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RFID BASED EXAMINATION ROOM GUIDE NAVIGATION SYSTEM WITH VOICE

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Abstract : The main aim of this project is to develop a system which can help to know the exam room for the students who are going to write their examination with voice message**.** The goal of this project is to provide guidance to students at examination centres. Many students are having difficulty finding rooms. Most students are worry while going to the examination, and they even feel tense while looking for their exam location. In these instances, our project is beneficial. As a hall ticket, each student will be given an RFID card. That will automatically display the room number of the student. Our project will primarily save time spent searching for a room in examination centres. Whenever student enters the exam center the reader reads the data from the tag and sends data (station name) to controller. Then the controller reads the data and it compares with the stored data, which data is matched to present data that particular voice announcement will come and also the location is displayed on the LCD.
Keywords. Arduino, RFID Module, Voice Module, LCD.

Introduction

A frequency transmitter is placed at some places in the house with the transmission frequency selected to correspond to a specific path. A frequency receiver is placed within a plurality of selected residences along a path and tuned to receive the frequency like that transmitted by the bus following the route followed by the bus which is to prevent and devour children at that residence. When the receiver receives the transmitted signal, an audible or visual alarm is activated thereby notifying the occupants of the residence of the approaching arrival of the child. The sensitivity of every receiver to the transmitted signal may be adjustable in order that the receiver won't activate its alarm until the bus is a certain distance away, thereby reducing to a minimum the quantity of your time the children must wait at the stop, yet giving them sufficient time to remember of the approach of the bus. The notification system is meant to be used in both urban and rural areas wherein the varsity buses following different routes are going to be equipped with transmitters of respective different frequencies, and therefore the various groups of residences are equipped with receiver's sensitive to an equivalent respective frequencies, counting on the bus which the children living within the residences are to require.

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LITERATURE SURVEY:

Rathi et al. [1] A framework for perceiving a dynamic hand words motion of Indian signs and change of perceived signal into text and voice and vice versa. Eigenvectors and Eigen esteem method has utilized for highlight extraction. Eigenvalue worth weighted Euclidean Distance based for the most part classifier has utilized.

Geethu and Anu [2] ARM CORTEX A8 Processor board is used. For image characterization, Haar classifier is used though 1-D HMM is utilized for Speech modification. Marking acknowledgment has created its significance in a very few zones like Human computer Interactions (HCIs), mechanical controls, home computerization.

Quiapo et al. [3] it was ready to fulfill the needs of a sign Language Translator. The task was ready to boost the fluctuate of the flex detection parts although as well as new types of detector states for included sifting. The procedure GUI conveyed the bigger a part of the capacities that were needed within the two-way interpretation technique.

Sayan Tapadar et al. [4] this includes training with the acquired alternatives that square measure near particular for different hand motions. In this way, we will be prepared to set up gesture-based communications and thus assemble crippled individuals socially satisfactorily. Use the distinctive feature extraction.

Hamid A. Jalab and Herman .K. Omer [5] a hand motion interface for prevailing media player misuse neural system. The anticipated standard recognizes a gathering of 4 explicit hand signals, to be specific: Play, Stop, Forward, and Reverse. Our standard is predicated on four stages, Image procurement, Hand division, alternatives extraction, and Classification. Geethu G Nath and Arun C [6] Implemented framework for marking recognition for not too sharp people in ARM CORTEX A8 processor board misuse convex sunken body standard and model coordinating principle. The framework is utilized to oversee gadgets like an instrument, car Audio Systems, home apparatuses.

Shweta et al [7] Build up a genuine time framework for hand motion acknowledgment that recognizes hand signals, alternatives of hands like pinnacle figuring and edge computation thus convert motion pictures into voice and contrariwise using image processing.

Ali A. Abed and Sarah A. Rahman [8] the versatile instrument is developed and tried to demonstrate the viability of the anticipated guideline. The instrument movement and route happy with very surprising headings: Forward, Backward, Right, Left and Stop. The ubiquity rate of the automated framework came to with respect to ninety-eight using Raspberry Pi with the camera module and modified with Python. Muhammad Yaqoob Javed et al. [9] Digital Dactylology Converser (DOC) that could be a gadget that changes over a sign language into voice sign and instant message. The anticipated gadget will function admirably and translates the letters, letters in order to content and sound.

