

SMS BASED REMOTE CONTROL DEVICE

BY

NAZMUL HASAN

ID: 111-25-191

This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Masters of Computer Science & Engineering

Supervised By

Dr. Syed Akhter Hossain

Professor & Head

Department of CSE

Daffodil International University



DAFFODIL INTERNATIONAL UNIVERSITY

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APPROVAL

This Project titled “**SMS Based Remote Control Device**”, submitted by Nazmul Hasan to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of M.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 28th January.

BOARD OF EXAMINERS

Dr Syed Akhter Hossain

Professor and Head

Department of CSE

Faculty of Science & Information Technology

Daffodil International University

Chairman

Dr Yousuf Mahbubul Islam

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Department of CSE

Faculty of Science & Information Technology

Daffodil International University

Internal Examiner

Dr Md Kabirul Islam

Associate Professor

Department of CSE

Faculty of Science & Information Technology

Daffodil International University

Internal Examiner

Dr Mohammad Shorif Uddin

Professor

External Examiner

Department of Computer Science and Engineering
Jahangirnagar University

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I hereby declare that, this project has been done by me under the supervision of **Dr. Syed Akhter Hossain, Professor & Head, Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

Supervised by:

Dr. Syed Akhter Hossain
Professor & Head
Department of CSE
Daffodil International University

Submitted by:

Nazmul Hasan
ID: 111-25-191
Department of CSE
Daffodil International University

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Finally, I must acknowledge with due respect the constant support and patients of my parents.

ABSTRACT

This project is on “**SMS Based Remote Control Device**”, which presents a system of the PC remote Controlling with the Mobile Telephone through accessing the main PC ports; USB and parallel. USB port for transferring data from Mobile phone to PC and parallel port for interfacing PC with real time controlling hardware. The system is implemented by using the SMS (Short Message Service) as associated with Nokia mobile phone devices which support Nokia pc suite version 6 and mobile telecommunication networks. Nokia mobile phone device and with ordinary type of PC that run under Windows XP or compatible.

The software for system is divided into two parts; Mobile to PC through USB port is a general commercial program that associated with the Nokia mobile devices, and second which access SMS file and control all parts of system is designed by using Microsoft Visual basic (vb 2008) . Such idea is quiet new and represents the ability of anyone who has Mobile and PC to control remotely major devices in his/her home, office and etc.

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CHAPTER ONE

INTRODUCTION

1.1: Introduction

Nowadays, the communications becomes very simple, fast, interactive and more compact, that makes the global as a small village. So it is very easy of anyone to subscribe in the local or global telecommunication networks with individual mobile phone device. Mobile devices, such as mobile phones, are becoming multipurpose devices. These devices are capable of storing data as well as running custom application. As more people adopt these devices and begin to use them for personal or business tasks, the need for controlling access to the data stored within the devices will become vital .With today's and tomorrow's wireless technologies, such as IEEE 801.11, Bluetooth and G3[8], mobile devices will frequently be in close and interfacing communication. Many environment s including offices, meeting room's automobiles and class rooms already contains many computers and computerized applications, and the smart homes of the nearest future will have ubiquitous embedded computation. PC remote control with small mobile device is a challenging topic of mobile/ubiquitous computing. Enabling users to use data and functions stored in/ served by their home / office PCs from anywhere with small mobile devices is beneficial because users can access the data/functions at any time they want without carrying heavy notebook PCs. Further more users can control applications they want to keep running even while they are out .several systems and methods have been proposed and developed for controlling remote with mobile phone. The system that employing

for translating PC GUIs into mobile devices UIs (screen size , input device , etc) , such system requires converting image data to text will be very expensive. The evaluation of the cell phone from analog handset passing by PCs and WAP (Web-enabled Phone), which need continuously working and connecting with the internet networks. The system that uses the email enabled mobile devices; require Java enabled devices, because the systems use client Java applets. Consequently, older model mobile devices that are email enabled but not Java enabled, cannot be used for this system. This paper represents a simple, practical and very low cost method which applies the SMS technique that already available in all types of mobile phone devices and provided with all modern mobile telecommunication networks.

1.2: Objective

This project is designed with an idea to use the mobile hand set as a long distance remote controller. The mobile sets are now days used most widely and very commonly. The SMS can be sending to any mobile user of any service provider with no or a minimum charge. This system is designed using a GSM mobile. The GSM mobile is configured as a receiver which sends the SMS to a computer after receiving it completely. The SMS sent by the user is written in a particular format. The computer receives the message and decodes it and identifies the task to be done.

The present scenario of technological advancement and research is stepping forward towards the high speed and long distance data communication. The Mobile and cellular technology is one of the reliable and advanced media for the data communication. The information technology makes mobile communication more popular and economical. The science and technology is moving with fast pace towards long distance communication and data transmission. The advancement in long distance communication essentially can create a global village. This project is conceptually based on long distance data communication and control. In the present scenario the application of mobiles are very

much common, almost everyone is using a mobile for their day to day affairs. The mobile networks are covering globally. The idea to use the mobile as a remote control device is definitely an innovative and widely accepted concept. The mobile set as a remote control can cover wide area compare to any other remote control devices... In this project an attempt is made to control the electrical appliances globally by using the cellular network. The SMS technique is inexpensive and more reliable as the data transfer is in text based. In most of the network the SMS facility is inexpensive or free. This concept of control system is very much use full for industrial and consumer application. This type of applications can be used in industries for controlling devices also the user can get field information and data through GSM mobile in the format of SMS etc. In the consumer sector this application can be used to operate air condition machines, rice cooker and washing machines etc. These machines can be operated by sending a SMS to the GSM Mobile.

The world is becoming advance to better living, whether it is in terms of safety or in terms of power and energy. At times people forget to switch off appliances which may cause energy loss and may lead to accidents resulting in loss of property/life. The question arises- How to switch off/control appliances remotely by the best method possible? We have an answer...

Using one of the most commonly available device- The phone, we can control appliances remotely- From any part of the world.

In the present world of wireless technology everything is going to be digital and wireless, and the cell phone is the key player in wireless technology today. And today technology made the possessing of a mobile, considered as a basic commodity. And the trends in wireless technology changing day-by-day and today the working is going on how to develop remote devices without the presence of man and to

Reduce to the time factor and labor, and our project belongs to that race and by using it we can control any electronic devices through a cell phone, with one SMS.

The advantage of SMS based control is as follows,

1. This is cheaper and the SMS can be retained in the network even though the network is busy for some time.
2. The SMS can be written through with low cost.

1.3: Background Study

For doing this project we study some papers on remote control device by using Simple Text Message through PC. One of the papers is SMS Based Wireless Home Appliance Control System (HACS) [1] for Automating Appliances and Security. Then we gathered information about their current system and their new requirements. In this section of documentation we discussed about the background of their paper, their current system background, the methodology of their system. The model of their system, the working principle of their system.

1.4: Project Background

This project is prepared by Malik Sikander Hayat Khiyal, Aihab Khan, and Erum Shehzadi software Engineering Dept. of Fatima Jinnah Women University, Rawalpindi, Pakistan on SMS Based Wireless Home Appliance Control System (HACS) [1] For Automating Appliance and Security. Their paper mainly focuses on the controlling of home appliances remotely and providing security when the user is away from the place. Their system proposes in two sub-systems. First Appliance control subsystem that enables the user to control home appliances remotely whereas the security alert subsystem provides the remote security monitoring. The system is capable enough to instruct user via SMS from a specific cell number to change the condition of the home appliance according to the user's needs and requirements. The second aspect is that of security alert which is achieved in a way that on the detection of intrusion the system allows automatic generation of SMS thus alerting the user against security risk.

Their system consists of the following components.

PC: This unit contains the software components such as the HACS System through which the appliances are controlled and home security is monitored.

GSM Modem: It is a hardware component that allows the capability to send and receive SMS to and from the system. The communication with the system takes place via RS232 serial port. Cell phone can be attached at the place of GSM hardware but it limits the hardware functionality such as sending or receiving of SMS.

Mobile Device: Cellular phone containing SIM card has a specific number through which communication takes place. The device communicates with the GSM Modem via radio frequency. Mobile user transmits SMS using GSM technology. [9]

The methodology of their system given below:-

GSM hardware tests are run in order to check the hardware support. The system will call GSM modem and it will get activated.

After activation the Modem will check for hardware support. If the hardware is missing or some other hardware problem there will be error, resulting in communication failure and the application will be terminated.

If hardware responds then the serial port will be opened for communication and GSM hardware will allow transmission of SMS.

The system will then connect and after connection establishment the system will be able to detect intrusion and will alert user about the breach and similarly the system will update status of appliances by receiving SMS from the pre-defined cell number.

SMS will be silently ignored if cell number is unauthorized.

The model of their system given below:

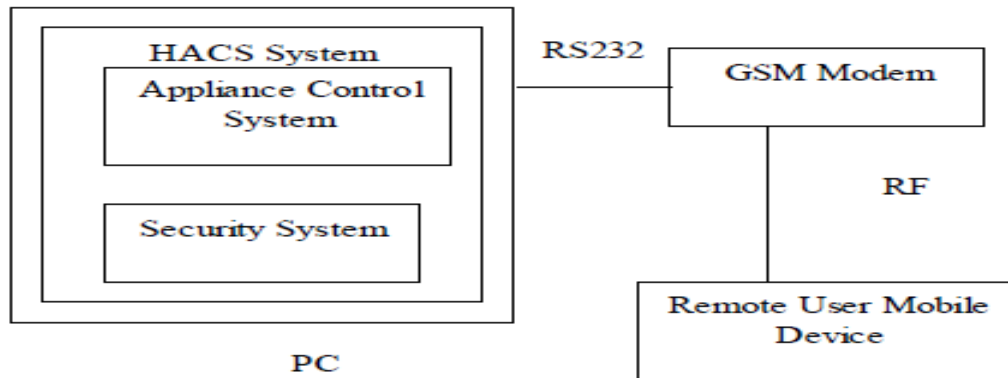


Figure 1.1: The model of home appliance control system [2]

The working principle of their system explained below:

PC: PC being the main module has HACS system installed on it. The two subsystems; one being appliances control is responsible for ubiquitous access of appliances and the second subsystem being security alert is responsible for security intrusion detection. Both subsystems work on GSM technology for transmission of instructions from sender to receiver.

