram

5.7.1 Contents

Class diagram commonly contain the following things:

- Classes

- Interfaces

- Collaborations

- Dependency, generalization, and association relationships.

5.7.2 Definition and Common Uses

A class diagram is a diagram that shows a set of classes, interfaces and their relationships. Graphically, a class diagram is a collection of vertices and arcs. A class diagram will shares the same common properties as do all other diagrams. A class diagram is an illustration of the relationships and source code dependencies among classes in the Unified Modeling Language (UML). In this context, a class defines the methods and variables in an object, which is a specific entity in a program or the unit of code representing that entity. Class diagrams are useful in all forms of object-oriented programming (OOP). The concept is several years old but has been refined as OOP modeling paradigms have evolved. In a class diagram, the classes are arranged in groups that share common

characteristics. A class diagram resembles a flowchart in which classes are portrayed as boxes, each box having three rectangles inside. The top rectangle contains the name of the class; the middle rectangle contains the attributes of the class; the lower rectangle contains the methods, also called operations, of the class. Lines, which may have arrows at one or both ends, connect the boxes. These lines define the relationships, also called associations, between the classes.

- Class: A definition of objects that share given structural or behavioral characteristics.

- Attribute: A typed value attached to each instance of a classifier.

- Operation: A method or function that can be performed by instances of a classifier

5.7.3 Class Diagram
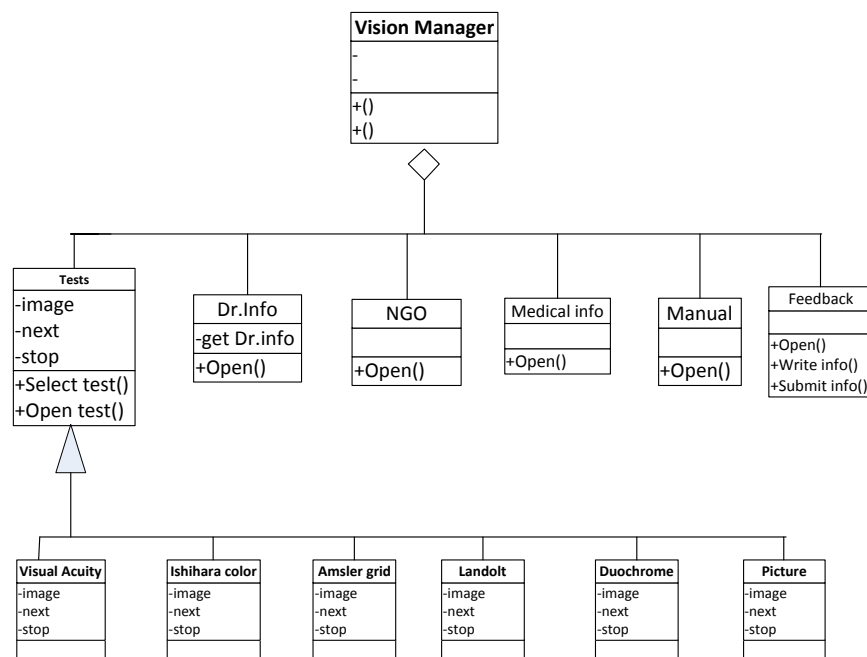
FIGURE 5.15: Class diagram of Vision Application.

5.8 Deployment Diagram

subsectionDefinition A deployment diagram shows the configuration of run time processing nodes and the components that live on them. Deployment diagram address the static deployment view of architecture. They are related to component diagrams in that a node typically encloses one or more components .

5.8.1 Nodes and Components

The UML provides a graphical representation of node. This canonical notation permits you to visualise a node apart from any specific hardware. Using stereotype this notation to represent specific kinds of processors and devices.

FIGURE 5.16: Node.

A *node* is a physical element that exists at run time and represents a computational resource, generally having at least some memory, and often processing capability. Graphically, a node is rendered as a cube. Every node must have a name that distinguishes it from other nodes. A name is a textual string. Components are things that participate in the execution of a system; nodes are things that execute components. Components represent the physical packaging of otherwise logical elements; nodes represent the physical development of components and components that things are executed by nodes. The UML can often use stereotypes to specify new kinds of nodes that you can use to represent specific kinds of processors and devices. A *Processor* is a node that has processing capability, meaning that it can be executed by component. A *device* is a node that has no processing capability and general, represents something that interfaces to real world.

