БІБЛІОТЕКОЗНАВСТВО, КНИГОЗНАВСТВО

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Maslak Volodymyr,
Doctor of Historical Sciences, Associate Professor,
Head of the Department of Ukrainian Studies,
Kremenchuk Mykhailo Ostrohradskyi National University,
vimaslak2017@gmail.com,
ORCID: https://orcid.org/0000-0002-2898-2400

INFORMATION SYSTEMS IN THE LIBRARY BY UNIVERSITIES IN THE CASE OF THE PROGRAM «LIBRARY»

The purpose of the article is *to develop and implement a computer program for the regularization of the librarian catalog system.* ***The methodology of the study.*** *The selection of factual material was based on the general scientific methods of analysis and synthesis, comparison and generalization; statistical method, methods of comprehensiveness, objectivity. In the process of presenting the main provisions of the article, were used the system-structural and statistical-analytical and descriptive methods.* ***The scientific novelty.*** *The proposed article discusses the documentation aspects of the work of libraries as a factor in influencing the formation of the subject area of a software product. The principles of programming information support for the electronic library system of higher education institutions are addressed in the article, the incoming and outgoing information is analyzed in the electronic library system, the tools that were used to implement the software are described, the architecture and tools used to create databases for the electronic catalog are reviewed.* ***Conclusions.*** *The main advantages of introducing the program into the library of a higher educational institution are identified.*

Key words: *library, computer program, fund, catalog, librarian, reader, university.*

Маслак Володимир Іванович,
доктор історичних наук, доцент,
завідувач кафедри українознавства,
Кременчуцького національного університету
імені Михайла Остроградського

ІНФОРМАЦІЙНІ СИСТЕМИ У БІБЛІОТЕЦІ ЗАКЛАДУ ВИЩОЇ ОСВІТИ НА ПРИКЛАДІ ПРОГРАМИ «БІБЛІОТЕКА»

Метою статті *є розробка та запровадження комп'ютерної програми для впорядкування бібліотечної каталожної системи.* ***Методологія дослідження.*** *Добір фактичного матеріалу ґрунтувався на основі загальнонаукових методів аналізу і синтезу, порівняння та узагальнення; статистичний метод, методів всебічності, об'єктивності. У процесі викладу основних положень статті використовувалися системно-структурний та статистично-аналітичний та описовий методи.* ***Наукова новизна.*** *У пропонованій статті висвітлено документаційні аспекти роботи бібліотек як чинник впливу на формування предметної області програмного продукту. Розглянуто принципи програмування інформаційного забезпечення системи електронної бібліотеки закладу вищої освіти, проаналізовано вхідну і вихідну інформацію в систему електронної бібліотеки, охарактеризовано інструментальні засоби, які були використані для реалізації програмного забезпечення, розглянуто архітектуру та засоби, що використовувалися для створення баз даних електронного каталогу.* ***Висновки.*** *Визначені основні переваги запровадження програми до бібліотеки закладу вищої освіти.*

Ключові слова: *бібліотека, комп'ютерна програма, фонд, каталог, бібліотекар, читач, університет.*

Маслак Владимир Иванович,
доктор исторических наук, доцент,
заведующий кафедрой украиноведения
Кременчугского национального университета
имени Михаила Остроградского

ИНФОРМАЦИОННЫЕ СИСТЕМЫ В БИБЛИОТЕКЕ ЗАВЕДЕНИЯ ВЫСШЕГО ОБРАЗОВАНИЯ НА ПРИМЕРЕ ПРОГРАММЫ «БИБЛИОТЕКА»

Целью статьи *является разработка и внедрение компьютерной программы для упорядочения библиотечной каталожной системы.* ***Методология исследования.*** *Отбор фактического материала основывался на общенаучных методах анализа и синтеза, сравнения и обобщения; статистический метод, методов всесторонности, объективности. В процессе изложения основных положений статьи использовались системно-структурный и статистически-аналитический и описательный методы.* ***Научная новизна.*** *В предлагаемой статье рассматриваются документационные аспекты работы библиотек как фактор влияния на формирование предметной области программного продукта. Рассмотрены принципы программирования информационного обеспечения системы электронной библиотеки заведения высшего образования, проанализировано входящую и исходящую информацию в систему электронной библиотеки, охарактеризованы инструментальные средства, которые были использованы для реализации программного обеспечения, рассмотрено архитектуру и средства, используемые для создания баз данных электронного аталога.* ***Выводы.*** *Определены основные преимущества внедрения программы в библиотеку заведения высшего образования.*

