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ELECTRONIC RESOURCE IN UNIVERSITIES AND COLLEGES: THE PROBLEMS OF A SINGLE SEARCH

Abstract: None of electronic library systems satisfies all the universities requirements in content. The university has its own e-library. In all electronic library systems the search works different. It's necessary to develop a single information retrieval system both through the electronic issues fund existing in the university and electronic issues fund presented in electronic library system. This paper presents the integration technology of electronic library systems including university e-library with a view to creating a single information retrieval system through the university library funds.
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Introduction

Electronic publications become more popular in universities libraries funds compilation every year. One of the main sources of electronic publications is electronic library systems (ELS). ELS is organized collection of electronic documents including publications that are used for information support of educational and scientific research process in universities and colleges and providing access to then through Internet. According to the FSEI of HPE requirements "every student must be provided with discrete unlimited access to one or several electronic library systems containing all the necessary and additional issues of educational, courseware and another literature listed in discipline working documents (modules), practices formed in virtue of direct contract with the copyright holders".

Materials and Methods

None of ELS satisfies all the universities requirements in content [1]. That's why the education institution has to be subscribed for several ELS together. In addition the university has its own e-library. In all ELS the search works different. The quantity of searching fields differs (from two fields in ELS "Lan'" to nine fields in IQlib), the quantity of Boolean operators differs as well (from one "AND" in "BiblioTech" to three "AND, OR, NO" in ELS "Book.ru"). The quality of morphological analysis

also differs depending on existing full-text search system. Therefore it's necessary to develop a single information retrieval system both through the electronic issues fund existing in the university and electronic issues fund presented in ELS. It's more comfortable to use and administrate the single ELS in which functions of collections search, access control, statistics collection and so on could be done centrally.

One of this problem solving method can be the usage of technology "Yandex. Server" [2,3]. It's essential to solve the following problems:

- to choose the data provider for indexing and the document contents analyzer;
- to determine the structure of collections "Yandex. Server";
- to develop a diagram of information flow of search process in e-catalogue and to develop software modules for its work.

To solve this problem it's necessary to take following cue of search establishing in university library e-catalogue:

- the possibility of annual ELS content change;
- the search on predetermined ELS list for different university subsections and branches.

In standard pack "Yandex. Server" 4 possible data sources are included:

- ftds – for file directories indexing;
- webds – for web-pages indexing;

- odbcds – for data indexing through interface ODBC;

- mysqlds – for data bases MySQL indexing.

As a data provider was chosen the standard provider webds. The choice is contingent on the simplicity of documents management for indexer and the well-functioning operating principle to work with the university collection on the base of web-technologies. In this case the indexing works like a "net spider (robot)" [4].

The document content analysis is realized by means of xml-parser [5, 6]. All the xml-files stuff is text-based. The analysis is being done in following fields:

- the title;
- authors;
- subject;
- publication date;
- specialty;
- department;
- discipline;
- keywords.

The mandatory field is the field "title".

Each of the fields is important in the text inside XML-element and it allows point the most necessary for searching fields. The field "title" is the most important and the field "keywords" is the least important.

While developing the collections structure the most important was to change annually the content of attached ELS and also the necessity of search provision on predetermined ELS list for different university subsections and departments [7,]. That's why for each ELS was created separate collection. Resultant (meta search) collection to use in e-catalogue is formed on the base of university collections and ELS staged collections. Such approach doesn't allow re-index all the collections but simply make a search through selected collections for different university subsections and branches.

To organize the work of "Yandex. Server" it's necessary to set the indexing and search mechanism [8].

Information flow of search process diagram in research library e-catalogue is shown on picture 1.
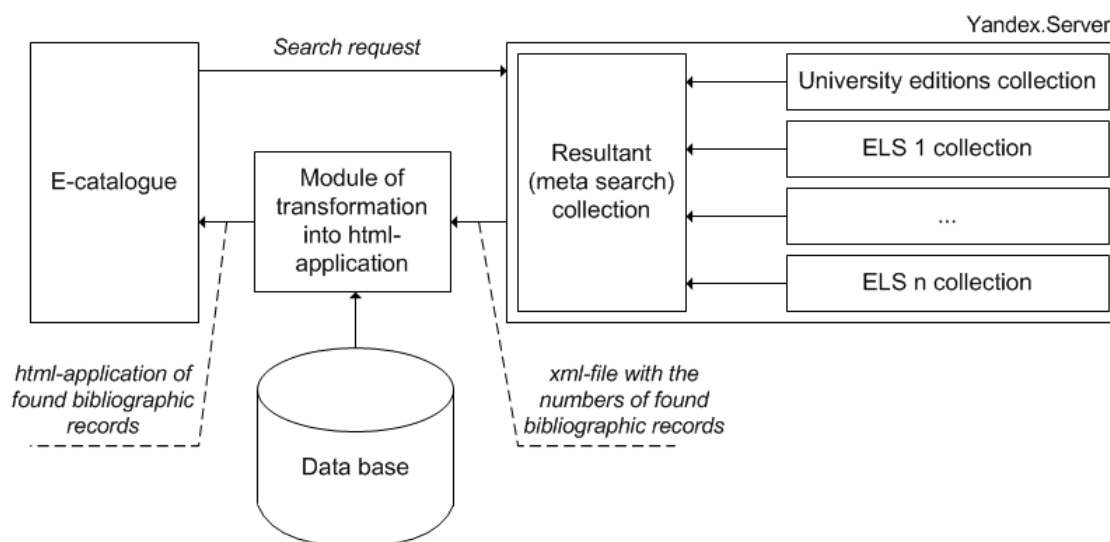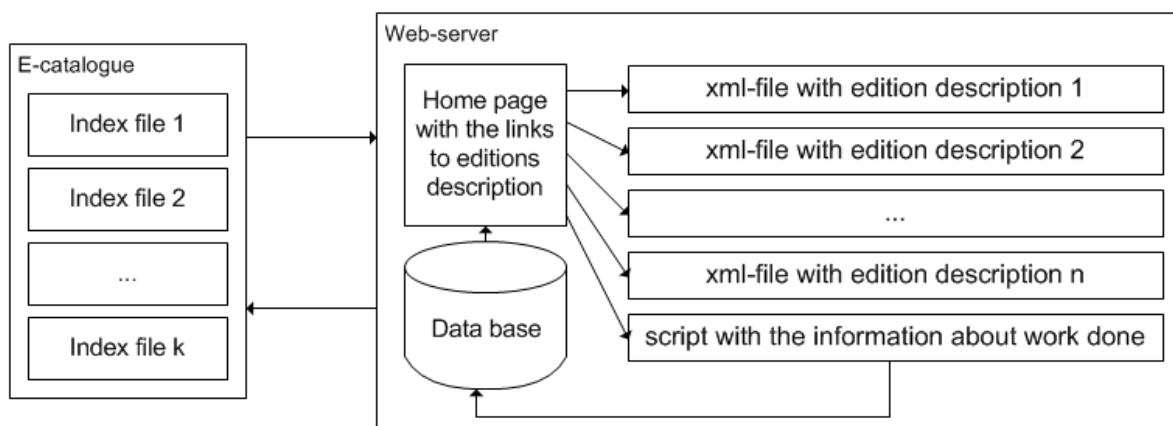

