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Course: EE322 Engineering Design 6

HW4

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"I pledge my honor that I have abided by the Stevens Honor System"

Section 1:

Our group consists of 3 members and we are working on the Crime Rate Application for mobile usage using Android platform. The three members are Shaun Anyi (leader), Suraida Alias and Nurul Rozlan.

For this assignment, each one of us is given specific tasks to be completed. Shaun Anyi is responsible to find information and do research on the operating platform that the Crime Rate Application will use, Android. While Suraida Alias is in charge of doing research on the Mobile Application Server and lastly Nurul Rozlan is responsible for programming codes and software that will be used to develop the application. For the first assignment working in group, each one of us is working equally in term of work load and contribution to the assignment.

	Shaun Anyi (Leader)	Suraida Alias	Nurul Rozlan
Percentage of effort towards this assignment	33.3333%	33.3333%	33.3333%

Section 2:

➤ Android:

For our project, we will be utilizing the Android as our operating platform. Android is a software stack for mobile devices that includes an operating system, middleware and key applications. It is normally being used for mobile smartphones such as the Samsung Galaxy S2 or tablets such as Motorola Xoom. All applications are written using the Java language.

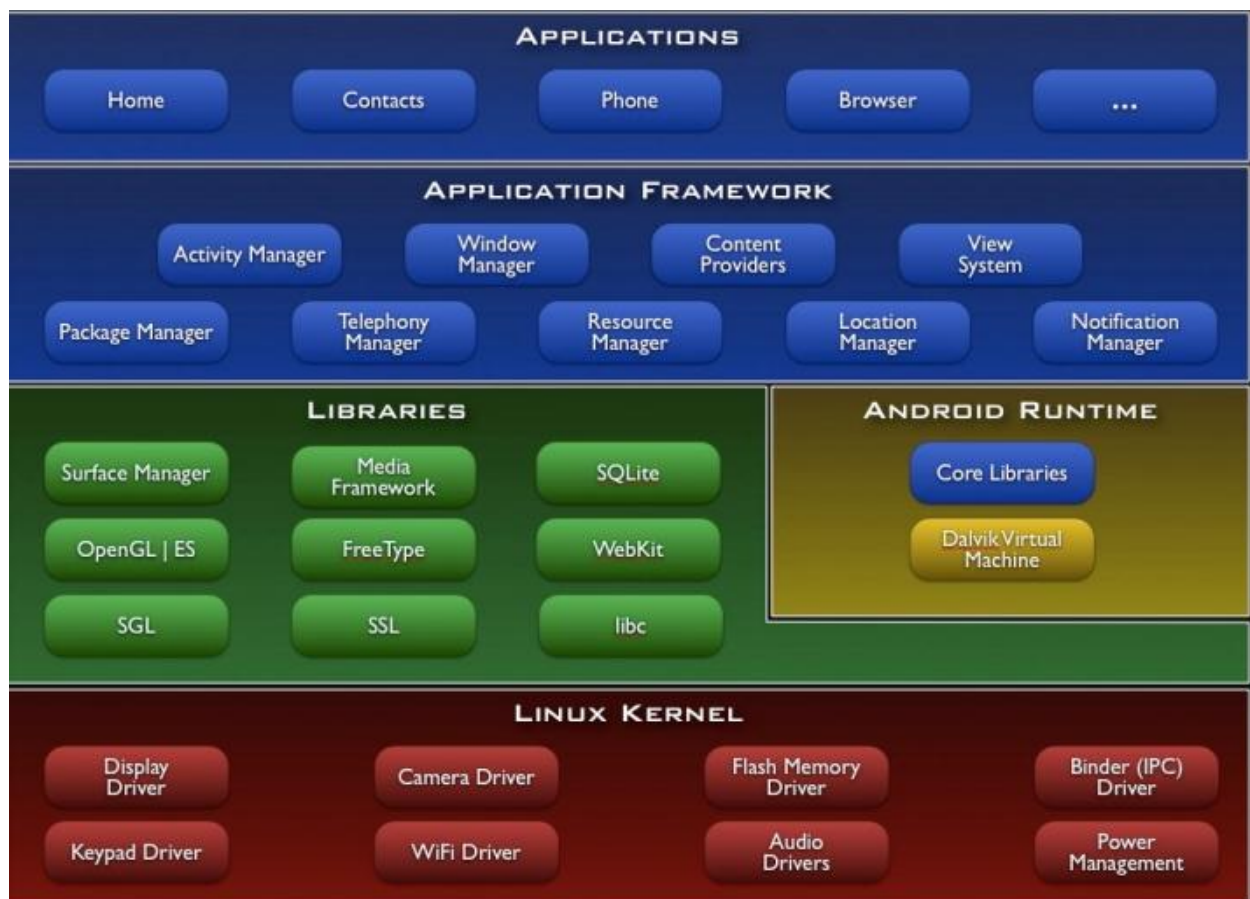
➤ Interface

Android's user interface is based on direct manipulation using touch inputs that loosely correspond to real-world actions, like swiping, tapping, pinching and reverse pinching to manipulate on-screen objects. The response to user input is designed to be immediate and provides a fluid touch interface, often using the vibration capabilities of the device to provide haptic feedback to the user. Internal hardware such as accelerometers, gyroscopes and proximity sensors are used by some applications to respond to additional user actions, for example adjusting the screen from portrait to landscape depending on how the device is oriented, or allowing the user to steer a vehicle in a racing game by rotating the device, simulating control of a steering wheel.