GSM Modem: GSM modem is a plug and play device and is attached to the PC which then communicates with the PC via RS232 port. GSM modem is a bridge responsible for enabling/ disabling of SMS capability. [10]

Cell Phone: Mobile device communicates with the GSM Modem via radio waves. The mode of communication is wireless and mechanism works on the GSM technology. Cell phone has a SIM card and a GSM subscription. This cell phone number is configured on the system. User transmits instructions via SMS and the system takes action against those instructions.

Figure 1.1 shows various GSM hardware tests that will be run to check the hardware support. The system then opens the serial port for communication with the GSM modem.

On successful port opening the system communicates with the GSM Modem but if fails system does not communicate. The system checks support for battery level, signal strength and GSM modem SMS sending and receiving capability. If these tests succeed the system gives response of 'Ok', if not then 'ERROR' is returned.

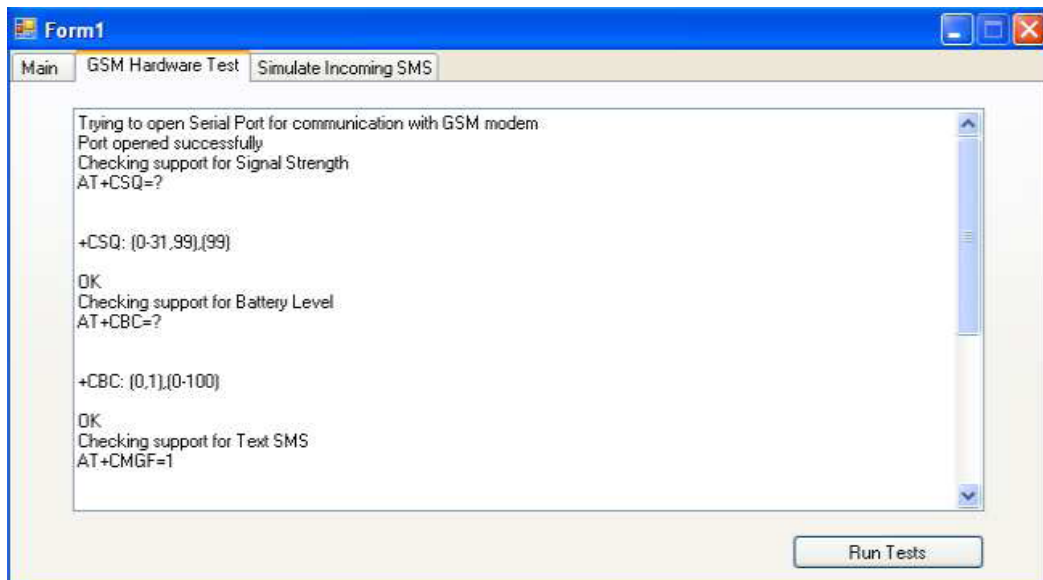


Figure 1.2: GSM Hardware Test

Figure 1.2 show that a particular home appliance is simulated on the reception of SMS sent by the remote user. The remote user sent SMS from a pre-configured cell number on the HACS system to turn on the sound alarm and the system performed the respective function by simulating the alarm to green color as directed by the user.

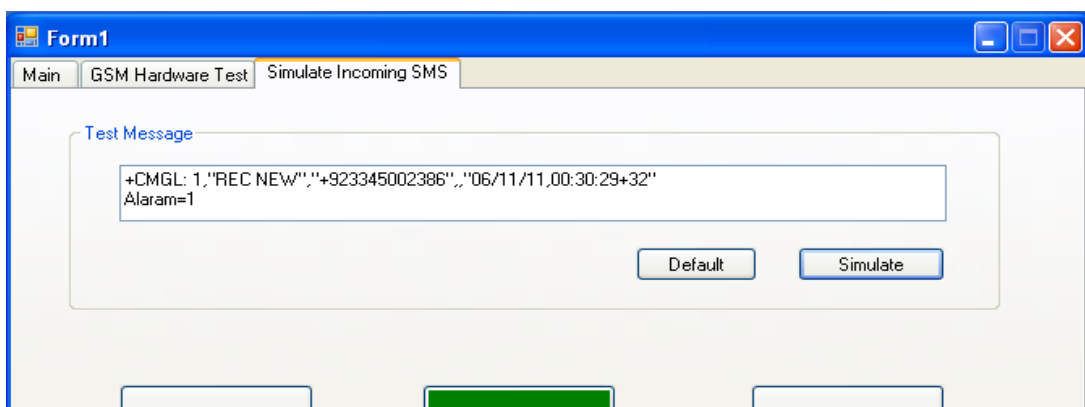


Figure 1.3: Simulation of Home Appliance

Figure 1.3 shows the result when the event of intrusion was triggered then the system automatically generated SMS to inform the user about the security risk. The system is constantly monitoring the battery level, charging status and signal strength.

In Figure 1.4 is illustrating that the communication between system and GSM hardware device is taking place via COM port.

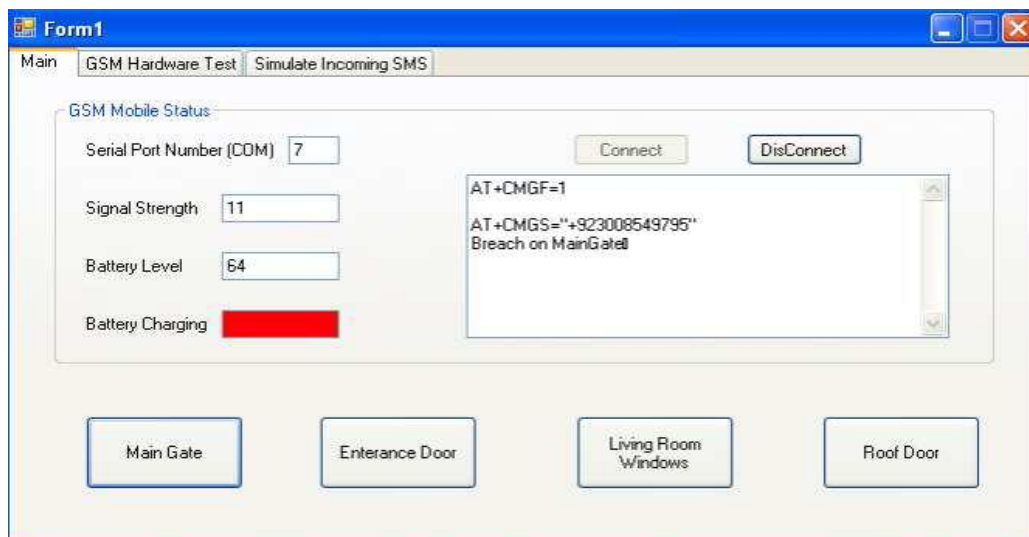


Figure 1.4: SMS alert on Intrusion Detection

I also follow another paper which is SMS Remote Control System – Using InContact SMS and NetIO published by Intensecomp Pte Ltd In April, 2003.[3]

They uses InContact SMS Gateway which is a server based software application that provides ability to send and receive SMS messages through GSM network. This application extends capability of SMS by incorporating two-way communication and control functions. It always adds wireless communication capabilities into existing communication backbone systems. Usage of SMS has grown tremendously over the past few years and adding SMS capabilities into your existing system is the obvious step in going forward. With In Contact SMS Gateway, they could create all sorts of SMS usage and applications and another is NetIO which is a device capable of sensing digital signal and monitors analogue values. It also has built-in temperature sensor for monitoring purposes. Communicates through standard TCP/IP network protocol can be extended in any Ethernet networks and connectable to any Intranet and the Internet. Remote controlling features allow NetIO to turn on or off a device or equipments such as air-conditioning systems and building automation systems. It is also capable of monitoring a room temperature and adjusts the air-conditioning system automatically.

