Interactive Voice Response System for College automation

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Abstract:

The interactive voice response (IVR) system serves as a bridge between people & computer by connecting the telephone network with instructions. The telephone user can access the information from anywhere at any time simply by dialing a specified number and following an automated instruction when a connection has been established. The IVR system uses pre-recorded or computer generated voice responses to provide information in response to an input from a telephone caller. The input may be given by means of touch-tone or Dual Tone Multi-Frequency (DTMF) signal, which is generated when a caller presses a key of his/her telephone set, and the sequence of messages to be played is determined dynamically according to an internal menu structure (maintained within the IVR application program) and the user input. The IVR System which will be designed to provide an ideal platform for the operation of start-ups and existing small concern. It will be a highly economical & efficient. 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 end.

Now-a-days every institution needs automation. As a part of college automation, we have to do a project Interactive voice response system for college Automation. Our project allows the user to know the student's attendance and marks quickly through the telephone line without the intention of the college authority. In the hardware side embedded system has been used. This microcontroller controls the whole hardware. Mobile line is used for communication purpose. Visual Basic has been used for frontend software programming. Presentation in the class and outcome of the university are made reachable to the parents by our project. It will be very obliging to the parents to be acquainted with their son's/daughter's recital in the college.

Keywords: **IVR, DTMF, speech synthesizer, Microcontroller,etc.**

1. INTRODUCTION

Interactive Voice Response systems (IVRS) allow callers to interact with the communications system over the telephone. IVR is used to enable the caller to retrieve information from a database, enter information into a database, or both. IVR systems allow the user to efficiently exchange information, reducing clerical processing.

IVRS provides a voice response to parents and guide them to the information they require. The parents can call up on the toll-free number and obtain any information regarding student by simply pressing certain button on his mobile as per the guidance of voice fed into computer.

An IVRS system talks to callers following a recorded script. It prompts a response to the caller and asks him to respond by pressing a touchtone key, and supplies the caller with information based on responses made.

Pre-recorded information

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. Live information from databases. These IVR's get information from databases, convert to voice, and speaks it back to the caller. Practically all industry segments are potential users for this, and examples include Phone banking (where you call in, dial in your account number & TPIN and can hear your account balance on phone) Courier packet trace(where you call in, dial the AWB number, and the system tells you whether the packet has been delivered, if it is in transit, etc.).

Objectives

a. In this project student related information is inserted by the admin of respective departments.
b. User should input the student code and select the appropriate menu.
c. Selected menu is given to the server in terms of DTMF tone.
d. According to his/her concern system plays the appropriate message.

2. EXISTING SYSTEM

To know the details of the son/daughter parent should have to approach to the college. This may be very time consuming and if the parent is leaving outside the state then it is very time consuming and economical.Many business applications employ this technology including telephone banking, order placement, caller identification and routing, balance inquiry, and airline ticket booking. A simple Voicemail system is different from an IVR in that it is person to person whereas an IVR is person to computer.

3. LITERATURE SURVEY

A survey was carried by us was found that the system we are going to implement is not present in any of the college in "Shivaji University".
Literature related to our topic is as follows:
- Interactive voice technology development for telecommunications applications. A Speech and Acoustics Laboratory.

- Efficient client-server based implementations of mobile speech recognition services

Technologies used:

DTMF signals (Entered from the telephone keypad) and natural language speech recognition interpret the callers response to voice prompts. Other technologies include the ability to speak complex and dynamic information such as an email, news report or weather information using text-to-speech (TTS). TTS is a computer generated synthesized speech that is no longer the robotic voice generally associated with computers. Real voices create the speech in tiny fragments that are spliced together (concatenated) before being played to the caller.

All the three Microcontrollers will have the same internal architecture, but they differ in the following Aspects.
- 8031 has 128 bytes of RAM, two timers and 6 interrupts.
- 8051 has 4K ROM, 128 bytes of RAM, two timers and 6 interrupts.
- 8052 has 8K ROM, 256 bytes of RAM, three timers and 8 interrupts.