Android devices boot to the home screen, the primary navigation and information point on the device, which is similar to the desktop found on PCs. Android home screens are typically made up of app icons and widgets; app icons launch the associated app, whereas widgets display live, auto-updating content such as the weather forecast, the user's email inbox, or a news ticker directly on the home screen. A home screen may be made up of several pages that the user can swipe back and forth between, though Android's home screen interface is heavily customizable, allowing the user to adjust the look and feel of the device to their tastes. Third party apps available on Google Play and other app stores can extensively re-theme the home screen, and even mimic the look of other operating systems, such as Windows Phone. Most

manufacturers, and some wireless carriers, customize the look and feel of their Android devices to differentiate themselves from the competition.

➤ Architecture of Android platform:



➤ Android S/W Stack – Application

- ❑ Android provides a set of core applications:

- ✓ Email Client
- ✓ SMS Program
- ✓ Calendar
- ✓ Maps
- ✓ Browser
- ✓ Contacts
- ✓ Etc.

➤ Android S/W Stack – App Framework

❑ Enabling and simplifying the reuse of components

- ✓ Developers have full access to the same framework APIs used by the core applications.
- ✓ Users are allowed to replace components.

Feature	Role
View System	Used to build an application, including lists, grids, text boxes, buttons, and embedded web browser
Content Provider	Enabling applications to access data from other applications or to share their own data
Resource Manager	Providing access to non-code resources (localized strings, graphics, and layout files)
Notification Manager	Enabling all applications to display customer alerts in the status bar
Activity Manager	Managing the lifecycle of applications and providing a common navigation backstack

➤ Android S/W Stack – Libraries

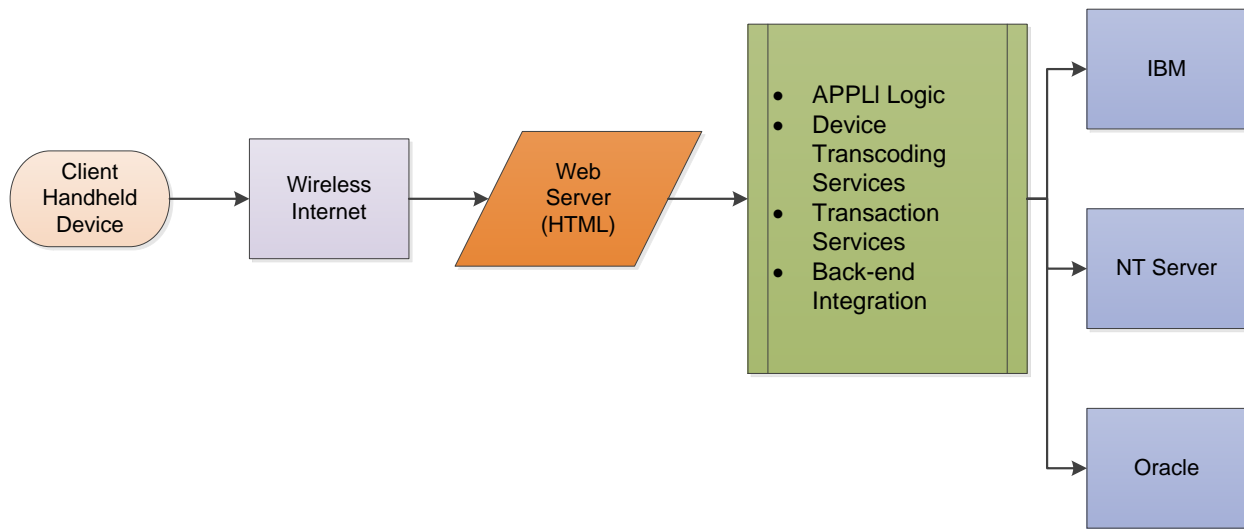
- ❑ Including a set of C/C++ libraries used by components of the Android system
- ❑ Exposed to developers through the Android application framework

