



# REMOTE PC ADMINISTRATION THROUGH MOBILE PHONE: A CASE STUDY

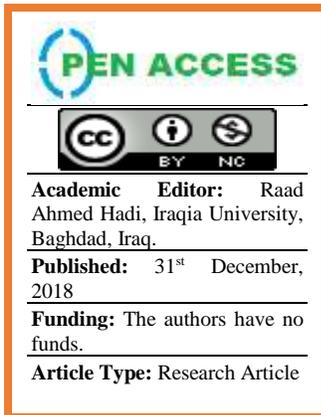
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## ABSTRACT



Analyzing and controlling systems through mobile phones is quite common and interesting. Administrating the number of systems concerns wide variety of tools and refers the software and hardware systems. The idea behind this is to maintain and control the different resources inside the systems. Various number of administrators, programmers and operators are related to this area. Sometimes administrating most of the systems is usually a complicated job concerning analysis and installation of new systems. System administrator usually performs various jobs related to troubleshooting of the system, along with providing the training to number of users. Installing, maintaining, configuring, setting the policies and standards are main jobs of system administrators. Presently, controlling and maintaining the computers remotely provides an easy and flexible service to various administrators and users. As they can use and troubleshoot their systems from any particular remote location. This paper mainly focusses on the intent to using a system at a remote location by using android mobile phone. By applying this approach, one can operate, maintain and control the system at a distant location.

**Keywords:** remote pc; mobile phone; system administration; services; resource management; analysis;

## 1. INTRODUCTION

Gradually it has been perceived that mobile phone is becoming more prominent and favored by many people and groups. A flexible and reliable technology that provides a new direction of communication. A mobile phone with wireless accessibility has gathered a wide majority of users. We've to fully aware by the technological connection to the internet in popular fashion. The intensification in technology helps us to utilize the internet facilities smoothly on mobile phones. This research is related with monitoring and accessing the remote PC by using a mobile phone through wireless or Bluetooth technology. The user can access remote pc through mobile phone from everywhere. In remote pc a user cannot be able to access the system physically, but he /she will be able to utilize the system via some form of computer network. The system basically builds a connection between mobile phone and remote desktop. It enables both the system to communicate by using IP address and ports. This system can also use the Bluetooth facility but with a limited range. One can also use UMTS services. We have used a various number of technologies in this research project like Java Programming (Swing, Socket and Filing), Java Micro Edition, Java Wireless Toolkit, Net Beans, and Android Programming.

### 1.1 Motivation

Nowadays technology is vital and takes a more positive impact on society day by day people becomes attached more with it. It connected number of separate locations in to one central area. Therefore, main motivation is to further reduce the required manpower. The second is to manage centralized management for separated locations. These tools encompass flexibility and most importantly security.

Why remote mobile administration

- Low network maintenance.
- Faster communication.
- Easy access from any where through Wi-Fi and bluetooth.

- Remote monitoring from anywhere.
- Phones are always on, computers are not
- Carrying a Phone/Tablet is part of a modern lifestyle
- Using a small portable multi-communication computing device is convenient, economical, practical and personal.

## 2. LITERATURE REVIEW

Now a days there are number of remote systems that are widely used to monitor and control number of devices rapidly. The purpose behind this research is to elaborate the concept of remotely controlled devices that work efficiently on android platforms, and provide number of services to users. There are number of server programs that work as a group on android platform and make connection to the available network. These server programs can be controlled through client written with java code and can easily be run on desktops [1]. The most important work is to maintain the security while designing the remotely controlled systems [2]. Another important consideration is the remote visualization platform that is most efficient to achieve the display of various devices. Virtual network computing is also enhanced day by day that is designed to remotely control the devices [3]. In [4] researchers mentioned the remote-control system that is totally based on virtual network computing and works on Symbian Operating System smart phones. The purpose behind designing these systems is to improve the application testing systems in mobile devices because of high cost and unavailability of resources in mobile devices. However, the most interesting fact about them is to perform and maintain remote configuration.

