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Design and Implementation of an E-Library Search System

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ABSTRACT: E-library system makes the work of a person who is in charge of the library more convenient to search, arrange and make an inventory of the contents of the library.
In this paper, a search system for an E-Library for the academic organizations was introduced such as universities, researches centers. This system has some methods of searches and it is convenient for the researchers to find their required information. The data base contains two categories, Books and Theses. The administrator of the E-Library can add, update, and delete any information in the database easily.
We developed an E-Library Search System using PHP, MYSQL and APACHE with WAMP server.

KEYWORDS: Digital Library, E-Library, Search System, Information Retrieval, Automation.

1 INTRODUCTION

The web creates new challenges form information retrieval. The amount of information on the web is growing rapidly, as well as the number of new users inexperienced in the art of web research. People are likely to surf the web using its link graph, often starting with high quality human maintained Indices such as Yahoo! or with search engines.

Human maintained lists cover popular topics effectively but are subjective, expensive to build and maintain, slow to improve, and cannot cover all esoteric topics. Automated search engines that rely on keyword matching usually return too many low quality matches.

Library automation started in the 1960s in the USA. Since then the trend of library automation has been spreading all over the world. Nowadays libraries are continuously increasing in number, and most are being automated. This automation is actually a combination of hardware and software, both being necessary for any automated system. In the field of libraries, software has become more important than hardware. Hundreds of library software packages have been developed and run successfully in advanced countries and there are many directories and other tools available to help librarians in the selection of suitable software for their libraries [1].

Digital libraries facilitate information access and storage, available for a large community of users. Digital documents should be easily retrieved and archived, so large number of researches focuses on the development of efficient information retrieval techniques and optimized data storage. As stated by [2], these issues are only some aspects of the information environment.

Libraries are also places for users to share and to exchange knowledge about library contents. New services are then required: communication between members, knowledge structuring and organization, contextual archiving and contextualizing information exchanged around the documents.

Our purpose is to design and present E-Library Search System. The database of the system contains books names and thesis titles, so it is special for the academic organizations like universities, and researches centers. This system serves the researchers and other users with many facilities in searching stage by many means such as author name, book name, interested area, number of copies, and year of issue.

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2 THE REVIEW OF LITERATURE

In 1999 a website on OSS for libraries (OSS4lib – www.oss4lib.org) was launched at Yale Medical Library in the USA with a mission of building better and free systems for use in libraries and this contains links to useful information on developments, mainly in the USA, for OSS and libraries [3].

Schlumpf [4], in his paper by the title of Open Source Library Systems concluded that the open source movement is a phenomenon that is affecting the software industry in fundamental ways. Morgan [2] is well-known in this field and he has a lot of essays in this subject. One of his essays, based on a presentation given at the 2001 American Library Association (ALA) Annual Conference, enumerates a number of possibilities for open source software (OSS) in libraries and how it can be leveraged to provide better and more effective digital library collections and services. Goh et al [5] have developed a checklist for digital libraries evaluation and use this checklist on four digital library software packages. Krishnamurthy[3] is described that open access and open source movement in the digital library world. He is provided key developments in the open access and open source movement.

3 INFORMATION RETRIEVAL (IR)

At the present time which widely spread of information, importance of information retrieval is very high. However, it is very difficult to search relevant information which is satisfied its purpose from a vast information efficiently. Web search engines are typical examples.

In many cases, user can find no web page when a restriction of query is strict and a great deal of web pages when it is loose. Re-investigations are demanded in the latter cases. “Searching contents which are referred to certain terms or concepts” is a query of general information retrieval. However, such a query practically represents to investigate special features, characteristics, and events of them. An actual meaning of a query is “searching contents which are referred to some terms or concepts with certain relationships mutually”.

Accordingly such relationships may not be denoted by conventional statistical information (i.e. appearance frequency). In addition, users look for their interests from search results. In many cases, there are too many search results, and it is necessary to suggest some information for a direction of narrowing. To solve these problems, a new intelligent method of information retrieval using organized knowledge resources based on semantics relationships is proposed.

