



P-1557



HOME APPLIANCES CONTROL SYSTEM

A PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this project report “HOME APPLIANCES CONTROL SYSTEM” is the bonafide work of “K. NARESH KARTHIK, P.SANDEEP, K.S. VIVEK” who carried out the project work under my supervision.

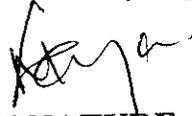


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EXTERNAL EXAMINER

19/04/05.

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DECLARATION

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Declare that the project entitled “**HOME APPLIANCES CONTROL SYSTEM**”, submitted in partial fulfillment to Anna University as the project work of Bachelor Of Technology (Information Technology) Degree, is a record of original work done by us under the supervision and guidance of Ms.M.Lavanya, lecturer, Department of Information Technology, Kumaraguru College of Technology, Coimbatore.

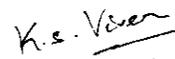
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ABSTRACT

The project titled “HOME APPLIANCES CONTROL SYSTEM” aims at extending the communication technology, which plays an important role in determining the growth of a country. Today India enjoys a better status in the world due to this technological development only. The 21st century man craves for a sophisticated and better living. A number of electrical and electronic gadgets has been invented for the sole purpose of easy life of mankind. These gadgets provide comfort as well as security. But with increasing number of gadgets and the hectic schedule it becomes extremely difficult for humans to cope up with the instruments. The solution for this problem lies within our project.

Our project depicts the futuristic home. Each and every electrical and electronic appliance is integrated together and embedded with the help of artificial intelligence. The main objective is to control the gadgets through voice recognition i.e. through mobile phones from any part of the globe. This will reduce the tension from human mind and they can work at ease or enjoy their holidays even if they forget to switch of any appliance. This project has evolved to become a necessity in each and every home and as they say that “Necessity is the mother of all inventions”.

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LIST OF ABBREVIATIONS

S.No	ABBREVIATION	EXPANSION
1)	DTMF	Dual Tone Multi Frequency
2)	LAN	Local Area Network
3)	PC	Personal Computer
4)	PSTN	Public Switched Telephone Network
5)	SAIP	Speech Application Interface Program
6)	SMS	Short Messaging Services
7)	SRS	Software Requirement Specification

1. INTRODUCTION

1.1 EXISTING SYSTEM AND ITS LIMITATIONS

The current implementation of Home Automated System leads to have a complete control over the electronic appliances in the house with features including speech recognition and also through SMS.

In the existing project the speech recognition was done such that the voice is converted to plain text. Using this only single appliance was controlled and accessing was not done. The main limitation of speech recognition system is that it is not user friendly because it does not have a quick response.

The controlling of appliances through SMS was done by sending the message to the system through mobile phone. It has many limitations such as when message is sent through mobile if network coverage is not available then message acknowledgement will not be received or it may get delayed.

Delay may occur due to traffic congestion or handoff. If network is not available message cannot be sent. PSTN phones cannot be used because message cannot be sent through them.

1.2 PROPOSED SYSTEM AND ITS ADVANTAGES

The proposed system includes the following features namely voice controlled electronic circuit, mobile communication and internet. Using all these features electrical and electronic and appliances can be controlled and accessed.

The voice controlled electronic circuit provides to control the appliances through voice. In this project, we are not only controlling but also accessing them. The advantage through voice is that it is user friendly. Many devices can be controlled and quick response is got.

The mobile communication actually provides to control and access the appliances by sending the DTMF signal. The main advantage is it can be used from remote areas. Acknowledgement is not at all required. Also along with mobile, PSTN can be used. The response is quicker, flexible and user-friendly.

The internet provides to control and access the appliances from anywhere in the world, by sending pre-defined commands through chat program. The advantages are status can be viewed immediately, provides quick access and also authorized access is given which provides maximum security.

2. SYSTEM REQUIREMENTS AND ANALYSIS

System study is an activity that encompasses most of the tasks that we have collectively called computer system engineering. The study is conducted with the following objectives:

- Identify the needs
- Evaluate the system concept for feasibility
- Perform economic and technical analysis
- Allocate functions to hardware, software, people, and other system elements
- Create a system definition that forms a foundation for all subsequent engineering works

2.1 PRODUCT DEFINITION

Our intention is to develop a system which controls and access all the electrical and electronic devices through speech, mobile and internet, where speech is used to control and access the appliances when user is within the home location, mobile is used to control and access the appliances when user is in remote location and internet is used to control and access the appliances anywhere in the world.

2.2 PROJECT PLAN

In the analysis phase, we have learned about the various technologies and identified the technologies most suitable for the project implementation. From this study, the most suitable language selected is visual basic. Differentiation of modules, user interface design and other crucial aspects were identified and designed as necessary. Other ambiguities which may exist are identified and taken care of.

After the analysis phase, the design phase commences in which the various modules and its functionalities are identified. The complete system flow of control and data are identified and depicted in the form of diagrams.

Next the implementation phase is taken care of in which the design is translated into code. Each module is coded separately and finally integrated to form the entire system. Care is taken to make the code easily understandable by future users.

In the testing phase, each module is tested thoroughly and finally the integrated modules are tested together to ensure the correct working of the entire system. Testing is also done to ensure that the product satisfies the specified requirements and set criteria.

3. SOFTWARE REQUIREMENTS SPECIFICATION

3.1 INTRODUCTION

3.1.1 PURPOSE

The purpose of this project is to specify the requirements of “Home Appliances Control System”. It describes the interfaces for the system. The document also bridges the communication gap between the customer and the analyst.

3.1.2 SCOPE

SRS forms the basics for agreement between the client and the supplier and what the software product will do. It also provides a reference for the validation of the final project.

Any changes made to the SRS in the future will have to go through formal change approval process.

3.2 DEFINITION

3.2.1 CUSTOMER

A person or organization, internal or external to the producing organization, who takes financial responsibility for the system. In a large system this may not be the end user. The customer is the ultimate recipient of the developed product and its artifacts.

3.2.2 USER

A person who will use the system that is developed.

3.2.3 ANALYST

The Analyst details the specification of the system's functionality by describing the requirements aspect and other supporting software requirements

3.3 GENERAL DESCRIPTION

3.3.1 PRODUCT OVERVIEW

This system aims to provide control and access all the electrical and electronic devices through speech, mobile and internet, where speech is used to control and access the appliances when user is within the home location, mobile is used to control and access the appliances when user is in remote location and internet is used to control and access the appliances anywhere in the world.

3.3.2 USER CHARACTERISTICS

The users must know the username and password name in order to control and access the appliances either from local or from remote or from anywhere in the world. Also the user must have knowledge about the commands that are stored in the system that has to perform a respective operation.

3.3.3 GENERAL CONSTRAINTS

The system has a single platform where three main modules i.e. on for voice controlled electronic circuit, mobile communication and another for internet.

3.3.4 GENERAL ASSUMPTIONS

The user must train the system before usage otherwise the voice will not be recognized by the system and also user must have mobile phone which facilitates long tone DTMF.

3.4 SPECIFIC REQUIREMENTS

3.4.1 INPUTS AND OUTPUTS

The system gets three inputs from the user. The inputs are from mobile speech and from the internet. When user gives input from the mobile means he should first enter the authentication code as well as when user gives input the internet, first he should enter the user name and password in order to connect with the system. After getting the input system send the required output to the parallel port where the circuits sense the signal and performs the corresponding operation.

3.4.2 FUNCTIONAL REQUIREMENTS

- The system should be able to authenticate user who gives the correct input.
- The system should allow the user to perform the desired functions without any problems.

3.4.3 SYSTEM REQUIREMENTS

3.4.3.1 HARDWARE REQUIREMENTS

Processor	:	Pentium IV
RAM size	:	128 MB RAM
Hard disk capacity	:	20GB

3.4.3.2 SOFTWARE REQUIREMENTS

Operating System	:	Windows /9xs
SAPI	:	Speech development kit
Language	:	Visual Basic 6.0

3.5 PERFORMANCE CONSTRAINTS

The system should run smoothly as long as it gets the correct input from the user when he uses voice. The system should perform correct operation as long as the mobile connection is good.

4. DESIGN DOCUMENT

4.1 STRUCTURE OF HOME APPLIANCES CONTROL SYSTEM

The structure of Home Appliances Control System can be fragmented into two media

- Hardware System
- Software System

Hardware System acts as a bridge to communicate with each and every electronic appliance to the computer, which runs the software. Software system in the computer acts as a microprocessor, which calculates and sends signal to the hardware system. So both are really essential for running the Home Appliances Control System.

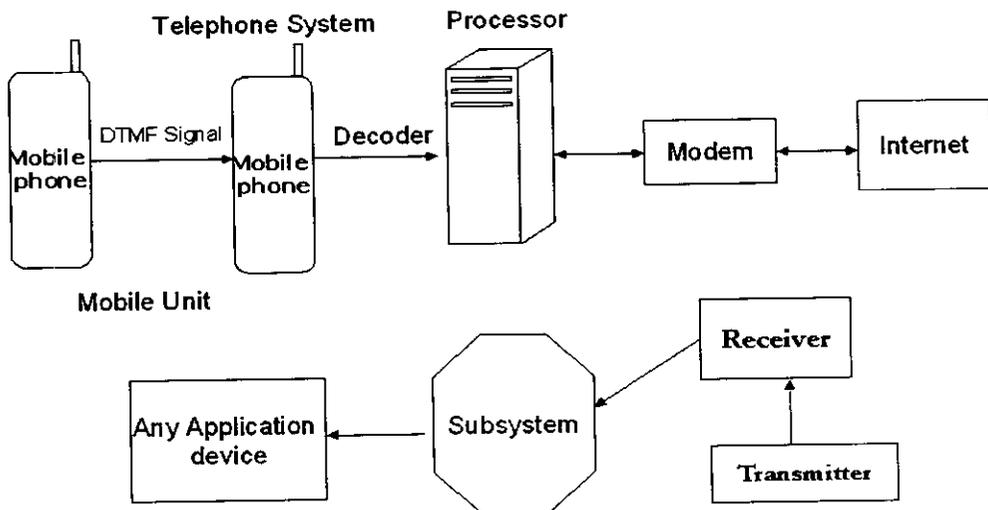


Fig 4.1.1. Architecture of Home Appliances Control System

4.1.1 HARDWARE SYSTEM

There is a vast circle of complex network communication with each electronic appliance to each room. Their easy installation, faster transfer of data, robustness and flexibility are precisely calculated for selecting the network communication that is used in the system. The overview structure of Home Appliances Control System is well shown in the fig4.1.1. The detailed function of Hardware System is explained in the later chapters.

