

## Web-Based University Students' Projects' Database

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**Abstract:** The aim of this study is to designing a web based application which keeps track of all the projects carried out in each department of the various faculties or schools in the university (using Federal University of Technology, Akure as a case study) every session thus solving the problems accrued to the manual method of getting information about past projects. In the application designed, HTML was used for authoring the web pages, JAVA for writing animation applets, JavaScript for handling client side processing of form input and data validation and MySQL for creating the tables in the database and PHP (Hypertext Preprocessor) to write CGI (Common Gateway Interface) scripts to support the database. Various required information about each project are stored to enable easy retrieval of information by interested researchers.

**Key words:** Gateway, interface, javascript, MySQL

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### INTRODUCTION

In all Nigerian Universities, final year students submit projects in partial fulfillment of the requirements for the award of degrees. Admission of students into the various faculties or schools in a University is on a yearly basis. This leads to increase in the number of projects submitted to each department session after session. Technological developments through the years have enabled us to do more with less effort. We have continuously looked for better ways of doing things and each invention and new development has allowed us to extend our capabilities. Today, we are witnessing one of the most dramatic technologies ever developed the computer.

The computer has become a dominant force in the society reaching into many areas of life, benefiting individuals and the society as a whole. Computer applications have been put into use in a wide variety of areas.

The learning process can be enriched in many subjects because of the scale and range of information provided by computer data banks. Knowledge can be extended by the computer's ability to assemble and retain a large database which can be retrieved when the need arises.

The world wide web has grown rapidly since its introduction to the world in the early 1990s. Having gained the attention of millions of people in many segments of the society, the web is now a frequent subject of (and increasingly the delivery mechanism for) mass media reports. Many organizations now use the web to deliver information ranging from government organizations to major corporations. Small businesses,

organizations and individuals all over the world also use the web for communication, information and interaction.

This intense interest in the web is a result of the potential it offers for communication. Using the web, individuals or organizations can instantaneously and continuously present hypermedia-text, images, movies and sound to a global audience. Today, many people use the web's potential to serve information from tens of thousands of web servers around the world to millions of users about subjects ranging on just about every pursuit imaginable. This vast range of content includes informal home pages that individuals create as well as systems of information for major institutions and corporations.

The world wide web is a hypertext information and communication system popularly used on the internet computer network with data communications operating according to a client/server model. In an increasingly technological society, providing internet access is seen by many as a natural extension of an institution's remit to provide information, educational and leisure services to users. The world wide web opens up enormous possibilities for the development and delivery of these services. It also offers an intuitive and increasingly familiar computing environment through which to deliver existing services and a channel for developing new ones<sup>[1]</sup>.

This study hence, focuses on designing a web based database for students' projects. The application will be able to capture and motivate the user, provide useful, innovative and interactive services about past students projects from any department in the University irrespective of the degree, hence easing research and simplifying the tasks of Lecturers and Administrative Staff of the various departments.

## **OVERVIEW OF THE EXISTING SYSTEM**

Graduating students of The Federal University of Technology, Akure (FUTA) submit reports on their final year projects to their respective departments every year. The final year project is submitted to each department in partial fulfillment of the requirements for the award of degree (First degree, Postgraduate Diploma, Master's degree or Doctorate degree).

FUTA, at its inception in 1982 had three schools, namely Schools of Agriculture and Agricultural Technology, Earth and Mineral Sciences and Pure and Applied Sciences with 269 students. In the 1991/92 session, which was about ten years from the inception, the student population was 2098. However, today, (2004/2005 session), the University has five schools with several thousands of students. In view of this, the number of graduating students increases yearly, thus increasing the number of project reports submitted year after year.

Keeping information about the submitted projects and the ability to modify such information is highly important. Students and other Researchers approach the various departments to get the titles, abstract and other relevant information concerning the projects that have already been done in order to assist them in going about their own study work.

Undoubtedly, monitoring the large number of already submitted projects that cover so many topics for about twenty years now pose some difficulties. The monitoring exercise which involves keeping adequate and proper information about the submitted projects, modifying the information when necessary, arranging the projects in specific orders, retrieving desired information about certain ones and producing the print-outs of selected titles is a Herculean task. This problem has led to the situation in which students inadvertently repeat past projects. It has also denied Students and Researchers adequate and timely information about past projects, thus hindering progress in advancement of knowledge.

## **JUSTIFICATION FOR THE REQUIRED SYSTEM**

Having studied the existing method of keeping track of students' projects, the retrieval of information about them and the problems involved; the Computer readily comes to mind as the appropriate tool for the solution because of its vast capabilities.

With the web-based Computerized system, it is possible to obtain various types of information and reports about students' projects. This helps to promote efficiency as inadvertent repetition of past projects is avoided. It eases proper research which is made possible

after having an insight of past projects. Moreover, knowledge can be advanced in the area of research because the project supervisors are able to monitor allocation of project titles to students in order to ensure continuity in various research areas.

## **DESIGN OF THE PROPOSED SYSTEM**

System design which is a very vital aspect of system development is a detailed description of a new system which attempts to solve some of the problems of the existing system and to provide a superior data and information processing system<sup>[2]</sup>. Web design, on the other hand is the process of creating a look and feel as well as developing a linking and information packaging architecture for a web. It is an art that balances aesthetics with technical considerations and communication principles.

