REMOTE CELLULAR SMS NETWORK COMMANDER

Main Project Report

submitted in partial fulfillment of the award of the degree

of

Bachelor of Technology

in

Computer Science and Engineering

of

Cochin University of Science and Technology

Under the guidance of

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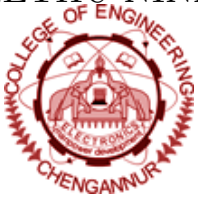

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Certificate

This is to certify that the main project report entitled

REMOTE CELLULAR SMS NETWORK COMMANDER

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is a bonafide record of the work done by them.

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Acknowledgment

This project would never have been successful if it weren't for the dedication put in by many minds selflessly. First, We thank GOD, THE ALMIGHTY for showering his abundant blessings upon us for the fulfillment of this seminar.

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This humble endeavor wouldn't have become a success without the constant support, inspiration and blessings from my parents. We express our love and gratitude to all our well-wishers and dear ones without whose support and encouragement this work would have never been possible.

Abstract

We are developing the proposed system for monitoring the networks. When we have a group of computers interconnected, the administration and monitoring all these systems are required. For this purpose we can use one computer called server computer. All remaining computers are called client computers and are under the control of server computer. Using server operating systems we can control the client system. Although we have server-operating systems to monitor the client machines, here we present a new tool using which we can monitor and control the client machines very effectively. Remote Cellular SMS Commander network tool can control remote PC systems with a mobile phone device through using the SMS message services. There is no so conditions that this mobile phone must be of a particular type or version. The only condition is, it must support SMS inside the devices and can work with the network that provide the services of SMS.

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1 Introduction

This software is used to control the working of a computer using mobiles.It contains mainly mobile phones and computers. User mobiles are connected to a central server, and this central server forms a network of client PC's. The user can send the messages using their respective mobile phones, which is connected to the central system. Based on the request send by the user, the server system performs the task on their respective client PC's. The goal is to control the remote PC systems with a mobile phone device through using the SMS message services. There is no condition that mobile phone must be of a particular type or version.The only condition is they must support SMS inside the devices and can work with the network they provide the services of SMS. This software enables users to use data and functions stored in/served by their office PC's from anywhere with small mobile devices.

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages. A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities. For the purpose of this document, the term GSM modem is used as a generic term to refer to any modem that supports one or more of the protocols in the GSM evolutionary family, including the 2.5G technologies GPRS and EDGE, as well as the 3G technologies WCDMA, UMTS, HSDPA and HSUPA.

GSM modems can be a quick and efficient way to get started with SMS, because a special subscription to an SMS service provider is not required. In most parts of the world, GSM modems are a cost effective solution for receiving SMS messages, because the sender is paying for the message delivery.

2 Literature Survey

2.1 Existing System

There does not exist a device to control the operation of a PC in the network. So it is a very tedious procedure and the resource and manpower is very high. We cannot fully control the operation of system in a specific time and work overload of the employee is very high. Various factors for inventing the new proposed system is

1 Security

2 Resource utilization maximum

3 Availability

Usually above given techniques are not integrated together into a single system.

2.2 Proposed System

We are developing the proposed system for monitoring the networks. When we have a group of computers interconnected, the administration and monitoring all these systems are required. For this purpose we can use one computer called server computer. All remaining computers are called client computers and are under the control of server computer. Using server operating systems we can control the privileges of the client user by setting client access permissions and other settings specified in the domain. Although we have server-operating systems to monitor the client machines, here we present a new tool using which we can monitor and control the client machines very effectively. Remote Cellular SMS Commander network tool can control remote PC systems with a mobile phone device through using the SMS message services. Which can be done by using two mobile phones, there is no so conditions that both mobile phones must be the same types or versions. The only condition is, they must support SMS inside the devices and can work with the network that provide the services of SMS.

3 Software Requirement Specification

3.1 Introduction

3.1.1 Purpose

The purpose of this document is to present a detailed description on Remote Cellular SMS based Network Commander. This software is used to control the working of a computer using mobiles. It contains mainly mobile phones and computers. The user can send the messages using their respective mobile phones, which is connected to the central system. Based on the request send by the user, the server system performs the task on their respective client PC's.

3.1.2 Scope

System described in this document is specifically designed for Remote Cellular SMS based Network Commander. Scope of this project is as follows:

1 Ability to restart the computer

2 Ability to shut down the computer

3 Detect any USB connected

4 Monitor activities in the system

5 Notifications from leaders

3.2 Overall Description

3.2.1 Product Perspective

This product is developed for monitoring the networks. When we have a group of computers interconnected, the administration and monitoring all these systems are required. For this purpose we can use one computer called server computer. All remaining computers are called client computers and are under the control of server computer. Using server operating systems we can control the privileges of the client user by setting client access permissions and other settings specified in the domain. Although we have server to monitor the client

machines, here we present a new tool using which we can monitor and control the client machines very effectively. Remote Cellular SMS Commander network tool can control remote PC systems with a mobile phone device through using the SMS message services. There is no so conditions that the mobile phone must be the particular type or version. The only condition is, it must support SMS inside the devices and can work with the network that provide the services of SMS.

3.2.2 Operating System Environment

Java Platform, Standard Edition or Java SE is a widely used platform for programming in the Java language. It is the Java Platform used to deploy portable applications for general use. In practical terms, Java SE consists of a virtual machine, which must be used to run Java programs, together with a set of libraries (or "packages") needed to allow the use of file systems, networks, graphical interfaces, and so on, from within those programs. NetBeans is a free, open-source Integrated Development Environment for software developers.The NetBeans Platform is a reusable framework for simplifying the development of other desktop applications.

3.3 Functional Requirments

The system presented in this document mainly consist of two modules, they are server module and client module.

Server module consists of:

1 Connection management module: It is responsible for establishing connection between server and clients.

2 Client session management module: It is responsible for managing the activities of the client, that is it keep track of the client.

