Sos Android Application

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Abstract

SoS application is a Google – Map based online emergency application useful to find the specified emergency stations like, Police, Fire station, Cab service numbers and Hospitals, likely to be found in a given circular area. The user will only have to provide a radius of area to be searched. With the help of this application, User will also be able to view a geographical map of the area, make calls, and send messages to a selected emergency station. In this project, the application can be scaled up to the procedures which can be carried out in an emergency situation. Another aspect that can be put into reference for future scope is that the application can be mapped into any other operating system and can be used in iPhones, iPads or any other Windows phone. This application will also prescribe home remedies for common ailments.

1. Introduction

The system itself defines its task, "SOS" means it is a system which will manage the emergency situations and provide home remedies for different diseases. Anyone, ranging from home users to office users who is in a traumatic situation and needs help or guidance, be it stuck in an emergency situation or to see home remedies of common diseases. People who want to send emergency message in case of trouble. A person who wants to search out the nearest hospital, police station, cabs in case of trouble. What is need for this application? Let us illuminate certain points in order to understand the situation and need for this application : Unable to contact during emergency Unable to reach nearest hospital in case of emergency
- Unable to find the route to a hospital, police station in case of emergency Unable to save some important locations and their route Unable to send multiple messages during emergency Unable to find out the home made remedies for small diseases

2. Literature View

2.1 Domain Research

As this project is a website as well as android application. The development of this needs a great research work. With research work done properly one can make out the success or failure of the project, as it provides complete exposure of knowledge, business, human networking, better insights and understanding of the required area.

Domain research will deal with the whole method of a Website building. Then the developer will include the study of J2EE, XML, Android, SQL Queries. To make the research better, developer has divided it in the following domains:

2.2 Need for Mobile Technology

[3]At the end of 2011, there were 6 billion mobile subscriptions, estimates The International Telecommunication Union (2011). That is equivalent to 87 percent of the world population. And is a huge increase from 5.4 billion in 2010 and 4.7 billion mobile subscriptions in 2009. From the given facts one can easily understand why we should develop a mobile application. Also in the problem description area I have mentioned many reasons why we should not opt for file system. This is the main reason behind choosing mobile technology.[3]

2.3 Need for Android Mobile Technology

[9]48.5% people in US owns android device. Out of 51.5 all other mobile companies are fighting for their existence.At the 2012 Mobile World Congress, Google released a startling statistic: There are now around 850,000 Android activations made each day. When close to one million phones are being turned on every day, you're doing something right. Yet, Google and its mobile operating system, Android, still get a bad rap because of different versions coming out.. Still it is going to play a vital role in the future mobile era. This is why we have chosen android technology to implement this system.[9]

2.4 Global Positioning System (GPS) tracking

[4]The most accurate procedure to find the exact location of a place is by only GPS and if we could attach GPS with Google-Map then the users can find the exact location of anyone and as these devices are on everybody's android mobile.
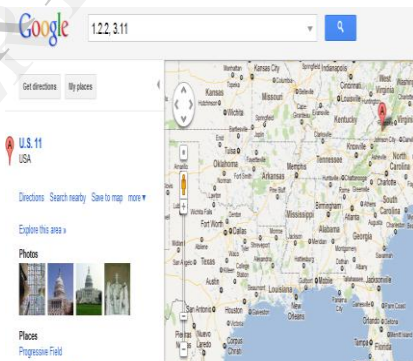

Figure 1. Google Maps with Gps

2.5 GSM, GPRS, WIFI

The proposed system will provide the services across the countries also as the users often continue to use their mobile phones when they travel to other countries.
The proposed system can access the internet by GPRS and the data usage must be less than 56 Kbps so that all users can effectively use the services.
The proposed system can access the internet by Wi-Fi and the data usage must

be less than 80 Kbps so that all users can effectively use the services

2.6 Visibility

Visibility is one of the most important design principles and what it means is that, as and when the user looks on the system screen he/she may feel the possibility for action. The developer will keep an eye on this principal in order to provide better visibility.

