

PERSONALISED APPLICATION DEVELOPMENT FOR ANDROID MOBILE PHONES

N. Leo Bright Tennisson
Department of Computer Applications
Valliammai Engineering College
tennisson@rediffmail.com

ABSTARCT:

This paper gives an exposure to develop personalized Android mobile applications for android mobile phones using free open source software's. Various technological advancements emerged in mobile devices. The difference between computer and mobile devices is gradually decreasing. Mobile devices vary in size, technology, applications, etc... Various mobile operating systems were developed and used in mobiles. Millions of mobile applications were supported by each mobile operating system. An overview of all these technologies is discussed in this paper. Especially Android mobile operating system supports several features and supports many applications developed using java. JDK and Android SDK can be downloaded from internet. Procedure to develop Personalized Android Applications in a computer and the way export and run them in Android Mobile Phone is explained with coding.

Keywords: Android Mobile operating system; JDK; Android SDK.

1. Mobile Technologies

1.1 Overview of Technological development in mobile devices

Ordinary Mobile Phone of compact size primarily designed and used for voice and sms services. PDA [Personal Digital Assistant] or palmtop computer basically designed for can access internet, accessing spreadsheet applications like work processing applications, calculators etc. Smart Phone has the features of both mobile phone and PDA. Size of the smart phone is approximately between 3 inches and 4 inches length. Tablet computer or simply tablet is a mobile computer with display, circuitry and battery in a single unit. Tablets are often equipped with sensors, including cameras, microphone, accelerometer and touch screen, with finger or stylus gestures replacing computer mouse and keyboard. Their Sizes ranges from 7inches to 10 inches length. **Phablet** is a Smartphone form factor describing devices with a screen between 5 to 6.9 inches (130 to 180 mm) in size, designed to combine or straddle the functionalities of a Smartphone and tablet, eliminating the need for two devices.

1.2 Overview of Mobile Operating Systems

A **mobile operating system**, also referred to as **mobile OS**, is the Operating System that operates a Smartphone, tablet, PDA, or other digital mobile device. Modern mobile operating systems combine the features of a personal computer operating system with other features, including a touch screen, cellular, Bluetooth, Wi-Fi, GPS mobile navigation, camera, video camera, speech recognition, voice recorder, music player, Near field communication and Infrared Blaster.

The most common mobile operating systems are:

1.2.1 Android

Android is from Google Inc. It is free and open source. Android's releases prior to 2.0 (1.0, 1.5, 1.6) were used exclusively on mobile phones. Most Android phones and some Android tablets, now use a 2.x release. Android 3.0 was a tablet-oriented release and does not officially run on mobile phones. The current Android version is 4.3. Android's releases are nicknamed after sweets or dessert items like Cupcake (1.5), Frozen Yogurt ("Froyo") (2.2), Ginger Bread (2.3), Honeycomb (3.0), Ice Cream Sandwich (4.0), Jelly Bean (4.1) and KitKat (4.4). Most major mobile service providers carry an Android device.

1.2.2 Asha

Nokia Asha platform is from Nokia.

1.2.3 Blackberry

BlackBerry 10 is from BlackBerry. It is closed source and proprietary. BlackBerry 10 (previously BlackBerry BBX) was the next generation platform for BlackBerry smartphones and tablets. One OS was planned for both Blackberry smartphones and tablets going forward.

1.2.4 iOS

iOS is from Apple Inc. It is closed source and proprietary and built on open source Darwin core OS. The Apple iPhone, iPod Touch, iPad and second-generation Apple TV all use an operating system called iOS, which is derived from Mac OS X. Native third party applications were not officially supported until the release of iOS 2.0 on July 11, 2008. Before this, "jail breaking" allowed third party applications to be installed, and this method is still available. Currently all iOS devices are developed by Apple and manufactured by Foxconn or another of Apple's partners.

1.2.5 Windows Phone

Windows Phone is from Microsoft. It is closed source and proprietary. On February 15, 2010, Microsoft unveiled its next-generation mobile OS, Windows Phone. The new mobile OS includes a completely new overhauled UI inspired by Microsoft's "Metro Design Language". It includes full integration of Microsoft services such as Microsoft SkyDrive and Office, Xbox Music, Xbox Video, Xbox Live games and Bing, but also integrates with many other non-Microsoft services such as Face book and Google accounts. Windows Phone devices are made primarily by Nokia, along with HTC, Samsung, Huawei and other OEMs.

1.2.6 Windows RT

Windows RT is from Microsoft. It is closed source and proprietary. Microsoft announced Windows RT is an OS design for tablets only and only runs on ARM processors. This version also resembles Windows 8. Windows RT cannot run x86 programs. Apps can be only downloaded from the Windows Store. This OS has Microsoft Office 2013 pre-installed.

1.2.7 Symbian OS

Symbian OS is from Nokia and Accenture. It uses an open public license. Symbian has the largest smartphone share in most markets worldwide, but lags behind other companies in the relatively small but highly visible North American market. This matches the success of Nokia in all markets except Japan.

