A PRACTICAL APPROACH TO WEB DESIGNING

(A CASE STUDY OF MATHEMATICS / COMPUTER SCIENCE DEPARTMENT)

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

BY

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PGD / MCS / 2000 / 2001 / 1001

DEPARTMENT OF MATHEMATICS / COMPUTER SCIENCE

F.U.T. MINNA

NOVEMBER, 2003

CERTIFICATION

This is to certify that this research was carried out by AKHILOME IYOGUN of the Department of Mathematics and Computer Science is adequate in scope and quality for the award of the post Graduate Diploma in Computer Science of the Federal University of Technology; Minna.

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MALLAM AUDU ISAH
(PROJECT SUPERVISOR)

DATE

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MR. L.N. EZEAKO
(HEAD OF DEPARTMENT)

DATE

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(EXTERNAL EXAMINER)

DATE

DEDICATION

This Project is dedicated to my Wife PAT. IYOGUN and my Two Sons BLESSED AND OBUNNI whom I always leave every weekend to go for Lectures in Minna during the course of my studies.

sharing data. The traffic between its sites included small text files sent between individual users. The Internet's phenomenal growth has made it a global marketing medium and commercial business area. Communications companies, telephone companies, and cable television firms, and corporate, all want to be a part of the Internet phenomenon. Currently, the Internet is being used for:

- ✓ E-mailing.
- ✓ Exchange of data and information.
- ✓ As a forum for discussions, exchanging information and news between special interest groups.
- ✓ On-line conversation.
- ✓ Commercial or business transactions
- ✓ On-line training.
- ✓ Recruitment purposes.
- ✓ Entertainment.
- ✓ Accessing information on any topic in the World.

Some of the areas where the Internet is being used have been discussed below:

E-commerce:

E-commerce stands for electronic commerce. With the Internet, the customers can view the available products and/or services on-line, select the product(s) that he/she wants to buy and place an order for these products. Payment details are also specified on-line. Payment is typically done by specifying a Credit Card number. The customer is charged on his credit card for the purchases made and will pay for them when he receives the credit card bill.

GLOBAL COMMUNICATION

The Internet provides rapid communication facilities at the cost of a local phone call. It allows the users access to a world market.

NO TIME ZONE DIFFERENCE PROBLEMS:

The use of facilities like e-mail and on-line chatting enables the companies to be in contact with the suppliers, clients and employees in spite of time differences across continents. E-mail messages can be accessed at the user's convenience. For immediate contact, on-line chatting is a good tool. The Internet has made it possible for employees to live and work at a distance. They need not to go into the office physically. Transfer of information, and meetings can take place over the net.

CUSTOMER FEEDBACK AND SUPPORT:

One of the main advantages of the Internet is being able to maintain good contact with the customers. Customers can contact good companies at any time of the day or night using e-mail and obtain information by way of Gopher and FTP. The use of the Internet helps in maintaining a close relationship with the customer.

MARKETING AND SALES:

A web site on the World Wide Web (WWW) can provide the company with a global presence. Companies can establish this presence by using tools like Usenet, Gopher, FTP Telnet, and e-mail. Businessmen can carry out marketing research on-line.

INFORMATION RESOURCES:

Organization need all kinds of latest information. Many businesses rely on the latest scientific and/or Governmental information for their operations. The Internet provides this information in abundance.

SUPPLIER SUPPORT

Contacting old and new suppliers can be done speedily over the Internet. This in turn can speed up the procedure to obtain supplies.

On-line supermarket refer to the sites on the Internet that sell items like books, music tapes, and deliver flowers across countries. Some sites even have the facility to book movies tickets and have them delivered. For example, **amazon.com, barnes.com and noble.com.**

1.4 The Advantages of these sites are:-

- The user can browse through the products available with that supermarket, from home at his convenience.
- Product that may not be available locally can be bought through these sites.

However, the disadvantage lie in the time taken for the delivery of the product. Delivery may not be as quick as desired.

On-line supermarkets are getting popular and soon people would be able to buy garments, household products and probably even computers on the Internet.

UNIVERSITIES/ON-LINE COURSES:

Many Universities have Internet connection. The Universities on the Internet tend to exchange resources to help each other. They also use the Internet to put up publications, announcement of conferences and vacancies.

The Universities also put up information about student loans grants, scholarships and work-study programs on the Internet. Many Universities provide Internet access to their students.

Potential students, local as well as from other countries, seeking admission to universities abroad, can access their web sites. The web sites provide information on the courses and programmes offered.

The students can correspond with the Universities regarding the admission procedures via e-mail. E-mail proves to be a much cheaper and faster option than the conventional modes of communication.

Most Universities place a lot of importance on research, especially research that brings in grant (money). Many Government agencies place their grant offers on relevant Internet mailing lists and Usenet groups. The Internet proves to be a useful tool to researcher.

- Many academic researchers need supercomputers to run programs that perform complex computations. The programs cannot be executed on the University computer systems. The Internet has sites where researchers can access supercomputers and pay for their use.

- Researchers can download software including editors, compilers, spreadsheet, databases and analysis tools to help them in their research.
- They can conduct surveys by posting questionnaires on an Internet mailing list or Usenet news newsgroup.
- Hundreds of academic libraries can be accessed for information on the Internet.
- Articles written by researchers have to be reviewed by peers. This is to verify their accuracy before they can be published in journal. By putting up the articles on the Internet, the peer-review process can be speeded up.
- Academic researchers can exchange and discuss ideas via e-mail and by conducting public discussions in mailing and Usenet newsgroups.
- Databases containing the research information are being put on the Internet. Other researchers and the general public can access these databases for information.
- Publishing articles on the net offer advantages like faster publishing easier distribution, and reduced cost. Articles can take months to get published through the normal publishing process. However, on the Internet, the whole process could take just few weeks.

Another area of academics where the Internet is gaining popularity is distance learning. It has been implemented by using e-mail, Gopher and FTP. People can take these courses while sitting at home or in the office.

Taking courses via the Internet has several advantages:

- There is more and faster interactivity between the students and the faculty than in a traditional, paper-based correspondence.
- The student can access the Internet from any place in the World. Thus the study materials can be accessed from anywhere without a break in continuity.

- Many courses use Gopher and FTP to make information available. This allows the students to explore the study materials at their own place.
- In traditional distance education, access to books, materials and libraries was difficult. However, over the Internet, the students are able to access databases, articles, journals and libraries.

Distance education is moving toward a virtual reality environment where the user will go through the experience of being present in an actual classroom. The students and the faculty will be able to assemble in class-like environment on the Internet. Special hardware and software will be required to implement a virtual classroom.

