

# STEVENS

## Institute of Technology

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**Spring 2013**

**Engineering Design 6 E322**

**Project:** Crime Rate Application

**Homework #7**

**Team members:** Shaun Anyi (Leader)

Nurul Rozlan

Suraida Alias

**Instructor:** Prof. Hong Man

**Due Date:** 12 April 2013

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

*Shaun Anyi*

*Nurul Rozlan*

*Suraida Alias*

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 section on possible solutions and resource to deal with design constraints, ethical and professional responsibilities, and multidisciplinary teamwork planning. While Suraida Alias is in charge of providing a SWOT analysis of our selected “best” design and lastly Nurul Rozlan is responsible for distinctive implementation block diagrams and also specify which of our designs you feel is the "best" solution and indicate reasons for this choice.

For this assignment, 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%

The functionality of the components used in figures:

The application that we are going to develop can be divided into 3 main components. The first component is mobile applications. The second component is server part and the third one is administration part.

➤ Mobile application

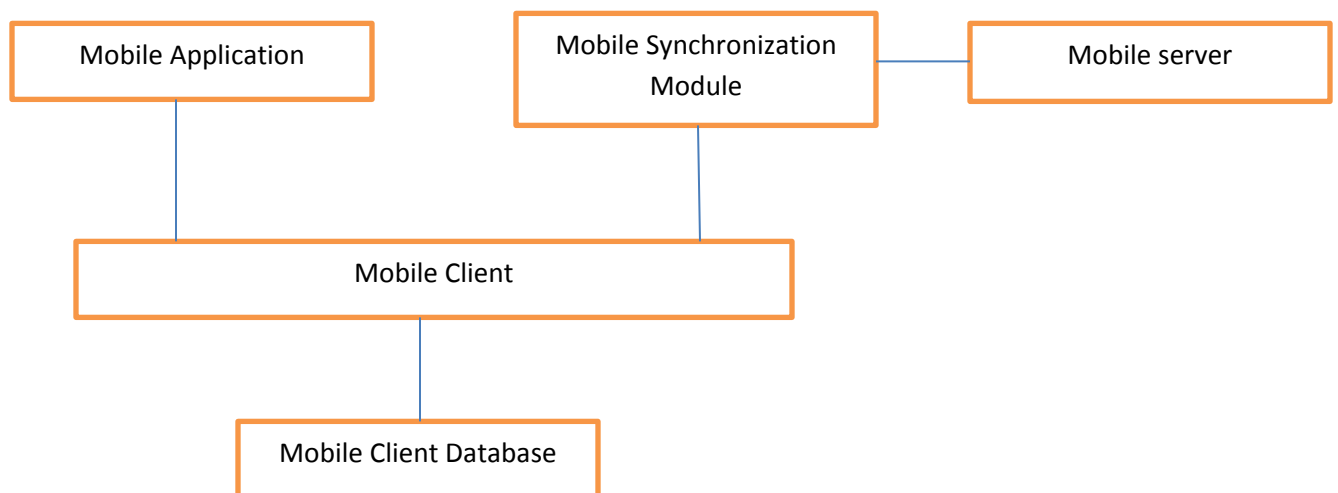
For mobile application, basically it involves user interface, location detection and data delivery. User interface is important for user to choose functions that he desired from our

application. This may involves location detection, and information about crime rate of the location. User interface helps users to understand our application and ease them to use it conveniently. Other than that, mobile application functions to detect users' locations. This is to help user to determine their own location without having to check out their own location by reading street name and etc. This location information will be used to get information from users, and being sent back again to users.

