The Development Of Information Resources in Library Search System Based on RFID

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Abstract

The objectives of this research were to develop the development of information resources in library search system based on RFID. The research methodology was composed of three steps. Firstly, the IR form and model were synthesized through gathering and elicitation IR. Secondly, the IR system was analyzed, designed, and implemented. Last, the IR system was tried on the experts. The processes we studied the related information, selected the application prototype based on studied criteria, and developed the system using JAVA language and MySQL database.

The results of the research showed the following:The design was synthetic model to guideline for design as follows:

A) The Client site was operated the user wants to use system through Web browser.

B) The Web server was operated the system.

C) The Database server was operated the system consists of information management systems that the administrator were managed data such as user data management in organization.

The analysis of the evaluation of system efficiency by the experts found that the system efficiency was at the high level of five aspects with a mean of 4.18 and a standard deviation of 0.34 can be used. (Usability Test were at very good ($\overline{X}$ =4.80, S.D. =0.45), Functional Requirement Test were at good ($\overline{X}$ =4.00, S.D. =1.00), Security Test were at good level ($\overline{X}$ =4.33, S.D. =0.58), Output Validation Test were at good ($\overline{X}$ =4.00, S.D. =0.71), and Functional Test were at good ($\overline{X}$ =3.80, S.D. =1.30).

Keywords: Information Resources, *RFID*

1. Introduction

One of the most important recent RFID applications can be found in library systems. Libraries are facing the challenge of managing the growing size of collection and keeping operation budget low. RFID seems a very promising technology here where books can have an embedded RFID chip with all relevant information. The advantages of RFID over barcode or magnetic strip systems can be seen from several viewpoint. Since RFID tags can be read through an item, borrows can check out several books at one scan. RFID could help staff speed up inventory management process, reduce human errors and increase the accuracy of inventory record. Smart shelves are used to pinpoint the exact location of books in a library.

2. Objective

The objectives of this research were to develop the development of information resources in library search system based on RFID.

3. Literature Review

3.1 RFID

RFID (Radio Frequency Identification) allows an item, for example a library book, to be tracked and communicated with by radio waves. This technology is similar in concept to a cellphone. RFID is a broad term for technologies that use radio waves to automatically identify people or objects.There are several methods of identification, but the most common is to store a serial number that identifies a person or object, and perhaps other information, on a microchip that is attached to an antenna.(Shahid, 2005)

RFID can be used library circulation operations and theft detection systems RFID-based systems move beyond security to become tracking systems that combine security with more efficient tracking of materials throughout the library, including easier and faster charge and discharge, inventorying, and materials handling.(FAQ,2004)

3.2 IR

IR (Information Resources) is knowledge and experience that is important to identify any themes or content. Compiled and processed by filtering image using sign language and other codes as well as recorded on many types of materials. The source is divided into three major categories.

- Printed materials such as books, journals, annual reports.
- Non- Printed materials such as CD-Rom, DVD, Video etc.
- Electronic resources

3.3 Database server

A database server forms the back-end or server component of a client-server system, which can be accessed by one or more clients, or front-end applications through the use of query language, typically MySQL. The server is responsible for updating records, ensuring that multiple accesses is available to authorized users, protecting the data and communicating with other servers holding relevant data. The client-end requests records and then modifies them, while the server tracks records for the client and adds new ones.

3.4 Java

Java is a general-purpose, class-based, object-oriented computer programming language that is specifically designed to have as few implementation dependencies as possible. Java applications are typically compiled to bytecode (class file) that can run on any Java virtual machine (JVM) regardless of computer architecture. Java of the most popular programming languages in use, particularly for client-server web applications. The language derives much of its syntax from C and C++, but it has fewer low-level facilities than either of them.

4. Development of Information Resources in Library Search System

System Development Life Cycle (SDLC) in reference to adaptive waterfall process as adopted and described by Dennis and Wixom. The major phase consists of Planning, Analysis, Design and Implementation.

4.1 Analysis and Design

Use-Case View

This view presents the users perception of the functionality provided by implementations of the system.