Of the three microcontrollers, 8051 is the most preferable. Microcontroller supports Both serial and parallel communication. In the concerned project 8052 microcontroller is used. Here microcontroller used isAT89S52, which is manufactured by ATMEL laboratories.
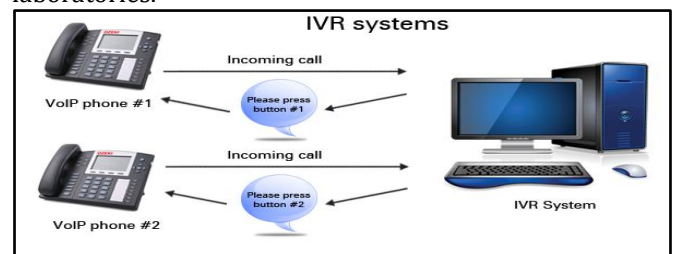
4. METHODOLOGY

4.1 Proposed Work:

When user calls to that number then system will ask to enter correct student code. After that user must have to listen the audio track in order to get correct information. The users enter his/her choice. This dial tone transmitted to the electronic circuit, which will correctly identify what user want. Then the particular information is fetched from the database. This information is converted to voice message and user is now able to listen what he/she wants.
There are three modules we are implementing:
1) Attendance: The monthly attendance percentage of a student is updated in the database. That will helpful for parents as well as student.
2) Test marks: The College is conducting monthly test .That test marks are added to the Database.

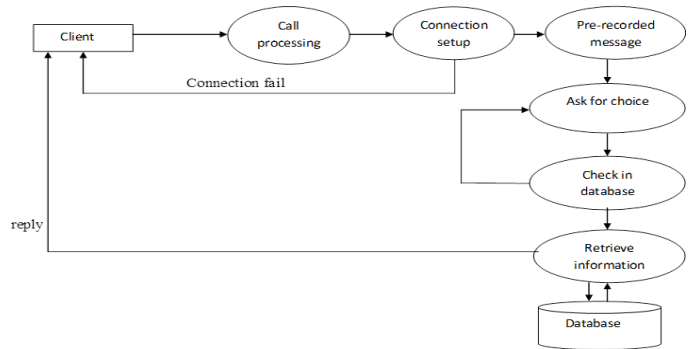3) Fees: The amount paid by student as well as remaining amount is also present in database.

4.2 Design Approaches

4.2.1. DFD Level 0:
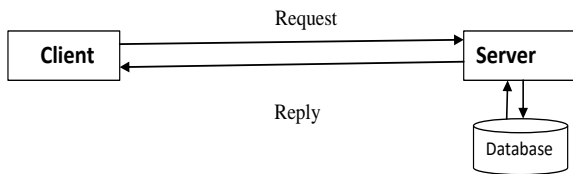
Figure 4.2.1 DFD Level 0

4.2.2 DFD Level 1:

Figure 4.2.2 DFD Level 1

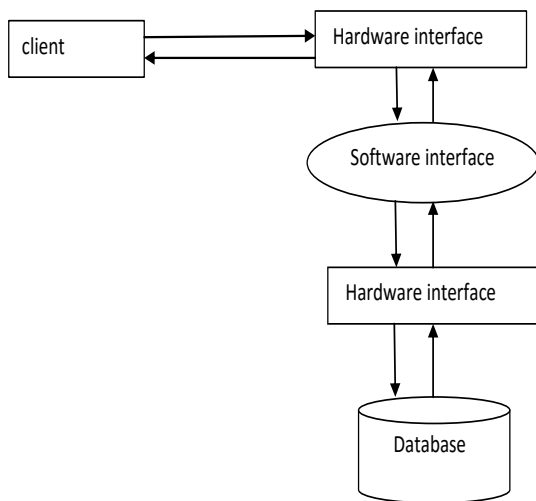### 4.2.3 DFD Level 2:

Figure 4.2.3 DFD Level 2
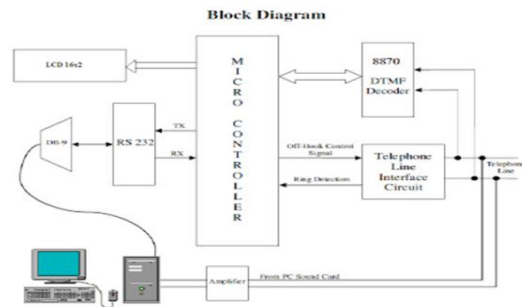
4.2.4 Block Diagram:

