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Voice Response System for Parents of Hostel Students

I.J.Vinila

Assistant Professor, Dept. of ECE., Dr.Sivanthi Aditanar College of Engineering, Tiruchendur, India

ABSTRACT: Nowadays every institute needs automation. Automatic voice responding system is an automated communication system allowing user to interact with a computer to achieve the defined result without using human interface. The automatic voice responding system uses computer stored data. The student data is stored in computer. The parent's mobile number is stored in the computer. When a parent dial the hostel phone number that we will create as like a toll free number, they will get the answer in automatic stored voice form. Based on pressing a particular number the corresponding information are automatically stored in a computer. So we are implementing this system.

KEYWORDS: Automatic voice responding system; Database; GSM; DTMF

I. INTRODUCTION

Interactive voice response (IVR) is a technology that allows a computer to interact with humans through the use of voice and DTMF tones input via keypad. In telecommunications, IVR allows customers to interact with a company's host system via a telephone keypad or by speech recognition, after which they can service their own inquiries by following the IVR dialogue. IVR systems can respond with pre-recorded or dynamically generated audio to further direct users on how to proceed. IVR applications can be used to control almost any function where the interface can be broken down into a series of simple interactions. IVR systems deployed in the network are sized to handle large call volumes.

Common examples are audio movie snippet previews (e.g. at PVR). Though it is possible to build these IVR's through live information from databases (using text-to-speech engines), one doesn't get the voice variations, which are so important for the moviegoer. Other examples are around procedural (or "how to") information dissemination like Income tax filing procedures, bank account opening or credit card application procedures, etc [5].

The objective is to inform parents for their children those who stay in the hostel in a very easy and automatic manner. By using this system parents can easily inform their children without waiting and interference of anyone.

Requirements: Hardware:
1. GSM module
2. DTMF decoder
3. Ring detector
4. Micro controller

Software: Microsoft visual studio 2010

II. RELATED WORK

In [1] author used a novel concept to improve upon the processes in university environment using RFID technology. A system is implemented for the automation of time and attendance using RFID systems. The students and faculty members are provided with RFID devices/tags. When these tags pass through the reader generated interrogation field, they transmit information back to the reader, thereby identifying them. The RFID system makes it possible to monitor the movement of tagged users and record their real time data and pass it to processing system to maintain a log. Using the recorded information, this system is capable of (1) marking attendance (2) marking unauthorized entry (3) probation analysis (4) attendance weightage calculations (5) submission of warnings via emails (6) SMS to parents to keep them updated about their child's progress in the institute (7) a dedicated Web site for the availability of the processed data for the users of the system. The entire processing is done without human intervention. In [2] the Interactive Voice Response System (IVRS) is an interaction between people who want to use IVR system and

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computer database by connecting the cellphone network with the computer database. The cellphone user can access the information from anywhere at any time simply by dialing a specified IVRS service number and following an instruction when a connection has been established between caller and IVRS service number. The ring detector circuitry detects caller and connects caller to computer. The caller gives input in the form of dual tone multi frequency signal, which is obtained when a caller presses a key from their cellphone set. According to the entered response from the caller when the connection is established, computer generates voice response. Voice response is generated dynamically according to the input from caller. As caller enters valid response the corresponding database is converted into voice format by "Text to Speech converter" which is inbuilt in computer with Operating System of the computer. The IVRS system comprises of ring detector circuitry, DTMF decoder section, AVR microcontroller, serial interface unit, computer and cellphone. Using IVR system user gets information about requested student in the form of voice simply by dialing the IVR system service number provided by college authority. For implementing this AVRS, [3] the author used ARM 11 microcontroller Raspberry Pi and GSM module. The system programming is done by using python. AVRS is specially designed for parent to obtain the student academic performance and the system is highly reliable and scalable. Also the system made user friendly and operating on a 24*7 hour basis. Parent can obtain real time information of student using just mobile phone.

III. METHODOLOGY

Automatic voice responding system uses the pre-recorded information or computer generated voice response to provide information in response to a caller. Initially we create a unique code for each student like roll number. This uses Data base for storing the information to be provided to the user. One of the phone number used in hostel is set as like a toll free number. That is, whenever parents call this number the pre- recorded voice will be activated. While hearing this voice, the caller should press a particular number. This information will be stored automatically in computer.

