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

Step 1:

Oracle Database Mobile Server

For crime rate application, Oracle Database Mobile Server 11g is a dependable, secure way to link mobile applications and fixed devices into existing enterprise infrastructure. It covers the application grid to mobile devices, letting access to enterprise data and applications in the absence of a network connection. When a network connection is available, Oracle Database Mobile Server uses data synchronization to allow consistent and secure data exchange with a backend Oracle Database. Oracle Database Mobile Server supports many different client platforms, including Java, Android, Blackberry, Windows Desktop & Mobile, and Linux. For this project, SQLite is a very popular open source embedded database library and is widely used in smart phones, including Android and Blackberry devices. It is a small footprint, transactional database library that is self-administering, requiring no external DBA.

Data synchronization can be enabled in a variety of ways including automatic background sync, manual sync using a GUI, command line app, or even from another application using API calls. At the core of the Oracle Database Mobile Server product is the server itself, which can be deployed on commodity server hardware running industry standard operating systems including Windows, Linux, Solaris, HP-UX and IBM AIX. The Mobile Server provides a reliable, bi-directional synchronization system and a powerful administration interface. The Oracle Database Mobile Server synchronization system allows efficient asynchronous and synchronous incremental data synchronization between thousands of mobile users and the Oracle Database. Oracle Database Mobile Server features a robust and resilient synchronization process. Oracle Database Mobile Server also employs a secure, centralized repository to support a unified

interface for distributing and managing software and data on remote systems. In addition, the Mobile Development Kit (MDK) is included with Oracle Database Mobile Server.

It consists of a set of tools, APIs, tutorials and code samples that accelerate the development of mobile applications. The main component of the MDK is the Mobile Database Workbench (MDW), a visual development tool for designing synchronized databases. Wizards in the MDW accelerate creation of synchronized databases by allowing developers to quickly define and customize snapshots of enterprise data models for incorporation into these databases.

Integrated Development Environment

Integrated Development Environment (IDE) is a programming environment that is used to develop a software program. IDE came 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. The price for downloading and installing this software is free. Eclipse is available for multiple languages, which are C, C++, Python, Perl, PHP, JAVA, XML and more. Eclipse is created to be an 'apache for developer tools'. It provides many essential services that software developers would need. Eclipse is an open source framework that consist set of APIs which is a real code designed to do real work. Eclipse is used to build and run integrated end-to end software development tools.

When installing Eclipse to develop Android application, there is some other stuff that needs to be downloaded and installed too. There are Android Software Development (SDK) Kit Tools and Eclipse Plugin. Android SDK gives developer API libraries that are needed to build, test and debug apps for Android. One of the examples of API is Google Map API that enables developer to include Google map in their application. Eclipse Plugin for Android application, called Android Development Tools (ADT) is provided by Android to extend the capability of Eclipse for developing Android application.

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.

- 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. The most important part of JAVA language is the compiling part. JAVA language won't work if the program written is not compiled. For this part, Eclipse really makes the work easier as automatic compilation is always its default. Every time a project is saved, it will be compiled and errors will be shown for user to correct them.

- 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.

One of the most important xml file that must be had by all application is Android Manifest file. Manifest file shows important information about systems in the Android application. Those information about the system need to be in Android Manifest file before the application code is ran. Generally, what Android Manifest file does are it names the JAVA package and describe them in the application, it

determines which process that will host part of application, it declares all permissions that the application must have to protect parts in API and other application and also it lists libraries that the application need to be linked with.

<u>Android</u>

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.

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.

Step 2:

<u>Uniform Crime Rate Reports & Online Mapping</u>

As a service to the public, Jacksonville Sheriff's Office provides crime incident information with a mapping program. With prompting from the user, the information provided will show the number of police reports written for selected crimes, within a selected geographical area, or specific address or location. The type of crime and number of offenses will be presented in a table format, with insightful demographic information, such as the time of day the crime occurred. This information is not intended to serve as official crime data.

<u>Crime Mapping</u>

CrimeMapping.com Mobile has been developed by the Omega Group to help law enforcement agencies throughout North America provide the public with valuable information about recent crime activity in their neighborhood. Their goal is to assist police departments in reducing crime through a better-informed citizenry. The application will give people access to the following features:

- Map out crime activity near current location
- Investigate crimes occurring near home, work or school address
- Identify any crime by type, time or date of occurrence
- Filter the research for specific crime types such as burglary or assault

Section 1

Shaun Anyi   –   Shaun is responsible in mobile platform part of our project. He is in charge of getting information about Android, the mobile application that we chose to use.

Suraida Alias   –   Suraida is responsible in obtaining information about server side of our application. As server plays important role for an application, Suraida will explain in more details about the server used in our project.

Nurul Rozlan   –   Nurul is in charge of getting information about programming language part of our project. More information about what languages are used in our application is explained.