3 Database Connectivity:It is responsible for managing database and handling queries.

4 User management: Manages the users who are members of the network.

5 SMS module: Responsible for receiving sms from the client which is in pdu format and convert it in to text format.

Client module consist of:

1 Server request process unit: This modules handles the request received to server such as login request,application run request etc.

2 Client authentication module: Responsible for managing the authentication of client who logs in.

3 Client appilcation Module:Client application is always running on the system. This module responsible for viewing and coding of application.

4 Application management: Manage client applications.

3.4 Non-Functional Requirements

3.4.1 Software Requirements

- Platform : Windows
- Database : mySQL
- Languages : Java SE, NetBeans IDE

3.4.2 Hardware Requirements

- Processor : Pentium III or above.
- Speed : 1.4 GHz.
- Base Memory : 128MB RAM.
- Hard Disk Drive : 40 GB.
- Key Board : ISO/IEC9995 QWERTY Keyboard
- Display Type : VGA/EGA
- Mobile Device : Any Mobile device with inbuilt SMS functionality

3.4.3 Perfomance Requirement

- Scalability:System should be able add any number of clients.
- Speed:Speed of the system should be responsive, that is response to a particular action should be available in short period of time.
- Safety:The data in the database should not be lost, if a needed a backup should be made available.
- Security:The system database should not be manipulated by the user.

3.4.4 Definition

1 Administrator: The one who manages the system .

2 Server: A computer system which provides services to the client.

3 Client: User who are already registered in network and can send sms to the admin pc.

4 Database: Collection of client information monitored by administrator.

5 Network: Collection of computers which consist of one server and many clients.

3.4.5 Acronyms

- JFC. A Java toolkit for developing graphical user interface
- JDBC. An API that defnes how a client may access a database
- Java SE 1.6. Java SE is a widely used platform for programming in java language
- NetBeans IDE. NetBeans is a free, open-source Integrated Development Environment for software developers

4 Detailed Design Diagram

4.1 Data flow Diagrams

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modelling its process aspects. Often they are a preliminary step used to create an overview of the system which can later be elaborated. DFDs can also be used for the visualization of data processing (structured design). A DFD shows what kinds of information will be input to and output from the system, where the data will come from and go to, and where the data will be stored. It does not show information about the timing of processes, or information about whether processes will operate in sequence or in parallel (which is shown on a flowchart).

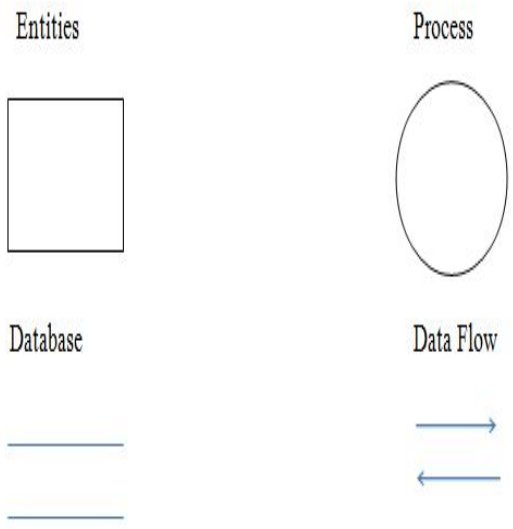

Figure 1: *Symbols*

It is common practice to draw the context-level data flow diagram first, which shows the interaction between the system and external agents which act as data sources and data sinks. On the context diagram the system's interactions with the outside world are modelled purely in terms of data flows across the system boundary. The context diagram shows the entire system as a single process, and gives no clues as to its internal organization. This context-level DFD is next "exploded", to produce a Level 1 DFD that shows some of the detail of the system being modelled. The Level 1 DFD shows how the system is divided into sub-systems (processes), each of which deals with one or more of the data flows to or from an external

agent, and which together provide all of the functionality of the system as a whole. It also identifies internal data stores that must be present in order for the system to do its job, and shows the flow of data between the various parts of the system.

Data flow diagrams were proposed by Larry Constantine, the original developer of structured design, based on Martin and Estrin's "data flow graph" model of computation. Data flow diagrams are one of the three essential perspectives of the structured-systems analysis and design method SSADM. The sponsor of a project and the end users will need to be briefed and consulted throughout all stages of a system's evolution. With a data flow diagram, users are able to visualize how the system will operate, what the system will accomplish, and how the system will be implemented. The old system's dataflow diagrams can be drawn up and compared with the new system's data flow diagrams to draw comparisons to implement a more efficient system. Data flow diagrams can be used to provide the end user with a physical idea of where the data they input ultimately has an effect upon the structure of the whole system from order to dispatch to report. How any system is developed can be determined through a data flow diagram model. In the course of developing a set of levelled data flow diagrams the analyst/designers is forced to address how the system may be decomposed into component sub-systems, and to identify the transaction data in the data model.