5.8.2 Deployment Diagram
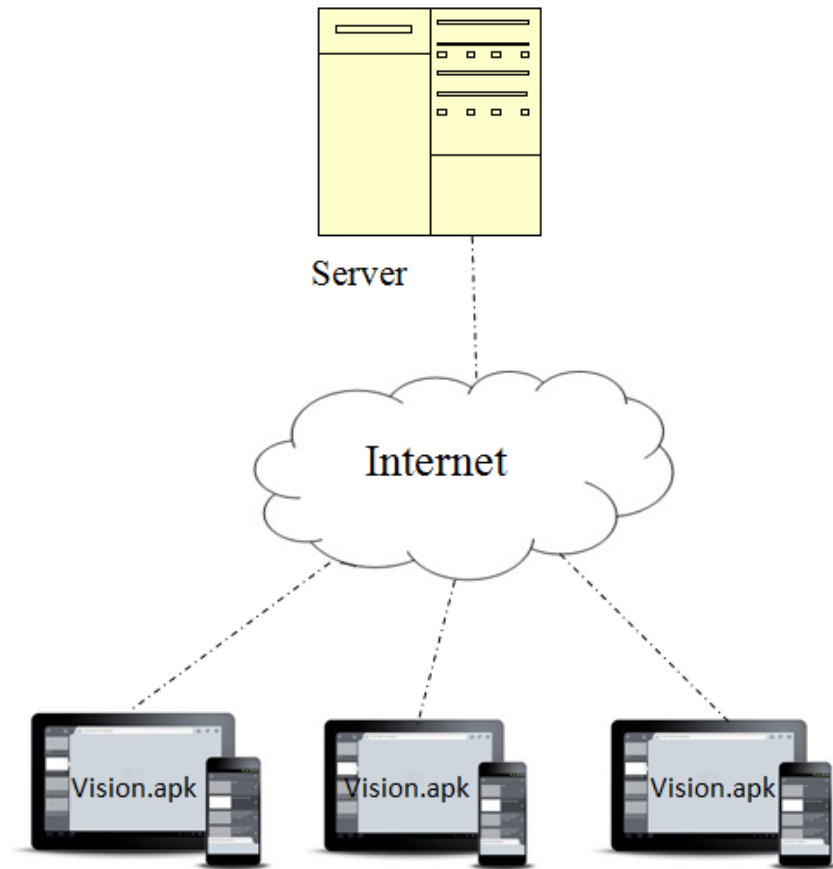
FIGURE 5.17: deployment diagram for Vision Application.

Chapter 6

Coding

6.1 Introduction of tools and Installation

6.1.1 Android

There's no other software quite like Android. Google engineered Android, and Google own apps run better on it. And with millions of apps, games, songs, and videos on Google Play, Android is great for fun, and for getting things done.

Android devices come in all kinds of sizes, with all sorts of features, and in all sorts of prices. Each version of Android is named after a dessert, and the most recent version of Android is lolipop. With Android, you are in control of your mobile experience.

The world is contracting with the growth of mobile phone technology. As the number of users is increasing day by day, facilities are also increasing. Starting with simple regular handsets which were used just for making phone calls, mobiles have changed our lives and have become part of it. Now they are not used just for making calls but they have innumerable uses and can be used as a Camera , Music player, Tablet PC, T.V. , Web browser etc. . And with the new technologies, new software and operating systems are required.

- What is android

Operating Systems have developed a lot in last 15 years. Starting from black and white phones to recent smart phones or mini computers, mobile OS has come far away. Especially for smart phones, Mobile OS has greatly evolved from Palm OS in 1996 to Windows pocket PC in 2000 then to Blackberry OS and Android.

6.1.2   ADT Bundle

The Android SDK is a software development kit which provides API libraries and necessary developer tools necessary for building Android applicationâĂŹs. Android SDK is officially provided by android developers.

steps for the installation and set-up of Android development environment:

1. Download Eclipse

2. Download JDK and install it, set the environment path.

3. Download ADT plugin inside Eclipse.

4. Set the Preference with Android-SDK path.

5. Download the latest platform-tools and everything.

The ADT Bundle includes everything you need to begin developing apps:

1. Eclipse + ADT plugin

2. Android SDK Tools

3. Android Platform-tools

4. The latest Android platform

5. The latest Android system image for the emulator

Yes there are also possible ways if you want to use existing version of Eclipse or any other IDE.

- **Setting Up the ADT Bundle:**

As you have downloaded ADT bundle, follow below steps to setup it:

1. Unpack the ZIP file named "adt bundle osplatform.zip " and save it to an appropriate location such as a "Development" directory in your home directory.

2. Open the adt bundle osplatform goto eclipse and next directory and launch eclipse.

6.1.3 XAMPP Installation Steps

1. Download the software from apachefriend website.

   Select the Installer option under the Basic Package. You may be taken to a page that presents you with a bunch of different download locations. Just click one of the download buttons, and then save the file to your desktop. Once downloaded, the installer works like most Windows installers.

2. In Internet Explorer, you may get a warning about downloading the file. Click the yellow information bar that appears above the Web page in IE, and choose Download FileâĂę

3. Double-click the .exe file you downloaded.

   A window opens, asking you to select the language you would like to use.

   If a warning dialog appears click the "Allow" option to install XAMPP.

4. Choose a language from the menu, and then click OK.

   A Setup Wizard window appears, ready to step you through the setup process.

5. Click the Next button.

   The installer suggests putting the application on your main drive at C, You can pretty much install it anywhere.

6. Click the Next button once again.

   The XAMPP Options window appears. In most cases, itâĂŹs fine to leave all the windowâĂŹs checkboxes just as you see.

