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Apply Android Studio (SDK) Tools

Hana R. Esmaeel
Department of Inform. & Comm. Engg.,
Al-Nahrain University, Iraq

Abstract: Android studio is anew IDE(Integrated Development Environment) made available for free Google to Android Developers.it include many tools to develop the application. In this paper SDK Emulator was used to implement some features of Android devices. such as(launch google Browser, connect to internet, send messages ,viewthe basic information of the device(memory space, and security))these features are implemented using virtual device named GALAXY_NOT4_API_219(Resolution 480*800dpi, size on disk 1GB, API i 21, Target Google API, cpu/ ABI x860), The concept of android ,the project's structure , and Application Architecture was explain

Keywords –Emulator, Android, Activity, JDK, SDK

I. INTRODUCTION

As technology has evolved, mobile devices have become about more than simply making calls, but their software and development platforms have resistedkeeping pace. Androidis an open source software stack that includes the operating system, middleware, and key applications along with a set of API libraries for writing mobile applications that can shape the look, feel, and function of mobile handsets. Small, stylish, and versatile, modern mobile phones have become powerful tools that incorporate cameras, media players, GPS systems, and touch screens. [1]

Android applications are written using Java as a programming language but are executed using accustom virtual machine called *Dalvik*rather than a traditional Java VM, Each Android application runs in a separate process within its own Dalvik instance, relinquishing all responsibility for memory and process management to the Android run time, which stops and kills processes as necessary to manage resources. Dalvik and the Android run time sit on top of a Linux kernel that handles low-level hardware interaction including drivers and memory management, while a set of APIs provides access to all of the underlying services, features, and hardware [2].

II. ANDROID APPLICATION ARCHITECTURE

The following application services are the architectural cornerstones of all Android applications, providing the framework to be using by developer [3].

A..Activity ManagerControls the life cycle of activities, including management of the activity stack.

B Views are used to construct the user interfaces for activities.

C..Notification ManagerProvides a consistent and non-intrusive mechanism for signaling users.

D..Content ProvidersLets the user applications share data between applications.

E..Resource ManagerSupport's non-code resources like strings and graphics to be externalized.

III. SYSTEM REQUIREMENTS

1-Microsoft Window 8/7/Vista/2003(32 or 64 bits

2-400 hard disk space

3-GB RAM (4 GB)

4-At least 1 GB for AndroidSDK, EmulatorSystem, images and catches

5-Java Development Kit(JDK 7)

IV.The features supported by Android

As Android is open source and freely available to manufacturers for customization, there are no fixed hardware and software configurations [4].

A.StorageUses SQLite, a lightweight relational database, for data storage.

BConnectivity:Supports GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, and Bluetooth (includesA2DP and AVRCP), Wi-Fi, LTE, and WiMAX).

C.Messaging: Supports both SMS and MMS.

D.Web browser: Based on the open-source WebKit, together with Chrome's V8 JavaScript engine.

E.Media support**:** Includes support for the following media: H.263, H.264 (in 3GP or MP4Container), MPEG-4 SP, AMR, AMR-WB (in 3GP container), AAC, HE-AAC (in MP4 or3GP container), MP3, MIDI, OggVorbis, WAV, JPEG, PNG, GIF, and BMP.

F.Hardware support: Accelerometer Sensor, Camera, Digital Compass, Proximity Sensor, and GPS.

G.Multi-touch: Supports multi-touch screens.

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H.Multi-tasking: Supports multi-tasking applications.
I.Flash support: Android 2.3 supports Flash 10.1.
J. Tethering: Supports sharing of Internet connections as a wired/wireless hotspot.