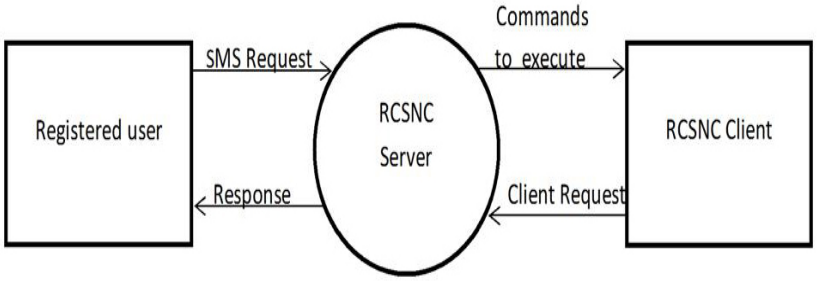

Figure 2: *Level 0 DFD*

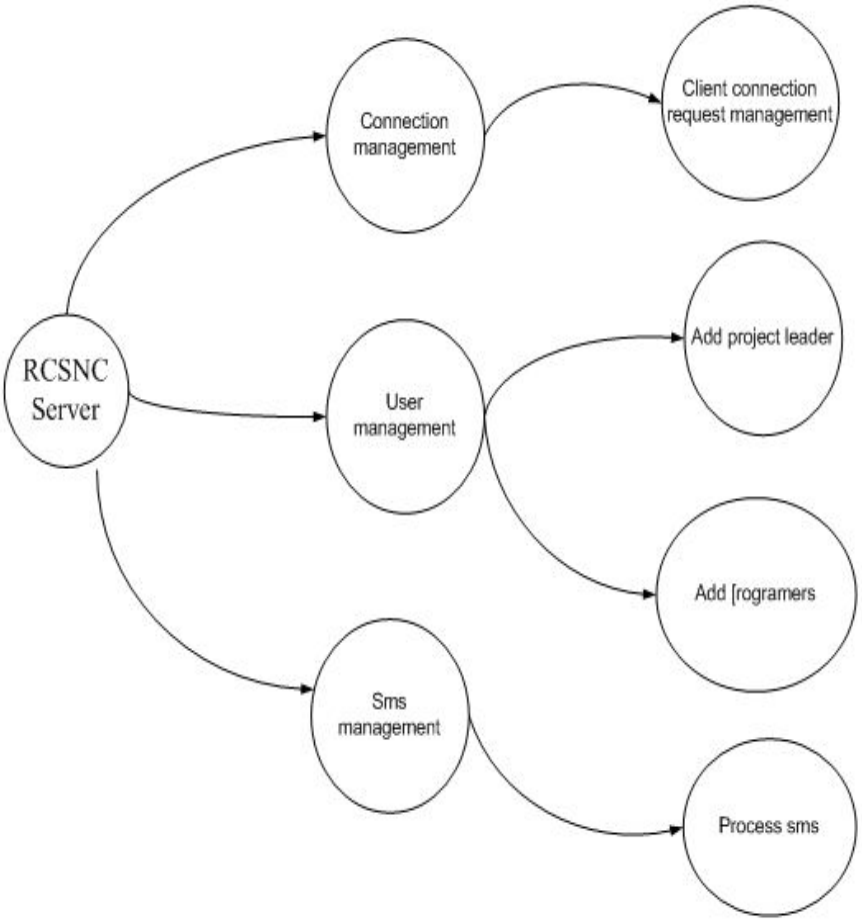

Figure 3: *Server Level 1 DFD*

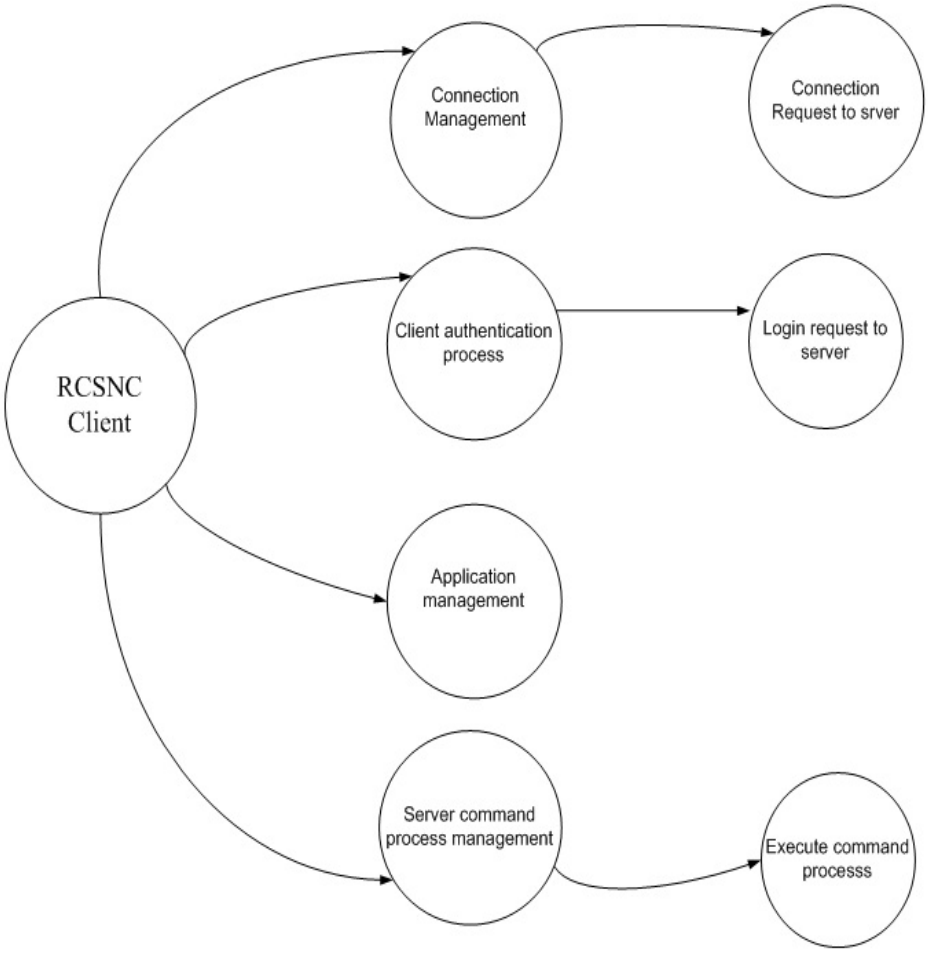

Figure 4: *Client Level 1 DFD*

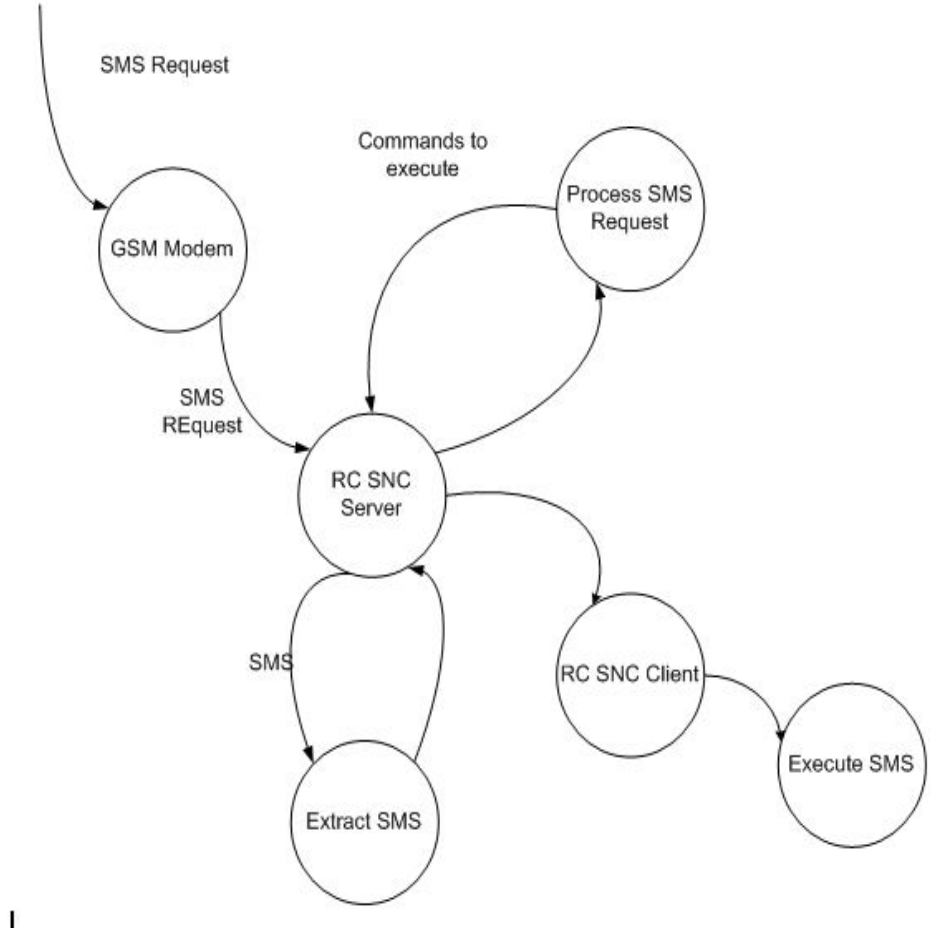

Figure 5: *Server Level 2 DFD*

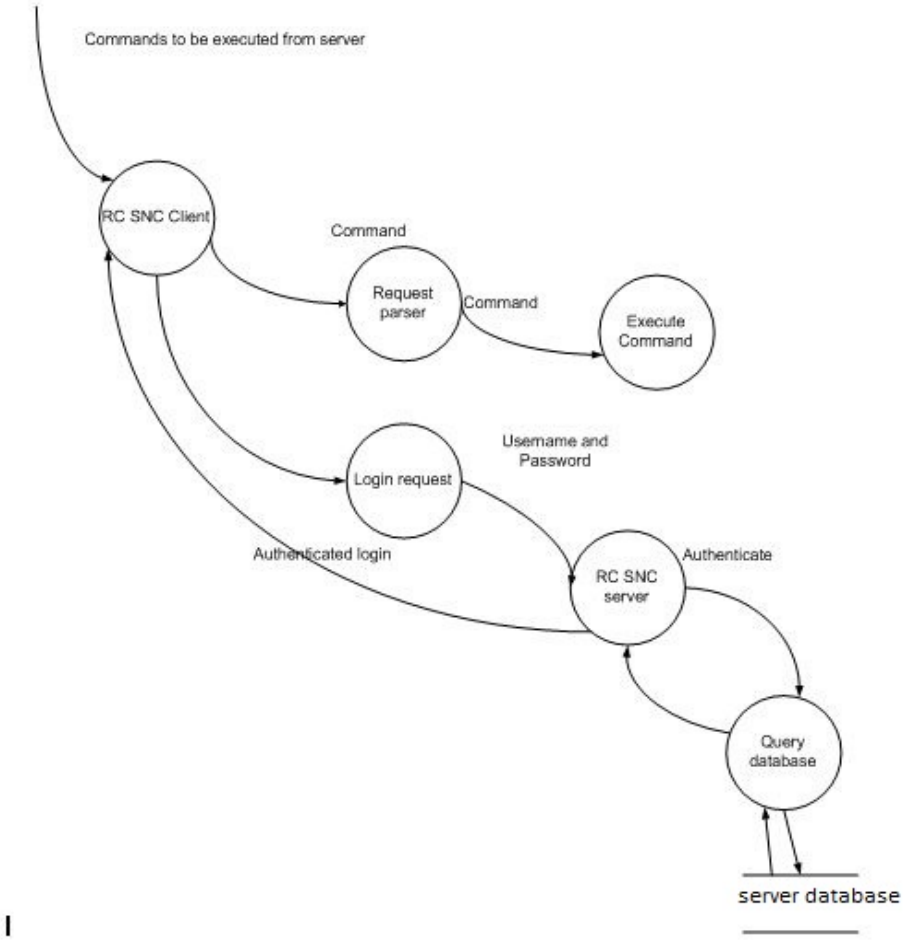

Figure 6: *Client Level 2 DFD*

4.2 Use case Diagram

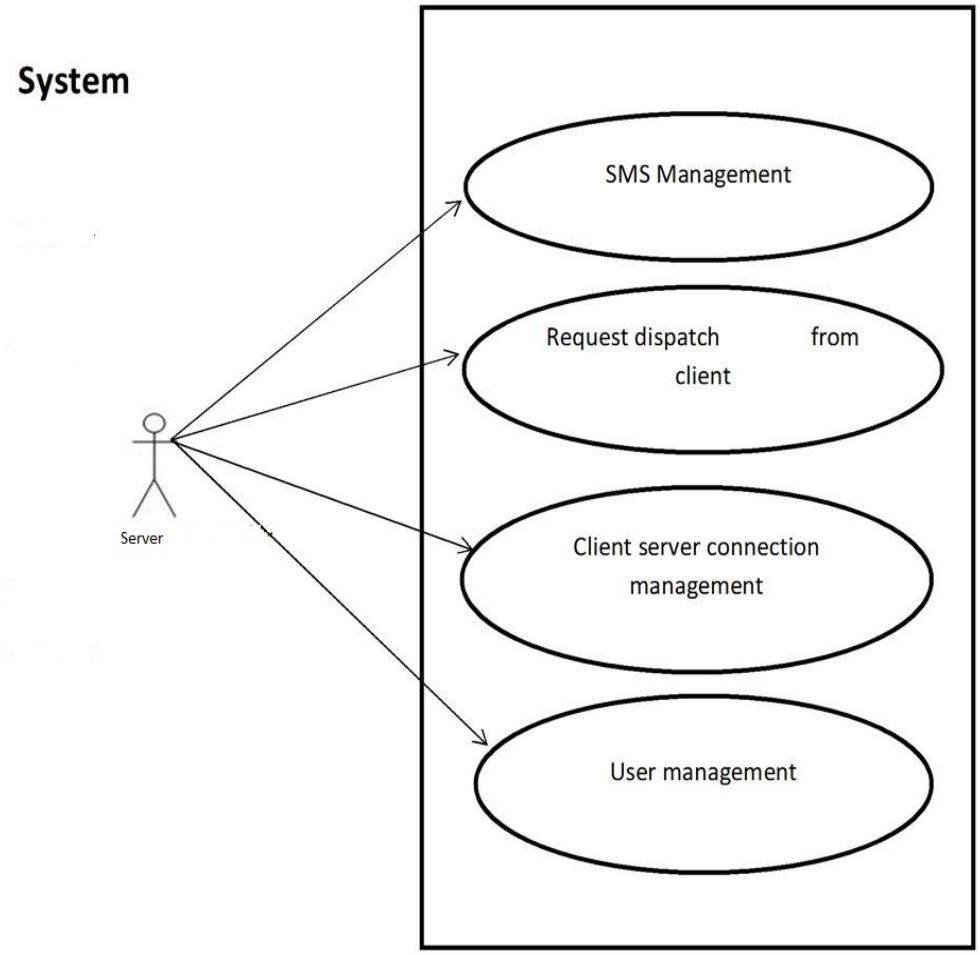

Figure 7: *Server Usecase Diagram*

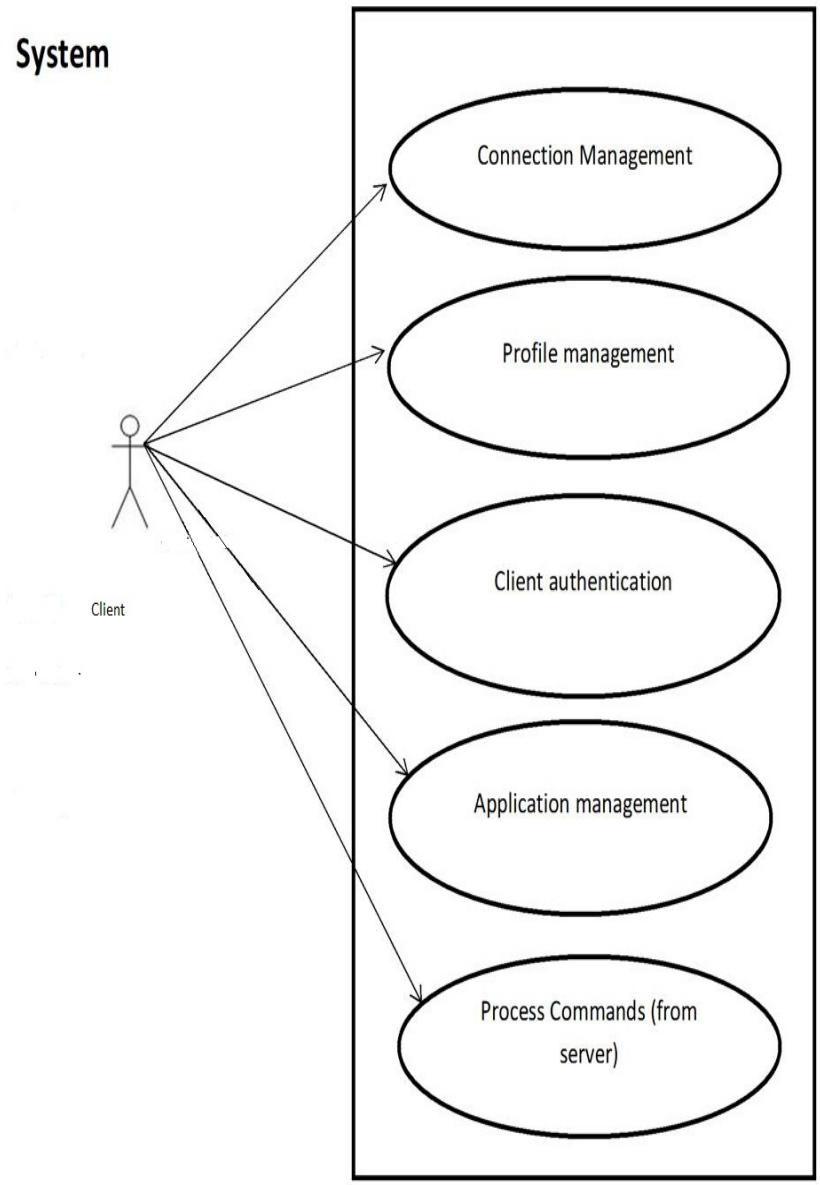

Figure 8: *Client Usecase Diagram*

4.3 Database Table

Field	Data Type	Description
commandId	varchar	primary key
content	varchar	
mobile	int	

Table 1: command

Field	Data Type	Description
hostId	int	primary key
hardwareInfo	varchar	
hostName	varchar	
osinfo	varchar	
systemInfo	varchar	

Table 2: host

Field	Data Type	Description
leaderId	int	primary key
mobile	int	
name	varchar	

Table 3: leader

Field	Data Type	Description
messageId	int	primary key
message	varchar	
messageType	int	
mobile	int	

Table 4: message

Field	Data Type	Description
userId	int	primary key
email	varchar	
mobile	int	
name	varchar	
leaderId	int	

Table 5: user

5 Implementation

5.1 Introduction

Implementation is the stage in the project where the theoretical design is turned into a working system. Implementation is the final and important phase. The most critical stage in achieving a successful new system and in giving the users confidence that the new system will work and be effective. The system can be implemented only after thorough testing is done and if it found to working according to the specification. This method also offers the high security since the old system can take over if the errors are found difficult to handle certain type of transactions while using the new system. Implementation phase include the training that should be provided for the chosen staff.