1.5 INTRODUCTION TO WEB SITE DESIGN:

One of the most importance skill to acquire is design. While it is not imperative that you have extensive knowledge in design, a bit of knowledge can you in creating a site and attracting visitor. There is always a balance information site and the sites overall design. A good site should feature a complimentary combination of design and information such as the following:

1.5.1 TOPOGRAPHY:

This is the style of text that one present to visitors. The style of text one use throughout a site sets the atmosphere of what site is all about. Make sure that the type of font, font colours and font size suit your sites purpose. Many users do not read a lot of text while visiting a Web Site, but they do scan for things they might find useful, so one should make key words stand out.

The following tips will help one to use topography in a Web site.

- Do not overwhelm your visitors with large chunks of text. Instead, break large pieces of text into smaller paragraphs.
- Do not use extremely large fonts in your sites body text; likewise, do not use fonts that are too large or too small to make it hard for the reader to follow the text on the page.
- Make the text contrast with the background.
- It is much easier for the eye to follow text that contrasts with the background.

1.5.2 COLOUR:

One of the most important aspects of planning a site is determining what type of a colour scheme to use. While front page comes with several pre-defined themes that offer a wide assortment of great colour schemes, one may want to choose colour combination that will suit the site. The colour of a site can reflect the nature of the site. Flashy colour can be used for the promotion of products while more subtle colours can be used for a site that is informative. The following are useful tips that can help one to use colour effectively:

- Use colour to enhance the message, but try to use colour in a way that takes away from the message.
- If you are adding colour to the text or a text background, make sure that the text is still legible. The lack of contrast between colours can make text hard to read.
- Try not to use colours that are too bright or hard on the eyes.

1.5.3 LAYOUT:

Another important area of a site is the layout. Layout is how information and other element on your site are organized. The following guidelines will help you with layout::

- Try not to have your site clustered with information. Use space to your benefit. Having too much information on one page can actually dissuade people from reading the site.
- Test to see how your site looks on smaller monitors. Different size of monitors provide different results.
- The home page should give your visitor a sense of what your site is about what your site is all about without them having to scroll excessively, key topics and features should immediately stand out once the page has been loaded.

1.6 BRIEF OVERVIEW OF THE WEB SITES:

A Web site is a collection of linked files called Web pages. The Web pages of a Web site contain text, pictures and other elements of related information and are accessed by Web browsers. They are linked together using Hypertext Markup Language (HTML) code. The HTML is made up of codes consisting of tags that define how web pages look. A software package called a browser translates the HTML tags into a final product – a web page.

A Web browser is piece of software that runs on your personal computer and enables you to view web pages. Web browsers often simply called browsers interpret the HTML code and provide a visual layout displayed on the screen.

Many browsers can also be used to check e-mail and access newsgroups.

The most popular browsers are Netscape Navigator and Microsoft Internet Explorer.

Whenever you begin a web project, the first thing one need to think about include the following:

- Who will work on the project?
- What are the goals of the project?
- Who will use the finished product?
- How will the project be implemented?

Every project need a certain amount of documentation, regardless of the size or scale of the endeavor. Documentation can be defined simply as the recording of the problems, the proposed solutions, the steps taken to reach the solution and the result.

DEVELOPMENT OF LIFE CYCLES:

Many pieces of documentation are edited throughout different parts of the typical development life cycle.

The vast majority of Web development projects use a life cycle similar to the following:

PLANNING AND ANALYSIS: The project scoped and defined. The contracts are written, reviewed and signed. Before beginning any web development process, we must analyse the project to determine certain key aspects such as:

- What is the purpose of the site?
- What are the site goals?
- Who is the target audience?

- What will the content be?
- How will the content be structured?
- How will users move through or navigate the site?

DESIGN: The structure of the project is designed, as specified in the documentation.

DEVELOPMENT: The project is built and tested, according to the specifications approved in the first two phases. Images, multimedia, code and so on are developed and tested.

TRANSFER AND MAINTENANCE: The project uploaded to the final web server and tested. Ownership is then transferred to the client or another team for maintenance. The above four mentioned stages are only the beginning.

Each stage may have many mini-stages within it and some stages may overlap others. The entire process is an interactive one that continues as the site grows and evolves. One other major aspect of a web site is publishing.

After finishing testing the site, it is now ready to be published on web server. The Internet service provides usually offer space on their web server for minimal charge.

Before you publish the web site on their server, you should clarify certain things from the web server's administrator.

- Ask him how much disk space is being allocated; ask him if there is any extra charge to be paid if more space is required.
- Find out whether you will be given your own domain name or not.
- How is their customer service?

- What precautions they take or how they handle power failure, and whether conditions?
- How frequently they take backups?
- Find out the protocol used at the 15P such as FTP or HTTP post.

Once you get convinced with the 15P as for the URL of the web server and the name of the folder where you publishing a web site.

Publishing is the procedure by which you make your web site available to other users of your network or other networks.

Prior to publishing a site over the Internet, they go through two phases:

ALPHA TESTING:

This is the testing process that takes place during the development of the site itself. The developer will constantly test the page on the browser and change the design as and when required.

BETA TESTING:

This testing is done one the site is developed by a different group of employees or it can be tested by the people for who this site is being developed.

Prior to Beta testing, you need to have:

- Fully developed web site.
- Properly tested.
- All the navigation links tested.

1.7 OBJECTIVE OF THE PROJECT:

The objective of this project can be stated as follows:

to increase public awareness of the University and its services.

sell the University to potential students.

facilitate communication between the University and the Students, Alumni, and other interested parties.

enable interested parties to support the University through on-line donation and potential other means.

1.8 SCOPE OF THE PROJECT:

The scope of this project is to look at steps or processes involved in designing a Web site, for the Department of Mathematics/Computer Science of the Federal University of Technology, Minna. The content of the site will include a brief of the Department Teaching Staff, the Courses available in the Department, the admission requirements and the admission process.

1.9 MOTIVATION FOR THE STUDY:

The speed at which information are obtained in Nigeria Universities can be said to be very low. It takes prospective applicant time to find out what is obtainable in most Universities in Nigeria. With the advent of Internet, obtaining information about any organization has become easier, faster and cheaper. This also enhances decision-making. The number of Universities in Nigeria is increasing everyday including private Universities. To attract prospective students and other employees, the knowledge of Universities in terms of its course contents, caliber of lecturers, administrator and other key personnel of the University deserves to be known. Having a fair knowledge of University will enhance decision taking. The slow pace in which information is obtained in the Nigeria Universities is well known by all and sundry. This was what motivated me to initiate a study of Website Design of the Federal University of Technology, Minna with the hope that in the nearest future, other interested

parties my want to build on this work and eventually host it. With this, it is my belief that it will revolutionize information dissemination in Nigeria University system just like what is obtainable in Developed Countries. Apart from this, a site design for the Federal University of Technology, Minna will increase public awareness of the University and its service.

