NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF MANAGEMENT SCIENCES

COURSE CODE: MBE 817

COURSE TITLE: WEB APPLICATION DEVELOPMENT

COURSE GUIDE

MBE 817
WEB APPLICATION DEVELOPMENT

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INTRODUCTION

MBE 817: Web Application and Development is a course offered by post graduate students in the School of Management Sciences. It teaches web design and its application. It is aimed at broadening your knowledge of cyber technology and its application.

COURSE OBJECTIVES

By the time you are through with this course, you should be able to do the following:

- explain the concept of the Internet
- describe the structure of the internet
- explain the basic tools used on the internet
- explain what the internet can be used for
- explain how to search for information on the internet
- give an account of the history of the world wide web
- navigate web pages
- surf the internet, using a web browser
- explain the parts of a complete HTML document
- write a complete HTML document for a web page design
- explain the concept of Uniform Resource Locator (URL)
- reference files via FTP, using URL convention
- explain what scripting language is
- explain control languages (JCL) and shells
- explain embeddable languages
- explain the use of popup boxes
- explain Break and Continue Statements in Java Script
- build websites
- create tables and frames
- save animation
- explain effect and transitions
- list the requirements to viewing flash movies
- segment and group objects
- set a plan overview of the site to be designed
- set the design architecture
- maintain the site for consistent use

WORKING THROUGH THIS COURSE

A lot of effort has been put into the development, writing and production of this course material. You will in turn have to spend a lot of time to

read it and digest its contents. Practice all the self assessment exercises and tutor-marked assignments as this will help you master the course.

COURSE MATERIALS

The course materials consist of the course guide, the main course material and the recommended textbooks and other references.

STUDY UNITS

Stated below are the study units in this course material:

Module 1 Introduction

Unit 1 The Internet Basics
Unit 2 The World Wide Web
Unit 3 Designing Websites

Module 2 Static Web Design

Unit 1 Hypertext Mark-up Languages
Unit 2 Advanced HTML Elements

Module 3 Dynamic Web Design

Unit 1 Dynamic Web Design
Unit 2 Java Script
Unit 3 Advanced Java Script
Unit 4 Database

Module 4 Web Design Tools

Unit 1 Developing Web Pages with Dream Weaver
Unit 2 Corel Paint Shop
Unit 3 Creating Images for the Web
Unit 4 Animations
Unit 5 Macromedia Flash

Module 5 Web Management

Unit 1 Website Planning and Management

TEXTBOOKS AND REFERENCES

Below is a list of some materials that will enhance your knowledge of Web Application Development

Berners-Lee, T. (1995). *The World Wide Web: A Very Short Personal History*. World Wide Consortium (W3C).htt.

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Microsoft Corporation (1998). Microsoft® Visual Studio™ 6.0 USA: Development System. Microsoft Corporation.

Microsoft Corporation (2002). *Microsoft Access Help*. Microsoft Corporation, USA.

Schneider, G.M. & Gersting, J.L (2007). *Invitation to Computer Science, JAVA version*. (2nd ed.). USA: Thomson Course Technology.

Wikipedia, (2006). *Wikipedia*, the free encyclopedia.

Willard, W. (2003). *HTML: A Beginner's Guide*. (2nd ed.) (An Osborne Title).

TUTOR-MARKED ASSIGNMENT

The Tutor-Marked Assignment (TMA) component of this course will make up 30% of your total score. You will be given several TMAs, and the scores of the best three will be recorded. The TMAs will be given to you by your course facilitator. Work on all the assignments and submit them to your facilitator on schedule.

FINAL EXAMINATION AND GRADING

You will be required to write an examination at a time which will be communicated to you. The examination will constitute 70% of your total score.

HOW TO GET THE MOST FROM THIS COURSE

You are at great advantage as a distance learner because you can learn at your own pace, more so as you have specially designed learning materials. Your learning materials replace the conventional classroom lectures. All the study units in your course material follow a common format. There are various sets of objectives which state what you should be able to do at the end of each unit. Read through all the units and ensure you are able to achieve all the objectives.

Work on all the self assessment exercises contained in each unit and assess yourself by matching your response with the stated objectives.

You are strongly advised to draw out a realistic personal study schedule, to which you would strictly adhere. Consult the recommended textbooks and references during your study time.

FACILITATORS/TUTORS AND TUTORIALS

You will be informed about the schedule designed for tutorials for this course. You will also be informed about the venue for tutorials. You are advised to attend tutorials as this will give you the opportunity to ask questions and receive answers. It will also give you opportunity to air your views and even discourse issues relating to the course with your course mates.

SUMMARY

MBE 817: Web Application and Development is a course which you will find very useful now and in the future. Work hard and maintain an optimistic attitude.

We wish you all the best.

MAIN COURSE

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MODULE 1 INTRODUCTION

UNIT 1 THE INTERNET BASICS

CONTENTS

1.0 INTRODUCTION

The concept of Web design will be baseless without having a look on the platform that supports web applications. The origin of cyber technology on which web applications operate is the Internet. The Internet is a network that links millions of computers around the world. It is an interconnection of various networks across the globe. The Internet started not quite long ago, but now it has become a viable tool for every progressive mind in research, business, commerce, industries, communications, manufacturing etc. It is useful to all categories of people irrespective of interest or profession – engineers, scientists, pilots, philosophers, pastors and Islamic scholars to mention just a few. The Internet has revolutionised how people use computers in home, business, at work, on journey, at leisure etc. Many people depend on it daily to communicate with others, do business transactions, play games and watch movies, get the information they need and many others.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the concept of the Internet
- describe an overview of the structure of the Internet
- explain some basic tools use on the Internet
- list and explain what the Internet can be used for
- describe how to look for information on the Internet.

3.0 MAIN CONTENT

3.1 Overview of the Internet

Actually, a network is two or more computers connected together, and an Internet work is a heap of networks connected to other networks so that all computers on the entire individual network can exchange data over the large interconnecting network. Computers don't connect directly to the Internet, but to a network that connects other to other through a network backbone. Interconnection between these backbones makes it possible for a computer on one network to exchange messages and data with another connected to any other network in the cyberspace. Figure 1 is a simplified diagram of the Internet's interconnected backbones.

A set of networking protocols that controls the Internet is known as the Transmission Control Protocol/Internet Protocol (TCP/IP). The specifications for TCP/IP include the addressing schemes that identify each computer on the Internet and the rules for several kinds of programmes.

The first thing needed to access the Internet is the Internet account. It takes the form of provision of an access point to the Net. This account is secured through an Internet Provider (IP). These are people who supply telecommunication services. If an organisation has an Internet connection, a block of addresses with the Internet authorities are provided to that organisation. User is allowed to use the node by assigning a number to his computer, such as 158.129.24.21. This number is the address of the computer on the Internet. Once the address has been assigned, the computer becomes a network node. This can then access a TCP/IP network in a bunch of computers hooked together with cable or modems or wave or satellite, using TCP/IP protocols.

One of the most important features of the Internet is that, it is not limited to a specific type of computer or operating system. TCP/IP can run on

all kinds of computers built in the last 30 years. It always presents the same appearance to the network regardless of the computer on which they are operating.

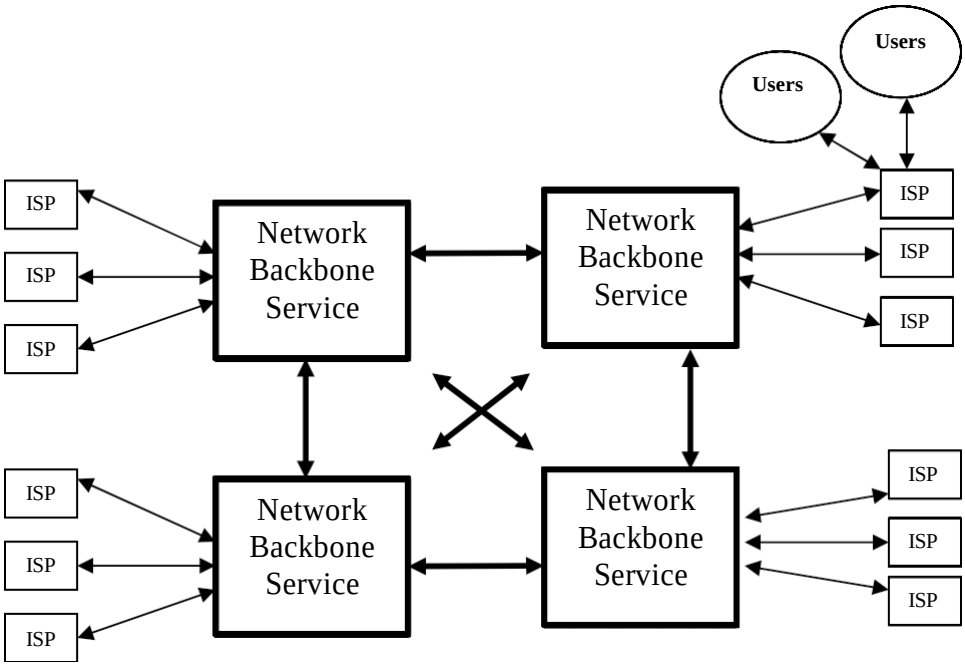

Fig. 1: Interconnected System Networks

3.2 History of the Internet

The Internet was created by the Pentagon's Advanced Research Projects Agency (ARPA). It aimed at bringing together scientific minds to research and develop technology that would enable America to stay ahead of the Cold War. In the early 1960s, an idea was conceived to have a network of computer that can withstand partial cable outages from military attacks in strategic places. In 1964, RAND Corporation came up with an open suggestion to have computer network that could not be destroyed by nuclear war. To accomplish this task, Bob Taylor launched ARPA by setting up a number of research projects at American universities, and came up with the idea of ARPAnet. This became the very first trans-national network. It was to link scientific researchers together. Paul Baran used the technology to transfer data in the early sixties. Baran developed the first packet switching techniques which were incorporated into the Wide Area Network WAN technology. The first test of Network Control Protocol (NCP) was carried out at the Britain Physical Laboratory in 1968, and was successful enough to convince the Pentagon's Advanced Research Project Agency to install the first node in 1969, creating ARPAnet. NCP was later superseded by TCP/IP.

ARPAnet was implemented on DECPDP-10 computers. Messages and data handling were carried out using separate minicomputers called Terminal Interface Processors (TIPs). TIPs were linked together over a lease telephone connection. The first nodes connected were the University of California, Santa Barbara, the Stanford Research Institute, and the University of Utah.

By 1973, the ARPAnet had become a national network, but it was restricted to universities, research institutes and defence contractors. It became a wonderful technology, with a major flaw of lack of security. Students who had access to a terminal connected to the TIPs spent hours in front of the screen; electronic mail was the topmost priorities of the users rather than the intended scientific research. This resulted in the emergence of social structure on the Internet.

By 1975, ARPAnet was turned over to the Defence Communication Agency, which was dedicated mainly to overseeing the military and government radio and data traffic. The security on the net was improved upon a little. Only 256 sites could be connected at a time because the ARPAnet was limited to 8-bite addressing techniques.

By 1982 there had been a tremendous improvement of the addressing techniques and thousands of networks could be connected – this is the emergence of the true Internet as a result of the introduction of Transmission Control Protocol/Internet Protocol (TCP/IP).

In 1983, about 200 computers have been connected and have Internet usage.

In 1986, National Science Foundation (NSF) created one computer network called NSFnet which connected five super computer centres for academic purposes.

In 1989, World Wide Web (www) was launched by Tim Berners-Lee. This really advanced the course of the Internet usage. The growth has been on the increase of 100% yearly since then.

1993, the first graphical user interface web browser – Mosaic - was launched by the National Centre for Supercomputing in the University of Illinois. In 1995, more than 2 million computers were connected to the Internet.

Today the Internet technology transcends research institutes, institutions of learning, government agencies and parastatals. The Internet has dropped to the level of being afforded by individual and also by small and larger business organisations. It was initially meant for

communication and data generated and sustained by research projects. Later it was saturated by electronic mails. Now, the explosion of the Net not only allows communication and textual messages and data but also allows business data, video games and other multimedia tools. By June 2007, about 1.33 billion people use the Internet for different activities.

SELF - ASSESSMENT EXERCISE

i. What was the major reason for the evolution of the Internet?
ii. List the major developmental stages of the Internet.

3.3 Client/Server Interactions on the Internet

In most cases, the programs and services that operate through the Internet uses client/server design, in which a client program on the user's computer sends command or information request to a server, which may respond by creating a live connection or by sending data back to the client. The real interaction on the Internet is a seamless operation which is virtually unknown to the computer user. For the sake of explanation, the structure of the Internet operation can be divided into three distinct parts – client tier, middle tier and the database tier.