In order to represent various semantic relationships, semantic analysis of information and the structuralization of organized knowledge resources based on their attributes, characteristics, meaning, and so on. A model by which multiple hierarchical, overlapping dynamic and relative relationships can be described is devised in order to represent such semantic structures.

It is apparent that neither graph model nor hyper graph model has sufficient capability to represent such conceptual structures. We proposed a new representation of such structure called Homogenized Bipartite Model and made a system for self organized knowledge resources based on semantic relationships [6,7,8,9] .

4 SYSTEM DESIGN

The system is divided into two parts, the first part is SearchSystem side with database represent the server, and the second part isthe E-Library User Interfaceside that represents the client by using PHP , MYSQL and APACHE with WAMP server. System diagram and system database diagram are illustrated in Figures (1,a) and (1,b) respectively.

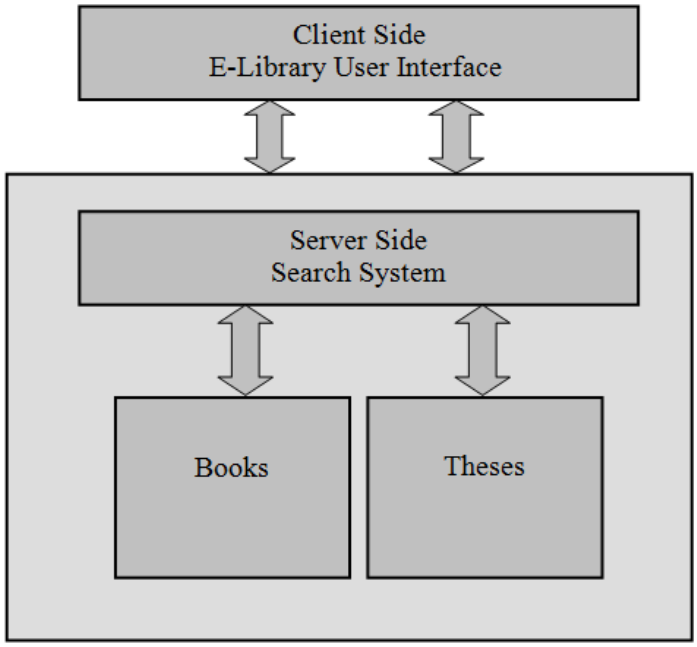

Figure (1,a): System block diagram

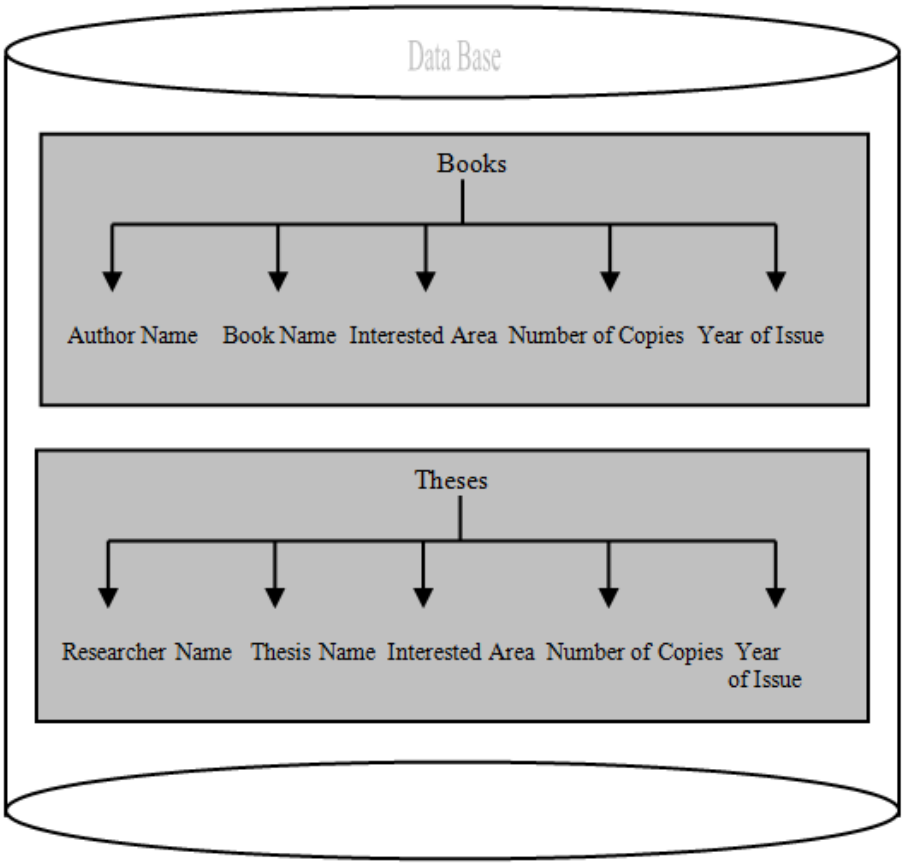

Figure (1,b) : System Database diagram