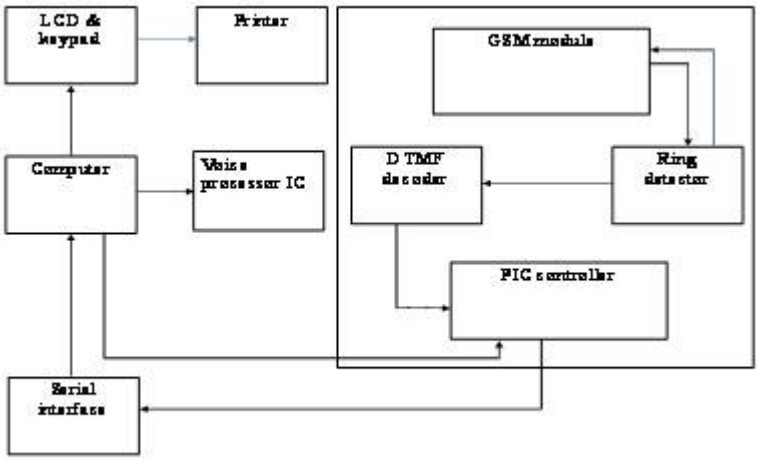

Fig.1. Block Diagram for Automatic voice responding system

The flow chart for the voice responding system is shown below. Cell phone (of specified contact number) used is acts host connecting device communicate caller with computer. The cell phone signal will go to the DTMF Decoder as well as Ring detector. DTMF decoder is Dual Tone Multi Frequency. DTMF signal consists of two superimposed sinusoidal waveforms whose frequencies are chosen from a set of eight standardized frequencies. DTMF decoder converts the input signal into BCD. Ring detector unit detects the presence of incoming calls. The output of DTMF decoder and Ring detector will be the input of the Microcontroller. The microcontroller we stored the coding to activate the voice IC. The output of the controller is sent to the Computer through serial interface. A LCD and keypad will connect in computer. Student will enter their roll number in key pad to display the status through LCD.

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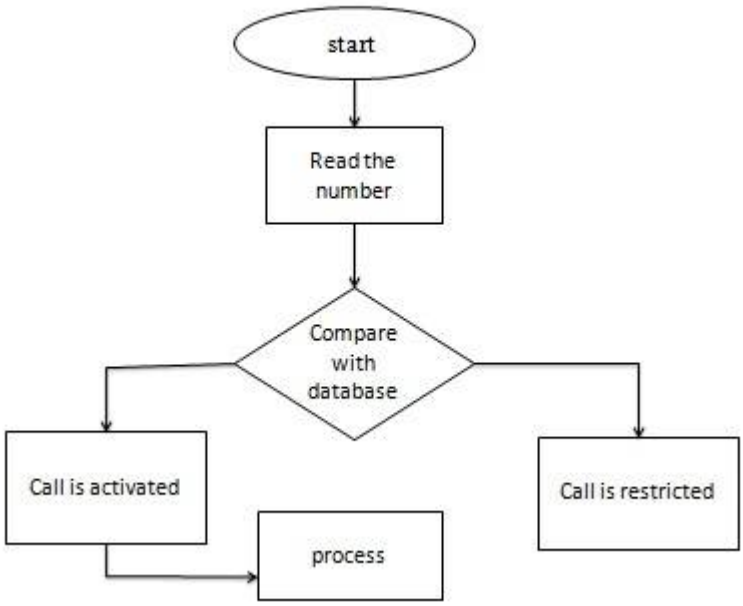

Fig.2. Flowchart for Automatic voice responding system

A. *Description of DTMF:*

Dual Tone Multi Frequency decoder (DTMF) circuit identifies the dial tone from the telephone and decode the key pressed on the remote telephone. We are using ICMT8870DE is a DTMF decoder IC. The advantages of DTMF are i) DTMF tones can be transmitted over GSM links. So we can control different devices over long distance. ii) Use of two frequencies make the system more immune. Hence DTMF is popularly used.