On the top of the structure is the *client tier*. The client tier is made up of the users' application which is typically optimised for users' interaction. The interface is based on Hyper Text Mark-up Language (HTML) – to be discussed in sufficient details in due course – that enables the web browser (Internet Explorer, American Online or any other) interacts with the application at the client side. HTML is normally used to define the format and style of the web pages and presenting information using the web browser. The *middle tier* is a complex level that contains most application logic that communicates data between other levels of the system. The web server may be the Internet Information Server (IIS), – that comes with Windows 2000 and later versions. Apache, these software servers are used to achieve a secure client server communication. They allow pre-processing of requests and post-processing of responses, permitting site-specific handling of HTTP requests and responses. Active Server Page (ASP), PHP etc are scripting language used to communicate with the database. These scripting languages handle data that are passed from the HTML forms in such a way that SQL (Structured Query Language) queries forms are sent to the database and the result of the queries are processed and passed to the *client tier* in an HTML document format. The *data source tier* consists of the Data Base Management System (DBMS) – the back engine of the system resident on the server – used to create, delete, modify and query the data contents of the database.

The architecture of the system is based on the following software suites:
- a browser, Hypertext Mark-up Language, Hypertext Transfer Protocol (HTTP) and Transmission Control Protocol/Internet Protocol (TCP/IP). HTML works for delivering and displaying of information using a web browser application, TCP/IP for transferring of data between application over the Internet, and HTTP interfaces the database to the web.

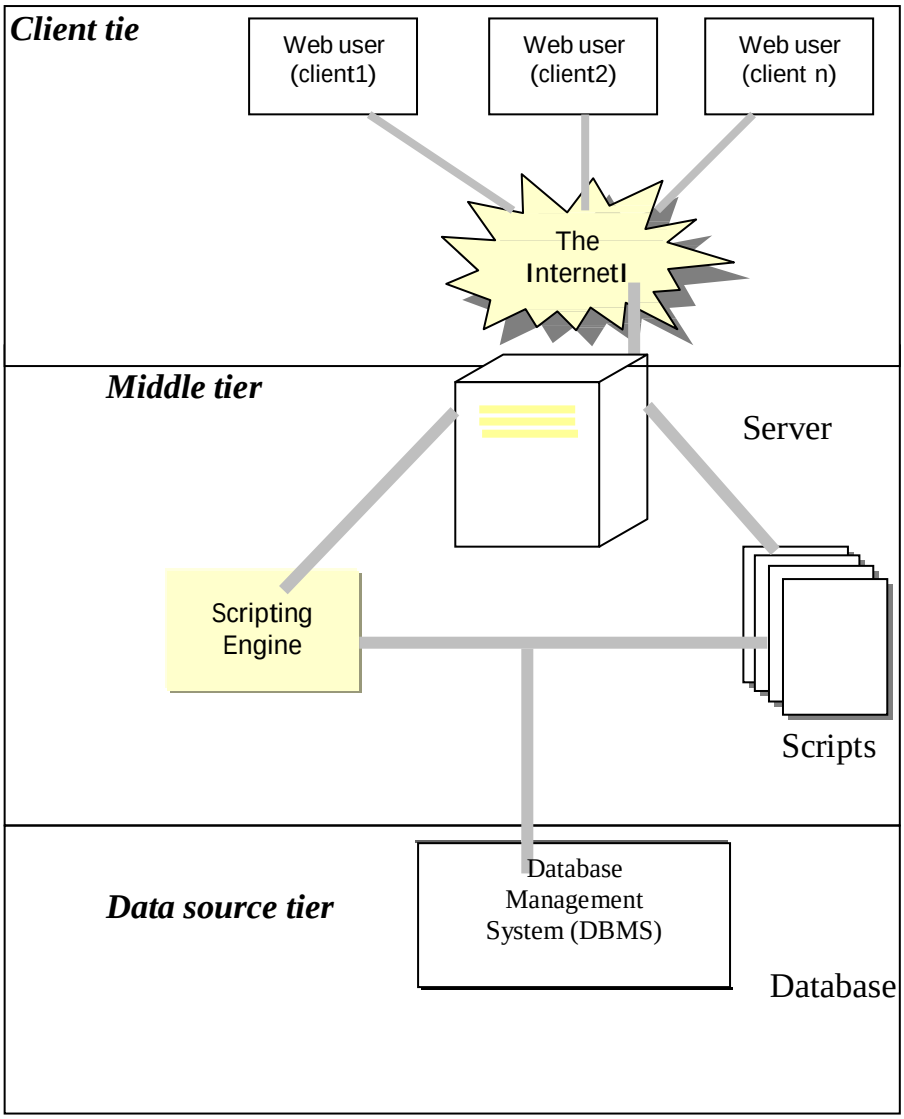

Fig. 2: Client/Server Interactions on the Internet

SELF-ASSESSMENT EXERCISE

What do you understand by Client/Server Interaction?

3. 4 Internet Tools/Utilities

1. Telnet

Telnet is a simple, text-based program that allows you to connect to another computer by using the Internet. Telnet allows authorised users to enter commands used to access programs and services that are on the remote computer, as if you were sitting right in front of it. Telnet can be used for many things, including accessing e-mail, databases, or files.

The Telnet client is a text-based program that runs at the command prompt window. User can only type text commands and user cannot use a mouse, because one doesn't need mouse to accomplish most things one wants to use Telnet for.

Telnet is a technology which uses a client and a server. Access depends on what the administrator allows the user do with Telnet access, and user's rights on that system. Telnet client is available on Windows, which means that user can connect to almost any Telnet server. Telnet is a connection method that can be used across computers that use different operating systems, such as Linux, Unix, or Windows.

2. Gopher

Gopher was created at the University of Minnesota (Home of Golden Gopher) in 1991 as a guide to information services on the University Campus, but it turns to be a very important tool on the Internet.

A gopher is a distributed document delivery program that can access data on multiple hosts; it is a menu driven server program that lets the user access Internet information search tool. The Internet Gopher contains one or more menus with pointer to items that may be located anywhere on the Net. Gopher can browse a path to needed information. It "goes for" materials on the topics of interest that are stored in different locations and establishes a path to the information.

Gopher is a bunch of dedicated computers called Gopher servers. Each Gopher server knows about all the other servers (most of the time). If a Gopher doesn't have a needed search item, it searches for it on another Gopher server. It presents these searches on a series of menus from which they can pick the next item of interest. Gopher servers can be navigated, or specific information can be searched for on a particular server, or all the servers or just all the menu titles on all the servers.

Almost all information on the Internet can be downloaded. When using Gopher, an item is selected from the menu; the Gopher's client identifies

the resource type, and connects the computer to the server that contains the item. If the resource is a file, the client program downloads a copy to the client's computer, and uses local file viewer to display its contents. If the server is a database, the gopher client asks for the specific information needs.

In recent times, the use of Gopher as a browsing tool has been taken over by the World Wide Web because it requires local content viewers to display downloaded files, but it is still a good Internet browsing tool, therefore it can still be part of the Internet tool kit.

3 Veronica

This is an abbreviation for Very Easy Rodent-Oriented Net-wide Index to Computerised Archives. It is a method of searching through all the Gopher menus for keywords that appear in the title of a file or directory. It permits the use of logical operators like 'and', 'or' and 'not' to join words together to narrow down or expand the search. It is not case sensitive. By default, Veronica will deliver only the first 200 items that match the searched term. It is a very useful tool to locate information on Gopher servers. Gopher client is first accessed, and then all Gopher space can be searched for directives to titles and words at different sites.

4 Jughead

Jughead is similar to Veronica but the user can search just an area at a time. User accesses a specific Gopher and selects the search Gopher space with Jughead for that gopher. When the use of this tool is properly mastered, it saves a lot of time. It is not as popular as Veronica.

5 Archie

Archie is another Internet tool that helps users to find information on the Net. It is a short form for Achieved files. It is a collection of servers containing database files of anonymous File Transfer Protocols (FTP) host. It is a character-based interface tool. It is most effective for one-word searches. It allows a search for keyword in the directory and file titles. The word can be in singular or plural form and either lowercase or uppercase. Several search methods to locate the needed information in Archie are command line driven, and these come in various guises of complexity. It retrieves a lot of unwanted information from the Internet.

6 Telnet

This is a short form of Telecommunication with another Network. Telnet is a program that allows users to access the services of other

members of the Internet without dialling in from your modem. It is an Internet tool that connects one computer to a second computer as a distant terminal. The Telnet server (called the host) treats user's requests (commands) from the Internet as if they come from a terminal connected directly to the host. It is client software used to log on to remote computers and perform tasks as though you are sitting at the remote computer itself.

Telnet can therefore, be used as a gateway into other computers' services. The TCP/IP numeric address or the Internet name of the host (server) becomes the passage to another node and its services. When users connect Telnets to another system, many of its services are available to the users as if they are on the users home system, since other computers on the Internet are configured public Telnet host. When logging to another system, the user must know the commands of the target system if there is no special Graphical User Interface (GUI) communication package.

7 File Transfer Protocol (FTP)

This is an Internet tool that is used for uploading and downloading files between computers. It is used to transfer files from remote system to a host computer. When a server receives a file request from a client, it makes a copy of that file and sends back to the client (download). Also the client may send files or directory of files to the server (upload).

Most often, users download files from the public archive on FTP servers. Many of these archive files are available on the Internet. Many software companies maintain FTP archives that contain upgrades, drivers and additional program modules. A large amount of information gathered through the Internet use FTP. Just as in Telnet, only the address of the server and the directory/subdirectory of the file need to be known.

When accessing public files, clients log on to FTP as 'anonymous' for their usernames, and enter their e-mail address as the password. Anonymous FTP is always free public information. When a file is transferred, it goes to the host system's directory, and then it is downloaded unto the client's PC.

FTP comes in two forms:

i. Especially FTP with terminal emulator: - This uses command lines. It is more difficult to use for the beginners.
ii. FTP with GUI: - This is window based and object oriented. It employs clicking of mouse button. This method uses GUI communication software that makes the process much simple.

Binary files, text files, data graphics, multimedia and compressed files can be transferred and the special format can still be maintained

SELF-ASSESSMENT EXERCISE

Enumerate five (5) Internet tools you have studied in this sub-section.

3.5 Uses of the Internet

1. Find information

The Internet contains a vast amount of information—far more than even the world's largest libraries. For example, you can read news stories and movie reviews, check airline schedules, see street maps, get the weather forecast for your city, or research a health condition. Reference sources, such as dictionaries and encyclopaedias, are widely available, as well as are historical documents and classic literature.

Most companies, government agencies, non-profit organisations, museums, and libraries have websites with information about their products, services, or collections. Many individuals publish websites with personal journals called blogs (short for web logs) about their hobbies and interests.

2. Communicate

E-mail is one of the most popular uses of the Internet. You can send an e-mail message to anyone with an e-mail address, and it will arrive almost instantly in the recipient's e-mail inbox—even if he or she lives halfway around the world.

Instant Messaging (IM) allows user to have a real-time conversation with another person or a group of people. When you type and send an instant message, the message is immediately visible to all participants. Unlike e-mail, all participants have to be online (connected to the Internet) and in front of their computers at the same time.

Newsgroups and web-based forums allow you to participate in text-based discussions with a community of other people who are interested in the same topic. For example, if you are having trouble using a program, you could post a question in a discussion group for users of that program.

3. Share

You can upload (copy) pictures from your digital camera to a photo-sharing website. Invited friends and family members can then visit the website to view your photo albums.

4. Shop

The web is the world's biggest shopping mall. You can browse and purchase products—books, music, toys, clothing, electronics, and much more—at the websites of major retailers (usually a credit card is required). You can also buy and sell used items through websites that use auction-style bidding.

5. Play

You can play games of every type on the web, often against other players—no matter where they are in the world. Many games are free, and you can download others for a fee. You can also listen to Internet radio stations, watch movie clips, and download or purchase music, videos, and even some TV shows.

SELF-ASSESSMENT EXERCISE

List the uses of the Internet.

3.6 Connecting to the Internet

To start with, there is the need to decide what type of network to set up or to find out what hardware and cables you need to set up a home network.

Once you know what type of network you want and have the necessary hardware, there are four possible steps to take (two of these are not always required).

1. Install any necessary hardware.
2. Set up an Internet connection (optional).
3. Connect the computers.
4. Run the set up which can be a wireless router or access point wizard (wireless only).