1.10 OUTLINE OF THE PROJECT.

The project will be divided into Five Chapters.

Chapter One will give a general introduction of the work, stating a brief history of the growth of Internet and an overview of Web sites.

Apart from that, it will also state the project objective, scope of the work and motivation for the study of the project.

Chapter Two will look at the structure of the Federal Universities of Technology, Minna and narrowing it down to Mathematics/Computer Science Department of the University. It will also look at the Internet connectivity in the academic community in Nigeria with special reference to the Federal Universities of Technology, Minna.

This Chapter will also consider a few basic characteristic of popular web technologies as they relate to web design and various coding and design tool used to design web pages. Such will include Hypertext Markup Language (HTML), HTML codes, Java Codes and Web site securities.

Chapter three will consider website analysis and design.

This will include the design methodology to be used and site Navigation and Hyperlinks.

Chapter Four will concentrate on the system implementation and output showing the site and all the pages – Department page, Lecturers page and Graduate page. Application for Admission forms on-line etc.

Chapter Five is the summary of the project, findings and recommendations.

The Department of Architect is working on a project tagged ARCHITECT. It is aimed at addressing the 400-year-old flood phenomenon in China. The Solution is anchored on a simple but technical approach of constructing floating building on the Youg-Ise and Hwang Ho riverbanks. The Department welcomes visitors to "The Floating City of China"

In the area of internal revenue generation, the University has floated the FUTMIN CONSULT, a consultancy outfit that has continued to achieve greater heights. It has undertaken the following consultancies among others.

Gurara Inter Basin Water Transfer, NNDC/UNII Project, EEC/FGN, Middle-Belt Project, Niger State Ecological Mapping of Wheat growing ADB/UNDD State ecological Zone Mapping, Mando fish farm and NICON Hilton Hotel Sewage Design, Environment Impact assessment at Kagara Dam for the Upper Niger River Basin and Rural Development Authority (UNBRDA). FUTMIN CONSULT is also consultant to INEC on its Communication and Telecommunication programme, which is an on going project.

The University has established a linkage programme, which is on with the University of Namibia and it member of the Association of Commonwealth Universities. It has honored to our Distinguished Gentlemen and achieves namely: Alhaji (Dr.) Sheu Idris, CFR, the Emir of Zaria and the Chancellor to the University, Alhaji (Dr.) Abdulrahaman Mora and Dr. Sam Nujoma, the president of the Republic of Namibia, Retired General Badamosi Babangida, the former Head of State of Federal Republic of Nigeria and Retired Flight Lieutenant Jerry Rawlings, the President for the Republic of Ghana.

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The Head of the Department (HOD) whom must be a professor and would coordinates all the activities of the department with the help of the departmental secretary. The main responsibilities of the head of the department is to ensure the successful running of the department academically and delegates jobs to them when the need arises who then report to him from time to time.

The Mathematics/Computer Science Department examination office, is the heart of the department. The office is charged with the responsibility of preparing exams time table and assigns invigilators to ensure smooth conduct of the examination. It is through this office that each Lecturer of the department including the Head of department that collects his/her scripts of the course he/she thought in that semester. The students' result (undergraduates, post-graduate diplomas and master students) are also kept in this office for further reference. The activities in this office is so tedious and sensitive to the department and as a result, any Lecturer appointed as an exams officer stays in the office for a period of two-years and after which the head of department appoints any other person.

The coordinator of post-graduate programmes is in charge of the Master and PhD students admitted by post-graduate school into the department. The students (M. Tech and PhD) collect their research topics through this office.

The office of the coordinator of post-graduate diploma programme is charged with the responsibility of registering post-graduate diploma students admitted by the post-graduate school into the department. The officer issues their project supervisors at the end of the course and ensures that lecturers go to their classes as scheduled.

The office of the coordinator seminars is charged with responsibility of orgnising seminars of any kind and project defense that has to do with the department. The office reports directly to the Head of the Department at the end of the exercise.

Other lecturers in the department take instruction from the head of department.

3.4 STATE OF INTERNET CONNECTIVITY AND THE ACADEMIC COMMUNITY IN NIGERIA

Issues relating to Internet connectivity which necessitate the need for an Internet website in Nigeria academic communities is such that adequate attention should be given to it. In the last few years, there has been a measurable growth in the information technology industry. It is note worthy that developing countries must actively participate in information age in order to remain relevant as part of the international education/economic order. Electronic communication as offered by the internet will continue to play a vital role in all aspect of human endeavor as we launch into the new era as the world countries to be dominated by information technology.

The state of Internet connectivity is Nigeria Universities and Polytechnics as well as other institutions of higher learning is appalling compared to what is obtainable in other nations (including developing countries). The serious issues calls for great concern especially as one comes face to face with the various academic communities that are connected to the Internet. The journey to the information super high way is

real, but it is unfortunate that this important issue is not given the much-needed attention by the academic communities and the Federal Ministry of Education in Nigeria. Since the industrial revolution is quite a far away distance from us in this part of the World, we must make special efforts to ensure that we stay within the information World. We must make special efforts to ensure that we stay within the information World; we must make special efforts to ensure that we stay within the information revolution.

The table below shows the figures that depict the State of connectivity of Nigeria Academic communities to the Internet. Although, this is limited to the Universities, Polytechnics, College of Education and the private tertiary institutions.

(a.) **UNIVERSITIES CONNECTED TO THE INTERNET**

INSTITUTIONS	NUMBER AVAILABLE	NUMBER CONNECTED	% CONNECTED
Federal Universities	16	4	25
Federal Universities of Agriculture	3	0	0
Federal Universities of Technology	5	0	0
State Universities	9	0	0
State University of Technology	3	0	0

(b) **POLYTECHNICS CONNECTED TO THE INTERNET**

INSTITUTIONS	NUMBER AVAILABLE	NUMBER CONNECTED	% CONNECTED
Federal Polytechnics	17	02	12%
State Polytechnics	24	0	0

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In recognition of excellence in areas of Science and Technology, the University hopes to attract high caliber and eminent academicians to its fold and endeavor to fully equip all its academic's facilities.

At take off, the University acquired on a permanent basis, the facilities of the former government Teacher's college, Bosso which now serves as the Bosso Campus of the University. It has undergone a complete face-lift and was a scenic outlook befitting a modern University seting. However, the University acquired 10,600 hectares of land along the Minna-Ketaregi Bida Road for the main campus of the University because expansion was inevitable .