EXISTING SYSTEM

In previous systems a jumbling system-based examination solution was there. It is possible that students will have difficulty locating their respective rooms as a result of this students became late to reach their exam halls

PROPOSED SYSTEM

Using RFID technology, this system assists in locating exam halls and seats. Each student is given an RFID tag.

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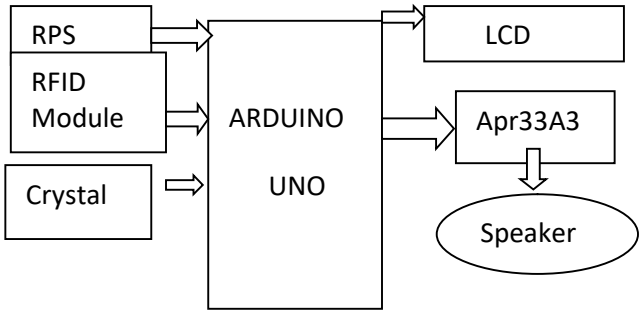
BLOCK DIAGRAM



ARDUINO

Overview:

Arduino Uno is a microcontroller board subject to the ATmega328P (datasheet). It has 14 pushed information/yield pins (of which 6 can be utilized as PWM yields), 6 essential information sources, a 16 MHz completed resonator (CSTCE16M0V53-R0), a USB alliance, a force jack, an ICSP header, and a reset button. It contains all that ordinary to help the microcontroller; on a crucial level interface it to a PC with a USB association or force it with an AC-to-DC connector or battery to begin. You can intrude with your Uno without anguishing essentially overachieving something mistakenly, most central outcome possible you can trade the chip for two or three dollars and start once more. "Uno" suggests one in Italian and was picked to stamp the presence of Arduino Software (IDE) 1.0. The Uno board and structure 1.0 of Arduino Software (IDE) were the reference sorts of Arduino, direct made to unendingly current deliveries. The Uno board is the first in the headway of USB Arduino sheets and the reference model for the Arduino stage; for a sweeping once-over of current, past, or old sheets see the Arduino report of sheets. • Physical contraptions and sensors Physical contraptions and sensors can amass and see sagacious and multidimensional data, and check of the target state of a function uninhibitedly without human mediation. Besides, when contraptions

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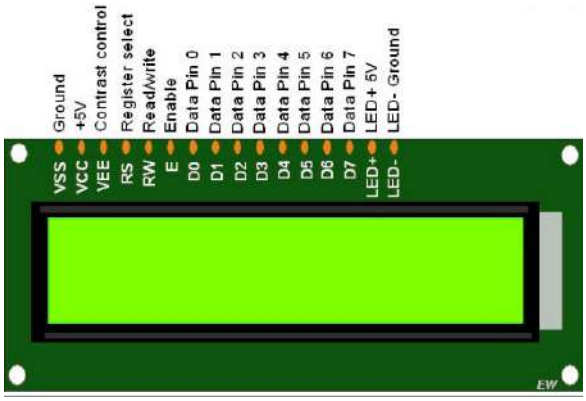
capacity to get data with presented understanding, gadgets can act and respond. Condition setting will at that point be changed and the contraptions will reach out of the blue. In that limit, this assortment structure will be rehashed perseveringly. • Connection and foundation Association and foundation, for example, cloud, security, covering ceaselessly, security, insistence, and controlling, pull in interminable, solid information and data stream and assessment circles.

LCD

LCD (Liquid Crystal Display) is such a level board show which utilizes fluid noteworthy stones in its major sort of development. LEDs have a gigantic and moving methodology of usage cases for clients and connections, as they can be customarily found in telephones, TVs, PC screens, and instrument sheets.