While the process of performing tasks remotely it is considered that the designed architecture should support software management task on mobile devices [5]. The development of android expanding day by day and it offers continuously expanding features like android 2.3.3 the USB host support that was not available but included in the new android 4 called as “ice cream sandwich”. This feature supports different devices such as mouse, keyboard, mice etc. and assumes that it will control the USB interface by avoiding the virtual machine over interface [6]. By creating the remote-control system to enable the communication possible there is a server-socket running on android application that will wait for the client requests. As a number of users use the system concurrently, so to handle the number of users this application implements a thread that responds to each client simultaneously by using its shared resources [7].

There are several research studies designed to promote the remote-control systems between the devices. Samsung is one of the largest manufacturers of android devices that has a tool known as kies, these tools basically give the permission to the user for the upgradation of firmware, music, photos and so on but is not used for controlling the different services [8]. Another study mentioned the protocol known as ADB protocol that provides number of functionalities on majority of devices. The android platform integrates the ADB Protocol and when the server is configured on the device this platform provides services on it [9]. Another way of interacting with systems is through the use of sensors these sensors are used to fined data on the environment and can update the behavior of particular device [10]. Based on existing trends the main goals of this research are:

- To elaborate a network-based system for pc administration.
- To create a management system of all clients along with the username, password on mobile login facility administrator of the system.
- To design and develop a mobile application that provides accessibility for users to use system at a distant location.
- To develop an application that provide efficient platform for mobile users for accessing the number of facilities through smart phone.

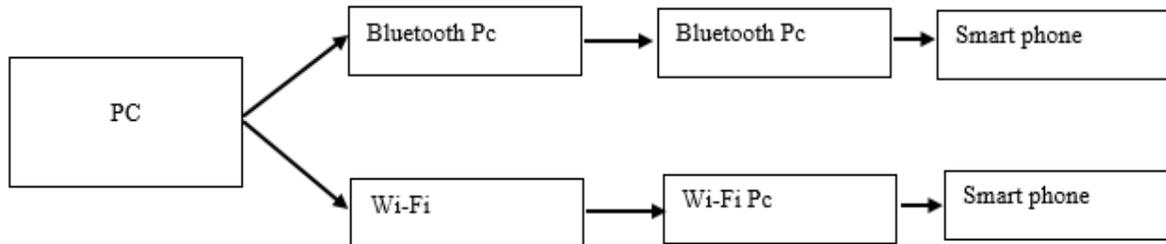
The major aim is, to develop a communication bridge between mobile users and their PC's. Users can control the system through mobile phone at a distant location. The user can control keyboard, mouse, and other programs. The proposed platform provides an actual view of desktop screen on smartphone by simple inserting IP and port addresses. Moreover, the platform supports number of targeted devices. Hence, the added features are:

- Display the computer monitor screen on smart phone.
- Display a run menu where user can search number of programs.
- Display number of drives where user can access number of files.
- User can control his mouse through his smart phone.

- User can control his keyboard through his smart phone where he can work with number of keys like caps lock, shift, delete, and space.
- Display a control panel where user can manage number of settings

### 3. SYSTEM ARCHITECTURE

In this proposed architecture the system will behave in both directions. It can be accessed remotely with a Bluetooth but it will provide a limited range, making the communication possible. We have established connections from both directions along with a protocol stack. At the other side there is a Wi-Fi connection that provides the broader range for accessing the system remotely. The transmission will provide the connectivity by using TCP/IP. There are two types of application that the system requires for completing its work, one is the server application for a particular machine under control and other is a client for controlling or supervising the device.