7. Click Install.

   The installer places all the files onto your system. This process takes a while, since a lot of programs and files are being installed.

8. Finally, click the Finish button.

   A window appears “congratulating” you way to double-click the installer program and asking whether you wish to start the XAMPP Control panel.

9. Click Yes, to open the XAMPP Control Panel .

   The XAMPP Control Panel lets you start and stop the Apache Web server and MySQL database server.

10. If the buttons to the right of Apache and MySQL say Start, click them to start the Web server and the MySQL database server.

11. To do so, launch a Web browser, and, in the Location bar and type localhost.

6.1.4 PHP

PHP (recursive acronym for **PHP:** *Hypertext Preprocessor*) is a widely-used open source general-purpose scripting language that is especially suited for web development and can be embedded into HTML.

PHP is probably the most popular scripting language on the web. It is used to enhance web pages. With PHP, you can do things like create a username and password login pages, check details from a form, create forums, picture galleries, surveys, and a whole lot more.

PHP is known as a server-sided language. That's because the PHP doesn't get executed on your computer, but on the computer you requested the page from. The results are then handed over to you.

The most popular explanation of just what PHP stands for is "Hypertext Pre-processor". But that would make it HPP, surely? An alternative explanation is that the initials come from the earliest version of the program, which was called Personal Home Page Tools. At least you get the letters "PHP" in the right order!

- **What is a PHP File**

    - PHP files can contain text, HTML, CSS, JavaScript, and PHP code
    - PHP code is executed on the server, and the result is returned to the browser as plain HTML
    - PHP files have extension ". PHP"

- **What Can PHP Do**

    - PHP can generate dynamic page content
    - PHP can create, open, read, write, and close files on the server
    - PHP can send and receive cookies
    - PHP can add, delete, modify data in your database.
    - With PHP you are not limited to output HTML. You can output images, PDF files, and even flash movies. You can also output any text, such as XHTML and XML.

- **Why PHP**

    - PHP runs on various platforms like Windows, Linux, Unix, Mac OS X, etc.
    - PHP is compatible with almost all servers used today Apache, Apache Tomcat,IIS, etc.

- PHP supports a wide range of databases

- PHP is free. Download it from the official PHP resource website.

6.1.5   MySQL

MySQL, the most popular Open Source SQL database management system, is developed, distributed, and supported by Oracle Corporation. The MySQL official web site www.mysql.com provides the latest information about MySQL software.

- MySQL is a database management system.

  A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server. Since computers are very good at handling large amounts of data, database management systems play a central role in computing, as standalone utilities, or as parts of other applications.

- MySQL databases are relational.

  A relational database stores data in separate tables rather than putting all the data in one big storeroom. The database structures are organized into physical files optimized for speed. The logical model, with objects such as databases, tables, views, rows, and columns, offers a flexible programming environment. You set up rules governing the relationships between different data fields, such as one-to-one, one-to-many, unique, required or optional, and âĂIJpointersâĂİ between different tables. The database enforces these rules, so that with a well-designed database, your application never sees inconsistent, duplicate, orphan, out-of-date, or missing data. The SQL part of "MySQL" stands for "Structured Query Language". SQL is the most common standardized language used to access databases. Depending on your programming environment, you might enter SQL directly for example, to generate reports, embed SQL statements into code written in another language, or use a language-specific API that hides the SQL syntax.

- MySQL software is Open Source.

  Open Source means that it is possible for anyone to use and modify the software. Anybody can download the MySQL software from the Internet and use it without paying anything. If you wish, you may study the source code and change it to suit your needs. The MySQL software uses the GPL for GNU General Public License, to define what you may and may not do with the software in different situations.

- The MySQL Database Server is fast, reliable, scalable and easy to use.

  MySQL Server can run comfortably on a desktop or laptop, alongside your other applications, web servers, and so on, requiring little or no attention. If you dedicate an entire machine to MySQL, you can adjust the settings to take advantage of all the memory, CPU power, and IO capacity available. MySQL can also scale up to clusters of machines, networked together. MySQL Server was originally developed to handle large databases much faster than existing solutions and has been successfully used in highly demanding production environments for several years. Although under constant development, MySQL Server today offers a rich and useful set of functions. Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet.

6.1.6 Photoshop

- When working with Photoshop, you generally create several images for various purposes. Apart from different image types, the Adobe Photoshop also allows you to create PDF files.

- When the images are saved as PDF files, they are easy to transfer online, provide decent display effects, and are easy to manage.

- Also, Adobe Photoshop allows you to save the images as PNG files that are mostly used for the webpages. The PNG images can be easily integrated into the webpages, and the webpages are then uploaded to the web server for the end-users.

- Many times the PNG images are used to prepare logos and stylish names for the organizations as well. When this is the case, you, as Adobe Photoshop designer, might require to save such PNG images of logos and stylish names without any background.

- When you normally save the images that have transparent background in Adobe Photoshop, the images automatically add a white background before they are saved as PNG or JPEG files.

- This way, the images no longer remain with transparent background, and hence they are completely unusable as logos stylish names.

