

IoT Based Smart Library Management System

AIM: “IoT Based Smart Library Management System” is to maintain the records of book issue, stock maintenance, book search, fine collection, and all necessary requirements to manage the day to day operations and also to control excess use of the energy resources.

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Abstract—Library management refers to the use of system to manage the typical operations of libraries such as cataloging and maintaining the records. Management is a process of using the machinery and software for easily working and saving the human power time. The project is based on Library Management. The user will command the System to issue a particular book which is required. The System will fetch for the book from the database of the library. The System will scan for the book through the database or in the mentioned bookshelf. Once a book is found it is booked by the System, and issued to the user on the counter. The project gives the most efficient way to maintain the library. Hence it will reduce the use of manpower needed in the library.

Keywords— *Pressure pad, WSN, Xampp*

1. INTRODUCTION

A library is a collection of books; it provides service to members. There is a need of librarian to issue the book and note down the details of the students and books. This might be an easy task in case of a small library. Also, to search the book by the human take a lot of time, many times the book gets overlooked by the human eye. The solution to this is using the Android application by which the user can issue and return the book. Management is a process of using the machinery and software to

keep records easily and saving human power and time. The main purpose of library management is to free the librarians and library staff and allow them to contribute more meaningfully to the spread of knowledge and information.

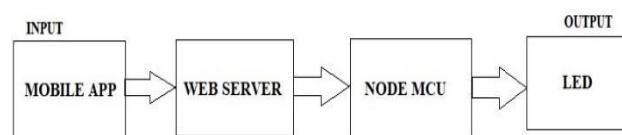
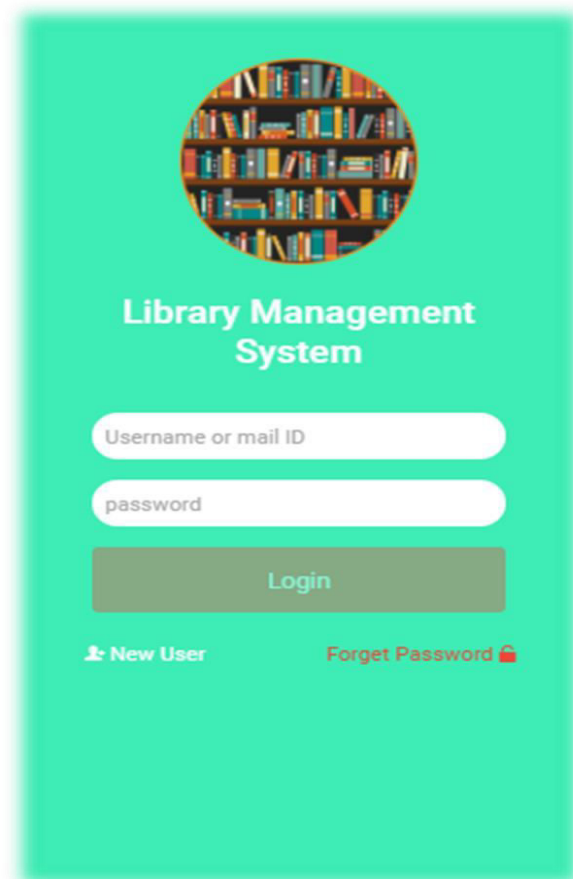
2. METHODOLOGIES

Here the main role is of hardware and software part. Here we have a website developed for the admin or the librarian which will keep and track records of the books which are issued by the students which are been validated by using an OTP. This method helps to reduce the huge piles of paper work and helps to retrieve the data in minimum span of time. And the second thing which we have implemented to conserve energy is the hardware part of the project which operates in such a way that; we have placed IR sensors for obstacle detection which is used when any student sits on the chair in the library then sensing the obstacle it will automatically switch ON the lights and fans of that particular table and same vice-versa. When the student leaves his place the lights and fans will be turned OFF. So by using this strategy we conserve the electricity.

3. IMPLEMENTED MODULE

- **Arduino Mega 2560:** It is a microcontroller board based on the ATmega2560. It has 54 digital input and output pins, 16 analog inputs, 4 UARTs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header and a reset button.
- **Relay Module 5v:** This small relay board works from a 5v signal. It uses a transistor to switch the relay on so can be connected directly to a microcontroller pin.
- **IR sensor module:** an infrared sensor is an electronic device that emits in order to sense some aspects of the surrounding. It can measure heat of an object also it can detect motion of object.
- **LCD 16*2:** An LCD is an electronic display module which uses liquid crystal to produce a visible image.
- **DHT11 sensor:** This features a calibrated digital signal output with the temperature and humidity sensor capability.
- To make the hardware interact with software we have used the software applications such as Ionic framework version 1, Angularjs, Bootstrap 4, PHP 7, MySQL

4. OUTCOMES



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CONCLUSION

In this system, we have presented a Library Access Application, developed for Android using MySQL Database. The Library Access System Application saves users valuable time by making complete procedure online. The of Library will not only improving the effectiveness system but also reduces the human load thereby indirectly improve the human resource and reduce the excessive consumption of resources of the library. Indeed, helping in the process of “**Library Management**”

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