➤ Android S/W Stack – Runtime

- ❑ Core Libraries

- ✓ Providing most of the functionality available in the core libraries of the Java language
- ✓ APIs
- ✓ Data Structures
- ✓ Utilities
- ✓ File Access
- ✓ Network Access
- ✓ Graphics
- ✓ Etc.

➤ Mobile Server Application



Mobile Application Server model

➤ SAP NetWeaver Application Server

For our project, to get information about crime rate, a type of server such as SAP NetWeaver Application Server must be set up to handle mobile request documents that are sent from mobile devices through the document service and server connector. The server connector communicates with SAP NetWeaver Application Server using the TCP port number assigned to SAP NetWeaver Application Server. When SAP NetWeaver Application Server receives requests

from the document service, it stores them in a mobile document queue to be processed and stored in the database.

The server has the following tasks:

- It is responsible for the queuing and acknowledgment of synchronized data containers and for communicating with the back-end system.
- As part of data synchronization, it defines data packages for individual mobile devices (data allocation), determines the delta data to be sent to the device (delta data determination), manages conflict situations and provides a number of configuration and monitoring tools.
- It plays a major role in the deployment of applications on the mobile device.
- In the SAP NetWeaver Mobile Administrator, it provides functions for administering the mobile devices and the mobile components (JAVA).

➤ Oracle Database Mobile Server

Oracle Database Mobile Server can be used for our project because it is the best way to connect embedded devices and mobile applications to Oracle Database. It is able to keep a large number of physically remote database synchronized with a backend Oracle Database system. Furthermore, Oracle Database Mobile Server can manage applications, users, devices and data on large deployment of mobile or remote devices. Oracle Database Mobile Server has new features that support for Java SE, including SE Embedded and Java 1.6. It is also automatic sync for Android and Blackberry platforms. Oracle Database Mobile Server is well suited to the crime rate application because it has high performance and reliability.

➤ Integrated Development Environment

Integrated Development Environment (IDE) is a programming environment that is used to develop a program. Usually, IDE would come with code editor, compiler, debugger and graphical user interface builder. It can be standalone application or part of other application.

In building Android application, we will need to install Eclipse, an IDE that would have Android ADT plug-in with it, in our computer.

➤ Programming Code

Programming code plays important role in developing an application. It is where the structure of the application is built. Today, code is written in many types of different programming languages, such as JAVA, C++, XML, PHP, C# and others. For application developers, it is very important for them to know how to write in any one of those programming languages.

For our project, as we are going to develop an Android application, basic knowledge about programming language is really important. We are going to install Eclipse for Android developer to write codes and thus, build an application. In Eclipse, two programming language will be used in building an application, which are JAVA and XML.

1. JAVA

JAVA is one of the most commonly used programming languages nowadays. JAVA has independent platform. This means that JAVA can be executed successfully in different kind of computers. JAVA is basically an object-oriented programming language, which means it consists of element that represents real world object. JAVA language is not really hard compared to others. It comes together with JAVA API, a library of classes that is really essential for developing application as it provides function that is needed my most programs.

In Eclipse, JAVA language is used for building the method or function of the application. It plays important role in making sure the application works well.

2. XML

XML stands for Extensible Markup Language. XML is used to create information formats and share them on any user interface such as World Wide Web, intranet and etc. XML is commonly used by people who would like to share information with others constantly.

In Eclipse, XML will be used for designing user interface. All of the design for collecting information submitted by user will be done by XML.

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