4.1.2 SOFTWARE SYSTEM

Software system that runs in the local host (system) does all the job of calculating and controlling all the appliances. Only the direct command from the local host would interact with the hardware system. The local host can be accessed from the remote location, where the data are transferred by the cipher text over the internet for safer and secure data transmission. The more detailed structure of the software system and security encapsulations is well explained in the later chapter.

4.1.3 INTERFACING

Software system present in the project would control all the activities of the device .It is the control center of the system. The program that runs in the system is quite sophisticated.The software system can be divided in to three parts.

- User interface
- Network interface
- Processing unit

User interface, is the part in which the home appliances controls system communicate the user, it gets input from the user and work accordingly through commands that is interpreted

Network interface, is the part in which the home appliance controls system communicated or interface with network that connects the entire controller. It is where the instruction is sent to controller.

Processing unit is the place where the user interface and network interface converge. Processing unit analysis the both value and take the necessary action those are preprogrammed in the database of the system.

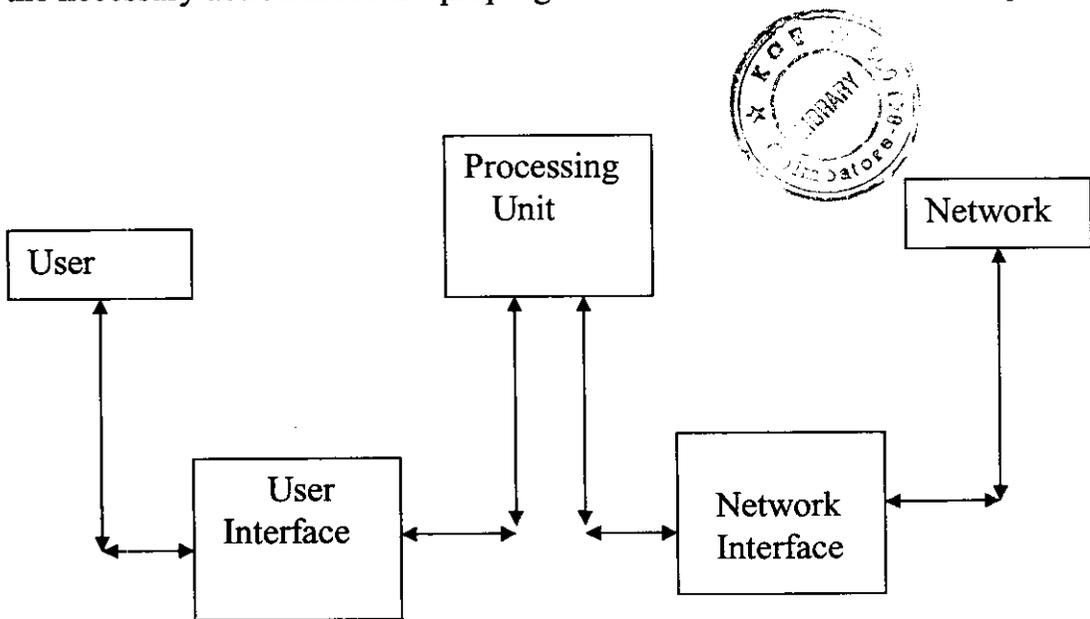


Fig 4.1.3 .Detailed picture of software system

The fig 4.1.3 shows the detailed picture of each fragmented part of the software system function and how they interact with one another.

4.2 INPUT DESIGN

User interface is defined to be the part of the system, which interact with the user. This is the place where the user gives the instruction and gets the respond key from the home appliances control system .This doesn't have the direct link with the network interface as it goes to every controller. The data is fed into the processing unit. The user interface gets the data that are from the user by means of following ways.

- Speech commands
- Textual controls
- DTMF signal

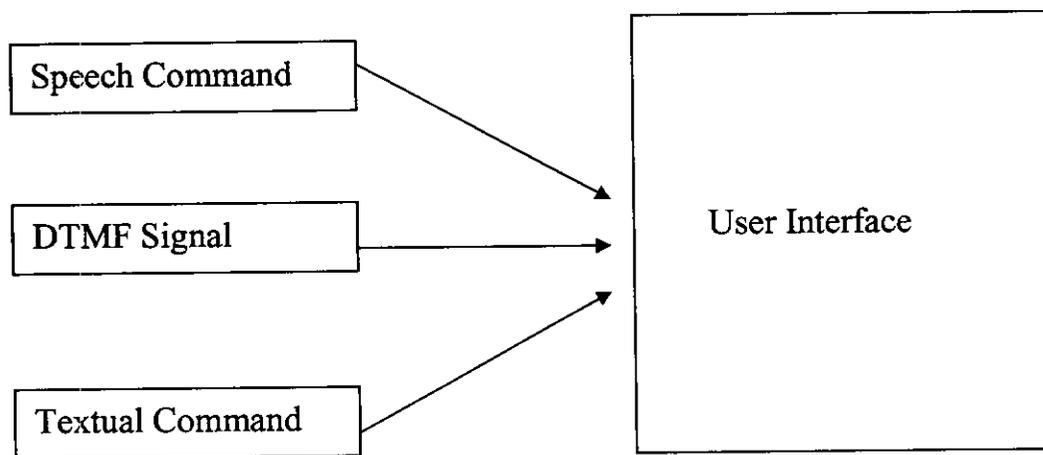


Fig 4.2.1 Input to the System

Textual commands that are in the form of the characters are entered from the remote place, via server-client relationship or by the means of telephony controls or by means of working with the Local Host as it supports that too.

Clicking the controls is simply communicating with the Local Host, clicking the respective commands would also get in to the value to the system.

Speech commands are much advanced features, which gets data or command directly from the user by the mean of Voice commands, this is a Speech Recognition system, which can understand the commands and feed the data to the Processing unit.

If the User Interface System wants to respond or want to pass information to the user. This can be done in the following ways:

- Textual Respond
- Speech Respond

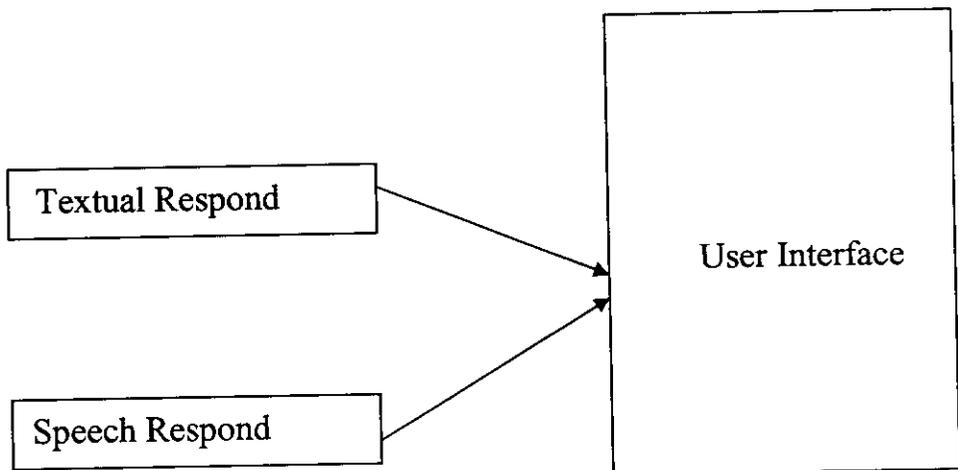


Fig 4.2.2 Response from System

Textual Respond when the Remote Access transmission media to be Internet, the Remote Computer gets the information in the textual data. It can also be used when the user communicates the local host computer directly.

Speech respond is in the form of speech as like computer having conversation with the user. This is very user friendly system, which has been developed recently.

Network interfacing, it is the gateway communicating the entire controller and controlling all the devices. It is transceiver of the all the controllers. Without this interface it is not possible to communicate the network. Network interfacing does the interfacing of the controller and sends the data to the respective deed as per the processing control instruct to do so. No part of the software system communicates with the network without passing this interface part. If the controller wants to communicate with the system, it should interface with the system only through the network interfacing part.