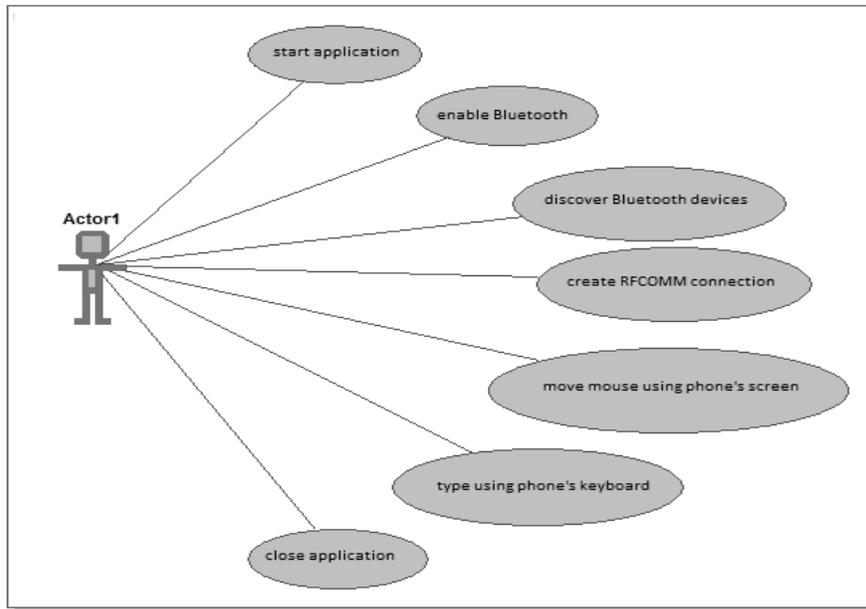
**Figure. 1** System architecture of the project

Figure 1 shows the proposed system architecture. That shows the connectivity of system with Bluetooth device as well as Wi-Fi. If the user wants to connect the system with Bluetooth device then he/she must be able to enable the Bluetooth device from both sides. Then with the access of Bluetooth over Pc and smart phone the user will be able to access the system remotely. In this architecture the smart phone acts like as a remote of the Pc. On the other side user can also connect the system with Wi-Fi enabled device. Thus, user can remotely access this pc through Wi-Fi. Every system has certain limitations. The identified limitations of the proposed system are to consider the mobile device with the accessibility of wireless communication.

This research project is designed with android and java mobile application. The main focus of this project is to provide remote flexibility to mobile users. This system can easily be incorporated on Windows 8 and Windows Server Operating System as well as can run on Linux Operating System. Linux operating system is also very flexible to operate remotely. It can easily integrate on mobile phones and have a high capability to manage hardware resources.

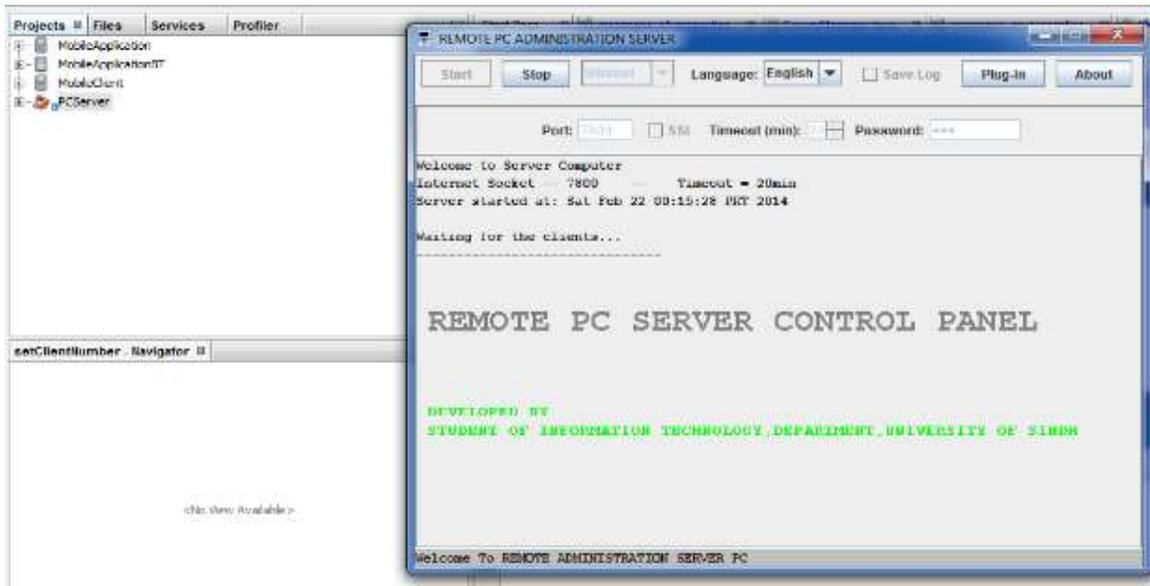
This system is designed to act as remote-control system for wireless, Bluetooth and TCP/IP enabled devices. As this project is implemented on android platform thus the android/JME both devices act as a client to the computer. Through the android touch screen a user can control the mouse and mobile keyboard will support the computer's keyboard. A user can simply simulate the system through an android mobile phone by clicking or touching the mobile screen, all the information from the phone needs to be sent to the server application.