LCDs were a basic ricochet the degree that the development they eliminated, which breaker light-passing on the diode (LED) and gas-plasma shows. LCDs permitted partners to be all-around more meager than the cathode bar tube (CRT) development. LCDs eat up liberally less force than LED and gas-show shows since they search after the standard of deterring light instead of delivering it. Where a LED emanates light, the fluid tremendous stones in an LCD pass on a picture utilizing foundation edification.

As LCDs have supplanted dynamically sorted out superstar drives, LCDs have started being eliminated by new presentation improvements, for example, OLEDs.



APR 9600 VOICE IC:

The APR9600 device offers true single-chip voice recording, non-volatile storage, and playback capability for 40 to 60 seconds. The IC is 28 pin device used to record & playback of maximum of 8 messages. The device supports both random and sequential access of multiple messages. Sample rates are user-selectable, allowing designers to customize their design for unique quality and storage time needs. the device is ideal for use in portable voice recorders, toys, and many other consumer and industrial applications.

Fig: APR9600 Experimental board

. RFID

RFID (Radio Frequency Identification) technology has been around for many years. Prior to the year 2000, common uses for RF-ID in the USA included tollway passes, access ID cards and the tiny ID chips that are inserted in animals for identification. The recent introduction of RFID in the supply chain as well as several mandates has added to the awareness and value of this technology.

RFID tags operate at several different frequencies. The majority of RFID tags operate at either 13 MHZ or 900 MHZ. Think of these two frequencies as the AM and FM bands on your radio. Each one has its advantages. For example, one works better when surrounded by metal while the other will work better over long distances.

13 MHZ (HF) tags are generally better at penetrating liquids and are usually used for access control such as in security cards and wristbands. The read range at this frequency is about 3 feet or 1 meter.

900 MHZ (UHF) tags operate better when reading multiple tags simultaneously, and thus are generally the tag type of choice for inventory purposes. The read range at this frequency is about 3-10 feet or more depending on what type of reader, interrogator or access point is used.

Most RFID tags do not contain any data in them after they are manufactured; they are similar to a blank label waiting for information to be printed on them. To place information in the tag, an encoder must be used. One of the most popular methods of encoding is with an RFID Capable Label Printer that has a built-in encoder and RFID Capable Barcode Label Software.

There are basically three types (called classes) of tags:

Class 0 - these tags are like a license plate in that they are read only and are encoded with data when they are manufactured.

Class 1 - these tags allow you to write the data in the tag and are usually one time programmable (OTP). These are available in either HF or UHF versions and are known as GEN1.

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Class 1 GEN2 EPC (GEN2) - these tags are the latest type of UHF tag and are the types of tags most referred to in this document. They are also the tags required for mandates by various suppliers such as Wal-Mart and the US Department of Defense (DOD). In the industry, we refer to these tags simply as GEN2. These tags are 96 bits or larger and contain advanced features such as lock after write and CRC read verification.

The following components are required to write data (encode) to class 1 tags:

Software Application à Encoder Software à Tag Encoder à RFID Tag
The following components are required to read data from the tag:
RFID Tag, Reader, Interrogator or Access Point à Decoding Software à Software Application
IDAutomation.com provides some components of this system including Software Applications, Encoder Software and Tag Writers.

RFID vs Barcodes

Barcoding is a mature technology that has been around for many years, unlike RFID which is still in its infancy. Additionally, the components used to read and write bar codes have come down in price because of this maturity and sales volume. There are many additional issues to consider with RFID, such as those listed below in the Disadvantages of RFID section. However, all things considered, RFID has many advantages over barcoding. In some cases, these advantages outweigh the disadvantages and high cost of the components. Decision makers must carefully consider whether RFID really provides an advantage over barcoding in their business model. Advantages and Disadvantages of RFID

Advantages:

Inventory efficiency - Because line of sight is not required to read RFID tags, inventory can be performed in a highly efficient method. For example, pallets in a warehouse can be read, inventoried, and their location can be determined no matter where the tag is placed on the pallet. This is because the radio waves from the reader are strong enough for the tag to respond regardless of location.
Return on investment - Though the cost may be high at first, the total cost of ownership should go down over the years and provide a return on investment (ROI), if the implementation provides a significant method to improve business processes.
Vulnerability to damage minimized - barcodes can be damaged in many ways. Although, 2D barcode types such as Data Matrix can be read even when up to 40% of the barcode is damaged.