This begins by setting up one computer. Once the network is set up and it is established that the first computer is working correctly, add additional computers or devices. This information is designed for people

who have a broadband connection (usually DSL or cable) to the Internet rather than a dial-up connection.

Install the Hardware

Install network adapters in any computer that needs them. (Follow the installation instructions in the information that came with each adapter.)

Set Up or verify an Internet Connection (Optional)

You don't need an Internet connection to set up a network, although most people want to use their network to share an Internet connection. To set up an Internet connection, there is a need for a cable or DSL modem and an account with an Internet Service Provider (ISP). Then connect to the Internet wizard and follow the instructions.

After an Internet connection, there is the need to verify that the connection is working. To do that, open your web browser and go to a website that you don't usually visit. (If you go to a website that you visit often, some of its web pages might be stored on your computer and will display correctly even if your connection is faulty.) If the website opens and you don't get any error message, your connection is working.

To Share an Internet connection

An Internet connection can also be shared among two or more network computers. This can be done by either use an intermediary device or set up Internet Connection Sharing (ICS) - this may require additional cost by your ISP

a. **Use an Intermediary Device**. A router or a combined router and modem (also called an Internet gateway) can be used to share an Internet connection. If you use a router, connect it to both the modem and the computer with the Internet connection, and then verify your Internet connection again. The information that came with the router should include connection instructions. If you use a combined router and modem, plug it into any computer.

Note *The router and modem must be turned on to use the Internet connection from any of the computers on your network*.

b. **Set up ICS**. If you want to share an Internet connection and you don't want to buy any more equipment, you can set up ICS on the computer that is connected to the modem. That computer will also need two network adapters: one to connect to the modem

and one to connect to the other computer. ICS is not included with Windows Vista starter.

Connect the Computers

There are several ways to connect computers—the configuration depends on the type of network adapters, modem, and the Internet connection that you have. It also depends on whether or not the Internet connection is to be shared among all the computers on the network. The following sections briefly describe some connection methods.

Ethernet Networks

If your home or office is wired for Ethernet, set up the computers in rooms that have Ethernet jacks, and then plug them directly into the Ethernet jacks.

Ethernet Network using Built-in Ethernet

Wireless Networks

HPNA Networks

Turn on all computers or devices, such as printers, that you want to be part of your network. If your network is wired to Ethernet or HPNA, it should be set up and ready to use. You should test your network to make sure that all computers and devices are connected correctly.

Run the Set up as a Wireless Router or Access Point Wizard

If your network is wireless, run the setup as wireless router or access point wizard on the computer attached to the router.

The wizard will instruct you on the process of adding other computers and devices to the network.

Test Your Network

It is a good idea to test your network in order to make sure that all the computers and devices are connected and working properly. To test your network, do the following on each network computer.

Click the start button, and then click Network. You should be able to see icons for the computer you are on and all of the other computers and devices that you have added to the network. If the computer you are

checking has a printer attached, the printer icon might not be visible on other computers until you enable printer sharing.

Connecting Your Mobile PC from Work to Your Home Network

To connect the mobile PC that you use at work to the Internet or the network from your home network, you must have a network connection set up at home.

SELF-ASSESSMENT EXERCISE

State the four stages required to get connected to the Internet.

3.7 Surfing the Internet

Surfing the Internet is the process of visiting different sites on the Internet. The word was coined by Jean Armour Polly in 1992. You can use the web on the Internet to link different pages at different sites all over the world for a wide variety of activities. This is like changing the channel of your television set. It has to do with the aesthetic of "going with flow" as dictated by hyperlink on some of the word or phrase on your current web page. This can be accomplished by the use of World Wide Web. Casual clicking on the web links is naturally quick. A purposeful search on the Net is, however, better and time saving.

Various web browsers are available to search users' needs on the Internet. Some of these are the Internet Explorer, American Online, CompuServe, Prodigy, and Netscape

SELF-ASSESSMENT EXERCISE

What is "surfing" on the Internet?

4.0 CONCLUSION

Looking at the trend in scientific research, business activities, entertainment, education, government and even administration, it becomes imperative for virtually all living literate people that want to be relevant in this century to have a competent knowledge of what the Internet is, and at least some experience of its usage. All hands must be on deck to ensure this is done. Individuals must be ready with prepared mind, also governments and establishments have a lot to do in the provision of the Internet facilities and equally finance the training of their personnel.

5.0 SUMMARY

This unit is an eye opener to what the Internet is all about. The general overview and the history have enabled us to know where the technology started and the contributions of visionaries on the design and development of the Internet. More so, client server interaction enables us to know the relationship between our computer and the host that connects user's system to the Internet. The various tools that had been used to communicate on the Internet is a guide that research on the technology is a continuous process and better things may still emerge as new discoveries are made. Connectivity of the system is a very vital stage in the use of the Net and it is very important that that stage is not omitted because it forms the basic prerequisite to our searching or surfing the Internet.

6.0 TUTOR-MARKED ASSIGNMENT

List and explain five (5) Internet tools.

7.0 REFERENCES/FURTHER READING

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UNIT 2 THE WORLD WIDE WEB

1.0 INTRODUCTION

The greatest break through ever recorded in the history of computing is the World Wide Web. It brought into reality interconnections among peoples, resources and minds of different tribes, races, geographical zones, religion and cultures together into a unified entity on the Internet. In actual fact, the usage of the computer and the Internet becomes an instrument of empowerment for all. The zeal for computer usage becomes greatly increase as user may link different sites all over the world to do what their minds intend to do. The estimated number of the Internet users has increased from 200,000 in year 2000 to 5,000,000 in June 2007, which represents a percentage increase of 2,400.0% in Nigeria; about 643.1% in Africa and about 225.0% growth worldwide. The usage will continue to grow at a steady rate.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain (brief) a history of the WWW
- explain the basic web terminologies
- navigate web pages
- surf the Internet using a web browser.

3.0 MAIN CONTENT

3.1 The World Wide Web (WWW) or Web

The World Wide Web (WWW) or Web consists of a wide collection of electronic documents that have built-in hyperlinks to other related documents. The link may be to another part within the same document or other documents in the same site or other sites in any part of the world.

Technically, the World Wide Web is defined as all the resources and users on the Internet that are using the Hypertext Transfer Protocol (HTTP).

A broader definition comes from the organization that Web inventor Tim Berners-Lee helped found, the World Wide Web Consortium (W3C). The organisation defined it thus: "The World Wide Web is the universe of network-accessible information, an embodiment of human knowledge."

SELF-ASSESSMENT EXERCISE

Explain what you understand by World Wide Web.

3.2 History of World Wide Web

3.2.1 Web Page

A Web page on the World Wide Web is a page of file/document notated with the Hypertext Markup Language (HTML). Usually, it contains text and specifications about where image or other multimedia files are to be placed when the page is displayed. Each page is an individual HTML file with its own **Web address** (URL). The first page you usually request at a site is known as the **home page**. Most home pages have a default name that doesn't have to be specified; you only need to enter the **domain name** for the site itself. Web page may be retrieved from a local computer or from a remote web server. Web pages are requested and served from the web servers using Hypertext Transfer Protocol.

Web page may consist of files of static text stored within the web server's system. These are called **static web pages,** the web server may construct the XHTML for each web page when it is requested by the browser – these are refer to as **dynamic web page**. Static web pages usually have file extension **.htm** or .**html**, while a dynamic web page usually reflects the language or technology used at the server such as

PHP, JavaServer Pages, or others, taking the associated URL .filename extensions .**php** or .**jsp**

3.2.2 Website

A Web site is a related collection of World Wide Web (WWW) files that includes a beginning file called a **home page**. A Web site can be just a few pages.

A website implies a geographic place that may contain some set of peculiar features. A very large Web site may be spread over a number of servers in different geographic locations. IBM is a good example; its Web site consists of thousands of files spread out over many servers in world-wide locations.

A synonym and less frequently used term for Web site is "**Web presence**." That term seems to better express the idea that a site is not tied to specific geographic location, but is "somewhere in cyberspace." However, "Web site" seems to be used much more frequently.

You can have multiple Web sites that cross-link to files on each others' sites or even share the same files.

3.2.3 Web Browser

A browser is an application program that provides a way to look at and interact with all the information on the World Wide Web. The word "browser" seems to have originated prior to the Web as a generic term for user interfaces that let you browse (navigate through and read) text files online.

Technically, a Web browser is a client program that uses HTTP (Hypertext Transfer Protocol) to make requests of Web servers throughout the Internet on behalf of the browser user. Most browsers support e-mail and the File Transfer Protocol (FTP) but a Web browser is not required for those Internet protocols and more specialised client programs are more popular.

The first Web browser, called World Wide Web, was created in 1990. That browser's name was changed to Nexus to avoid confusion with the developing information space known as the World Wide Web. The first Web browser with a graphical user interface was Mosaic, which appeared in 1993. Many of the user interface features in Mosaic went into Netscape Navigator. Microsoft followed with its Internet Explorer (IE).

As of September 2006, Internet Explorer is the most commonly used browser. Other browsers include:

- firefox browser wars between IE, which was developed from Mezilla (the open source version of Netscape).
- flock, an open source browser based on Firefox and optimised for Web 2.0 features such as blogging and social book marking .
- safari, a browser for Apple computers (the third most popular browser).
- lynx, a text-only browser for Unix shell and VMS users.
- opera, a fast and stable browser that's compatible with most relatively operating systems.

3.2.4 Web Server

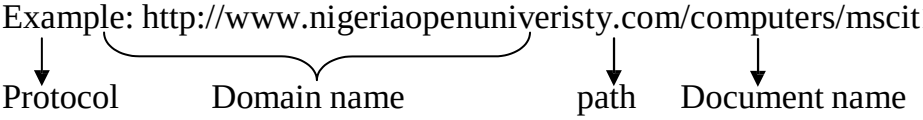
A Web server is a program that, using the client/server model and the World Wide Web's Hypertext Transfer Protocol (HTTP), serves the files that form Web pages to Web users (whose computers contain HTTP clients that forward their requests). Every computer on the Internet that contains a Web site must have a Web server program. Two leading Web servers are **Apache**, the most widely-installed Web server, and Microsoft's **Internet Information Server** (IIS). Other Web servers include Novell's Web Server for users of its **NetWare** operating system and IBM's family of Lotus **Domino servers**, primarily for IBM's OS/390 and AS/400 customers.

Web servers often come as part of a larger package of Internet- and intranet-related programs for serving e-mail, downloading requests for File Transfer Protocol (FTP) files, and building and publishing Web pages. Considerations in choosing a Web server include how well it works with the operating system and other servers, its ability to handle server-side programming, security characteristics, and publishing, search engine, and site building tools that may come with it.

3.2.5 Web Address

Web address is expressed as the directory path to the file on a particular server. (A Web page address is also called a Uniform Resource Locator, or URL.) URLs identify both HTML and HTTP when accessing Web pages. The URL tells the browser where to locate a document. It is a standard that allows a user to enter name and location of information, as well as the method of transporting that information over the Internet.

Example: http://www.nigeriaopenuniveristy.com/computers/mscit1.html



Protocol is a set of rules guiding communications on the Internet.

Domain name is address of the IP server on which the site is resident. This is translated by the user browser into numerical figures that actually represent the serves address Path is/are folder on the website where the site's documents are stored.

The documents are individual files that are linked together as a whole on the site.

SELF-ASSESSMENT EXERCISE

Differentiate between Static Web page and dynamic Web page.

3.3 How to Find Information on the Internet

URL

This is the fastest way to find information on the Internet if you know the address of the site page you want to visit. The Web address (URL) of the page is typed in the address bar at the top of your browser window. The browser links the site and displays the page if the address is correct.

Browsing

When reading some web pages or documents, one can easily link to other related pages the Internet by clicking a Hyperlink and then follow on. Hyperlinks always have blue colour, and when pointed to, the pointer changes to form a hand. Good web designs always have hyperlinks that can take them to other sites of interest when click on them

Search Engine

A **search engine** is a software program that can be used to find information on the Internet. It can be used to find websites, pages and the Internet files. It is helpful in locating specific pages for which one do not know the URL. To find a page or pages, you enter the search word or phrase called **search text** or **keyword** on the search bar of the of the search engine you are using.

The search engine locates and retrieves documents matching the keyword, displays the number of items retrieved and show them on the screen in pages. There are quite a number of search engines on the Net, each work in a similar way to retrieve the same or different result of the

search a keyword. Some of the search engines support Boolean search with logical operators such as AND, OR, NOT. Examples are Google, MSN, and Yahoo etc.

