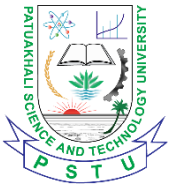
FACULTY OF COMPUTER SCIENCE & ENGINEERING

Project Report on

RFID BASED LIBRARY MANAGEMENT SYSTEM



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DECLARATION

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ABSTRACT

Historically, libraries have employed barcode-based book management systems for book identification, self-check-in, anti-theft, inventory control, and book classification. The process is manual. We suggest an RFID-based library management system that allows for quick transaction processing and streamlines the borrowing and returning of books from libraries with minimal manual labour. The suggested system has the ability to store data electronically that can be read by a reader. Using RFID tags, the system can issue and receive books. It can also use library databases to compute relevant factors like due dates, renewal dates, and fines.

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CHAPTER-01

INTRODUCTION:

1.1 INTRODUCTION:

RFID is a cutting-edge automated method for quickly classifying, arranging, and tracking a wide range of commodities. Today's RFID applications include automatic sorting, theft detection, and inventory tracking. In the near future, data gathering, identification, and analysis will be crucial for certain library activities. Radio frequency identification (RFID) technology is the dynamic link between people, things, etc. RFID-enabled automated libraries are transformed into "self-service stations" that require little assistance from library workers. By implementing self-service "check-in" and "check-out," major delivery delays for library resources are eliminated, and operational effectiveness is increased. It is mostly utilised in libraries to automate procedures for managing books, including circulation, inventory control, check-in, shelf management, and anti-theft. Combined with machinery for computer-assisted sorting. Sorting books is facilitated and accelerated using RFID. The material handling procedure at the library can be automated so that librarians can spend more time interacting with users, hence increasing "user interaction and satisfaction."

CHAPTER-02

METHODOLOGY:

2.1 EXISTING SYSTEM:

The systems used by libraries nowadays use barcode technology. There is a barcode on every book in the library. The barcode's uniqueness changes according to the line thickness. This kind of library administration necessitates manual management. The library's primary operations, including the lending, renewing, and returning of books, must all be manually monitored and managed. Due to the barcode readers' limited capacity to read more than one code at once, there is typically a long line at the issue and return counters. The barcodes must be encoded during manufacturing, and they can only be programmed once. The attributes of the codes cannot be changed once specified. On a sheet of paper, the codes are printed and adhered to the books. The bar-code reader should be in close proximity to the bar code while both loaning out and returning the books.

The creation of the operating manual is necessary to make this feasible. Even with manual operation, it takes a lot of time and effort since the reader must always be put extremely close to the barcode tag for the book to be correctly read. The read range of the bar-code readers is relatively limited, only a few millimetres or so.

2.2 PROPOSED SYSTEM:

An RFID system is made up of several transponders, portable or fixed readers, data input devices, and system software, among other things. The technology's core component, transponders or ID tags, exist in a variety of forms, sizes, and read ranges. The following essential elements make up a complete RFID system:

RFID tags that have been electronically customised with particular data.

A server to receive and decode the information and communicate with the automated library system. A reader connected to the Library Information System. An antenna attached to the reader.

Candidate leaves the library.

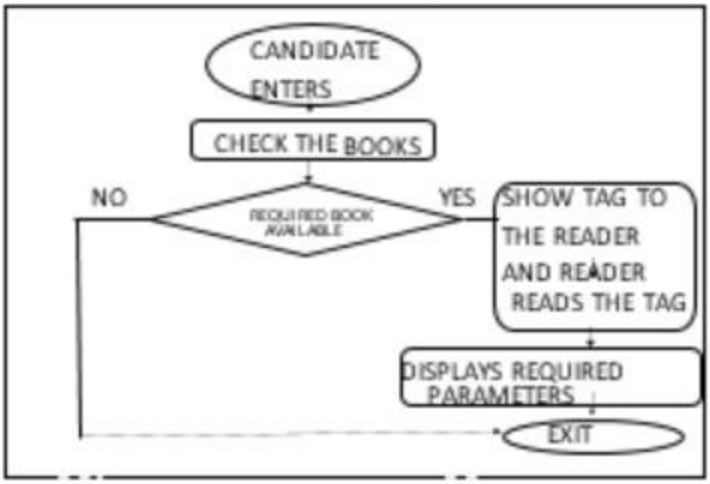

Fig :01

CHAPTER-03

COMPONENT REQUIREMENT

3.1 HARDWARE SPECIFICATIONS

- Arduino UNO
- RFID TAG
- RFID Reader MFRC522
- Jumper Wire
- ARDUINO IDE Compiler
- Buzzer
- LED

