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Wireless Library Record System Using RFID Card

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Abstract: ***In this project we tend to demonstrate the concept of advance wireless library system with the assistance of touch panel and RFID card. In this project we demonstrate the utilization of RFID card to create the library record keeping straightforward for student additionally as professional. Once a student needs to issue the book he/she would simply need to swap his/her RFID card. When the card is swapped, student's account is going to be known from the list of registered students. The supplying section is going to be the transmitter section and the library operator's computer is going to be the receiver end. LCD display is given on transmitter section to instantly display the knowledge provided to the operator. RFID card acts as an input file. The system then asks whether or not the book is to be issued or returned. When the choice is chosen, the system can evoke RFID card of the book. Student then must swap the RFID card of the book. When the card is swapped, the book data are going to be automatically detected and its issue/ return action are going to be recorded. The record of all the books issued and came are going to be sent to operator's section that he will check whenever he's free.***

Keywords: Microcontroller, RFID card, LCD, Interface, Wireless Network, Transmitter (Bluetooth), Receiver (Bluetooth).

I. INTRODUCTION

The project chiefly aims in providing fully machine-driven library system with the assistance of RFID card and a LCD display to manage and supply a easy surroundings of the user to issue/return the book from library. The RFID cards of the student and also the book are going to be the input file.

The record of data} are going to be updated instantly on library operator's section (receiver section) and its information are going to be displayed instantly on the student's end (transmitter end). Use of RFID card would end in quick book supplying system since the student won't need to enter any of his details and simply swipe the card. Additionally no data of the book are going to be needed to input. Thence use of RFID card improves time taking method of supplying a book.

The device consists of a microcontroller that is interfaced with the input and output modules, the controller acts as an intermediate medium between each of them. Therefore the controller is termed as a control unit. The input module is nothing however a RFID card. The output module is that the RF module. The controller additionally takes the responsibility to instantly show the difficulty data of the book on graphical digital display. At the receiving section the chosen books are going to be updated on laptop.

II. LITERATURE REVIEW

Library users expect to search out everything along says writer Abram, vice chairman for innovation at SirsiDynix, the leading supplier of package solutions and associated services for libraries. in keeping with her historically, the library management system or integrated library system (ILS) was chargeable for running libraries expeditiously and effectively. Over the previous couple of years, the role of the ILS has been increasing from meeting library must delivering user expertise.

According to Eden (2011), views that almost all libraries area unit forced to figure with fewer employees attributable to the having a a lot of improved and progressive system for his or her library. According conjointly to the study, the library administration ought to emphasize to their employees that the organization features a unconditional interest in providing them with the tools and coaching they have to help the organization within the new data marketplace. These could embody search engines, circulation systems, and therefore the on-line public access catalogue.

According to Lopez (2002), University of the Philippines Mindanao once UP in Mindanao accepted its 1st batch of scholars in 1996, the most Library assortment was integrated with the core assortment of the college of Management (SOM) Library at the Stanfilco Bldg., Laidlaw Avenue, Ubangi, and Davao town. The Filipiniana and General References were housed along with the faculty of Arts and Sciences (CAS) assortment in area a pair of of the Philippine Coconut Authority. within the Second Semester AY 1996-1997, the CAS Library enraptured to its main field in Bago Oshiro. Upon the popularity of UP in Mindanao by the Board of Regents (BOR) as a constituent unit (CU) of the UP System, the CAS was split into 2 (2), namely: faculty of Humanities and Social.

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III. MODE OF PROJECT

A. *Transmitter Section*

In this section we select the student's RFID card as an input data that interface to ADC and DAC connect to microcontroller. After the book is issued, an alert message is sent to the receiver section.