5 IMPLEMENTATION OF THE SYSTEM

The system database is called (myproj) contains two tables for books, and theses, the first table for books contains : Author Name , Book Name , Interested Area , Number of Copy , Year of Issue .

The second table for theses which contains Researcher Name, Thesis Name, Interested Area, Number of Copies, Year of Issue.

In this Window, there are two ways for entering to the Library System, the first way is : by selecting any link and enter directly , and the second way is : the secure link display. When the user wrote a wrong user name and password, it is unable to enter the system, but if user name and password written correctly, and click on OK button to go to the main page.

The secure page contains set of labels for several pages, which represent the library system that contains the types of search about the database such as books, theses, and all information about them. Notice all that in figure (2).

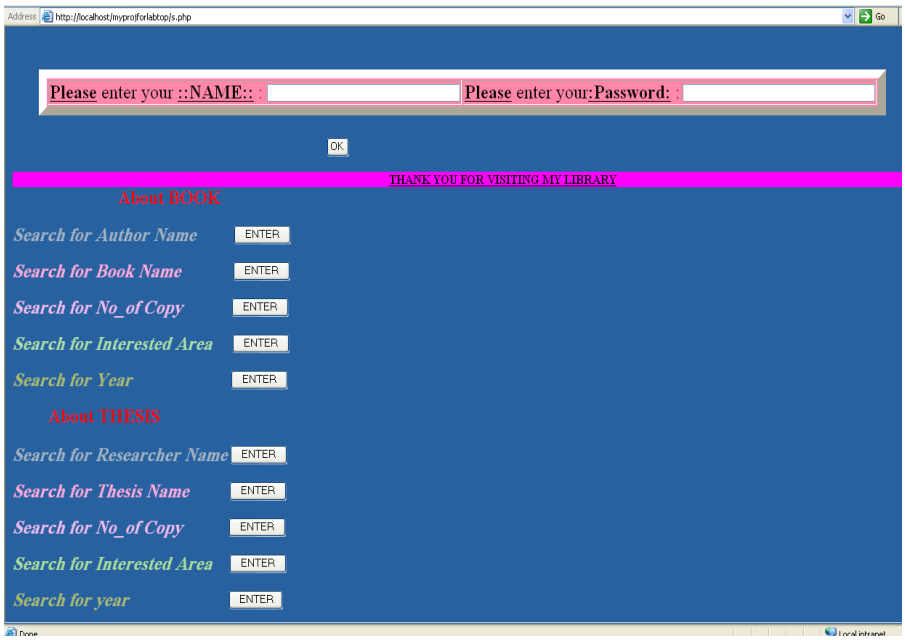

Figure (2): The Main page of the system

The main page suitable for entering to the Library System in order to Search, and After clicking on ENTER button of the first label , the following page will appear as shown in figure (3) below .