- Next steps will guide you step-by-step as how you can save such PNG images with the transparent background.

1. Log on to the computer using any account.

2. Initialize Adobe Photoshop by double-clicking its icon.

3. Once opened, create or import the desired image.

4. Ensure that the background layer is set to transparent.

5. Once you are done with the image creation process, flatten the image by going to Layer >Flatten Image.

6. Accept any confirmation that is displayed in any kind of confirmation box while flattening the image.

7. Once the images are flattened, go to File menu from the menu bar.

8. From the displayed menu, click the Save for Web option. (Note: Adobe Photoshop 7 is used for this demonstration. If you have some other version of Adobe Photoshop, you might find Save for Web and Devices option or something similar to this in the File menu.)

9. On the opened Save for Web box, from the right section, click to select PNG-24 option from the Settings drop-down list.

10. Check the Transparency checkbox.

11. Finally click the Save button to save the image with the transparent background. 12. The saved image can now be used for webpages as it does not contain any white or black background whatsoever.

6.2   Issues

- What tests have to take to check eyes on smart phones.
  Problem- Our main problem was we were not aware about which tests we have to take and what test gives the effective result as well as which eye diseases are commonly find. In short we were not aware about the eye related medical information. Solution- We met ophthalmologist and discussed about the various tests. After discussion we know that the visual acuity test is very important test and also we get information about various tests names and information.

- How to take tests
  Problem- After knowing about the tests new problem was how to take these tests. What kind of images have to use and what size of images have to use.
  Solution- We search on internet for this problem and we get the standard size of that images and format of those images.

- Problem occur while creating the creating images for tests

  Problem- For creating test images are required which should be in .png format that is transparent background.

  Solution- For solving this problem we used Photoshop. Using Photoshop images are saved as .png and with transparent background.

- From what distance test have to take.

  Problem- After implementing test the next problem was at what distance the test has to take.

  Solution- We asked this problem to ophthalmologist. According to their information, in hospitals these test are taken form 20 ft away. So they suggest that we have to take test from 20cm away, as it is standard distance for checking near vision.

- Problem in database

  Problem- First we use SQLite database for application. But for storing NGO and Doctor information remote server is needed.

  Solution- So we use MySqL database. Using remote server database the doctor information is stored.

- Space between data

  Problem- We save the data in our database. While register doctor information for example"Nilam Pujari" which contain space in between two words so thatâĂŹs why when fetching the data from tablet it break the connection because of the spaces also when sending feed back from tablet to database it again break the connection. Solution- We find one solution that is we replace the space with "_" the function is replaceAll.

6.3 Coding

1)Visual acuity Test:- This is one type of test. There are two buttons. If user is able to read the text or image on screen then he has to click on next button otherwise click on stop button. The test is exited. If user keep going on click the next button the score will be increased and display to user.

```
b1.setOnClickListener(new View.OnClickListener()
{public void onClick(View v) { vcounter=vcounter+1;
Intent i=new Intent(visual.this,visual1.class);
startActivity(i);
```

```
finish();
}
});


b2.setOnClickListener(new View.OnClickListener()
{ public void onClick(View v) {
Toast.makeText(getBaseContext(), "Sorry.....You are fail....
    Your score is="+vcounter, 4).show();
vcounter=0;
Intent i=new Intent(visual.this,MainActivity.class);
startActivity(i);
finish();
}
});
```

2)Doctor Registration Form-

i)Submit button:- When user fill name, address, contact, education, password in respective text boxes in registration form then user click on submit button all information will send to server. A constructor will call automatically with all respective parameters. Then id for that user will automatically generated by server.

```
submit.setOnClickListener(new OnClickListener() {@Override
    public void onClick(View arg0) {

String selectdrinfo="";
uname=etxName.getText().toString().replaceAll("\\s+","_");
contact=etxContact.getText().toString().replaceAll("\\s+","_");
String
    addr=etxAdd.getText().toString().replaceAll("\\s+","_");
String
    pass=etxPass.getText().toString().replaceAll("\\s+","_");
String
    name=etxName.getText().toString().replaceAll("\\s+","_");
String
    con=etxContact.getText().toString().replaceAll("\\s+","_");
String ed=etxEdu.getText().toString().replaceAll("\\s+","_");
```

```
new
    Remote_Data(getApplicationContext(),name,addr,con,ed,pass).execute(""

    Toast.makeText(getApplicationContext(),
    ""+Remote_Data.ok,  Toast.LENGTH_SHORT).show();
new
    Remote_Data(getApplicationContext(),name,con).execute("");
int doctorid=Remote_Data.did;
Toast.makeText(registration.this, "Your
    Id"+Remote_Data.did,Toast.LENGTH_SHORT).show();
 finish();
}
});
```

