

Lab Management System Based On RFID With Web Page Using Arduino Microcontroller

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Abstract-RFID stands for Radio-Frequency Identification. There has been rising demand for secure system that has got to be reliable and quick responded for the industries and company. frequency Identification (RFID) is one among the reliable and quick means that of distinguishing any material object. The RFID device must be scanned to retrieve the identifying information. On different hand, college student attendance management of sophistication plays a very important position within the work of management of faculty student, this could facilitate to urge student to class on time, improve learning potency, increase learning grade, and so entirely improve the education level of the college. In this work, for the attendance to be recorded the RFID is used. The graphic user interface and database also included in this system. The objectives of the project are to increase management efficiency of student data and stored properly in database. Other than that, the objectives are to develop a system that is easy to applied and used at any places example like class and event. User solely has to scan their RFID tag close to the RFID antenna and therefore the attending can automatically recorded within the info that has been created. This technique can facilitate to cut back the time of taking the attending. The system provides the functionalities of the overall system such as displaying live ID tags transactions, registering ID, deleting ID, recording attendance and other minor functions. This interface was installed in the host computer. The web-based is to provide an online web that will provide all the information and utilities of the laboratory such as group timetable, calendar, lab sheet download and others needed. This paper presents a system that come with web portal for student and staff.

Keywords-RFID; management; Arduino; Webpage

I. INTRODUCTION

This paper may be a study concerning the student lab attendance management system that uses associate RFID approach. this method wont to retrieved or keep information from database[1]. The implementation of the system is split into 2 classes, that square measure hardware style and computer code style. In hardware style is to style the RFID

devices that discover the distinctive ID in student card so show the distinctive ID on liquid show (LCD) panel. The RFID reader, that may be a low-frequency reader, is connected to the pc| portable computer} or computer via a serial to USB convertor cable. The attendance system user interface is developed exploitation Visual Basic.Net.[2]. Hardware device is employed Arduino Mega microcontroller because the platform. For the computer code style is to style the software that gives a facility for contact variety of person to blame of the workplace, schedule for student concerned and calendar. moreover, the systems conjointly offer facilities to download lab sheet.

The software style consists 2 sections that area unit system integration between system and devices and system and user. System integration between system and devices is intended for the association between the system and RFID devices. every laptop with RFID device should be put in with the motive force association. The perform of the association system is to record the group action from device and save in information. System integration between system and user has designed the web site that gives the power for users. the web site is consists with many menu pages. one in all it's the announcement page which will inform news or any update from person answerable. At the side of menu page, there is a calendar and group timetable which is useful for student to prepare before entering the laboratory [3]. This project is to observe and monitor student's attendance by using RFID approach and to provide a completed web-based full with information and utilities needed.

II. METHODOLOGY

This project will describe a completed lab management system for a better system equip with RFID tags. The overall methodology includes a combination of previous project studies, ideas and hardware. Fig. 1 show the approach used to implement the project.

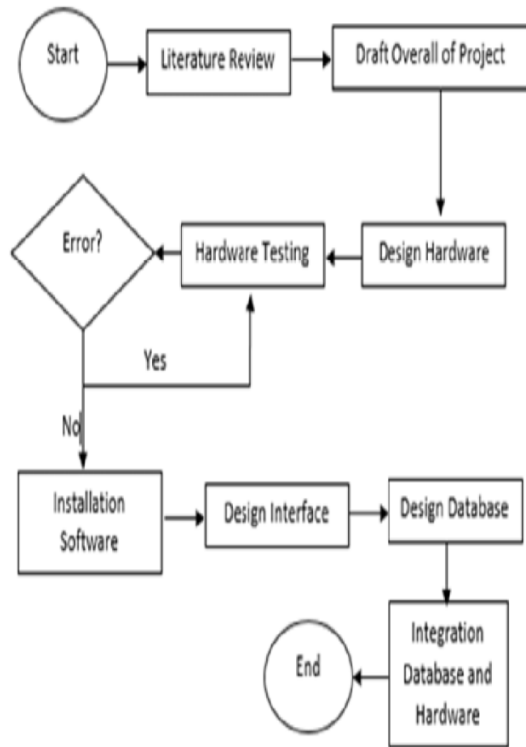


Fig 1: Flowchart of the system

The implementation of the system is split into 2 classes, that are hardware style and package style. In hardware style is to style the RFID devices that discover the distinctive ID in student card then show the data student card on digital display panel. The laborious ware device is employed Arduino MEGA microcontroller because the platform. For the package style is to style the software that has a facility for managing the group action, contact range of person responsible of the research lab, schedule for student involve and analysis of student performance within the laboratory. The software style consists 2 sections that are system integration between system and devices and alternative section is system and user. System integration between system and user has designed the web site that has the ability for users. the web site consists with many menu pages. one in every of it's the house pages that have like home, admin login, employees login, student login, and call. At the facet of menu page, there's a talk box that is beneficial for student to speak with lecturer or technician.