Softwares used for developing this system are:

5.1.1 NetBeans

NetBeans is an integrated development environment (IDE) for developing primarily with Java, but also with other languages, in particular PHP, C/C++, and HTML5. It is also an application platform framework for Java desktop applications and others. The NetBeans IDE is written in Java and can run on Windows, OS X, Linux, Solaris and other platforms supporting a compatibleJVM

The NetBeans Platform allows applications to be developed from a set of modular software components called modules. Applications based on the NetBeans Platform (including the NetBeans IDE itself) can be extended by third party developers. The NetBeans Team actively support the product and seek future suggestions from the wider community. Every release is preceded by a time for Community testing and feedback.

NetBeans began in 1996 as Xelfi a Java IDE student project under the guidance of the Faculty of Mathematics and Physics at Charles University in Prague. In 1997 Roman Stank formed a company around the project and produced commercial versions of the NetBeans IDE until it was bought by Sun Microsystems in 1999. Sun open-sourced the NetBeans IDE in June of the following year. Since then, the NetBeans community has continued to grow in 2010, Sun (and thus NetBeans) was acquired by Oracle.

5.1.2 Eclipse

In computer programming, Eclipse is an integrated development environment (IDE). It contains a base workspace and an extensible plug-in system for customizing the environment. Written mostly in Java, Eclipse can be used to develop applications. By means of various plug-ins, Eclipse may also be used to develop applications in other programming languages: Ada, ABAP,C, C++, COBOL, Fortran, Haskell, JavaScript, Lasso, Perl, PHP, Python, R, Ruby (including Ruby on Rails framework), Scala,Clojure, Groovy, Scheme, and Erlang. It can also be used to develop packages for the software Mathematica. Development environments include the Eclipse Java development tools (JDT) for Java and Scala, Eclipse CDT for C/C++ and Eclipse PDT for PHP, among others.

The initial code base originated from IBM VisualAge. The Eclipse software development kit (SDK), which includes the Java development tools, is meant for Java developers. Users can extend its abilities by installing plug-ins written for the Eclipse Platform, such as development toolkits for other programming languages, and can write and contribute their own plug in modules. Released under the terms of the Eclipse Public License, Eclipse SDK is free and open source software (although it is incompatible with the GNU General Public License). It was one of the first IDEs to run under GNU Classpath and it runs without problems under IcedTea.

Eclipse began as an IBM Canada project. Object Technology International (OTI), which had previously marketed the Smalltalk-based VisualAge family of integrated development environment (IDE) products, developed the new product as a Java-based replacement.In November 2001, a consortium was formed with a board of stewards to further the development of Eclipse as open source software. It is estimated that IBM had already invested close to 40 million by that time. The original members were Borland, IBM, Merant,QNX Software Systems, Rational Software, Red Hat, SuSE, TogetherSoft and WebGain. The number of stewards increased to over 80 by the end of 2003. In January 2004, theEclipse Foundation was created.

Android and GSM are two important components in this system.

5.1.3 Android

Android is an open source and Linux-based Operating System for mobile devices such as smartphones and tablet computers. Android was developed by the Open Handset Alliance, led by Google, and other companies. Android offers a unified approach to application development for mobile devices which means developers need only develop for Android, and their applications should be able to run on different devices powered by Android. The first beta version of the Android Software Development Kit (SDK) was released by Google in 2007 where as the first commercial version, Android 1.0, was released in September 2008. On June 27, 2012, at the Google I/O conference, Google announced the next Android version, 4.1 Jelly Bean. Jelly Bean is an incremental update, with the primary aim of improving the user interface, both in terms of functionality and performance. The source code for Android is available under free and open source software licenses. Google publishes most of the code under the Apache License version 2.0 and the rest, Linux kernel changes, under the GNU General Public License version 2.

Features of Android

Android is a powerful operating system competing with Apple 4GS and supports great features. Few of them are listed below:

- Beautiful UI : Android OS basic screen provides a beautiful and intuitive user interface.
- Connectivity : GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, Bluetooth, Wi-Fi, LTE, NFC and WiMAX.
- Storage : SQLite, a lightweight relational database, is used for data storage purposes.
- Media support: H.263, H.264, MPEG-4 SP, AMR, AMR-WB, AAC, HE-AAC, AAC 5.1, MP3, MIDI, Ogg Vorbis, WAV, JPEG, PNG, GIF, and BMP
- Messaging : SMS and MMS

5.1.4 GSM

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone. When a GSM modem is connected

to a computer, this allows the computer to use the GSM modem to communicate over the mobile network. While these GSM modems are most frequently used to provide mobile internet connectivity, many of them can also be used for sending and receiving SMS and MMS messages.

A GSM modem can be a dedicated modem device with a serial, USB or Bluetooth connection, or it can be a mobile phone that provides GSM modem capabilities. For the purpose of this document, the term GSM modem is used as a generic term to refer to any modem that supports one or more of the protocols in the GSM evolutionary family, including the 2.5G technologies GPRS and EDGE, as well as the 3G technologies WCDMA, UMTS, HSDPA and HSUPA.

GSM modems can be a quick and efficient way to get started with SMS, because a special subscription to an SMS service provider is not required. In most parts of the world, GSM modems are a cost effective solution for receiving SMS messages, because the sender is paying for the message delivery.

The mapping between Java class and table is provided using hibernate.