Ключевые слова: *библиотека, компьютерная программа, фонд, каталог, библиотекарь, читатель, университет.*

Relevance of the research topic. Dynamic reform of higher education, its informatization, introduction of modern teaching technologies requires the construction of a new effective system of a library and information support of the educational process. At the university there is a constant process of introducing innovative forms of search and obtaining information from various information sources that users need. There have been significant changes in the organization and management of the library fund display system: a combination of traditional forms of reference and bibliographic apparatus, library statistics, register and registration of documents using information about modern electronic media. In particular, this article highlights the possibility of creating a computer information retrieval program [4, p. 61-63].

Analysis of the main researches and publications. There is a number of publications on this topic as a confirmation of the fact that the activity of libraries in the conditions of the formation and development of the information society constitutes an actual field for research. Researchers who reconsider this topic in their scientific papers are V. V. Nemoskalenko [5], P. I. Rogova [6], V. V. Faronov [3], E. V. Burov [1], Yu. M. Stolyarov [2], Z. Romanukha [8]. Their research reveals the essence of the creation and implementation of software products in the library system, in terms of software and hardware.

The purpose of the article is to develop and implement a computer program for the ordering of the library catalog system.

The presentation of the main material. The program that was created provides for the computer system «Library», the main properties of which are:

• ensuring multi-criteria selection of documents by requisites, rubrics, keywords, etc.;

• providing the ability to view electronic documents;

• establishing of literature lists;

• design and execution of readers' orders

• automation of all main production processes of the library, including processing of library documents, bibliographic work, administration;

• support of paper technologies: printing of bibliographic cards, forms, acts;

• doublet monitoring;

• provision of a single interface from all workplaces;

• ensuring the protection of information through the procedure for registering a user on the server with his authority definition.

This is a universal system that can be used not only within the university, but also outside. The developed system is designed to automate work with the library fund and readers, organize electronic accounting of publications, as well as provide access to the catalog of publications using the Internet browser.

The system will allow:

1) to maintain an electronic catalog of the library fund, which means that library users will be able to carry out an attribute search of publications in the electronic catalog of the fund; make arbitrary selections of publications from the library stock; print out references and bibliographic descriptions of publications; employees will be able to introduce a new edition; inform the librarian about the availability of publications with identical ISBNs (BBC, UDC) when introducing a new edition; to perform search in the fund for any attributes of publications and their combinations; make arbitrary selections of publications from the catalog of library stock; automatically create and print alphabetic and systematic catalogs; automatically form the author's mark; check the text fields spelling; set permissions for library employees to directories; to adjust the composition of the attributes of publications and the type of the main catalog separately for readers and employees of the library;

2) keep an electronic catalog of library readers;

3) automate the processes of issuing and returning publications, the system takes care of the electronic forms of readers with comprehensive information on each return / issue operation, monitoring the timing of issuance and renewal of publications, automation of the routine operations with the reader (re-registration, extension, search in the form, replacement of lost editions);

4) literature search in the library, the proposed scheme for ordering publications in the library is as follows: the reader, working with the electronic catalog of the library fund, can place an order for any book (if it is in the subscription), if there is a free copy in the library, it is booked for the reader for a certain period during which he can receive it. If there is no free copy in the library, the reader is given the opportunity to enroll in a queue for an edition. When a free copy appears in the library, the system will automatically notify the reader via email. The ordering system of books can be customized according to any wishes of the users of the system;

5) keep records of the library fund, the system allows you to automate the entire cycle of the library accounting fund from the moment of arrival of the publication to the library, until it is written off, including the formation of the inventory book, the book of total accounting, the entire range of necessary acts. A powerful search system for the inventory book, the book of total accounting, notebooks of replaced books and other objects of accounting of the library fund will be implemented. The embedded mechanism for generating inventory numbers, KSU numbers, and inventory book entries will ensure convenient and reliable library workflow;

6) to provide remote recording of readers to the library, this involves a system of filing applications for registration in the library, which allows to simplify the entry of new readers for the library;

7) generate statistical reports; the system has a number of statistical reports on the workflow of the library. For any period, you can find out the number of visitors, the amount of literature issued, the number of people who signed up for the library, and any other statistics;

8) automation of work with publications and readers is especially effective when using bar identification and plastic card identification.

