

DESIGN AND IMPLEMENTATION OF AN INTERACTIVE WEBSITE: A CASE STUDY OF THE DEPARTMENT OF PHYSICS.

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ABSTRACT

An interactive website has been designed for the Department of Physics, University of Uyo, using Hypertext Markup Language (HTML) involving structuring, coding, and testing. This will enable the Department to gather, process, store and disseminate an up-to-date information to the whole world on the academic programmes, research activities as well as the general functioning of the Department. In the design, provisions have been made for the website of the rest of the University. In the mean time, the implementation is carried out within the limited facilities of the free server.

KEYWORDS: Interactive Website, Hypertext Markup Language, Database, Internet, Hosting.

1.0

INTRODUCTION

One of the most distressing problems facing Universities especially in developing countries is inefficient and ineffective information system. The demise of most Universities is as a result of their inability to move toward increasing use of on-line tools to accomplish effective acquisition, analysis, processing and dissemination of information. While the contributions by educators and students from Universities in the developed countries towards revolutionizing the world technologically has been on the increase, that of developing countries have remained stagnant and in some cases, decreased. The provision of on-line facilities in a University System enhances significant advances by improving the quality and level of services provided. Once an organization is linked up the Internet, the use of a communication tool package known as a Web browser is enhanced; this helps the user to navigate through the Internet and interact with all other connected users.

An interactive website is a network that makes it possible for people to interact, access and exchange information from their computers. People from different backgrounds, ages, colour and countries share ideas, stories, data, opinions and products freely. It offers a rapidly growing collection of information, with topics ranging from arts to sciences and technology, as well as research materials for students and coverage of news, recreation, entertainment, sports, shopping and employment opportunities.

In a simplified view, we can look at Internet as a global collection of many different types of computer networks linked together. Below are some of things we can do with this website:

* Write an electronic message and send it through an electronic mail system.

* Receive and send an electronic mail to other people who are connected to the network and clip out parts of the message for inclusion in a report.

* Browse the catalogue of a digital library and scan the contents of abstracts, or full documents and transmit selected documents to one's computer for later reading or for incorporation into other documents.

* Locate, download, install and run software in network accessible software libraries.

* Compose an article or newsletter and send it out to thousands of people on an electronic distribution list.

* Join on-line discussion groups that bring together people with shared interest to compose and read messages that form a continuing conversation among potential tens of thousands of "follow travelers".

* "Telecommute" to work from a personal computer and engage in business with fellow workers, customers and suppliers.

* Enroll in a program of study at a remote school and then receive assignments, submit work and interact with faculty through the network.

* Scan consumer catalogue an order goods and services

- * Connect to on-line entertainment centers and join other people in electronic games.

1.1 HISTORICAL BACKGROUND

The Internet according to Cerf et al (2000) began as an experiment by the U.S Department of Defense in the end of the 1960's to help scientists and researchers from widely dispersed prous work together by sharing scarce and expensive computers and their files. This goal required the creation of a set of connected networks that acted as a National Computer Network called ARPANET (Advanced Research Project Agency Network). Thirty years later, the Internet has come a long way with more than 150 million users linked up world wide. The majority of the users, however, are resident in the developed countries. Subsequent advances in data network and telematics in the last decade have revolutionized the Net.

Vint Cerf and Bob Khan known as fathers of the Internet, defined "Internet Protocol" (IP) by which packets are sent on from one computer to another until they reach their destination. But the World Wide Web was made by Berners-Lee alone. He designed it, released it to the world and fought to keep it open, non --proprietary and free.

Berners-Lee, according to Cerf et al (2000), is a Particle Physicist. He started the development of the Web in the year 1980 in the Swiss Alps. Berners-Lee, doing a six-month job as a software engineer at CERN (Center for European Nuclear Research) in Geneva, was fooling around with a way to organize his far-flung notes. He designed a piece of software that could, as he put it, keep "track of all the random associations one comes across in real life. He called it *Enquire*, short for *Enquire within Upon Everything*, a Victorian-era encyclopedia he remembered from childhood. Angus (1995)

Building on ideas that were current in software design at the time, Berners-Lee fashioned a kind of "hyper text" notebook. Words in a document could be "linked" to other files on Berner-Lee's computer. He cobbled together a relatively easy-to learn coding system- HTML (Hypertext Markup Language) - that has come to be the lingua franca of the Web. It is the way Web-content creators put those little coloured underlined links in their text, add images, sound and video... information. He designed an addressing scheme that gave each Web page a unique location or Uniform Resource- Locators (URL's) and establish a set of rules that permitted these documents to be linked together on computers across the Internet. He called that set of rules HTTP (Hypertext Transfer Protocol).

