

Designing of An Application on Health Development Based on Android Platform

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ABSTRACT

Android involves many developers writing applications that helps in extended the functionality of the devices. There are currently over 1, 50,000 applications available for Android. Android Market is the online application store run by Google, though applications can also be downloaded from third-party sites. Developers use Java language for development of application. In this paper an application is suggested which is useful in development of health of people thus, developing a healthy society.

Keywords:- Android, Health Development, Application, Society

I. INTRODUCTION

Android is a computing platform designed for use in some smart phones and other devices. This technology, which is owned by Google, includes an operating system, software, and applications. The operating system is based on Linux, which provides advanced computer processing. Android technology is maintained and continually developed by the Android Open Source Project (AOSP) [10].

Google purchased Android, a 22-month-old Palo Alto, California, startup in July 2005. Android was co-founded by Andy Rubin, maker of mobile device Danger. The purchase was key in Google's move into the wireless technology market. In 2008, Google introduced the HTC Dream as the first marketed phone to use Android technology. Since that time, this platform use has expanded to other smart phones, tablet computers, E-readers, netbooks, and other devices [12].

II. ANDROID OVERVIEW

A. Android fundamentals

Android applications are written in the Java programming language. The compiled Java code along with any data and resource files required by the application is bundled by the apt tool into an Android package, an archive file marked by an .apk suffix. This file is the vehicle for distributing the application and installing it on mobile devices; it's the file users download to their devices. All the code in a single .apk file is considered to be one application. By default, every application runs in its own Linux process, with a unique Linux user id. Each process has its own virtual machine (VM).

B. Android Architecture

Android is architected in the form of a software stack comprising applications, an operating system, run-time

environment, middleware, services and libraries. This architecture can, perhaps, best be represented visually as outlined in Figure I [11]. Each layer of the stack, and the corresponding elements within each layer, are tightly integrated and carefully tuned to provide the optimal application development and execution environment for mobile devices. The layers consist of:

- a) **The Linux kernel:** Positioned at the bottom of the Android software stack, the Linux Kernel provides a level of abstraction between the device hardware and the upper layers of the Android software stack.
- b) **Android Runtime-Dalvik Virtual Machine:** The Dalvik virtual machine was developed by Google and relies on the underlying Linux kernel for low-level functionality. It is more efficient than the standard Java VM in terms of memory usage, and specifically designed to allow multiple instances to run efficiently within the resource constraints of a mobile device.
- c) **Android Runtime- Core Libraries:** The Android Core Libraries (also referred to as the Dalvik Libraries) fall into three main categories which are:
 - Delvik VM Specific Libraries
 - Java interoperability Machine
 - Android Libraries
 - C/C++ Libraries
- d) **Application Framework:** The Application Framework is a set of services that collectively form the environment in which Android applications run and are managed. This framework implements the concept that Android applications are constructed from reusable, interchangeable and replaceable components.

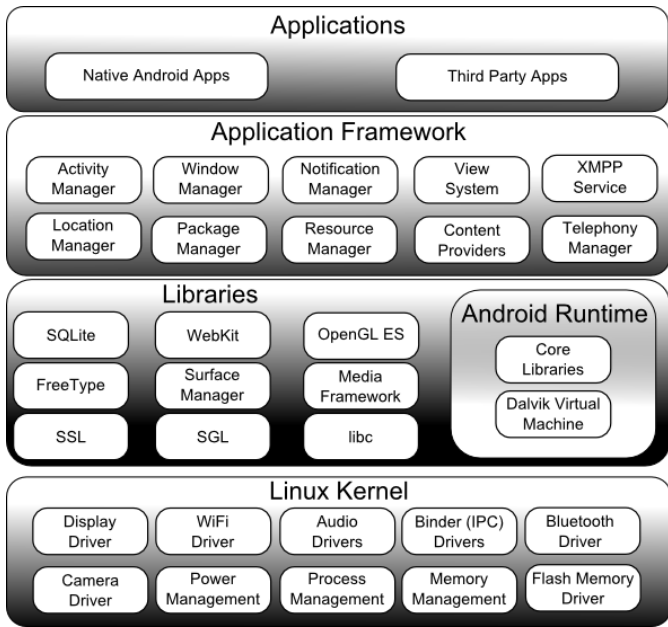


Fig. 1: Android architecture

e) **Applications:** Located at the top of the Android software stack are the applications. These comprise both the native applications provided with the particular Android implementation (for example web browser and email applications) and the third party applications installed by the user after purchasing the device.