B. *Receiver Section*

In receiver section record of issued and returned books is continuously updated and this record is saved. Library operator can check this

IV. ARCHITECHTURE

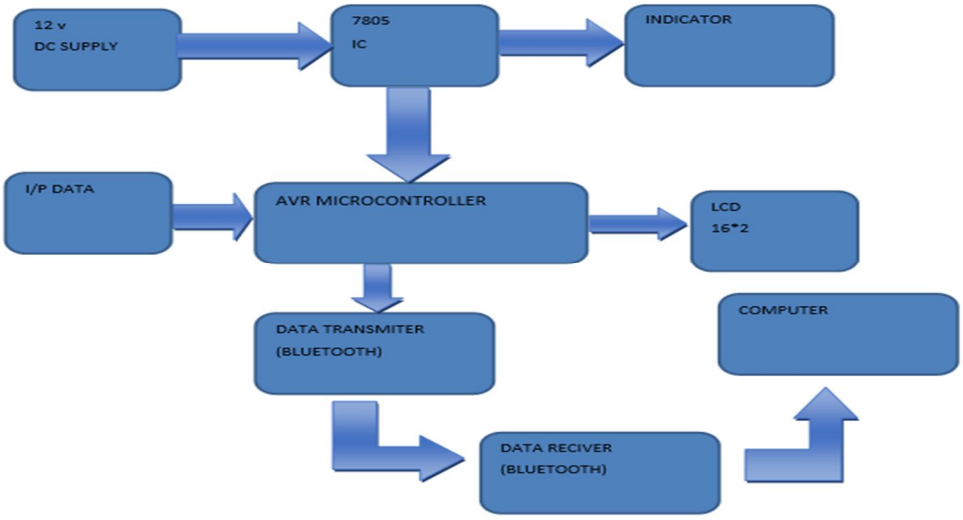

Fig.1 Block Diagram

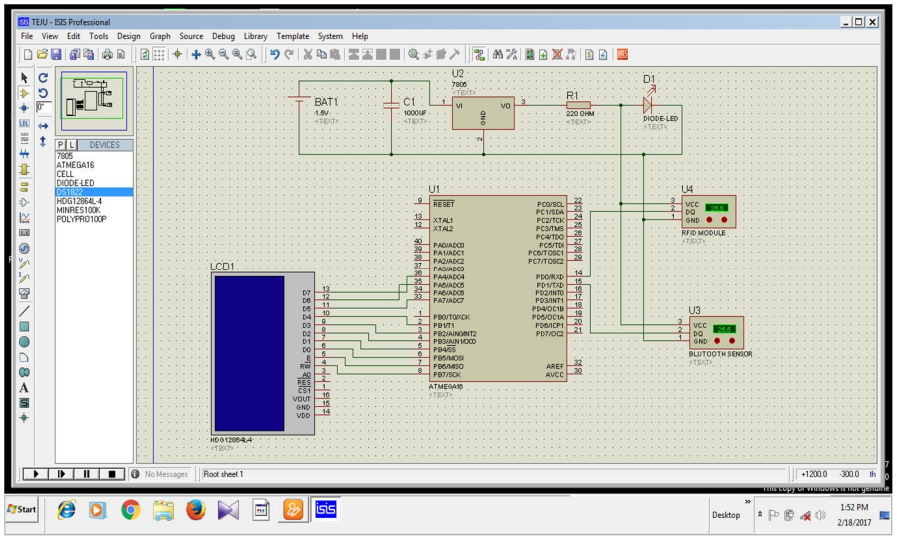

Fig.2 Circuit Diagram

V. HARDWARE AND SOFTWARE USED

A. *Microcontroller AVR ATMEGA16*

All output signals generated from flex sensors are in analogue kind and these signals have to be compelled to be digitized before they'll be transmitted to encoder. Thus microcontroller ATMEGA sixteen is employed because the main controller during this project. It's integral ADC module that digitizes all analogue signals from the detectors and integral electronic device for sensor signal choice. It supports each serial and parallel communication facilities.

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ATmega16is Associate in Nursing 8-bit high performance microcontroller of Atmel's Mega AVR family with low power consumption. Atmega16 is predicated on increased reduced instruction set computing architecture (Reduced Instruction Set Computing) architecture with 131 powerful directions. Most of the directions execute in one machine cycle. Atmega16 will work on a most frequency of 16MHz.