During the development of the database, an information model of the problem was constructed. Informative-logical model reflects the data domain as a

set of information objects and links between them. This model represents data intended for storage in a database [7].

Based on the tasks that have been identified, it can be claimed that the following documents are being used to build this database:

- book catalog;
- library readers card catalog.

These source documents are the input information contained in the tables *(see Table 1 – Table 2).*

Catalog_Book											
Inventar_ ID_Book	ISBN	BBK1	BBK2	BBK3	Avtor	Name_Book	Yaer_Publisher	Publiser	Sity	OUT	Storinky

Table 1 – Book catalog

Reader									
ID_Reader	First_Name	Name	Father	ID_group	Data_birhday	Adres	E-mail	Telefon	Remarc

Table 2 – Library readers card catalog

In addition to the specified input information, reference information is also included in tables 3 and 4.

Table 3 – Group data

Group	
ID_Group	Kurs

BBK1	
Kod_BBK1	Comentar

Table 4 – Coding BBK1 (DDR1)

Similar structures should table BBK2 (DDR2) and BBK3 (DDR3). Reference is also a table containing data about the group.

In addition to the input and reference information, the operational information should be highlighted, which is stored in the table of individual record cards (see Table 5).

Table 5 – Individual registration card

Card_reader			
ID_Card	inventar_ID_Book	Data_Load	Data_Return

Subject domain documents not only provide an opportunity to identify the data structure, but are also the basis for the development of input / output forms and reports.

The initial pieces of information are requests and reports generated by the application. Using queries, the user (the librarian or the reader can find the necessary book, analyze information about the books ordered), by using the reports the librarian will be able to print a reader card, or a list of readers clustered in groups.

Functional dependencies definition between the details.

Based on the analysis of the document "readers' card catalog", we highlight one information object (key prop) – the reader does not repeat. Details – Last name, first name, address, e-mail are for reference only, and each of them depends only on the key requisite – the reader's ID. Similarly, you can perform an analysis of the document "Book Catalog", where you can select another object – a book. The identification of the book occurs on the key props – ID of the book. The reader ID is associated with an ID card by a ratio 1 to many, since one reader can take several books in the library at the same time.

The informative- logical model of the subject area under consideration can be shown graphically, clearly demonstrating the dependence of information objects from each other (Fig. 1).