V. ANDROID CONCEPTS

A.Activitiesthe building block of the user interface is the **activity**. It is an Android analogue for the window or dialog in a desktopApplication.
B.ContentProviders: provide a level of abstraction for any data stored on the device that is accessible by multiple applications. The Android development model encourages the developer to make his own data available to other applications.
C.Intents: are system messages, running around the inside of the device, notifying applications of various events, from hardware state changes (e.g., an SD card was inserted), to incoming data (e.g., an SMS message arrived), to application events (e.g., your activity was launched from the device's main menu).
D.Services: Activities, content providers, and intent receivers are all short-lived and can be shut down at any time. Services, on the other hand, are designed to keep running, if needed, independent of any activity. It might use for checking for updates to an RSS feed, or to play back music even if the controlling activity is no longer operating. [5]

VI. PROJECT STRUCTURE

When we create a new Android project (e.g., hana_project.py), we get five key items in the project's root directory:
A….AndroidManifest.xml, which is an XML file describing the application being built and what components , activities, services, etc. are being supplied by that application.
B. Build.xml, which is an Ant script for compiling the application and installing it on the device.
C-bin/, which holds the application once it is compiled.
D.src/, which holds the Java source code for the application.
E.res/, which holds "resources", such as icons, GUI layouts, and the like, that get packaged with the compiled Java in the application.
F.assets/, which hold other static files you wish packaged with the application for deployment onto the device.

VII.ANDROID LAYOUT FIGURE (1) SHOW THE LAYOUT OF ANDROIDAND FIGURE(2) SHOW HOW ANDROID RUN THE APPLICATION.[6]

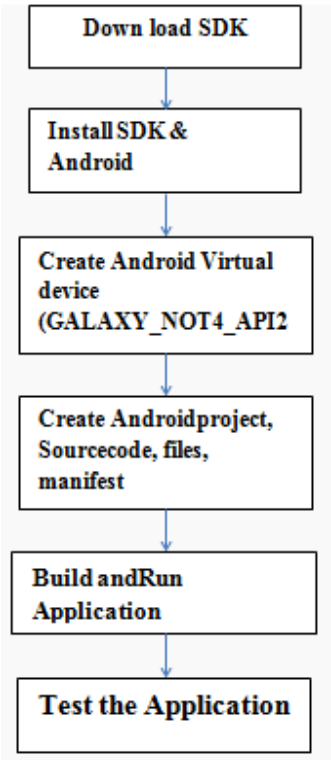

Fig 1 AndroidLayout

VIII. IMPORTANT TOOLS AVAILABLE FOR USE WITH ANDROID. ANDROID STUDIO OFFERS THE FOLLOWING TOOLS

A.lexibleGradle-based build system.
B.Build variants and multiple apk file generation.
C.Code templates to help the developer to build common application features.
D.Rich layout editor with support for drag and drop theme editing.

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E.-lint tools to catch performance, usability, version compatibility, and other problems.
F.ProGuard and app-signing capabilities.
G.Built-in support for Google Cloud Platform, making it easy to integrate Google Cloud Messaging and App Engine

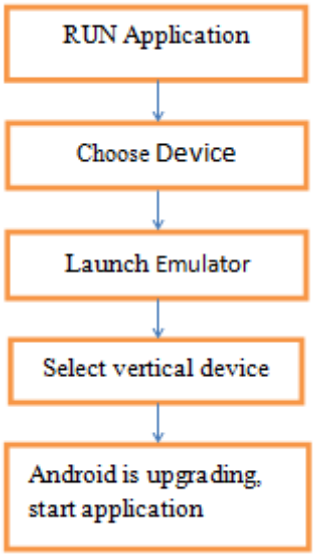

Fig 2 .Run application

IX. SOME IMPORTANT FEATURES OF ANDROID DEVICES: THEFEATURES DESCRIBED BELOWAPPLIED TO THEVIRTUAL DEVICENAMED

GALAXY_NOT4_API_21 (Resolution 480*800dpi, size on disk 1GB, APIi 21, Target Google API, cpu/ABI x860)

A. The user will find a quick launch bar for googl

Browser as well as the Application menu.as shown in figure (3) below

Fig.3launch google browse

B. Browser application Built-in web browser.

The emulator has an Internet connection, provided that your machine has one.as shown in in figure (4), and figure (5) below