The system diagram of their system show in below:

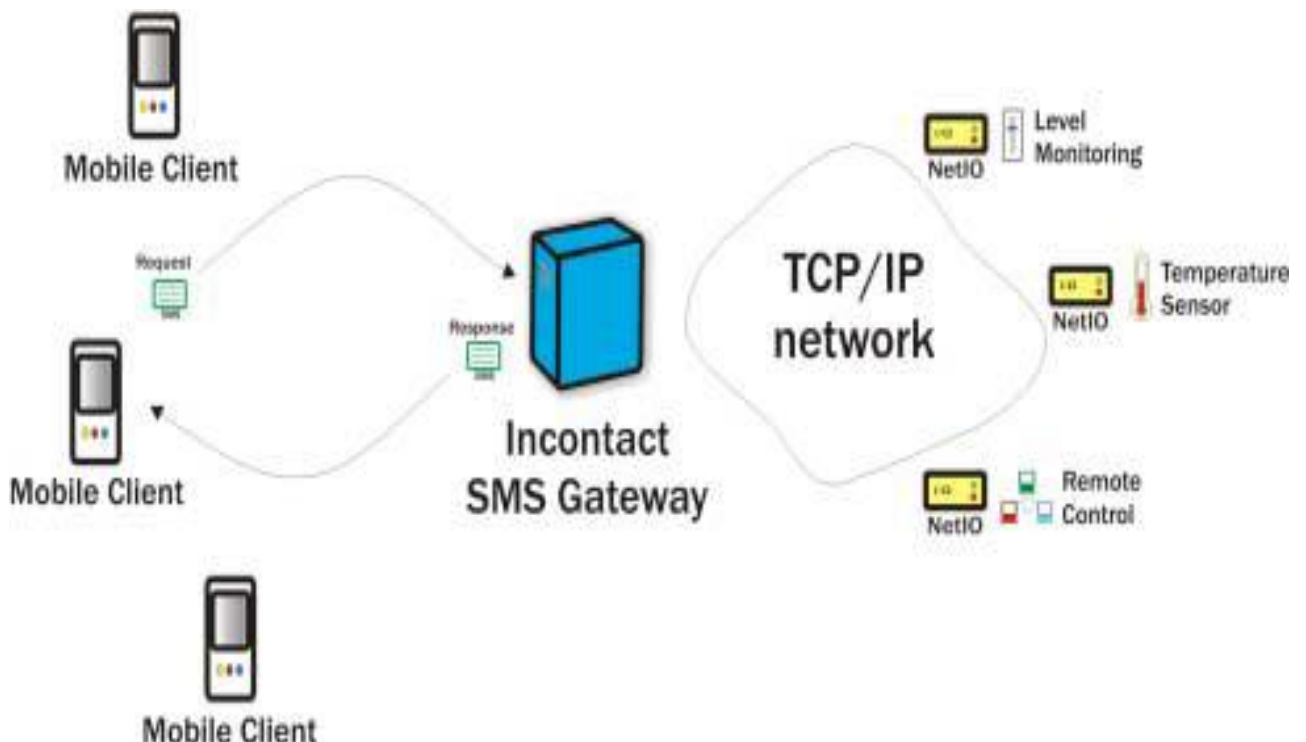


Figure 1.5: The system diagram [5]

To implement their project they need PC server to host InContact SMS Gateway and a GSM modem. InContact SMS has configurable parameters and programmable features to program task-specific actions. These actions will be translated and sent to NetIOs installed in various rooms. Connect NetIO's digital output pins to turn on/off lights. Digital inputs available are used to monitor on/off devices such as fire-alarm sensor and other. Use the on-board temperature sensor to monitor room temperature. Connect all installed NetIOs to the building Ethernet network. NetIO has built-in support for TCP/IP network. Host software should be able to use NetIO library functions to monitor signal status connected to NetIOs. Combine this software with InContact SMS built-in library functions to transfer signal status information to SMS format and send it to respective recipients. Here you have a basic SMS Remote Control System. To further extend SMS Remote Control System, create keywords or commands recognized by InContactSMS Gateway and attach actions to these commands. For example, "Turn On Light 1" is a command to turn on all lights in room one. Create intuitive commands so as not to burden user by memorizing complicated commands. Simple and easy to remember commands will make your system more friendly.

CHAPTER TWO

INTERFACING SYSTEM

2.1: PC Interfacing System

To make an ordinary home as future and a smart home, all appliance must be computerized controllable. To do that it's very preferable that using PC. As the PCs are provided with input/output ports, which makes easily to interface PC with the real world control applications. The interface is the combination of hardware and software embodies, the hardware is an electronic circuit that matches with the PC's port protocol signal and the software is the programming of the PC to manage all input /output signals from its ports, hence the interface hardware circuits. In this paper for the purpose of interfacing with the real time control applications, the PC parallel port is used .Since the parallel port works well as hardware interfacing. The parallel port pins are TTL levels

output(originally derived by a 74LS374 octal latch).This means that they put output 0 to 0.8 dc volt logically 0, and the 2.4 to 5 dc volt logically 1. According to the parallel port behaviors, there are 8 bits for data input/output, which can produce 256 different control signal status. The data bit signals can be managed by software that applied for this purpose the powerful software language is VB (2008) which can access the ports more efficiently than other available computer program languages. As the whole project software here is written and implemented through the use of Microsoft Visual Basic (2008). we IO.DLL which contains portOut (data, port) method .this method used for controlling the voltage of parallel port[11]. There are many ways could be used to control all home's appliances by sending appropriate signals to the PCs ports parallel or serial .then these signals inserted to the interface hardware system that prepared, designed and matches with the output signals, then depend on the signals the interface hardware control or manage one or more home appliances. The designed program will make the PC parallel port to send signals which appear as approximately 5 volts at one or more bits of eight data bits on the parallel port. these volts will change the status of the interface hardware .in order to do that there are many electronic circuits which can be useful for his purpose or more could build its own electronics in most cases the general transistor is used as a switch mode operation and the mini contactors as the interface system is directly connected to the PC parallel port it's at high degree recommended to protect the pc and its ports from any back feed misused, thus achieved by using any available type buffering .

2.2: Remotely PC Controlling System

The goal is to control remote PC with a mobile through using the SMS message services. Which can be done by using two 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 service of SMS and

support Nokia PC suit version 6 which mobile are connected to PC with USB port. The following figure depicts the proposed system that control remote PC

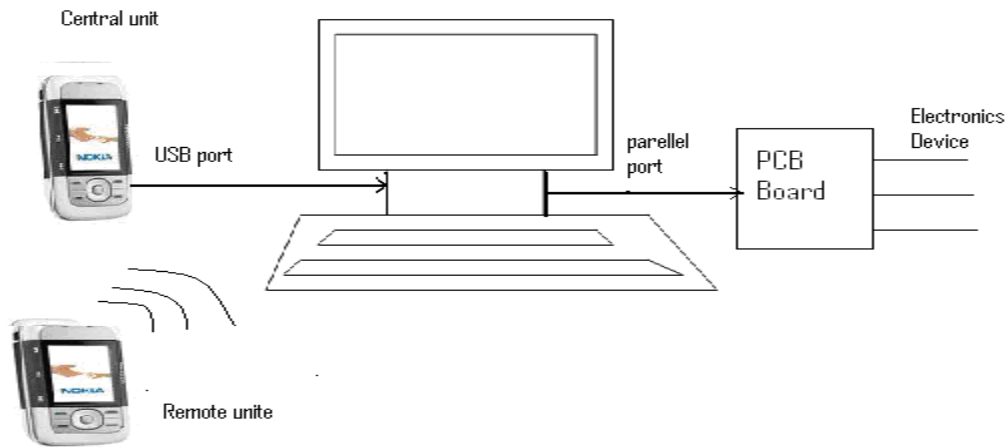


Figure 2.1: PC remote control system [4]

The block diagram of this system is shown in Figure 2.1 Where the PC is read and receives the SMS from the mobile phone that connected to it through USB port. Hence according to the type of mobile phones manufactures which includes the recognizable device software, reading, saving and managing the data of the mobile phone device inside the PC.

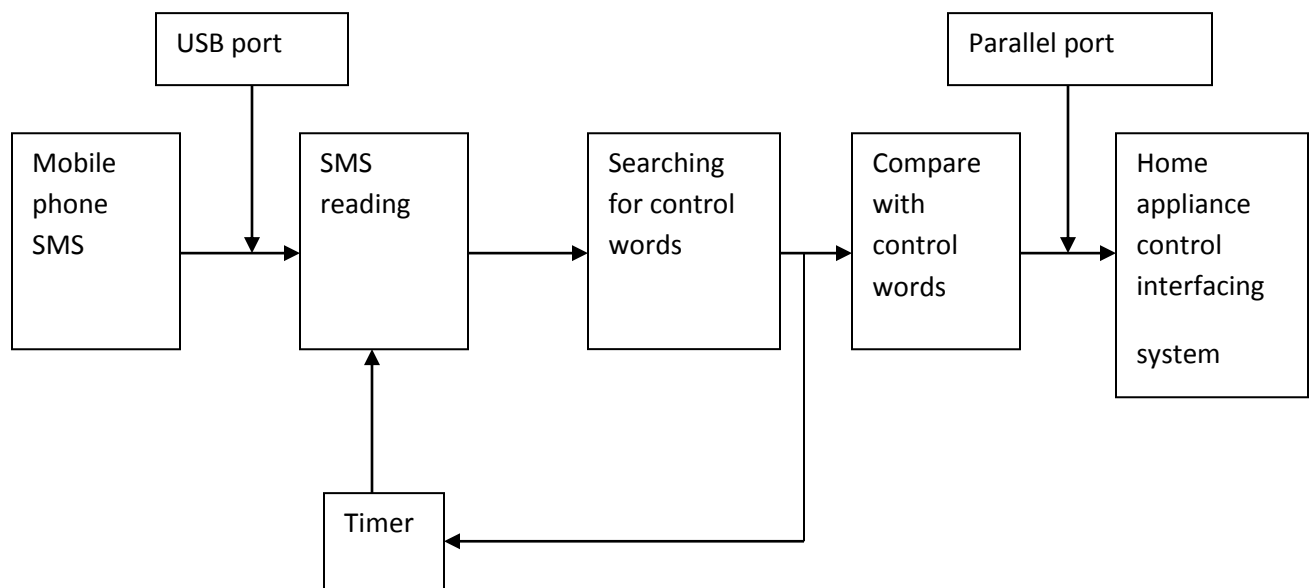


Figure 2.2: The Block diagram of the remote PC control system. [6]

As the mobile phone is recognized by the PC and it's received the SMS message from any other mobile phone then its send the message to the PC. The PC read the message and put it in temporary file .after that it searching inside the received SMS message for any available control words and this is done by using the appropriate program as prepared in this paper .thus the program is managing the SMS data and compares with any available control words that the whole project is designed. The program in this project will continuously search inside the receiving SMS for any probability of containing the control words so if control words are not found in the received SMS the program will send a SMS to the sender which contain "wrong key word". The comparison with available will achieved after the program has found the control words inside the SMS then the program will prepare and initialize the parallel port to send the proportional signal to the interface hardware that designed in this project; this signal will be proportional with the control appliance in the house or offices with the SMS message that deli by the PC from remote mobile phone .after finish this work then device will work according to the message and the program send a feedback SMS to the sender which contain "operation successful". if the SMS comes from unauthorized mobile number then

the program send a feedback SMS to the sender which contains “unauthorized access is denied” .