Figure 2 show the use case diagram that shows the user's accessibility to the system components. By mobile phone availability user can start application and will be able to use various features remotely. User will start the application and will enable the Bluetooth connection to discover the Bluetooth devices through the mobile phone. Once the devices are found user may connect his device with the discovered Bluetooth device. After the connection is made the user will be able to access the system remotely like he can move the mouse cursor on the screen with the keyboard of his phone. User can easily logout or close that application.



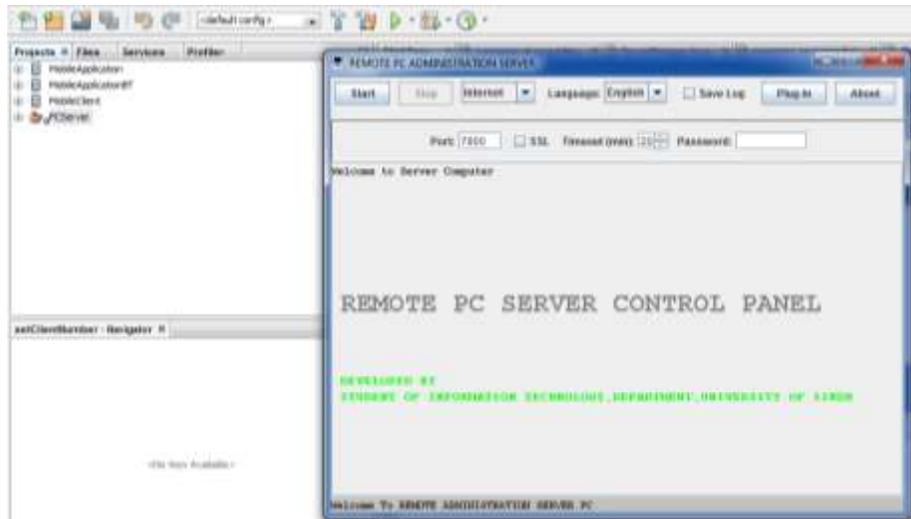
**Figure. 2** Use case diagram

There are two Modules of the proposed system that is client module and server module. Client Module is deployed on mobiles and smart devices. However, server module resides in the computer which will be accessible for remote administration. The Server and client are developed separately because server module is based on desktop application on pc and client module is mobile application which has been developed for mobile devices. Figure 3 shows the server model interface and when user wants to access the desktop user will able to first see the starting view of the main interface of the server.