2.7 Feedback and Constraints

Feedback is the response to the user
of the action performed
Constraints are some universally accepted conventions which notify some specific actions.

2.8 Programming Language Research

2.8.1 Android

- Android OS specific programming, as it is better for customization
- Android is well supported with JSP
- Android Support with Google-Map and GPS technology
- Android has Multi-threading, Handler, Exception Handling, Encapsulation which can be used in the system for various functions like fetching friends data while showing their location on Google-Map. [4]

2.8.2. J2EE

[10]To develop the web services use of J2EE will be done.
There are a number of patterns that have been identified by the Sun Java Centre for the presentation tier i.e. which is visible to the users. Various patterns are described below in details.

Intercepting Filter: Facilitates pre-processing and post-processing of a request.
Front Controller: Provides a centralized controller for managing the handling of requests.
Composite View: Creates an aggregate View from atomic subcomponents.

View Helper: Encapsulates logic that is not related to presentation formatting into Helper components.
Service to Worker: Combines a Dispatcher component with the Front Controller and View Helper patterns.
Business Delegate: Reduces coupling between presentation-tier clients and business services. It hides the underlying implementation details of the business service, such as lookup and access details of the EJB architecture.
Service Locator: Multiple clients can reuse the Service Locator object to reduce code complexity, provide a single point of control, and improve performance by providing a caching facility.
Transfer Object Assembler: It is used to build the required model or sub model. The Transfer Object Assembler uses Transfer Objects to retrieve data from various business objects and other objects that define the model or part of the model.
Composite Entity: It model, represent, and manage a set of interrelated persistent objects rather than representing them as individual fine-grained entity beans. A Composite Entity bean represents a graph of objects.
Data Access Object: Abstracts and encapsulate all access to the data source. The DAO manages the connection with the data source to obtain and store data. [10]

3. Data Mining for SoS

Data Mining means finding information from third-party sources such as marketing

research, websites, magazine articles, and other sources that is already published or gathered by somebody.

3.1 Technical

This part is going to research the proposed system technically means what programming language or database the system is going to use.

3.2 Android

[11]Android is the world's most popular mobile platform. With Android you can use all the Google apps you know and love, plus there are more than 600,000 apps and games available on Google Play to keep you entertained, alongside millions of songs and books, and thousands of movies. Android devices are already smart, and will only get smarter, with new features you won't find on any other platform, letting you focus on what's important and putting you in control of your mobile experience.

3.3 Android OS programming

Android powers hundreds of millions of mobile devices in more than 190 countries around the world.
Android gives us a world-class platform for creating apps and games for Android users everywhere, as well as an open marketplace for distributing to them instantly.

3.4 Android Support with Google Map

Android and Google Map both are initiatives of Google itself and for ease of use they have provided the packaged libraries bundled with Android platform so use of Google-Map in android application is without compatibility issues, exceptions and well defined so that no performance issue occurs as in mobile systems performance sometime causes application to crash.[11]

3.5 Multithreading

[10]A program or process can contain multiple threads that execute instructions according to program code. Like multiple processes that can run on one computer, multiple threads appear to be doing their work in parallel. Implemented on a multi-processor machine, they actually can work in parallel. Unlike processes, threads share the same address space; that is, they can read and write the same variables and data structures.
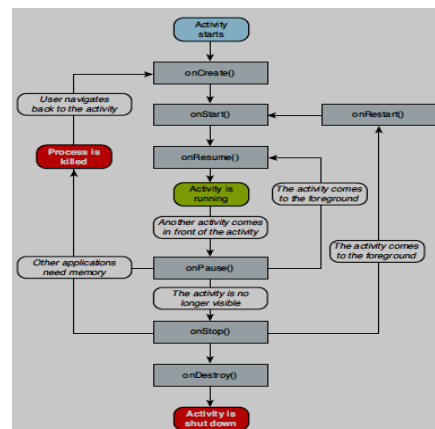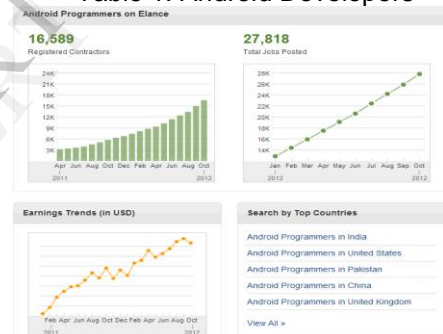
Table 1. Android Developers

