DESIGN AND DEVELOPMENT OF IN-HOUSE SOFTWARE FOR LIBRARY AUTOMATION

Sankait Gupta

Assistant Professor,
Govt. Post Graduate College, Rajouri (J&K) India
Email : sankaitmca@gmail.com

ABSTRACT

This paper introduces the design and development of In-House software for the automation of libraries. Information and communication technology (ICT) brought a lot of challenging issues to all facets of the educational system and the library is not an exemption. Automating a library is a unique decision that makes the library activities easy for prompt service delivery to the users. The development of this software is a step towards achieving this goal. The most distinguished feature of this software when compared with other available software is that it is designed for the low budget institutions having lesser collection of books. The software is developed in four stages by analysis, design, development and implementation. As we know that a number of software are already available for the automation of libraries, In-House, Commercial or Free/Open source, like e-Granthalaya, Koha, SOUL, LIBERO, LIBSYS7, VERSO, Lexwin etc. But the major problem with all such software is their high cost as well as requirement of high performance computing facility; which leads less budget institutes to remain out of the services and facilities of ICTs. Our main purpose behind this is to make available library automation services to Government schools and colleges of J&K state of India and even in the entire locations of the country located in remote areas.

Keywords: *Information and Communication Technology, Library automation, low budget institutions, College and School libraries.*

1. Introduction

Now a day, Library Automation has become the buzz word in library profession and has become a bare necessity for any libraries and it is worth mentioning that Information and Communication Technologies (ICTs) have exerted a profound influence on traditional academic libraries. In this field, several libraries have chosen the method of automation and computerization to overcome the inadequacies of traditional methods of working in the libraries like various house-keeping operations including acquisition, cataloguing, circulation, OPAC, Library administration etc. and report generation of libraries.

It is well known that for the automation of libraries, a number of software, In-House, Commercial or Free/Open source, like *Koha, SOUL, LIBERO, LIBSYS7, VERSO, Lexwin,* e-Granthalaya etc. are already available in the market. But the major problem is the high cost of such software as well as requirement of high performance computing facility; which leads less budget institutes to remain out of the services and facilities of ICTs.

First, we talk about Commercial software: according to a study the tentative cost of commercial software varies from few thousands of rupees to lakhs of rupees [1]. So these software are very costly and not affordable by many institutions of our country. Now as far as free/open source software are concerned, one can download them from Internet free of cost

and use them. But to download, first the institution needs Internet connection and apart from this there are many system requirements to run these software. If we talk about e-Granthalaya, developed by NIC Govt. of India, it needs a minimum of 2 GB of RAM and more importantly it runs only on Windows operating system and no component is installed at user end and moreover it needs high speed Internet connection (minimum 4 MBPS)[2]. If we talk about KOHA, one needs to install KOHA, Apache web server, Perl and MySql Server [3].

The condition is quite worse of Government schools of the country in the perspectives of automation of libraries. This developed software can run on any machine including P-IV and having RAM as low as 128 MB. It is possible for Govt. Schools and newly created colleges of our state (located in remote areas, having no Internet connection and having old computer systems) to install and use this software easily. Moreover, this software run on both Windows and Linux operating systems. The efforts are also in process to implement this software for the automation of our college library.

2. Methods

2.1 Study Design

The study is a methodological research for developing an automation software for libraries for carrying out various library functions like acquisition, cataloguing, circulation, OPAC, Library administration etc.

2.2 Development Process

The In-House Library Automation software of the present study was developed using Python programming language [4] and SQLITE database[5]. It is composed of four stages of analysis, design, development and implementation.

In first stage i.e., analysis, the requirement of the library automation software was analyzed. In this process, I studied the various features of already available library automation software and listed various limitations of these software.

In the design stage, I studied the various functional requirements and designed a number of user interface screens that are required for the library automation software.

During the development stage, first the database is created and then the actual library automation software is developed by creating various forms.

The implementation stage actually involves installing the library automation software in some of the institutions to check its working. The developed library automation software was checked by entering the real data of our college library and carried out the various house keeping operations of the library using this software for a certain period.

The complete functionality of the software is shown by data flow diagram in Fig.1 (context level diagram).