3.2 SOFTWARE SPECIFICATIONS

- Python Compiler
- Pycharm Community edition

CHAPTER -04

WORKING PROCEDURE

4.1 WORKING:

An external power source typically powers an RFID reader, which is always switched on. The os cillator inside of it produces a signal with the desired frequency when it is turned on, but because the signal strength will be very low (which could cause the signal to fade off if it is transmitted di rectly), it needs to be amplified, which can be done using an amplifier circuit. We also need to m odulate the signal in order to propagate it over a greater distance, which is accomplished by a mo dulator. Now that the signal has undergone all these enhancements, it is ready to be broadcast. An antenna can do this by converting the electrical signal into an electromagnetic signal. The closen ess of an RFID reader allows it to detect tags everywhere it receives signal. When an RFID tag ap proaches an RFID reader, the tag detects the reader's signal using a built-in coil that turns the RF signal it receives into an electrical signal. The microprocessor within the tag can be powered up w ith just this converted signal. The microchip's job is to communicate the data (unique ID) that is s tored in it once it is switched on. The signal is sent into the air through the same coil it was receiv ed through. A transceiver is also a part of the RFID reader. The original data may be collected on ce the signal from the tag is received by the RFID reader through its antenna, and it is then proces sed further by a microcontroller or a microprocessor to complete a particular task.

Then a PYTHON Interface is used . If anyone wants to update the book details be updated or regi stred they can do so . Even they can know where is the books belong even mentioning the colum n and section of the books . It will be saved in database . Anyone can update the information . Th ey can keep track at which time the book was borrowed .

4.2 INTERFACING:

A RC522 based reader linked via the Serial Peripheral Interface (SPI) interface, as illustrated in fig, is used by the library to read and write several types of Radio-Frequency Identification (RFID) cards on the Arduino UNO platform.

The Arduino is connected to the RFID reader in the manner described below:

The Arduino's 3.3v pin receives 3.3V.

The digital pin is supplied RST 9.

The Arduino's ground pin is provided GND.

IRQ is not connected.

MSO is connected to pin 12 of the digital interface.

MOSI is linked to pin 11.

SCK is connected to pin 10 of the digital interface.

SDA is connected to pin 9 of the digital interface.