Many search engines use a program call a **spider**. This program reads Web pages in order to create catalogue or index of hit; to display a list of Web pages that contain the keyword entered in the search bar.

4.0 CONCLUSION

World Wide Web otherwise called the Web has become a vital engine that drives the Internet and it has made the use of the Internet more popular among people of different profession. It enhances the Internet awareness and usage and therefore has become a subject worth discuss in this way. In most cases people now replace the term Internet with Web. It therefore becomes necessary for students to know the basic concept of the World Wide Web.

5.0 SUMMARY

In this unit, we have discussed the various concepts of the World Wide Web. The overview gave us the insight to how it all started and the brain behind the technology. Other concepts like the Hyperlink, the Web address, the Web server, Website etc, further gives a better understanding of client/server interaction discussed in unit 1. Consequently, the topic on how to search the Internet is an eye opener to various ways in which our quest for information on the Internet can be easily handled.

6.0 TUTOR-MARKED ASSIGNMENT

Mention three (3) ways to access information on the Internet.

7.0 REFERENCES/FURTHER READING

Lingan J.B. (2006). Look up Tech Terms http://searchwebservices. techtarget.com. Accessed Aug. 2007)

UNIT 3 DESIGNING WEBSITES

CONTENTS

1.0 INTRODUCTION

Web is a structure of construction of a network of links. It is derived from the spider's method of connection from place to place or setting trap for their preys. In computing, the term has become very popular term since early 90's especially when the World Wide Web was published by Tim Berners-Lee in the European Laboratory for Particle Physics. Now, the concept of Web has become a popular parlance that it is no more synonymous to a trap but rather a complicated network of local and global link on the Internet. A web site consists of a home page connected to other files by hyperlinks. A web site can be disk-based or server-based.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the concept of web sites
- implement the design of websites using FrontPage
- design a web page
- link web pages together
- add dynamic contents to web pages
- list and explain the browser and server compatibility of a website.

3.0 MAIN CONTENT

3.1 Designing Web Sites using Front Page

Microsoft, as the world leading software developer, has provided FrontPage and other associated software, as a wonderful tool to design and implement web design. Microsoft Front page is a package in Microsoft Office suites that is specifically designated for the purpose of web design. It makes web design easy to create, modify/edit, authenticated and publish for use on the Internet. Before we go into the intricacies of designing web sites, it is necessary to look into various concepts associated with web design.

3.2 Definition of Concepts

A **web site** is a group of related Web pages that is hosted by an HTTP server on the World Wide Web. The **pages** in a Web site generally cover one or more topics and are interconnected through hyperlinks. Most Web sites have a home page as their starting point.

Home Page is the Main page of a web site which usually has hyperlinks to other pages. A web site can contain many pages connected together by hyperlinks.

Hyperlink is a coloured and underlined text or a graphic object/icon that can be clicked to go to a file, a location within a file, an HTML page on the World Wide Web, or an HTML page on an intranet. Hyperlinks can also go to newsgroups and to Gopher, Telnet, and FTP sites.

A web site can be disk-based (disk-based web site: A web site hosted on a local computer.) or server-based (server-based web site: A web site hosted by a Web server, such as Microsoft Internet Information Server (MIIS).

3.3 Create a Web Site

1. Load Microsoft FrontPage
2. On the **File** menu, point to **New**, and then click **Page or Web**.
3. In the **New Page or Web** task pane, under **New from template**, click **Web Site Templates**.
4. Click the web site template you want to use.
5. In the **Specified location of the new web** box, type the URL for the new web site, or click **Browse** to create a new site on your hard disk, network, or on the Internet.

Note To create a subweb, append the name of the subweb to the name of the root web. For example: http://Open_Univerity.com/web_design.

6. Choose one of the following:

- If you want to add the site to the current web site, select **Add to current Web**.
- If you are creating a Microsoft FrontPage web on a secure port of a Web server that supports Secure Sockets Layer (SSL), select the **Secure connection required (SSL)** checkbox.

3.4 Creating and Designing Web Pages

Web pages are the basic documents of the World Wide Web and are written in HTML (Hypertext Markup Language). Web pages can either be part of a web site, or they can stand alone.

FrontPage provides several page templates that can help a user to quickly create pages with a variety of layouts and functions. FrontPage template can be used to create a two-column page or a page with a search form. Several **themes** can also be used to create pages with a consistent design. A **theme** contains unified design elements with a colour scheme, including fonts, graphics, backgrounds, navigation bars, horizontal lines, and other page elements.

To design and layout pages by oneself, one can start with a blank page, and then:

- use frames, tables, or absolute positioning to precisely position text and graphics on a page.
- add page elements, such as text, graphics, page banners, tables, forms, hyperlinks, banner ads, etc.
- add content that can change, such as marquees, hit counters, and time stamps.
- format text by applying styles or using style sheets.
- animate page elements and set page transitions for lively pages.
- set the background colour, picture, or sound.
- create your own page template: a pre-designed page that can contain page settings, formatting, and page elements.

3.5 Navigation Structure

Link Bar

A link bar is a set of hyperlinks used for navigating a web site. A typical link bar might have hyperlinks to the web site's home page and its main pages:

Home News Contents Search

A link bar can be display on every page in your web site so that site visitors can always get to the web site's main pages quickly and easily. Link bars can use buttons or text hyperlinks. For example, the link bar above can also be displayed as text:

Home News Contents Search

A set of hyperlinks can be created to use for navigation — that is, one can create his/her own set of buttons and link them to the relevant pages within his/her web site and outside it, and repeat this on each page where you want a link bar. One can also choose to set up the navigation structure of a web site, and then let Microsoft FrontPage create the link bars. FrontPage maintains the link bars it creates; if a page is moved or added, FrontPage updates (recalculates the hyperlinks in) the link bar accordingly.

Note FrontPage can generate link bars only when you are working within a web site, rather than with separate pages.

Types of Link Bars

- Microsoft FrontPage has three different types of link bars that can be added to your pages for navigation

Note You can add and view any type of link bar when you publish to a disk-based web site. However, to publish to a Web server, in order to be able to add a custom link bar or a link bar with back and next links, the Web server must have SharePoint Team Services from Microsoft installed.

A. A Custom Link Bar

When you add a custom link bar is added to a site, one can add any of the pages within the web site as well as external pages. This link bar can be set up in any desired way; pages can be added or removed from the link bar at any time.

B. A Link Bar with Back and Next Links

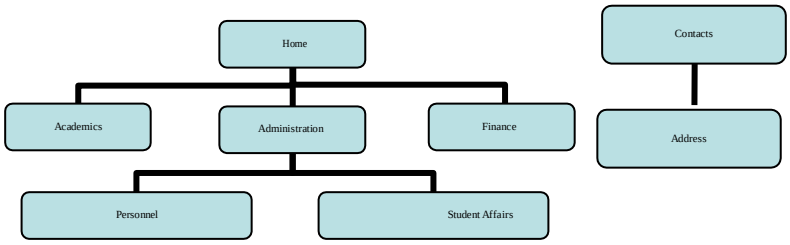
When a link bar with back and next links is added, FrontPage looks at the navigation structure of the web site in order to determine which page will be linked to when the site visitor clicks the **Back** or the **Next** link.
In addition to these choices for a link bar, a page can be hyperlinked to the web site's home page and/or to the parent of the current page, or to external web pages.

C. A Link Bar Based on the Navigation Structure of Your Web Site

In order to add a link bar based on the navigation structure of your web site, you must first set up that navigation structure. The navigation structure determines which hyperlinks to put on the link bar, and the page titles determine the labels for the hyperlinks.

You can create a navigation structure for your web site by organizing pages in **Navigation** view. This navigation structure shows how pages in your web site are related to each other and provides FrontPage with a way to set up link bars. Then, when you add link bars based on the navigation structure of your web site, FrontPage sets up each link bar according to this structure.

The following example shows the structure of a web site:



The following is an explanation of the relationships between these pages:

Home page : The first page added to a navigation structure, typically named Default.htm or Index.htm. In this example, **Home** is the home page.

Global-level pages: These are at the same level as (but do not include) the home page as shown in **Contacts** above

Parent-level pages The parent page of another page, plus pages that are directly connected to the parent page on the same level. The parent-level pages for **Academics** are **Home** (the parent page), and **Contacts**.

Child-level pages are pages directly below another page. In this example, **Home** has three child pages (**Academics**, **Administration**, and **Finance**), **Contacts** has one child page (**Address**), and **Administration** has two child pages (**Personnel** and **Students Affairs**).

Same-level pages Pages that are on the same level in the structure and have the same parent page as **Academics**, **Administration**, and **Finance** are same-level pages, but **Address** is not because it has a different parent page. **Personnel** and **Student Affairs** are also same-level pages.

Back and next pages The structure for the back and next pages is determined by the order of pages in **Navigation** view. In this example, if **Administration** is the page to which you are adding the link bar, the **Next** link would direct the site visitor to **Finance** and the **Back** link would direct the site visitor to **Academics**

Setting the style of link bars

There are several option to make link bars appears

- Place link bars horizontally or vertically on a page
- Add more than one link bar to each page, for example to navigate to different page levels
- Format a link bar that uses text just as you would any other type of text
- Change the style of a link bar that uses buttons instead of text

Using Link Bars within Shared Borders

A shared border is a region that is common to one or more pages in a web site. Shared border is used to place the same content on multiple pages in one step, rather than editing each page.

One can also use link bars inside a shared border. However, this is relative to each page — a link bar might seem useful when it is viewed from one page, but one might not like the selection of hyperlinks when the link bar is viewed from a different page. Since a link bar inside a shared border has the same settings for all pages using the shared border. There is a need to be careful when setting up the link bar.

How to Add a Link Bar Based on the Navigation Structure

1. Create a navigation structure.

In **Navigation** view, do one or more of the following:

Add an Existing Page to the Current Navigation Structure

- Click the page in the **Folder List**, and drag it to the position in the structure where you want it.

If the **Folder List** is not showing, on the **View** menu, click **Folder List**.

Move a Page within the Navigation Structure

- Click the page, and then drag it to another location, such as under or next to another page.
- Add a title to a page
- Right-click the page, click **Rename** on the shortcut menu, and then edit the name.
- *Add a new page under an existing page*
- Right-click the existing page, point to **New**, and then click **Page** on the shortcut menu.

Delete a Page from the Navigation Structure

- Click the page, and then press DELETE.

Note This does not delete your page from your web site.
Save changes without switching views

- Right-click on the view background, and then click **Apply**

Change**s** on the shortcut menus

1. To open a page to edit it, double-click the page.
2. In Page view, position the insertion point where you want to place the link bar.
3. On the Insert menu, click Navigation.
4. In the right pane, click Bar based on navigation structure, and click Next.
5. Select the link bar style you want to use for this link bar. Or, if your page uses a theme, click Use Page's Theme.

If a theme has been applied to your web site, button link bars will use fonts, colours, and other style elements from the theme. If you click **Use Page's Theme** and your page does not use a theme, the link bar will use the default text of the page.

6. Click **Next**.
7. Choose the page orientation of the link bar (vertical or horizontal), and click **Finish**.
8. Under **Hyperlinks to add to page**, select the type of hyperlinks you want on the link bar, and click **OK**.

Add a Link Bar with Custom Links

1. In **Page** view, position the insertion point where you want to place the link bar.
2. On the **Insert** menu, click **Navigation**.
3. In the right pane, click **Bar with custom links**, and then click **Next**.
4. Select the link bar style you want to use for this link bar. Or, if your page uses a theme, click **Use Page's Theme**.
   If a theme has been applied to your web site, button link bars will use fonts, colours, and other style elements from the theme. If you click **Use Page's Theme** and your page does not use a theme, the link bar will use the default text of the page.
5. Click **Next**.
6. Choose the orientation of the link bar, and click **Finish**.
7. Do one of the following:

Create a new link bar

1. Click **Create New**.
2. Type a name for your new link bar, and click **OK**.
3. Click **Add link**.
4. Find the page you want to be on your custom link bar, and select it by clicking it. Or, type its URL in the **Address** box.
5. In the **Text to display** box, type the text you want to show on the link bar.
6. Click **OK**.
7. Repeat steps 3 through 6 for each link you want to add to the link bar.

Use an Existing Link Bar

8. Next to the **Choose existing** text box, click the arrow to find the link bar you want to use.
9. Click **OK**.

Add a Link Bar with Back and Next Links

When a page is added to a link bar with back and next links, FrontPage determines the order of how the pages will be linked (using the back and next buttons) from how the pages are ordered in the folder structure.