Software design

The software design will describe about the database and visual basic Interface. For the website development, Google Sites is chosen. Google Sites can be access directly through any browser portal for example google chrome and internet explorer [3]. Fig. 2 shows website architecture for user.

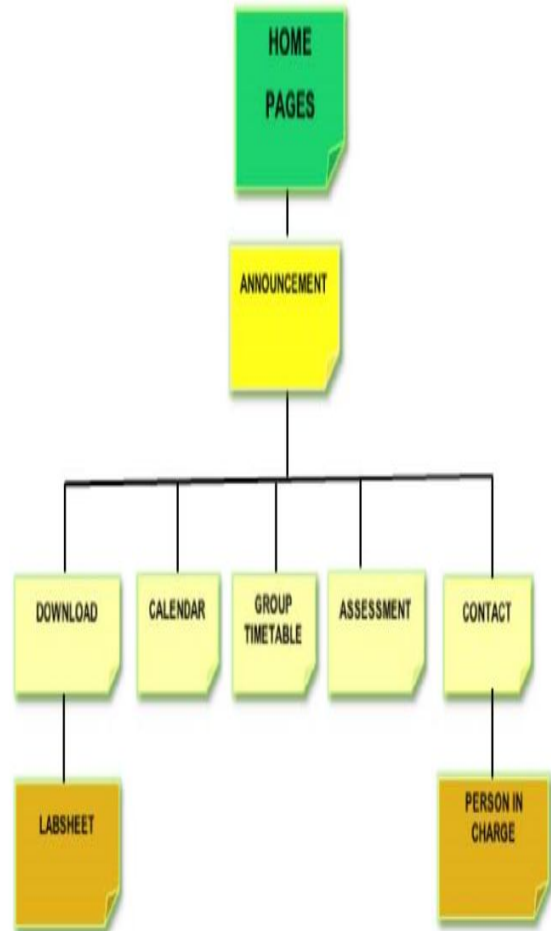


Fig 2: Architecture of website

There are several basic elements in home pages. The home pages consist of group timetable, assessment download, calendar, contact, lab sheet download. In group timetable page is page for student to view the assigned group that has been decided by lecturer. For the download pages, student can download the file such as a lab manual, assessment and others.

For interface platform Visual Basic application is used. Visual Basic is the software to create graphical user interface describes the process of registration to the user. It is the primary way to interact with the user and allow user to interact with the system.

Flowchart

To connect between the database and interface, there is an option in software that can establish a connection. From there, when the setup for device and software is complete, surely there is no any problem to establish a connection through USB. Fig. 5 explains the process to create a connection between device and software.