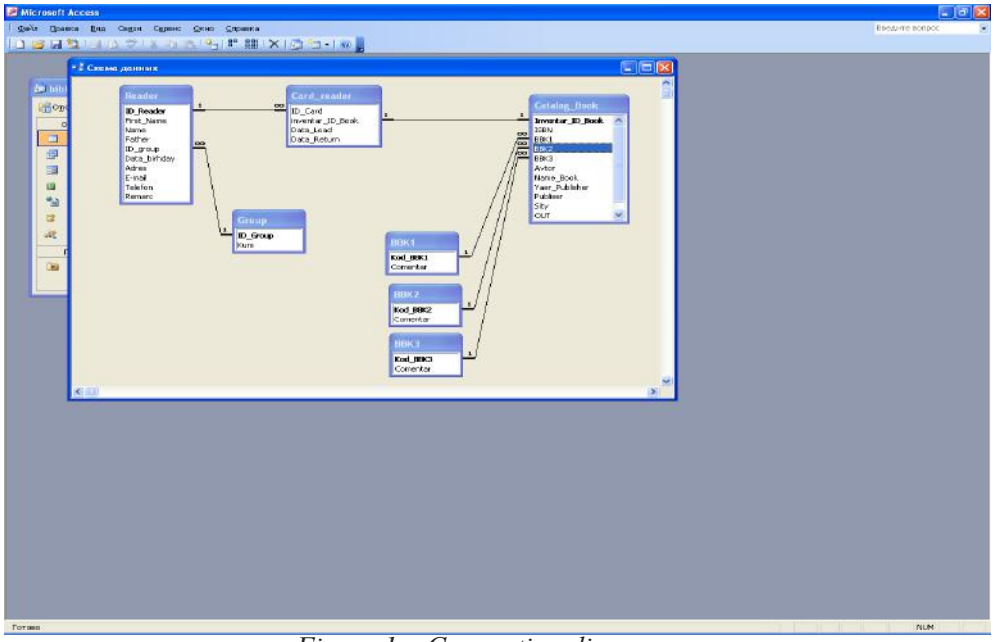

Figure 1 – Connection diagram

The given structure satisfies the basic requirements for the construction of an informative-logical model, i.e. information objects do not have duplicate entries. This is accomplished with unique keys. Due to this, there is no data redundancy effect, which indicates the normalization of the informative-logical model obtained.

Based on this, the main requirements for the workplace of a librarian are formed: Intel i5 processor or later with a clock speed of at least 1 GHz, 4 GB of RAM, at least 1 GB of free space on the hard disk, nVidia GeForce 760/860/960 video card, display, video adapter, presence of the installed Windows 8/10 operating system.

Note that the initial information will also be a Web page on which the names of the debtors will be placed, as well as an ASP file for withdrawing debtors.

The developed application consists of three parts: the user's workplace, the librarian's workplace, the administrator's workplace. Each workplace is a separate software module. The user module is installed on the user's work machines, the librarian module is installed on the librarian's workplace. The administrative module can be located both on the librarian's computer and on a separate computer. The files of the pages of the results of queries and reports are placed separately on the server.

After loading the program of the librarian's workplace, the main window of the program opens. Clicking the continue button will open the identification window. After identification, the database is accessed and the main window for working with the database is opened.

The part of the program code is as follows:

```
Attribute VB_Name = «Form1»
Attribute VB_GlobalNameSpace = False
Attribute VB_Creatable = False
Attribute VB_PredeclaredId = True
Attribute VB_Exposed = False
Option Explicit
Private Sub Cmdexit_Click()
End
End Sub
Private Sub Cmdnext_Click()
'replace 'c:\myfile.avi' with the name of the AVI file you want to play
'PlayAVIPictureBox «C:\program files\ Amiglobe 2001\logo\logo.avi», Picture1
PlayAVIPictureBox «C:\program files\ count8.avi», Picture1
Load Form2
Form2.Show
Unload Form1
End Sub
```

The text of a module that provides video playback in a graphic object:

```
Attribute VB_Name = «Module1»
Option Explicit
Private Declare Function mciSendString Lib «winmm» Alias «mciSendStringA» (ByVal lpstrCommand As String, ByVal lpstrReturnString
```

```
As String, ByVal uReturnLength As Long, ByVal
hwndCallback As Long) As Long
    Private Declare Function mciGetErrorString
Lib «winmm» Alias «mciGetErrorStringA»
(ByVal dwError As Long, ByVal lpstrBuffer As
String, ByVal uLength As Long) As Long
    Private Declare Function GetShortPathName
Lib «kernel32» Alias «GetShortPathNameA»
(ByVal lpszLongPathAs String, ByVal lpszShortPath
As String, ByVal cchBuffer As Long) As Long
    Dim ShortFileName As String * 260
    Dim deviceIsOpen As Boolean
    'Retrieve short file name format
    RetVal = GetShortPathName(FileName,
ShortFileName, Len(ShortFileName))
    FileName = Left$(ShortFileName, RetVal)
    'Open the device
    CommandString = «Open « & FileName
& « type AVIVideo alias AVIFile parent « &
CStr(Window.hWnd) & « style « & CStr(WS_
CHILD)
    End If
    'raise a custom error, with the proper
description
    Err.Raise 999, ErrorString
    End Sub
```

Thus, the developed information system "Librarian" automates the tasks associated with the workflow of an educational institution library, allows you to increase the productivity of library staff and automate the process of accounting and circulation of library funds. The system allows you to simplify the search for literature in the library, to improve the quality of customer service, to use new information technologies in the library business.

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