1. In **Page** view, position the insertion point where you want to place the link bar.
2. On the **Insert** menu, click **Navigation**.
3. In the right pane, click **Bar with back and next links**, and then click **Next**.
4. Select the link bar style you want to use for this link bar. Or, if your page uses a theme, click **Use Page's Theme**.
   If a theme has been applied to your web site, button link bars will use fonts, colours, and other style elements from the theme. If you click **Use Page's Theme** and your page does not use a theme, the link bar will use the default text of the page.
5. Click **Next**.
6. Choose the orientation of the link bar, and click **Finish**.
7. Do one of the following:

Create a New Link Bar

1. Click **Create New**.
2. Type a name for your new link bar, and click **OK**.
3. Click **Add link**.
4. Find a page you want to link to, and select it by clicking it. Or, type its URL in the **Address** box.

Note Be sure to complete steps 3 and 4 to add the page on which to add the link bar.

5. Set the order of how the pages are browsed to clicking the **Move up** or **Move down** buttons.

Use an Existing Link Bar

6. Next to the **Choose existing** text box, click the arrow to find the link bar you want to use.
7. Click **OK**.

To Add an External Hyperlink to a Link Bar

Do one of the following

Add an external link to a link bar based on the navigation structure

1. In **Navigation** view, right-click the page to which you want to add an external hyperlink, and click **Add Existing Page** on the shortcut menu.
2. Do one of the following:

Create a Hyperlink to a Page or File

1. Under **Link to**, click makes sure **Existing File or Web Page** is selected.
2. Select the page or file to which you want to link.

Create a hyperlink to a page or file on the World Wide Web

1. Under **Link to**, make sure that **Existing File or Web Page** is selected.
2. Click **World Wide Web**.
3. In your Web browser, browse to the page that you want to link to, and then press ALT+TAB to switch back to Microsoft FrontPage. The location of the page you visited is displayed in the **Address** box.

Create a Hyperlink to an E-Mail Address

1. Under **Link to**, click **E-mail Address**.
2. Either type the e-mail address you want in the **E-mail address** box, or select an e- mail address in the **Recently used e-mail addresses** box.
3. In the **Text to Display** box, type the label of the e-mail address you want to display on the link bar.
4. In the **Subject** box, type the subject of the e-mail message.

Note Some Web browsers and e-mail programs may not recognise the subject line.

The hyperlink is added to your navigation structure and is displayed with the icon. You can change the position of the external hyperlink in the navigation structure by clicking and dragging the hyperlink to a different location.

To save the changes, right-click the **Navigation** view background, and then click **Apply Changes** on the shortcut menu.

Add External Links to a Custom Link Bar or a Link Bar with Back and Next Links

1. Double-click the link bar.
2. Click **Add link**.
3. Do one of the following

Create a Hyperlink to a Page or File

1. Under **Link to**, make sure that Existing **File or Web Page** is selected.
2. Select the page or file to which you want to link.

Create a Hyperlink to a Page or File on the World Wide Web

3. Under **Link to**, make sure that **Existing File or Web Page** is selected.
4. Click **World Wide Web**.
5. In the Web browser, browse to the page that you want to link to, and then press ALT+TAB to switch back to Microsoft FrontPage.

The location of the page you visited is displayed in the **Address** box.

Create a Hyperlink to an E-Mail Address

6. Under **Link to**, click **E-mail Address**.
7. Either type the e-mail address you want in the **E-mail address** box, or select an e-mail address in the **Recently used e-mail addresses** box.
8. In the **Text to Display** box, type the label of the e-mail address you want to display on the link bar.
9. In the **Subject** box, type the subject of the e-mail message

3.6 Table of Contents

Table of contents displays the logical arrangement of web pages with their links in a web design. It is possible to generate the table of contents automatically based on the navigation structure of the web site or one based on the categories that is assign to the pages.

The table of contents based on the navigational structure can also include pages with hyperlinks that are not included in the navigation structure. A site patron browsing your web site can click any entry in the table of contents to jump to that page or file.

The table of contents and also be create on a page that contains other content, or on a page by itself. To create a table of contents for a large

web site, it should probably create a special page containing only the table of contents.

Table of contents can be formatted, for example the heading, font size etc. can be changed; it can also be set to automatically recalculate the table of contents whenever any page in the web site is edited. The example below shows the table of contents for the navigation structure above.

Table of Contents
Home
Academics
Administration
Personnel
Students Affairs
Finance
Contacts
Address

How to Create a Table of Contents

Do one of the following:

A. Create a table of contents based on the navigation structure

1. In **Page** view, position the insertion point where you want to create a table of contents.
2. On the **Insert** menu, point to **Web Component**.
3. In the left pane, click **Table of Contents**.
4. In the right pane, click **For This Web Site**, and then click **Finish**.
5. In the **Page URL for starting point of table** box, type the relative URL of the page to use as the starting point for the table of contents, or click **Browse** to locate the page.

The starting point determines which pages are leftmost in the table of contents. Pages pointed to by hyperlinks on the starting page will be indented one level in the table of contents as shown above.

6. In the **Heading font size** box, select the paragraph style for the heading (the top-level entry, or starting page) of the table of contents. To exclude the starting page from the table of contents, click **None** from the drop-down list.
7. Under **Options**, do one or more of the following:

    - Select the **Show each page only once** check box if the web site includes pages pointed to by multiple hyperlinks

and you want the table of contents to list each page only once.

- Select the **Show pages with no incoming hyperlinks** check box to include pages not pointed to by any hyperlinks in your web site.
- Select the **Recompute table of contents when any other page is edited** check box to automatically recalculate the table of contents whenever any page in your web site is edited.

Note *Recalculating a table of contents for a large web site can be a time-consuming process. If you select this check box, you may find that it takes longer to save pages. If you don't select this check box, you can manually regenerate the table of contents by opening and saving the page containing the table of contents.*

B. Create a Table of Contents Based on Categories

1. Assign each page you want on your table of contents to a category.

i. In the **Folder List**, right-click the page to which you want to assign a category, and then click **Properties** on the shortcut menu.
ii. Click the **Workgroup** tab.
iii. Under **Available Categories**, click the category to assign this page to.

If you want to create a new category, click **Categories**, type the name of the new category, and click **Add**.

iv. Click **OK**.
v. Repeat steps 1 through 4 for each page to which you want to assign a category.

2. In **Page** view, position the insertion point where you want to create a table of contents.
3. On the **Insert** menu, click **Web Component**.
4. In the left pane, click **Table of Contents**.
5. In the right pane, click **Based on Page Category**, and then click **Finish**.
6. In the **Categories Properties** dialogue box, select the categories whose pages you want to list in your table of contents.

The categories you select will be listed under **Selected Categories**.

7. In the **Sort files by** box, do one of the following:

- If you want to sort the list alphabetically by title, click **Document title**.
- If you want to sort the list by file dates, click **Date last modified**.

Click the check boxes if you want to display the **Date the file was last modified** or any **Comments added to the file**.

Note Click **Preview in Browser** to test the table of contents

3.7 Adding Dynamic Contents Pages

Dynamic contents or elements are tools that give the user or owner of a site some information situation report on a site. For example the hit content, time stamp, dynamic HTML etc.

Hit Counter: this tallies and displays the number of times a web page has been visited to the user and site owner. This will serve as motivation to user to know the awareness of the site and its relevance to the needs of web browsers. Microsoft FrontPage provides several styles of counters, but user can supply his/her own number graphics by creating a custom picture in GIF format. After you add a hit counter to a page, you can reset the counter to any number.

To add a hit counter to a web page

1. In **Page** view, position the insertion point where you want to place the hit counter.
2. On the **Insert** menu, click **Web Component**.
3. In the left pane, click **Hit Counter**.
4. Do one of the following

Choose an existing counter style

- In the right pane, under **Choose a counter style**, double-click one of the counter styles.

Use a custom picture as a counter style

1. In the right pane, double-click any of the counter styles.
2. In the **Hit Counter Properties** dialogue box, select **Custom Picture**.
3. Type the relative location of the GIF file.

For example, if the GIF is located in your images folder, the relative path would be /openuniverity/abuja.gif

To set the counter to a specific number, select the **Reset counter to** box, and then type the number.

To display a fixed number of digits in the hit counter, select the **Fixed number of digits** box, and then type the number.

For example, to display 005 rather than 5, select this option and type **3**.

Click **OK**. **[HitCounter]** is displayed on the page as a placeholder for the hit counter. To see how the hit counter will appear to site visitors, click the **Preview** tab, or click **Preview in Browser**

Stamp Time: this displays either the time or the date, or both, that the page was created or last changed. A time stamp lets site visitors know whether the information on your site has changed since their last visit.

To add a time stamp to a page

1. In **Page** view, position the insertion point where you want to place a time stamp.
2. On the **Insert** menu, click **Date and Time**.
3. Specify the type of time stamp to display.
4. Specify a format for the date and for the time.

Dynamic HTML (DHTML) effects: DHTML is a Microsoft enhancement to HTML version 4.0 that enables user to create visual effects or improve the layout of a web page. A visual effect might be an animation in which text appears to fly off the page one word at a time. A page layout improvement could take the form of a space-saving collapsible outline. The blue links below are designed using DHTML so that you can click them to show more content.

If site visitors with older browsers (Microsoft Internet Explorer 3.0 or earlier or Netscape Navigator 3.0 or earlier) make up a large portion of your audience, you can turn off DHTML features using the Microsoft FrontPage browser compatibility settings.

If you disable DHTML, or if you design a web site to be compatible with a browser that doesn't support DHTML, the commands that use DHTML will be unavailable (that is, they will appear dimmed) on menus in FrontPage.

The following commands and settings are unavailable when DHTML is disabled

- Dynamic HTML Effects (Format menu)
- Page Transition (Format menu)
- Enable collapsible outlines (Bullets and Numbering dialogue box)
- Enable hyperlink rollover effects (Page Properties dialogue box, Background tab)

Note If you choose a browser compatibility selection that doesn't support DHTML, but use it anyway, your pages might not be displayed properly, or they might contain errors.

3.8 Browser Compatibility

It is possible to design a web site for compatibility with specific browsers and technologies. For example, you can design a web site for compatibility with both Microsoft Internet Explorer and Netscape Navigator, or for compatibility with all version 4.0 browsers

Browser compatibility settings

The following table shows features that are enabled in Microsoft FrontPage depending on the browser compatibility settings you choose.

Browser type	**Available Features**
Microsoft Internet Explorer 5.0 and later	ActiveX, VBScript, JavaScript, Java applets, DHTML, frames, CSS 1.0, CSS 2.0, VML
Internet Explorer 4.0	ActiveX, VBScript, JavaScript, Java applets, DHTML, frames, CSS 1.0, CSS 2.0, VML downlevel image file
Internet Explorer 3.0	ActiveX, VBScript, JavaScript, Java applets, frames, CSS 1.0, VML downlevel image file
Netscape Navigator 5.0 and later	JavaScript, Java applets, DHTML, frames, CSS 1.0, CSS 2.0, VML downlevel image file
Netscape 4.0	JavaScript, Java applets, DHTML, frames, CSS 1.0, CSS 2.0, VML downlevel image file
Netscape 3.0	JavaScript, Java applets, frames, VML downlevel image file
Internet Explorer and	JavaScript, Java applets, DHTML,

Netscape 4.0, 5.0 and later	frames, CSS 1.0, CSS 2.0, VML downlevel image file
Internet Explorer and Netscape 3.0	JavaScript, Java applets, frames, VML downlevel image file
Microsoft Web TV	N/A

The following settings may be unavailable depending on the browser compatibility settings you choose.

Browser type	**Unavailable Features**
Microsoft Internet Explorer only	Blink
Netscape Navigator only	Marquee, video, table background picture, cell borders and background
Both Internet Explorer and Netscape	Marquee, video, table background picture, cell borders and background, blink
Microsoft Web TV	Marquee, video, table background picture, cell borders and background, overline, blink, small caps, all caps, capitalize

Note: Menu commands that are incompatible with your browser compatibility selections are unavailable (dimmed) on FrontPage menus. If one overrides the default and enable a technology or feature not supported by a specific browser or version, the web site might be displayed incorrectly or contain errors

Design a web site for use with specific browsers

1. On the **Tools** menu, click **Page Options**, and then click the **Compatibility** tab.
2. In the **Browsers** box, select the specific browsers you want.
3. In the **Browser versions** box, select the specific versions of browsers that you want.