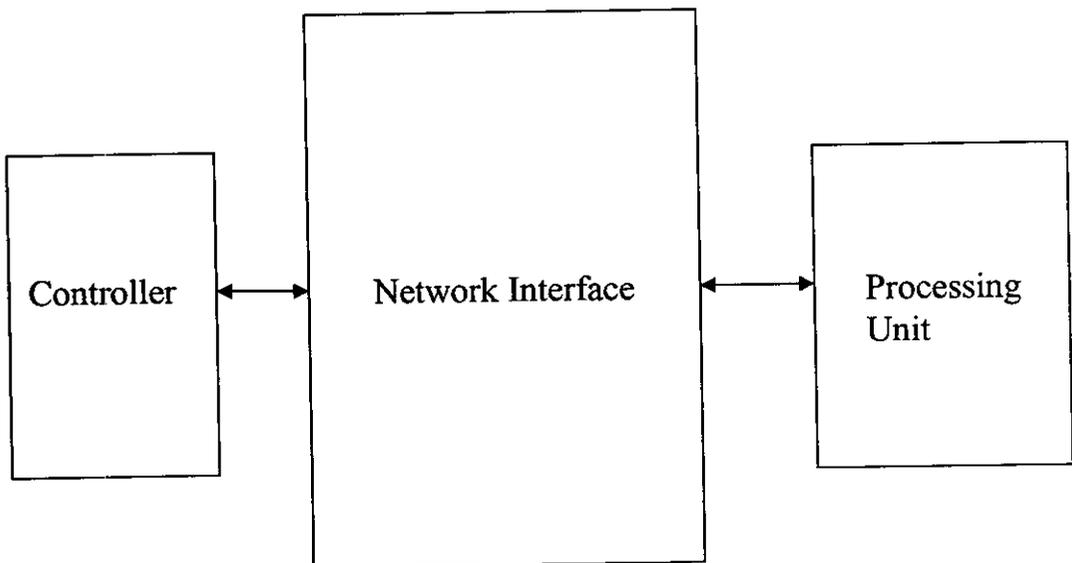


Fig 4.2.3. Overall Processing

Processing unit, it is the main part of the home appliances control system, in which entire system calculation is done here. It is much complex than aligning the network system in the controller. It combines and

does the calculation and performs the task, which the users wish to complete.

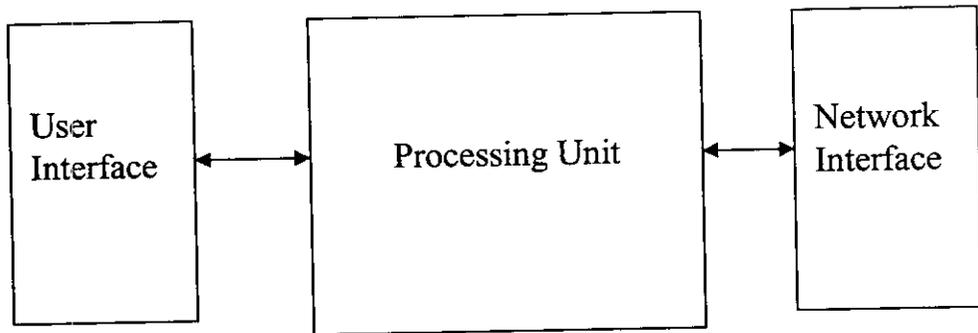


Fig 4.2.4 Interfacing of the System with the User

The entire home appliances control system not only uses its own program but it has third party service used to link with the internet and other such activities.

4.3 PROCESS DESIGN

4.3.1 VOICE INPUT

- Input from the user is in the form of speech.
- The speech recognition software converts speech into text.
- After getting the input as text, the output command converts the text into corresponding binary value. The below figs 4.3.1.1 and 4.3.1.2 represent the block and circuit diagram of voice input.
- The binary value is sent through the parallel port.
- The parallel port is connected to the 74154 chip where the four value input is converted into 16 outputs.

- Then it is connected to the RS flip-flop where the signal sets the flip-flop. The flip-flop gives a constant 5 volt until it is reset.
- Then the 5volt is given to the relay which acts as a switch to connect the high voltage devices.

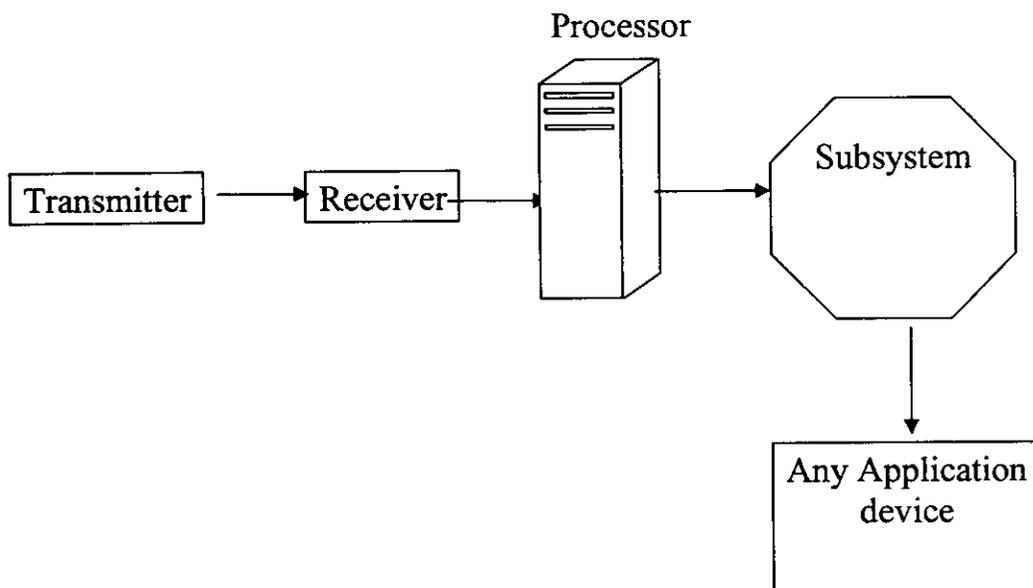


Fig 4.3.1.1 Block diagram of Voice Recognition

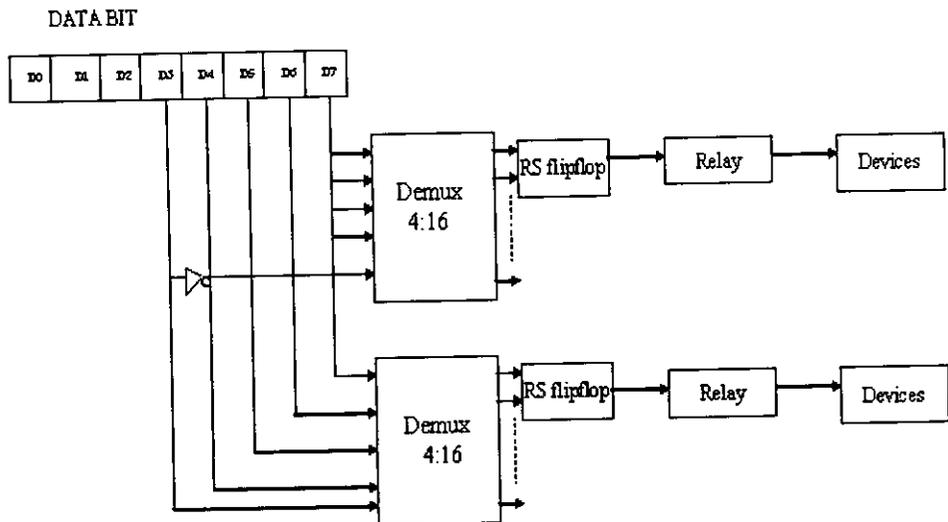


Fig 4.3.1.2 Circuit diagram of voice controlled electronic circuit

4.3.2 MOBILE INPUT

- The user gives the input through mobile by means of DTMF signal.
- The user makes a phone call to the system.
- After the call is established, the user sends the DTMF code by means of pressing the number. The below fig 4.3.2.1 and 4.3.2.2 represents the block and circuit diagram of mobile input
- The system recognizes the number by means of 8870 the DTMF decoder, which converts the signal and gives the corresponding binary value.
- The system takes the input through the parallel port via status pin.

- After getting the input the system controls the appliances through the subsystem which is explained in the voice input design.