On Tuesday, June 2nd 1992 the former President and Commander-in-Chief of the Armed Forces, Federal Republic of Nigeria, General Ibrahim Badamosi Babaginda GCFR, fss, Mni (Rtd.) performed the Sod Turning ceremony to mark the commencement of project on the main campus site. And since then work had started in earnest for the physical development of the main campus which is phase I consist of the School of Agriculture and Agriculture Technology, University Library, Senate Building, Students Village, the Staff Houses, the Computer Centre as well as the Industrial Development Centre. Scholl of Science and Science Education and FUTMIN CONSULT are expected to remain at the Bosso Campus.

Since its inception, the University had graduated more than Eight sets of students whose market value was adjusted very satisfactory and are in high demand in both Government and Industry, serving the technological needs of the nations.

The University has recorded quite a number of academic achievements which include the design and fabrication of a number of high valuable items of socio-economic importance such as the Solar Air heater, Motor-Car, Craft shaft, Gearing system for crane heist drivers, rice

destroying machine, maize Sheller, multipurpose grinder. Irrigation models, Poultry feeder amongst an host of others gained recognition, nation-wide as a Centre for Excellence in Computer Science having been designated by the National Universities Commission.

Furthermore, the Library has expanded its services in conformity with the general development of the University. Some of the Library services were automated in 1997/98 academic session using a library application software known as Tinlib (The Information Navigator Library). The official commissioning ceremony was performed by the Vice Chancellor, Prof. M. A. Daniyan, on 23rd March 1999. In addition, there are a number of Master and Doctorate degree candidates currently being trained in the University in host of the disciplines offered in the four schools.

In pursuance of excellence, Prof. S. A. Garba had a team of researchers in the development and production of typhoid fever vaccines.

This project is sponsored by the Unipetro Nigeria Plc. The team has been able to develop and produce typhoid fever vaccines. And having completed the testing on mice, guinea pigs, rabbit and monkeys, the vaccine is being tested on human. So far so good and it is hoped that very soon the new vaccine will be in the market.

CHAPTER TWO

2.1 HISTORICAL BACKGROUND OF FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA.

The Federal University of Technology, Minna is owned by the Federal Government of Nigeria. It was established on 1st February, 1983. The objective for its establishment is to give effect to the Nation's drive for the much needed self-reliance in Science, Engineering and especially Technology. It is a specialized University of Technology. At inception, Professor J.O. Ndagi served as foundation Vice Chancellor from 1983 to 1990, Professor S. O. Adeyemi as Vice-Chancellor 1990-1994, Professor I. H. Umar as Sole Administrator 1994 – 1997, Professor G. A. Garba was appointed as Acting Vice-Chancellor on 20th June 1997. On the 7th August, 1997 Professor M. A. Daniyan was appointed the Vice Chancellor and he served till 5th August 2003 with the appointment of Professor Umar Saiad Tukor as the present Vice Chancellor on 4th October, 2002.

The foundation Registrar Lat Dr. B. P. Sawa served from 1983 – 1986, Mrs L. S. J. Ahmed 1988 – 1993, while the current Registrar Alhaji U. A. Sadiq was appointed as substantive Registrar with effect from October, 1998 having acted in that position since 1993.

2.2 FUT MINNA, GENERAL INFORMATION STRUCTURE

The general information structure of the Federal University of Technology, Minna is a simple hierarchical structure which is made up of three (3) basic layers, which are the Administrative, University Services and finally the Academic affairs with the Vice Chancellor at the head of the structure coordinating the affairs of the others sectors.

2.6 JAVA SCRIPT CODES

JavaScript is a scripting language (web site development environment) created by Netscape hence JavaScript work best with Netscape suite of clients and server products. Clients-side, JavaScript is embedded between HTML program. JavaScript is embedded Between <Script> ..... </Script> HTML tags. These tags are embedded within the <HEAD> .....</HEAD> or <BODY> .....</BODY> tags of the HTML program. JavaScript is embedded into an HTML program because JavaScript uses the filename. HTML and HTTP protocol, browser, to transport itself from Web Server to client's browser where JavaScript executes and processes Client's information.

JavaScript is an object-oriented language that allows creation of interactive web pages. JavaScript allows users entries, which are loaded into HTML Form to be processed as required. This empowers a web site return site information according to a user's requests. JavaScript offers several advantages to a web developer. A short development cycle. Ease of learning. Small size scripts. The strengths of JavaScript can be easily and quickly used to extend the functionality of HTML pages already on a web site.

2.7 WEB SITE SECURITIES

Security on the Internet means protection of data. This is very important issue as a single action could lead to the entire collapse of the Internet site.

There are various dangers to internet websites and these includes, information theft, unsolicited e-mails, viruses, worms which are sent as attachment to e-mail and which are

Each of these links take the user to the required page when all the information needed has been adequately provided. In like manner, for easy navigation each page has a link to the home page.