### **Design tools**

**Hardware:** A full multimedia, Pentium III 500MMX computer. Pictures were scanned using a genius color page Vivid 3X scanner.

**Software:** Windows notepad was used for editing the HTML pages, Coreldraw, Corel Photopaint and Corel scan were used for the production and editing of pictures and images, Java applets were used to create animations, Entries to be made by users were validated using a scripting language-Java script, Microsoft paint was used to design navigation buttons, MySQL was used to create the tables in the database, PHP was used to write CGI scripts to support the database, Netscape communicator was the browser used and Apache was the web server used. The web presentation was designed in windows '98 operating system environment.

### **Design overview**

**Projects database system design:** The system design is aimed at effective and efficient management of information retrieval, dissemination, processing and removing the difficulties involved in the search activities of the past projects by researchers and at ensuring proper keeping of records.

**Database specification:** This system has one database called projectdb and it makes use of one database table- Thesis\_table, which help to manage information about thesis (Table 1).

**Database design description and implementation:** In this database, there are four main options:

Table 1: Thesis table

Field name	Type	Length	Status
Thesisid	character	10	unique, not null
Degree	character	6	not null
Matricno	character	12	not null
Title	character	120	not null
Author	character	50	not null
Department	character	3	not null
School	character	4	not null
Supervisor	character	30	not null
Year	character	4	not null
Abstract	text	1000	not null

- Search thesis
- Display thesis abstract
- Display all thesis
- Thesis management

Search thesis provides the user the opportunity of searching for thesis by author, matric number, title, dept, or supervisor.

The display thesis abstract option displays the abstract of the selected thesis.

The display all thesis option displays the entire thesis in the thesis database.

The thesis management option is meant exclusively for the super users (System manager and any other authorized staff) for management purposes and contains the following options:

- Add new thesis
- Update thesis
- Delete thesis
- Search thesis
- Display thesis

The add new thesis option provides super users the means of adding new thesis to the existing thesis in the thesis database.

The update thesis option affords the super user the opportunity of editing, modifying or making changes to an existing thesis record.

The delete thesis option allows for permanent removal of thesis from the database.

The search thesis option provides the super user the opportunity of searching for thesis by author, matric number, title, dept, or supervisor.

The display thesis option displays the entire thesis in the database.

**Other design considerations:** Other considerations in the design of the entire system are outlined below:

- The application will potentially have hundreds of users and it is unrealistic to provide training for everyone.

Hence, it was designed for easy use, providing help instructions and appropriate error messages for invalid inputs.

- The icons and texts guide the user through the information in the site instead of acting merely as decoration. The colours and icons work well together and give a tactile sense to the information.
- On clicking any of the options available in the Main menu, different forms (as the need requires) are displayed for users to fill in order to query the database. This enhances the usability of the system.
- The modules that are not available for general users and surfers can only be accessed after the supply of correct name and password in order to disallow unauthorized users.

**Hardware requirements:** For the implementation of this system, a full multimedia computer system with a minimum of the following requirements are needed at the server end.

Pentium processor with a speed of 500MHz, 64MB RAM, 10.2 GB Hard disk space, SVGA Monitor, Modem (28.8Kbs), ISDN line, ISP for Internet access, Peripheral equipment like UPS and stabilizer.

Low cost complete computer systems are sufficient to operate at the client sides.

**Software requirements:**

- A Network Operating System (Linux or Windows NT) will be required at the server side.
- Windows Operating System (Windows '95, Windows '98, Windows 2000 or Windows NT) may be used at the client sides.
- Web Server Software (Apache preferably).
- Web Browser Software (Netscape Navigator or Microsoft Internet Explorer).
- MySQL Server.

**Choice of programming languages:** The following languages were used for the reasons outlined:

- HTML was used because it is the standard for authoring web page and supported by a wide variety of browsers (both graphical and non-graphical).
- JAVA was used for writing animation applets because it is platform independent, that is, it can be downloaded and executed on any kind of machine.
- Javascript was used for validating the entries made on the client side because it is supported by the two most popular browsers-Internet Explorer and Netscape Navigator.

- MySQL server was used as the database server because it is a light weight relational database management system designed to suite web application development in that it provides rapid access to data sets with as little system overhead as possible. It has a back-end database that supports critical functions on the web.
- PHP abbreviation for Hypertext Preprocessor was used to write CGI (Common Gateway Interface) scripts to support the database because it has tightly integrated database capabilities and it is extensive in that it offers compatibility with several database servers.

### **CONCLUSIONS**

The world wide web has been the key that has unlocked many possibilities and resulted in increased efficiency for libraries.

The web pages authored using HTML, Javascript for data validation, JAVA for writing animation applets and MySQL and PHP for the database modules provide users online access to information about University students projects.

With the aim of the study being achieved, students can get information about past projects with ease. Lecturers can approve project topics without tears. Storage of new information, correction and retrieval of already stored information can be done without much

rigour. This research work thus makes past projects more useful, achieving the aim for which students' projects were meant and meets the requirements for the award of their various degrees.

It is however recommended that each of the Nigerian Universities fully implement this web application as soon as she is connected to the Internet. She should also make provision for an Intranet in order to ease the flow of information within the university.

Further study can be done by including loan and reservation facilities into the system and in the area of digitizing students' projects and making them available online. The implementation of the interconnection of different universities together in order to promote research by allowing access to past projects carried out in other universities is also an important aspect that can be properly looked into in the future.

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