2.3. System Algorithm and Program

The system in this project is design to receive the SMS from any mobile device to the mobile phone that directly connected to the PC. This can be achieved by knowing the dial number of the phone that connected to the PC here this phone may be any ordinary mobile phone that has SMS capability. In order to prevent any occurrence of SMS likelihood control words, the sending SMS that contain control words should come between the specified codes that protocol between user of far mobile phone and the mobile phone that connected to the PC. The graphical user interface program is designed in this project by using the Microsoft Visual Studio (2008) [14]. This program is responsible for manage the whole system as the following;

- (i) The program is using the internal system timer for continuously observing the received message from mobile phone.
- (ii) After the PC received the new message, the program is read the SMS from mobile inbox.
- (iii) Searching the entire message for acceptable codes that matches between the two mobile phones and the user.
- (iv) If there are no such codes, the program will send appropriate feedback SMS.
- (v) If the program found the acceptable codes, then carry the words between these codes to compare them with a list of control words that the system is designed for controlling the corresponding home appliances.

(vi) The program through the parallel port send a suitable signal to there bit so as can be carry out by the interface hardware that connected to the parallel port and the home appliances.

(vii) Then send appropriate feedback.

2.4: The Flow Chart

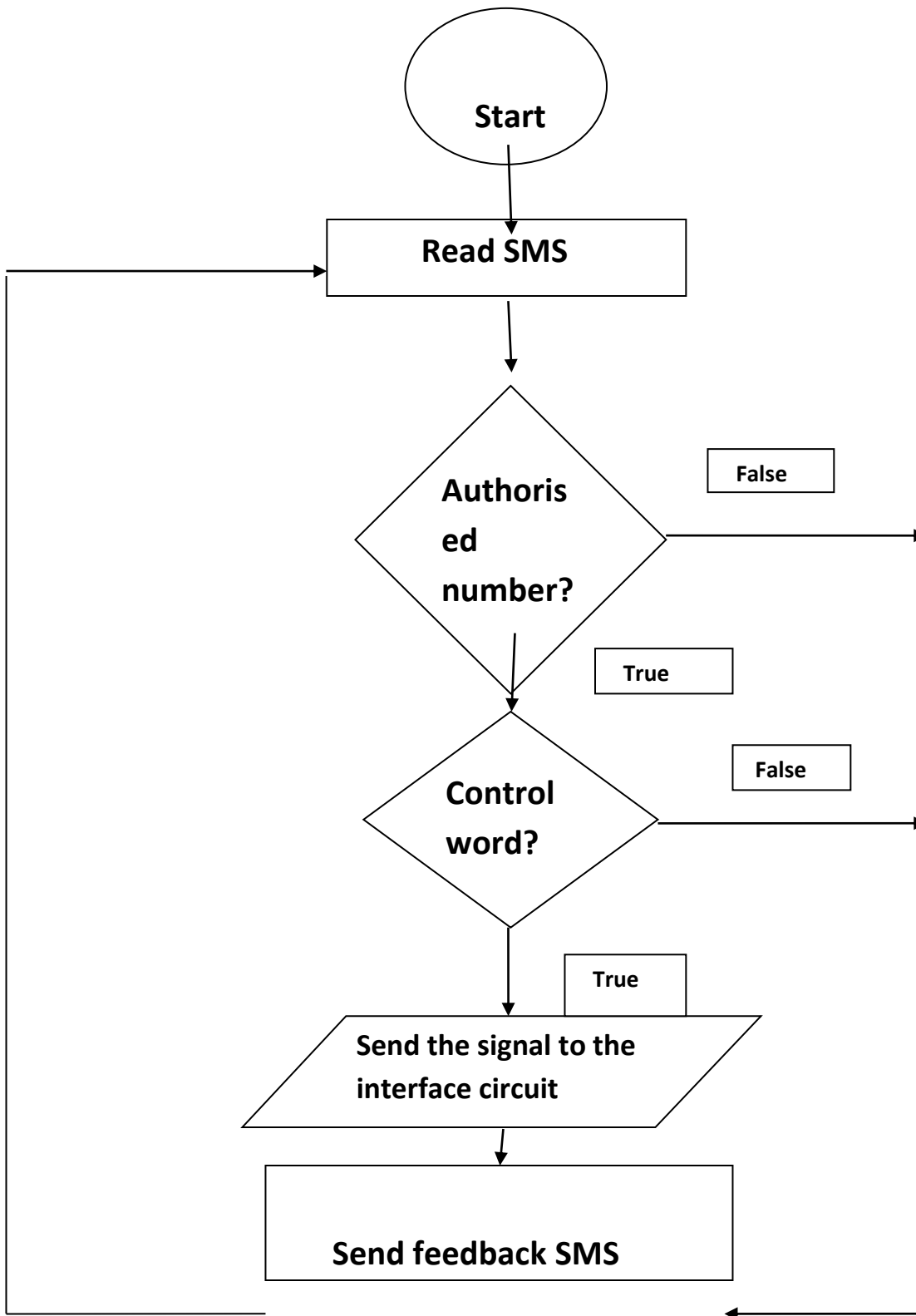


Figure 2.3: Flow chart of the program

CHAPTER THREE

SYSTEM DETAILS

3.1: System Details

In this section the details description of the program is shown below. The program is divided into two sections. One of them is receiving SMS and other is sending the desired voltage to the Parallel port right pin. Other section is sending proper feedback SMS to the command sender mobile number. The whole program is written in VB 2008 Language.

The proposed system that designed in this project is tested in the Computer Laboratory in Computer Science & Engineering Department in Daffodil International University [DIU]

Where the PC under the test has the following properties; PIV, 2.8 GHz, 256 MB of RAM and operated under windows XP. The type of the mobile phone that connected with the PC is NOKIA 5300 that used USB data transfer. The remote mobile phone device may be any mobile phone devices. [36]

The common controlled appliances are; Light, Fan, Ac on/off

The test is applied by sending the following SMS message.

“light on” “fan on” “light off” “fan off” “ac on” “ac off”

“light off,fan off” “light off,fan on” “light on,fan off”

“light on,fan on” “light off,ac off” “light off,ac on”

“light on,ac off” “light on,ac on” “fan off,ac of”

“fan off,ac on” “fan on,ac off” “fan on,ac on”

“light off,fan off,ac off” “light off,fan off,ac on”

“light off,fan on,ac off”b “light off,fan on,ac on”

“light on,fan off,ac off” “light on,fan off,ac on”

“light on,fan on,ac off” “light on,fan on,ac on”

3.2: Receiving and Sending SMS

To send and receive SMS we used Nokia mobile phone which is supported the Nokia PC suite version 6. To communicate with the mobile phone we accessed the Nokia PC suite 6[36] with the help of nclmsg.dll. The details code is shown into the coding section of this document.

3.3: Parallel Port Interfacing

In parallel port the 2nd to 9th pin is used to send voltage. To do this work we used IO.DLL. The PortOut(Data, Pin Number) method is used to passed the proper voltage into the parallel port. The details code is shown into the coding section of this document.

CHAPTER FOUR

COMPONENT DESCRIPTION

4.1: The Parallel Port

The parallel port or line printer terminal (LPT) port is a 25-pin D-type female connector available at the back of your PC. The original parallel port, called standard parallel port (SPP), [7] is a bundle of three ports (or registers), namely, data port, status port and control port. Pins 2 through 9 form the 8-bit data port. This port is purely a write-only port. This means it can be used only to output some data through it. Pins 1, 14, 16, and 17 form the control port, which is capable of reading/writing. Pins 10 through 13 and pin 15 together forms the status port. The status port is a read-only port.



Figure 4.1: Front view of parallel port [15]

4.2: Pin Assignment

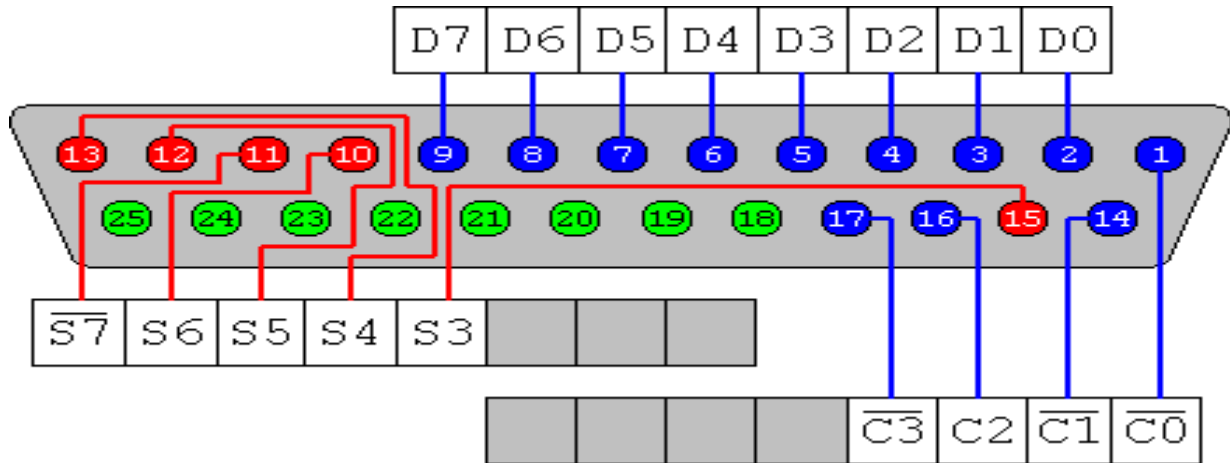


Figure 4.2: Pin assignment

4.3: The details of 25-pin parallel port are given in Table

The details of 25-pin parallel port are given in Table 4.1

Parallel port pin no.	Port signal Name	Direction	Hardware inverted	Register
1	NStrobe	I/O	Yes	Control
2	D0	Out		Data
3	D1	Out		Data
4	D2	Out		Data
5	D3	Out		Data
6	D4	Out		Data
7	D5	Out		Data
8	D6	Out		Data
9	D7	Out		Data
10	NACK	In		Status
11	Busy	In	Yes	Status
12	Paper Out	In		Status
13	Select	In		Status
14	Nauto-Lf	I/O	Yes	Control
15	Nerror	In		Status
16	Ninitialize	I/O		Control

The base address of the first parallel port (LPT1) is 0378 in hexadecimal (hex) notation (or 888 in decimal notations). The base address of the second parallel port (LPT2) is 0278 in hex. In this project, we've used only LPT1.