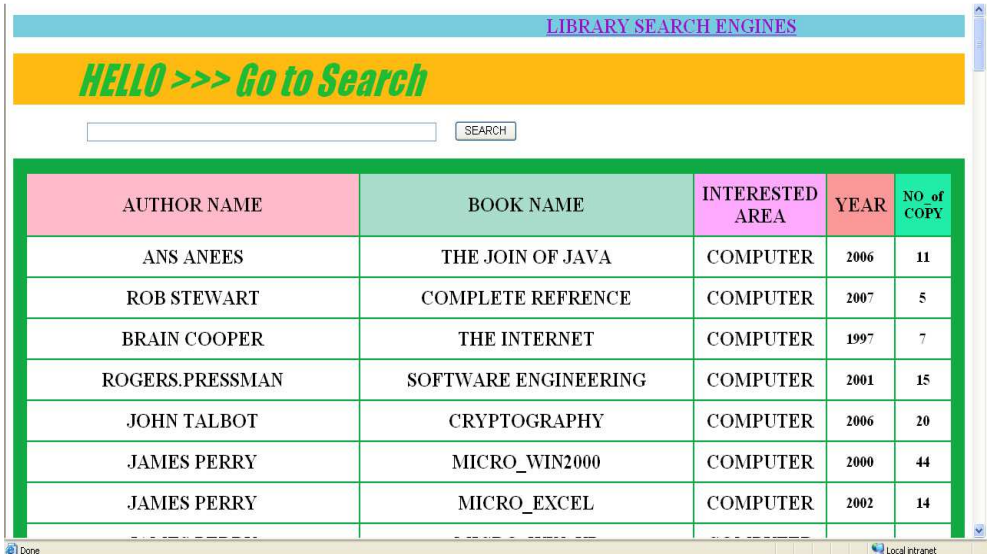

Figure (3): Search about Author Name Window.

This window display the database and the type of search about author name, the user can write any author name and click Search button to find all information about books in the library, and in other way , the user can write only the first name or just one letter from author name, figures (4,5) below explain these ways of search.