Use Cases

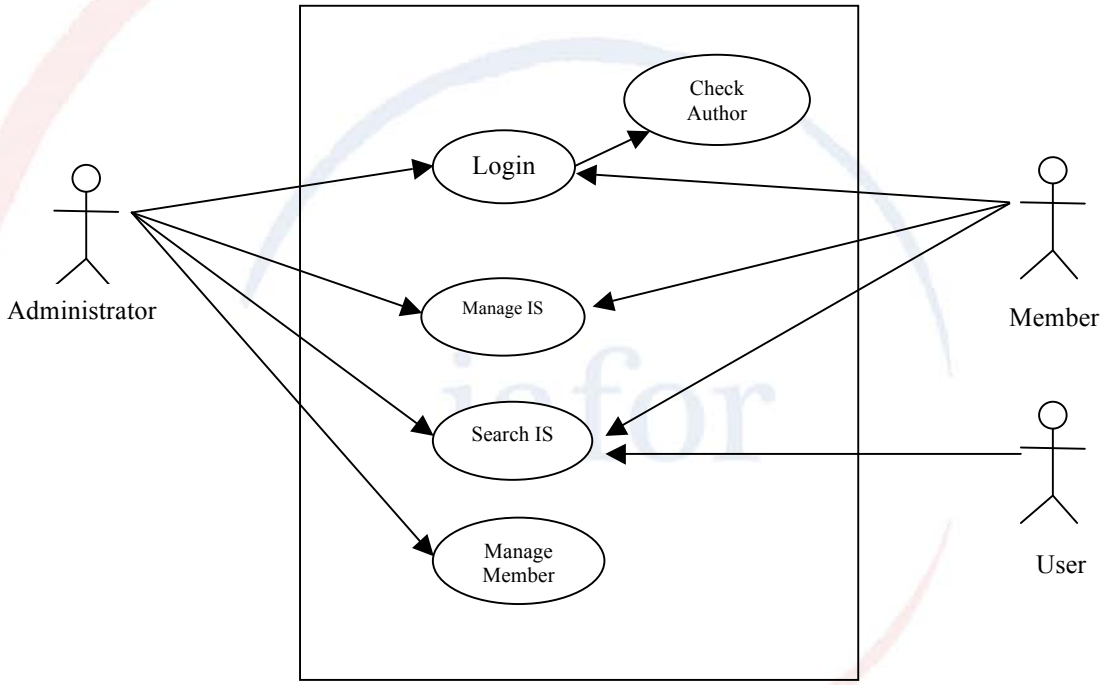

Fig. 1. Uses-case View

4.2 The System Architecture

The architecture of Information Resources in Library Search System can be purposely created as shown in Figure 2.