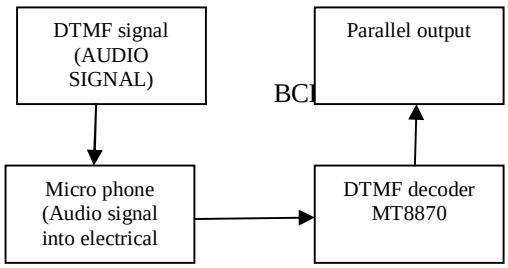

Fig.3. Block Diagram for Dual Tone Multi Frequency decoder

B. *Description of GSM*

GSM is a mobile communication modem; it is stands for global system for mobile communication (GSM). GSM is an open and digital cellular technology used for transmitting mobile voice and data services operates at the 850MHz, 900MHz, 1800MHz and 1900MHz frequency bands.

GSM Applications:

1. SMS based Remote Control and Alerts
2. Security Applications
3. Sensor Monitoring
4. GPRS Mode Remote Data logging

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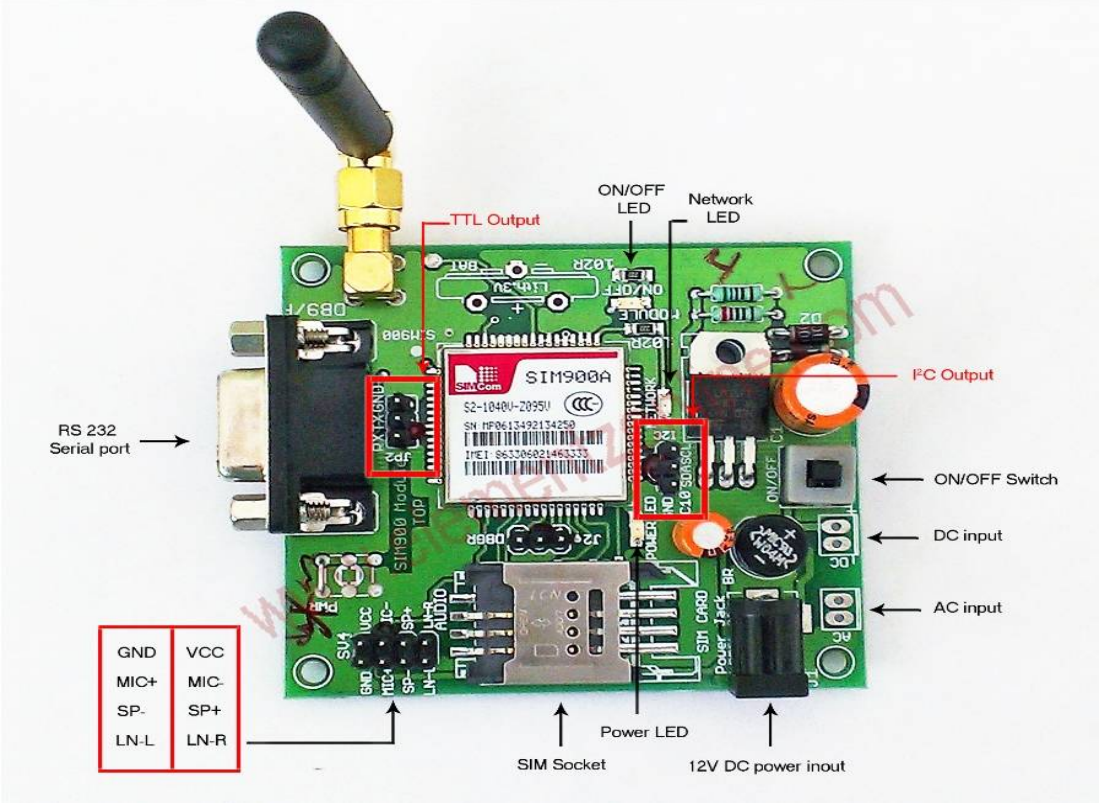

Fig.4. GSM Module

C. *Description of Visual Basic*

Visual Basic is a programming language and development environment created by Microsoft. It is an extension of the BASIC programming language that combines BASIC functions and commands with visual controls. Visual Basic, also referred to as "VB," is designed to make software development easy and efficient, while still being powerful enough to create advanced programs. Visual Basic is available as a streamlined application that is used primarily by beginning developers and for educational purposes.

IV. SIMULATION RESULTS

By using this, IVR system user/parents comes to know the status of particular student through a single call to IVR system service number and responds in the form of voice. Now days peoples are too much busy in their work it is not possible to visit hostel every time, so that using this system they come to know status of the student. Using this system whatever database for particular students responds in the form of voice.