3.2 THE PGD MATHEMATICS / COMPUTER SCIENCE DESIGN FLOWCHART

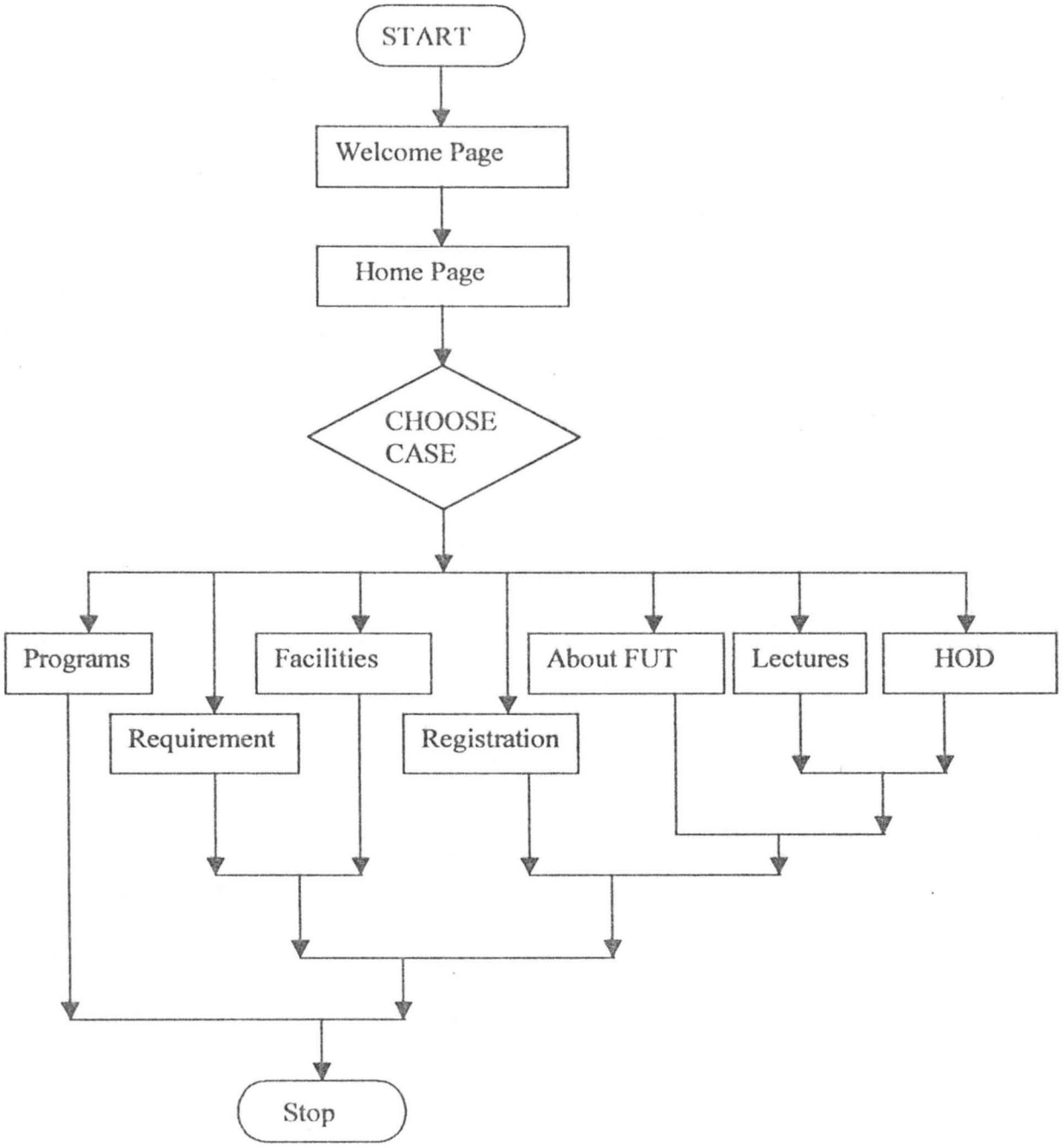


Fig 3.2.1

3.3PROGRAMS HYPERLINK FLOWCHART

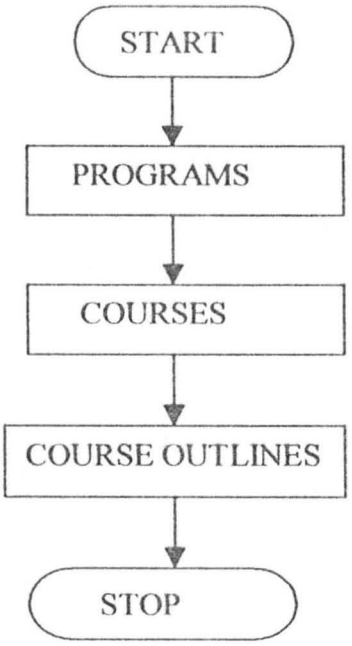


Fig 3.3.1

The above fig.3.3.1 shows the programs hyperlink flowchart. In this hyperlink, there are three links to three different pages viz, the courses available in the PGD computer science program page, the course outlines, which provides in details all the courses to be taken, the course units and the analysis of the courses. The number of times each course will be taken per week and for the whole semester.

3.4 PROGRAM REQUIREMENT HYPERLINK FLOWCHART

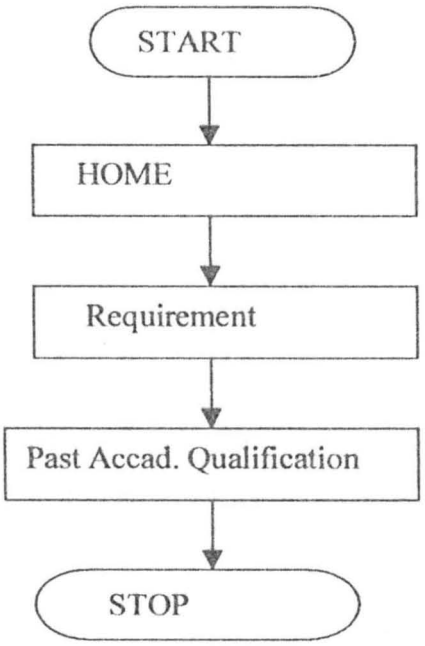


Fig 3.4.1

Fig 3.4.1 shows the flowchart for PGD computer science entry requirement hyperlinks. The entry requirement links are found at the home page of the site. On click, it takes the client to the entry requirement page. In this page every information as regards the required information for qualification to PGD computer science are stated.