iii) Display:- The particular user information is displayed.

```
display.setOnClickListener(new OnClickListener() {@Override
    public void onClick(View arg0) {
DatabaseHandler db = new
    DatabaseHandler(getApplicationContext());
Cursor c = (Cursor) db.getAlldata();
if (c.moveToLast())
{
do {
DisplayContact(c);
} while (c.moveToNext());
}
else
{Toast.makeText(registration.this,
    "norecords",Toast.LENGTH_SHORT).show();}
db.close();
}
private void DisplayContact(Cursor c)
{ Toast.makeText(getBaseContext(),"id " + c.getString(0)+
"name " + c.getString(1)+
"\n" +"address " + c.getString(2) +
"\n" +"con: " + c.getString(3) +
"\n" +"edu" + c.getString(4),
```

```
Toast.LENGTH_SHORT).show();
}
});
```

iv) Delete:- When user will click on this button all the data from local database is deleted.

```
delete.setOnClickListener(new OnClickListener() {@Override
    public void onClick(View arg0) {
String selectdrinfo="";
DatabaseHandler db = new
    DatabaseHandler(getApplicationContext());
long sd=db.simple();
Toast.makeText(registration.this,
    "deletedr..."+String.valueOf(sd),5).show();
}
});
```

4) View Doctor Information âĂŞ
i) Display- When user click on display button information stored in local database will be display on form.

```
public void loaddata()
{ DatabaseHandler db = new
    DatabaseHandler(getApplicationContext());
List<String> lables1 = db.getdrdata();
ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
android.R.layout.simple_list_item_1, lables1);
list.setAdapter(adapter);
}
```

ii) Get Form Net:- When user click on this button all the data fetch from server and updated into local database.

```
getfromnet.setOnClickListener(new OnClickListener()
    {@Override public void onClick(View arg0) {
String selectdrinfo="";
new
    Remote_Data(getApplicationContext(),selectdrinfo).execute("");
```

```
Toast.makeText(viewdr.this, "Geting all
    data...",Toast.LENGTH_SHORT).show();
}
});
```

5)Registration php All the information from registration page of client is send to this file on server and it is added to database.

```
<?php
$cont = mysql_connect('localhost','root','root')
 or die('Could not connect to the server!');
mysql_select_db('registration')
or die('Could not select a database.');
$name1=$_REQUEST['name'];
$r1= mysql_real_escape_string($name1);
$add1=$_REQUEST['add'];
$r2 = mysql_real_escape_string($add1);
$con1=$_REQUEST['con'];
$r3 = mysql_real_escape_string($con1);
$edu1=$_REQUEST['edu'];
$r4 = mysql_real_escape_string($edu1);
$pass1=$_REQUEST['pass'];
$r5 = mysql_real_escape_string($pass1);
$flag['code']=0;
$query= "insert into
registration.dr_reg (dr_name,dr_add,dr_con,dr_edu,dr_pass)
    values ('$r1', '$r2', '$r3', '$r4', '$r5')";
mysql_query($query) or trigger_error(mysql_error()." in
    ".$query);
{
$flag['code']=1;
echo"hi";
}
print(json_encode($flag));
mysql_close($cont);
?>
```

Chapter 7

TESTING

7.1 What Is Software Testing

Software testing is the process of analyzing or operating software for the purpose of finding bugs. Testing can be described as a process used for reveling defects in software, and for establishing that the software has attained a specified degree of quality with respect to selected attribute.The fundamental objective of testing is to find defects as early as possible and get them fixed.

Software Testing Process

- Test Planning high level plans which list test objectives, test approach, measurement criteria along with test schedule and resources.

- Test Design create test cases, identify test cases for automation(if applicable),prioritize test cases and finalize test iterations.

- Test Implementation Create test scripts using automated testing tools.

- Test Execution Execute the test cases on the test environment and test reports.

- Test analysis Use test and project metrics to calculate key indicators. The data usually will be obtained from your defect tracking system.

- Postmortem reviews Discuss lessons learns and identify strategies which will prevent such problems in future.

7.2 Test methods

7.2.1 Black Box Testing

It is also called as functional testing, it is the process of giving the input to the system and checking the output of the system.Without bothering about the system that how the system generates the output. It is also called as Behavior testing.

- Approach to testing where the program is considered as a Black Boxs.

- Testing based solely on analysis of requirements user specification, user documentation etc.

- The test cases are based on the specifications.

- Black box testing techniques apply to all levels of testing.

- Test planning and design can begin early in the software process.

- Tests are done from a users point of view.

7.2.2 White Box Testing

White box testing or structural testing considers facets like programming style, control method, source language, database design. A test for remote monitoring routine can be an example of structural test. This type of testing helps to uncover defects at structural level. The tests go below the top or functional layer to uncover the defects.

- Testing that takes into account internal structure and flow of a system or component.

- The testing is based on code structure or the algorithm.

- White box testing assumes that the procedural design and code is known to the tester.

- Obliviously test design can be done only after coding is complete.

- White box tests are inherently finite.

7.3 Test Cases and Test Data

- Test data are inputs that have been devised to test the system.

- Test cases are inputs and output specification plus a statement of the function under test.

- Test data can be generated automatically or real.