Figure 2. Android Lifecycle

3.6 Handler

A Handler allows sending and processing Message and **Runnable** objects associated with a thread's **MessageQueue**. Each Handler instance is associated with a single thread and that thread's message queue. When user creates new Handler, it is bound to the thread / message queue of the thread that is creating it -- from that point on, it will deliver messages and runnable to that message queue and execute them as they come out of the message queue.

3.7 Exception Handling

Exceptional conditions in traditional environments often arise in situations such as division by zero or "file not found," and they must be managed with clumsy and hard-to-read constructs. Java helps in this area by providing object-oriented exception handling.

3.8 Server-Side Application

Developer thinks that for developing proposed Server-Side application JSP-servlet will be used, as J2EE is a feature-rich server-side programming(and all we need from JSP-Servlet is to send and receive the data) which contains Exception- Handling, object oriented concepts, which will help in developing the proposed project.

JSP has Android support as these two are backed by Google itself like JSP supports JSON objects that will be responsible for data communication between these two.

3.9 JSP-Servlet with Android

❖ It is well-compatible with android data sending and receiving with the help of

JSON objects which is dedicated for this particular operation.

❖ JSP-Servlet and Android both are well-backed by Google so there won't be any compatible and performance issues

❖ It has all the capabilities like database connectivity, receiving and sending data, Validations needed for the project.

❖ It is well-supported with Android. [10]

3.10 Database Management System

3.10.1 MySQL

[16]The MySQL Database powers the most demanding Web, E-commerce and Online Transaction Processing (OLTP) applications. It is a fully integrated transaction-safe, ACID compliant database with full commit, rollback, crash recovery and row level locking capabilities. MySQL delivers the ease of use, scalability, and performance that has made MySQL the world's most popular open source database. Some of the world's most trafficked websites like Facebook, Google, ticketmaster, and eBay rely on MySQL for their business critical applications.

3.10.2 SQL Query

SQL Query will be used for interacting with DBMS in order to fetch the data or maintain records in backend databases.

SQLlite Database

It will be used by developer as backend for the project or websites. [16]

4. Methodology

[14] The Advanced waterfall provides an orderly sequence of development steps and

helps ensure the adequacy of documentation and design reviews to ensure the quality, reliability, and maintainability of the developed software.
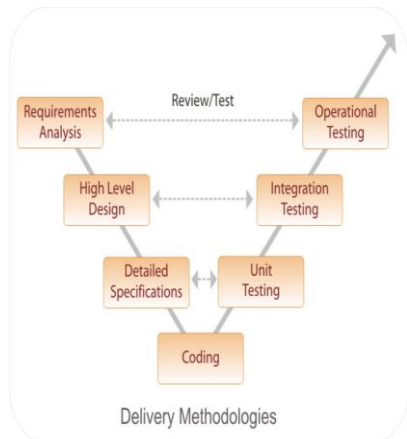

Figure 3. Software Development V-Model

4.1 Phases of V-Model

This methodology has following phase that developer will follow while developing the system.

Requirement Analysis-This is the first step in the verification process. During this stage the developer will not be going to discuss how the system is going to be built; it is going to be a generalized discussion and a user requirement document is put forth. This document will carry information regarding the function of the system, performance, security, data, interface etc. This document is required by the business analysts to convey the function of the system to the users. So it will merely be a guideline.

High Level Design-Like the name of the phase suggests, here the possible design of the product is formulated. It is formulated after keeping in mind the requirement

notes. While following the documents, if there is something that doesn't fit right in the design, then the user is made aware of it and changes are accordingly planned.

