

Information system for school libraries

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Abstract – This paper describes school library application for elementary and high school facilities in Serbia. It is a software solution that enables quick and comfortable work to librarians. Its purpose is keeping evidence of all books and magazines in a library and retaining information regarding checkout of these books and magazines. It considerably shortens time needed to find a person that borrowed particular book, data regarding book funds of the library and to generate reports needed for library functioning. Apart of evidence regarding borrowed and returned books, the program enables sending complete book list on the Internet in XML format. The list is sent by FTP on certain location at the server where school presentation is, and then it is parsed and shown in accordance to wishes and needs of particular school.

Key words: school library, XML, FTP

I. INTRODUCTION

The library is much more than a building or a room full of books [1]. It is primarily a place where knowledge is widened and information found, and only after that, it is a distributor of books and magazines.

The school library program is a part of general educational plan of the school and encompasses:

- educational activities
- library activities
- cultural and public activities
- other activities (advanced training, cooperation with professional organs in the school)

School libraries are part of two systems: school and library, therefore their work is regulated in two ways – by education regulations and by library regulations. These regulations are complementary to each other and represent unique basis for application of work in school libraries.

The role of librarian is very important in every library [4][5]. The Yale University Library has well-established research education programs and at beginning of the fall 2008 semester, all 1,320 incoming students in the Class of 2012 were assigned their own Personal Librarian or “PL” – one of 32 Yale librarians who serves as the students’ primary point of contact in the library [11][12].

Wealth of every library is measured by the number of books and magazines it owns. Wealth of the library induces students to come to the library and to read. During the 2000-01 school year, Williams Intermediate School in Davenport, Iowa, improved use of its library dramatically. The original Colorado study, as it is

popularly known, found that the size of the library in terms of its staff and its collection is a direct predictor of reading scores [9]. The amount of test score variation explained by this school library size factor ranged from five to 15 percent across various elementary and secondary grades and while controlling for a variety of other school and community differences. Indirect predictors of achievement included the presence of a professionally trained librarian who plays an active instructional role and higher levels of spending on the school library [3].

The aim of every library is to continually increase and modernize its book funds [2]. With increasing of book number there is a need to introduce an information system that will enable quick search of books and magazines, as well as keeping evidence on their checking out and checking back [6]. It is also necessary to generate quick reports on most-read books, most active students and classes so that school may award them and to induce in that way other students to read more. A list of all books may be sent to the Internet and shown at the school website so that students may know which books are available at the school library [8][10].

The school library application, presented in this paper, fulfills all these demands.

II. PROGRAM REALIZATION

Development of the application for school libraries was realized using C# programming language. This is one of young programming languages, developed in 2002 as a part of Microsoft .NET Framework. C# is object-oriented programming language directly oriented to development of application in .NET Framework platform. Version 4.0 is used in the realization.

The application is logically divided into 5 units. These units are shown in upper part of application, below the menu line. These units are:

- Checkout
- Check-in
- Entry
- Changes and
- Reports

By choosing one of those options, appropriate form in central part of application window is opened. Sub-options are specific for every option and their number varies depending of option chosen. Main window of application is shown in Figure 1.

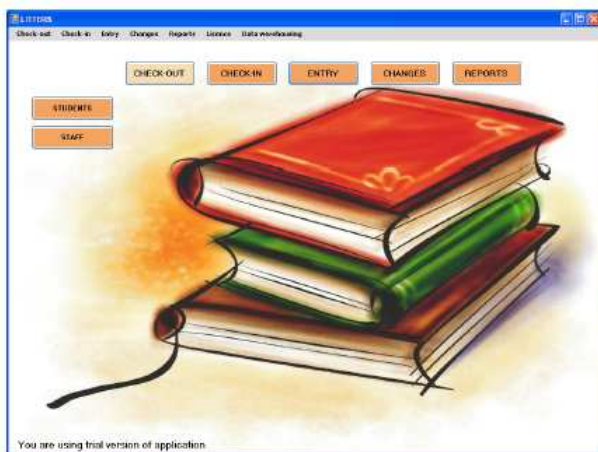


Figure 1. Main application window

A. Checkout

Checkout, together with check-in, is most often used action in school library functioning. Therefore, these two options have the first two places in organization of the application. This option has two sub-options:

- checkout by student and
- checkout by staff

Both sub-options are realized in the same manner, but they are separated due to logical difference between data regarding staff and students in a school. When checking out, it is necessary to enter an identification number from library card for a student or a staff member, as well as inventory number of a book. Checkout date is automatically set to current date and check-in date is three weeks later.