7.3.1 Test Cases

7.3.1.1 Technical Test Cases

TC ID	OBJECTIVE	PREREQUISITES	STEPS TO BE FOLLOWED	EXPECTED RESULT	ACTUAL RESULT	REMARK
1	Perform Visual Acuity test	User Must click on visual acuity test icon	1- When click on visual acuity test icon, visual acuity test will open. 2- When click on next button, next image will be display. 3-When click on stop button, test will stop and give correct result.	2- Visual Activity test page will open and the correct result will be displayed after click on stop button.	Visual Activity testwork successfully.	Pass
					Continued on next page	

Table 7.1 – continued from previous page

TC ID	OBJECTIVE	PREREQUISITES	STEPS TO BE FOLLOWED	EXPECTED RESULT	ACTUAL RE-SULT	REMARK
2	Perform Ishihara colour blindness test	User Must click on Ishihara colour blindness test icon	1- When click on Ishihara colour blindness test icon,Ishihara colour blindness test will open. 2- When click on next button, next image will be display. 3-When click on stop button, test will stop and give correct result.	2- Ishihara colour blindness test page will open and the correct result will be displayed after click on stop button.	Ishihara colour blindness test work successfully.	Pass
3	Perform Amsler Grid test	User Must click on Ishihara colour blindness test icon	1- When click on Amsler Grid test icon,Amsler Grid test will open.	2- Amsler Grid test page will open and the correct result will be displayed after click on stop button.	Amsler Grid test work successfully.	Pass

Table 7.1 – continued from previous page

TC ID	OBJECTIVE	PREREQUISITES	STEPS TO BE FOLLOWED	EXPECTED RESULT	ACTUAL RESULT	REMARK
			2- When click on next button, next image will be display. 3-When click on stop button, test will stop and give correct result.			
4	Perform Duochrome test	User Must click on Duochrome test icon	1- When click on Duochrome test icon,Duochrome test will open. 2- When click on next button, next image will be display. 3-When click on stop button, test will stop and give correct result.	2- Duochrome test page will open and the correct result will be displayed after click on stop button.	Duochrome test work successfully.	Pass

Table 7.1 – continued from previous page

TC ID	OBJECTIVE	PREREQUISITES	STEPS TO BE FOLLOWED	EXPECTED RESULT	ACTUAL RESULT	REMARK
5	Perform Picture test	User Must click on Picture test icon	1- When click on Picture test icon,Picture test will open. 2- When click on next button, next image will be display. 3-When click on stop button, test will stop and give correct result.	2- Picture test page will open and the correct result will be displayed after click on stop button.	Picture test work successfully.	Pass
6	Perform Landolt test	User Must click on Landolt test icon	1- When click on Landolt test icon,Landolt test will open. 2- When click on next button, next image will be display.	2- Landolt test page will open and the correct result will be displayed after click on stop button.	Landolt test work successfully.	Pass

Table 7.1 – continued from previous page

TC ID	OBJECTIVE	PREREQUISITES	STEPS TO BE FOLLOWED	EXPECTED RESULT	ACTUAL RE-SULT	REMARK
			3-When click on stop button, test will stop and give correct result.			
7	View Doctor Information	user must click on View NGO Information icon	1.. User click on view my profile the data will fetch from remote database and displayed on screen. 2.User click on Display button all records stored in local database will be sisplay . 3.User click on view my profile, after login user can update his information .	The data will be save and display on screen successfully	The required data save, fetch and displayed successfully.	Pass
8	View NGO Information	user must click on View NGO Information icon	1. User click on view my profile the data will fetch from remote database and displayed on screen. 2.User click on Registration button registration form will be displayed, after submiting form it store in remote database. 3.User click on view my profile, after login user can update his information .	The data will be save and display on screen successfully	The required data save, fetch and displayed successfully.	Pass

Table 7.1 – continued from previous page

TC ID	OBJECTIVE	PREREQUISITES	STEPS TO BE FOLLOWED	EXPECTED RESULT	ACTUAL RESULT	REMARK
9	Give Feedback	user must click on feedback icon	1.When click on write feedack, feedback form open and after submitting it will be store in local database. 3.When click on submit feedback button, all records will store in remote database.	Feedback will store successfully in remote database.	feedback stored.	Pass
10	View Medical Information	User must click on medical information icon	1.Click on Eye diseases button.	pdf of eye information will be displayed .	information displayed	Pass
11	View Manual	User must click on manual icon	1.Click on How to use button.	pdf of manual will be displayed .	manual displayed successfully	Pass

TABLE 7.1: Technical Test Cases

7.3.1.2 Pilot Trials

Name of Patient	Age	Sex	Test	Result	Remark
Sourabh Pujari	17	Male	Visual Acuity Test.	15(out of 15)	Vision is good
Madhuri Mokashi	21	Female	Visual Acuity Test	15(out of 15)	Vision is good
Ganesh pujari	47	Male	Ishihara Colour Blindness Test	12(out of 15)	Need to meet consultant
Bapuso Waghmode	59	Male	Duochrome Test	4(out of 4)	Vision is good
Vandana Mane	26	Female	Visual Acuity Test	15(out of 15)	Vision is good
Mandar Ganpule	22	Male	Ishihara Colour Bindness Test	15(out of 15)	Vision is good
Rajesh Rajapure	30	Male	Visual Acuity Test	15(out of 15)	Vision is good
Parvati Pujari	67	Female	Landolt Test	13(out of 15)	Need to meet consultant
Pooja Patil	21	Female	Amsler grid test	4(out of 4)	Vision is good

TABLE 7.2: Pilot Trials

Chapter 8

DEPLOYMENT

8.1 Deployment Steps

Deployment is next important procedure.