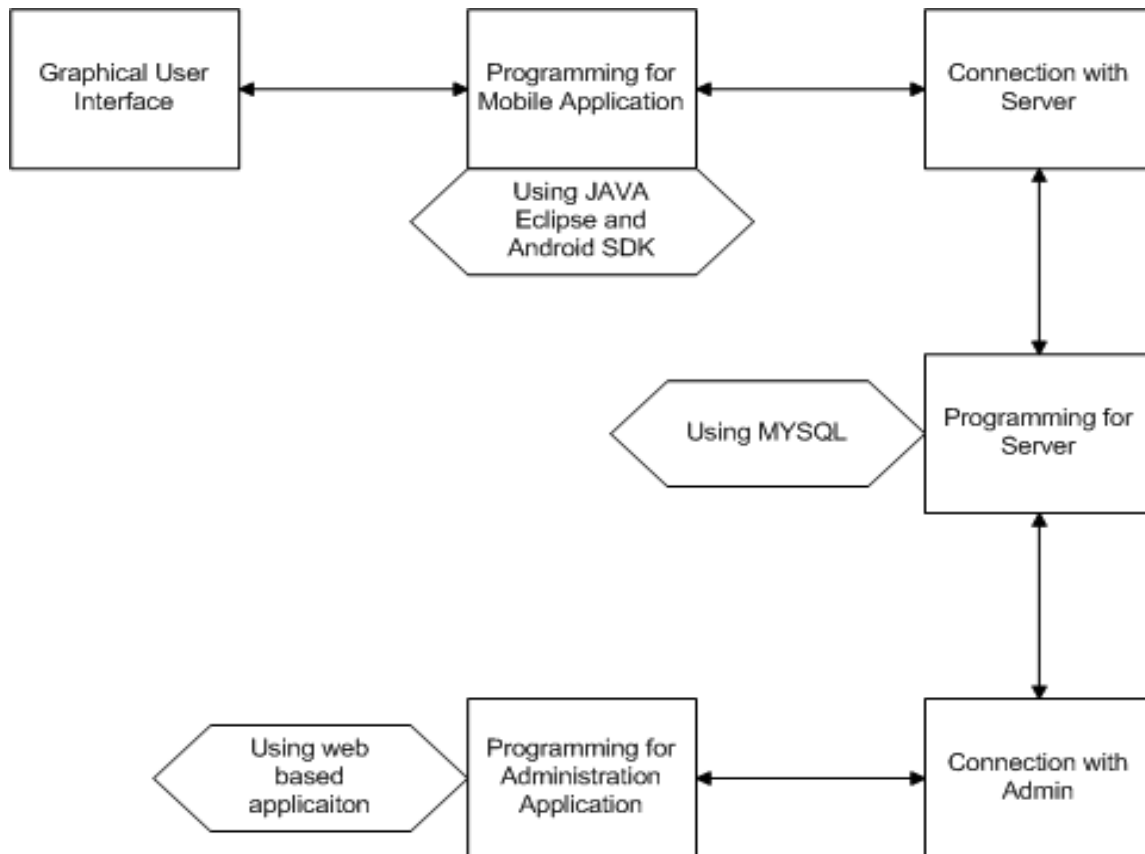
➤ Server

Server acts as database storage for our application. As our application is about crime rate, almost all information that needs to be stored is information and record about crime that happened at certain places. When information about users' locations is detected, records and other information about crime rate at the associate place will be searched in database and being sent to users. Besides, precaution advices will be given to users together with the information given. This information will be kept in server too.

Interfaces between Components:



