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Abstract- This paper discusses the Development and Implementation of an Internet-based Library Portal. Library information system encompasses all kinds of information relating to not only Books, Periodicals, Journal Publications but includes demonstration CDs and Patrons records. Most libraries still depend on the usual manual cataloging of Books which is somewhat cumbersome. This research work is intended to automate and put on-line the book cataloging process so that intended Patrons can browse for available books in the Library irrespective of time and location. It also discusses the design and implementation of a website interface integrated with My Structured Query Language (MySQL). It reflects on the concept of appropriate database selection mechanism, interface design and system development. Conclusively, an Internet-based Library Portal is designed, implemented and deployed at the Polytechnic Library of the Institution.

Keywords- Cataloguing, database, Library, MySQL, Portal.

I. INTRODUCTION

Paper records represent the conventional way of managing Library’s information. This method has many drawbacks as prospective Patrons have to visit the Library’s book catalogue to check-up information regarding available materials in the Library. Thus, there is the need to provide an alternative means of processing and displaying books and other relevant materials rather than the dependence on traditional Library book catalogues. [1] Design an Integrated Library System that allows automated cataloging by scanning a book’s ISBN. It is used to track items owned, orders made, bills paid, and Patrons who have borrowed items. [2] Proposes an E-learning Module for Library Management Software Package for various areas of library activities. [3] Presented online library management software for monitoring and controlling the transactions in a library like adding new members, new books, and updating new information, searching books, members etc. It also features facilities to borrow as well as return books. It is based on a 32bits Windows Operating system and uses Java-based scripting language. [4] Discusses Web interface in library management software systems. It touches on the growth and development of library automation software.

It encapsulates the standards in terms of library and Web technology as well as security issues.

In this paper we present the Development and Implementation of an Internet-Based Library Portal. The design is simple but effective in solving the specified problems of manual book cataloging and searching. In this work, new books can be entered online in to the database through the web interface provided. Books can be searched by entering any of the search terms: Author, Subject, Title and Discipline. The result of all the books in that category is displayed including the call number which enables one determine the location of the book on the shelf. Users do not require a username and password before accessing valuable information on the website as against the platform provided by [1][2][3] and [4]. It can be comfortably deployed by educational institutions or colleges for maintenance of library records.

II. METHODOLOGY

This encompasses the data flow diagram, the detailed flow graph, system analysis, and the front and back end system designs of the online library portal.

Data Flow Diagram

The data flow diagram represents the line of communication between the system and intended users. Figure 1 shows the data flow diagram of the designed system. The system administrator and students are required to access the database. The library Patrons are required to register in to the library database. Thereafter a Patron can search for books or Journal by clicking the book-search item on the menu bar. The system administrator manages the Patrons’ account, and sends emails to those whose borrowed items are due for return. Refusal to return a borrowed item within a specified period could attract a fine which is entered against the students’ or staff account. The administrator has an interface through which new items such as books and serials are entered in to the library database. The function of each of these entities is illustrated in the detailed flow diagram in figure 2.
Consultancy: this option takes you to the web page detailing all services provided by the library, as well as the consultancy unit of Auchi Polytechnic.

Book Search: this provides Staff, Students or prospective Patrons the search wizard to view or search for available material in the library. The search result provides the Title, Subject, Call Number and discipline of the material.

Admin: the system administrator is responsible for registering students and staffs in the library database. The admin option also allows the library administrator enter new materials in to the database.

A. Database Design

A database is an application that manages data and allows fast storage and retrieval of such data. There are different types of databases: relational, network and hierarchical databases. In this research work a relational database is used. It stores data in tables where each row in the table holds similar information. A database can be queried to retrieve specific data. Application program accesses the database by sending queries or request for data to the DBMS [2]. In a relational database, one can view data, modify data, add and delete data. A query allows some specific data to be retrieved or in some cases permits data to be written in to the database.