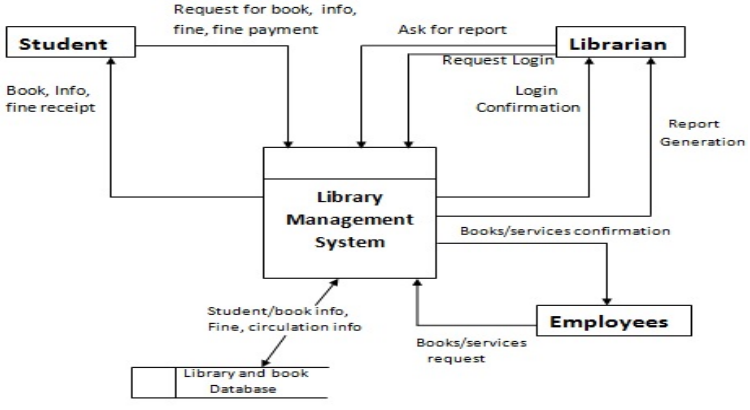


Fig. 1 Context Level Diagram

3. Results

3.1 Analysis

Two different areas were analyzed before developing our library automation software.

First, I checked various institutions to see the library automation status and to our surprise maximum of them were not aware about the concept of library automation. According to the website of J&K School Education Department, there are 6665 Govt. Middle Schools, 1194 Govt. High Schools and 597 Govt. Higher Secondary Schools in J&K [6]. As far as District Rajouri is concerned; which is first target for our library automation software, there are 412 Govt. Middle Schools, 76 Govt. High Schools and 41 Govt. Higher Secondary Schools [7] and in none of these schools, library is automated. All these schools have a library comprising of a good collection of books according to their infrastructure. Most of these schools have a computer system (old like Pentium-IV with 128 or 256 MB of RAM) either provided by the Government or Indian Army under Sadhbavna scheme.

Secondly, we analyzed various library automation software already available in the market. These software come under three categories viz: In-House, Commercial and free/open source software. We found that commercial software are too costly for these institutions to afford and they don't even need such highly featured software. They don't even go for the free/open source software because first they need Internet connection to download such software which is not possible for all the institutions and secondly such software need high performance computing facility.

3.2 Development

3.2.1 Database

First the database is designed consisting of many tables using SQLITE Database. There is a table named Student storing the information related to students like roll number, name, address etc. Then there is Book table storing the information of the books like book id, title, author name, publisher etc. And then the issue/return table containing the information of issued book's details, student's details, date of issue, date on which book is to be returned etc. The relationship between various functional units (entities) within the database is represented by an ER diagram in Fig. 2.

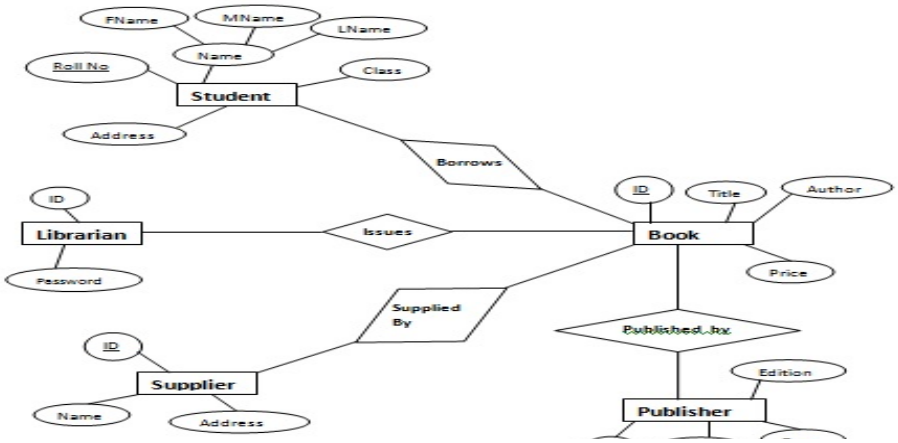
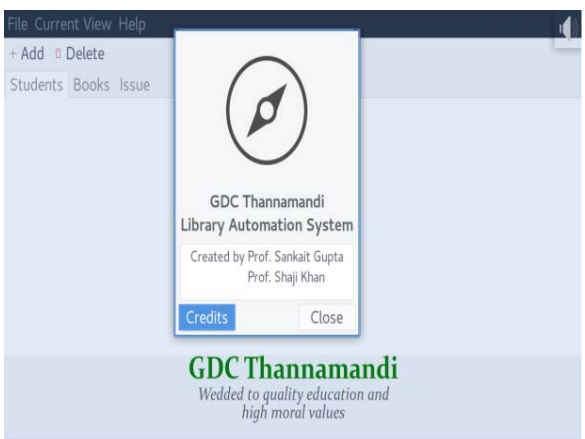