3.5 ABOUT FUT MINNA HYPERLINK FLOWCHART

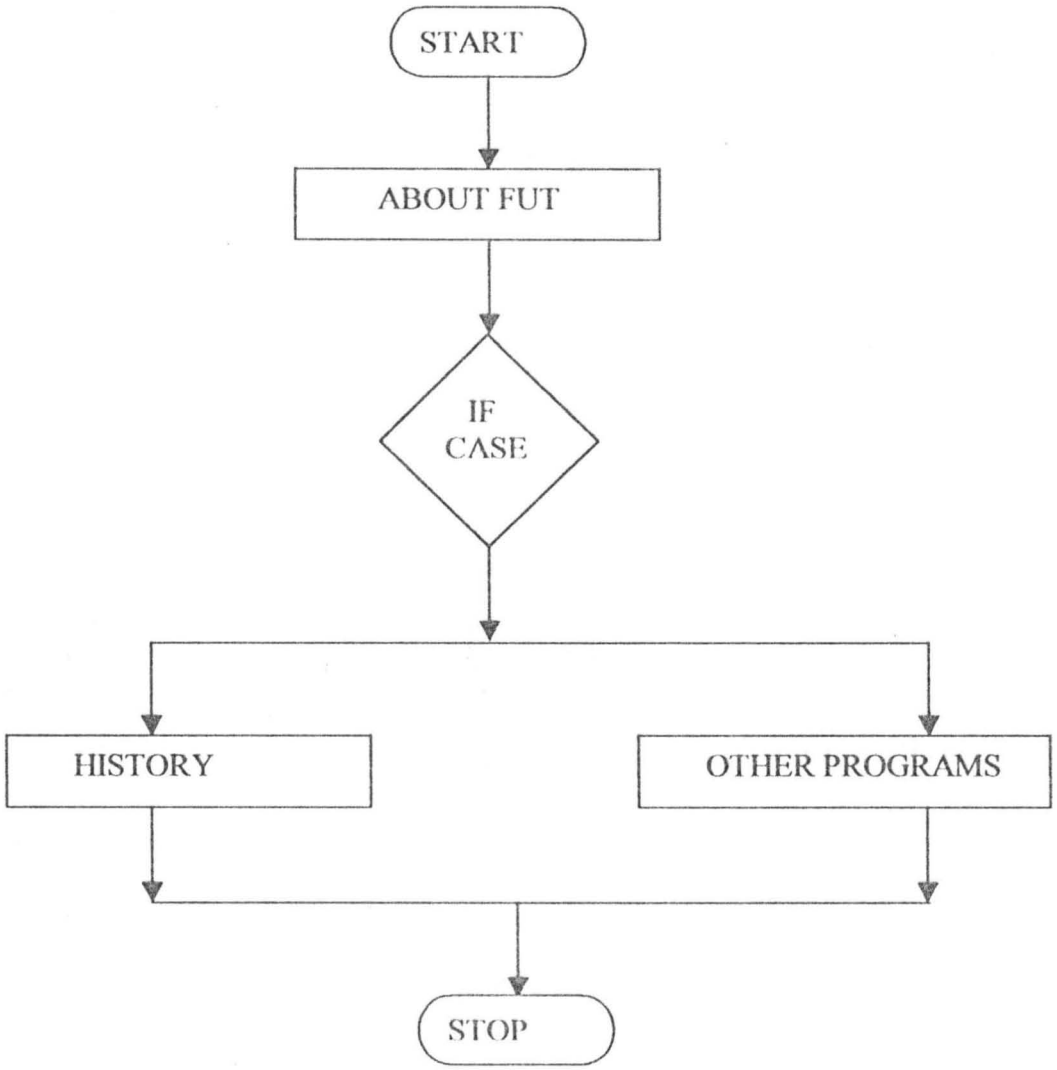


Fig 3.5.1

Fig 3.5.1 shows Federal university of Technology, Minna hyperlink flowchart. In this links, the required information on the history of the Federal university of Technology, Minna is adequately provided. Also, other programs from other schools and activities are provided within this links.

CHAPTER FOUR

PROGRAM OUT PUT

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

COURSE FOR B. TECH

(1) MATHS WITH COMPUTER SCIENCE
(2) STATISTICS WITH COMPUTER SCIENCE

The department consists of three sub-disciplines. These are Mathematics, Computer Science and Statistics. Courses are spread over ten semesters including six months industrial Attachment.

Since the university, as a policy, does not graduate students on single subjects bases, applied courses are built into the programme. It is ensured that the Nigeria Universities Commision minimum Academic standards in Mathematics and Statistics are maintained in structuring this programme. However, Applied option is taken from Computer Sciences. Since ours is a 5 year degree programme we have substantially exceeded the minimum requirement of NUC academic standards in the subject area.

OBJECTIVES OF THE PROGRAMME

Among many other things, the objectives of the combined-honour programme run in the department are as follows:

1. To prepare graduates in Applied Mathematics and Computer Science.
2. To deepen the knowledge of Mathematics and Computer Science towards advanced postgraduate research in the related fields.
3. To produce graduates in Computer Science towards meeting the demand for Information Technology professionals in Industries and other sectors.
4. To prepare graduates in Applied and Computational Mathematics towards advanced research in Engineering and other Technology disciplines.
5. To prepare graduates whose prospective careers demand advanced knowledge of Mathematics and Computing Techniques.

B.TECH MATHEMATICS WITH COMPUTER SCIENCE PROGRAMME

100 LEVEL COURSES. FOR PREVIEW OF THE COURSE CONTENTS CLICK

COURSE CODE	TITLE	UNIT
MAT. 111	ALGEBRA AND TRIGONOMETRY	3
MAT. 112	VECTOR, GEOMETRY AND DYNAMICS	3
CPT. 111	COMPUTER SCIENCE ORIENTATION	2
STA. 117	INTRODUCTION TO STATISTICS	2
MAT. 121	DIFFERENTIAL AND INTEGRAL CALCULUS	3
CPT. 121	INTRODUCTION TO COMPUTER SCIENCE	2
STA. 127	PROBABILITY I	2

COURSES FROM OTHER DEPARTMENTS	
PHYSICS	7
CHEMISTRY/GEOGRAPHY	6
USE OF ENGLISH	5
SOCIAL SCIENCE	2
LAW	2
TOTAL	39

200 LEVEL COURSES. PREVIEW

COURSE CODE	TITLE	UNIT
MAT. 211	SET THEORY	2
MAT. 212	LINEAR ALGEBRA 1	2
MAT. 216	MATHEMATICAL METHODS	3
STA. 217	PROBABILITY II	3
CPT. 211	COMPUTER PROGRAMMING I	3
CPT. 213	INTRODUCTION TO COMPUTER SYSTEM	2
MAT. 222	LINEAR ALGEBRA II	2
MAT. 223	REAL ANALYSIS I	3
MAT. 226	INTRODUCTION TO NUMERICAL ANALYSIS	3
MAT. 228	INTRODUCTION TO DIFFERENTIAL EQUATIONS	3
CPT. 221	COMPUTER PROGRAMMING II	3
CPT. 222	INTRO. TO ALGORITHMIC	2

	PROCESSES	
	TOTAL	31

COURSES FROM OTHER DEPARTMENTS

HUMANITIES (GST 103)	2
WORKSHOP PRACTICE	2
TECHNICAL DRAWING	2
EDUCATION	5
TOTAL	42

300 LEVEL COURSES. PREVIEW

MAT. 311	ABSTRACT ALGEBRA I	3
MAT. 313	REAL ANALYSIS II	3
MAT. 314	COMPLEX ANALYSIS I	3
CPT. 312	COMPILER CONSTRUCTION I	3
CPT. 313	OPERATING SYSTEMS I	2
STA. 315	DISTRIBUTION THEORY	2
CPT. 316	SYSTEM ANALYSIS AND DESIGN	3
MAT. 321	ABSTRACT ALGEBRA II	2
MAT. 322	VECTOR/TENSOR ANALYSIS	3
MAT. 324	COMPLEX ANALYSIS II	2
MAT. 328	DIFFERENTIAL EQUATIONS I	3
CPT. 324	INTRODUCTION TO FILE PROCESSING	3
CPT. 325	DATA BASE DESIGN AND MANAGEMENT	2

COURSES FROM OTHER DEPARTMENTS

EDUCATION	5
TOTAL	39

ELECTIVES

MAT. 315	ANALYTICAL DYNAMICS 1	3
MAT. 316	DYNAMICS	2
MAT. 317	FIELD THEORY	3
MAT. 326	FLUID DYNAMICS 1	2

MAT. 329	HISTORY OF MATHS	2
STA. 325	REGRESSION ANALYSIS 1	2
CPT. 317	DATA COMMUNICATION OF NETWORKS	3
CPT. 321	COMPUTER ARCHITECTURE 1	3
CPT. 323	AUTOMA THEORY, COMPUTABILITY AND FORMAL LANGUAGES	3
CPT. 322	INTRODUCTION TO DIGITAL DESIGN AND MICROPROCESSORS	3
CPT. 326	OPERATING SYSTEM 2	3