4.4: How to connect circuits to parallel port

PC parallel port is 25 pin D-shaped female connector in the back of the computer. It is normally used for connecting computer to printer, but many other types of hardware for that port is available today.

Not all 25 are needed always. Usually you can easily do with only 8 output pins (data lines) and signal ground. I have presented those pins in the table below. Those output pins are adequate for many purposes.

Pin function

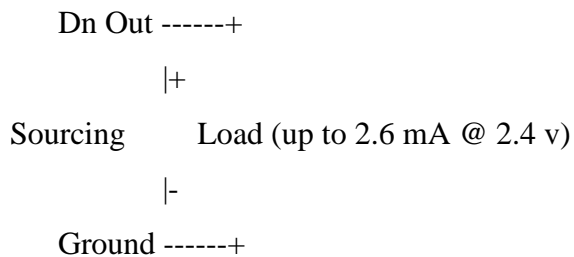
- 2 D0
- 3 D1
- 4 D2
- 5 D3
- 6 D4
- 7 D5
- 8 D6

9 D7

Pins 18,19,20,21,22,23,24 and 25 are all ground pins.

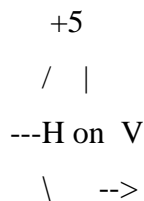
Those data pins are TTL level output pins. This means that they put out ideally 0V when they are in low logic level (0) and +5V when they are in high logic level (1). In real world the voltages can be something different from ideal when the circuit is loaded. The output current capacity of the parallel port is limited to only few mill amperes.

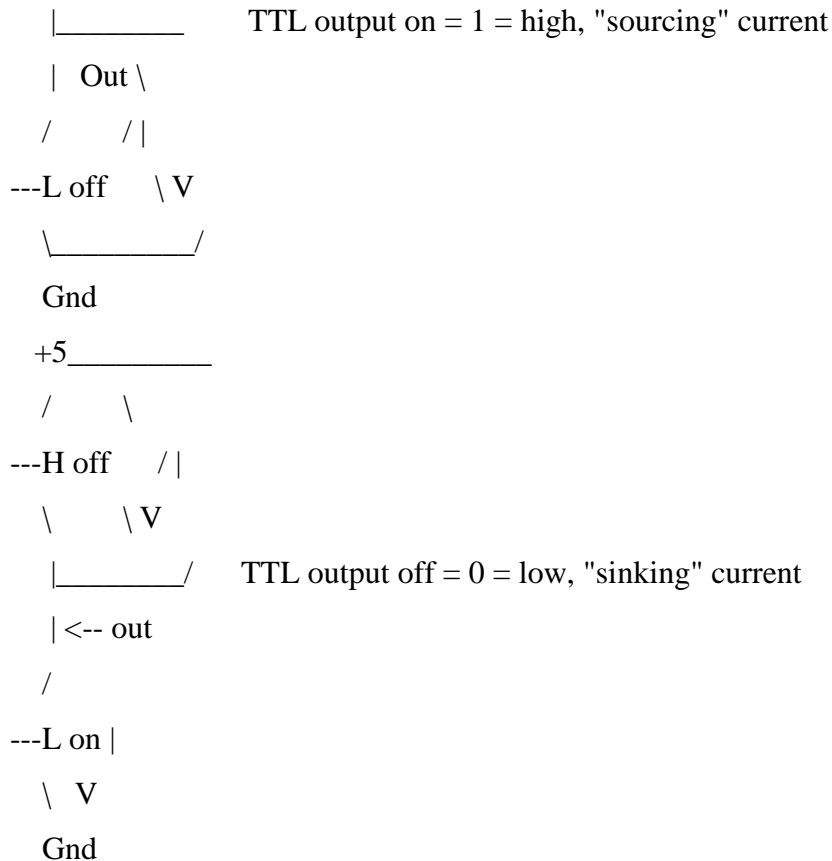
Here is a simple idea how you can connect load to a PC parallel port data pins. [18]



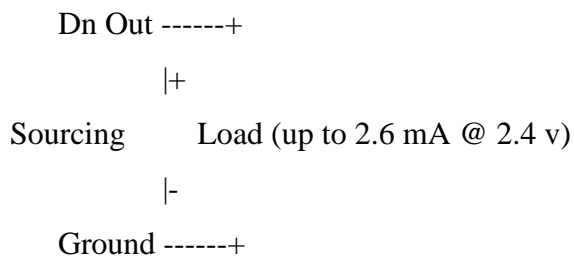
This is not the only way to connect things to a parallel port.

The parallel port data pins are TTL outputs, that can both sink and source current. Regular TTL outputs basically consist of a two "stacked" transistor in series between +5 volts and ground, with the output coming from the connection between them. This is called a "totem pole output". At any given time one of these transistors is conducting and the other is not. To pull the output "high", the transistor from +5 to the output conducts (H), which "sources" positive current from the output to ground (that is, an external device between the output and ground will get power). To pull the output low, only the lower transistor (L) conducts, "sinking" current to ground; an external device between +5 volts and the output can be energized.



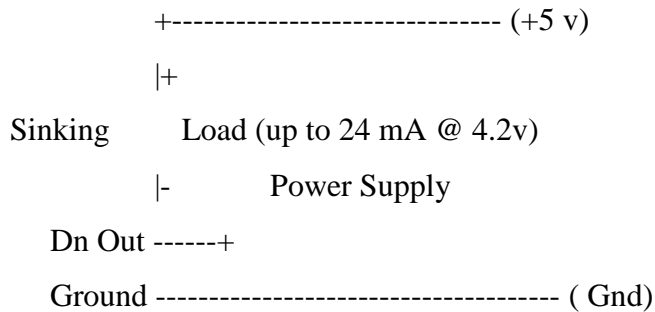


The outputs are designed so that they give at least 2.4V at 2.6 mA load. This 2.6 mA figure is for ordinary LS-TLL circuits used, the LSI implementations used in many computers can give more or less. Simple current sinking load connection:



When taking current from PC parallel port, keep the load low, only up to few mill amperes. Trying to take too much current (for example shorting pins to ground) can fry the parallel port. I have not killed any parallel port (yet) in this method, but I have had in cases where too much load has made the parallel port IC very hot. Be careful.

If you have an external +5 volt supply, you have another option for connection: use the Data Out pins to sink up to 24 mA from your +5 volt supply. This can be made with a circuit like this [19]:



The load gets power then you have external +5V on and the printer port data pin set to 0. This circuit gives you capability of driving more current than the "sinking" approach. You need to be careful with this circuit, because with this circuit you can easily fry the parallel port if you do things wrong. My advice is to be very careful with this type of circuit and make sure that the external +5V power supply gets turned off when computer gets turned off (all printer ports might not like getting +5V though the load to printer port when they are not powered).

CHAPTER FIVE

CODING OF PROPOSED PROJECT

5.1: Coding

The whole program is written in VB 2008. We right the code into four sections. They are receiving SMS, parallel port interfacing, send feedback SMS and add authenticate mobile number into the database. Now the coding of this program is shown section by section below.

5.2: Receiving SMS:

To receive the SMS the following code is used:

```
Private smsObj As NokiaCLMessaging.ShortMsgAdapter
```

```
Private messageItemObj As NokiaCLMessaging.ShortMessageItem
```

```
Private deliverObj As NokiaCLMessaging.IGSMDeliver
```

```
Private gsmObj As NokiaCLMessaging.IGSMSSubmit
```

```
Private pIShortMessageItem As NokiaCLMessaging.IShortMessageItem
```

```

Private smsMemObj As NokiaCLMessaging.IMemory

Private submitOBJ As NokiaCLMessaging.IGSMSSubmit

Private Function readSMS(ByVal i)

    smsObj = New NokiaCLMessaging.ShortMsgAdapter

    messageItemObj = New NokiaCLMessaging.ShortMessageItem

    messageItemObj =
smsObj.ReadSMS(NokiaCLMessaging.ShortMessageMemory.SHORTMESSAGE_ME
MORY_ME, 1, i)

    Select Case (messageItemObj.Type)

        Case
NokiaCLMessaging.ShortMessageType.SHORTMESSAGE_TYPE_GSM_DELIVER

            deliverObj = messageItemObj.TypeProperties

            a = deliverObj.Message

            b = deliverObj.OriginatorAddress

            c = deliverObj.TimeStamp

            phoneNumber = b

    End Function

```

5.3: Parallel port interfacing

For parallel port interfacing the following code is used.