Security: database security is of paramount concern as data integrity must be preserved at all times. Data must not be changed, modified or intercepted without authorization from the database administrator. Most databases use MD5 encryption algorithm to encrypt the username and password to authenticate users. MD5 is common when MySQL and PHP scripting language are used. SHA1 and MD5 is the two main encryption algorithm that can be used for securing data in a relational database as MySQL. We have chosen MD5 which encrypts the data with 128 hash length and it proves relatively secured.

III. DEPLOYED TECHNOLOGIES

HTML

HTML is a hypertext markup language which is the language of any website. Every website is designed by writing html codes. In order to make a website more attractive and efficient a cascaded style sheet (CSS) is used.

CSS

Cascading style sheets are utilized to format the layout of web pages. They can be used to define text styles, table sizes, and other aspects of web pages that previously would be defined in a page html [2].
PHP

There are multifarious scripting languages such as VBSCRIPT, Perl, JSP (JAVA Server Pages), ASP (Active Server Pages) and PHP (Hypertext preprocessor). PHP is used because it is a very powerful server-side scripting language for producing efficient and dynamic web applications. With PHP, one can build interactive and dynamic websites. It is easy to incorporate PHP script in to html code to integrate a website with a database. PHP is compatible with various web servers like Apache and Microsoft’s IIS as well. All the PHP scripts are executed on the server and it supports various databases like MySQL, MSSQL, Oracle, PostgreSQL etc. PHP is interpreted at runtime and not compiled into memory like ASP while ASP runs comfortably on Microsoft Windows-based Server [5].

APACHE WEB-SERVER

A Web-server is of paramount significance for the delivery of web contents to a web browser. The most commonly used web servers are Apache and Internet Information System (IIS). Apache is considered in this research work because of its popularity in various platforms. It can be used in windows-based systems as well as in Linux-based system. IIS only supports windows-based platforms.

MySQL

MySQL stands for My Structured Query Language. MySQL lets us access and manage data. There other relational databases such as MS SQL, ORACLE, MICROSOFT ACCESS, MySQL POSTGRESQL etc. We have considered MySQL because of its popularity in many web applications. Unlike other databases it supports multiple platforms such as Windows and Linux. It is a free software and does not need payments for upgrades. It can be used to execute queries against a database, inserts data in to a database, retrieves data from a database, updates record in a database, delete records from a database and create new databases. It can also be used to create new tables in a database and set permissions on tables, procedures and views.

IV. RESULTS & DISCUSSION

Home page: the system commences with the main home page which is accessible without any username or password. Figure 3 shows the home page. The home page has menus such as academic staff, hnd2 result, upload file, hnd1 result, nd1 result, nd2 result, AdminGen, Auchi Polytechnic Library. Clicking on any of these items takes us to a new webpage. Figure 3 show the main home page.

Figure 3: main home page

Auchi Polytechnic Home Page: this is the Library home page which provides the required option to search for materials in the database and to enter new items in to the database. The Patron searches for Book items by clicking on the Book Search option on the library home page. Figure 4 shows the library home page.
Book Search: this allows prospective Patron search for materials in the database. Figure 5 shows the web page for the Book Search item on the menu.

Figure 4. Auchi Polytechnic Library Home page

Figure 5. Book Search Page

Figure 6 shows the result of a search page when we search to find Computer science books in the library.

Figure 6. Search Result Page of Computer Science

New Book Entry: this provides the html form for the Administrator to enter new Books or serial items in to the database. Figure 7 shows the web page for the New Book Entry form.

Figure 7 Admin Page
V. CONCLUSION

This paper discusses the development and implementation of an Internet-based Library Portal. It has helped in ameliorating some of the problems of traditional book catalogue system in the library. It enables students, staffs and other users have access to library materials irrespective of time, space and convenience. It is easy to search for any material through this online facility and to locate the exact placement of the material in the library. It also provides a flexible means of making information available to students and staff of the institution. The design objectives were accomplished and this Internet Infrastructure can be of immense benefit to all Tertiary Institutions when promptly deployed. It will make library information processing and management in Tertiary Institutions much easier.

In fact, materials can be requested for anytime by all stakeholders irrespective of distance and time and necessary response forwarded to the prospective Patron via email attachments or SMS messages.

REFERENCES