1.2.8 Windows Mobile

Windows Mobile was from Microsoft. It was closed source and proprietary. The Windows CE operating system and Windows Mobile middleware are widely spread in Asia. The two improved variants of this operating system, Windows Mobile 6 Professional (for touch screen devices) and Windows Mobile 6 Standard, were unveiled in February 2007

1.2.9 Bada

Bada is from Samsung Electronics. It is closed source and proprietary. It is a mobile operating system under development by Samsung Electronics. Samsung claims that Bada will rapidly replace its proprietary feature phone platform, converting feature phones to smart phones. The name 'bada' is derived from, the Korean word for ocean or sea. The first device to run bada is called 'Wave', which has a full touch screen and was unveiled at Mobile World Congress 2010. Samsung also opened an app store, called Samsung Apps, to the public. It offers close to 3000 mobile applications.

1.2.10 Blackberry OS

BlackBerry OS is from BlackBerry. It is closed source and proprietary. This OS is focused on easy operation and was originally designed for business. Recently it has seen a surge in third-party applications and has been improved to offer full multimedia support. Currently Blackberry's App World has over 50,000 downloadable applications. Blackberry's future strategy will focus on the newly acquired QNX, having already launched the BlackBerry PlayBook tablet running a version of QNX and expecting the first QNX smartphones in early 2012.

The other mobile operating systems are

BlackBerry Tablet OS, Maemo [Maemo is from Nokia. It is open source and GPL], Meego [MeeGo was from non-profit organization The Linux Foundation. It is open source and GPL], Brew, GridOS, Linux, Mer, Nemo Mobile, S40, Sailfish OS, SHR, Tizen, webOS, DangerOS, LiMo 4, Nucleus, Palm OS, Windows Mobile

1.2.11 Upcoming software platforms

Aliyun OS [Aliyun OS is from Alibaba/AliCloud. It is cloud based].

Firefox OS [Firefox OS is from non-profit organization Mozilla Foundation. It is open source and uses GPL]. Ubuntu Touch OS [Ubuntu Touch OS is from Canonical Ltd.. It is open source and uses GPL].

2. ANDROID MOBILE OPERATING SYSTEM

Among various mobile operating systems Android is one of the very few free open source operating systems. Difference between ordinary mobile and Android mobile is the number of applications supported. Android supports around 6 lakhs mobile application.

Special Features of Android

- It is a free open source mobile operating system.
- It has component based architecture based on Linux and open source.
- It provides tons of built in services
- It supports automatic management of application life cycle
- It provides High quality graphics and ground.
- It applications are portable across a wide range of current and future hardware.

2.1 Requirements for android application development

To develop Android Applications you need the following softwares which is available as free open source.

- JDK (Java Development Kit)
- Android SDK
- Eclipse (IDE)

The above software's can be downloaded from www.google.co.in.

2.1.1 Downloading Procedure

Download jdk 1.7 for 32 bit processor.

- Save in C Folder or default software folder in your computer

Download android SDK for 32 bit or 64 bit processor.

- Save in C Folder or default software folder in your computer

Eclipse is an Integrated development environment (IDE) comprising a base workspace and an extensible plug-in system for customizing the environment. It is written mostly in Java. It can be used to develop applications in Java and, by means of various plug-ins, other programming languages

Development environments include the Eclipse Java development tools (JDT) for Java. The Eclipse software development kit (SDK), which includes the Java development 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

After downloading rename the big name of JDK and SDK.

Double Click the SDK manager.exe

- Select the Android Versions
- Select the Extras
- Click Install 6 Packages

Download Process is over.

2.1.2 Procedure to install Android Emulator

In the SDK manager window

- (1) Click Tools
- (2) Click Manage AVD [Android Virtual Device Manager]
- (3) Click New
- (4) You will get a dialog box
- (5) Give a new AVD name and set screen size and click OK button
- (6) New AVD name will appear in the list displayed.
- (7) Click Launch button
- (8) Now you will get a screen in computer monitor as you have in mobile.

2.1.3 Procedure to load tools

- (1) Go to My Computer and open the folder containing Android SDK in a new window.
- (2) Double click Eclipse

All tools will be loaded.

Now you can develop any personalized mobile application.