Module Module1

Public Declare Sub PortOut Lib "IO.DLL" (ByVal Port As Integer, ByVal Data As Byte)

Private Declare Sub PortWordOut Lib "IO.DLL" (ByVal Port As Integer, ByVal Data As Integer)

Private Declare Sub PortDWordOut Lib "IO.DLL" (ByVal Port As Integer, ByVal Data As Long)

Private Declare Function PortIn Lib "IO.DLL" (ByVal Port As Integer) As Byte

Private Declare Function PortWordIn Lib "IO.DLL" (ByVal Port As Integer) As Integer

Private Declare Function PortDWordIn Lib "IO.DLL" (ByVal Port As Integer) As Long

Private Declare Sub SetPortBit Lib "IO.DLL" (ByVal Port As Integer, ByVal Bit As Byte)

Private Declare Sub ClrPortBit Lib "IO.DLL" (ByVal Port As Integer, ByVal Bit As Byte)

Private Declare Sub NotPortBit Lib "IO.DLL" (ByVal Port As Integer, ByVal Bit As Byte)

Private Declare Function GetPortBit Lib "IO.DLL" (ByVal Port As Integer, ByVal Bit As Byte) As Boolean

Private Declare Function RightPortShift Lib "IO.DLL" (ByVal Port As Integer, ByVal Val As Boolean) As Boolean

Private Declare Function LeftPortShift Lib "IO.DLL" (ByVal Port As Integer, ByVal Val As Boolean) As Boolean

Private Declare Function IsDriverInstalled Lib "IO.DLL" () As Boolean

```
Dim count1_, count2_ As Integer

End Module

Private Function chk()

    str = Val(t3.Text) & Val(t2.Text) & Val(t1.Text)

    Call PortOut(888, str)

End Function
```

5.4: Sending feedback SMS

To send the feedback SMS the following function is used.

```
Public Function send()

    Dim j As Integer

    Dim ad As String = ""

    If ComboBox1.Text = "GP" Then

        ad = "+8801700000600"

    ElseIf ComboBox1.Text = "Bangla Link" Then

        ad = "+88019900557"

    ElseIf ComboBox1.Text = "Warid" Then
```

```
ad = "+8801600006001"

ElseIf ComboBox1.Text = "Teletalk" Then

    ad = ""

End If

Dim smsEntry As NokiaCLMessaging.ShortMessageItem

smsEntry = New NokiaCLMessaging.ShortMessageItem

smsEntry.Type =
NokiaCLMessaging.ShortMessageType.SHORTMESSAGE_TYPE_GSM_SUBMIT

submitOBJ = smsEntry.TypeProperties

submitOBJ.Message = sendfed

submitOBJ.ServiceCenterAddress = ad

'submitOBJ.ServiceCenterAddress = "+88019900557"

submitOBJ.ProtocolID = 0

submitOBJ.DataCodingScheme = 0

submitOBJ.ValidityPeriodRelative = 255

'phoneNumber = "+8801911714541"

On Error GoTo ErrorTrap

submitOBJ.DestinationAddress = phoneNumber

'submitOBJ.DestinationAddress = Me.TextBox1.Text
```

```
Call  
smsObj.SendSMS(NokiaCLMessaging.ShortMessageRouteType.SHORTMESSAGE_R  
OUTE_TYPE_ANY, submitOBJ)
```

```
' MsgBox(submitOBJ.MessageReference)
```

```
Exit Function
```

```
ErrorTrap:
```

```
MsgBox("Source:" + Err.Source.ToString + " === Description:" +  
Err.Description.ToString + " ===== Help:" + Err.HelpContext.ToString)
```

```
End Function
```

5.5: Adding authenticates number into the database

To add the mobile number the following code is used.

```
Imports MySql.Data.MySqlClient
```

```
Public Class Authority
```

```
Dim mycon As New  
MySqlConnection("datasource=localhost;username=root;password=pollob;database=nu  
mber")
```

```
Dim myTable As DataTable
```

```
Private Sub Authority_Load(ByVal sender As System.Object, ByVal e As  
System.EventArgs) Handles MyBase.Load
```

```
Dim myadp As New MySqlDataAdapter("Select * from numtable ", mycon)
```

```
Dim myds As New DataSet()
```



```

myadp.Fill(myds, "numtable")

myTable = myds.Tables("numtable")

DataGridView1.DataSource = myTable

End Sub

Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

    If TextBox1.Text <> "" Then

        Try

            Dim command As New MySqlCommand("INSERT INTO
numtable(phnnumber)" & "VALUES('" & Me.TextBox1.Text & "')", mycon)

            mycon.Open()

            command.ExecuteNonQuery()

            mycon.Close()

            MsgBox("Saved Successfully")

            Dim myadp As New MySqlDataAdapter("Select * from numtable ", mycon)

            Dim myds As New DataSet()

            myadp.Fill(myds, "numtable")

            myTable = myds.Tables("numtable")

            DataGridView1.DataSource = myTable

        Catch ex1 As MySqlException

        Catch ex As Exception

```

```
        MsgBox(ex.Message)

    End Try

Else

    MsgBox("Please insert all the field value")

End If

End Sub

End Class
```

CHAPTER SIX

TESTING OF PROPOSED PROJECT

6.1: Testing

Testing is an important part of any project. In this section the unit testing and the system testing is shown one after another.

Unit Testing

In this section I test the program unit by unit. The test result is shown in table 6.1 below.

TABLE 6.1: The test result of Unit Testing unit by unit.

Input value	Desired value	Output value	Comments
light on	light on	operation successfull	perfect
light off	light off	operation successfull	perfect
fan on	fan on	operation successfull	perfect
fan off	fan off	operation successfull	perfect
ac on	ac on	operation successfull	perfect
ac off	ac off	operation successfull	perfect
light off,fan off	light off,fan off	operation successfull	perfect
light off,fan on	light off,fan on	operation successfull	perfect
light on,fan off	light on,fan off	operation successfull	perfect
light on,fan on	light on,fan on	operation successfull	perfect
light off,ac off	light off,ac off	operation successfull	perfect
light off,ac on	light off,ac on	operation successfull	perfect
light on,ac off	light on,ac off	operation successfull	perfect
light on,ac on	light on,ac on	operation successfull	perfect
fan off,ac off	fan off,ac off	operation successfull	perfect

fan off,ac on	fan off,ac on	operation successfull	perfect
fan on,ac off	fan on,ac off	operation successfull	perfect
fan on,ac on	fan on,ac on	operation successfull	perfect
light off,fan off,ac off	light off,fan off,ac off	operation successfull	perfect
light off,fan off,ac on	light off,fan off,ac on	operation successfull	perfect
light off,fan on,ac off	light off,fan on,ac off	operation successfull	perfect
light off,fan on,ac on	light off,fan on,ac on	operation successfull	perfect
light on,fan off,ac off	light on,fan off,ac off	operation successfull	perfect
light on,fan off,ac on	light on,fan off,ac on	operation successfull	perfect
light on,fan on,ac off	light on,fan on,ac off	operation successfull	perfect
light on,fan on,ac on	light on,fan on,ac on	operation successfull	Perfect
AC ON	Wrong keyword	Wrong keyword	perfect
Light ON	Wrong keyword	Wrong keyword	Perfect

6.2: System testing

In this section the whole system is tested.

At first when the program is running then the following interface is come and the voltage of the parallel port is running low.

