RFID Based Library Management System

**Abstract**

Libraries are very important aspects for humans. They are essential in acquiring and retaining the knowledge of a person. But the earlier library system has caused many problems. This project helps to identify the large number of tagged books using radio waves. The database shows the availability of the book in the library so that the student can search in the database and if available, they can collect book from the library. It helps to handle the issue, renewal and return process via RFID tags easily. If the student failed to return the book after the due date corresponding fine will be generated based on the time period. RFID.

Every educational institute has the library and an existing library management system uses manual system and bar-code technology for accessing the book. But with largely increasing the number of books in the library it causes human error, consumes more time and become less efficient. It is important to digitalize the existing library and the problem of barcode technology. The drawback of the above-mentioned technology can be overcome by using RFID technology. There is a rapid development in this technology which has been used in various applications. RFID system helps in efficient collection, management and distribution of books. It will track the books and makes issue/return of the book process easier. Database is created to store the information of the books available in the library, so that the user can access it for collecting the books. It helps to authenticate the registered user to avoid accessing from unauthorized user. GSM module is used to provide alert message for the registered user during return process. It is implemented with theft detection system to identify the theft action that takes place in the library. RFID has three parts- a scanning antenna i.e., RFID reader, a transceiver and a transponder i.e., the RFID tag which is programmed with information and it is located on the objects to be identified. The RFID technique uses electromagnetic coupling for data exchange between the reader/writer and the tag. When RFID tag passes near the area of scanning antenna, it detects the signal from antenna and the chip get activated and transmits the information. The proposed system is more efficient and provides more easy option for the registered user.

**Block Diagram**

Android app

Microcontroller unit

Firebase Database

RFID Reader for book/User Identification

Push button

RFID for Theft Detection

LCD Display