Finally, he then cobbled together the World Wide Web first GUI (Graphic User Interface) web browser, and called it "World Wide Web". It ran on the Next computer. The application was later renamed to Nexus just to avoid confusion between the first client and the abstract space itself.

In 1991 the World Wide Web debuted, instantly bringing order and clarity to the chaos that was Cyber space. From that moment on, the Web and the Internet grew as one, often at exponential rates. Within five years, the number of internet users jumped from 600,000 to 40 millions. At one point, it was doubling every 53 days. Berners (2000).

1.2 STATEMENT OF PROBLEM

Many problems face the Department of Physics and also the University of Uyo community as a whole today, chief amongst these are:

- i Forgery of semester results or even final degrees

- ii The Physics Department, University of Uyo, its program, the lecturers and their respective areas of specialization, research works and other relevant information about the Department are basically unknown by the global community.
- iii Academics do not have the opportunity of sharing their research works with other academics in the world.
- iv. Joint research with other academics in other parts of the world is virtually impossible except one is able to take a trip to meet fellow academics.

1.3 OBJECTIVE OF THE PROJECT

The objective of this project is to design an interactive website for the Department of Physics to solve these problems.

The publication of the Website on the World Wide Web would enable the department establish an international presence.

An identification number should be assigned to every bonafide graduate/undergraduate of Physics Department. On the certificate/result sheet, concernees will be advised to verify the authenticity of the certificate/result sheet from the Department's Website. Using Common Gateway Interface, CGI, script, the Site will be so designed to detect every fake certificate using the corresponding identification number or name. On the other hand, genuine cases of names and identification numbers will cause the system to release a detailed transcript of the recipient.

Details of the Department will be posted on the website for the world to see. The Department's news publication will also be posted on the Site. These can be restricted to a chosen audience by putting a password protection on the news publication if need be.

Researches done by academics in the Department will be made available for the world to see and possibly through the Department Website.

Due to the interactive nature of the web, joint research can be done by lecturers and students from Physics Department with other scientists in the world using available or built up computer simulation soft wares.

Graduate students- and other non-graduate students from any part of the world can apply on-line for graduate programs at the University of Uyo Physics Department without necessarily travelling down, until the admission is granted them.

2.0 DESIGN: THE DESIGN OF THE WEB SITE IS STRUCTURED UNDER THE FOLLOWING ITEMS. (The notepad of this website refers)

2.1 MODULE I - CODING THE PAGE STRUCTURE

2.1.1 HEADER CONTENT:

The first document structure tag in every HTML document is the <HTML> tag. It indicates that the content of this file is in HTML-language. All the text and HTML commands in the web pages of the website are within the beginning and ending HTML tags, as shown below.

TAG	DESCRIPTION
<abbr>	- Indicates an abbreviation
<acronym>	- Indicates an acronym
<Code>	- Displays a code example
<dfn>	- Highlights a definition or defined term
<Var>	- Suggest a word or phrase that is variable and should be replaced with a specific value.

Table 2.2.4 (a): The HTML tags in Logical Style

Physical styles define how to display text, but not how it is used on the page. The table below shows the HTML tags found in physical style.

TAG	DESCRIPTION
	Bold
<i>	Italic
<u>	Underline
<sub>	Subscript text
<sup>	Superscript text

Table 2.2.4 (b): The HTML tags in physical style

2.2.5 LINK

The crux of HTML is the capability to reference countless other pieces of information easily on the Internet. This is evident because the first two letters in the acronym HTML, stand for Hypertext, or text that is linked to other information.

HTML enables linking to other web pages as well as graphics, multimedia, e-mail addresses, newsgroups and downloadable files. The a tag, short for anchor and is used to add links to HTML files. does not serve much purpose without its attributes. The attribute that is also used is href, which is short for hypertext reference and tells the browser where to find (the information to which he is linking). The commonly used attributes are listed below.

With these, the problems of joint research with other academics in other parts of the world as well as other forms of similar interactions are addressed.