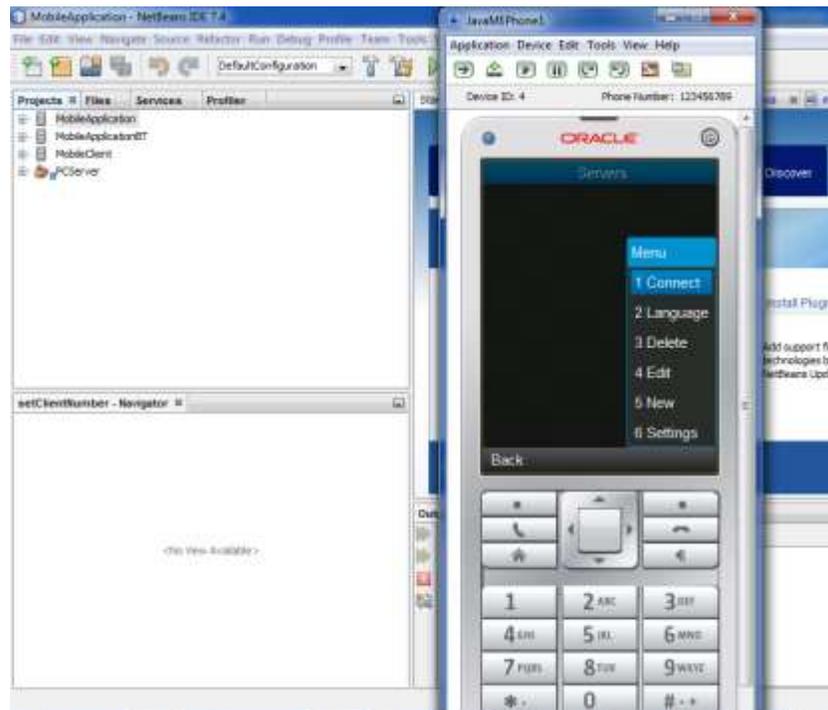
**Figure. 3** Server module interface

In figure 4, there is another view of server where it takes some time for waiting a client request for building further connections. The connection will be established whenever the user wants to interact with the system.



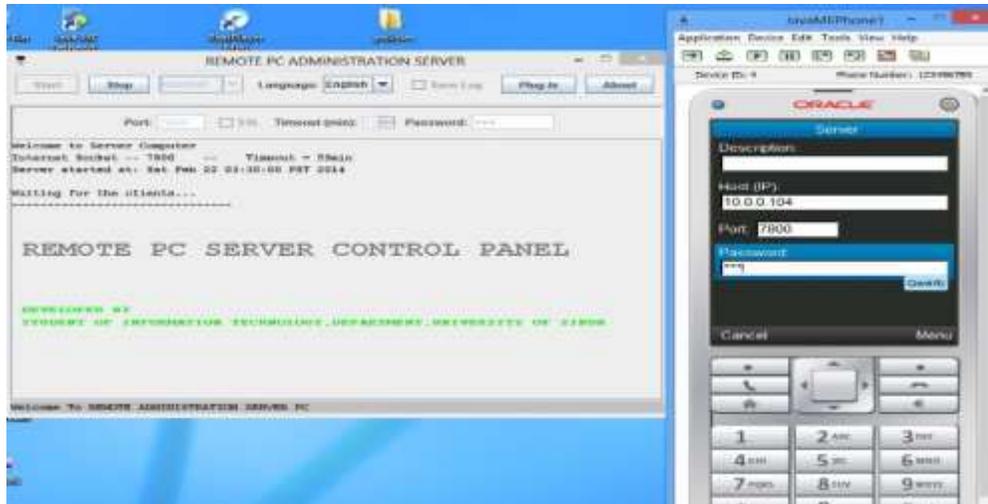
**Figure. 4** Server waiting for client request

Figure 5, shows that When server accesses the client requests then client will view some basic menus and functions, by using them client will be able to interact with the graphical view of system and will be able to use any components of that system. System will behave on users given direction. Moreover, Figure 5 shows the first view of home screen where the basic menus will be shown to the user and the accessibility will start from these menus. Users have a certain option to edit and change the language in which they find their comfort.



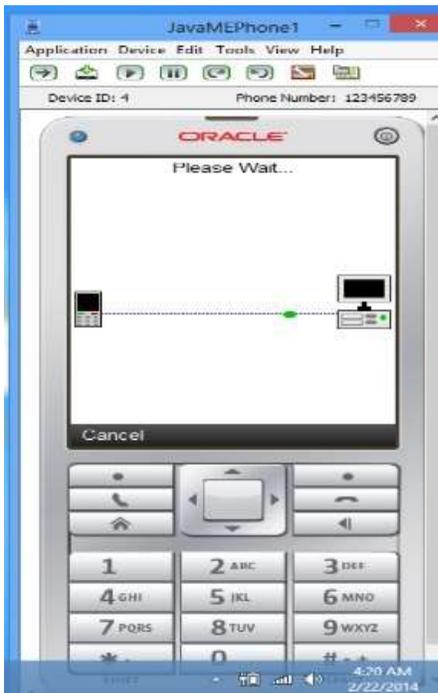
**Figure. 5** Home screen of client module

Figure 6, shows the authentication settings a user will input the IP and port number which is the most important way of interacting with the system. The user will insert the IP address of the remote system, if the IP address is incorrect then the system will display an error message. If the connection build secure then system will proceed further.