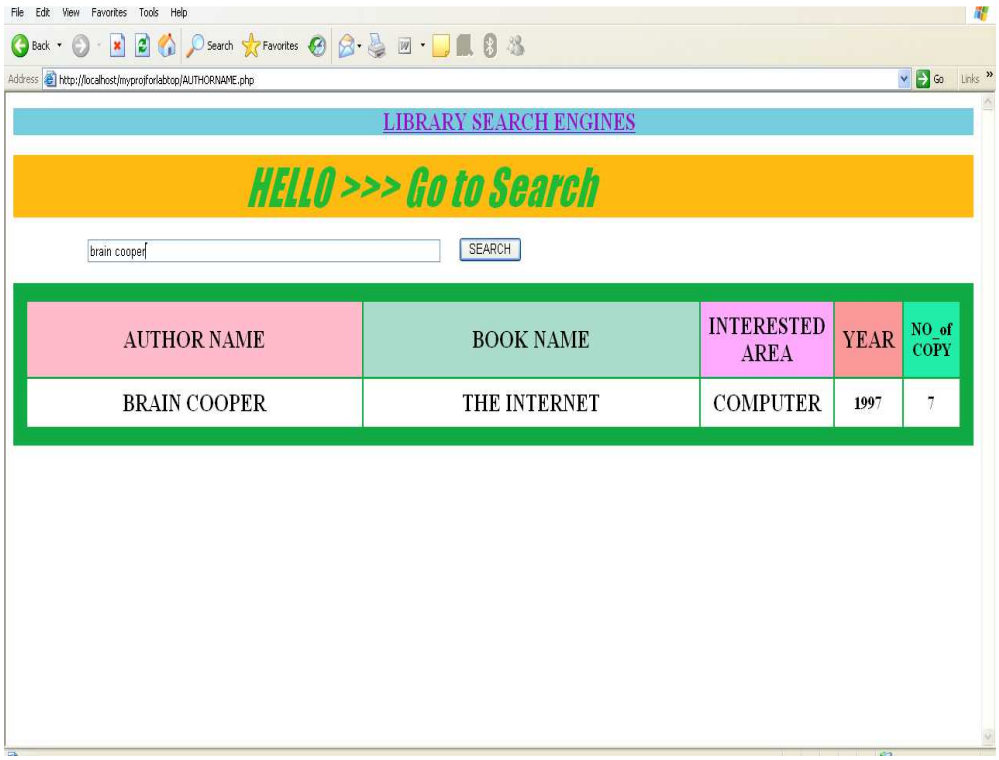

Figure (4): Full author name Window

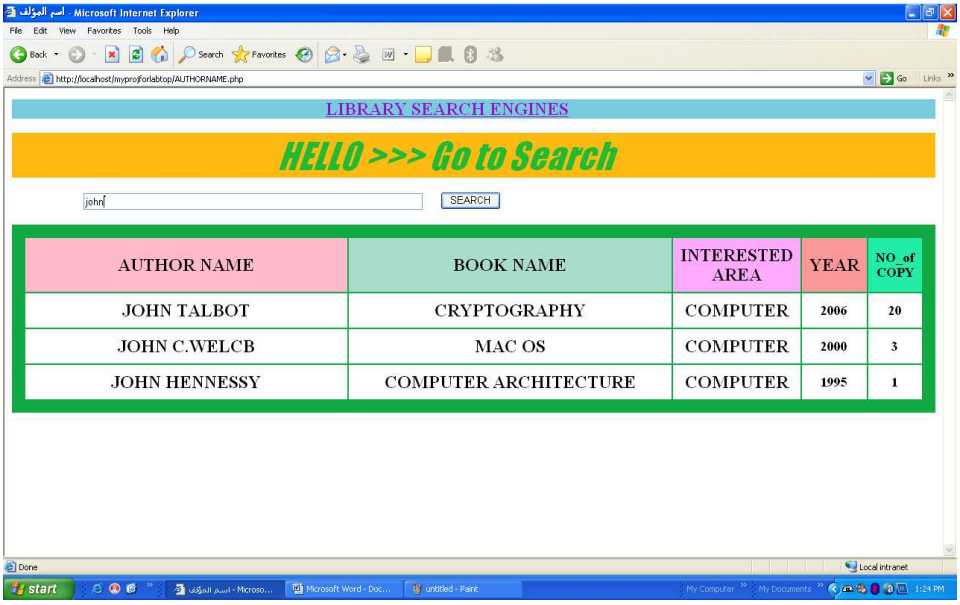

Figure (5): The first author name Window.

The second type of search is about book name, figure (6) below show the page of search about book name.