STUDENTS MUST TAKE AT LEAST 4 UNITS OF ELECTIVES FROM THE ABOVE LIST

400 LEVEL COURSES. PREVIEW

COURSE CODE	TITLE	UNIT
MAT. 411	METRIC SPACE TOPOLOGY	3
MAT. 412	DISCRETE MATHEMATICS	3
MAT. 416	INTRODUCTION TO MATHEMATICAL MODELLING	3
MAT. 418	DIFFERENTIAL EQUATIONS 2	3
CPT. 411	STRUCTURED PROGRAMING	3
CPT. 414	ALGORITHMS	2
CPT. 416	SOFTWARE DESIGN AND MANAGEMENT	2
CPT. 413	SYSTEM OPERATION RESEARCH	3
SECOND SEMESTER	SIWES	12
	TOTAL	34

500 LEVEL COURSES. PREVIEW

COURSE CODE	TITLE	UNIT
MAT. 513	FUNCTIONAL ANALYSIS	3
MAT. 515	NUMERICAL ANALYSIS	3
MAT. 518	PARTIAL DIFFERENTIAL EQUATIONS	3
CPT. 515	ARTIFICIAL INTELLIGENCE	2
CPT. 519	COMPUTER INSTALLATION AND MANAGEMENT	2
CPT. 521	ORGANISATION OF PROGRAMMING LANGUAGES	3
MAT. 523	LEBESQUE MEASURE AND INTEGRATION	3
MAT. 529	PROJECT	6
	TOTAL	24

ELECTIVES

COURSES	TITLE	UNIT
STA. 524	STOCHASTIC PROCESSES	2
MAT. 511	MATHEMATICS METHODS	3
MAT. 510	FLUID DYNAMICS II	3
MAT. 512	ANALYTICAL DYNAMICS III	3
MAT. 514	ELASTICITY	2
MAT.51	OPTIMIZATION THEORY	3
MAT. 520	QUANTUM MECHANICS	3
MAT. 522	SYSTEM THEORY	3
MAT. 526	ELETROMAGNETIC THEORY	2
MAT. 527	GENERAL REALTIVITY	2
MAT. 528	DIFFERENTIAL GEOMETRY	3
CPT. 512	COMPILER CONSTRUCTION II	2
CPT. 513	SYSTEM MODELLING AND SIMULATIONS	3
CPT. 524	EXPERT SYSTEMS	3
CPT. 527	COMPUTER ARCHETECTURE II	2
CPT. 511	DATA STRUCTURE AND ALGORITHMS	3

STUDENTS MUST TAKE AT LEAST 8 UNITS OF ELECTIVES FROM THE ABOVE LIST.

COURSES FROM OTHER DEPARTMENTS.

Students are advised to choose at least 10 units from the following Education courses.

However students should endeavour to include EDU 211 and EDU 312 in their choices.

EDUCATION ELECTIVES.

COURSE CODE	TITLE	UNITS
EDU. 211	History and Philosophy of Science and Math	3
EDU. 212	Curriculum and Instruction	2
EDU. 312	Instructional Strategies on Science and Math	3
EDU. 313	Educational Psychology	2
EDU. 321	Tests and Measurements	2

REQUIRED ELECTIVES

PHYSICS

Students should take all the following courses.

PHY. 113	- Mechanics	3 units

PREWRITTEN SOFTWARE PACKAGE - 4 UNIT

In house program development versus prewritten packages Software package; Word processing; Desktop publishing system; Data communication (Electronic Mail/Message system; Info retrieval systems Banking and investment service systems) Spreadsheet; Graphics; Investment; Analysis Accounting; Statistical Analysis and Midware Data Base Management; packages; project; management packages, Memory-resident packages; Integrated packages.

DCPT. 017
HARDWARE COMPONENTS AND SYSTEMS 3 UNITS

Central processor components; Primary storage components of the past; present and the future. The Arithmetic and logic Unit; The control section; Data Entry; Methods; Devices for online Data entry; Devices for off line Data Entry Secondary Storage and Output. Magnetic Disks, Magnetic Rubbles; Optical Disks, Displayed output computer Graphics, voice output, Assembling a microcomputer Testing Min Repairs.

DCPT. 018
INTRODUCTION TO STATISTICS I 3 - UNITS (C)

Review of Statistics, Random variables, probability functions, distribution functions, Expectation, moments generating function. Bayes theorem. Uniform, Binomial, hypergeometric, poisson and normal distributions, Skewedness, Kurtosis. Correlation and regression, f-and t-distributions.

DCPT. 020
NUMERICAL ANALYSIS - 3 UNITS

Analysis of errors + finite Differences, Further system of linear equations; Eigenvalue problems; solution of ordinary and partial differential equations.

DCPT. 021
OPERATING SYSTEMS - 3 UNITS

The open-shop system; the computer operator; Main functions of an operating; Batch monitors; auxilliary memory; Batch processing systems; Interrupts and channels; Multiprogramming; Multi-access systems.

DCPT. 022
COMPILER CONSTRUCTION - 3 UNITS

Compiler phases; syntax analysis; Lexical Analysis etc; Code general, storage, error detection and recovery compilers.

DCPT. 024
OPERATIONS RESEARCH 3 - UNITS

Elementary modelling, survey of some techniques; Linear programming, Transportation, Allocation of Assignment problems; Game theory, Queuing theory, Inventory control, Dynamic programming and system specification; IBMS (Learnmonth and Burchett Management System) system development methodology.

DCPT. 026
DATA BASE MANAGEMENT SYSTEM 3 - UNITS

History of IBMS, File Techniques Input/Output Facilities, Sequential; Hash, Index Sequential, hybrid and merge files Database concepts (Data independence, Data Redundancy, conceptual DB structure; Relational Approach; Hierrachical Approach; Survey of DB Applications Software; programming Dbase. Practical on use Dbase IV.

DCPT. 027
INTRODUCTION TO STATISTICS II 3 - UNIT (C)

Estimation, confidence interval. Statistical quality control; average, media, range, standard deviation, number of defects, and fractional defective, Average sample number, acceptance sampling plan. Forecasting. Simple queuing system, Poisson processes, random walk, Markov chains.

DCPT. 028
SYSTEM ANALYSIS AND DESIGN - 3 UNITS

The information needs of managers; Developing a Management information system, Issues of Management Info system; Organizing; control social. A system study Review (why systems studies are needed; steps in creating customized software) problem Definition. Techniques; The systems study Charter systems Analysis; Data Gathering; Analysis of the problem; The Analysis Report; The Analysis Report; The Analysis Report, Systems Design issues; Design tools and Techniques; choosing an alternative; the Design Report; System conversion and changeover. Structured methodologies; Origin of structured design Basic constructs; Objectives of Structured design; structured systems design; The Yourdon and constantise approach; DeMarco's structured analysis and system specification; LBMS (dearmonth and Burchett Management system) system development methodology; others.