Picture 1 – The diagram of information flow of search process in e-catalogue.

A search request received from e-catalogue is processed by "Yandex. Server". The search is carried out through all collections pointed in meta search collection [9, 10]. "Yandex. Server" returns the search result in the form of xml-file in which there are the numbers of bibliographic records. The indexing begins from the home page where the links on xml-files with the description of editions are placed (picture 2). The home page is formed on the

base of recordings received from data base and only new added and updated recordings are indexed. It allows lower the burden on "Yandex. Server". At a later stage of indexing the indexer goes to the empty page where there is a script which records the information about the work into a data base. Received information allows form the starting page by the next indexing.
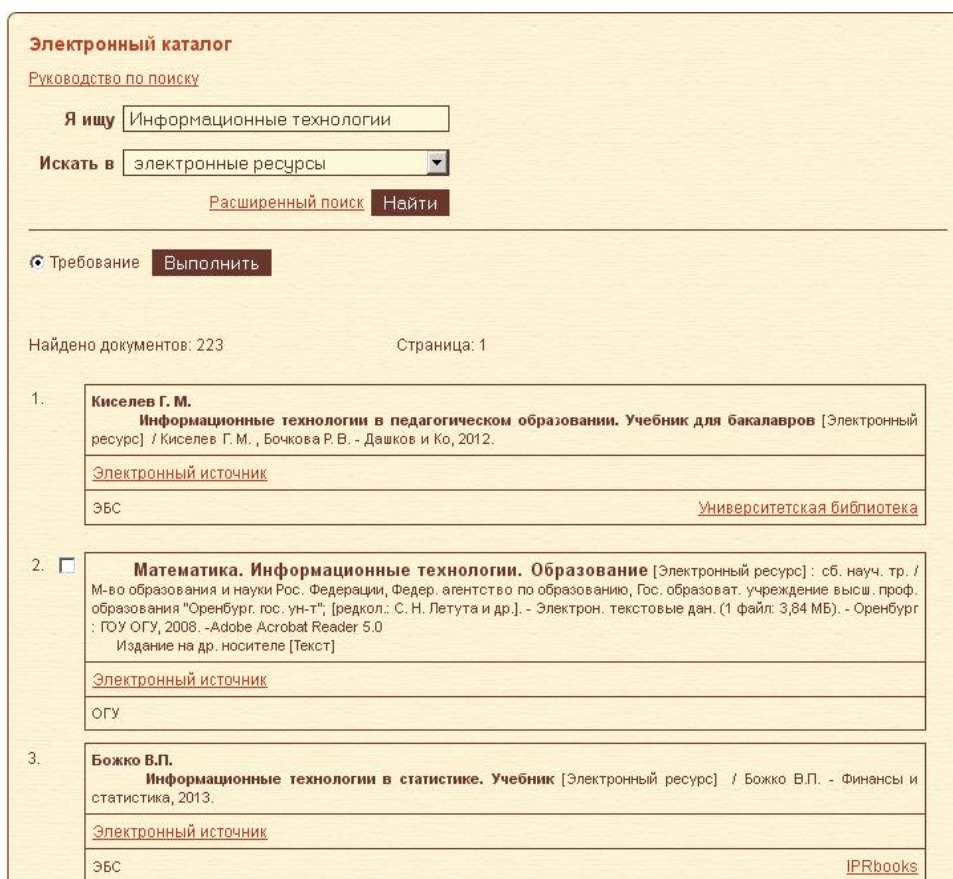
Picture 2 – The diagram of xml-files indexing with the description of editions.

For transformation of xml-file and receiving the necessary information from data bases on bibliographic records numbers the module of transformation into html-application is used. The result of this module work is reflected in e-catalogue (picture 3).

Picture 3 – E-catalogue.

Conclusion

While organizing of indexing work it's necessary to take into account previously indexed recordings to decrease burden on "Yandex. Server". For this purpose after the end of indexing the information about the date of the last indexing and the quantity of indexed documents is recorded into a data base.

Therefore on the basis of the technology "Yandex. Server" it was organized the search in research library e-catalogue both through the electronic editions available at university fund and through the electronic editions fund presented in ELS with the possibility to change the connected ELS and to search through predetermined list of ELS for different university subsections and branches.

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