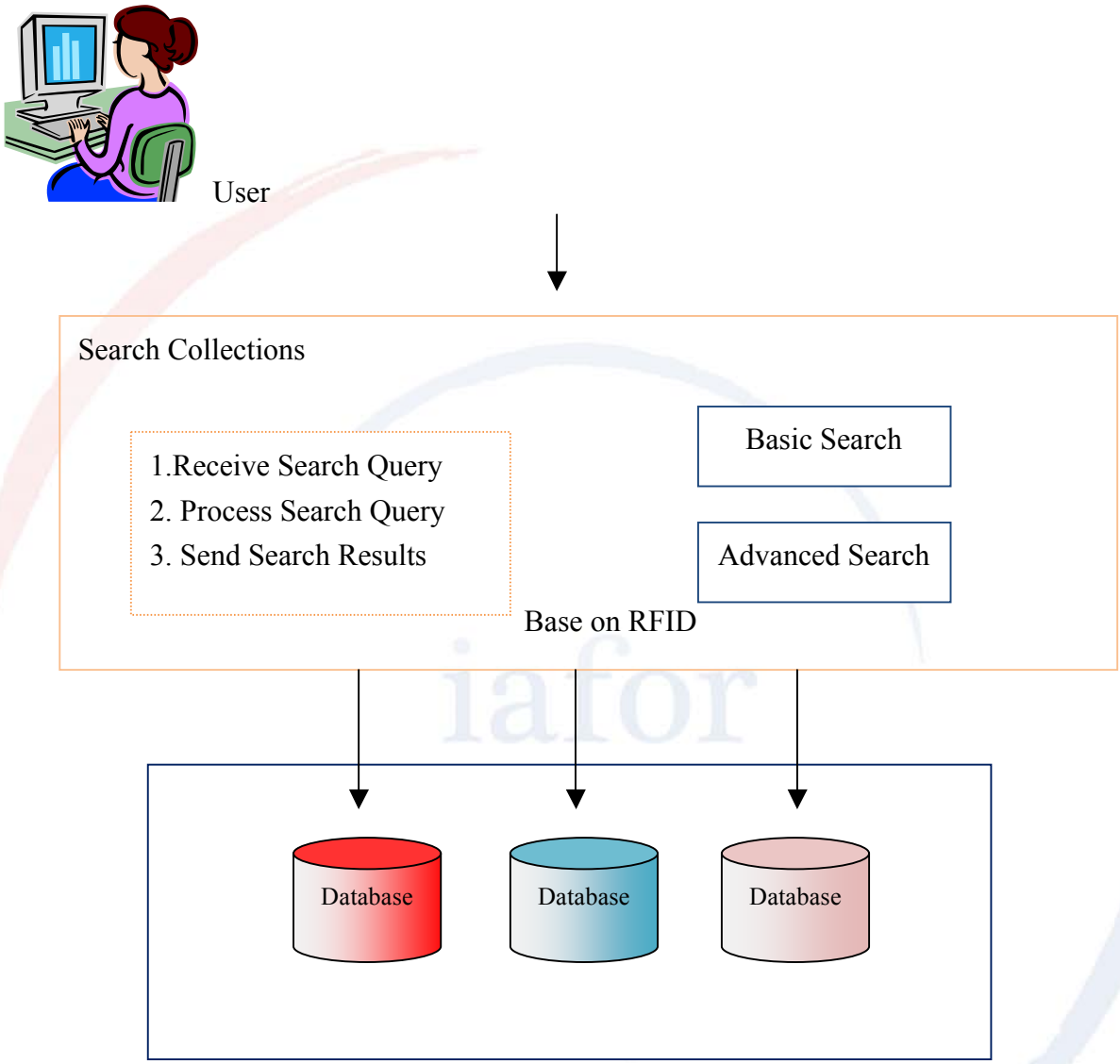

Fig. 2. Schematic diagram of the components and processes involved in the proposed web interface and the database

5. Results

The Information Resources in Library Search System is a web system which serves as an online central source of information on IT technology and research. This paper covers the development process and the content of the Information Resources in Library Search System base on RFID. The results was a development system that consists of 5 part as follows :

1) Functional Requirement Test
2) Functional Test
3) Output Validation Test
4) Usability Test
5) Security Test

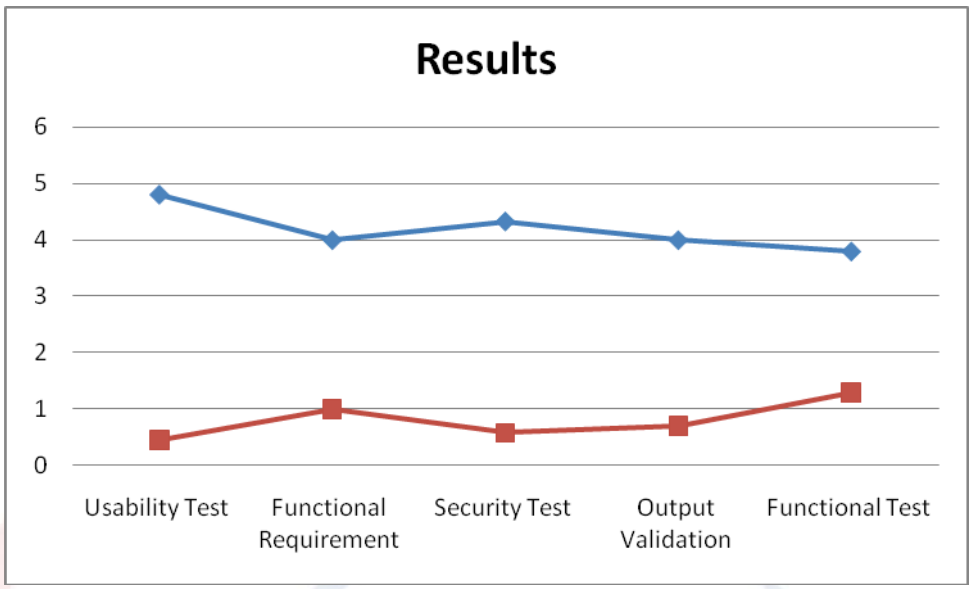

Fig. 3 Analysis results

The analysis of the evaluation of system efficiency by the experts found that the system efficiency was at the high level of five aspects with a mean of 4.18 and a standard deviation of 0.34 can be used. (Usability Test were at very good ($\overline{X}$ =4.80, S.D. =0.45), Functional Requirement Test were at good ($\overline{X}$ =4.00, S.D. =1.00), Security Test were at good level ($\overline{X}$ =4.33, S.D. =0.58), Output Validation Test were at good ($\overline{X}$ =4.00, S.D. =0.71), and Functional Test were at good ($\overline{X}$ =3.80, S.D. =1.30).

6. Summary and Conclusion

The research methodology was composed of three steps. Firstly, the IR form and model were synthesized through gathering and elicitation IR. Secondly, the IR system was analyzed, designed, and implemented. Last, the IR system was tried on the experts. The processes we studied the related information, selected the application prototype based on studied criteria, and developed the system using JAVA language and MySQL database.

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