ATTRIBUTE ="VALUE"	DESCRIPTION
href = "url"	Tells the browser where to find the information he is linking to.
name = "link-name"	Gives that spot in the page a name, so it can be listed to by another link.
title = "description"	Gives a brief description of the link.
target = "window-name"	Specifies the browser window from which the link should be loaded.

Table 2.2.5: Commonly used HTML attributes.

The text included in between the opening and closing of a tag is what the person viewing the web pages will click. The text is highlighted as a different colour from the surrounding text.

2.2.6 INTERIOR LINKS

To link a section of a text within a page on the website, we first give that section name, using the name attribute of the a tag.
 section 1

We now link the section with the href attribute to alert the browser on the linking to a section within the page, we precede the link with a pound or hash mark as shown below:

(#) link to section 1

2.2.7 E-MAIL LINK

Linking to other types of files takes almost the same process; the only change is the actual value of the href attribute. A typical example is shown below.

<a href =
=mailto:enoituenus@yahoo.com=emailenoituenus@yahoo.com

2.3 MODULE 3 - GRAPHICS AND MULTIMEDIA

The Goal of this Module :

- Add still graphics to web pages.
- Add multimedia elements to web pages.
- Link graphic.

2.3.1 INTEGRATING STILL GRAPHICS

Images were added anywhere to the foreground of web pages by using the img tag. We added the src attribute (short for source) and its value to specify the actual filename, and path of the image.

2.3.2 SIZE AND DISPLAY CONSIDERATIONS

Static images in the foreground of web pages were also formatted by specifying the image heights, image width, image boarder, blank space above and below the image and blank space to the left and right of the image. This is done by using the following HTML tags:

<img - opens the image tags.

src = " - identifies the location of the image.

/images/photo.jpg" - single-slash alias tells the browser to return to root level, look for a folder called images, and look within the folder for a file called photo..jpg./> - because the img tag does not have a required closing tag space.

= forward slash before the final bracket ensures the tag as being XHTML.

Width = "200" - defines the width, in pixels, of the image.

Height = "100" - defines the height, in pixels, defines the thickness of the border around the image

Vspace = "10" - defines in pixels, how much blank space is present above and below an image.

Hspace = "10" - defines, in pixels, how much blank space is present to the right and to the left of an image.

2.3.3 USING IMAGES AS LINKS

To link an entire image, we add the a tag and the href attribute around the image, specifying the content to which it is being linked. In this work we have applied this to access information on the

individual student researches and their supervisors.

```
<a href = "Research.htm" targets = " - top"> <img src =
images/invest.ink.jpg" width = "177" height = "174" .border = "0"
alt = "potential investors, please click here..." > </a>/td>
```

<a href = "Research.htm" - opening a tag tells the browser to begin linking to the Research.htm page located in Unuyo folder.

<img src = "Images/investor.ink. jpg" - this tag defines the image. - closes a tag and tell the browser to stop linking to the Research.htm page.

</td> - closes the already defined table data cell.

Target "- top" - identifies the target window where the link will be displayed.

2.3.4 IMAGE MAPS

Sections of an image was also linked, creating image maps. When sections of an image are linked (as opposed to entire image). the visitor's pointer changes to the "hand" when the mouse is moved over the predefined hot spots on the image. Each hot spot within an image map could be linked to its own web Page, if wanted.

An example in this work is an image of the map of University of Uyo, where each section could be designed as a hot spot.

2.4 MODULE 4 - INTERACTIVE ELEMENTS

Users interact with web pages in a variety of ways, such as entering data into and submitting a web form, and causing page elements to change based on certain actions. Web forms are coded with HTML tags and also JavaScript (scripting language) etc.

2.4.1 FORMS

This is the most common type of interactive element on the web. The basic purpose or any form is to collect information from the user. Online forms also require such, the collected form is then processed. On web forms, the places for users input are referred to as form fields or form input controls, and the instructions on what to enter in a particular field are called field label.

TYPES OF FORM FIELD

The three types of forms fields used on web forms are:

- a. text boxes
- b. radio buttons, and
- c. select menus

a. TEXT BOXES

Text boxes are in two forms namely single - line and multiple-line text areas.