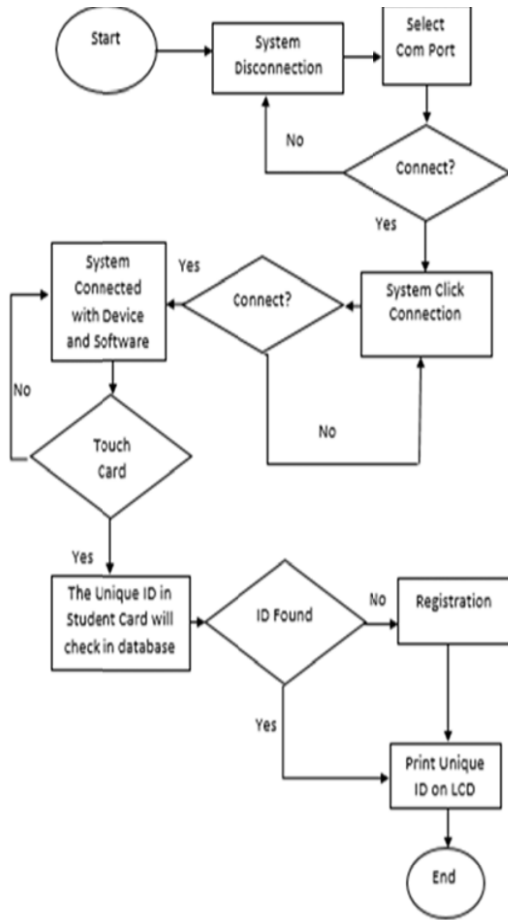


Fig 3: Flow chart of Interface devices between software

III. PROPOSED FRAMEWORK

RFID lab management system needs microcontroller to control the LCD and data transfer from RFID card to web server. Arduinos selected as hardware platform for RFID lab management system. The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (of which 14 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. The assembly language is C/ C++ and it's also have many libraries that help to create or write the program more easily [4].

The basic illustration between RFID card and RFID reader/writer module using the radio frequency[5]. Figure 4 shows the illustration of RFID work. The hardware connection of the system shown in Fig 5 block diagram of a RFID.

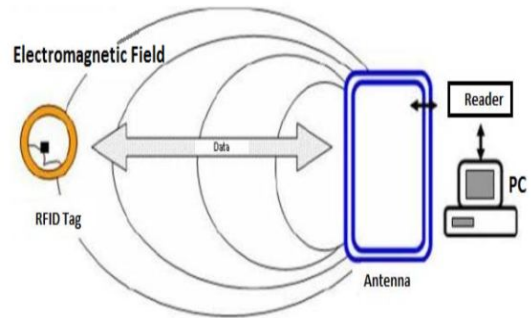


Fig 4: System Architecture

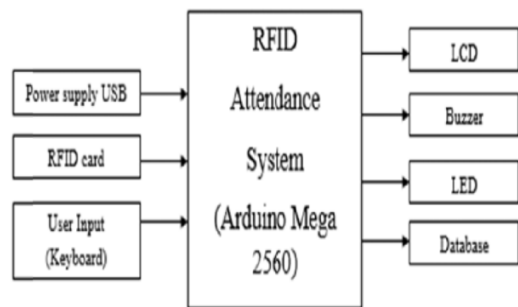


Fig 5: Block diagram of RFID

RFID will detect the unique ID after each card scanned. If success, that mean the hardware does not have any problem in circuit connection and serial communication. The next step is to test the Microsoft Access trace the unique ID card in system database. The process start with LCD print card serial number, after Microsoft Access trace the unique ID in student card it stored in database which is shows that the student is attended. The RFID reader has no unlimited total of card and tag scanned because each has it is own unique ID and data storage is based on database created.

The RFID device need inter face driver to read the data from the device and pass to the software system. The drivers communicate using communication port by using USB. The software which is Visual Basic is used to create interface between user and device.

For each new registration for student, the student need to key in the student data manually. The student needs to fill in data which is name, matrix number, identification card, phone number and course code.

System interface for user is created by using software Visual Basic. The interface called GUI is the effective interface and easy to handle. There are several steps that need to be done to complete the interface. The most importance part is programming of this software. The result of interface is depending of programming.

The student information has been ready by coming into the name, course code, matrix variety, positive identification and signaling. once the registration was triple-crown, the info automatic hold on at information.

For net portal for student may be access through Google Sites. the coed will read any announcement created by the lecturer at the house pages. Home page consists of many menu that is one among it's announcement if any news or work of work that require to be take noted by student. aside from that, student will read their assigned cluster on cluster schedule. therefore from this, every student can understand their own cluster before the laboratory occur initially day of latest semester. what is more, the coed will transfer the work sheet directly from the online. the coed can also refer directly the day of laboratory command within the web site calendar. Student can have access to speak with the person responsible at contact page that is consisting of person responsible contact variety.

IV. CONCLUSION

After finishing the project, it may be all over the RFID research lab Management System may be a project which will improve the system attending in each place particularly university and academy as a result of it'll get the precise info concerning date and time of student attending. Moreover, the RFID research lab Management System can also offer the employees easier to manage the attending in laboratory. Otherwise it's additionally facilitate student review the cluster timetable, assessment, transfer research lab sheet, transfer notes and any longer by mistreatment applications programme. additionally, it will encourage the community to use info technology to boost the amount of educational action into changing into a developed nation. From here, we can create a new level of mentality for nation which is from positive side of thinking minded. This will give benefit to much side whether to human or society. This will courage the people to decrease the usage of paper and used modern method which is paperless.

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