Security Communications Center

Progress Report II

Team 3

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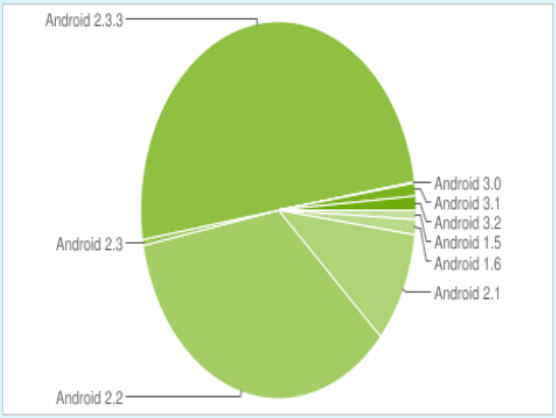
1. Rationale Behind Software Design Decisions [1][2][3]

The application is developed for smart phones which have android operating system. Android operating system is chosen because there are many libraries which will ease our job, tutorials and documentations are easily accessible, and APIs of Google for Android is open source and some APIs are only available for Android operating system. Java will be used as a programming language and application is developed by using Java Eclipse environment. Google Maps Api for Eclipse IDE will be used to generate maps of the application. Since Google Maps Api with Eclipse IDE is used widely to develop such kind of map applications, finding out solutions to encountered problems will be much easier for us. Android version 2.1 will be used to develop this tracking system because smart phones with a newer Android version will have the chance to use this system. By choosing this version, the application will be supported by almost 98 % of the smart phones with android system as it is seen in figure-1 which shows the version used by the android users who access android market during 14-day period. [4]



Platform	Codename	API Level	Distribution
Android 1.5	Cupcake	3	0.8%
Android 1.6	Donut	4	1.3%
Android 2.1	Eclair	7	9.6%
Android 2.2	Froyo	8	35.3%
Android 2.3 - Android 2.3.2	Gingerbread	9	0.5%
Android 2.3.3 - Android 2.3.7		10	50.1%
Android 3.0	Honeycomb	11	0.1%
Android 3.1		12	1.1%
Android 3.2		13	1.2%

Data collected during a 14-day period ending on December 1, 2011

Figure 1: Android Version Distribution

Mysql database language will be used because;

1. It is free
2. Widely used by software developers
3. It is compatible with java which is used as programming language in the project
4. It has many libraries for java
5. Software developers of our team is familiar with it
6. It is easy to use and easy to learn
7. Many Resources and documentations are available on the internet

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SQL Languages [5][6][7]

Microsoft's SQL is only available for Windows Server, so it cannot be run on other platforms. Lately it's been an ongoing security problem, with a variety of known exploits active on the internet. In addition, it has proprietary (Owner won't tell anyone else how it works, and tries to prevent other developers from creating software that does the similar things) extensions that lock users into using their product.

MySQL is an incredibly popular free, open-source database server, largely due to the fact that it can typically run circles around the others, and runs efficiently with fewer resources.

PostgreSQL is a very popular and highly-acclaimed free, open-source database server, and is often selected over commercial products. For its performance and features, not for its price. It runs primarily on Unix-like systems.

Interbase is a popular product from Borland which gets excellent ratings in user surveys. Its main advantages are its modest hardware requirements (but with the ability to scale to very large systems), and its ability to install and run effectively without a lot of intervention by the database administrator. It's a cross-platform system for Windows, Linux, and Solaris. It integrates very well with Borland's excellent development tools, as well as third-party tools. However, it’s not a free product and preferable to use in our project.

Firebird is a free open-source database tool based on the Interbase 6 source code Borland released to the public in 2000. Although the group of developers behind it initiated the fork from standard Interbase due to irreconcilable differences with Borland, the two systems are highly compatible with each other, which remain a high priority for the Firebird team. In addition to the platforms Interbase supports, Firebird is available for other Unix-like systems, including Mac OS X.

Oracle is one of the classic name brand database servers, making it one of the most widely used and widely supported for a cost. It's not the easiest to install or maintain, but its feature set is the richest, and it has a reputation of scaling very well to handle enterprise databases without slowing down.

While **IBM** are no longer the universally safe choice they once were (and neither will Microsoft be), they're still a serious contender, especially in the realm of "big iron" software. With the recent addition of Informix database technology, it's likely to get even better. It's available for Linux, NT, and the Unixes.

SAP MaxDB is an enterprise-class database released by business-software developer SAP as an open-source system. It's available for Windows and several Unix-like systems.

Adabas is known as one of the fastest databases, particularly when dealing with large sets of data. Its reliability makes it a worthwhile candidate for mission-critical applications. It's accessible through either standard interfaces like SQL, ODBC, and JDBC. It's available for Windows, Unix-like systems, OpenVMS, and IBM mainframes. **Adabas D**, a smaller version for small workgroup and personal projects, is available free.

Sybase derived from the same earlier implementation of Microsoft's SQL server. (That's right: Microsoft took advantage of someone else's work to get a head start on their SQL Server product) It's a commercial product, but a (slightly out of date) version for Linux is available for free use.

Pervasive.SQL is who produced Btrieve, a groundbreaking database that is a transactional database software product. It is based on Indexed Sequential Access Method (ISAM), which is a way of storing data for fast retrieval. One of its key advantages is its ease of maintenance. It has a reputation for running itself. Versions are available for Netware, Unix-like systems, and Windows.

MiniSQL (also known as **mSQL**) is a very lightweight implementation of SQL (or at least the most essential elements of the spec), designed to consume the minimal possible system resources when it's running. It's intended for use with small datasets and simple indexing, but as its users have pushed it to do more, developer Hughes Technology has enhanced it to meet many of their needs. Runs natively on Unix-like systems, with ported versions for Windows and OS/2.

2. SW Program Development Summary

We achieved to use Google Maps API in our program to show gps location on map. However, in order to use Google Maps API on android, Google forces to get a certificated key. This certificated key is free for development usage. This certificated key is acquired via g-mail account.

User icons, login screen, message dialog box, some other menus and some visual items will have been added at the end of the semester. Add/join group menu interface will be available on interview 3 but it will not be applicable until next semester.

Towards the end of May 2012, we are planning to establish network communication module of the system, create database and integrate the software with hardware components.

3. Technology Demonstration Test Plan

We are planning to show gps location of user on a map which is received as Google Maps API. Picture of the user will be seen on the screen when user touches icons that represent users on screen. Creating, deleting group options will be available. Message dialog box will be seen on the screen but not functional. Distance between two different users will be calculated and can be seen on the screen.

Figure 2 – A view from application

4. Conclusion

How the software development is enhanced step by step in detail by means of documentation is observed. We possess the chance of evaluating whether what we have planned is correct and reachable. The steps which will be done until the end of project are analyzed and determined.

Gps data may come later than expected time. -> Gps data is planned to be sent in every 10 seconds. Time delay is acceptable.

Battery of encryption device is run out -> data will be encrypted via software based encryption method.

Battery of smart phone of a user is run out -> his location can be determined by looking last 10 locations of that user.

Gps data may not be accurate enough. -> Solutions will be produced until program is released

Gps may not work properly in every place. -> Solutions will be produced until program is released

5. References

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