Single-line text fields is the most basic type of input control. It controls is a space, looking like a box, that can contain single line of text. Usually, text fields are preceded by descriptive text telling the user what to enter in the box. An example in this website is as follows:

```
Name: <input type = "text" size, = "30" name "Name"/> <br/>
Registration number: <input type "text" size "10" name ="Reg. No"/>
<br/>
Identification number: <input type "text" size "10" name = "IdNo"/><br/>
State: <nput type = "text" size "30" name = "state"/> <br/>
```

The output of the above HTML tag as on the website is shown below:

Name:

Registration number.

Identification number:

State:

With this provision, the problem of certificate verification is addressed.

MULTIPLE-LINE TEXT AREAS

This HTML attribute allows visitors of website to enter more than a single line of text and the format used is text area instead of text field, as shown below

```
<p> Please describe all applicable experience
<br />
<textarea. name = "Experience" cols = "20"
rows = "5" Type here
<textarea> ></p>
```

The output of above HTML tag is shown below. Please describe all applicable experience.

Please describe all applicable experiences

Type here

Multiple Line Text Area

</textarea> - closes the opening.<text area tag.

Type here - the printed text within the text area.

The cols attribute identifies the visible width of the text area, based on an average character width. The rows attribute identifies the visible height of the text area, based on the number of text lines

b. RADIO BUTTONS

Radio Buttons are small, round buttons that enable users to select a single option from a list of choices. This is accomplished with the input tag and the radio tag for the type attribute. Radio buttons are useful for questions requiring a yes or no answer. When the use selects one of the options by pressing the radio button, the circle is filled in with a black dot. For example,

```
<p> for which job are you applying? <br />
<input type = "radio" name = "Job" Value = "Trip leader"/>Trip
leader <br/>
<input type = "radio" name = "Job" value = "Lawyer"/>Lawyer <br/>
<input type = "radio" name = "Job" value = "Nurse"/>Nurse <br/>
<input type = "radio" name = "Job" value = "Technologist"/>
Technologist <br/>
```

<input type = "radio" specifies that the input type of the form option is a radio button type.

"Trip leader" implies that the values are transferred with the form of which it is processed and also helps to determine which option a user selects.

/> - a space and a slash at the end of each line terminate the input tag

that opens each line. The output of the radio button form written above, using HTML tag, is displayed below:

For which job are you applying?

- Tractor driver
- Lawyer
- Nurse
- Technologist

c. SELECT MENUS

Select menus are lists that have been compressed into one or more visible options, similar to menus found at the top of other software applications. Select menus also called drop-down menus, enable user to click all option initially visible and then pull down to reveal additional options. Only a single option is visible when the page loads.

The select element has been used to create a menu initially, while option tags surround each item in the menu. A menu, asking users to choose the state in which they live, as shown in the website, has been coded using this format:

```
State: <select name = "state">
<option value = " " > choose a state </option>
<option value = "AB"> Abia state </option>
<option value = "AD"> Adamawa state </option>
<option value = "AK"> Akwa Ibom State </option>
</select>
```

State: <select name = "state"> - This identifies the control, as a menu and gives it a name. No size attribute is specified, so only one option will show when the page is loaded.
 <option value = "AB">..... </option> - opens and closes the option while the text in between the opening and closing option tag are displayed in the menu.
 </select - closing tag is used to end the menu.

The output of the above HTML, tag is displayed below:

State:

Choose a state
Abia State Adamawa State Akwa Ibom State

BUTTONS:

Buttons enable user to interact with a form. For example, in this website the button labeled "submit" informs the browser that the filling of the form has been completed and is ready for processing. With HTML, three types of buttons can be created, as listed in table 2.4.1

TYPES OF BUTTON	DESCRIPTION	HTML
Submit	When pressed, this button processes the form	< input type = "submit" value = "submit"/> <button type = "submit" /> Submit </button >

Reset	When pressed, this button resets all the form's fields back to their initial values.	<input type "reset" value = "reset" /> <button type "reset" />Reset </button>
Generic Button	When pressed, an action or event is triggered, based oil a redefined script or Function. The generic Button always involve scripting language, such As JavaScript.	<input type "button" value = "Verify Data"/> <button type "button" value = "Verify Data"/>Verify Data </button >

Table 2.4. 1: Button types description and HTML tags used in creating them

2.5 PROCESSING FORMS

The term processing refers what happens to the form after the user enters all the data and presses the "submit" button. The action attribute inside the opening form tag, tells the browser how to process the form.