If you leave the default setting (**Custom**) selected, under **Technologies** you can select or clear the check boxes of the specific technologies or features you want to enable or disable

Identify a web page to search engines and web browsers

1. In **Page** view, right-click the page, and then click **Page Properties** on the shortcut menu.
2. Click the **Custom** tab.
3. Do one of the following

Add a system META variable

1. Under **System variables**, click **Add**.
2. In the **Name** box, type the name of the variable.
3. In the **Value** box, type the value of the variable.

Add a user-defined META variable

5. Under **User variables**, click **Add**.
6. In the **Name** box, type the name of the variable.
7. In the **Value** box, type the value of the variable

Enable or disable DHTML

1. On the **Tools** menu, click **Page Options**, and then click the **Compatibility** tab.
2. To enable or disable DHTML, under **Technologies** select or clear the **Dynamic HTML** check box

3.9 Server compatibility

How to Design a web site for specific servers

1. On the **Tools** menu, point to **Page Options**, and then click the **Compatibility** tab.
2. In the **Servers** box, select the server you want.

Note If you select **Apache server**, the Active Server Pages are disabled by default.

3. If you want to target your web site for a server that uses the Microsoft FrontPage Server Extensions, select the **Enabled with Microsoft FrontPage Server Extensions** check box.

Note If the server doesn't use FrontPage Server Extensions, or then clear this check box, the following items will be unavailable in the **Insert Web Component** dialogue box:

- **Web Search**
- **Hit Counter**
- **Photo Gallery**
- **Confirmation Field**
- **Top 10 List**

If the server isn't running SharePoint Team Services from Microsoft, the following items will be unavailable in the **Insert Web Component** dialogue box:

- **List View**
- **Document Library View**

Enable or disable features that require the FrontPage Server Extensions

FrontPage can be set to enable or disable commands that require Microsoft FrontPage Server Extensions on the Web server.

1. On the **Tools** menu, click **Page Options**, and then click the **Compatibility** tab.
2. Choose one of the following

To design a web site with features that require the FrontPage Server Extensions

- Select the **Enabled with Microsoft FrontPage Server Extensions** check box.

To design a web site with features that do not require the FrontPage Server Extensions

- Clear the Enabled with Microsoft FrontPage Server Extensions check box.

Note If you clear this check box, the following items will be unavailable in the **Insert Web Component** dialogue box:

- web Search
- hit Counter
- photo Gallery
- top 10 List
- confirmation Field
- **list View** (also requires a Web server that is running SharePoint Team Services from Microsoft)

- **document Library View** (also requires a Web server that is running SharePoint Team Services)

4.0 CONCLUSION

Microsoft FrontPage remains one of the most popular web design tools. Its flexibility makes it acceptable to users. It is authors HTML of the user's web design automatically thereby ease the burden of tag memorisation. Time spent on coding is less and the HTML automatically authored can serve as open source to design other web site. FrontPage offers a wide range of compatibilities to many versions of browsers with little settings or modification. Apart from different version of Internet explorer, it support other browsers like Netscape, Mosaic, and Microsoft web TV.

5.0 SUMMARY

In this unit we have explore in concise sense, how to design a website and its pages using FrontPage. The basic concepts in web design are explored, and different methods of linking web pages and sites together are explored. More so table of contents is a major tool for navigating a website and also for connecting external site. The methods of creating table of contents were outline for systematic understanding and practicability. The issue of compatibility may course a serious problem if not well mastered. This unit has done good justice to these essential parts of web design.

6.0 TUTOR-MARKED ASSIGNMENT

i. Design a website navigation structure.
ii. Create a table of content based on the structure in (i).

7.0 REFERENCES/FURTHER READING

Hofstetter F. (2003). Advanced Web Design with FrontPage 2002 CD-ROM. University of Delware.

Hofstetter, T. F. (2006). Internet Literacy with Students CD-ROM. 4ed. University of Delware.

Microsoft Corporation (2001). Microsoft FrontPage 2002 (online help).

MODULE 2 STATIC WEB DESIGN

Unit 1 Hypertext Mark-up Language (HTML)
Unit 2 Advanced HTML Elements

UNIT 1 HYPERTEXT MARK-UP LANGUAGE (HTML)

CONTENTS

1.0 INTRODUCTION

HTML, or HyperText Markup Language is designed to specify the logical organisation of a document, with important hypertext extensions. It is not a word processor such as Word or WordPerfect, although these word processors may be used as text editor to prepare HTML. HTML document may be viewed by many different "browsers", of very different abilities. Thus, HTML allows you to mark selections of text as titles or paragraphs, and then leaves the interpretation of these marked *elements* up to the browser you are using. For example one browser may indent the beginning of a paragraph, while another may only leave a blank line.

HTML instructions divide the text of a document into blocks called *elements*. The elements can be divided into two broad categories -- those that define how the BODY of the document is to be displayed by the browser and those that define information `about' the document, such as the title or relationships to other documents. This unit describes the vocabulary of these elements and an overall description of the design of HTML documents.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the different parts of a complete HTML document
- describe the structure and uses of various HTML instructions
- write a complete HTML document for a web page design
- explain and implement some advanced features of HTML instructions
- describe how to document various section of HTML
- explain the concept o f Uniform Resource Locator (URL).

3.0 MAIN CONTENT

3.1 Introduction to Html and Xhtml

The HTML/XHTML instructions are called *elements*. The instructions are themselves called *tags.* The instructions look like <element_name>, that is, they are simply the element name surrounded by left and right angle brackets.

Most elements mark blocks of the document for particular purpose or formatting: the above <element_name> tag marks the beginning of such as section. The end of this section is then marked by the *ending* tag </element_name>, note the leading slash character "/" that appears in front of the element name in an end tag. End, or stop tags are always indicated by this leading back slash character.
For example, the heading at the top of this page is an H2 element, (a level 2 heading) which is written as: <H2> 4.0 Introduction to HTML </H2>.

Some elements are *empty* -- that is, they do not affect a block of the document in some way. These elements do not require an ending *tag*. An example is the <HR> element, which draws a horizontal line across the page. This element would simply be entered as <HR>

Element names are case *insensitive*. Thus, the horizontal rule element can be written as any of <hr>, <Hr> or <HR>.

Many elements can have arguments that pass parameters to the interpreter handling this element. These arguments are called *attributes* of the element. For example, consider the element A, which marks a region of text as the beginning (or end) of a hypertext link. This element can have several attributes. One of them, HREF, specifies the hypertext document to which the marked piece of text is linked. To specify this in the tag for A you write:

<A HREF="http://www.fedpoybidaportal.com/home.html"> Registration .

where the attribute HREF is assigned the indicated URL. Note that the A element is not empty, and that it is closed by the tag . Note also that end tags do not take attributes - the attributes to an element are always placed in the start tag.

HTML/XHTML is an evolving language, and each new version is given a number. The first definitive version was HTML 2.0. it contains the most common elements, but some of the Netscape/Microsoft extensions are missing, and did not support tables, or ALIGN attributes.

HTML 3 (late 1995) had many upgrade the features and utility of HTML. However, it was never completed or implemented, although many features were integrated in version 3.2. this version supports TABLES, image, heading, ALIGN attributes, and a few others. It becomes the “universal" dialect to all browsers. However, it misses some of the Netscape/Microsoft extensions, such as FRAMEs, EMBED and APPLET. These features came with HTML 4.0

HTML 4.01 supports most proprietary extensions, and extra features like Internationalised documents, Cascading Style Sheets, extra TABLE, FORM, and JavaScript enhancements, that are not universally supported.

Now, HTML is being replaced by a new language, called *X*HTML - for the eXtensible HyperText Markup Language. The differences are actually small but important.
However, HTML and XHTML are very similar. The distinguishing features of XHTML are:

1. All tag and attribute names must be in lowercase. Thus, you can't write
   <A HREF="home.html">...</A> as ...

2. Empty tags must be written with an extra slash at the end e.g.
 or <img src=ball.gif"> as:
, and .
3. You can never omit an end tag. This is sometimes with HTML as in
    This paragraph is good
   With XHTML, as This paragraph is good
4. Attributes must always have a value.
   <hr size="2" storm> as <hr size="2" storm="strong wind" />
5. Attributes values must always be quoted.
   <hr size=2> as <hr size="2" />

3.2 Structure of HTML Document

HTML documents are structured into two parts, the HEAD, and the BODY. Both of these are contained within the HTML element - this element simply denotes this as an HTML document.

The head contains information about the document that is not generally displayed with the document, such as its TITLE. The BODY contains the body of the text, this is where you place the document material to be displayed. Elements allowed inside the HEAD, such as TITLE, are not allowed inside the BODY, and vice versa.

Example of Document Structure

```
<HTML>
<HEAD>
<TITLE> Library Retrieval Project </TITLE>
</HEAD>
<BODY>
<h1> Library Retrieval Project </h1>

Welcome to the Home Page of the Library Retrieval System.
This project allows the user to access library materials from a
remote source. It is a powerful online system that has been
commended by scholars all over the globe.

<p>How do you access it?  Do the following
<ul>
<li><A HREF="Library.html">Type</A> your information
request.
<li>Click
<A HREF="http://lib.info/retr.html">Go</A> to retrieve
result.
```

```
<li>Select <A HREF="ftp:serc.ret/bk.gif">book</a>
</ul>
</BODY>
</HTML>
```

Naming Scheme for HTML document

When your browser use for your HTML (Internet Explorer, Netscape Navigator, lynx etc.) retrieves a file, it must know what type of data it has received in order to know what to do with it. HyperText Transmission Protocol (HTTP) servers explicitly tell the browser the type of the data being sent. In other cases, such as when the browser is using File Transfer Protocol (FTP) to access a remote file, or when the browser is reading a file from your local disk (such as when you are editing pages prior to publishing them to a Web server), the browsers "guesses" the data type from the filename extension - that is, the part after the dot in the filename. The file extension indicates the type of file to be read. For example, HTML files are identified by names such as name.html (.html extension indicates that this is an HTML document).

Four letter extensions are common. This is not a problem with UNIX computers or Macintoshes, since these machines place no restriction on the filename. DOS and Windows 3.1 machines are restricted to a three letter extension. So the extension is truncated to three letters (i.e. .html becomes .htm).

Some standard extensions and their meanings are listed in the Table 3.1

Table 3.1: Mark-up elements within HTML HEAD

BASE	A record of the original URL of the document: this allows you to move the document to a new directory (or even a new site) and have relative URLs access the appropriate place with respect to the original URL.
ISINDEX	Usually placed in the HEAD by the server or a server script/program to indicate that a document is searchable.
LINK	Defines the relationship(s) between this document and another or others. A document can have several LINK elements.
META	A container for document *metainformation*.
NEXTID	A parameter used by automated HTML editors to create unique identifiers for the documents. ***NOTE:*** This attribute was dropped in HTML 4.0, so you should avoid it in new documents.

TITLE	The title of the document. This element is **mandatory** -- ***all*** documents must have a TITLE.
STYLE	Stylesheet instructions, written in a stylesheet language. Stylesheet instructions specify how the document should be formatted for display. Most browsers currently support stylesheets.
SCRIPT	Script program code -- for enclosing, within a document, scripting program code that should be run with -- and that can interact with -- the document. Example languages are JavaScript and VBScript.

Example of a HEAD

```
<HTML>
<HEAD>
<TITLE> Tinuola Business Enterprise </TITLE>
<BASE
HREF="http://www.education.org/register/student.html">
<LINKHREF="http://www.education.org/reg/index.html"
REL="index">
</HEAD>
<BODY>
text of the document
</BODY>
</HTML
```

3.3 BODY of HTML document

The *content* of a document is contained in the BODY element as opposed to the HEAD, which contains *information about* the document. Some mark-up elements allow within the body include the headings, paragraphs, lists, hypertext links, images etc.

Example of the HEAD and BODY elements are shown in the document below:

```
<HTML>
<HEAD>
<TITLE> BODY element in HTML </TITLE>
<BASE
HREF="http://www.fedpolybidaporta.gov.ng/register/06/SAA
S/list.html">
</HEAD>
<BODY>
<H1> BODY Element in HTML </H1>
```

 The BODY element contains all the content of the document,
as opposed to the HEAD, which contains information about the document. ...
</BODY>
</HTML>

BODY Attributes

Background Attribute
This enables an image file to be specified as a background

e.g. <BODY BACKGROUND="back/polylogo.jpeg"></BODY>

tiles the window background with the designated JPEG image.

COLOUR Attributes

BGCOLOUR =”#rrggbb” sets the background colour to the specified RGB value. Where RR, GG, BB represents the hexadecimal values for Red, Green and Blue respectively. The value rages from 0 to 255. Colour “000000”is black, while “FFFFFF” is white.

TEXT="#rrggbb" sets the default text colour to the specified RGB colour value.