The implemented system proves to be quite useful for the people livening in rural areas. Further there is no need of any an internet connection. It can be used by people who wish to get updated about the information on a daily basis. The implemented system uses auto answer mode to attend the incoming calls and hence there is no need of any human efforts. This system uses mobile network and hence it is not complex.

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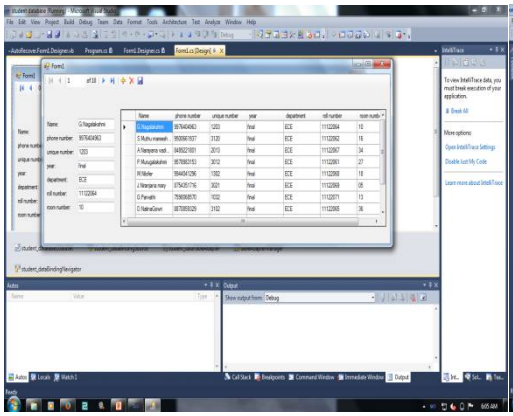

Fig.5. Student Database

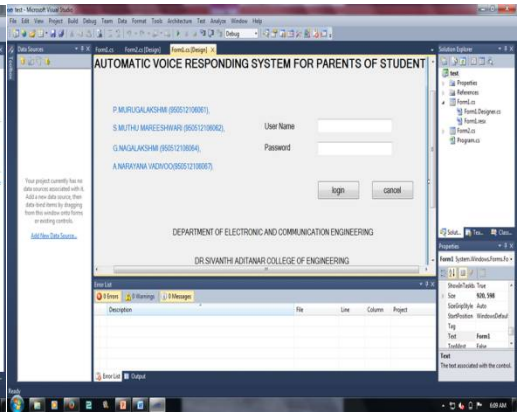

Fig. 6. User Login

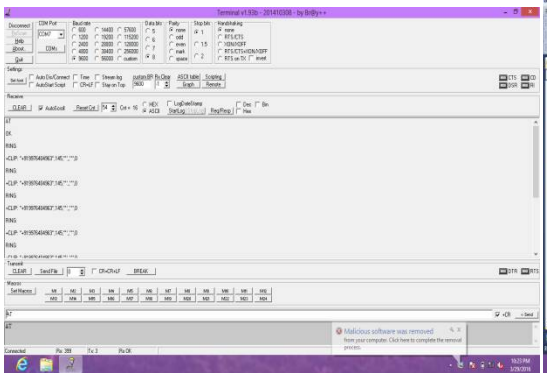

Fig.7. Incoming Call

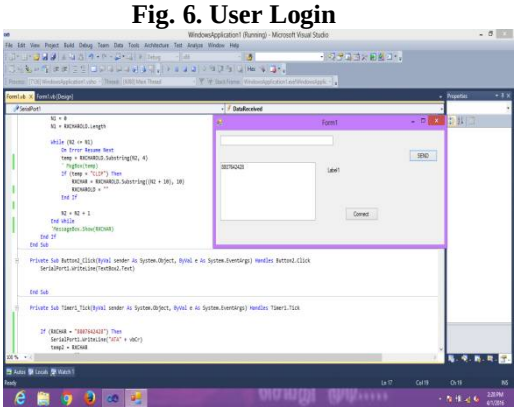

Fig.8. Data Received is stored

The student database contains student name, phone number, unique number, student roll number and the department in which the student is studying. As parents call from registered mobile number, mobile number of student is verified. The Automatic Voice Responding system asks the user to login the system using their username and password. AVRS is user friendly system can be access easily. As system providing automatic voice response according to input it reduces human resource cost. This system can be available for 24 hours. When a parent dial the hostel phone number that we will create as like a toll free number, they will get the answer in automatic stored voice form. Based on pressing a particular number the corresponding information are automatically stored in a computer.

V. CONCLUSION AND FUTURE WORK

The simulation results showed that the proposed system performs better. The implemented system is very beneficial to the user, to know the status of student in the form voice. Using this AVR system user gets information through a single call to the AVR system. AVRS for parents of hostel students is used in hostels to inform the student information about leave to resident tutor in hostel without visiting the hostel and without human interaction. By using this system it is convenient to get the student details easily by resident tutor and at any time. There is scope to optimize different methodologies in college automation to make system more users friendly and wide application areas.

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