ACTION ATTRIBUTE

The action attribute gives the location where the forms information should be sent. This is always in the form of the URL of the CGI script.
 <form action = " /cgi bin/ run.cgi"> This again applies in the case of certificate verification form in this work.

2.5.1 CGI SCRIPT.

A CGI script (Common Gateway Interface) is a Program that is run on a web server, triggered by input from browser. The script is a link between the server and some other program running on the system; for example, a database.

The CGI script can be written using any of the following programming languages: JavaScript, Visual Basic, Perl, DHTML and Flash. CGI scripts are called by the server, based on information from the browser. Cherry et al (1999), David et al (1997) and Dennis et al (1997).

2.5.2 HOW THE CGI SCRIPTS WORK

1. A URL points to CGI script the same way that it points to any other document on a server. The browser requests that URL from a server just as it would with any other document.
2. The server receives the request, notes that the URL points to a scripts (based on the location of the file or based on its extension, depending on the server), and executes that script.
3. The script performs some action based on the input, if any from the browser. The action may include querying a database, calculating a value, or simply calling some other program on the system.
4. The script formats its result in a manner the web server can understand.

5. The web server receives the result passes it back to the browser, which formats and displays it for the reader.

2.6 TESTING

Every web presentation has to be tested before it is finally uploaded into a web Server. Testing is done from two points of view, integrity testing and usability testing. Integrity testing is simply making sure that the pages put together in the previous chapters are created correctly using HTML - that they display without errors; all the links points to real locations and making sure that the pages are readable in multiple browsers. Usability testing, including making sure the pages are being used in the way they were designed for and that the goals for the presentation are being met.

3.0 WEBSITE IMPLEMENTATION

After testing was completed and a confirmation that all aspects of the site performed as expected in the target browsers and on the target platforms, the website is finally uploaded to the web.

For this web project to be implemented in the department for accessibility or surfed by visitors, there is need to have an Internet Connection, the site hosted and domain name registered.

3.1 GETTING CONNECTED TO THE INTERNET

In order to get connected to the Internet, the following are needed:

- a. a computer
- b. a modern (modulator – demodulator)
- c. a telephone line or micro wave link
- d. a web browser program
- e. an ISP or personal server

The computer to be used must be at least an Intel 486 processor (computer) or at best a Pentium computer with between 8Mb and 256 Mb of RAM with a good operating system such as windows. For effective performance, the hard-disk drive must be up to 1GB or more, depending upon the quantum of information to be download and a SVGA colour graphics monitor with at least 640 by 480 resolution and 256 colours.

In using modern, the modern to be connected must have a minimum speed of 14.4 kilobytes per second (kbps). Other faster modems can also be used. The modern can either be external or internal. External modern are usually outside the CPU box and have the advantage of being taken from one computer to another, although it requires a separate power source. Internal moderns are usually in the form of plug in cards and do not need separate power supplies.

A web browser program is needed to be able to navigate through the web as well as communicate with other users of the Internet. There are a lot of web browser programs, which can be bought off the shelf or downloaded from the Internet. Such programs include Microsoft Internet Explorer, Netscape Navigator, NCSA Mosaic, Lynx, Macweb and Winweb.

Internet connectivity is usually provided to an Internet user by an Internet service provider, (ISP). An ISP is an organization that gives users access to Internet as well as access to their own information contents. Examples of popular ISPs include American Online,

Compuserve, Cyperspace, Prodigy, Linkserve, Infoweb, Microsoft Network, Stallionet NetExpress etc.

The cost of Internet Connectivity varies from one ISP to another and from country to country depending upon the type of connectivity required by the users. Types of Internet Connectivity and their cost range are provided by Timothy et al (1998).

3.2 WEB SERVER

Every web site or web page also needs a web sever. Quite simply, it is a special software program that sits on a computer on the Net, waiting for a web browser to connect to it using HTTP to make a request. It also enables web sites to be hosted.

Before Internet users can see the web pages, the pages must be copied onto the server. This process of copying pages to the server is called uploading, and is most commonly accomplished using, File Transfer Protocol, FTP tools. FTP are stand-alone applications purchased in a computer store or download from the Internet.

3.3 WEBSITE HOSTING

Many different options are available for those who want to publish a site on the Internet. The companies that provide these types of services are called Hosts because they host your website content for viewing on the Internet.