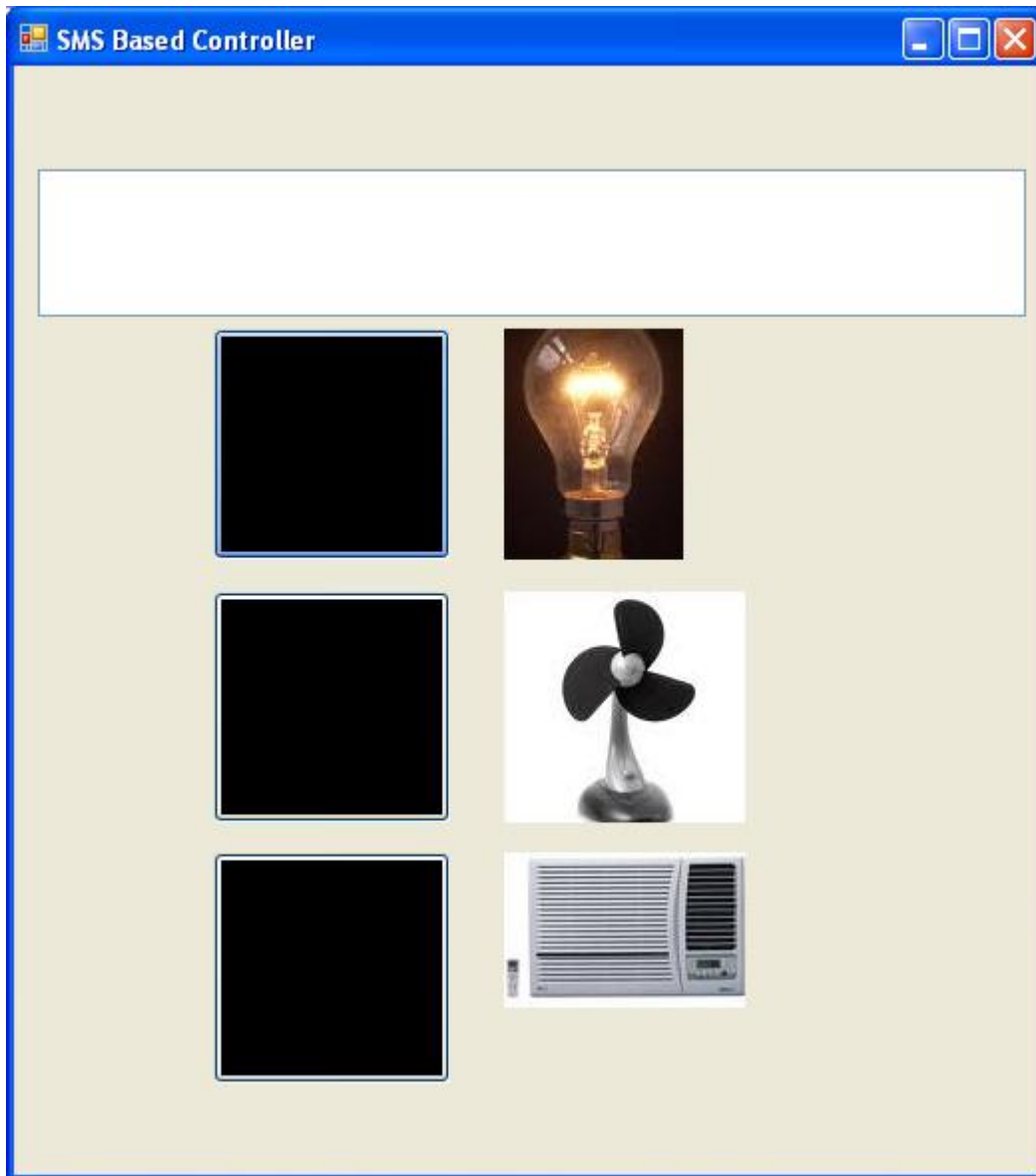


Figure 6.1: System testing 1

The program is checking the inbox of the mobile continuously. When the program received the "light on" sms then the light button is green and the light is on. The interface is shown in below.

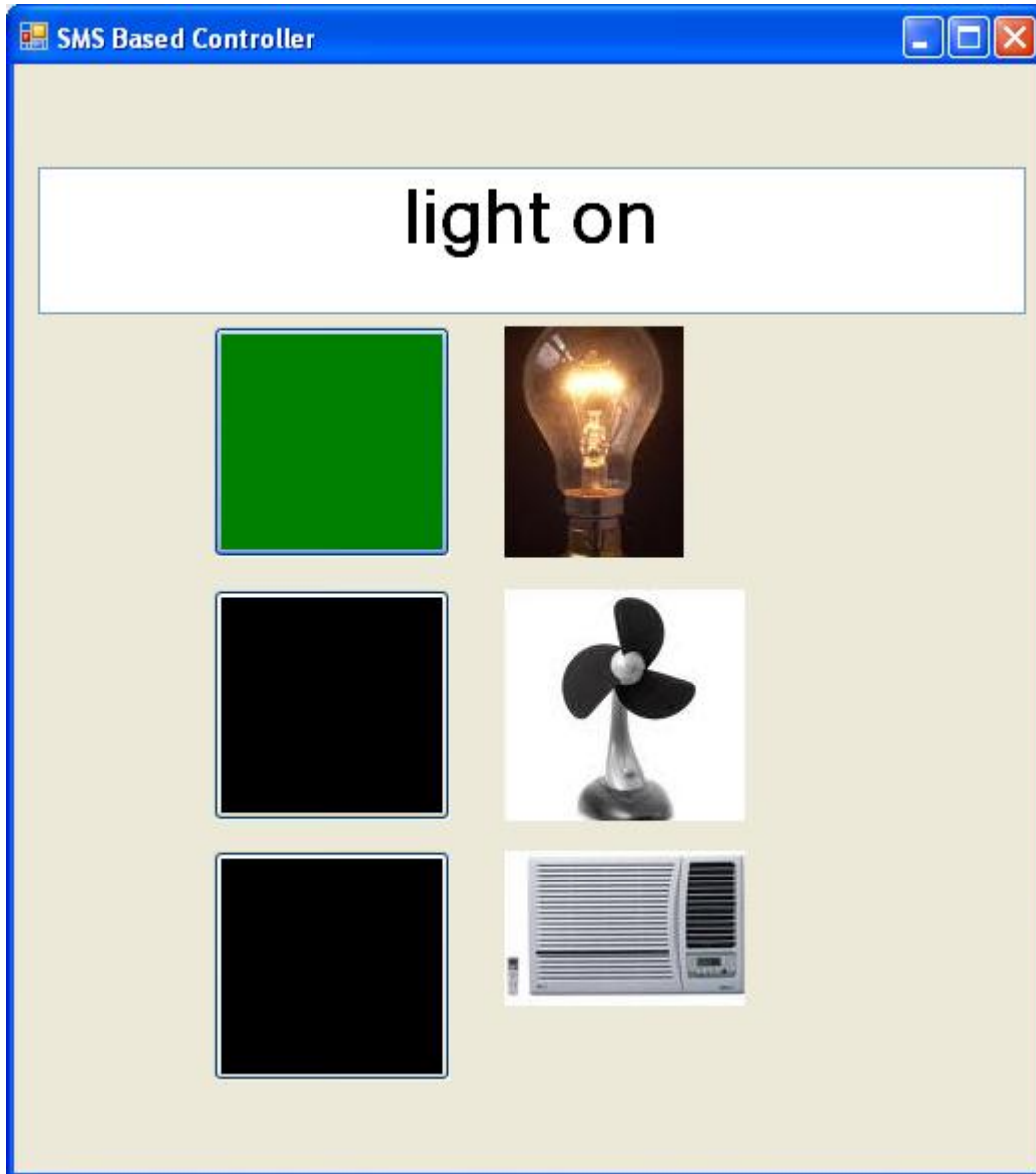


Figure 6.2: System testing 2

When the program received the " light off" sms then the light button is black and the light is off. The interface is shown in below.

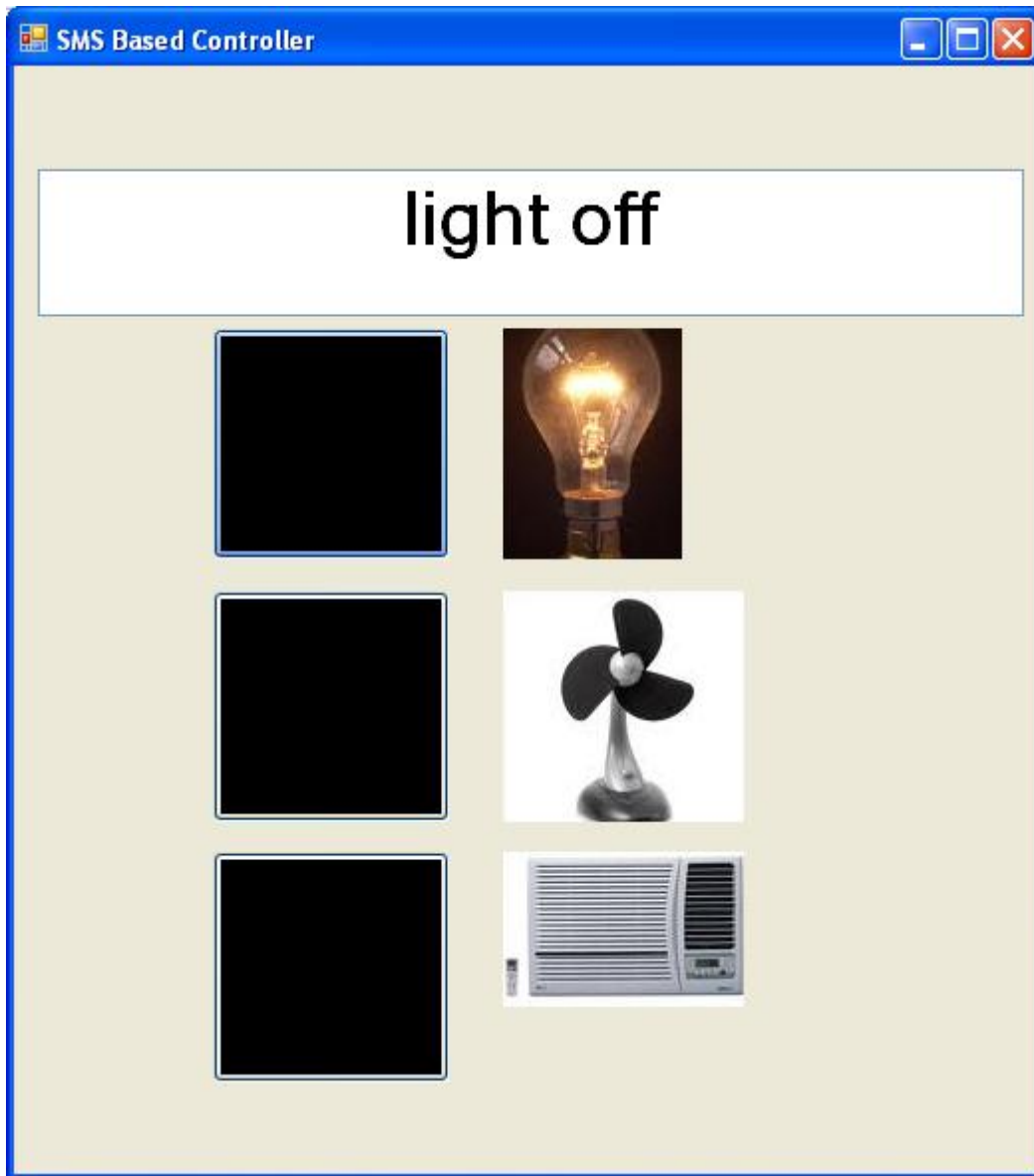


Figure 6.3: System testing 3

When the program received the "light on,fan on,ac on" sms then the light button is green and light is on fan button is green and fan is on.the ac button is green and ac is on.The interface is shown in below.