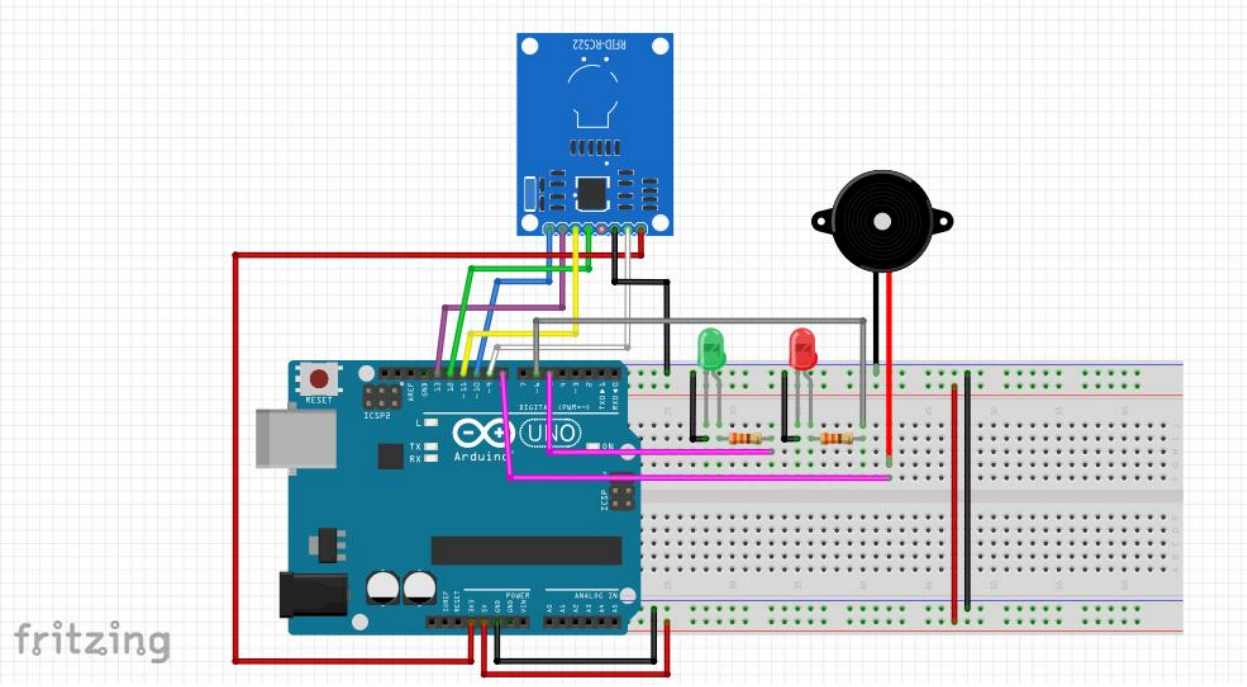

Fig: 02

4.3 RESULT:

To handle books automatically and effectively, libraries must deploy the RFID-based library management system, which is a special system. Utilizing RFID readers, efficiently identify and handle books. Key advantages of RFID in libraries are time savings, rapid access to books, and the elimination of human mistakes. The website or the Android app are only two examples of interfaces where private transactions may be observed. Utilizing a user interface designed for librarians, you may manage your data. As a result, automation and control have both been used