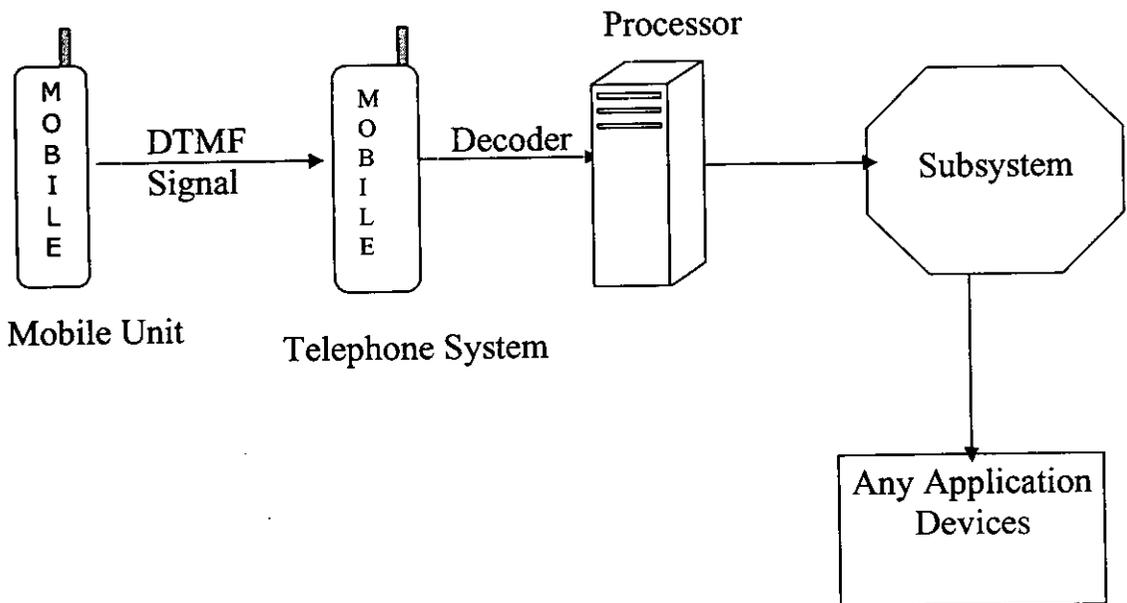


Fig 4.3.2.1. Block diagram of Mobile Communication

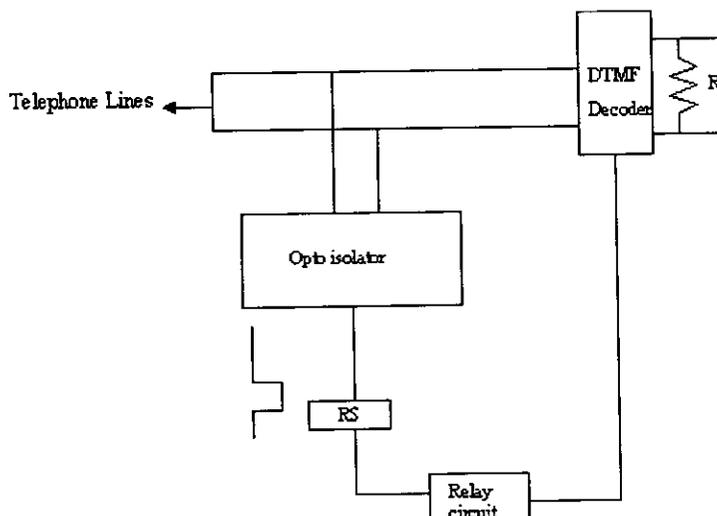


Fig 4.3.2.2 Circuit Diagram of Telephone Ringing circuit

4.3.3 INTERNET INPUT

- User can give the input through the internet.
- User can type the commands in the chat program (the client program sends the message to the server which is running in the system).
- When the message is arrived, the system checks for the correct input. The below fig 4.3.3 represents the block diagram of internet system.
- When the input is correct, the system sends the signal to the parallel port.
- After this the same process continues until the correct output is done.

Internet Processing System

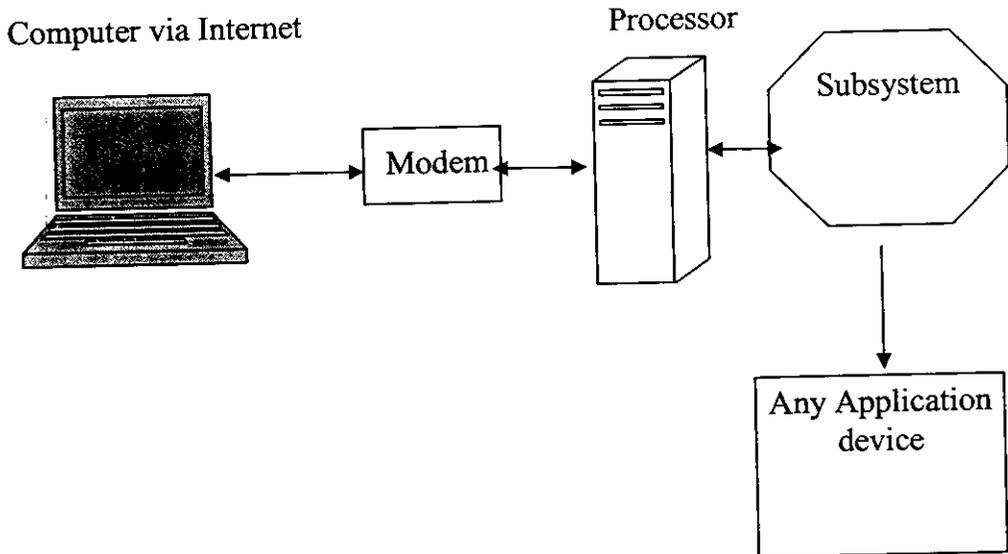


Fig 4.3.3 Block diagram of Internet System

4.3.4 SECURITY

Home Appliances control System controls the whole devices. It should be used responsibly for avoiding any dangerous act. So the data transfer from one place to another must be protected from prying eyes. If unwanted people access the local host this would make them to control the whole system. To avoid any such misuse of the Home Automated System, Security enforce is used.

For the Home Appliances control System, the entire network is so complex. Sensitive data must be protected from unauthorized access. Protection can be accomplished at a number of levels. The network in the Home Appliances control System can be classified in to two different media. One is internal and another is external.

In the case of internal the data are transferred with in the local host. So only the Local host running system should be secured for controlling the entire system. As the data transfer internally does not have sensitive data to be secured. The reason for that is no single Controller can control the other Controller unless the Local Host System running the Home Automated System authorizes it.

But in case of External network, data transmission media like Internet and Telephone Network is open to everyone. This would lead the Home Automated System to identify the authorized person. This would prevent any unnecessary access to the Local Host via, Internet.

As the two type of network i.e. Local Host to the Remote Host or vice versa through Internet and through telephony network, which is explained in the Hardware Structure chapter.

Security encapsulation in the Home Appliances control system uses two type of controlling any unauthorized to the Local Host by the following.

- Authentication
- Encryption/Decryption of data

Authentication does the user verification and allows only the authorized user to access the Local Host. In the case of Encryption/Decryption, the data are encrypted so that even the data accessed by the prying eyes would be impossible for them to understand data. The detailed illustration of the Authentication, Encryption and Decryption is explained in the forth-coming chapters.

5. PRODUCT TESTING

Testing is done to detect the errors in the software. This implies not only to the coding phase but to uncover errors introduced in all the previous phases.

The following are the types of tests that were performed-

5.1 Unit testing

Each and every module is tested separately to check if its intended functionality is met. Here each of the classes is separately tested. The look and feel of each component is tested. It must be ensured the all the methods of the classes are tested for proper execution. All electrical components are tested for proper functioning.

- The speech module is tested for the proper recognition of the voice.
- Checking the proper connectivity between server and client.
- Checking for the proper reception of DTMF signal

5.2 Integration testing

It is the testing performed to detect errors on interconnection between modules. Here, all the modules namely voice ,mobile and internet are connected together and it is checked for the proper functioning of all the modules and if any error is detected, then it is examined and checked for correct output.

5.3 Validation testing

This test is done to check for the validity of the entered input.

The input got is the voice command or textual command.

Validation has been conducted for two modules

- In speech the system takes correct input and confirm to the correct specification. Unless the correct input is given the system remains idle.
- In internet the system takes correct input and confirm to the correct specification.

6. FUTURE ENHANCEMENTS

Detailed study and higher results can take our project to the next futuristic level. This project will not be constrained to domestic purpose but it can be implied to big organizations, MNC's and industries. This will not only reduce time but also will yield profits.

Our project which is based on authentic voice module can be replaced by security systems such as finger print and face recognition module.

In future all the three modules that is mobile communication, voice and internet can be combined in one module in the mobile phone that will make it more compact.

Though this process may take it's time, but the result will certainly be attained which will change the lifestyle of future generation.

7. CONCLUSION

Thus we have enhanced the normal electrical and electronic control of appliances by adding extra control through mobile devices, voice and through the internet.

The speech recognition system helps the user to control the devices using voice thus it is more user friendly than any other system.

The mobile which helps the user to switch on and switch off the devices when user is out of station enabling the user to control the system in the remote area.

The internet which helps the user to control the system from any where in the world. Using the Home Appliances Control systems the user can save time, avoid accidents and increase the security of home or organization.