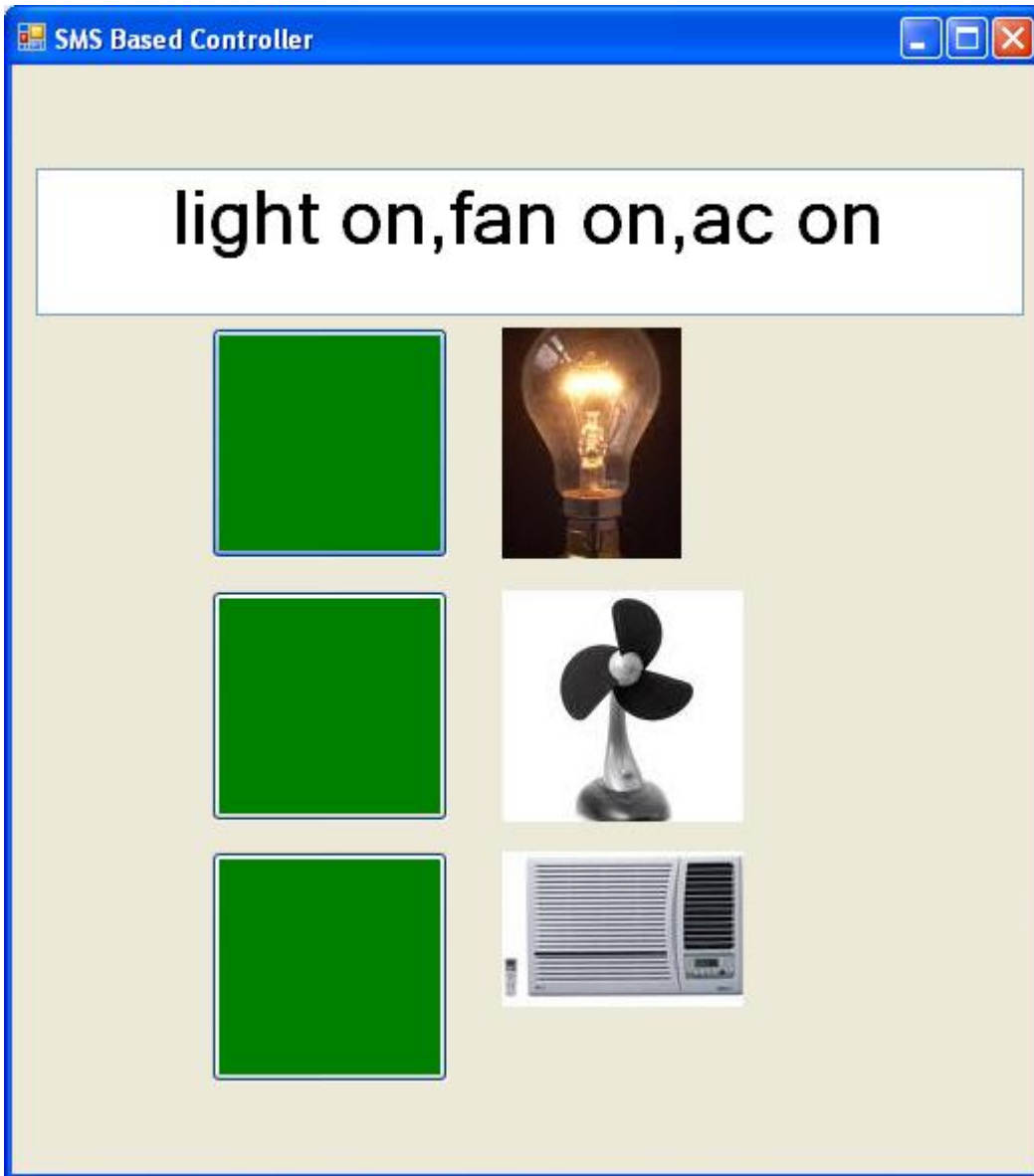


Figure 6.4: System testing 4

CHAPTER SEVEN

RESULT

7.1: RESULTS

The results which I get in my project those are given below.

TABLE 7.1: The results of the project

Input value	Desired value	Output value
light on	light on	operation successfull
light off	light off	operation successfull
fan on	fan on	operation successfull
fan off	fan off	operation successfull
ac on	ac on	operation successfull
ac off	ac off	operation successfull
light off,fan off	light off,fan off	operation successful
light off,fan on	light off,fan on	operation successful
light on,fan off	light on,fan off	operation successful
light on,fan on	light on,fan on	operation successful
light off,ac off	light off,ac off	operation successful
light off,ac on	light off,ac on	operation successful

light on,ac off	light on,ac off	operation successful
light on,ac on	light on,ac on	operation successfull
fan off,ac off	fan off,ac off	operation successful
fan off,ac on	fan off,ac on	operation successful
fan on,ac off	fan on,ac off	operation successful
fan on,ac on	fan on,ac on	operation successful
light off,fan off,ac off	light off,fan off,ac off	operation successful
light off,fan off,ac on	light off,fan off,ac on	operation successful
light off,fan on,ac off	light off,fan on,ac off	operation successful
light off,fan on,ac on	light off,fan on,ac on	operation successfull
light on,fan off,ac off	light on,fan off,ac off	operation successful
light on,fan off,ac on	light on,fan off,ac on	operation successful
light on,fan on,ac off	light on,fan on,ac off	operation successful
light on,fan on,ac on	light on,fan on,ac on	operation successful

7.2: Application

1. Wide application in saving the power providing safety from danger. Can be used in factory, office, home etc where power saving is a must.
2. Reduces hassles in controlling appliances from remote locations. Prevents human from any dangerous hazards. In all saving Time, Energy and Money.
3. Applications in Household Electronic appliances (home)

4. Industrial Applications Machines etc.

7.3: Limitation

Limited connectivity and specific usage

Always ensure to keep pc on

CHAPTER EIGHT

CONCLUSION

8.1: Conclusion

Based on the GSM network SMS service is an information network in the mobile storage and forwarding of the process, can be inter-city and inter-provincial and even cross-border transmission, flexible, convenient, cheap and reliable. This innovation is the use of SMS to achieve ultra-long-distance remote control and transfer data. Users with portable phones to the GSM MODEM module family made a short message can be on the home appliances or burglar alarm remote control to a global scale. Since this system uses a wireless manner, will not disrupt the existing home decoration, a certain degree of practicality. GSM MODEM and infrared remote control technology is mature and perfect, so this is a feasible option. And low cost of this program, high-performance, reliable and flexible characteristics of the control of home appliances easier and faster, more convenient and more secure.

The conclusion can be summarized in the following points

- (i) Using the SMS message in mobile phone, which is very famous by the mobile user, this make this system be very effective and attractive method?
- (ii) The parallel port data rate is at high degree when compared with other ports.
- (iii) Making all home appliances controllable is very attractive by many house owners, office and so on.
- (iv) The system cost is unacceptable cost range, as nowadays many houses have a PC and anyone can get a skill working with the PC. There are many works have lefts for the future. That includes, using other methods that can be connected to the PC as using

normal telephone device other features that came with modern mobile phones like G3 mobile communications which include image rather text based.

8.2: Future Work

At this moment we can control only eight device at a time but it is so limited connectivity for any home or industry. In future we will work how to control more device by using this project and some extra software so that one industry or garments or a factory device can control. If any body has interested to do work on this project we will say him or her to work on increase the control port and another thing is how to control device only using microcontroler and without using PC.here mobile directly connected to PCB circuit where microcontroler is used. Which program we used here this is VB langusge but it will be assembly language. To control 220 line we use 12 volt relay but in parallel port output we get 4.5 volt. But by using a ckt which contain max 232 IC and some capacitor we get almost 7.8 volt but decrease current .so at this moment we cannot work properly. It is possible by using 6 volt relay but it is not secure. in future we will try to solv this problem at which voltage and current increase properly which we need.another thing is the VB program which we use here that is only suuport PC suit ver 6. It is not support the latest ver PC suit.we also work to update the program which support all version and any mobile can acces it.

For security_by adding extra software, we can use our project for security purposes. For example: Before entering the gate we will send our name through our cell phone to the master unit. The computer process our name and send acknowledgement in the form of a question to send password and upon sending password it will ask some other questions to enter, If our answers matches then computer sends signals to micro controller and microcontroller controls the door and other devices attached it.

APPENDIX:

Which mobile directly connected to the PC this is NOKIA 5300 model. Which is only supported PC suit version 6 but not support latest version PC suit. It support Text Messaging templates that provide pre-set text that can be used to quickly send common text (SMS) messages without typing the message itself .

The present scenario of technological advancement and research is stepping forward towards the high speed and long distance data communication. The Mobile and cellular technology is one of the reliable and advanced media for the data communication. The information technology makes mobile communication more popular and economical. The science and technology is moving with fast pace towards long distance communication and data transmission. The advancement in long distance communication essentially can create a global village. This project is conceptually based on long distance data communication and control. In the present scenario the application of mobiles are very much common, almost everyone is using a mobile for their day to day affairs. The mobile networks are covering globally. The idea to use the mobile as a remote control device is definitely an innovative and widely accepted concept. The mobile set as a remote control can cover wide area compare to any other remote control devices. The IR remote controller and RF remote controllers have its limitation on its range where as the mobile based remote controllers can have a global range using wireless cellular network. In this project an attempt is made to control the electrical appliances globally by using the cellular network. The SMS technique is inexpensive and more reliable as the data transfer is in text based. This concept of control system is very much use full for industrial and consumer application. This type of applications can be used in industries for controlling devices also the user can get field information and data through GSM modem in the format of SMS etc. In the consumer sector this application can be used to operate air condition machines, rice cooker and washing machines etc. These machines can be

operated by sending a SMS to the GSM Modem. AS this design is an embedded system all the advantage of embedded system can achieved in this system. The SMS based appliance controller is conceptual step towards realization of Global village.

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