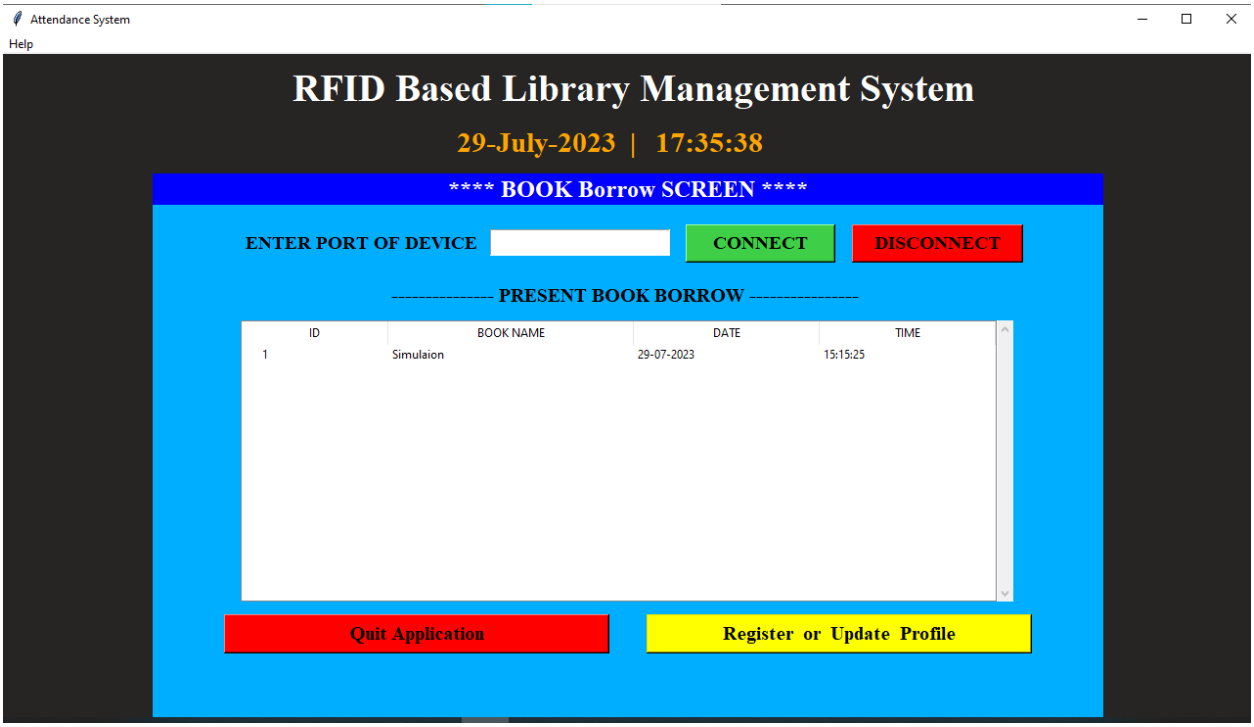

Fig:03

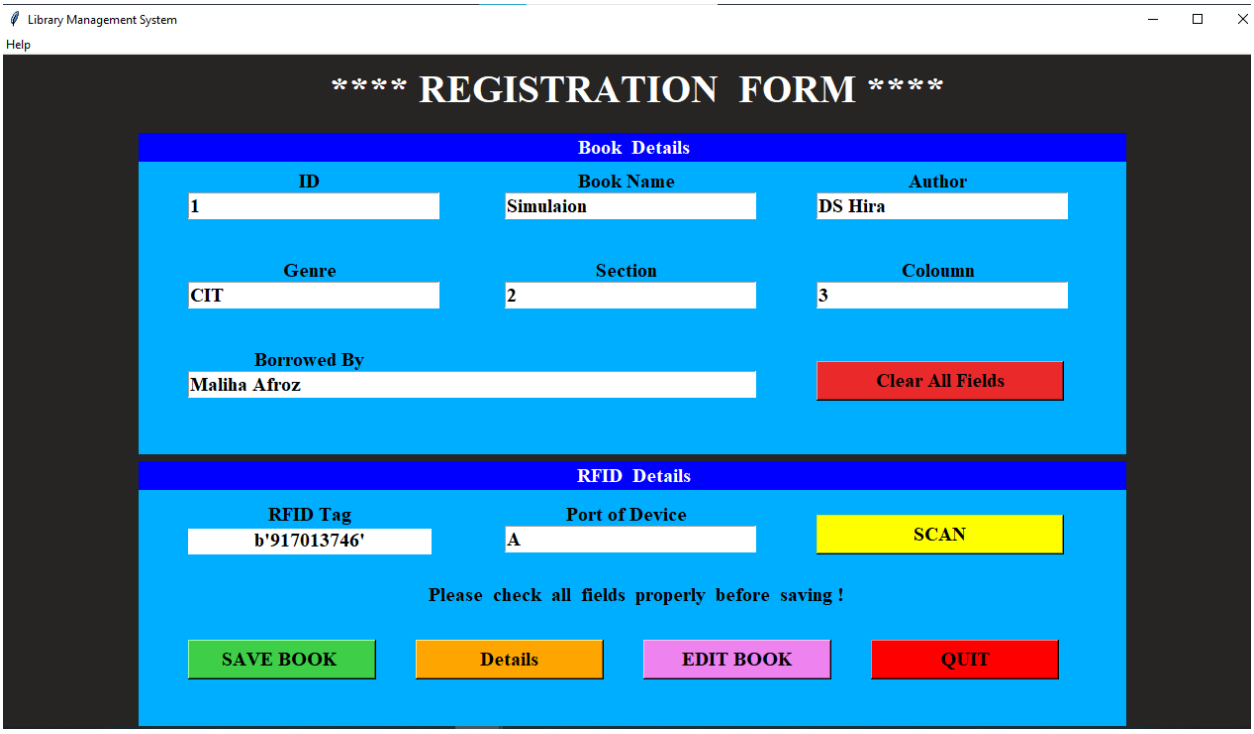

Fig: 04

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	RFID		ID		BOOK NAME		AUTHOR		GENRE		SECTION		COLOUMN		BORROWED BY	
2	b'917013746'		1		Simulaion		DS Hira		CIT		2		3		Maliha Afroz	

Fig:05

CHAPTER-05

CONCLUSION

5.1 CONCLUSION:

The usage of RFID in libraries speeds up the procedures for borrowing, monitoring, and searching books, freeing up personnel to focus on providing better user-service. RFID tags and readers must be of high quality to produce the optimum performance. The information that has to be expressed in tags is another factor in how well technology is used. These programmes can improve customer service, reduce book theft, reduce labour expenses significantly, and continuously update records of new book collections