Library Automation System for Visually Handicapped Person

Sajid Mulla, Jasar Rayeen, Rahul Muluk, Naseemul Gani Bhat

Abstract:- ***A facility to pick up desired book by Visually Handicapped Person by touching letters in Braille, they have to understand information about the book .For each book same process will be repeated so the process is somewhat time consuming and tedious. To reduce this complex procedure we are introducing the system by which visually handicapped person will get information about that book in audio format. For using this system, student have to keep electronic kit with him during searching of book in library. When he goes to the book, information in audio format will be played which contains details as name & author of the book & breif information about the book . The project will support the visually handicapped person to select correct book..***

Keyword-Rfid Tags, Rfid Reader

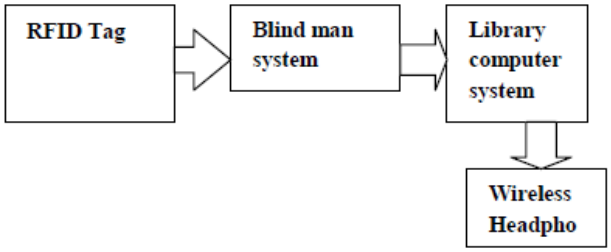
I. INTRODUCTION

Particular RFID cards are placed in each book. RFID detector circuit is given to blind person. When person goes to the book RFID detector circuit detect that code & transmits the code to the circuit which is connected to library PC. According to that code received, previously stored information in audio format is played. Through wireless microphone, information is provided to the blind person regarding that book.

II. RFID SYSTEM

Radio Frequency Identification uses a semiconductor (micro-chip) in a tag or label to transmit stored data when the tag or label is exposed to radio waves of the correct frequency. RFID stands for Radio-Frequency Identification. The acronym refers to small electronic the devices that consist of a small chip and an antenna. Chip typically is capable of carrying 2,000 bytes of data or less. The RFID device serves the same purpose as a bar code or a magnetic strip on the back of a credit card or ATM card; it provides a unique identifier for that object. And, just as a bar code or magnetic strip must be scanned to get the information, the RFID device must be scanned to retrieve the identifying information.

Block Diagram



III. WORKING

In this system we use four circuit:-

- RFID card
- Blind man system
- Library computer system
- Wireless headphone

RFID card is the circuit which containing one unique code for that particular book. The card is placed in book for that code we create one media file using visual basic.

One another system used, which is given to the blind person is RFID detector circuit. Which detect the code & transmit it using data transmitter?

Library computer system receives code, transmitted by blind person system & according to that code, PC plays the media file for that code library computer system contains, data receiver for receiving code. Audio transmitter, for transmitting that media file.

IV. BLIND MAN SYSTEM

The operation for the circuit is as follows

1. When power ON system starts the operation
2. LCD will display the 'WELCOME'.
3. When RFID tag will come into contact with RFID reader ,reader ID-10 will read code and serially transmitted to the microcontroller.
4. Microcontroller will send code to LCD for display. With the help of transmitter module last digit of the code is serially transmitted to library computer system.
5. After some delay go to step 2.

V. LIBRARY COMPUTER SYSTEM

1. When power ON system starts the operation
2. LCD will display the 'WELCOME'.
3. System will wait up to reception of code from Rx module
4. The code received will be displayed on LCD and also code is given serially to computer using max 232 interfaces.

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5. Visual basic program will compare code with audio files stored for codes after matching respective audio file will be played.
6. Here we are using wireless headphone for listening.

Features:-

- Frequency range -125 KHz
- Encoding type – Manchester 64 bits
- Voltage supply - 4.6V to 5.4V
- Power requirements – 5V DC @ 30 mA
- Dimensions - 26 mm x 25 mm x 7 mm

The ID-10 has the capacity to decode the serially transferred 5byte data (Card number) by the Tag. It then appends the start byte i.e., 02H (ACSII) and also the stop byte i.e., 03H (ASCII). The reader has a type of intelligence in it which enables it to calculate the checksum of the received data. This calculated checksum is also appended before the stop bit.

Thus, the total 10byte of information is ready for output at the D0 pin of the reader. This information is further transferred to the microcontroller were the verification of the card and thus the user is performed.

VI. ENCODER/DECDER IC's

The encoders/decoders are used for remote control system applications.For proper operation, a pair of encoder/decoder with the same number of addresses and data format should be chosen

Features

- Operating voltage 2.4V~12V for the HT12E
- Low power and high noise immunity CMOS technology
- Low standby current: 0.1_A (typ.) at VDD=5V

- HT12A with a 38kHz carrier for infrared transmission medium
- Minimum transmission word Four words for the HT12E

VII. RF MODULES (Tx/Rx)

- RF Tx/Rx modules are now widely and cheaply available. In this particular discussion, we shall be using ASK (Amplitude Shift Keying) based TX/RX pair operating at 433 MHz The transmitter module accepts serial data at a maximum of XX baud rate. They can be directly interfaced to a microcontroller or can be used in remote control applications with the help of encoder/decoder ICs.

VIII. WIRELESS HEADPHONE

PC will match the code and plays corresponding audio file related to that code . The audio file will be heard by blind person via wireless headphone and he will know about the book in CD or DVD.

Features Transmitter

- frequency-86MHz+-0.5MHz
- Modulation mode-FM
- Transmission range-30 meters(with no interface)
- Power supply-2*AAA OR 4.5adaptor

Receiver

- Frequency range-84MHZ to 108MHz
- Reception mode-FM
- Frequency response-20Hz to 20KHz
- Distortion-Less than or equal to 2%
- Power supply-2*AAA batteries

ADVANTAGES

It reduces time required to search a book in library.

- The system is reliable.
- It is superior than barcode technology

IX. CONCLUSION

In this project we can multiply the reader cards as well as the tags, but for demonstration purpose and cost limitation we are making only one reader and few tags system.

As such the reader antenna is having limited range, so its performance is least affected by any other kind of RF communication going on in the reader's vicinity.

Besides that we are working on RF 125 kHz for demonstration purpose. But long-range antenna can be manufactured by using higher frequency. There are many applications can be worked out from this system. That is why all major industries including Wall-mart, Infosys are taking this technology in forward direction. RFID technology has been taken to the next level; with applications and advancements ever increasing, the future looks bright for radio frequency identification.

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