B. LCD Display

A LCD may be a skinny, flat electronic visual show that uses the sunshine modulating properties of liquid crystals (LCs). They're common in client devices like video players, play devices, clocks, watches, calculators, and telephones. LCDs have displaced beam tube (CRT) displays in most applications. They're sometimes additional compact, light-weight, portable, less costly, additional reliable, and easier on the eyes. They're on the market in an exceedingly wider vary of screen sizes than CRT and plasma displays, and since they are doing not use phosphors, they can't suffer image burn-in. liquid crystal display of 16*2 size is employed during this project. LCDs are additional energy economical and supply safer disposal than CRTs. Its low electric power consumption permits it to be employed in powered equipment.

C. Bluetooth

Bluetooth is employed to transfer updated info from transmitter section to receiver section. Any new issue/return entry created is entered within the list on the receiver section (librarian's pc). Bluetooth facilitates wireless info transmission from transmission section to receiver section.

D. RFID Card

Rfid card uses magnetic force fields to mechanically determine and track tags connected to things. Tags contain electronically hold on info. Passive tags collect energy from a close-by RFID reader's interrogating radio waves. Active tags have a neighborhood power supply like battery and will operate at many meters from the RFID reader. not like a barcode, the tag needn't be inside the road of sight of the reader, therefore it should be embedded within the tracked object. RFID is one technique for Automatic Identification and information Capture (AIDC).

E. RF Module

This is extraordinarily tiny, and is glorious for applications requiring short-range RF remote controls. The transmitter module is barely 1/3 the scale of a regular stamp, and might simply be placed within a little plastic enclosure.

F. AVR STUDIO 4

This package is employed for programming over microcontroller ATMEGA16. This package has main application in embedded systems.

G. Sinaprog

This package is employed for program transfer to the microcontroller.

H. Power Supply

This project works on the 2 voltages as its demand, 5V and 12V. to own these voltage levels the subsequent circuit is employed as the regulated power supply. there's a rectifier initial that converts the 220V to the pulsing DC of 12V. electrical device and diodes square measure employed in the rectifier. As this DC voltage is in pulsing kind, we've got to convert it in pure DC with none fluctuations. we have a tendency to used associate IC 7805. This converts the 12V to 5V DC. to scale back the fluctuations we have a tendency to used the solution capacitors. The LED is employed to point the 5V at the output.

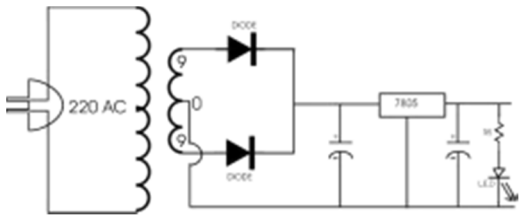

Fig.3 Circuit diagram of Power Supply

I. PCB Designer

This software is used for PCB layout design.

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VI. WORKING

The operating of the project is sort of straightforward and convenient as per the need. The transmitter section is mounted at the entry section of the library. The receiver section is placed within the library wherever each activity is continuously updated. each student has given a RFID card. He must swap the book's RFID and student's RFID card at the transmitter. The book is issued/returned and the status is displayed over the LCD. This info is updated at the receiver section through Bluetooth module. The record of all the entries created is saved within the style of record on the receiver section. This file will be checked by library operator whenever he's free.