8. APPENDIX

8.1 PIN CONFIGURATION

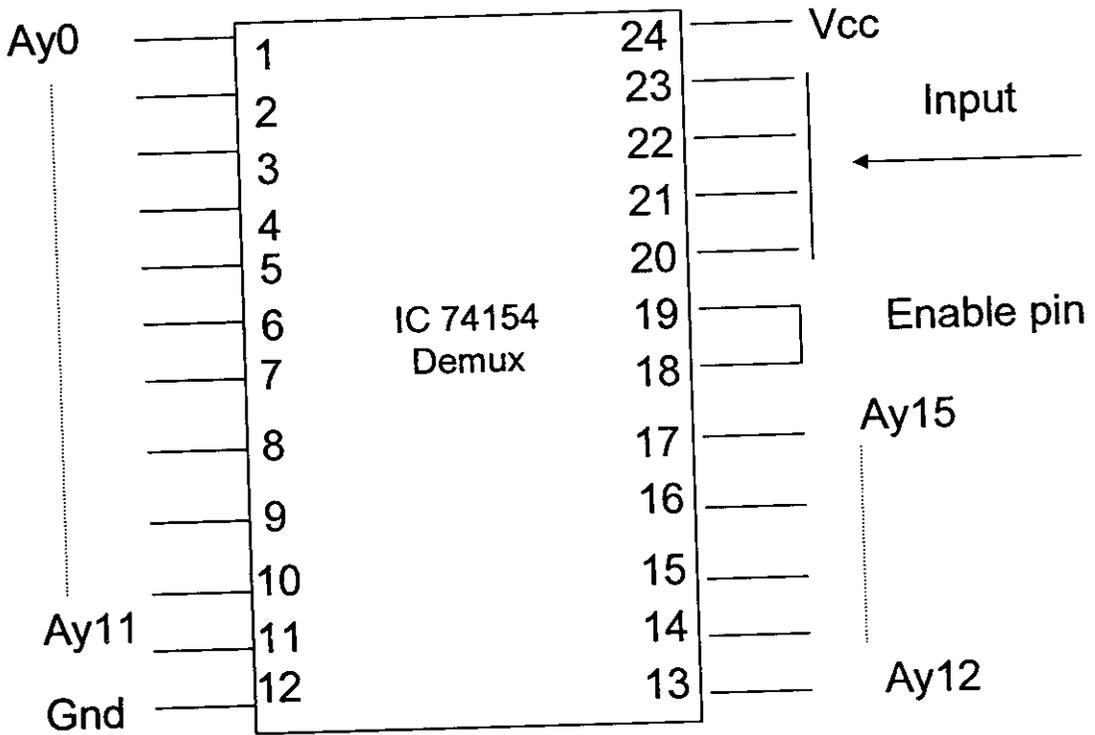


Fig 8.1.1 Pin diagram of IC 74154 Demux

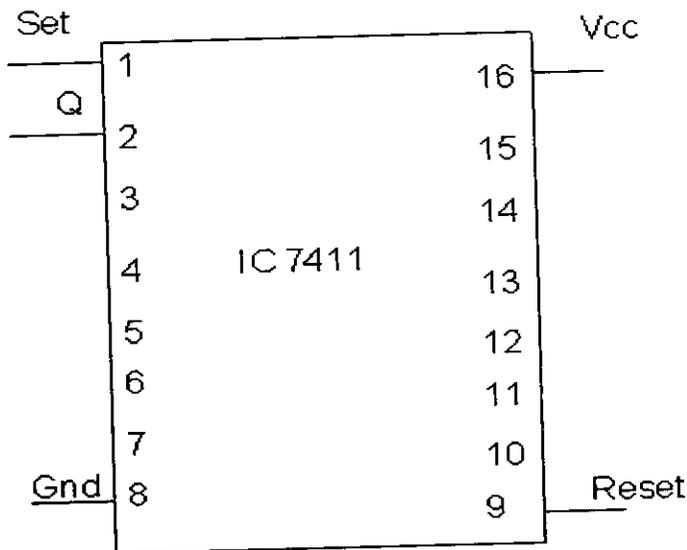


Fig 8.1.2 Pin diagram of IC 7411 RS flip flop

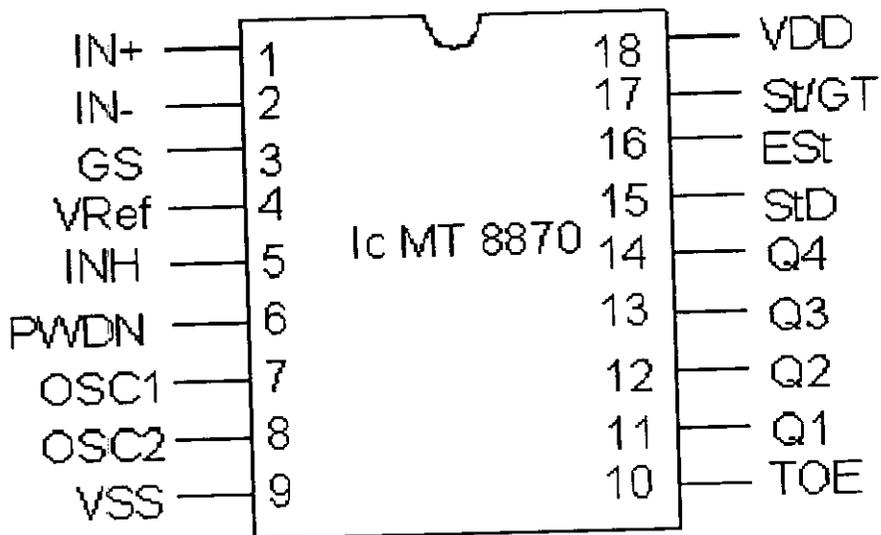


Fig 8.1.3 Pin diagram of IC 8870 DTMF

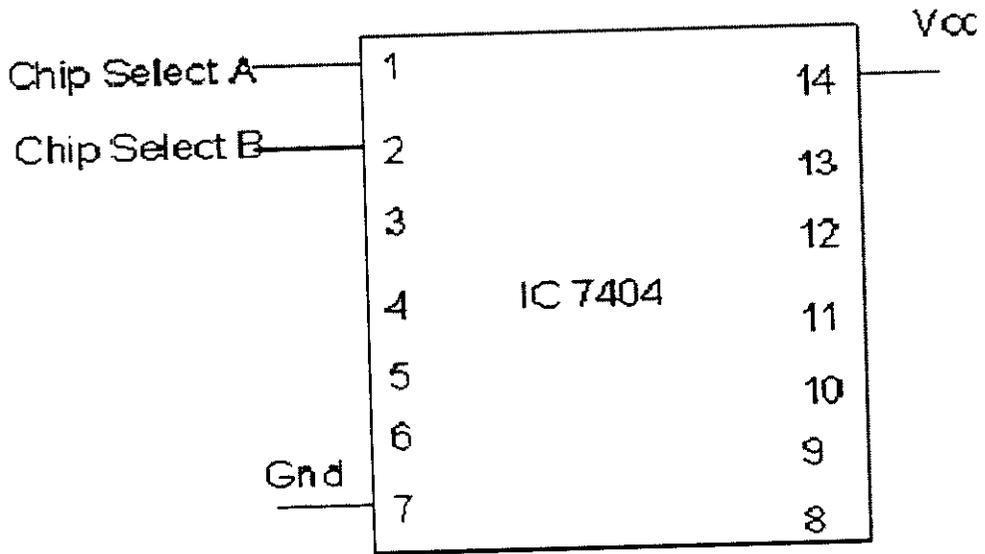


Fig 8.1.4 Pin diagram of IC 7404 Inverter

8. APPENDIX

8.2 SAMPLE CODE

8.2.1 Form

```
Dim r1f As String
Dim r1l As String
Dim r1m As String
Dim r2f As String
Dim r2l As String
Dim r2a As String
Dim sta As String
Dim cod As Integer
Dim sor As Integer
Dim gMymenu As Long
Dim username As String
Dim data1 As Integer
Dim data2 As Integer
Dim a As Integer
Dim count1 As Integer
```

```
Private Sub UpdateList()
Dim i As Long
Dim command As String
Dim description As String
Dim category As String
Dim flags As Long
Dim action As String
List1.Clear
tcount = Vcommand1.CountCommands(gMymenu)
For i = 1 To tcount
Vcommand1.GetCommand gMymenu, i, command,
description, category, flags, action
List1.AddItem command
Next i
End Sub
```

```
Private Sub cmdSend_Click()
'if msgbox is blank, then dont send msg
If LTrim(txtMsg.Text) = "" Or RTrim(txtMsg.Text) = "" Then
Exit Sub
```

```
'if not connected, dont send msg
If Server.State <> 7 Then Exit Sub
On Error GoTo notify
'send messages and info
msg = username & Chr(1) & txtMsg.Text
Server.SendData msg
'add msg to history
SeperateMsg msg
'clear textbox
txtMsg.Text = ""
Exit Sub
'let user know if client disconnected
notify:
lstHistory.AddItem "Error communicating with client..."
End Sub
```

```
Private Sub mnuRetrieveClientsIP_Click()
On Error Resume Next
'check if connected
If Server.State <> 7 Then
'deny IP retrieval
MsgBox "Cannot obtain remote IP!"
Else
'display clients IP
MsgBox "Client's IP address is: " & Server.RemoteHostIP
End If
End Sub
```

```
Private Sub Command1_Click()
vbOut 888, 10
End Sub
```

```
Private Sub Server_ConnectionRequest(ByVal requestID As
Long)
'close server if open
Server.Close
Server.Accept (requestID)
'notify user
lstHistory.AddItem "Connected to client..."
```

```
lstHistory.AddItem "System ready to accept command"  
'enable ping timer  
tmrPing.Enabled = True  
End Sub
```

```
Private Sub Server_DataArrival(ByVal bytesTotal As Long)  
'get data  
Dim data As String  
Server.GetData data  
Encrypt (data)  
'add message to history  
SeperateMsg data  
End Sub
```

```
Private Sub Text1_Change()  
a = 1  
End Sub
```

```
Private Sub Timer2_Timer()  
If a = 1 Then  
a = 0  
Else  
'MsgBox "not entered in 10 sec"  
vbOut 888, 10  
lstHistory.AddItem "disconnecting the telephone"  
Timer3.Enabled = True  
End If  
End Sub
```

```
Private Sub Timer3_Timer()  
vbOut 888, 13  
Timer3.Enabled = False  
End Sub
```

```
Private Sub Timer4_Timer()  
If count1 = 1 Then  
libca 914  
count1 = count1 + 1  
ElseIf count1 = 2 Then
```

```
libca 916
count1 = count1 + 1
ElseIf count1 = 3 Then
libca 925
count1 = count1 + 1
ElseIf count1 = 4 Then
libca 927
count1 = count1 + 1
ElseIf count1 = 5 Then
libca 929
count1 = count1 + 1
End If
End Sub
```

```
Private Sub Timer5_Timer()
libca 755
End Sub
```

```
Private Sub tmrPing_Timer()
'check if client still connected
If Server.State = 7 Then Exit Sub
'if NOT connected
lstHistory.AddItem "Client not connected anymore..."
'reset winsock control
Server.Close
Server.LocalPort = 8000
Server.Listen
'disable ping timer
tmrPing.Enabled = False
End Sub
```

```
Public Sub SeperateMsg(msg)
'this sub seeks out carriage returns and splits
'them up individually into the listbox as the
'listbox doesnt split up CR's as labels do.
'get the username by finding where chr(1) is.
pos1 = InStr(1, msg, Chr(1))
If pos1 <> 0 Then
```

```

lstHistory.AddItem Left(msg, pos1 - 1) & ":"
msg = Right(msg, Len(msg) - pos1)
End If
oprn (msg)
CheckIfHuge msg
lstHistory.ListIndex = lstHistory.ListCount - 1
txtMsg.SetFocus
End Sub

