

Tutorial

Creating SMS-based Applications

Part-1: *Using HyperTerminal to send and receive SMS messages*

By Haider Ali

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Introduction

Short Message Service (SMS) is provided by all cell phone operators and is extensively used by cell phone users. There is a wide range of applications demand in which a user interacts with a PC application via SMS message. This series of articles provides step by step tutorial for creating SMS based applications for PC that interact with mobile phone users via SMS. In this part I will give some basics of SMS applications. In part-2 I will make a small application in VB .NET that sends and receives SMS messages.

Connect the mobile phone with PC

SMS can be sent from a PC by using a mobile phone or GSM/GPRS modem. A GSM/GPRS modem is a wireless modem that works with GSM/GPRS wireless networks. A wireless modem is similar to a dial-up modem. The main difference is that a wireless modem transmits data through a wireless network whereas a dial-up modem transmits data through a copper telephone line. For sending/receiving SMS messages, we need to place a valid SIM card from a wireless carrier into a mobile phone or GSM/GPRS modem, which is then connected to a computer. The mobile phone or GSM/GPRS modem may be connected to a computer by several methods. For instance, through a serial cable, a USB cable, a Bluetooth link or an infrared link depending upon the capability of the mobile phone or GSM/GPRS modem. I have used infrared for connecting my Nokia 6070 phone with the PC. When the phone or GSM/GPRS modem is connected to the PC it will be connected at a serial port, COM4 in my case. All the programs that we write on the server side communicate with the mobile phone or GSM/GPRS modem via this port. Since I have used my mobile phone for communication I will refer to it afterwards, so the word mobile phone also means GSM/GPRS modem in rest of this article.



Figure 1: Mobile Phone Connected to PC via Infrared



Figure 2: Mobile Phone Connected to PC via Bluetooth



Figure 3: Mobile Phone Connected to PC via USB cable

AT Commands for SMS

There are certain AT Commands that can be used through HyperTerminal to send and receive SMS messages. Some SMS related commands are as follows:

AT+CSMS	Select Message Service
AT+CPMS	Preferred Message Storage
AT+CMGF	Message Format
AT+CSCA	Service Centre Address
AT+CSMP	Set Text Mode Parameters
AT+CSDH	Show Text Mode Parameters
AT+CSCB	Select Cell Broadcast Message Types
AT+CSAS	Save Settings
AT+CRES	Restore Settings
AT+CNMI	New Message Indications to TE
AT+CMGL	List Messages
AT+CMGR	Read Message
AT+CMGS	Send Message
AT+CMSS	Send Message from Storage
AT+CMGW	Write Message to Memory
AT+CMGD	Delete Message

Sending SMS from HyperTerminal

In order to demonstrate AT commands for sending SMS I give the following example of HyperTerminal program of Microsoft Windows. The lines in bold type are the command lines that should be entered in HyperTerminal. The other lines are responses returned from the GSM / GPRS modem or mobile phone.

```
AT
OK
AT+CMGF=1
OK
AT+CMGW="0321901234567"
> This is a simple Message using AT commands.
+CMGW: 1

OK
AT+CMSS=1
+CMSS: 20

OK
```

Explanation of the above example is given as follows:

- Line 1: "AT" is sent to the Mobile phone to test the connection. The Mobile phone sends back the result code "OK" (line 2), which means the connection between the HyperTerminal program and the Mobile phone works fine.

- Line 3: The AT command +CMGF is used to instruct the Mobile phone to operate in SMS text mode. The result code "OK" is returned (line 4), which indicates the command line "AT+CMGF=1" has been executed successfully. If the result code "ERROR" is returned, it is likely that the Mobile phone does not support the SMS text mode. To confirm, type "AT+CMGF=?" in the HyperTerminal program. If the response is "+CMGF: (0,1)" (0=PDU mode and 1=text mode), then SMS text mode is supported. If the response is "+CMGF: (0)", then SMS text mode is not supported.
- Line 5 and 6: The AT command +CMGW is used to write an SMS text message to the message storage of the mobile phone. "0321901234567" is the recipient mobile phone number. After typing the recipient mobile phone number, you should press the Enter button of the keyboard. The Mobile phone will then return a prompt "> " and you can start typing the SMS text message "A simple demo of SMS text messaging.". When finished, press Ctrl+z of the keyboard.
- Line 7: "+CMGW: 1" tells us that the index assigned to the SMS text message is 1. It indicates the location of the SMS text message in the message storage.
- Line 9: The result code "OK" indicates the execution of the AT command +CMGW is successful.
- Line 10: The AT command +CMSS is used to send the SMS text message from the message storage of the GSM / GPRS modem. "1" is the index of the SMS text message obtained from line 7.
- Line 11: "+CMSS: 20" tells us that the reference number assigned to the SMS text message is 20.
- Line 13: The result code "OK" indicates the execution of the AT command +CMSS is successful.

Receiving SMS in HyperTerminal

Below shows a simple example that demonstrates how to use AT commands and the HyperTerminal program of Microsoft Windows to read SMS text messages received by a Mobile phone or mobile phone. The lines in bold type are the command lines that should be entered in HyperTerminal. The other lines are responses returned from the Mobile phone or mobile phone.

```

AT
OK
AT+CMGF=1
OK
AT+CMGL="ALL"
+CMGL: 1,"REC READ","03339125856",,"06/04/21,00:30:29+20"
Hi, There is no class today.
+CMGL: 2,"REC READ","03339125856",,"06/04/21,00:32:20+20"
I will come at 5 pm.

OK

```

Here is a description of what is done in the above example:

- Line 1: "AT" is sent to the Mobile phone to test the connection. The Mobile phone sends back the result code "OK" (line 2), which means the connection between the HyperTerminal program and the Mobile phone works fine.

- Line 3: The AT command +CMGF is used to instruct the Mobile phone to operate in SMS text mode. The result code "OK" is returned (line 4), which indicates the command line "AT+CMGF=1" has been executed successfully. If the result code "ERROR" is returned, it is likely that the Mobile phone does not support the SMS text mode. To confirm, type "AT+CMGF=?" in the HyperTerminal program. If the response is "+CMGF: (0,1)" (0=PDU mode and 1=text mode), then SMS text mode is supported. If the response is "+CMGF: (0)", then SMS text mode is not supported.
- Line 5-9: The AT command +CMGL is used to list all SMS text messages in the message storage of the GSM / GPRS modem. There are two SMS text messages in the message storage: " Hi, There is no class today." and " I will come at 5 pm.". "03339125856" is the sender mobile phone number. "06/04/21,00:30:29+20" and "06/04/21,00:32:20+20" tell us when the SMS text messages were received by the SMSC. "+20" is the time zone. Note that the unit is a quarter of an hour. So, +20 means GMT+5 hours, since 20 quarters of an hour = 5 hours. "REC READ" indicates both of the SMS text messages have been read before.
- Line 11: The result code "OK" indicates the execution of the AT command +CMGL is successful.

About the Author

Haider Ali did MSc in Computer Science from Department of Computer Science University of Peshawar, Pakistan in 1993. He has 14+ years of experience and is presently working as Director MIS in Election Commission of Pakistan. His email address is haiderkhalil@yahoo.com.