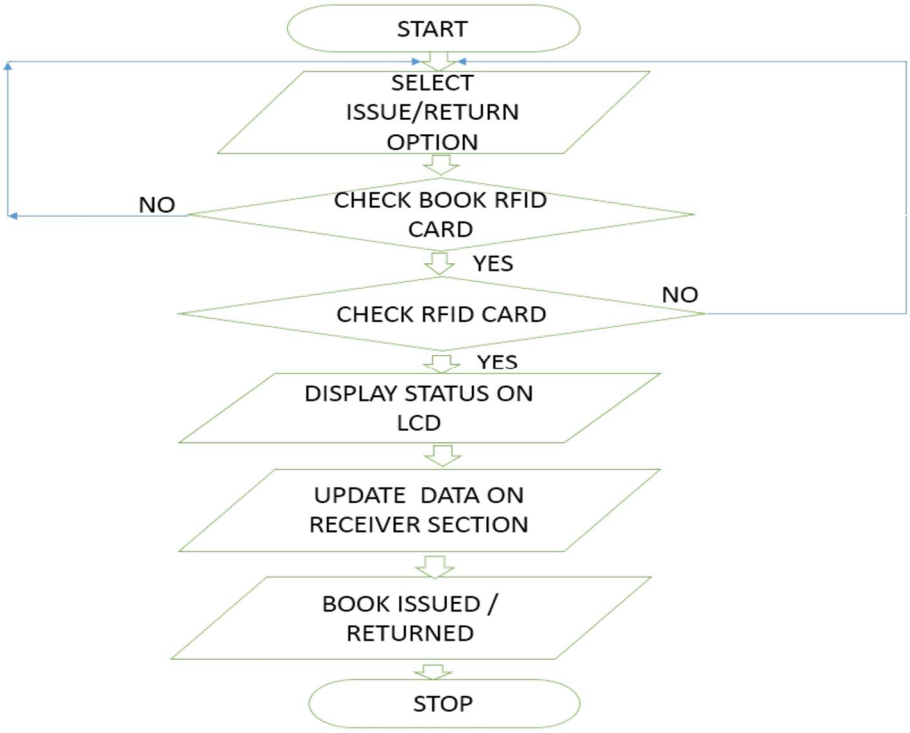

Fig.4 Flow Chart

There is additionally a future side for this project. We are able to build the face recognition at the facet of entry. This may cut back the unauthorized tries to issue the book. We can also initialize a protection mechanism which might be unlatched by entering the individual code given to each student. The door at the entry can solely open if each the face recognition and therefore the code entered area unit sensible. We are able to build same project with the utilization of barcode rather than RFID card.

VII. CONCLUSION

Fig.5 Project Circuitry

Test is found that this method is extremely effective and it's economical to keep record of all the entries of the issued/returned books within the library. Use of RFID makes method quicker since student doesn't got to enter any data manually. The requirement of associate operator is reduced with this project. This project additionally offers attention to the construct of self service. Quicker

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input will mean higher service. The only aim of this project is to create the method of book supplying a lot of attention-grabbing and secure. This additionally facilitates the student to keep up the record as per the wants.