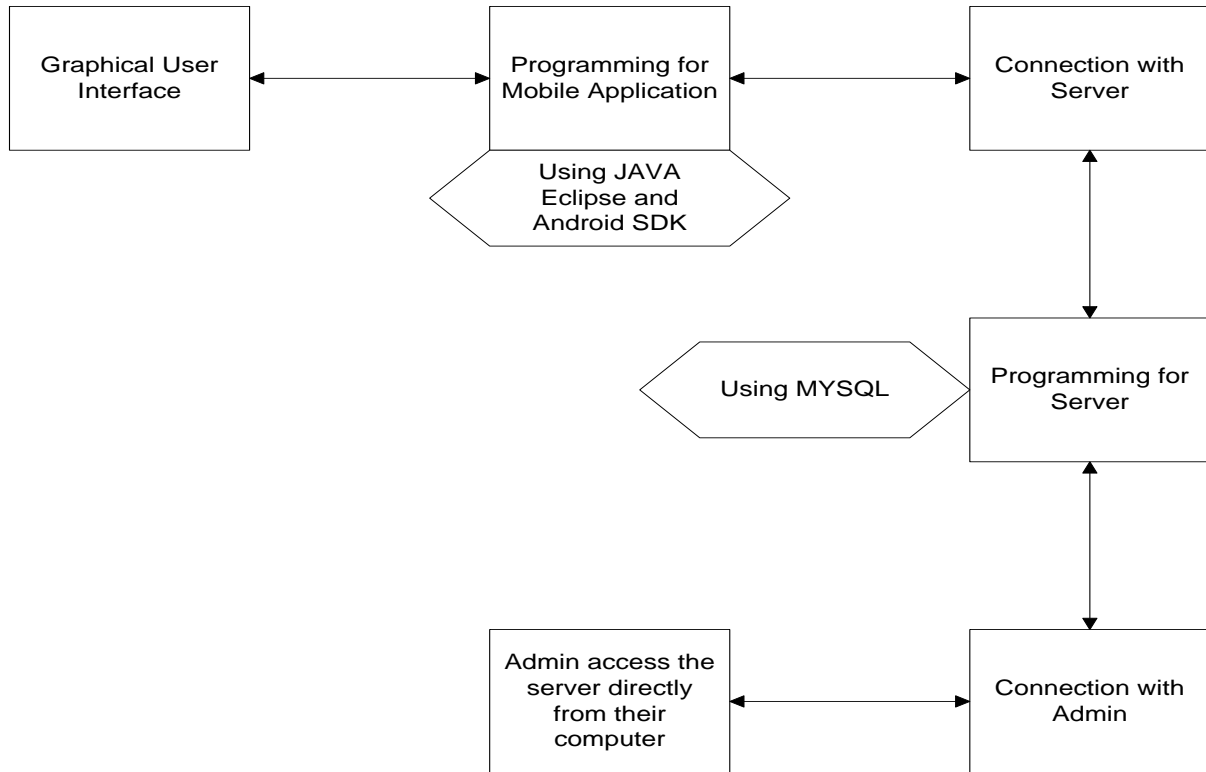
### Implementation 1:



- For this implementation, the first thing that we need to do is to design Graphical User Interface. This is to allow us to have some ideas about what functions that need to be done, related to the provided functions in GUI. After GUI is designed, we need to write a program for the application. This will be done using JAVA Eclipse and Android SDK. Things that will be included in mobile application are function to get users' locations. This will be done using Google Map API. Besides getting users' locations, users are able to see their current location, preventing them from lost.

- When the programming for mobile application is done, it will be connected to server. For this implementation, we are targeting to use MYSQL as the server. There is no way to connect JAVA Eclipse with MYSQL server directly. We will need to connect it to web application first. Thus, we will need to request for internet connection in our programming. Before the server is connected to the mobile application, we will need to do the programming part of server. The data need to be stored and managed properly. What data will be sent, how will it be sent, when will it be sent, this will be important criteria for server programming.
  
- Administration application will need to be done too. We are planning to have the application build on a website. After those three programming for mobile application, server, and administration is done, we will connect them.

Implementation 2:



- The way how this implementation is done is the same with previous implementation. However, for this implementation, there will be no application for administration. Admin will access the server directly from their computer to insert information using server user interface installed in their computer.

Implementation 1	Implementation 2
<p><b>Strength:</b></p> <p>As in implementation 1, we are targeting to use web application for the administration. This will allow admin to monitor the application from multiple places, which means that he/she can access the app from anywhere.</p>	<p><b>Strength:</b></p> <p>For this implementation, connection from server to administration does not need to be established. The application will have less error.</p>

<p>Weakness:</p> <p>This will need more programming to be done. A new connection from server to administration will need to be established. This might prone the system to more errors.</p>	<p>Weakness:</p> <p>Admin will need to online from one place. He will have no mobile access to the server.</p>
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Our group agrees to choose implementation 1 as the best design. It is based on the fact that it uses web application as application for the administration. We believe that convenience shouldn't go only to users, but also for administration as well. It might involve some errors during the process on building it but we are confident that all of that could be fixed until it is done perfectly. By using web based application, admin can access the system from anywhere. He/she will just need to go to specific website, as an example myPHPadmin, and he/she will just need to insert his/her credential and information could be access anywhere. Higher security will be implemented to ensure the data is secured and not accessed by unauthorized person.