Detailed Specifications-In the detailed specifications, the high level design is again broken up into sub units so that they can be studied and explained separately. The units are called modules. The modules can separately be decoded by the programmer.

The Validation Phases of the V model

Unit Testing-A unit in the programming system is the smallest part which can be tested. In this phase each of these units are tested.

Integration Testing or Interface Testing-In this phase the separate entities will be tested together to find out the flaws in the interfaces.

Operational Testing-After the previous stage of interface testing, in this phase it is checked if the system meets the requirements that have been specified for this integrated product.

Acceptance Testing-In the acceptance test, the integrated product is put against the requirement documents to see if it fulfills all the requirements.

Release Testing-It is in here that judgment has to be made if the product or software which is created is suitable for the user. [14]
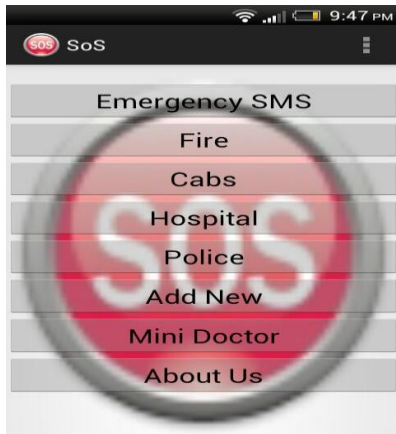
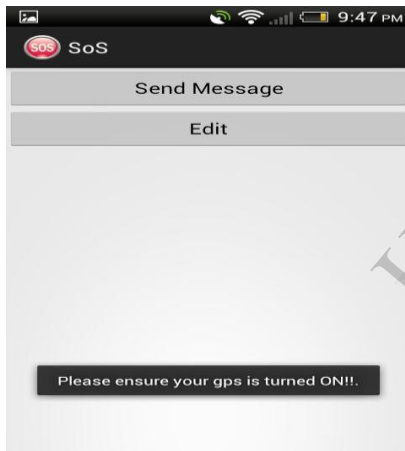## 5. Results

Figure 4. SoS Android
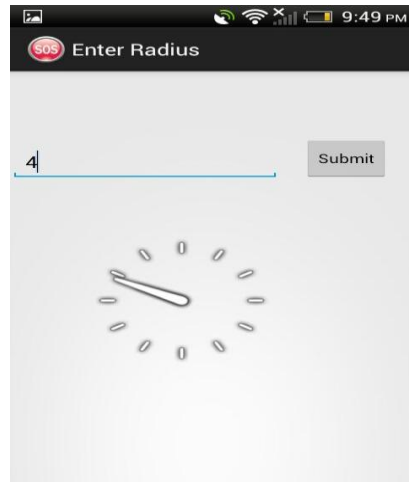Application Screenshot

Figure 6. On pressing
Police, Fire or Hospital option

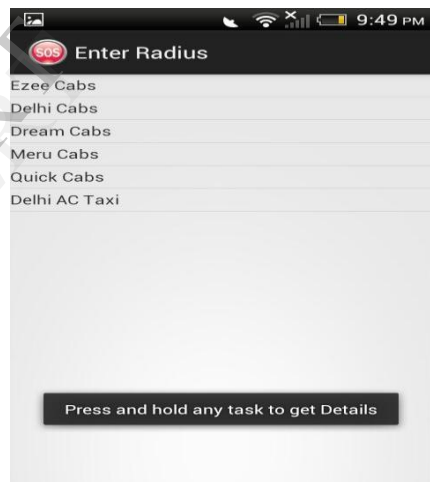Figure 5. On pressing
Emergency SmS option

Figure 7. On pressing
Cabs option

6. Conclusion

After going through the research work I am
now able to find out the in-depth
knowledge of the languages which will be
used to create the system. This system is
going to be developed on java frame work
as android is also based on java and so is
the JSP-servlet. The database which will be
used in this system will be SQLite for

android mobile and MySQL server for the web services.

7. References

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