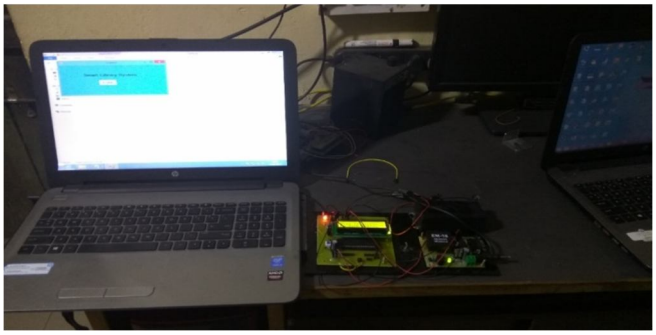

Fig.6 Interface with System

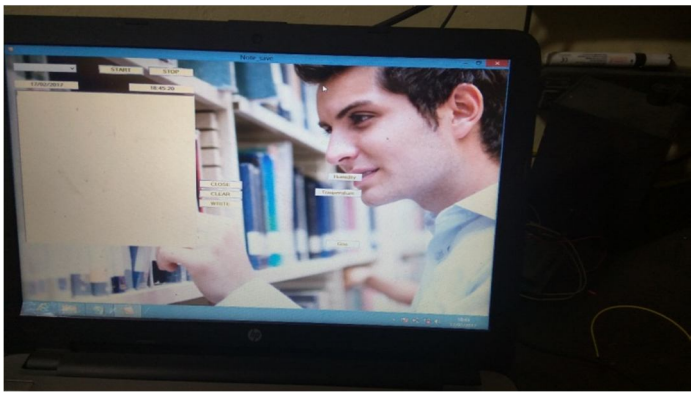

Fig.7 Librarian Interface

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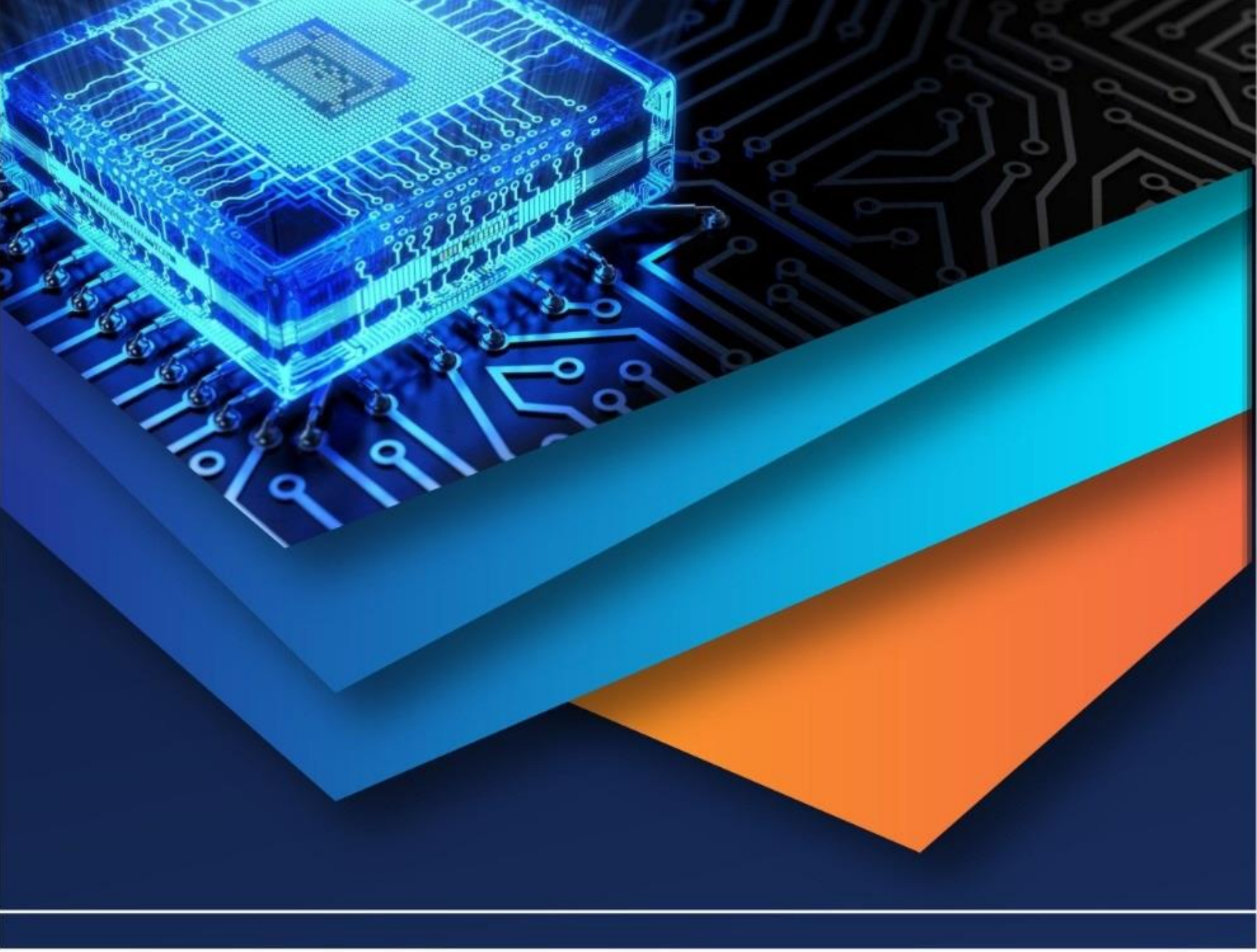

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