

Intelligent College Automation System

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ABSTRACT

The interactive voice response system (IVRS) is an automated phone system and software that allows an individual to conduct transactions by phone without the assistance of a live worker. Typically an individual caller will interact with this system by making selections from voice menus. The menu selections are made using touchtone phone keypad entries or Dual Tone Multi Frequency (DTMF) signal, which produces voice-band tones when a button is pressed on a phone. This interaction allows the individual to conduct transactions with the phone system as well as the system which is linked with phone. The phone system plays prerecorded voice prompts and the person typically presses a number on a telephone keypad to select the option associated with the voice prompt. Communication Service Providers (CSP) across the globe are adopting new age strategies such as Customer experience based differentiation and are focusing on transforming their customer interaction approaches through the collaboration & mash-up of multiple channels. A customer's experience through an IVR interaction really depends on who (customer/IVR) does most of the thinking during the dialogue? In order to deliver the right experience, the service providers have started evolving their legacy IVR systems into Smart IVRs. These intelligent IVRs take the onus away from the customers thus optimizing the interaction and providing a differentiated, unique & personalized customer experience. With the intelligence to think ahead of the customer, they have the ability to anticipate customer needs & present the most relevant options. The improved speed & accuracy with which these IVRs serve customers provides an impetus to the CSPs overall strategy of taking the customer experience to a new level. Built right, Smart IVRs can outperform your best performing agent. With the evolution of advanced speech technologies (e.g. Natural language understanding) coupled with smart design strategies (i.e. Next Generation IVRs) Smart IVRs have greatly improved the CSPs customer engagement indices. This white paper discusses various strategies of implementing such effective tools which can completely transform the customer experience.

Keywords—: *Dual tone multi frequency (DTMF), hybrid as a service (HaaS) algorithm.*

1. INTRODUCTION

Interactive voice response system (IVRS) is a technology that allows a computer to interact with humans through the use of voice and DTMF tones effort via keypad. In telecommunications, IVR allows clients to interact with a company host system via a telephone keypad or by speech recognition, after which they can service their individual inquiries by following the IVR dialogue. IVR systems can act in response with prerecorded or dynamically generated audio to direct users on how to progress. IVR applications can be used to control almost any function where the interface can be broken down into a series of simple communications. IVR systems deployed in the network are sized to handle large call volumes. Taking advantages of IVRS we are developing the system for college automation using Hybrid as a Service (HaaS). Which is described as follows. User dials the specific IVRS service number. Now the connection is recognized between mobile and our IVRS based mobile 1. Now, a pre-recorded voice greets the caller compliant that

the number dialed corresponding to the particular service. 2. In the meantime the callers number is noted through DTMF decoder and logged in to the database. 3. The voice prompts the user to enter the number. 4. After the person press the registration number, through telephone keypad, the number will be logged into the PC database. 5. Then the system-generated voice will ask the user to enter the choice. 6. The choice may be attendance percentage or semester mark percentage. 7. Once the choice is entered then the corresponding register number and choice will be sent to the database. 8. The query is used to search the corresponding data procedures.