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

Section 3
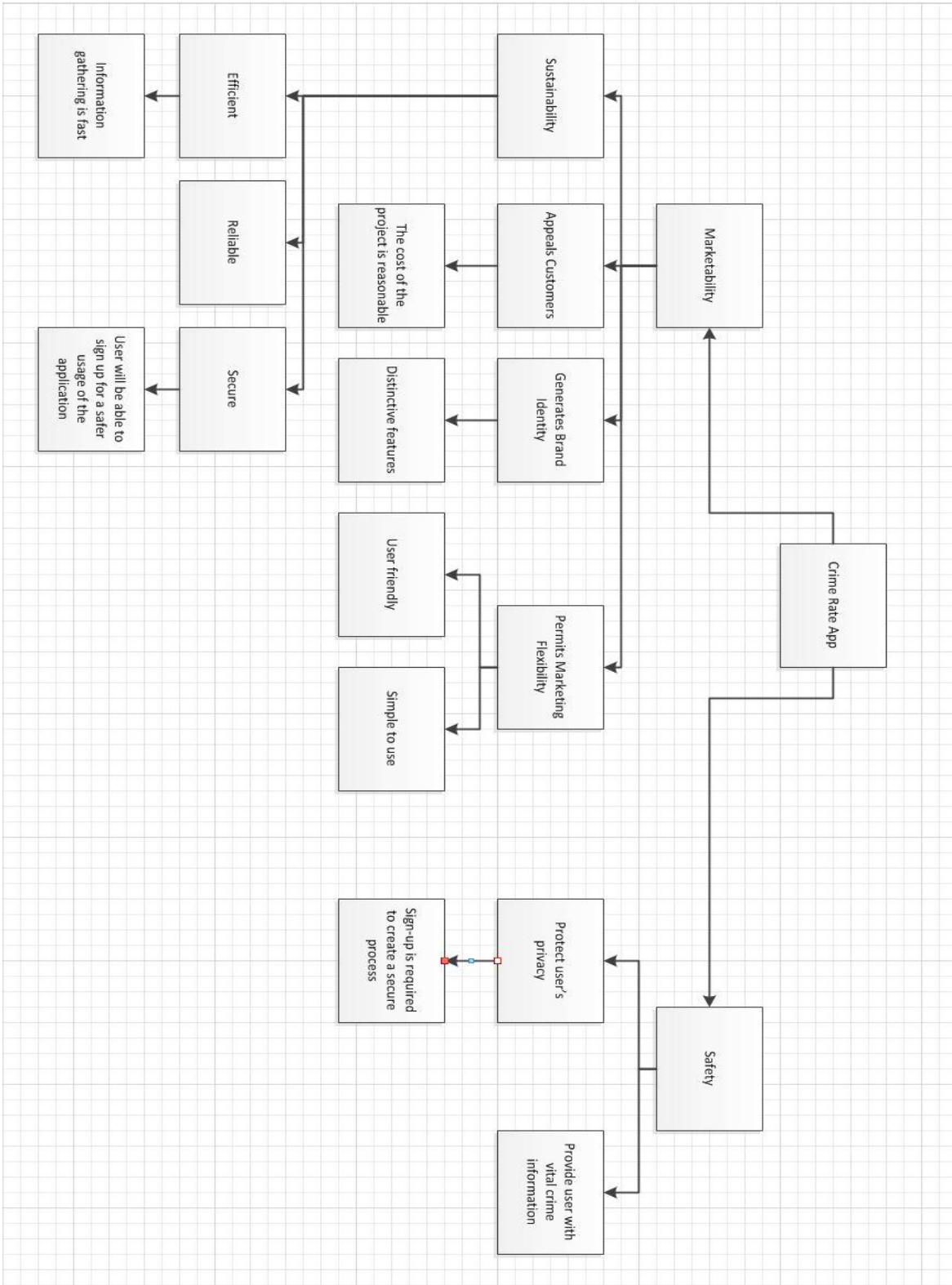
1. Realistic constraint
    - Economic
        - Our project has an economic constraint that needs to be considered. Our project might need to compete with current application available in Android market. We need to make sure that our product has affordable prize so people would consider buying our apps. We don't really have any other constraint as our product involve only software.
    - Environmental
        - Our project does not have any environmental constraint as we only have software for our project.
    - Health and safety
        - We don't really have constraint with health and safety as our product is only consists of software.
    - Manufacturability
        - Our project does not have any manufacturing constraint as our product consists of software only.
    - Sustainability
        - To make sure our project sustainable, we need to make sure that our application does not have any problem with it. In order to achieve this, we need to make sure that our coding is strong and good. We need to make sure that our coding is constantly updated to maintain its performance
2. Professional and Ethical Responsibilities
    - Having a good relationship with and responsibilities toward client
    - Making the best critical decisions

- Honest in doing works

- Pick up pieces of information from explicit research

- Expert in a field

- Thinking about potential risks to privacy and security of data, safety, reliability, and ease of use

- Exercise a high degree of care and follow good professional practices

- Knowing or learning enough about the application field to do a good job.

- Responsible to maintain an expected level of competence and be up to-date on current knowledge, technology, and standards of the profession.

Section 4:

References:

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