**MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

**Library Automation using RFID**

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| **Capstone Project code** | LAR |

-Ho Chi Minh City, 06/01/2015-

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# Table of Contents

[Table of Contents 3](#_Toc408745181)

[List of Tables 3](#_Toc408745182)

[Definitions, Acronyms, and Abbreviations 4](#_Toc408745183)

[A. Report No. 1 Introduction 5](#_Toc408745184)

[1. Project Information 5](#_Toc408745185)

[2. Introduction 5](#_Toc408745186)

[3. Current Situation 5](#_Toc408745187)

[4. Problem Definition 5](#_Toc408745188)

[5. Proposed Solution 5](#_Toc408745189)

[5.1 Feature functions 5](#_Toc408745190)

[5.2 Advantages and disadvantages 5](#_Toc408745191)

[6. Functional Requirements 6](#_Toc408745192)

[6.1 Manage books 6](#_Toc408745193)

[6.2 Manage users 6](#_Toc408745194)

[6.3 Check in information 6](#_Toc408745195)

[6.4 Thief prevention 6](#_Toc408745196)

[7. Role and Responsibility 6](#_Toc408745197)

# List of Tables

[Table 1: Roles and Responsibilities 6](#_Toc377162038)

# Definitions, Acronyms, and Abbreviations

|  |  |
| --- | --- |
| **Name** | **Definition** |
| LAR | Library Automation using RFID |
| RFID | Radio Frequency Identification |
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# Report No. 1Introduction

## Project Information

* Project name: **Library Automation using RFID**
* Project Code: **LAR**
* Product Type: **Hardware Design & Desktop Application**
* Start Date: **Jan6th, 2015**
* End Date:

## Introduction

This project is about developing an automatic library management system which uses RFID technology. Therefore the system can automatically create and maintain records about the person who has taken books and which books has been taken.

## Current Situation

In some traditional library still exists, the returned or borrowed books still so manual. The students must find out books on shelves or look for the number and title of books, then contact the librarian to start proceedings. It will have the form for students to fill information of content, books, date…

Currently, some libraries have conducted modernized by "barcode solutions". The library is using "Library System" software to manage the operation of the library. In this software with the participation of "Scanner", machine works to help librarians and book easily manage your library card. Relatively convenient, fast and accurate management easily borrow and return books; and in the professional work of other libraries.

## Problem Definition

Nowadays, most libraries are managed and saved on papers and files. This method actually has many limits. There are some reasons that we should change the system of libraries.

About the librarian: the libraries have many books and lot of information need to be managed. Therefore, the current system needs librarian work hard to manage.

About the books borrowing procession: The current system takes many steps to borrow book therefore it needs many people. Managing a large amount of document takes much times and complicate. If the students want to borrow books, librarians will search and management will become more difficult.

To sum up, for the time goes by, the system of current libraries is getting old-fashioned because of its wasting time and inefficient. Therefore, we need to produce a new, more efficient system.

## Proposed Solution

RFID technique is widely used now. Our project uses RFID in managing books in library with expectation of help people manage library more efficiently.

### **Feature functions**

* Manage readers: keep track of readers’ information about which books he/she has taken and if they has been returned or not.
* Manage books: maintain book information.
* Prevent book theft: build a RFID gate to prevent readers from borrowing books without checkout.

### Advantages and disadvantages

The advantages and disadvantages of the proposed solution:

* Advantages:
  + Reduce time for management: books with RFID tags can be read at fast rate. RFID readers can read many items simultaneously. It is easier to store, they do not have to keep a lot of papers.
  + Keep data in secure: data in RFID tags can be encrypted.
  + RFID tags are read/write devices: data of RFID tags can be edited for another uses.
* Disadvantages:
  + Cost more than barcode system: the total money to buy RFID tags for book management system is expensive.
  + Collision between readers or tags: prevent tags from responding information to readers.
  + Scanning issues: RFID have problems with metal and water.

## Functional Requirements

Function requirements of the system are listed as below:

### Manage information

* Manage books by ID, title … to define and arrange book. Define books status to know who is keeping or borrow logs.
* Manage user (student) by ID (student), name, book own… to define and do action. Define student status to know which book he is keeping or is he activate or deactivate.

### Check security

* User microchip that contains state and some info of book. A scanner will check it’s legal or not.

### Management borrow books

* Book can be search easily. Then it will be borrow by user. Information about state of user will be update to database

### Management return books

* When the book return, the information about borrowing (log info) will be show and then delete to confirm, do some business method and complete borrow processing. The log info will be update to database.

## Role and Responsibility

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
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*Table 1: Roles and Responsibilities*