Design constraints and possible solutions:

**a) Economic**

- Total cost of project and available budget
- Competition with other similar applications available in Android market
- High maintenance cost
- Time taken to finish the product may affect the total cost of budget

Solution(s):

- Manage budget efficiently
- Supervise project development to meet project deadlines
- Charge end users affordable and reasonable price

**b) Environmental**

- There is no immediate environmental hazard caused by our project since the project deals entirely with software and no hardware are being used

**c) Health and safety**

- There is no immediate health hazard caused by our project since the project deals entirely with software and no hardware are being used
- Unreliable and outdated information may cause safety issue for end users

Solution(s):

- The mobile application should relay up-to-date information to end users

**d) Manufacturability**

- Our project does not have any manufacturing constraint as our product consists of software only

**e) Sustainability**

- The mobile application may not be reliable due to programming errors or deficiencies
- The mobile application may require frequent updates to accommodate the different types of mobile phones

Solution(s):

- Programmer needs to make sure the programming of the software is correct and accurate
- Programming and coding needs to be checked and updated regularly



Professional and Ethical Responsibility with possible solutions:

- a) Avoid from using registered patents without permission

**Solution(s):**

- Request permission from patents' owner if there is any registered patents applied/used in the project

- b) The product should not be used as threat to other users' privacy.

**Solution(s):**

- The service does not collect or send data from the user without their permission. If it does, the service should prompt the users or notify them about the background services.
- The service is limited to one user at a time. Other user could not interfere with other users' services in any way.

- c) The safety of consumers should be considered.

**Solution(s):**

- The project development should be monitored and supervised.

- d) The project design should abide the state's law for public safety or Federal Communications Commission (FCC)

**Solution(s):**

- Allow the law enforcer to supervise and monitor the project to receive certification of public safety

Multi-disciplinary Teamwork Planning:

There is one primary discipline of engineering that would require us to work with which is Computer Engineering. Below is the task that would be performed by a computer engineer:

➤ Computer engineering

- operate computer-assisted engineering tasks such as:
  - Creating software for the system.
  - Maintaining the server of the system.

- Performing the modification of software to correct errors in software system.
- Coordinate installation of software system.
- Supervise testing and validation procedures of software.

### S.W.O.T Analysis:

#### i. Strength:

The objective of the mobile application is to provide information to the users about the crime rate in particular area. The implementation of such application in a mobile can be really useful for users who are aware of their safety especially when they are entering new area that they are not familiar with. Consider they are entering the area that has a high crime rate, and then they are not aware of their safety. By not having the early precaution in order to ensure their safety, the people are in dangerous. By having this application, the crime rate can be reduced.

The implementation of the Google MAP API for the application will direct the users to see their location. This Google MAP API is also useful for users to know the details of the location. By knowing the crime rate in any locations, the user can choose the safer place. By knowing the name of specific location also will remind to the user of the place.

As we are targeting to use web application for the administration, it will allow the admin to monitor the application from multiple places, which this is very convenient to the people to access the app anywhere.

ii. Weaknesses:

The expected weaknesses of the mobile application are misleading information and system error. Since we have chosen to use the web application for the administration, this will need more programming to be done. A new connection from server to administration will need to be established. More errors might be occurred. Thus, this must be done very carefully. The data of crime rate also must be checked regularly to avoid providing the wrong information. In addition, this project requires us to get the information from the police department. If the police department refuses to provide crime rate information, then it would be hard for this project to success.

iii. Opportunities:

This application will not cost much, thus, the price would be very cheap and it won't burden for user to buy it. This application will be developed in Android operating system, thus, more people can install this application on their phone.

The implementation of the application publicly provides more benefits to the people. MYSQL is used as the server to meet this demand. At last, the data can be stored and managed properly. User would find more versions of the apps and this would increase the probability to create a market. Other than that, market opportunity can be established physically in term of the programming. In addition to this is the job opportunity. Such intelligent system needs maintenance on a regular basis. Therefore qualified programmer is needed that should guarantee the optimum performance of the application for long period of time.

iv. Threats:

The objective of the system is to provide information to the user. Since more programming is to be done for this project, there might be some bugs that need to be fixed frequently. Most bugs might arise from mistakes and errors made in either the program's source code or its design, and a few are caused by compilers producing incorrect code. However, we believe that all of that could be fixed until it is done perfectly

Reference:

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