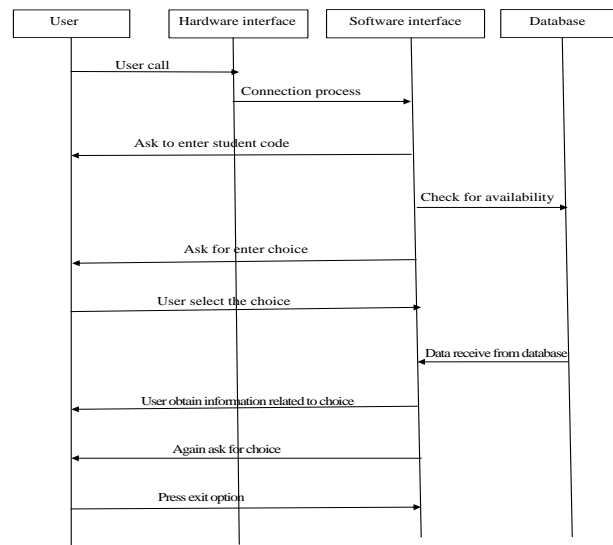**Figure 4.2.4 Block Diagram**

4.2.5 Sequence Diagram:

Figure 4.2.5 Sequence diagram
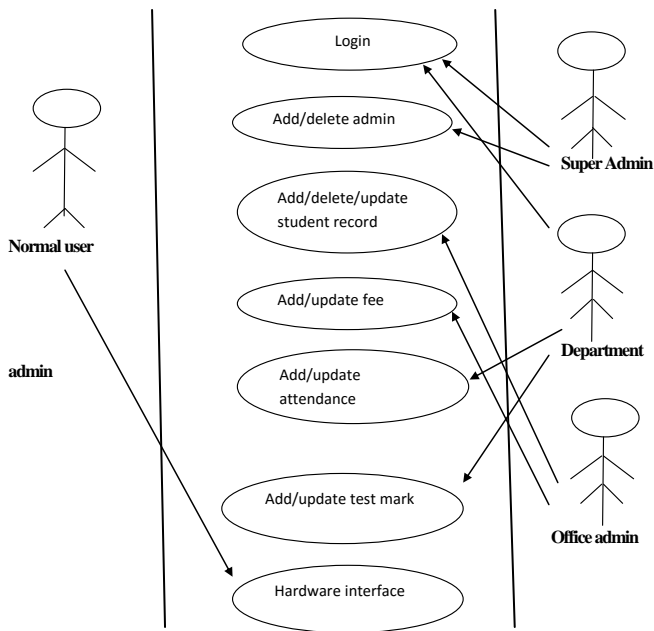
4.2.6 Use Case Diagram:

Figure 4.2.6 Use case diagram
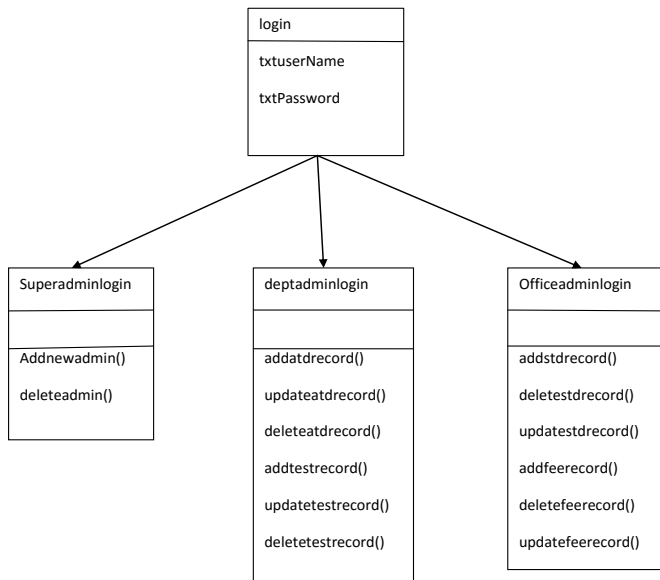
4.2.7 Class Diagram:

Figure 4.2.7 Class Diagram

5. CONCLUSION

In today's world everything needs to be done from the comfort of one's 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 project's 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.

6. REFERENCES

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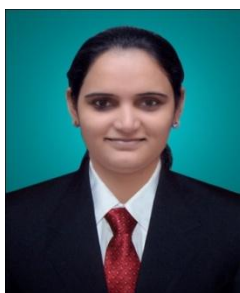
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