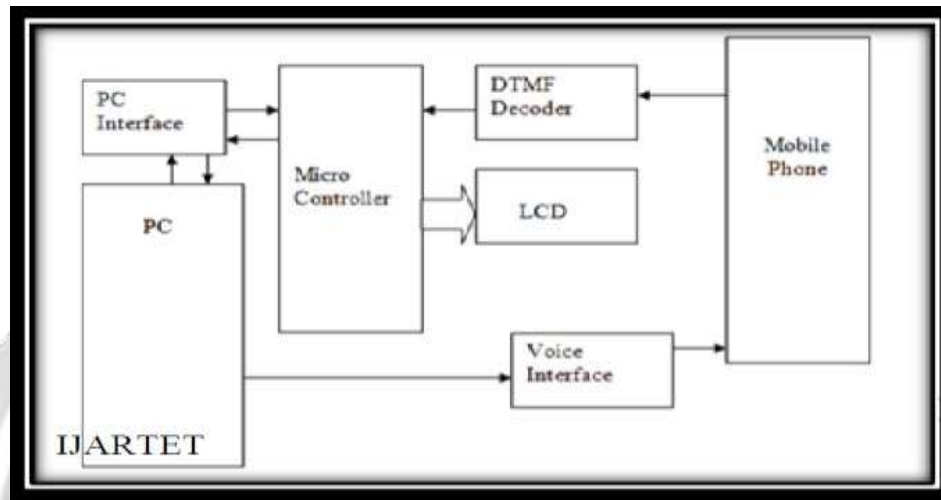


Fig-1: Hardware System design

1.1 Block Diagram Description

We are developing the college automation system using voice over internet protocol (VOIP). Which the major part of the system software design. The system software development includes the technologies Goertzel algorithm, dual-tone multi-frequency signaling (DTMF), speech synthesizer etc. The IVRS system which will be designed will consist of simple components like microcontroller and some basic application chips interfaced to a PC which will have small software running in the backend while the other jobs are performed on the front.

1.2 Dual Tone Multifrequency

Dual-tone multi-frequency signaling (DTMF) is used for telecommunication signaling over analog telephone lines in the voice-frequency band between telephone handsets and other communications devices and the switching center. The figure 2 shows the DTMF decoder circuit identifies the dial tone from the telephone line and decodes the key pressed on the telephone. Here for the detection of DTMF signaling. It decodes the input DTMF to five digital outputs. The C M-8870 DTMF (Dual Tone Multi Frequency) decoder IC uses a digital counting technique to determine the frequencies of the limited tones and to verify that they correspond to standard DTMF frequencies. The DTMF tone is a form of single way communication between the dialer and the telephone exchange office. The whole communication consists of the touchtone initiator and the tone decoder or detector.

1.3 GSM

GSM is a digital mobile telephony system that is widely used in Europe and other parts of the world. GSM uses a variant of time division multiple access (TDMA) and is the most widely used of the three digital wireless telephony technologies (TDMA, GSM, and CDMA). GSM digitizes and compress data, then sends it down a channel with two additional streams of user data, each in its

possess time slot. It works at either the 900 MHz or 1800 MHz frequency band. The most basic teleservice supported by GSM is telephony. As with all other interactions speech is digitally encoded and transmitted through the GSM network as a digital stream. GSM users can send and collect data, at rates upto 9600 bps

1.4 LCD

An LCD is a small low cost display. It is simple to interface with a micro-controller because of an embedded controller. This controller is set across various displays which means many micro-controllers have libraries that make displaying messages as easy as a single line of code. LCDs with a minute number of segments, such as those used in digital watches and pocket calculators, have individual electrical contacts for each segment

1.5 DTMF Decoder

The MT8870D/MT8870D-1 is a complete DTMF receiver integrating both the band split filter and digital decoder functions. The filter section uses switched capacitor techniques for high and low group filters; the decoder uses digital counting techniques to detect and decode all 16 DTMF tone pairs into a 4-bit code. External component count is minimized by on chip provision of a differential input amplifier, clock oscillator and latched three-state bus interface. DTMF receiver offers small size, low power consumption and high performance. Its architecture consists of a band split filter section, which separates the high and low group tones, followed by a digital counting section which verifies the frequency and duration of the received tones before passing the corresponding code to the output bus

1.6 Finger Print Sensor

The fingerprint sensor can read different fingerprints and store in its own flash memory. The sensor can perform three functions namely Add(Enroll) , Empty Database or Search Database and return the ID of stored fingerprint. Any of three functions can be called simply by making the pin low of the sensor or pressing onboard three switches. The response is either error or ok which is indicated by onboard LED. The response is also returned as single serial data byte. The return byte is a valid ID or error code. The response byte is a single byte at 9600 bps thus making whole sensor very easy to use. We have provided indicating LEDs and function switch already so its ready to use when you receive it. Just give power and start using the sensor using onboard switches. Then you can move on making external application using these functions.