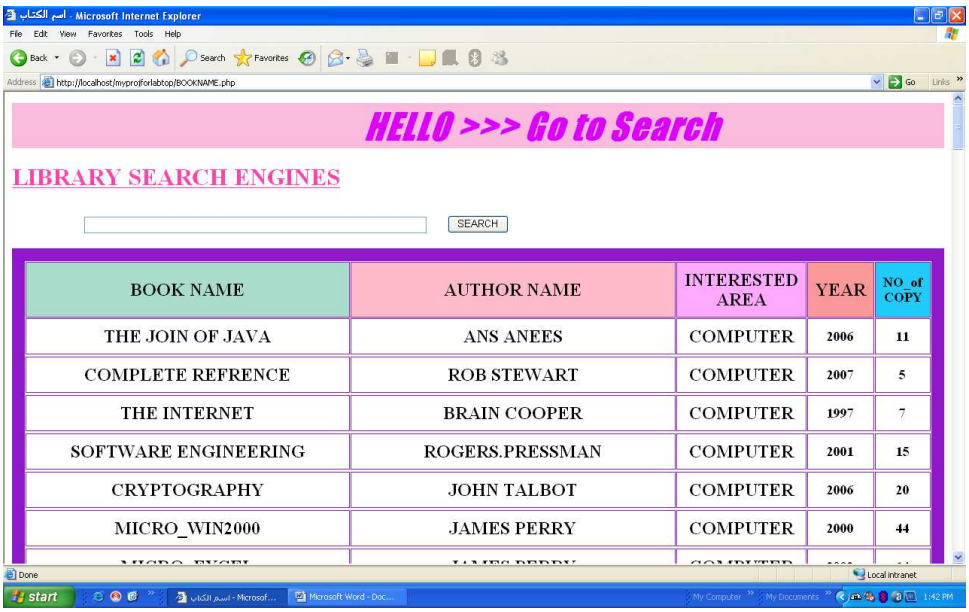

Figure (6) : Book name database Window.

The user can write any book name and Click Search to find all information about books , as shown in figure (7) below for example when written as a keyword “THE INTERNET” click on SEARCH button to retrieve the information about this book and any book consists of this word, will be appear .

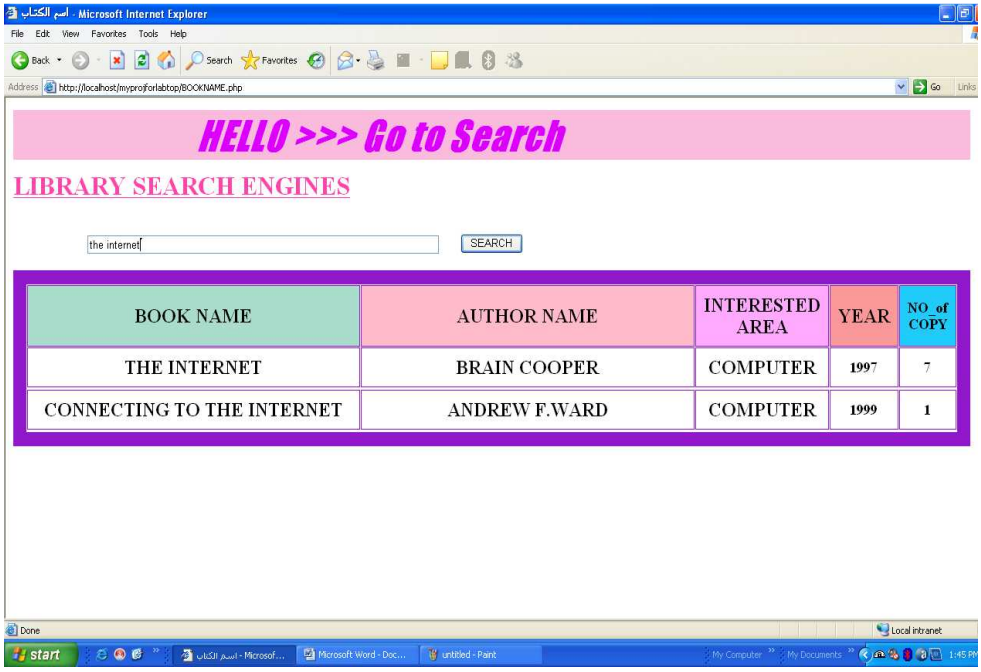

Figure (7): Book name search Window.

If the user write one section of a word like “soft” in text box and click on search button, will find all books contains this section in any order in the book name search.

The third type of search about Number of Copy , show two figures for these information ,The Search for the number of copies in the library system for books, useful to take stock the books in the library generally, figure (8) shown below .

