

COMMUNICATION OF DIFFERENT MOBILE PHONES USING UNIVERSAL PC SUITE

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Abstract: For connecting a mobile to a PC (Personal Computer) it is necessary to install PC suite on PC and then using USB cable the mobile is connected to the PC. After successfully connecting a mobile to a PC the user is able to access all the data from mobile i.e. messages, contacts, phone, memory and also for connecting to internet from mobile is done. But whenever different mobiles i.e. of different companies are to be connected again it requires different PC suites to be installed on PC for interfacing. This becomes tedious task to install different PC suites. So, the idea suggested in this paper is trying to provide a common interface for different mobiles so that this PC suite becomes universal and it helps to connect all these different mobiles to a common PC suite. This will save time. This "Universal PC Suite" will be designed with the help of the AT commands because of more than 90% of the mobiles support AT commands. AT commands are the instructions used to control a modem. AT is abbreviation of Attention but it sometimes preferred as Attention Telephony. Many of the AT commands are used to control wired dial-up modem. To detect these AT commands by our desktop the HyperTerminal is used. HyperTerminal is an application for connecting computer to other remote system.

Keywords: Integration of mobile phones, pc suite, contact retrieval, timed calling, phone model, battery information, battery signal, communication port, HyperTerminal, AT Commands.

I. INTRODUCTION

PC suite is application software. It is well known that, now a days, people carry different mobiles. There is a need to back up their important data, transfer the data between mobile and computer, internet access etc. So, the PC Suite is a software which provides this functionality. There are different PC suites available for different mobiles. People must have installed each PC suite for each mobile on their computer. But Universal PC suite is a single software will be used for different mobiles.

PC Suite is used to transfer data between the phone and the computer, and get applications or the latest phone software. Information can be synchronized between phone and programs, such as Office Outlook, create multimedia messages, or manage phone's calendar effortlessly on user computer. This can also connect computer to the internet with the help of user phone.

Today there are different types of PC suites available for different types of mobiles, providing different range and models. For e.g., Nokia, Samsung, LG, etc. provides their own pc suites for users but there is no common interface available which provides the same functionality [5]. This software is same as a (normal) pc suite but can be used to interface with any type of mobile phone i.e. of different companies. So, that this PC suite will be called as an universal PC suite.

This paper proposes Communication of different Phone Modems into a Single PC Suite. This will be done with the help of AT commands. Because, more than 90% of the mobile phones support the AT commands. AT stands for "Attention" All the commands are given to mobile using AT+

command like AT<command name> here command name specifies the different action to be performed such as call, message etc. This paper is aimed for mobile phone users who carry more than one mobile and can retrieve data from mobile phones, irrespective of the phone modem used.

This PC suite will be used as independent of the manufacture of the mobile. Mobile is connected to computer using USB (Universal Serial Bus) connector.

The reason for connecting it is to either charge the phone via USB or to share data, synchronize contact or access the internet. One end of the USB cable is plugged into the phone end and other end of the USB into computer.

The main objectives implemented through this paper are as follows:

1. To provide a common interface for many mobile devices supporting AT Commands.
2. To retrieve maximum possible information from the device connected to a computer.
3. To provide extra features that are not available in today's PC Suites.
4. To make this application used on commercial level.

So using this facility of connecting to computer as a modem will be retrieving useful data from the modem. This data will be used by users for their own purpose. Using USB cable it is possible to communicate the phone modem and send instructions and commands to the modem. The modem in response will reply back with string that will be used to decode the output.

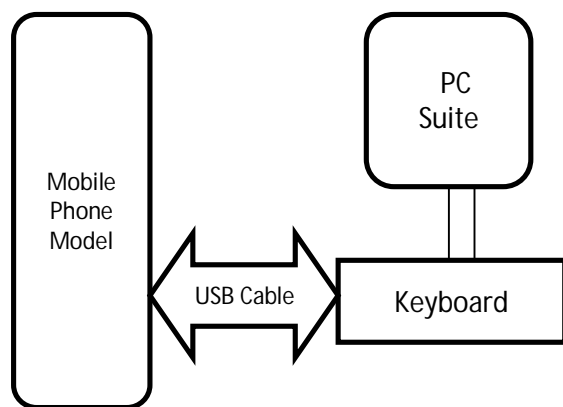


Figure 1. Block Diagram

The normal PC Suite functions will be implemented using this paper are as follows:

- 1) SMS - This feature will allow user to send text messages to desired phone numbers using the connected phone modem.
- 2) INTERNET - This feature will allow user to connect to internet using the connected phone modem.
- 3) CALL - This feature will allow user to create a voice call using the connected phone modem.
- 4) CONTACTS - This feature will allow user to read contacts from the connected phone modem.
- 5) BATTERY - This feature will allow user to check battery level of the connected phone modem.
- 6) PHONE INFO - This feature will allow user to know information about the connected phone modem.
- 7) SIGNAL STRENGTH - This feature will allow user to check signal strength of the connected phone modem.