```

```

Public Sub CheckIfHuge(msg)
'this checks if the words need to wrap to the next line

```

```

currlen = 0
charcnt = 0
charpos = 1
For a = 1 To Len(msg)
currlen = currlen + Me.TextWidth(Mid(msg, a, 1))
charcnt = charcnt + 1
If currlen > (lstHistory.Width - TextWidth("W")) Then
tmpmsg = Mid(msg, charpos, charcnt)
lstHistory.AddItem tmpmsg
a = a - 1
charpos = charcnt + 1
charcnt = 0
currlen = 0
End If
Next a
'add any leftovers
lstHistory.AddItem Right(msg, charcnt)
End Sub

```

```

Private Sub Form_Load()
vbOut 888, 0
playwav ("e:\sf\int.wav")
Timer2.Enabled = True
Timer4.Enabled = False
count1 = 0
r1f = "off"
r1l = "off"
r1m = "off"

```

```

r2f = "off"
r2l = "off"
r2a = "off"
'athus = 0
'athpass = 0
'*****//

username = "HACS: Server"
If LTrim(username) = "" Or RTrim(username) = "" Then
username = "Server"
'initialize port settings
Server.Close
Server.LocalPort = 8000
Server.Listen
lstHistory.AddItem "Server is listening on port " &
Server.LocalPort & ". "
lstHistory.AddItem "Waiting for client to connect..."
lblIP.Caption = "Your IP is: " & Server.LocalIP
'*****//

libca 1
sor = 1 'selection of Room One - room1 & 2 room2
Vcommand1.Initialized = 1
gMymenu = Vcommand1.MenuCreate(App.EXENAME,
"state1", 4)
Vcommand1.Enabled = 1
Vcommand1.AddCommand gMymenu, 1, "Select Room",
"when you say" + "Select Room", "listen list", 0, ""
Vcommand1.AddCommand gMymenu, 1, "Room One", "when
you say" + "Room One", "listen list", 0, ""
Vcommand1.AddCommand gMymenu, 1, "Room Two", "when
you say" + "Room Two", "listen list", 0, ""
Vcommand1.AddCommand gMymenu, 1, "Light On", "when
you say" + "Light On", "listen list", 0, ""
Vcommand1.AddCommand gMymenu, 1, "Light Off", "when
you say" + "Light Off", "listen list", 0, ""
Vcommand1.AddCommand gMymenu, 1, "Fan Low", "when
you say" + "Fan Low", "listen list", 0, ""
Vcommand1.AddCommand gMymenu, 1, "Fan Medium",
"when you say" + "Fan Medium", "listen list", 0, ""
Vcommand1.AddCommand gMymenu, 1, "Fan High", "when
you say" + "Fan High", "listen list", 0, ""

```

```

Vcommand1.AddCommand gMymenu, 1, "Fan Off", "when
you say" + "Fan Off", "listen list", 0, ""
'Vcommand1.AddCommand gMymenu, 1, "Play", "when you
say" + "Play", "listen list", 0, ""
'Vcommand1.AddCommand gMymenu, 1, "Next Track",
"when you say" + "Next Track", "listen list", 0, ""
'Vcommand1.AddCommand gMymenu, 1, "Track Previous",
"when you say" + "Track Previous", "listen list", 0, ""
'Vcommand1.AddCommand gMymenu, 1, "Mute", "when you
say" + "Mute", "listen list", 0, ""
'Vcommand1.AddCommand gMymenu, 1, "Music Off", "when
you say" + "Music Off", "listen list", 0, ""
Vcommand1.AddCommand gMymenu, 1, "AC On", "when you
say" + "AC On", "listen list", 0, ""
Vcommand1.AddCommand gMymenu, 1, "AC Off", "when
you say" + "AC Off", "listen list", 0, ""
UpdateList
Vcommand1.Activate gMymenu
playwav ("e:\sf\701.wav")
Formm.Show
End Sub

```

```

Private Sub Form_Unload(Cancel As Integer)
Vcommand1.ReleaseMenu gMymenu
End Sub

```

```

Private Sub Label3_Change()
Dim str As String
str = Label3.Caption
Select Case str
Case "Select Room"
libca 702
Case "Room One"
sor = 1
Case "Room Two"
sor = 2
Case "Light On"
If sor = 1 Then
oprn ("r1lon")

```

```
ElseIf sor = 2 Then
oprn ("r2lon")
End If
Case "Light Off"
If sor = 1 Then
oprn ("r1loff")
ElseIf sor = 2 Then
oprn ("r2loff")
End If
Case "Fan Low"
If sor = 1 Then
oprn ("r1fl")
Else: oprn ("r2fl")
End If
Case "Fan Medium"
If sor = 1 Then
oprn ("r1fm")
Else: oprn ("r2fm")
End If
Case "Fan High"
If sor = 1 Then
oprn ("r1fh")
Else: oprn ("r2fh")
End If
Case "Fan Off"
If sor = 1 Then
oprn ("r1foff")
Else: oprn ("r2foff")
End If
Case "Play"
If sor = 1 Then
oprn ("r1mpl")
End If
Case "Next Track"
If sor = 1 Then
oprn ("r1mff")
End If
Case "Previous Track"
If sor = 1 Then
oprn ("r1mrw")
```

```

End If
Case "Mute"
If sor = 1 Then
oprn ("r1mw")
End If
Case "Music Off"
If sor = 1 Then
oprn ("r1moff")
End If
Case "AC On"
If sor = 2 Then
oprn ("r2acon")
End If
Case "AC Off"
If sor = 2 Then
oprn ("r2acoff")
End If
End Select
End Sub

```

```

Private Sub Vcommand1_CommandRecognize(ByVal ID As
Long, ByVal CmdName As String, ByVal flags As Long,
ByVal action As String, ByVal NumLists As Long, ByVal
ListValues As String, ByVal command As String)
Label3.Caption = command
End Sub
Private Sub oprn(subr As String)
Select Case subr
Case "Status"
sta = "Room1 Light " & r1l & " Room1 Fan " & r1f & " Music
" & r1m & " Room2 Fan " & r2f & " Room2 light " & r2l & "
Room2 Ac " & r2a
txtMsg = sta
cmdSend_Click
Case "r1fl" ' Or "Room One Fan Low"
r1f = "low"
libca 914
libca 715 'play wave file

```

libca 911 'data sent from the port
Case "Room One Fan Low"
r1f = "low"
libca 914
libca 911 'data sent from the port
libca 715 'play wave file
Case "r1fh" 'Or "Room One Fan High"
r1f = "high"
libca 914
libca 716 'play wave file
libca 912 'data sent from the port
Case "Room One Fan High"
r1f = "high"
libca 914
libca 716 'play wave file
libca 912 'data sent from the po
Case "r1fm" 'Or "Room One Fan Medium"
r1f = "med"
libca 914
libca 717 'play wave file
libca 913 'da
Case "Room One Fan Medium"
r1f = "med"
libca 914
libca 717 'play wave file
libca 913 'da
Case "r1foff" 'r "Room One Fan Off"
r1f = "off"
libca 718 'play wave file
libca 914 'data sent from the port
Case "Room One Fan Off"
r1f = "off"
libca 718 'play wave file
libca 914 'data sent from the port
Case "r1lon"
r1l = "on"
libca 719 'play wave file
libca 915 'data sent from the port
Case "Room One Light On"
r1l = "on"

libca 719 'play wave file
libca 915 'data sent from the port
Case "r1loff" 'Or "Room One Light Off"
r1l = "off"
libca 720 'play wave file
libca 916 'data sent from the port
Case "Room One Light Off"
r1l = "off"
libca 720 'play wave file
libca 916 'data sent from the port

Case "r1mpl" ' Or "Room One Music Play"
r1m = "play"
libca 721 'play wave file
libca 917 'data sent from the port]
Case "Room One Music Play"
r1m = "play"
libca 721 'play wave file
libca 917 'data sent from the port
Case "r1mff" 'Or "Room One Music Forward"
r1m = "ff"
libca 722 'play wave file
libca 918 'data sent from the port
Case "Room One Music Forward"
r1m = "ff"
libca 722 'play wave file
libca 918 'data sent from the port
Case "r1mrw" 'Or "Room One Music Rewind"
r1m = "rw"
libca 723 'play wave file
libca 919 'data sent from the port
Case "Room One Music Rewind"
r1m = "rw"
libca 723 'play wave file
libca 919 'data sent from the port
Case "r1mw" ""Room One Music Mute"
r1m = "mt"
libca 724 'play wave file
libca 920 'data sent from the port
Case "Room One Music Mute"

r1m = "mt"
libca 724 'play wave file
libca 920 'data sent from the port
Case "r1moff" 'Or "Room One Music Off"
r1m = "off"
libca 725 'play wave file
libca 921 'data sent from the port
Case "Room One Music Off"
r1m = "off"
libca 725 'play wave file
libca 921 'data sent from the port
Case "r2fl" 'Or "Room Two Fan Low"
r2f = "low"
libca 925
libca 726
libca 922
Case "Room Two Fan Low"
r2f = "low"
libca 925
libca 726
libca 922
Case "r2fh"
r2f = "high"
libca 925
libca 727
libca 924
Case "Room Two Fan High"
r2f = "high"
libca 925
libca 727
libca 924
Case "r2fm"
r2f = "med"
libca 925
libca 728
libca 923
Case "Room Two Fan Medium"
r2f = "med"
libca 925
libca 728