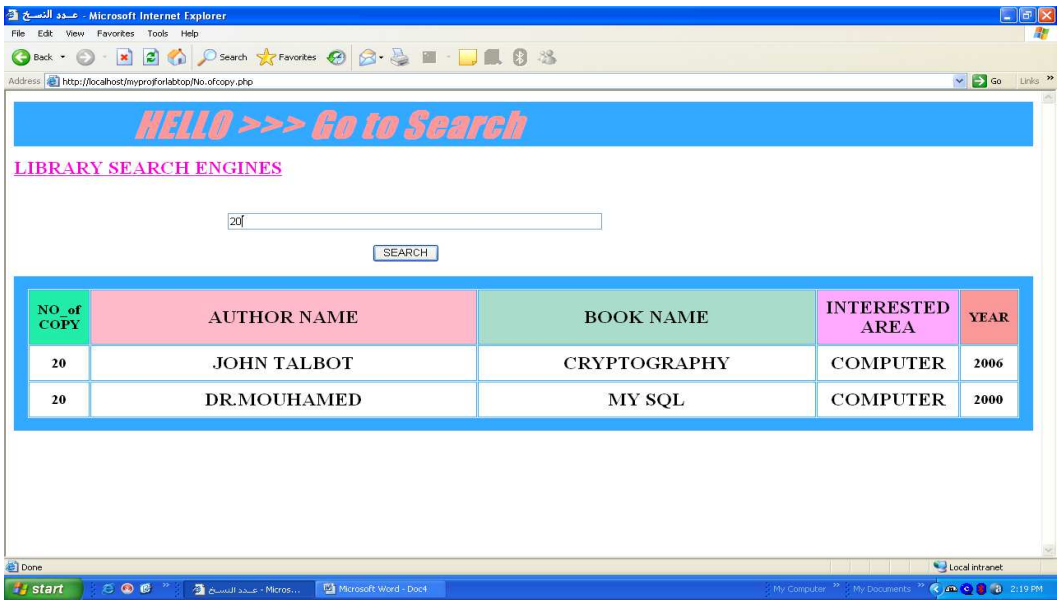

Figure (8): No. of copy Search Window.

The fourth type of Search in the Library System about Year of compilation, and useful for Updating the books in Library after know the last year is there, which is displays the database according to the numbers entering consider the year about books.

For Searching about YEAR “1996” will be appear as in the figure (9) below.

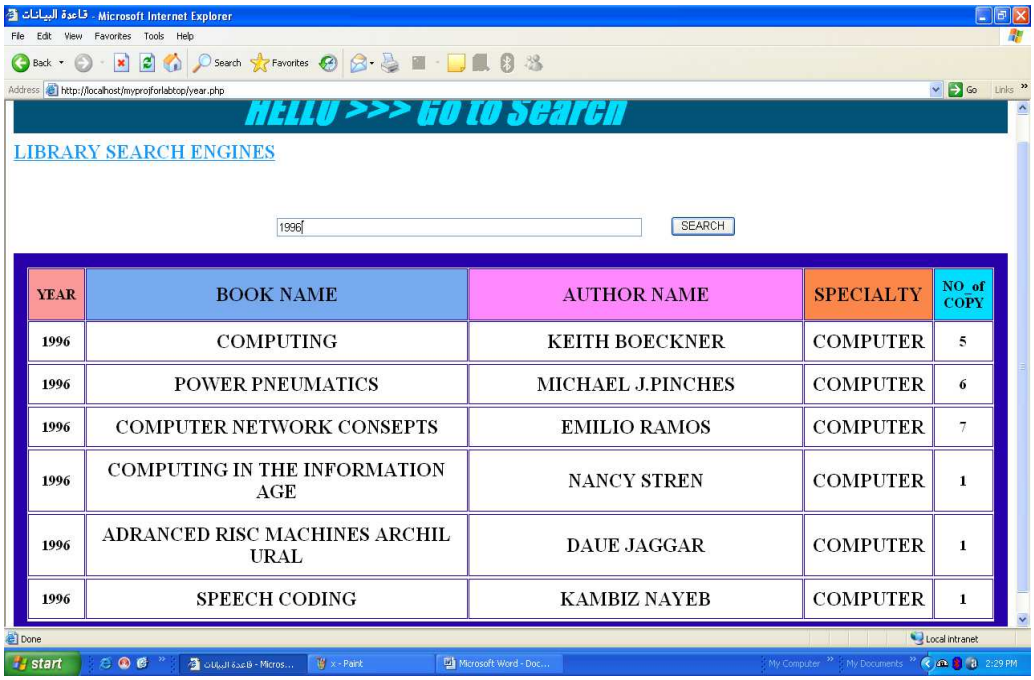

Figure (9) : Search for Year Window.