5.1.5 Hibernate

Hibernate is an Object-Relational Mapping(ORM) solution for JAVA and it raised as an open source persistent framework created by Gavin King in 2001. It is a powerful, high performance Object-Relational Persistence and Query service for any Java Application. Hibernate maps Java classes to database tables and from Java data types to SQL data types and relieve the developer from 95 percent of common data persistence related programming tasks. Hibernate sits between traditional Java objects and database server to handle all the work in persisting those objects based on the appropriate O/R mechanisms and patterns.

The Hibernate architecture is layered to keep you isolated from having to know the underlying APIs. Hibernate makes use of the database and configuration data to provide persistence services (and persistent objects) to the application.Hibernate uses various existing Java APIs, like JDBC, Java Transaction API(JTA), and Java Naming and Directory Interface (JNDI). JDBC provides a rudimentary level of abstraction of functionality common to relational databases, allowing almost any database with a JDBC driver to be supported by Hibernate. JNDI and JTA allow Hibernate to be integrated with J2EE application servers.

Advantages

- Hibernate takes care of mapping Java classes to database tables using XML files and without writing any line of code.
- Provides simple APIs for storing and retrieving Java objects directly to and from the database.
- If there is change in Database or in any table then the only need to change XML file properties.
- Abstract away the unfamiliar SQL types and provide us to work around familiar Java Objects.
- Hibernate does not require an application server to operate.
- Manipulates Complex associations of objects of your database.

5.2 Installation Procedure

The software can be installed in the following simple steps. In Central Database Server

- Install MySQL on Central Server
- Load Apache Tomcat Server
- Attach the database
- Connect the mobile acting as GSM modem
- Run application on the mobile
- Once the server is setup run the client application on the user system

5.3 Implementation plan

Run the client application. If you are a new user a registration form is displayed. You enter your mobile number,name,email id and select your leader and register. Once you have registered you can click on start monitoring button. If user is already existed then start monitoring button will be shown and you can click it. This means that each user register at one time.

Once registration is completed,client starts monitoring. It checks whether any USB is connected. If yes then a new device is connected "message" will be send to the sender. It checks whether the cursor is moving. If yes,then the new activity is detected "message" will be send to server. It request whether there is any command to be executed. In case there is any command for this particular client,sender to will respond with the command message and client will execute it. The command message can be SHUTDOWN and RESTART. The user who intended to send message to all group member,who are also client. Then he sends in the following format: CL SHUTDOWN and CL RESTART

If the message is SHUTDOWN client subsystem will be shutdown after 1 minute,or if message is RESTART client system will be restarted after 1 minute. Once the command is executed,success message is send to their respective mobile phone.

If the leader wants to send message to all group member,who are also client,then he send in following format: LD SHOW MESSAGE

This message will be stored in database and then forwarded to all the group members,who are cliens. Client see this message as a pop up alert.

6 Results

The following are the results of the system generated.

- User can perform shut down and restart on his/her remote computer by sending message through mobile phone.
- Leader can send message to all his group members through phone.This message will be shown as a notification on the user system.
- Any new USB device connected to the system will be detected and send as message to the user.
- Any new activity in the system will be detected and send to the user mobile. Thus security is implemented