Fig. 2 ER Diagram

3.2.2 User-Interface Screen

This library automation software comprises of a number of form designed in Python programming language. The main form is shown in Fig. 3. It shows different menus like Students, Books, and Issue. It also contains "*Add*" and "*Delete*" buttons to add or delete the student/book records. Student page is shown in Fig. 4 which is used to display/add/delete student's records. Fig.5 shows Book Page which is used to display/add/delete book's records. In Fig. 6 book issue/return details are displayed.



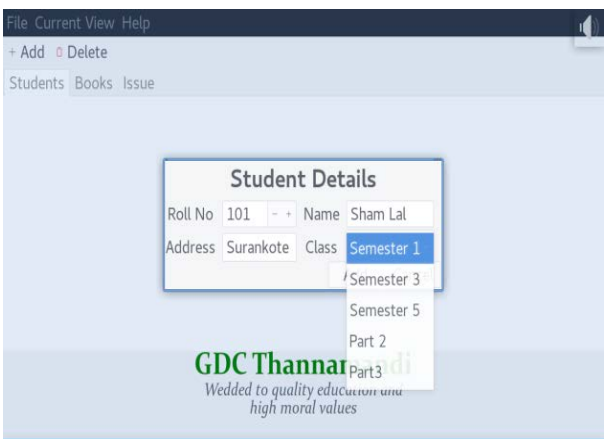
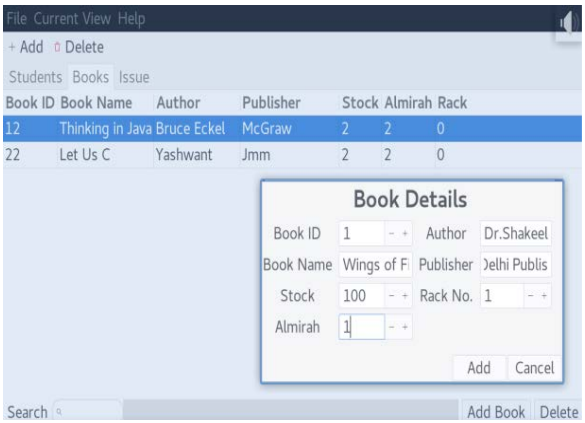


Fig. 3 Screen shot of main page

Fig. 4 Screen shot of student page



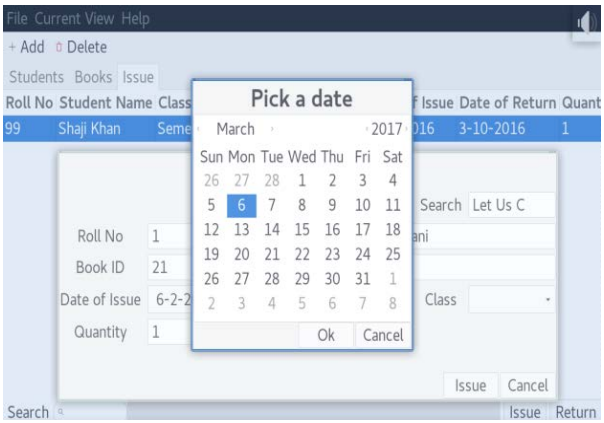


Fig. 5 Screen shot of book page

Fig. 6 Screen shot of issue/return page

3.3 Implementation

The developed software was checked for a trial run and tested with a data of nearly 100 students and 200 books and thereby tested all the operations of library.

4. Conclusions

In the study, the design and development of the library automation software passed through four stages namely analysis, design, development and implementation and a proper development process was followed. The efficiency and working of the software was checked by testing it on trial basis and performed the various library house keeping operations like acquisition, cataloguing, circulation, administration etc.

Now the next step is to install and use this software at various Government schools and newly created colleges which are still deprived of the concept of library automation. This software will be very useful for these institutions to keep track of their library and to perform various library housekeeping operations through computers.

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