- One computer is used for administration of remote server database.

- On client side, copy vision.apk file on tablet or smartphone.

- Install this apk file

- After installation of setup you can refer Manual for getting knowledge about how to use it.

- The feedback and doctor & NGO information will be stored on remote server.

8.2   Snapshots

Home Page:-
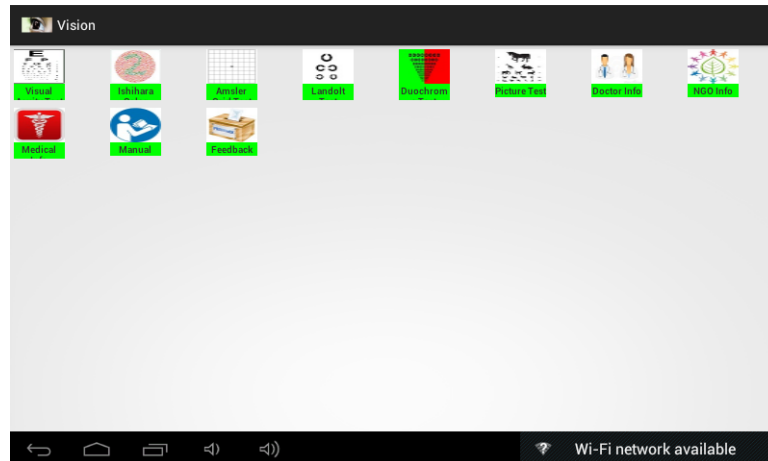
FIGURE 8.1: Home Page
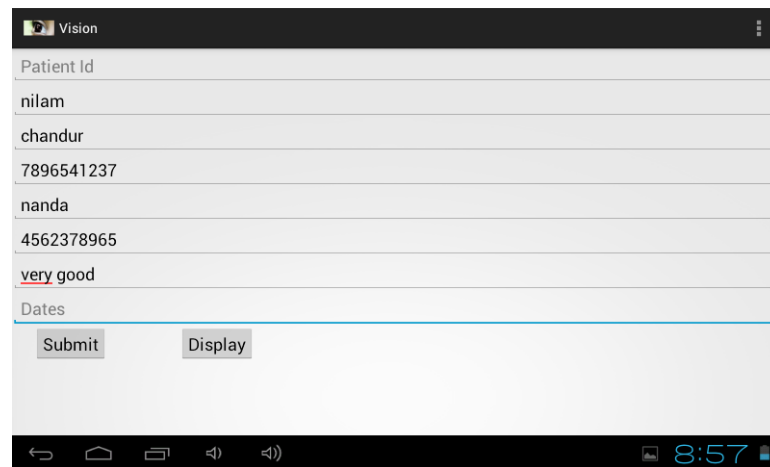
This is first page of application. This page shows 11 icons like various test, NGO, doctor and medical information.

Visual Acuity Test:-

FIGURE 8.2: Visual Acuity Test
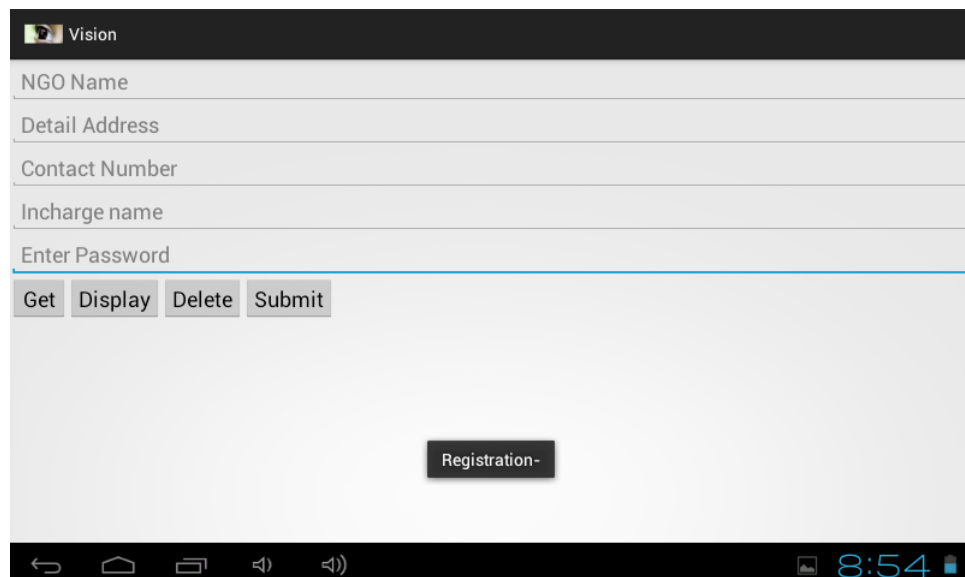
- This test contain image and two buttons namely next and stop.