Screen shots

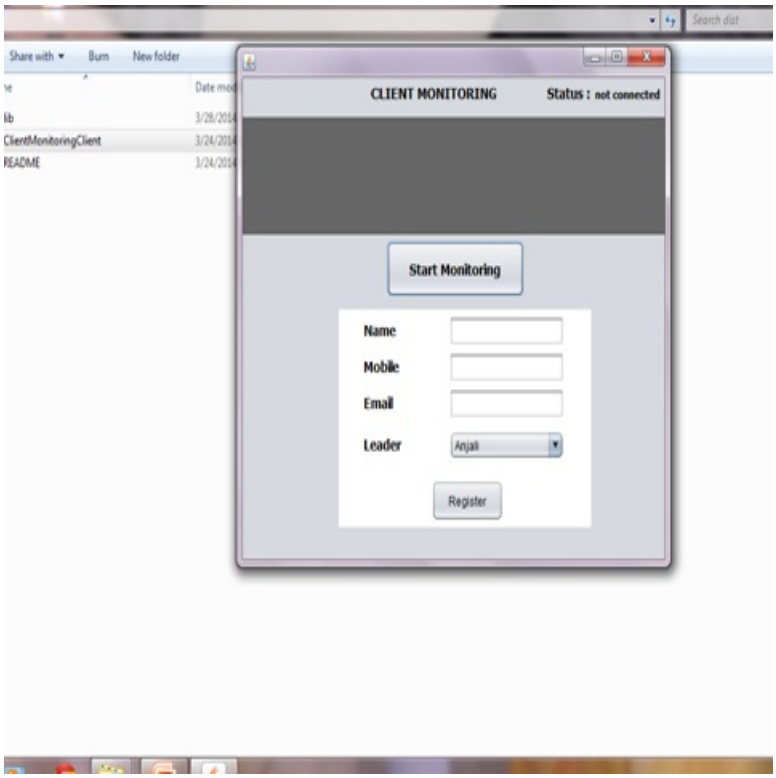

Figure 9: *Registration page*

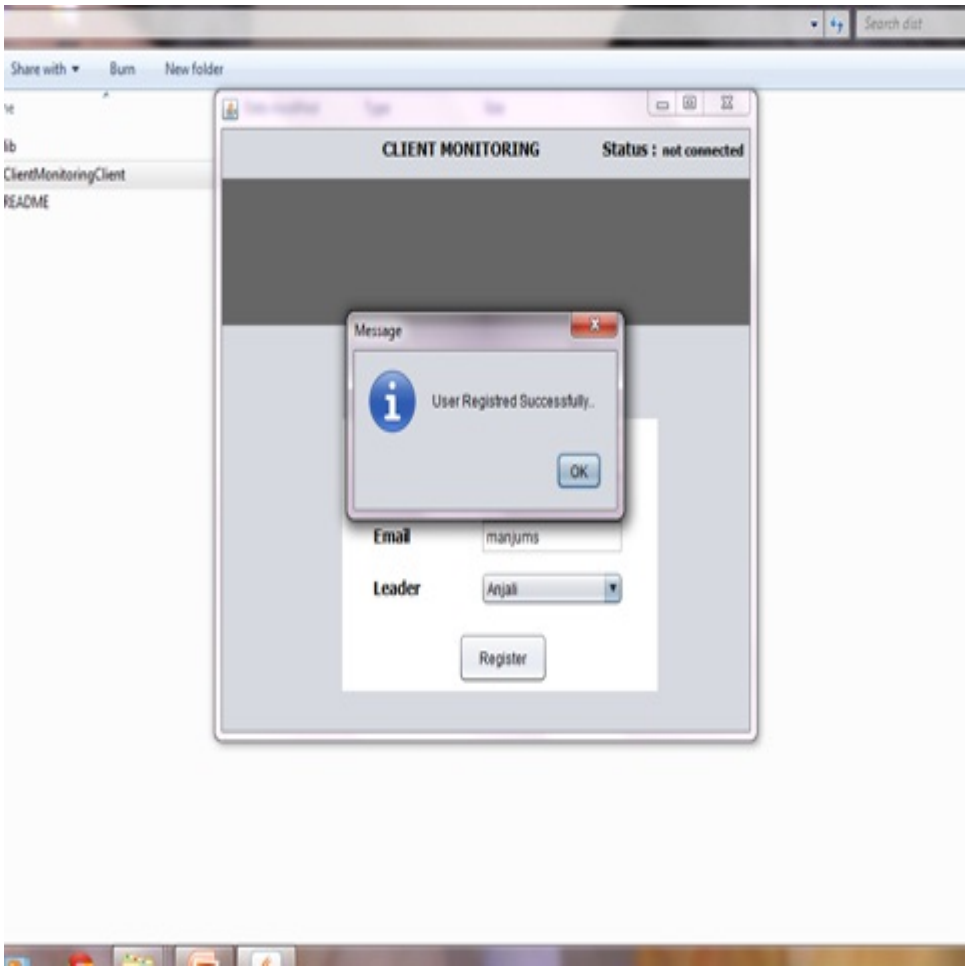

Figure 10: *After registration*

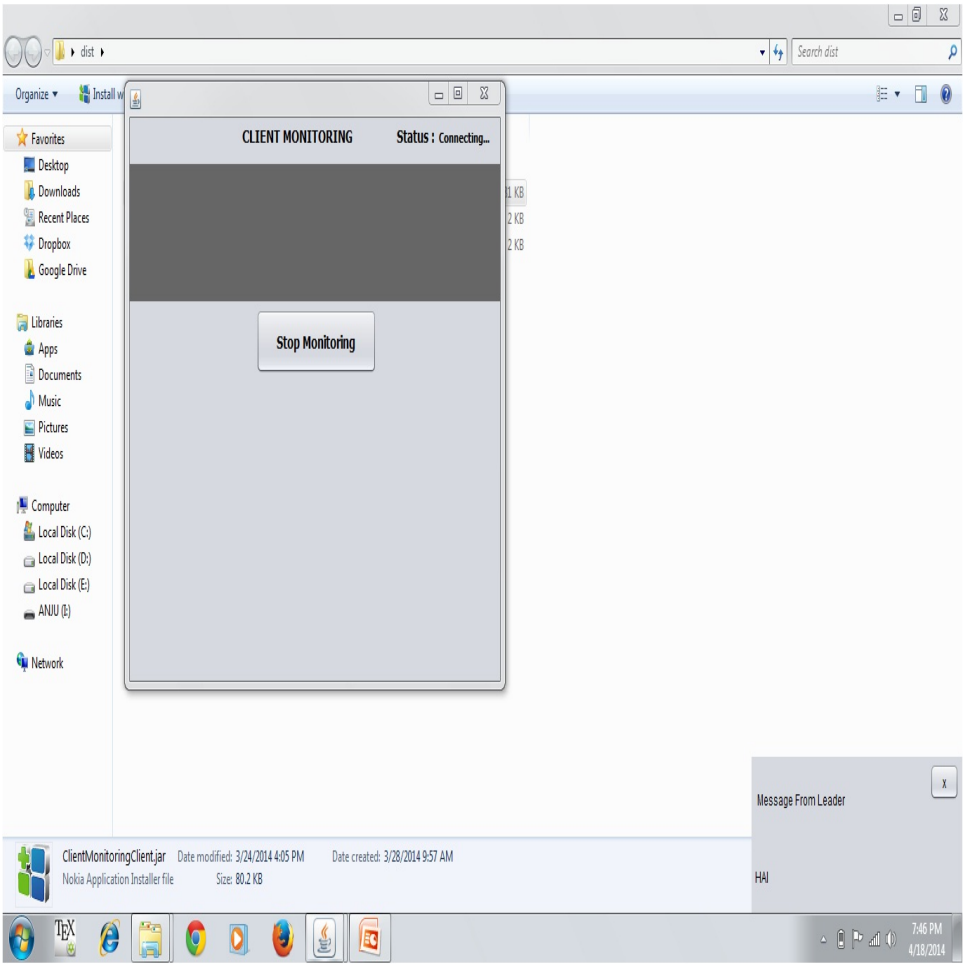

Figure 11: *Message from leader*

7 Conclusion

Remote Cellular SMS Network Commander is a software developed to control working of a computer in a network using mobile phone through SMS service.

This software helps to improve the security of the system in such a way that if anyone else other than the user of the system tries to acess the system , the user will be immediately notified.

User comes to know if someone else has connected a USB or is trying to access a file or folder. This software monitors the computer and immediately notifies the user through SMS service.

In case the user is away from his/her computer and has forgot to shutdown the system, then the user can send a message through his/her mobile phone and perform the shutdown operation on his/her remote system. Similarly he/she can perform the restart operation.

This system also helps leaders to send a message to all the members of his/her group. This message appears as a notification in his/her computer.

8 Reference

[1] Ming Xu, Jiayou Du,'Design of SMS-based remote control system using TC35 and MCU'. International Conference on Internet Computing and Information Services 2011