Finally, the fifth type of Search about the Interested Area for books, When the user chose “COMPUTER” , and considered Computer Library for Books. will be appear as in the figure (10) .

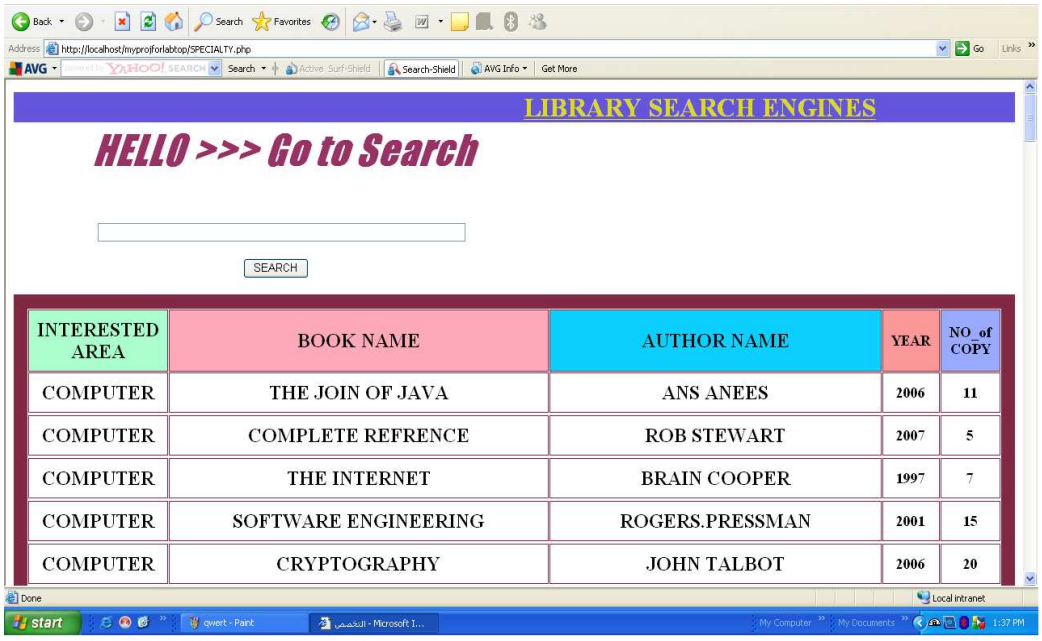

Figure (10) : Interested Area for Books Search Window.

Now, The other part or the other Table in the database contains the Theses, in this section display the main secure window ,and have other types for Search about theses and all components of them, After clicking on ENTER button titled with “RESEARCHER NAME” found the Search Engine pages for researcher name .

When The user write the word " OMER " , Clicking on Search button, find the Information Retrieve consists of this word in the researcher name not in this first name, but in the last name for researcher name .

Like book name search "thesis search" shows the search methods for thesis name after click on ENTER button in the main page.

The other type of search about number of copy like books search ,but here for theses name and for search about year of establishment to theses, is the same possibility for search about books.

The last type of search that represent the interested area for theses and possibility for search about them. when the user write the word "biology" to test a search engine can returns any information from the library system (database).

6 CONCLUSIONS AND SUGGESTIONS

By Implementing the proposed system, we conclude that the gained results and aim is achieved. The officer in charge can do updating on the Database, by deleting, adding, and modifying m also any entry in the keyword field is acceptable even was a letter or more than one letter as a word or a phrase. Increasing of the size of database didn't effect on the searching time and results retrieval time. To make the system to be secure, a password technique had supported.

We suggest to connect the system with the Internet and increasing database of the E-Library by the number of books and theses, and add the database of the system other kinds of publications such as magazines, papers, and articles, and generalize the system database to contain all area of specializations.

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