libca 923
Case "r2foff"
r2f = "off"
libca 729
libca 925
Case "Room Two Fan Off"
r2f = "off"
libca 729
libca 925
Case "r2lon"
r2l = "on"
libca 730
libca 926
Case "Room Two Light On"
r2l = "on"
libca 730
libca 926
Case "r2loff"
r2l = "off"
libca 731
libca 927
Case "Room Two Light Off"
r2l = "off"
libca 731
libca 927
Case "r2acon"
r2a = "on"
libca 732
libca 928
Case "Room Two AC On"
r2a = "on"
libca 732
libca 928
Case "r2acoff"
r2a = "off"
libca 733
libca 929
Case "Room Two AC Off"
r2a = "off"
libca 733

```
libca 929
End Select
End Sub
Private Sub timer1_Timer()
Text1.Text = vbInp(889)
If Text1.Text = 255 Then
firealarm
ElseIf Text1.Text = 159 Then
aut
End If
End Sub
```

```
Private Sub firealarm()
Timer4.Enabled = True
Timer5.Enabled = True
autcode
End Sub
```

```
Private Sub autcode()
Dim aucode As String
MsgBox "WARNING FIRE ALARAM ||| DISCONNECTING
ALL THE POWER SUPPLY".
aucode = InputBox("Authentication required to disarm", "Fire
alarm disarm code", "code")
If aucode = "1234" Then
Timer4.Enabled = False
Timer5.Enabled = False
Else
autcode
End If
End Sub
```

```
Private Sub timer6_Timer()
data1 = vbInp(889)
End Sub
Private Sub aut()
libca 738
Do
DoEvents
If data1 = 247 Then
```

```
'MsgBox "Room One"  
Timer6.Enabled = False  
data1 = 0  
room1  
ElseIf data1 = 239 Then  
Timer6.Enabled = False  
data1 = 0  
room2  
Else  
'undefined entry  
End If  
Loop  
End Sub
```

```
Private Sub room1()  
Text2.Text = "Room1"  
libca 739  
Timer6.Enabled = True  
Do  
DoEvents  
If data1 = 247 Then  
Timer6.Enabled = False  
data1 = 0  
light1  
ElseIf data1 = 239 Then  
Timer6.Enabled = False  
data1 = 0  
fan1  
ElseIf data1 = 167 Then  
aut  
End If  
Loop  
End Sub
```

```
Private Sub room2()  
Text2.Text = "room2"  
libca 749  
Timer6.Enabled = True  
Do  
DoEvents
```

```
If data1 = 247 Then
Timer6.Enabled = False
data1 = 0
ac2
ElseIf data1 = 239 Then
Timer6.Enabled = False
data1 = 0
MsgBox "light"
light2
ElseIf data1 = 231 Then
Timer6.Enabled = False
data1 = 0
fan2
ElseIf data1 = 167 Then
aut
End If
Loop
End Sub
```

```
Private Sub light1()
Text2.Text = "light1"
Timer6.Enabled = True
If r11 = "on" Then
libca 740
ElseIf r11 = "off" Then
libca 741
End If
libca 742
Do
DoEvents
If data1 = 247 Then
Timer6.Enabled = False
data1 = 0
oprn ("r1lon")
MsgBox "on"
room1
ElseIf data1 = 239 Then
Timer6.Enabled = False
data1 = 0
oprn ("r1loff")
```

```
room1
ElseIf data1 = 167 Then
Timer6.Enabled = False
room1
End If
Loop
End Sub
```

```
Private Sub fan1()
Text2.Text = "fan1"
If r1f = "low" Then
'ply fan low
libca 744
ElseIf r1f = "med" Then
'ply fan med
libca 745
ElseIf r1f = "high" Then
'ply fan high
libca 746
Else
'play off
libca 747
End If
Timer6.Enabled = True
libca 748
Do
DoEvents
If data1 = 247 Then
Timer6.Enabled = False
data1 = 0
'fan low
oprn ("r1fl")
MsgBox "r1f"
room1
ElseIf data1 = 239 Then
Timer6.Enabled = False
data1 = 0
'fan med
oprn ("r1fm")
room1
```

```
ElseIf data1 = 231 Then
Timer6.Enabled = False
data1 = 0
'fan high
oprn ("r1fh")
room1
ElseIf data1 = 223 Then
Timer6.Enabled = False
data1 = 0
'fan off
oprn ("r1foff")
room1
ElseIf data1 = 167 Then
room1
End If
Loop
End Sub
```

```
Private Sub light2()
Text2.Text = "light2"
If r2l = "on" Then
'play on wavefile"
libca 740
Else
'ply off
libca 741
End If
Timer6.Enabled = True
libca 742
Do
DoEvents
If data1 = 247 Then
Timer6.Enabled = False
data1 = 0
'light on
oprn ("r2lon")
room2
ElseIf data1 = 239 Then
Timer6.Enabled = False
data1 = 0
```

```
'light off
oprn ("r2loff")
room2
ElseIf data1 = 167 Then
room2
End If
Loop
End Sub
Private Sub fan2()
Text2.Text = "fan2"
If r2f = "low" Then
'ply fan low
libca 744
ElseIf r2f = "med" Then
'ply fan med
libca 745
ElseIf r2f = "high" Then
'ply fan high
libca 746
Else
'play off
libca 747
End If
Timer6.Enabled = True
libca 748
Do
DoEvents
If data1 = 247 Then
Timer6.Enabled = False
data1 = 0
'fan low
oprn ("r2fl")
room2
ElseIf data1 = 239 Then
Timer6.Enabled = False
data1 = 0
'fan med
oprn ("r2fm")
room2
ElseIf data1 = 231 Then
```

```
Timer6.Enabled = False
data1 = 0
'fan high
oprn ("r2fh")
room2
ElseIf data1 = 223 Then
Timer6.Enabled = False
data1 = 0
'fan off
oprn ("r2foff")
room2
ElseIf data1 = 167 Then
room2
End If
Loop
End Sub
Private Sub ac2()
Text2.Text = "ac2"
Timer6.Enabled = True
```

```
libca 750
If r2a = "on" Then
'play on wavefile"
libca 751
Else
'ply off
libca 752
End If
libca 753
Do
DoEvents
If data1 = 247 Then
Timer6.Enabled = False
data1 = 0
'AC on
oprn (r2acon)
room2
ElseIf data1 = 239 Then
Timer6.Enabled = False
data1 = 0
```

```
'AC off
oprn (r2acoff)
room2
ElseIf data1 = 167 Then
room2
End If
Loop
End Sub
```

```
Private Sub Encrypt(data As String)
Dim t1 As Long
Dim sl As Long
Dim Original As String
Dim out As String
Dim lx As Long
Dim char As String
sl = 0
out = ""
Original = data
txtMsg.Text = ""
For lx = 1 To Len(Original)
If lx Mod 2 = 0 Then
char = Mid(Original, lx, 1)
sl = sl + 1
t1 = (3 * Asc(char)) + (5 * sl)
out = out & t1 & " "
Else
char = Mid(Original, lx, 1)
sl = sl + 1
t1 = (3 * Asc(char)) + (5 * sl)
out = out & t1 & " "
End If
Next
'txtmsg.Text = out
RichTextBox1 = out
End Sub
```

```
Sub delay(a As Integer)
Dim i As Integer
i = 0
```

```
Do
DoEvents
If i = 0 Then
i = i + 1
Else
Loop
End Sub
```

8.2.2Module

```
'parallel port interfacing
Declare Sub vbOut Lib "WIN95IO.DLL" (ByVal nPort As
Integer, ByVal nData As Integer)
Declare Sub vbOutw Lib "WIN95IO.DLL" (ByVal nPort As
Integer, ByVal nData As Integer)
Declare Function vbInp Lib "WIN95IO.DLL" (ByVal nPort As
Integer) As Integer
Declare Function vbInpw Lib "WIN95IO.DLL" (ByVal nPort
As Integer) As Integer
```

```
'play wavefile declaration
Private Declare Function sndPlaySound Lib "winmm.dll" Alias
"sndPlaySoundA" _
(ByVal lpszSoundName As String, ByVal uFlags As Long) As
Long
```

```
Const SND_SYNC = &H0
Const SND_ASYNC = &H1
Const SND_NODEFAULT = &H2
Const SND_LOOP = &H8
Const SND_NOSTOP = &H10
```

```
Sub playwav(file)
SoundName$ = file
wFlags% = SND_ASYNC Or SND_NODEFAULT
x% = sndPlaySound(SoundName$, wFlags%)
End Sub
```

```
'main library
Public Function libca(code As Integer)
Select Case code
```

```
"" wave file library
Case 701
playwav ("e:\sf\701.wav")
Case 702
```



playwav ("e:\sf\702.wav")
Case 715
playwav ("e:\sf\715.wav")
Case 716
playwav ("e:\sf\716.wav")
Case 717
playwav ("e:\sf\717.wav")
Case 718
playwav ("e:\sf\718.wav")
Case 719
playwav ("e:\sf\719.wav")
Case 720
playwav ("e:\sf\720.wav")
Case 721
playwav ("e:\sf\721.wav")
Case 722
playwav ("e:\sf\722.wav")
Case 723
playwav ("e:\sf\723.wav")
Case 724
playwav ("e:\sf\724.wav")
Case 725
playwav ("e:\sf\725.wav")
Case 726
playwav ("e:\sf\726.wav")
Case 727
playwav ("e:\sf\727.wav")
Case 728
playwav ("e:\sf\728.wav")
Case 729
playwav ("e:\sf\729.wav")
Case 730
playwav ("e:\sf\730.wav")
Case 731
playwav ("e:\sf\731.wav")
Case 732
playwav ("e:\sf\732.wav")
Case 733
playwav ("e:\sf\733.wav")
Case 734