This is usual period for book borrowing, but it may be changed depending on school preferences. Check-in date has informative value, in order to remind a student or a staff member when to return a book to the library. When checking in a book, present date will be entered and saved in database. When entering a number of member card for a student or a staff member, as well as inventory number, lower part of the form is automatically filled in with information regarding the student/staff member and the book. This information enables a librarian to check whether information in database is correct and to amend if necessary in order to achieve full functioning of a system.

When entering checkout data it may happen that a student or a staff member has forgotten his library card. In this case, by pressing button "Find" (in lower right-hand part of the screen) a new form is opened, enabling a librarian to find the identification number for the name and surname, allowing the member to checkout a book anyway.

B. Check-in

Check-in is the process when a student or a staff member brings back to library a book he/she borrowed before.

This option has two sub-options:

- check-in by student

- check-in by staff

In this instance, identification number of a library card is entered, as well as inventory number of a book, and a search is done by data on checkout books. Data in database that connects a book with a student includes a status that a book is not returned yet. When a book is returned, this entry is not deleted, but its status is changed to notify that a student or a staff member has returned a book. An entry remains permanently in database in order to note how much every student or a staff member was reading, or which book was most popular.

C. Entry

An entry is a process of filling the database with data regarding given school library. Sub-options in this process are as follows:

- book entry
- magazine entry
- student entry
- staff member entry
- donor entry
- language entry

Book and magazine entries are filling the database with data regarding library funds. All relevant data regarding a certain book or magazine are entered. This is one of first steps after installing the application and it may be time consuming and quite tiresome, depending on number of entries to do. All libraries have more copies of a same book (author and volume) differing only by inventory number. In order to speed up entering data, an "add and copy" button is added, which adds an entry to a database and copies all its fields apart of inventory number field which is left empty. In this way, time necessary to entering all books may be decreased considerably. "Add and copy" button was added also in entering students, since it is usually done for all students from a class. In this way fields "grade" and "class" are copied, while all others must be entered manually.

D. Changes

Data changing process consists of following sub options:

- change in books
- change in magazines
- change in students
- change of staff
- change of donors
- change of language

This allows librarian to change existing data, due to changes that occurred in meantime or because of errors during the first entry.

One of mass changes of data is at the end of a school year, when students are going to next grade. Software has the option to change value of "grade" entry on the next value, while for eight-grade students (in elementary school) and senior students (high school) changes status to "graduated". For those students who failed a year, it is necessary to change value in "grade" and "class" field manually, depending on their new placement.

E. Reports

Reports are generated based on data regarding functioning of a library, which are situated in a database. In the application, it is possible to generate following reports:

- all members
- donors
- alphabetical catalogue
- book inventory
- magazines
- members by grades
- most-read book
- most active student
- expenditure
- non-returned books - students
- non-returned books – staff members

Reports are generated using Crystal Reports. This is the application in wide use for generating reports using data generated in database. Microsoft Visual Studio, which is being used in application development for school libraries, encompasses OEM version of Crystal Reports. Appropriate version is added to installation package in order to enable using it in computers where application is being installed.

III. SHOWING LIBRARY FUNDS AT INTERNET

This application has possibility to upload basic data of books and to create an XML file from these data. This file may be sent using FTP protocol to certain location on server, where a school website is located, so that improves information regarding a school.

When data reach the server, it is necessary to parse and to create a page that will be in accordance to look of other pages. These data are only a review, and it is not possible to checkout books using Internet. The main reason for this is that most of elementary and high schools have no access to high-speed Internet.

The appearance of XML file Books.xml comprising book data is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<Root>
  <Book invNumber="155481">
    <Author>Jeffrey Richter</Author>
    <Title>CLR via C#</Title>
    <SubTitle></SubTitle>
    <UDKNum>2009943026</UDKNum>
    <Language>English</Language>
    <PublishYear>2010</PublishYear>
  </Book>
  <Book invNum="2441157">
    <Author>Matthew McDonald</Author>
    <Naslov>Pro WPF in C#</Naslov>
    <Subtitle></Subtitle>
    <UDKNum>2009943025</UDKNum>
```

```
<Language> English</Language>
<PublishYear>2011</PublishYear>
</Book>
</Root>
```

IV. CONCLUSION

Information revolution gradually spreads over all spheres of human life. Until recently, school libraries had no computer and all keeping evidence for book borrowing has been done using member cards and papers where data were written. Introduction of software for school libraries enables quicker work and keeping evidence, therefore it improves work quality [7]. Searches and reports, which used to take days and days of work, now are being done within seconds. For certain school libraries, this program allows to put their whole fund on Internet, so students may find out from home whether certain book exists in their school library.

A new global trend is to install computers in libraries and to connect them to servers, allowing access to a large number of e-books for all their members. In this way a library fund is considerably augmented and improved, and students have more possibility to find out things they are interested in.

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