4.2 PGD MATHS/COMPUTER

ENTRY REQUIREMENTS:

The entry qualification will normally be Bachelors degree of Federal University of Technology, Minna or a degree from any other recognised institution in pure science and/or social science based discipline.

Holder of appropriate professional qualifications like, HND, from recognised Institutions may be considered

(1) FULL-TIME: Minimum of Two Semesters and Maximum of FOUR Semesters.

(2) PART-TIME: Minimum of FOUR Semesters and maximum of six semesters Lectures and practical will be held weekends as follows:

CONDITIONS FOR AWARD OF PGDCS

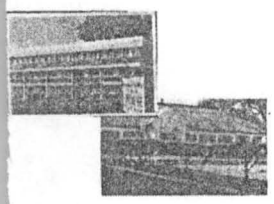
A student is expected to take and pass 25 Units core courses. On the whole a student must earn a minimum of 36 units to qualify for the award of Post-Graduate Diploma in Computer Science (PGDCS).

In addition, a student must satisfy all other conditions specified by the Federal University of Technology, Minna, Post-Graduate School for the award of Post-Graduate Diploma.

One unit means one hour lecture per week for a period of 16 weeks.

4.3 PGD COMPUTER SCIENCE
FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

Objectives|Courses|Degree|Requirement|



AIM:

It is a well known fact that in recent years many establishments, namely, Government, Bank, companies and even individuals, have accepted the necessity to computerise their operations. It is also on record that a large number of our graduates did not have the opportunity of having computer education. The main aim of this programme is to provide broad based training in some aspect of computer science and related subjects that are of great need in industry and other establishments.

POSTGRDUATE PROGRAMME IN MATHEMATICS

1. Introduction:

This is designed for mathematicians, and others who possess comparable degree of proficiency in Mathematics. The objective is to deepen the knowledge already obtained by students at their undergraduate level and prepare them for further research in different areas of Mathematics. The two programmes, namely M. Tech and Ph.D. in Mathematics are research oriented and are geared towards training candidates for career in public and private sectors as well as teaching in tertiary institutions.

2. Entry Requirements:

Basically, the minimum requirements specified in the post graduate school regulations shall apply.

2.1 For the M. Tech Degree: The course is open to candidates who possess a Bachelor's degree
in Mathematics or Mathematics with Computer science of the Federal University of Technology Minna or other approved universities with minimum of 2nd Class lower Division.

2.2 For the Ph.D. Degree: The course is open to candidates who already possess a degree of
Masters of Science or it's equivalent in Mathematics or any related field.

3. DEGREE AWARD REQUIREMENTS

3.1 M. Tech Degree in Mathematics
To be awarded the M. Tech Degree in Mathematics, a candidate must:
(a) Offer and pass a minimum of 22 units made up as follows:
(i) 16 units of core courses;
(ii) 6 units of optional courses.
(b) Satisfy all other requirements stipulated by the regulations of the school of Post
Graduate Studies.
3.2 Ph.D. Degree: To obtain the Ph.D. degree, the candidate must:
(a) Offer and pass 6 units of 700 level courses;
(b) Satisfy all other requirements stipulated in the regulations of the school of

CHAPTER FIVE

DOCUMENTATION AND RECOMMENDATION

5.1 DOCUMENTATION

This project (A Practical Approach to web designing: A case study of Mathematics/computer science department, Federal university of Technology, Minna) was designed using HTML and JavaScript. HMTL was used because it is one of the best web editing software used in website design.

The site was developed to aid the department easy access to information via the Internet and it goes a long way in publishing the department's activities on the internet. In designing the site, top-down system development approach and modular programming were used. The site has a total of ten (10) .htm files that are linked together to the home page. The home page has the file name index.htm which can be access using Notepad.

5.1.1 HARDWARE RESOURCES FOR THE SYSTEM

The system can be implemented on PC ranging from 486 DX4 and above and Pentium recommended with a modem rating of at least 56kbs, runs best on windows 98, windows NT, windows 2000 or windows Millenium operating systems and windos XP with 4MB and above.

5.1.2 INSTALLATION OF THE SYSTEM

Copy the program from the CD drive to the hard disk and load the from any browser preferably the Internet Explorer or Netscape Navigator.

5.2 CONCLUSION

The importance of adequate information as a tool for development in any given sector cannot be over-emphasised, in the same vein; information technology is recognised as an important tool in the day-to-day running of any establishment in the world. The Internet is today, becoming the backbone and foundation stone for building valid information technology, and it is of great importance to the department of mathematics and computer science, Federal university of Technology, Minna to stay on the same

pedestral with other computer science departments in other tertiary institutions around the world, especially the developing countries.

The department of mathematics and computer science of Federal university of Technology, Minna, website is an important tool for accentuating the recent connection of the university to the world information superhighway and also an important means of publishing the various information that could be useful to various users. It is also clear that the state of Internet connectivity in Nigeria tertiary institutions is appalling, in fact only mere 10% of the entire tertiary institutions in Nigeria. It also goes to show that there is a great need for the Federal Government of Nigeria to invest in information technology. The various advantages accruable to university, are in the areas of research collaborations, email services for staff and students, logistics support for the administrative sector of the university among many others. There is also a need for the constant updating of the Internet website, through the addition of relevant information and new facts emanating from the various sectors of the university, which may include special information like new school fees, resumption dates after a closure etc. The website would also be a veritable tool for the development of the members of the university community, mentally spiritually and otherwise.

5.3 RECOMMENDATION

Although the state of internet connectivity and consequently the development of an internet website, is not encouraging, lots can be done to improve this percentage and put Nigeria on the same level of awareness with other countries around the world. The heads of the various tertiary institutions in Nigeria can come together and make it a collective goal to be attained by them all. The Federal government can come in with the funds and logistics supports for the heads of the institutions, and private enterprises and individuals can also assist by providing funds for the design and development of information systems, as well as donating computers and other required hardware to the various institutions. There should also be scholarship funds for the deserving students who are wiling to pursue careers in the information technology related fields; this would encourage the production of career experts.

More so, for PGD computer science Federal university of Technology, Minna website, there should be periodic updating of the website content through the use of a personnel who would be saddled with the constant updating of the website. The PGD mathematics and computer science website should use less of heavy memory graphics as this takes more time to load by web browsers and could turn out to be an expensive website to visit by the users of information and thereby, discouraging the web traffic which would defeat the sole aim for the creation of the website in the first place.

HOME PAGE SOURCE CODE

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</font> </p>
<p align="center"><font color="#000080">number of our
graduates did not have the opportunity of having computer </font> </p>
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PROGRAMES SOURCE CODE

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