playwav ("e:\sf\734.wav")
Case 735
playwav ("e:\sf\735.wav")
Case 736
playwav ("e:\sf\736.wav")
Case 737
playwav ("e:\sf\737.wav")
Case 738
playwav ("e:\sf\738.wav")
Case 739
playwav ("e:\sf\739.wav")
Case 740
playwav ("e:\sf\740.wav")
Case 741
playwav ("e:\sf\741.wav")
Case 742
playwav ("e:\sf\742.wav")
Case 743
playwav ("e:\sf\743.wav")
Case 744
playwav ("e:\sf\744.wav")
Case 745
playwav ("e:\sf\745.wav")
Case 746
playwav ("e:\sf\746.wav")
Case 747
playwav ("e:\sf\747.wav")
Case 748
playwav ("e:\sf\748.wav")
Case 749
playwav ("e:\sf\749.wav")
Case 750
playwav ("e:\sf\750.wav")
Case 751
playwav ("e:\sf\751.wav")
Case 752
playwav ("e:\sf\752.wav")
Case 753
playwav ("e:\sf\753.wav")
Case 754

playwav ("e:\sf\754.wav")

Case 755

playwav ("e:\sf\755.wav")

Case 1

playwav ("e:\sf\int.wav")

" Parallel port Data Output library

Case 911

vbOut 888, 1

Case 912

vbOut 888, 2

Case 913

vbOut 888, 3

Case 914

vbOut 888, 4

Case 915

vbOut 888, 5

Case 916

vbOut 888, 6

Case 917

vbOut 888, 7

Case 918

vbOut 888, 8

Case 919

vbOut 888, 9

Case 920

vbOut 888, 10

Case 921

vbOut 888, 11

Case 922

vbOut 888, 17

Case 923

vbOut 888, 18

Case 924

vbOut 888, 19

Case 925

vbOut 888, 20

Case 926

vbOut 888, 21
Case 927
vbOut 888, 22
Case 928
vbOut 888, 23
Case 929
vbOut 888, 24
End Select
End Function

8.3 SAMPLE OUTPUT

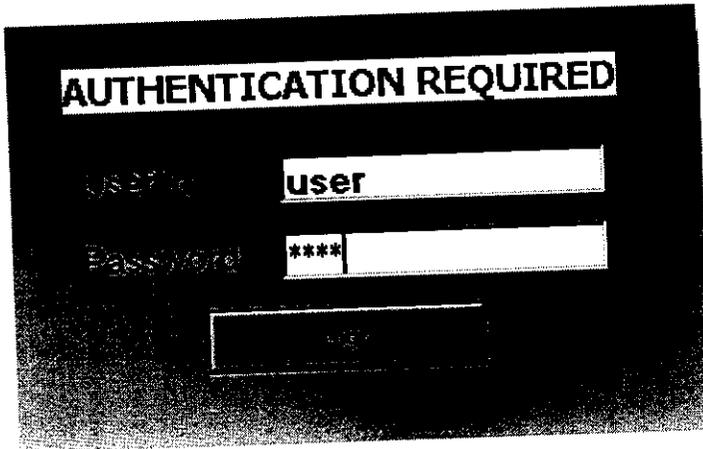


Fig 8.3.1 Login Form

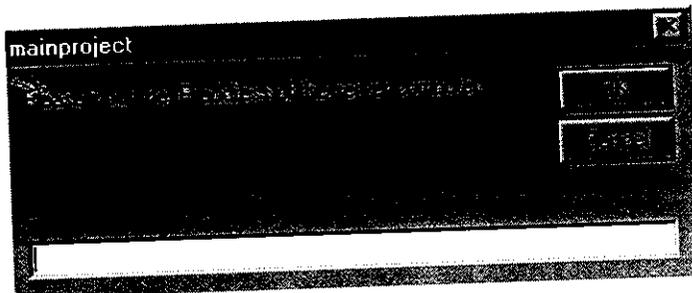


Fig 8.3.2 Connecting to Server

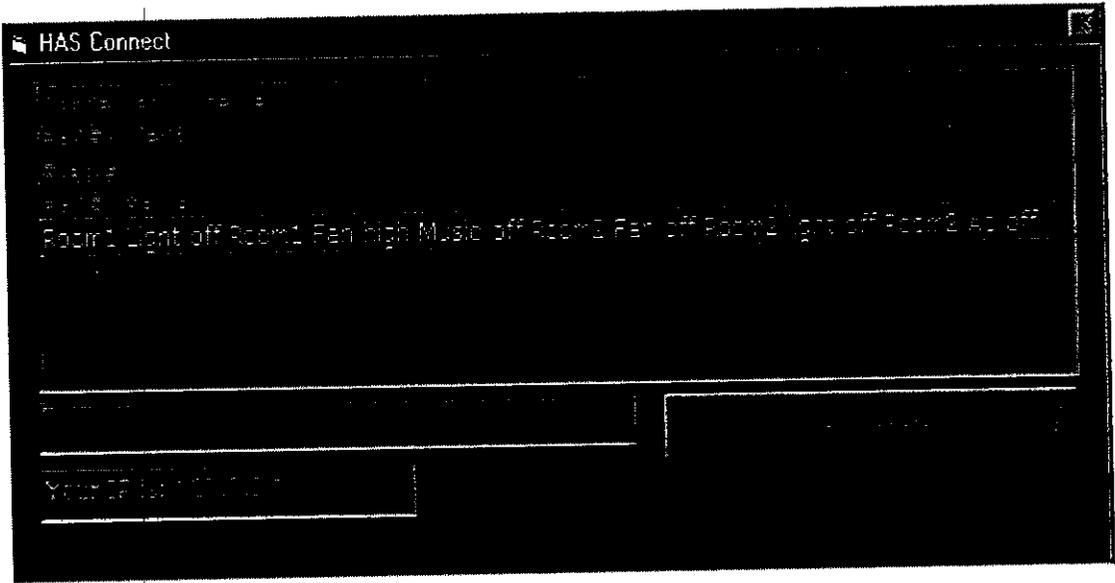


Fig 8.3.3 Client Application in remote system

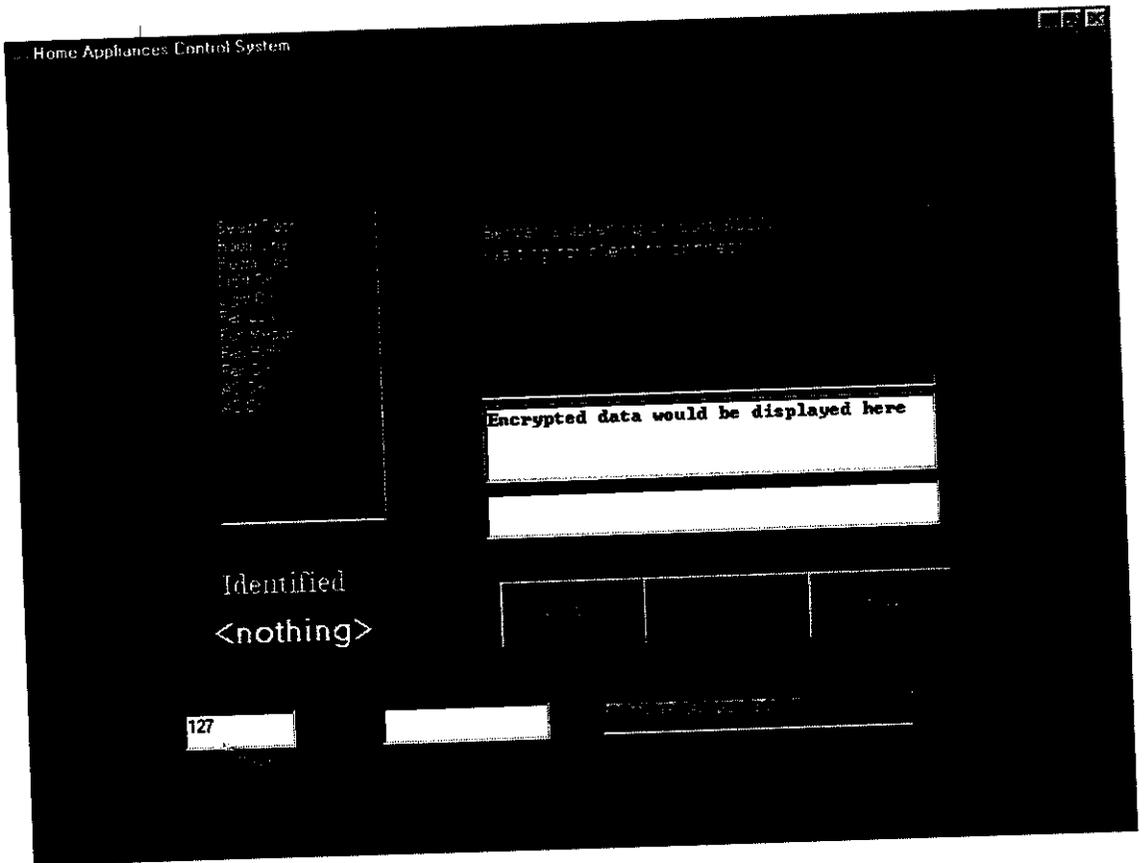


Fig 8.3.4 Speech Application

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