For website to be hosted on the Internet, there are different options provided by companies responsible for such services, these options are grouped into two categories:

- Personal site hosting
- Business site hosting

3.3.1 PERSONAL SITE HOSTING

These involve the free web space services offered by different sites for those who want to publish their personal website but aren't concerned about having their own domain name. These sites limit the amount or space or bandwidth used. Such sites that offer hosting to anyone who requests for it are: MSN (communities. msn.com); AOLHometown; Tripod (WWW.tripod.com) Angelfire (WWW.ngelfire.com); NBCi (wx.nbc.com/mywebsite) and yahoo!geocities (geocities.yahoo.com).

3.3.2 BUSINESS SITE HOSTING

On the business site hosting, there exist three options:

- onsite hosting
- collocation hosting
- offsite hosting

1. ONSITE HOSTING

Online hosting is a direct or dedicated type of Internet connection. Individuals rarely have connection because they are quite expensive. However, many organizations such as Colleges, Universities, Corporation and service providers do have direct links.

2. COLLOCATION

This is an option for businesses that don't want to spend the money for an expensive, dedicated Internet connection. With collocation, subscribers rent space and a high-speed internet connection from a host company (internet service providers, universities, colleges or cooperation connected directly to the internet). Subscribers'

equipment are housed in that space and can be reached anytime of the day by personnel, thereby enabling the users to maintain a higher level of control over the site. This type of connection provides a higher level of service at a lower cost but is somewhat slower and may not be as convenient compared to dedicated link.

3. OFFSITE HOSTING

Offsite hosting is also either on a shared or dedicated server. This type of hosting favours small to mid-size businesses and also individuals, because it is not expensive. The primary disadvantages of offsite hosting are slow response to retrieval of information, limited access to Internet functions and slow rate of connection for individual users.

For the purpose of testing the web presentation designed in this project before uploading it to web server, we've used a personal site hosting to host the web presentation. The site that is offering this free web space service is a free server.

4.0 MAINTENANCE AND UPGRADES

All websites require maintenance and upgrades at some point in their life cycle. A better website requires frequent maintenance to keep the content current and effective. Adopting the following options could do this:

The development of the web best maintenance solution that does not require them to purchase and study additional programs or to learn HTML.

- * Training of staff to use a commercial product, such as Microsoft FrontPage, HTML, self page study or classroom-based learning.
- * Set a monthly maintenance contract, where monthly payment is made to maintain the site. If a set is transferred to client who does not know HTML, you can use a WYSIWYG editor (What - You - See - Is - What - You - Get) such as Microsoft FrontPage or Macromedia Dream Weaver to make changes to a site.

4.1 TECHNICAL CREW TO MAN THE WEBSITE

The functions of the technical crew to man the website include:

- * To understand the client's overall business to translate a picture of it effectively to website visitor.
- * Understand the client's business goals and objectives as well as recognized flaws or red flags in meeting those with the project.
- * Develop an efficient, user-centered design and structure for the technical aspects of the project
- * Design and maintain appropriate database, servers, testing environment, security procedures, network.
- * Help educate the client regarding maintenance of site
- * Test and revise as necessary.

Technical crew include the following

Web master
Web Producer

Web publisher
Operators

The area of work for the technical crew would cover Web

Application Development, Web Development, Programming, Web Designing, Maintenance, Quality Analyzing and Engineering, Security Protocol, Database Management and Development.

4.2 WEBSITE MANAGEMENT

The functions of the website manager will include;

- * Develop and maintain good relationships with clients.
- * Understand the client's business goals and objectives.
- * Coordinate kick-off meeting involving all team members and schedule additional meetings as needed throughout the project lifecycle.
- * Create and manage project schedules, budget and scope, ensuring quality control throughout the project.
- * Identify and lead project resources, making sure all team members understand the assigned tasks, deadlines and deliverables.
- * Developing and managing new business for the upkeep of the project. Wendy (2001).

5.0 RESULTS

5.1 SURFING THE WEBSITE USING MICROSOFT INTERNET EXPLORER AS THE BROWSER

The word surfing means moving from one web page to another using links on the web pages. Assuming someone in Saudi Arabia needs information on studying Physics in University of Uyo, what he needs to do is to first obtain the web address of University of Uyo from a web search database, visit any cyber cafe that has Internet connection and then apply the following steps.

After booting the computer system, the user is to open Internet Explorer shortcut icon on the desktop or click start > programs > Internet Explorer. Other types are as follows:

- * Click file > open
- * Type the department's web address
- * Click OK.