Disadvantages:

Dead areas and orientation problems - RFID works similar to the way a cell phone or wireless network does.

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Just like these technologies, there may be certain areas that have weaker signals or interference. In addition, poor read rates are sometimes a problem when the tag is rotated into an orientation that does not align well with the reader. These issues can usually be minimized by properly implementing multiple readers and using tags with multiple axis antennas.

Security concerns - Because RFID is not a line of sight technology like barcoding, new security problems could develop. For example, a competitor could set up a high gain directional antenna to scan tags in trucks going to a warehouse. From the data received, this competitor could determine flow rates of various products. Additionally, when RFID is used for high security operations such as payment methods, fraud is always a possibility.

Ghost tags - In rare cases, if multiple tags are read at the same time the reader will sometimes read a tag that does not exist. Therefore, some type of read verification, such as a CRC, should be implemented in either the tag, the reader or the data read from the tag.

Proximity issues - Tags cannot be read well when placed on metal or liquid objects or when these objects are between the reader and the tag. Nearly any object that is between the reader and the tag reduces the distance the tag can be read from.

High cost - Because this technology is new, the components and tags are expensive compared to barcodes. In addition, software and support personnel that are needed to install and operate the RFID reading systems (in a warehouse for example) may be more costly to employ.

Unread tags - When reading multiple tags at the same time, it is possible that some tags will not be read and there is no sure method of determining this when the objects are not in sight. This problem does not occur with barcodes, because when the barcode is scanned, it is instantly verified when read by a beep from the scanner and the data can then be entered manually if it does not scan.

SOFTWARE TOOLS

Arduino IDE (Integrated Development Environment)

The Arduino progress condition contains a word processor for including code, a message zone, a book maintains, a toolbar with gets for crucial cutoff regular environmental factors, and an improvement of menus. It interfaces with the Arduino contraption to move activities and talk with them.

Making Sketches

Programming made using Arduino is called follows. These depictions are written in the substance boss. Depictions are saved with the record progress .ino. It has featured for cutting/staying and for looking/dislodging content. The message a region gives input while saving and passing on what's more shows abuses. NB: Versions of the IDE before 1.0 saved draws with the expansion pde It is possible to open these records with understanding 1.0, you will be begun to save the sketch with the .ino progression on save.

The Arduino condition uses the opportunity of a sketchbook: a standard spot to store your undertakings (or depicts). The depictions in your sketchbook can be opened from the File Sketchbook menu or the Open catch on the toolbar.

Tabs, Multiple Files, and Compilation

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Connects with you to figure out draws with more than one record (all of which appear in its own astounding tab). These can be typical Arduino code records (no new unexpected new development), C reports (.c speeding up), C++ records (.cpp), or header records (.h).

ADVANTAGES

- A RFID based circuit is used for speechless patient & physically challenged people.
- It is requires fewer components so its cost is low
- Small in size; due to small size we can place its hardware easily
- Light weight
- Flexible to users
- Easy to operate; anyone can operate it easily

DISADVANTAGES

- Accuracy and processing of system may be slow
- We may have some difficulty in operating with the buses

APPLICATIONS

- Useful for Physically challenged peoples
- Conveying information related operations
- Provides easy communication between the speech impaired people and the natural people
- Used for disabilities
- Handicaps

CONCLUSION

The project "**RFID BASED EXAMINATION ROOM GUIDE NAVIGATION SYSTEM WITH VOICE"** been successfully designed and tested. It has been developed by integrating features of all the hardware components used. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. The results are obtained by testing the factors such as whether the communication quality is good, and whether the correct bus identified by the visually impaired person. This system is very useful for the blind in order to take the public bus for ensuring their safer motion from one place to other Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented.

Future Aspects:

The future enhancement of this system would be providing a more compact device for the child, along with other features, such as voice enabled command and detection, advanced camera specification, also the system can be provided with user interface by developing a website.

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