The extra features will be implemented which are not available in today's PC suites are as follows:

- 1) SMS BOMBER – This feature will allow user to bombard a specific phone number with same text message number of times.
- 2) SMS DATABASE – This feature will allow users to send bulk messages to different numbers stored in the database.
- 3) TIMED CALL – This feature will allow users to call a desired number at a desired time of the day.
- 4) TIMED SMS – This feature will allow users to message a desired number at a desired time of the day.
- 5) CONTACT RETRIEVAL – This feature will allow user to save contacts from the connected phone modem

II. AT COMMANDS

The communication with the mobile is based on AT commands. It is possible to set or read a lot of different parameters using this communication protocol.

The following description explains important and useful AT commands for communication with GSM Module[12]. It is possible to use a simple serial port terminal for receiving and sending of AT commands.

To communicate using the modem, an asynchronous communication program is used. The command set for the modems is compatible with the Hayes command set.

The modem is controlled and configured by the AT (attention command). Each command consists of the following elements (with the exception of the A/and the +++ command that will be discussed later). A command is not entered until a carriage return <ENTER> is entered. Spaces entered are ignored. For example, to enter the command 'Answer', type ATA and <ENTER>.

Some commands do not have parameters. Any missing parameters in a command are assigned the value zero, which may be a valid parameter for the command. The sequence followed by AT command causes the modem to enter a command state. That is, AT without a command serves as a wake up code and an "OK" appears on the screen. The modem queues the commands in a 40-character command line. The command line begins with AT and can have several commands. A separator is not required between the commands.

When a carriage return is received, the commands are performed in the order in which they are sent to the modem. If more than 40 characters are sent to the modem, an error occurs and all commands must be re-entered.

The Hayes command set (also known as AT Commands) is a specific command-language originally developed for the Hayes Smart modem 300 in 1981. The command set consists of a series of short text strings which combine together to produce complete commands for operations such as dialing, hanging up and changing the parameters of the connection.

Types of AT Commands

There are four types of AT commands:

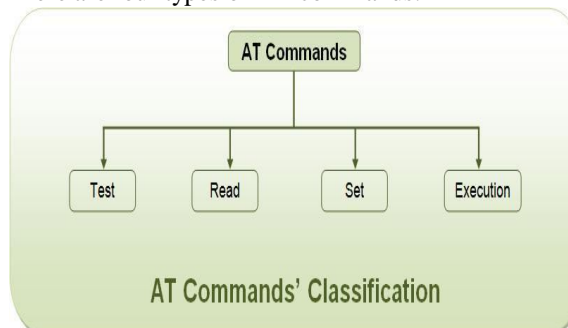


Figure 2. Format of AT Commands

- 1) **Test commands** - used to check whether a command is supported or not by the MODEM. SYNTAX: AT<commandname>=? For example: ATD=?

2) **Read command** - used to get mobile phone or MODEM settings for an operation.

SYNTAX: AT<command name>?

For example: AT+CBC?

3) **Set commands** - used to modify mobile phone or MODEM settings for an operation.

SYNTAX: AT<command name>=value1, value2... value N

Some values in set commands can be optional.

For example:

AT+CSCA=""+9876543210", 120

4) **Execution commands** - used to carry out an operation.

SYNTAX: AT<command name>=parameter1, parameter2... parameter N

For example: AT+CMSS=1,"+ 9876543210", 120

The read commands are not available to get value of last parameter assigned in execution commands because parameters of execution commands are not stored.

III. HYPERTERMINAL

HyperTerminal[13] is a program that user can use to connect to other computers, Telnet sites, bulletin board systems (BBSs), online services, and host computers. HyperTerminal connections are made using a modem, a null modem cable (used to emulate modem communication), or an Ethernet connection. HyperTerminal is not installed by default when a product in the Windows Server 2003 family is installed manually. HyperTerminal is installed by default, however, if the Windows Server 2003 product is installed using an answer file during automated installation. HyperTerminal has capabilities beyond making connections to other computers. It can, for example, transfer large files from a computer onto user portable computer using a serial port rather than requiring setting up portable computer on a network. It can help debug source code from a remote terminal. It can also communicate with many older, character-based computers.