Fig.4 Sign up for Facebook

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Fig.5Member login

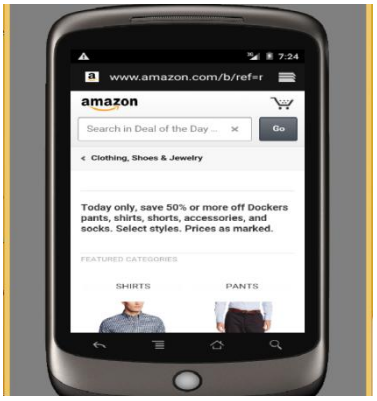

Fig 6 show amazonfrom internet

A. Application menu shows all installed applications. From the Home screen, click the Application menu button to see all installed applications. Settings as shown in figure (7) below.

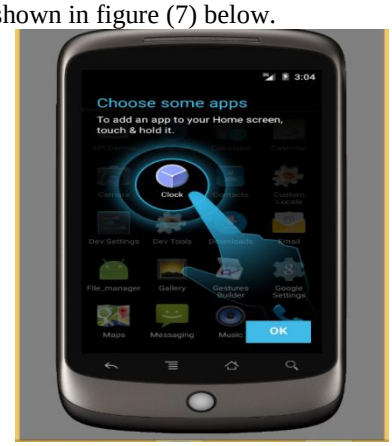

Fig.7choose application from home screen

B. Dev Tools application Built-in application tool to show the total space of the device and the device security as shown infigure (8),and figure(9) below.

Fig.8Application information

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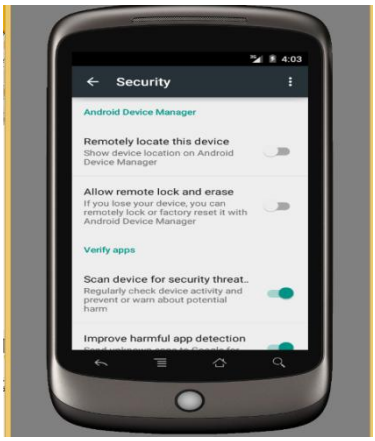

Fig. .9 security information

C. Messaging application Built-in application for sending and receiving SMS messages.
The emulator has limited messagingas shown in fig(10) and figure (11) below.

Fig.10 sending message

Fig.11Type messages

X. CONCLUSION

The Android SDK carryings a number of powerful tools to help with commonAndroid development tasks. The Android emulator can be used for running and debugging Android applications virtually, without the need for an actual device. But SDK has a number of limitations:

A .The emulator is not a device. It simulates general handset behavior, notSpecific hardware implementations or limitations.

BPeripherals such as camera hardware are not fully functional.

C.Phone calls cannot be placed or received but are simulated.

D .SMS messages are also simulated and do not use a real network.

E.It is not support Bluetooth.

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REFERENCE

[1] Jonathan Simon,-*Head First Android Development* ,Published by O'Reilly Media, Inc., 1005 Gravenstein Highway North, Sebastopol, 2011 .

[2] Abbey Deitel, Harvey Deitel, Paul Deitel,*Android™ How to Program,* SecondEdition,PrenticeHall, *Release Date: January 2014*.

[3] Brian Hardy, Bill Phillips, *Android Programming: The Big Nerd Ranch Guide,-*, Publisher: Big Nerd Ranch Guides, *Release Date: March 2013*.

[4] *J.F. Demario-,Android™ A Programmer's Guide* , by The McGraw-Hill Companies 2008.

[5] RetoMeier, *Professional Android™ Application Development*, Wiley Publishing, Inc. Indianapolis, IN 46256, 2009.

[6] Mark L. Murphy ,*The Busy Coder's Guide to Android Development*,CommonsWare, LLC2008 United States of America,2008.

[7] J.S. Harbour, Teach Yourself Android Game Programming, SAMS, January 15, 2014.

[8] Lauren Darcey and Shane Conder*Teach You Android Application Development in 24 Hours*,Second Edition, 2012.

[9] Wei-Meng Lee*Beginning Android™ Application Development*, Wiley Publishing, Inc., Indianapolis, Indianal, 2011.

[10] https://developer.android.com/sdk/index.htm

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