LINK="#rrggbb" sets the default text colour of hypertext anchors to the specified RGB colour value.

VLINK="#rrggbb" sets the default text colour of visited hypertext links to the specified RGB colour value.

Most browsers also support special colour *names* (white, blue, etc.).

MARGIN Attributes

Most browsers added attributes that set the padding around the text the page -- essentially setting the page margins. These properties are:
LEFTMARGIN="nn" sets the page margin on the left of the page to be of size *nn* pixels.
RIGHTMARGIN="nn" sets the page margin on the right of the page to be of size *nn* pixels.
TOPMARGIN="nn" sets the page margin at the top of the page to be of size *nn* pixels.

3.3.1 Organisation of the Elements in the BODY

A. Text Block Elements

As earlier mentioned, the BODY element contains all the displayed content of a document. Structurally, the document content is organised into blocks of text, such as paragraphs, lists, headings, paragraphs, block quotations, and so on. These are generically called *block elements*, since they "block" chunks of text together into logical units. Block elements can often contain other blocks, e.g. a list item can contain paragraphs or block quotations, so that these elements can often nest together.

The block-level elements are-

- Hn (Headings)
- P
- ADDRESS
- BLOCKQUOTE
- PRE
- HR
- FORM
- TABLE
- DIV (HTML 3.2 and up)

B. Text Emphasis Elements

At the next level down are text-level markup elements. These are elements that mark text for special meanings, for example, that a particular piece of text is emphasised (EM) or a citation (CITE), or that specify the desired physical formatting, such as boldface (B) or italics (I). These elements can usually appear anywhere inside a block element, with a few exceptions (you can't have images inside a PRE element).

C. Special Elements -- Hypertext Anchors

Analogous to the text-level markup is the anchor (A) element. This is the element that marks hypertext links.

D. Character-Level Elements

Character-level elements are line breaks (BR) and images (IMG). These are treated much like characters, and can appear wherever there is a character in a document.

E. Character References

More so, there are character or entity references. These are special HTML "escape" codes that can be used to enter special characters that are hard to type, such as accented or other non-ASCII characters. These are needed to type angle brackets or ampersand characters, as these are otherwise interpreted as HTML tags (< ... >) or as the beginnings of character or entity references (&).

Document Section Headings

HTML allows for six levels of headings, marked by the element names H1, H2... H6. There is no forced hierarchy in these headings, but for consistency you *should* use the top level (H1) for main headings and lower levels for progressively less important ones. In general hypertext documents should be broken up so that each page does not occupy much more than a single screen. In these cases you can use the H1 heading to mark the main document heading, and the others to mark subheadings.

Heading Alignment: The ALIGN Attribute

ALIGN attribute allows an author to "hint" at the desired alignment of the heading on the display. The possible values are ALIGN="left" (the default) to left-align the heading, ALIGN="centre" to centre the heading, and ALIGN="right" to right-align the heading.

Examples of Headings

<H1 align="left"> Heading type H1 </H1>
Heading type H1

<H2 align="centre"> Heading type H2 </H2>
Heading type H2

<H3 align="right"> Heading type H3 </H3>
Heading type H3

<H4> Heading type H4 </H4>
Heading type H4

<H5> Heading type H5 </H5>
Heading type H5

<H6> Heading type H6 </H6>
Heading type H6

Marking Paragraphs

The P element marks a block of text as a paragraph. The tag <P> marks the beginning of the paragraph, while the tag </P> marks the end of a paragraph. The end tag, however, is optional.

For example, the above text, including the heading, was marked up as follows:

```
<p> The P element marks a
block of text as a paragraph -- the tag <code>&amp;lt;P></code>
marks the beginning of the paragraph, while the tag
<code>&amp;lt;/P></code> marks the end of a paragraph. The end
tag, however, is optional.</p>
```

Lists

HTML supports several elements for making lists. They can be divided into two types: glossary lists, and regular lists. Glossary Lists are denoted by the element <DL>, while regular lists are denoted by the elements <UL>, <OL>, <MENU> and <DIR>. Lists can be nested. Thus you can have a regular list within a regular list, a regular list within a glossary list, and so on.

DL Element: Glossary Lists

This list type, also known as a definition list, is used to present a list of items along with descriptive paragraphs. This can be used for glossaries, but is also useful for presenting a named list of items and their meanings. The items within the list are introduced by the two elements:

<DT> -- The `Term' (a single line)
<DD> -- The `Definition' (may be multiple lines)

DL can take a single attribute, COMPACT, to signify that the list is small (or large) and should be rendered in a physically compact way. This attribute is ignored by several browsers.

Example of DL Lists

```
<dl>
<dt> Department List  </dt>
<ul>
<li> General Studies</li>
<li> Computer Science </li>
<li> Mechanical Engineering</li>
```

```
<li> Accountancy </li>
<li> Chemical Engineering </li>
<li> Hotel and Hotel Management </li>
</ul>
</dl>
```

Department List

- General Studies
- Computer Science
- Mechanical Engineering
- Accountancy
- Chemical Engineering
- Hotel and Hotel Management

A regular list

This is a sequence of paragraphs, each of which may be preceded by a special mark, sequence number, or nothing at all. The syntax is:

```
<UL>
<LI> General Studies</LI>
<LI> Computer Science</LI>
</UL>
```

where the opening element defining the list type can be one of
(Unordered List) **UL --** A list of multi-line paragraphs, listed separately and usually marked by a bullet or similar symbol
(Ordered List) **OL --** A list of multi-line paragraphs, listed separately and ordered numerically.

MENU -- An Unordered List of smaller paragraphs, this is similar to UL but is formatted (if possible) in a more compact manner.

DIR -- A list of short elements, typically less than 20 characters in length. These may be arranged in columns across the page, as opposed to one above the other. This is browser dependent

HR -- Horizontal Ruled Line

The HR element is used to draw a horizontal dividing line completely across the screen. This can be used to logically separate blocks of text, or to separate icon lists from the body of the text.
The HR element is empty.

HR Attribute Extensions

There are four major attribute extensions to the HR element. These are widely supported by most browsers. These attributes and their meanings are:

SIZE="n" –specifies the vertical width, in pixels, of the dividing line (n is an integer).

WIDTH="n", or "n%" - specifies the horizontal width, in pixels or as a percentage of the display width, of the dividing line (n is an integer).

ALIGN="left", "right", "centre" – specifies the alignment of the dividing line on the page. The default is centred.

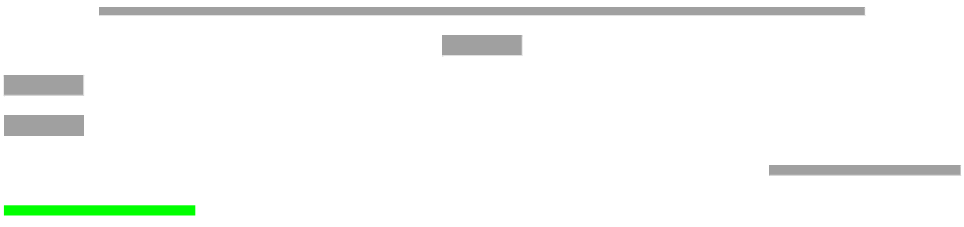
NOSHADE – Draws the dividing line as a solid black bar -- the default is a shaded bar.

Some browsers also supports a COLOUR attribute to set the colour of the horizontal rule.

Here are some examples:

```
<hr size=4 width=60%>
<hr size=10 width=40>
<hr size=10 width=40 align="left">
<hr size=10 width=40 align="left" noshade>
<hr size = 5 width=20% align="right">
<hr size = 5 width=20% align="left" colour="green">
```

These are displayed as shown below:



3.3.2 FORMS Element for fill-out Forms

The FORM element allows you to create a fill-out form. FORM element and its associated sub-elements INPUT, TEXTAREA, and SELECT, allow for more sophisticated user input via fill-in FORMs. These allow for author specified radio and checkbox buttons (using INPUT elements), single-line text input fields (again using INPUT),

selectable lists (via SELECT) and block text input regions (via TEXTAREA).

The data input into a FORM are sent to a server, the FORM attribute ACTION, specifies the URL to which the data should be sent. Also, the FORM element can select the HTTP method by which the data are sent -- the *GET* HTTP method means that the data are appended to the URL like a query string, while the *POST* method means that the data are sent as a message body, much as data are sent from the server to the browser, but in the opposite direction.

An example of FORM is:

```
<FORM ACTION="http://csd.edu.ng/research/cgi_bin"
METHOD=POST>
First entry field: <INPUT NAME="entry1"> <BR>
Second entry field: <INPUT NAME="entry2"
VALUE="bloop"> <BR>
Third entry field: <INPUT NAME="entry3"> ---
Select Option: <SELECT NAME="entry4">
<OPTION VALUE="no1">Frogs
<OPTION VALUE="no2">Peaches
<OPTION VALUE="no3">Cream
<OPTION VALUE="no4">Newts
</SELECT>
To submit the query, press:
<INPUT TYPE="submit" VALUE="Submit Query">. <P>
</FORM>
```

The above FORM is rendered as follows:

First text entry field:

Second entry field: Fela

Third entry field: --- Select Option: Juice

To submit the query, press: Submit.

Note that you can use TABLEs to format the layout of the form.

Meanings of FORM Attributes

The ACTION specifies the url to which the form results will be sent: this URL should point to a cgi-bin/ script or program. If absent, the ACTION is taken to be the url of the current document -- that is, the data is returned to the same place from where the document came.

The METHOD specifies the HTTP method to be used to submit the form information to the server. METHOD can have two arguments:

- GET (the default) - the form contents are appended to the url (after the question mark).
- POST - the form contents are sent to the server in the body of the message.
- The ENCTYPE attribute specifies the way in which the data are to be encoded. This attribute is only relevant when METHOD="post", as the GET method only allows one type of encoding.

For "post", the two possible values are:

- "application/x-www-form-urlencoded" (the default) - the form contents is encoded as if it were to be appended to the end of a URL (as in GET method).
- "multipart/form-data" - the data is send as a MIME multipart message.

The latter is useful for big forms, for forms that include files sent from the browser (using file upload), or for document written in non ASCII characters (for example, Japanese or Hebrew).
If you are writing your own FORMS you also need to write a cgi-bin script or program to interpret the FORM entries.

3.3.3 TABLES

Before table was introduced ito HTML, the preformatted element <PRE> was used to create table-like layout. This, of course, only worked for text, and did not work for images, and did not allow for elegant page designs.

TABLE Element

The TABLE element denotes the range of the table, and uses attribute to define properties of it. For example, the BORDER attribute indicates the size of the border to draw around the table and between each of the table's *cells.* There are several other attributes besides BORDER.

The only two elements allowed inside a table are CAPTION, and TR. CAPTION defines a table caption, and can take one attribute - ALIGN - to define where the caption should be placed. Possible values are "top", "bottom" "left" and "right".

TR defines a **Table Row -** a table is made up of any number of any number of rows, depending on how you design it. Each row in turn contains cells, denoted either by TD (table data) or TH (table header) elements. The number of TD or TH elements in a given row defines the number of columns in the table, while the number of TR elements defines the number of rows. In general, TD elements are used for data, while TH elements are used for row or column headings. Note that you need to be careful that each row contains the same number of cells -- otherwise the table columns will not line up correctly.

Here is a simple table example, (a table with 3 rows and 4 columns)

```
<TABLE BORDER="1">
<caption align="bottom">This is the Table Caption</caption>
<TR> <TH>Value 1  <TH> Value 2  <TH> Value <TH> Name
</TH> </TR>
<TR> <TD> 4.02 </TD> <TD> 1.2 </TD> <TD> 3.2 </TD>
<TD> James </TD> </TR>
<TR> <TD> 0.44 </TD> <TD> 0.3 </TD> <TD> 7.2 </TD>
<TD> Jide </TD> </TR>
</TABLE>
```

This table is displayed as:

Value 1	**Value 2**	**Value 3**	**Name**
4.02	0..02	3.2	James
0.44	0.3	7.2	Jide

Note

TH, TD and TR should always have end tags.

Although the end tags are formally optional, some browsers may mess up the formatting of the table without end tags. Always use end tags when handling a TABLE within a TABLE -- in this situation, the table parser gets hopelessly confused if you don't close your TH, TD and TR elements. A default TABLE has no borders, by default; tables are drawn without border lines. You need the BORDER attribute to draw the lines. By default, a table is justified to the left margin. The table be placed inside a DIV element with attribute ALIGN="centre".

Most browsers support table alignment, using the ALIGN attribute.