If the address was typed in correctly, what the user sees is the Home page of University of Uyo. See figure 15 page (ii) of APPENDIX A (overview of the website). Etuk [9]. The page is segmented into 4 frames. *The first frame* contains the name of the University, the second frame displays the logo of the University, the third frame contains the list of hotlinks and the last has graphic images that signify links to other pages.

If the user clicks on *the link* - the University, the user is taken to a page that introduces the University, the brief history of the University, and the aims and objectives of the University etc. See figure 16 in page (iii) of APPENDIX A (overview of the website). 'Etuk, [9]

If the user clicks on the link - academic program the browser takes the user to the page that displays the entire degree program offered in University of Uyo. All other links that display the degree program offered! in University of Uyo are inactive except that of Natural and Applied Sciences. Also, all other Departments under Natural and Applied Sciences are inactive except that of Physics Department since the design was limited to that of Physics Department only.

If the user clicks on the link - Physics, the browser takes the user to the home page of Physics Department, which is segmented into 3 frames. The first frame has the department's name, the second frame

displays the logo of the Department and the third frames contains hot links which on pointing at each link displays sub links that specifies link to other web pages. See figure 17 in page (iv) of APPENDIX A (overview of the website). Etuk, [9]. The home page of Physics Department contains the following links:

- Home,
- Background
- Information,
- Program,
- Course description
- Departmental staff,
- Research,
- Certificate verification,
- the link - Background Information when clicked takes the user to the page that introduces the department.

See figure 18 in page (v) of APPENDIX A. Etuk, (2002)

The link - Program when clicked highlights the program offered in Physics Department.

The link - Course when clicked displays the program content of B.Sc. Physics degree program showing the course code, course title and credit hours or unit. See figure 19 in page (vii) of APPENDIX A. Etuk, (2002).

The link -Course description when clicked displays a page that gives full description of the courses offered.

The link -- Certificate --verification when clicked takes the user to the certificate verification page. This page enables interactivity. It has a form that requires to be filled and submitted. See figure 20 in page (ix) of APPENDIX A. Etuk, (2002).

If the information supplied by user is valid, the required output will be generated else, the request will be rejected, signifying invalid identification.

The link - Departmental staff when clicked displays all the academic, technical and administrative staff of the department likewise their respective area of specialization and qualification. See figure 21 in page (x) of APPENDIX A. Etuk, (2002).

The link - Research when clicked displays a page that outlines the students' seminar, project topics and supervisors' of this topic.

5.0 CONCLUSION

The website for the Department of Physics was thus constructed and presented at the Department before the Head of Department. It was also presented before the Director of Computer Services of the University and again before the NUC accreditation panel in November 2002.

This was done only within the limited facilities of the free server pending the actual hosting and registration of the University Domain Name.

This website has been packaged in a CD attached to this w

7.0 REFERENCES

- Angus, J. K. (1995) The Internet and Worldwide Web MacDonall and Evans Ltd., Plymout, USA. 493 -540.
- Berners-Lee, T. (2000), WW W .. W ' 3.org/people/bemers-lee J-FAQ.html (Worldwide Web Consortium, MIT, USA); Frequently Asked question by the Press. 4-9.
- Cerf, V. G.; Clark, D. D.; KLDui, R. E.; Lemer, B M.; Lynch, D. C.; Postel, J.; Robert L. G.; Wolf, S. (2000) Internet Society, MIT, USA: A Brief History of the Internet.
- Cherry, C., Time (1999). Magazine: The Century's 100 Greatest Minds. 18 - 19.
- David, S and Hayden Books. (1997). Creating Killer Websites. Pitman Publishing, London.
- Dennis, R. and Coolen, J. (1997). Electronic Communications. Prentice Hall of India Private Limited, New Delta. 1506- 159.
- Etuk, E. N. (2002). Design and Implementation of Interactive' Website for the department of Physics. B.Sc. (Physics) Project (Unpublished). University of Uyo Library OR Department of Physics. University of Uyo.
- Timothy, J. O and Linda, I. O. (1998). Computing Essentials, Multimedia Edition. McGraw-Hill Companies Inc., New York.
- Wendy, W. (2001). Web Design~ A Beginners Guide.
- Osborne/Mcgraw-Hill Companies, Londo