1.7 Personal Computer

Personal computers may use the control pins of a serial port to interface to devices such as uninterruptible power supplies. In this case, serial data is not sent to the receiver, but the control

lines are used to signal conditions such as loss of power, or low battery alarms. Today, RS-232 is gradually being superseded in personal computers by USB for local communications. USB is designed to make it easy for device drivers to communicate with hardware. However, there is no direct analog to the terminal programs used to let users communicate directly with serial ports. RS-232 only standardizes the voltage of signals and the functions of the physical interface pins. Serial ports of personal computers are also often used to-- directly control various hardware devices, such as relays or lamps, since the control lines of the interface could be easily manipulated by software.

2. FLOW PROCESS

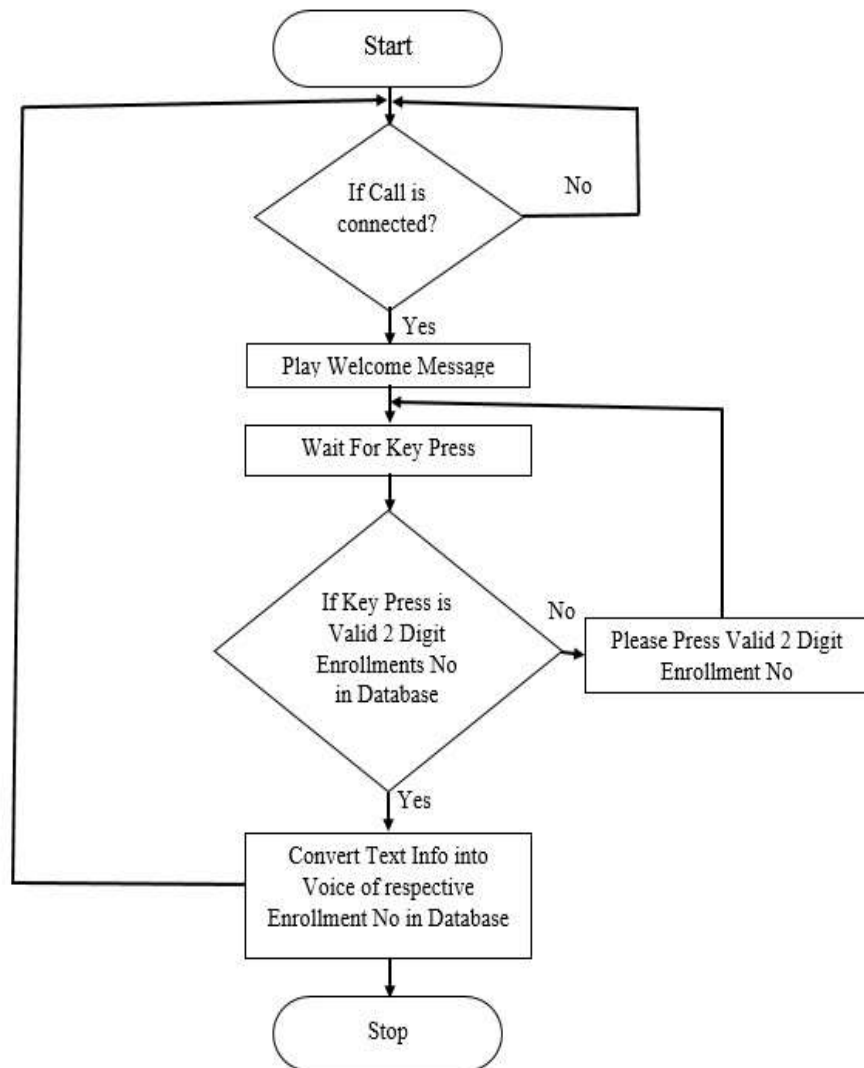


Fig-2: Flow Chart

3. CONCLUSION

In today's world everything needs to be done from the comfort of ones home or office. For this application is prepared in such a way that they can be easily accessed through computers. In the same way our projects aim is to provide the entire information to the user at the tip of his fingers. Due to this project the traditional manual way of handling the customer queries will be handled in a more technological and automated way. This type of system performs operations similar to that of a human telephone operator

4. REFERENCES

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