Example for java eclipse IDE is given below

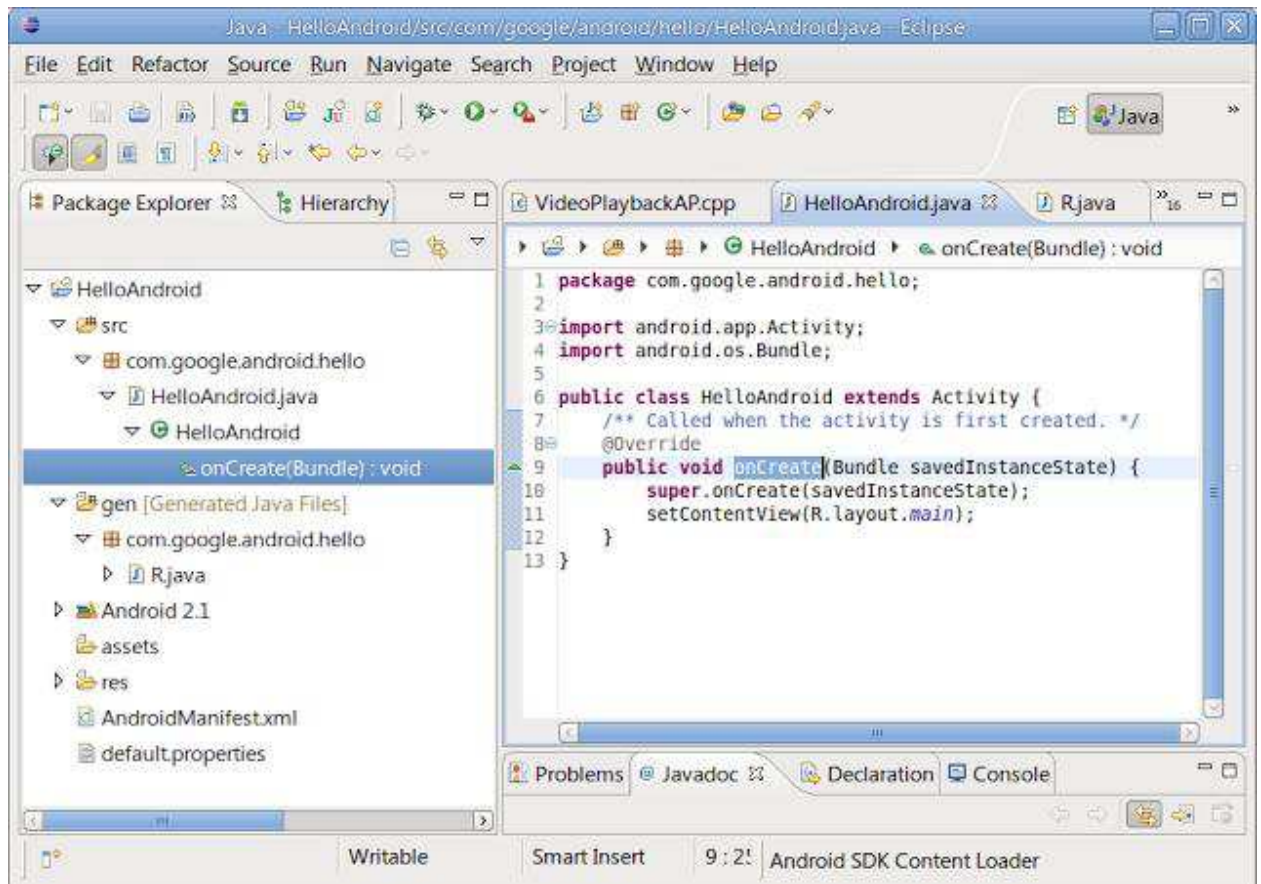


Fig 1 Java Eclipse IDE

For example you can open two emulators and a Call or SMS can be made with one emulator to another.

From menu select New Android Application. It will take you to a wizard. Click Next for 3 steps to allow default settings. You will get a screen to place your coding.

3. CODING EXAMPLE

3.1 Music applications

In resource folder [res] place or paste some music file

In MainActivity.java

```

{
MediaPlayer.player=MediaPlayer.Create(this,R.raw,backscore);
Player.start();
}

```

To place Button

Select Layout , Activity main

Drag and Drop Button tool

Give ID and label/caption for button

In MainActivity

Type the following

Button mybtn;

Overrided

Protected

```
----  
Mybtn=(Button)findViewById(R.id.btnplay);
```

```
In MainActivity.java  
Public class MainActivity extends  
    Activity implements OnClickListener  
{  
    Button mybtn;  
    Mybtn.setOnClickListener(this);  
}
```

Now Run the application and press the button in the virtual mobile screen on your computer monitor. You can here the music.

3.2 Installing android application developed in PC into mobile.

In bin folder you will have the apk file with the name of your application. Example mymusic.apk

Copy this and send it to android mobile.

Click Install in mobile.

Then it will work in your android mobile as it worked in computer.

References

- [1] Android Developers [Online] / auth. Google, Inc. // Android SDK and Reference. - 01 19, 2010. - 01 20, 2010. - <http://developer.android.com/index.html>.
- [2] Android Porting Kit [Online] // Viosoft Corporation. - 2009. - 02 22, 2010. -
- [3] Mark L. Murphy, "Beginning Android", Apress
- [4] Mike McGrath, "Building Android Apps in easy steps, Tata McGraw Hill Education, 2012
- [5] What is Android? [Online] // Embetek.com. - July 6, 20098. - 02 19, 2010. - http://www.embetek.com/index.php?option=com_content&view=article&id=49:android.
- [6] Why Develop for Android? [Online] / auth. M Michael // TrueSong Media. - November 12, 2009. - January 21, 2010. - <http://www.truesongmedia.com/2009/11/why-develop-for-android/>.