- If user can see image clearly then click on next otherwise click on stop button.

Feedback Form:-

FIGURE 8.3: Feedback

- Feedback form contain patient name, contact, address, consultant name, contact and feedback about application.

- This information will help to doctors and NGO.

Registration form:-

FIGURE 8.4: Registration Form

- Registration form use for doctor and NGO registration.

- User has to fill NGO or Doctor name,address,contact number, incharge name, specialisation, password.

- There are four buttons as Get, Display, Delete, Submit.

- After submitting form, user has to click on Get button and then user will get id from server.

- Display button is used to display all records stored in local database.
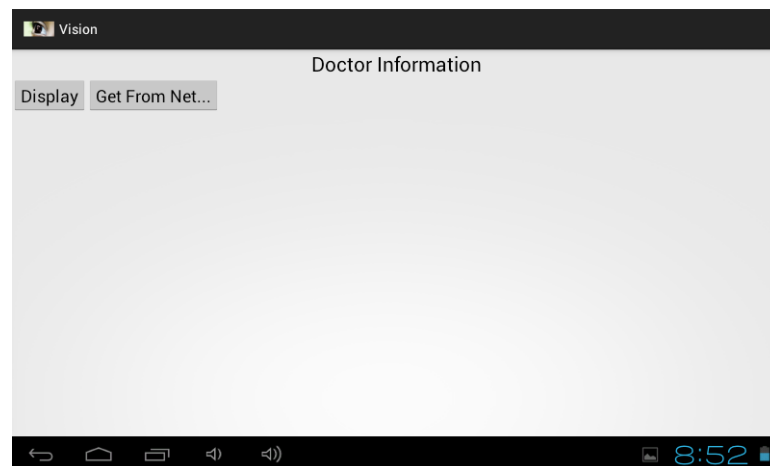
View Profile:-

FIGURE 8.5: View Profile

- View profile contains two button as Display and Get From Net.

- After click on Display button all records stored in local database will display.

- When user click on Get From Net button all records from remote database will be first store in local database and then display.
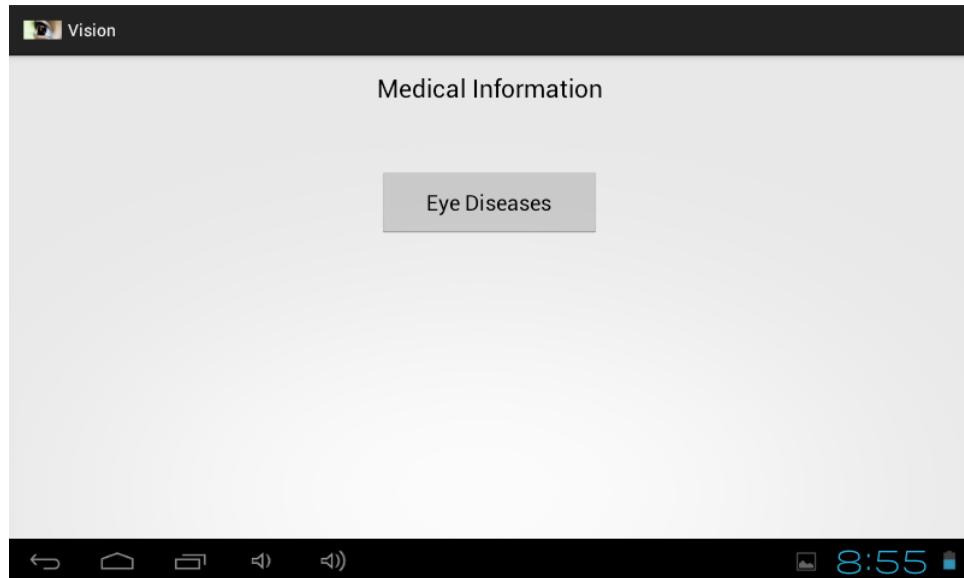
Medical information:-

FIGURE 8.6: Medical Information

Medical information will give information about eye diseases and symptoms of eye diseases.

Chapter 9

CONCLUSION

We created an application based on android operating system. The main objective of project is by harnessing mobile phone apps, hardware rigorous scientific testing, we are creating an easy to use, portable system for testing eyes anywhere in the world. We are implementing such application which will be portable and free of cost. This application will be open source so it will be helpful for future development. The application is offline so need of internet for using this. This is useful for NGOs, doctors and individual user. The vision application is the preliminary eye test application so does not give 100% result about your vision. But this gives you suggestions to meet Ophthalmologist if the user cannot pass the test and also provides information about doctors and NGOs(Non Government Organizations). Using this information patient can meet doctor and recover from the disorders of eyes. Vision application is helpful to society and medical field. Vision eye exam application is a good application that let you carry around visual acuity test in addition to other tests.

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