C. Android components

Android applications consist of loosely coupled components, bound using a project manifest that describes each component and how they interact. There are six components that provide the building blocks for your applications [11] [14]:

- a) **Activity:** Activities are presentation layers which use Views to form a graphical user interfaces that display information and respond to user’s action.
- b) **Services:** Services are invisible workers of applications. They are used to perform regular processing that needs to be continued even when activities are invisible.
- c) **Content Providers:** Content Providers are the preferred way of sharing data across applications boundaries.
- d) **Intents:** Intents are simple message passing framework. Using this one can broadcast messages system-wide or to a target Activity or Service, stating your intention to have an action performed.
- e) **Broadcast Receivers:** By creating and registering a Broadcast Receiver your application can listen to broadcast Intents that match specific criteria.

f) **Notifications:** A notification is a message you can display to the user outside of your application’s normal UI.

D. Application Manifest

Every application must have an AndroidManifest.xml file (with precisely that name) in its root directory. The manifest file presents essential information about your app to the Android system, information the system must have before it can run any of the app's code.

III. SUGGESTED APPLICATION

The suggested application will consist of ListView as display in figure below:



Figure II: ListView displaying several features of application

A. Diet and Exercise

This opens a new Activity, which is further a ListView displaying Diet and Exercise. Diet contains information about balanced diet to be taken in the morning, evening and night with advantages of every food items mentioned. This information is stored in the database while building the application.

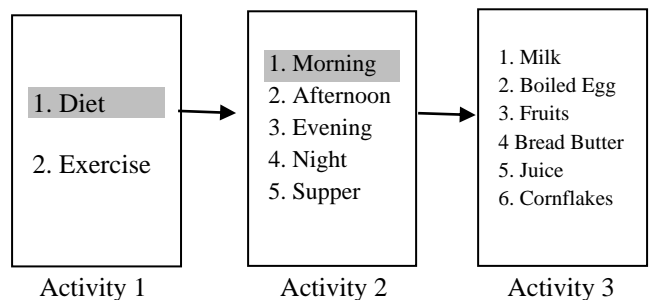


Figure III: Contents of ‘Diet and Exercise an example

Exercise contains description of various exercises for:

- a) Weight loss
- b) Weight gain
- c) Digestion
- d) Hypertension
- e) Postural deformities

B. Injuries

Within Injuries detailed information is provided of curing various injuries like Burns, Minor accidents, cuts, scratches, muscular pain, etc.

Minor Burns
Use cool water, not ice. If the burn is caused by chemicals, hold the burned skin under cool running water for 10 to 15 minutes until it does not hurt as much. ..

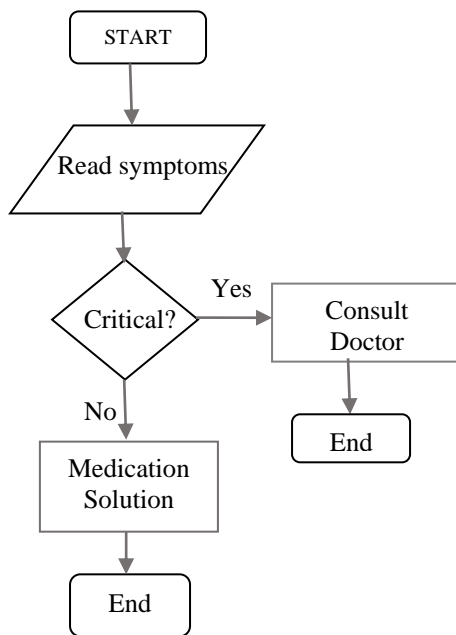
Fig. IV: Example-Injuries curation information



Fig V: mapping location example

C. Check up

Check Up is helpful to provide proper treatment of any health related problem. Users enter symptoms, application detect the possible problem and suggest the medicines. The flowchart below depicts working of this feature of the application.



Flowchart I: Check Up mode

D. Locate a Doctor

This feature of this application makes use of GPS location and provides details of nearby Hospitals and Doctor’s clinics.

Android devices are equipped with GPS hardware. Android provides a very straight forward API to access Location information derived from GPS hardware along with Wi-Fi and Cellular network connection sources that helps provide location information. For managing location based information, Android provides the *android.location* package. APIs for managing maps data and displaying, makes use of *MapView* and *MapController* classes. These features are used to build this part of application. Details of hospitals and clinics are placed within android database management system along with its location description using API and GPS.

IV. CONCLUSION

In this paper, the suggested application, having a lot of functionalities of health development is presented. Since everyone travel with a smartphone, they can use their phone as a medium of preventing and curing several health related problems. Also this application not only provides medication but also techniques to improve health through balanced diet. The hospital, clinic and chemist location detection using GPS is further helpful for user to locate them easily in case of emergency.

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