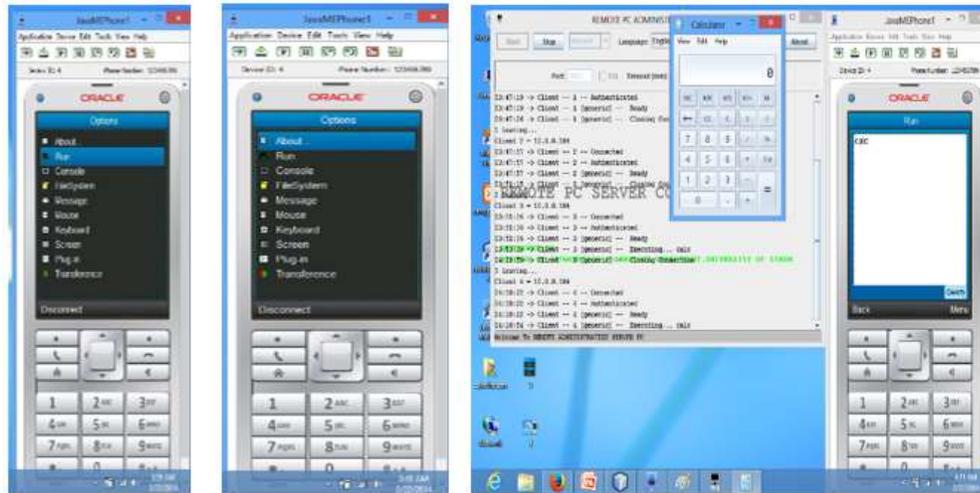
**Figure. 6** Connection settings

In Figure 7, after inserting correct IP and port number the system will be able to connect both devices computer with mobile phone remotely where a user can view the graphical screen of the system.



**Figure. 7** Connecting devices

In Figure 8, a user is working with menus and cursor. And interacting with the graphical screen icons. Now we have fully access on android mobile phone to use different shortcuts of keyboard on mobile phone. Just like we can capitalize the words with caps lock, here the other menus and shortcuts are also available like ctrl+v, ctrl+z, ctrl+x and so on. Another step is the view of opening a calculator. In this module there is also a run command where a user can search number of files. When a user clicks on a keyboard the system will show all options related to keyboard and when user opens the screen the system will show the desktop to the user where user can access and use all stuff that's on the desktop. We have tried to put some features that we mostly used which are considered as most common. User has accessibility to open a drive remotely in computer so that user may work with number of applications simultaneously. If the connection fails then user may reconnect system through IP addresses remotely.



**Figure. 8** Working with devices (opening calculator)

The steps to connect system with android are given below:

- Step 1: open Wi-Fi connection to connect PC and android
- Step 2: start the server and insert port and IP addresses
- Step 3: if server and client-side connection are matched then click on connect option
- Step 4: the devices manipulate their connections as required.

Java and Android platforms have good impact on smart devices and on several applications. There are number of remote projects that use Java and Android platforms. This research provides an easy accessibility to users to access their system through their mobile devices or just with their fingertips. At first step user can interact with desktop remotely by following number of steps.

**Table. 1** Data/Information

Data	Information
User inserts User will be able to insert his name, passwords, port and IP addresses	If the inserted data becomes successful the user can easily login into the system
Before login into the system there must be a network accessibility	Devices mostly require a network connection like Wi-Fi. They can also access remotely while working with Bluetooth.
System will require a correct IP and port addresses	If the IP and port addresses are inserted successfully, the system will run successfully otherwise it will generate an error message

Table 1 shows a number of start-up steps for a user to easily interact remotely and build a successful connection with system.

**4. CONCLUSION**

This research is simply made by using a simple java code and implemented on android platform as android platform provides a great vision for smart devices. The main aim behind this research is to provide a facility for mobile users to access their system remotely. This research also provides lots of features for mobile users including opening and closing desktop applications and working with smart devices looks quite efficient for users. In future, these applications will be cross platform applications. Moreover, the research can be further enhanced by making number of applications such as Bluetooth

chat application, multiyear games and Bluetooth GPS and CALL making applications. This research can be extended further to make it helpful for mobile users to access the system over internet.

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