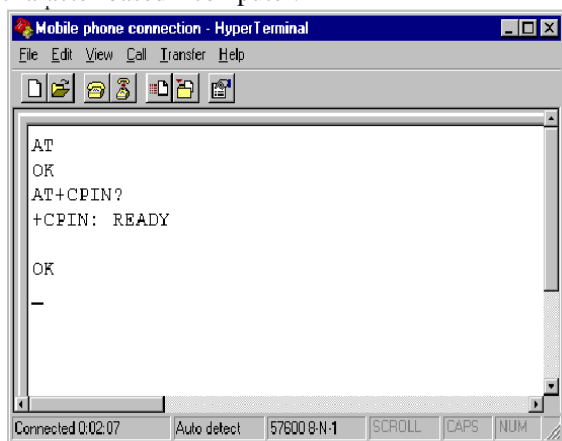


Figure 3. HyperTerminal

HyperTerminal records the messages passed to and from the computer or service on the other end of user connection. It can therefore serve as a valuable troubleshooting tool when setting up and using user modem. To make sure that user modem is connected properly or to view modem's settings, user can send commands through HyperTerminal and check the results. HyperTerminal also has scroll functionality that enables you to view received text that has scrolled off the screen.

IV. OVERVIEW

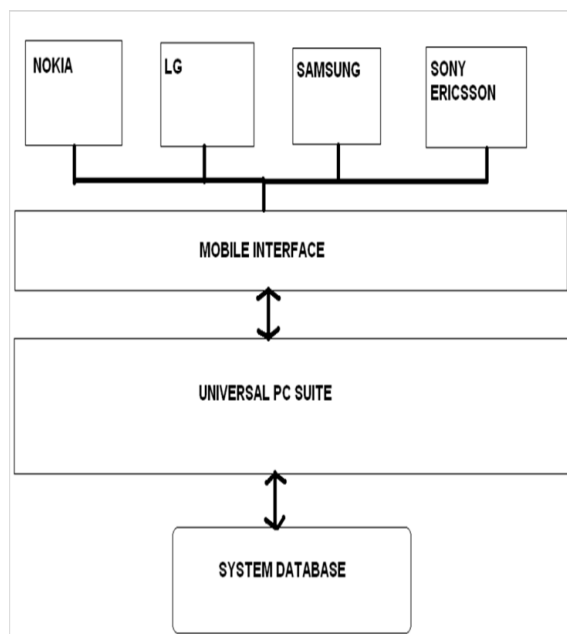


Figure 2. Architecture Overview of Universal PC Suite.

The application works on the principle of AT Commands. AT Commands are used by an external device to communicate with the PC using HyperTerminal. More than 90% of the mobile phones support the concept of AT Commands. The mobile device is connected to the PC with the help of a USB. USB is the communication port between the phone modem and the PC suite. USB helps to recognize the type of external device connected to the PC.

The main objectives which will be implemented through this paper are as follows:

- 1) To provide a common interface for maximum (approximately all) devices supporting AT Commands
- 2) To retrieve maximum possible information from the device connected which it supports
- 3) To provide extra features that are not available in today's PC Suites
- 4) To make this application used on commercial level

So using this facility of connecting to computer as a modem will be retrieving useful data

from the modem. This data is used in PC Suite. Using USB cable user will be communicating the phone modem and sending instructions and commands to the modem. The modem in response will reply back with string that will be used to decode the output and hence make our PC Suite.

V. WORKING

Connecting mobile device to user's PC it shows the available ports. User can select the port & go to further process. The port will be checked & available ports list will be display on modem list.

Program will check the manufacturers identity information & using this information it will switch to the AT Commands & retrieve maximum AT Commands from modem. After accessing information from AT commands it will display the all possible information about specific phone manufacturer. Hence user can access information though there are different phone manufacturers.

After displaying commands for user it will show custom features which are available for different manufacturers like NOKIA, SAMSUNG, LG, SONY etc. the program can detect the manufacturer & display all features which is chosen by a user.

VI. APPLICATIONS

PC Suite itself is an application used by the mobile phone users. Nowadays people carry more than one phone for communication. This application comes in handy as they can connect many different phones and retrieve information according to their use. It is technically feasible as the application can be installed on any Windows Desktop PC.

CONCLUSION

We are going to propose a new system model to ensure effective real-time data retrieval, communication between different phone modems.

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