Allowed values are "left", "right", or "centre", for example: <TABLE ALIGN="left">.

TABLE Attribute Extensions

Head 1	Head 2

HTML supports additional TABLE element attributes. These are BORDER, which takes numbers to set the width, in pixels, of the outside table border; CELLPADDING which takes numbers that defines the space, in pixels, between the cell contents and the cell borders (that is, padding *within* each cell of the table), while CELLSPACING defines the space *between* the cells (the width of the cell-cell border; the WIDTH attribute sets the width of the entire table. This can be expressed as an absolute number (in pixels) or as a percentage width of the available space for the table -- 100% being as wide as possible.

Table Examples

Here are some simple tables, showing how the WIDTH, BORDER, CELLPADDING and CELLSPACING attributes work:

<table border **width=80%**>

<TR> <TH> Value A <TH> Value B </TR>
<TR> <TD> 2.11 <TD> 2.23 </TR>
</table>

Value A	Value B
2.11	2.23

<table **border=8**>
<TR> <TH> Value A <TH> Head 2 </TR>
<TR> <TD> 2.11 <TD> 2.23 </TR>
</table>

Value A	Value B
2.11	2.23

<table border **cellpadding=8**>
<TR> <TH> Head 1 <TH> Head 2 </TR>
<TR> <TD> 4.11 <TD> 4.23 </TR>
</table>

Head 1	Head 2
4.11	4.23

<table border **cellspacing=8**>
<TR> <TH> Head 1 <TH> Head 2 </TR>
<TR> <TD> 4.11 <TD> 4.23 </TR>
</table>

4.11	4.23

COLSPAN and ROWSPAN attributes are used to stretch across into the next column and "drop down" to the next row respectively. COLSPAN indicates how many columns (counting to the right) are occupied by the cell, while ROWSPAN indicated how many rows (hanging down) the cell "spans".

This is illustrated in the following example.

<TABLE BORDER WIDTH=40%>
<TR> <TD> 1.1 <TD> 1.2 <TD> 1.3 <TD> 1.4 </TR>
<TR> <TD> 2.1 <TD COLSPAN=2> 2.2 <TD> 2.4 </TR>
<TR> <TD> 3.1 <TD> 3.2 <TD ROWSPAN=3> 3.3 <TD> 3.4 </TR>
<TR> <TD> 4.1 <TD> 4.2 <TD> 4.4 </TR>
<TR> <TD> 5.1 <TD> 5.2 <TD> 5.4 </TR>
</TABLE>

The above table is displayed as:

1.1	1.2	1.3	1.4
2.1	2.2		2.4
3.1	3.2	3.3	3.4
4.1	4.2		4.4
5.1	5.2		5.4

TABLES can contain TABLES

Each table cell can in turn contain its own table. This allows for more precise structuring of table layout, and of table borders. The following example shows how this can work.

<TABLE WIDTH=80%>
<TR> <TD COLSPAN=3 ALIGN="centre"><H2>This is an Overall Title</h2></TD> </TR>
<TR>
<TD ALIGN="centre" VALIGN="centre">
<TABLE BORDER=4 CELLSPACING=8>

```
<TR> <TD COLSPAN=2 ALIGN="centre">Subheading One
</TD> </TR>
<TR> <TD>Item 1 </TD> <TD> Item 2 </TD> </TR>
</TABLE>
</TD>
<TD WIDTH=20%>   </TD>
<TD ALIGN="centre" VALIGN="centre">
<TABLE BORDER=4 CELLSPACING=8>
<TR> <TD COLSPAN=2 ALIGN="centre">Subheading Two
</TD> </TR>
<TR> <TD>Item 3    </TD> <TD> Item 4  </TR>
</TABLE>
</TD>
</TR>
</TABLE>
```

The above table is displayed as....

This is an Overall Title

Subheading One	
Item 1	Item 2

Subheading Two	
Item 3	Item 4

3.4 Hypertext Anchors

An *anchor* is a piece of text or some other object (e.g. an image) which marks the beginning and/or the end of a hypertext link. The <A> element is used to mark that piece of text (or inline image), and to give its hyper-textual relationship to other documents. The text between the opening and closing tags:

<A attributes> ...text... </A>

can be the start or destination (or both) of a link.
Here are some simple examples:

<A HREF="http://www. bidapolyporta.edu/st/help.htm">Click here for help</A>

The string `Click her for help' is a hypertext link to the document `help.htm' located at the indicated URL (www.biapolyporta.edu)

<A HREF="image.jpeg"> <IMG SRC="icon.gif"> </A>

The image `icon.gif' is a hypertext link to the image file located in the same directory as the currently accessed document. This can allow you to use a small icon that links the user to a larger version of the same image. Alternatively the anchor tag could have been <A HREF="document.html">, in which case the image acts like an icon button than links the user to the indicated HTML document.

<A NAME="freebook">textbook</A>

The string `textbook' can be the target of a link. This link is referenced via the form "help.htm#freebook" where help.htm' is the file that contains this anchor and `#freebook' is the anchor NAME. If you are already in `help.htm' the file is implicit, so it can be left out.

Attributes for A and LINK

The following sections describe the attributes appropriate to either Anchor or LINK elements. The entries marked '*' are commonly used and should be well understood. The other attributes are less common, and can be omitted at an introductory reading.
HREF (link to object) *****
NAME (link from object) *****
REL (relationship between objects)
REV (relationship between objects)
TITLE (TITLE of document)

1 HREF in Anchors

The HREF attribute (optional) marks the anchor as the start of a link to another document or resource (e.g. an image file), or to a particular place in another document.

The address of the referenced document can be specified by an *absolute* or *partial* URL:

<A HREF="URL"> anchor </A>

where *URL* is the URL of the document to be accessed. For example HREF can use http: to access other HTML documents, images, etc. or it can use ftp: or gopher:. It can even indicate a telnet: connection.

Partial URLs are also possible when accessing any server, but are particularly common within document collections on http servers. These are convenient for referencing documents that come from the *same* server as the current document - that is, the one currently being viewed. In this case you need only specify the location of the

document *relative* to the current one. Here are some examples of the varied possibilities:

http://www.web.edu/u1/staff/doc.htm

HTML document served by the specified http server.

ftp://ftp.ncc.gov.ng/pub/doc/ncc.abj

Compressed tar file accessed via anonymous ftp from the indicated site.

./../OtherStuff/thing.html

A relative URL: the HTML document comes from the same http server but in the directory OtherStuff, found two levels up from the directory the current document was served from.

telnet://flober.rodent.edu

A telnet session to the indicated machine

Links to **a Particular Place in a Document**

Particular places in an HTML document can be marked as specific destinations of hypertext links via the NAME attribute. For example, suppose a place in a document is marked via the anchor:

<A NAME="proj1">Project 1</A>

From within this document we can create a hypertext link to this place by specifying the anchor:

<A HREF="#proj1">(see Project 1)</A>

If we wanted to reference this place from another document in the same directory we would put

<A HREF="doc.html#proj1">(see Project 1)</A>

and so on.

2 NAME attribute in an Anchor

The NAME attribute (optional) marks the anchor as a possible *destination* of a link from another document, or from somewhere else within the same document.

The value assigned to a NAME should be a name token.

Example:

<A NAME="point"> Cumulative grade point </A>

where the identifier point is used to NAME the anchored text as the possible target of a hypertext link. The reference identifier can be an arbitrary string, but it must be unique within the document.

Targeting NAMEd Anchors

Named anchors can be targeted, from within the same document, using HREF - you simply HREF the name, pre-pending a `#':

<A HREF="#point"> Cumulative grade point </A>

the NAMEd anchor can also be target from another document, simply by adding the NAME after the document URL. For example, if the identifier 'grade' was located in the file `cgp.html' it could be referenced by either

<A HREF="cgp.html#grade"> Student CGP </A>
or
<A
HREF="http://www.bidapolyporta.edu.ng/computer/grade.html#grade"> Student CGP </A>.

Example of NAME

top of page.

3 REL Attribute

The REL attribute is used to give the relationship(s) described by the hypertext link, and describes the relationship of the destination of the link to the document containing the hypertext anchor - REL cannot be used unless an HREF is present. The value for REL is a space-separated list of relationship values. For example

<A HREF="http://niger.edu/zungeru.htm" REL="index">Student

indicates that the link is to a document that is an index related to the current.

REV is the converse of REL. Thus an anchor of the form

<A HREF="http://niger.edu/zungeru.htm" REV="index">student

indicates that the document containing this anchor element is an index related to the document zungeru.htm.

4 REV Attribute

The REV attribute is used to give the relationship(s) described by the hypertext link, and describes the relationship of the document containing the anchor to the destination of the link to. Consequently REL cannot be used unless an HREF is present. The value for REV is a space-separated list of relationship values. Example

<A HREF=http://niger.edu/student.htm
REV="index">student

indicates that the document containing this anchor element is an index related to the document student.htm.

REL is the converse of REV. Thus an anchor of the form

<A HREF="http://niger.edu/student.htm"
REL="index">student

indicates that the document student.htm is an index related to the document containing this hypertext anchor.

5 TITLE attribute

This attribute is optional, and is informational only. If present its argument should be the TITLE of the document whose address is given by the HREF attribute. This may be useful for the following:

- A browser may display the title of the document prior to retrieving it. The browser could display the titles as a margin note or in a small box while the mouse is over the anchor. For example a browser could display the title as "pop-up" help when the mouse pointer hovers above a hypertext link.
- Putting a title in the link is a way to give them a meaningful label. As some documents such as graphics, plain text and Gopher menus, do not come with a title themselves.

6 METHODS attribute

This attribute is optional. Its argument is a space separated list of HTTP METHODS supported by the object and accessible to the user.

These are more accurately given by HTTP protocol header messages (the server sends this information, along with the data requested, as soon as a URL is selected). It is useful to include the information in advance in the anchor reference.

3.3.5 Line Breaks

The line break element indicates that a new line is to start at the given point. Meanwhile it is different from a paragraph element and should not be used in it place.

An example (and its rendering) is:

```
<ADDRESS>Engr. Dr. John Manukaji<BR>
Deputy Rector<BR>
The Federal Polytechnic<BR>
P.M.B. 55, BIDA.<BR>
Niger State, Nigeria
</ADDRESS> <BR>
```

is rendered as:

Engr. Dr. John Manukaji
Deputy Rector
The Federal Polytechnic
P.M.B. 55, BIDA.
Niger State, Nigeria

The CLEAR Attribute

This is use to control text flow around embedded images. It permits breaking of such that it goes to the next line alongside the image, or to the next free line below the image and flush with the left or right margins. It can take the three values "left", "right" and "all". CLEAR="left" causes the next text line to start down as soon as the left margin is cleared, CLEAR="right" causes the line to break and start when the right margin is cleared. CLEAR="all" breaks down until both margins are cleared.

3.3.6 IMG (In-line Images) Element

The IMG element allows an image file to be inserted within an HTML document. This image file can be pictures, figures within a document and presented with the text. However this element can *not* be used to include other HTML text within a given document.

Images can be included within a hypertext anchor: thus an image is made to behave as a button linked to other documents or resources.

The IMG element is empty, meaning there is no closing </IMG>. It has several attributes:

SRC="image_url"
SRC give the URL of the image document (**must** attribute**)**. The naming scheme is the same as for hypertext links: thus SRC="ball.jpg" or SRC="../../ball.jpg".

ALT="alternative text"
The ALT attribute lets you specify a text alternative to the image. This attribute should ***always*** include particularly if the image is a button linked to some other resource. If the image is unimportant, you can always put ALT="".

ALIGN="bottom", "middle", "top"

ALIGN tells the browser how to align the image with the neighbouring text. "Bottom" aligns the bottom of the image with the baseline of the text, and is the default. "Middle" aligns the middle of the image with the baseline of text, and "top" aligns the top of the image with the top of the tallest item in the line. This attribute is optional.
"left", "right" (HTML 3.2)

HTML 3.2 supports left and right-aligned images. In this case, the image "floats" to the left or right margin, with the text following the image element flowing around the image. This attribute value is supported by all current browsers.

"absmiddle", "absbottom", "texttop", "baseline" (HTML 3.2)
Netscape introduced these extra attributes, which work like "top", "middle" and "bottom" but which give additional vertical control of image placement, when the image flows with the text. Example
ALIGN="absmiddle"

```
<p> <IMG SRC="polylogo.gif" ALT="[Poly Logo]"
ALIGN=ABSMIDDLE> Here is some text wrapped around
the Polytechnic logo.
It is very interesting to show how the
text is wrapped around the image given the
ALIGN=absmiddle
alignment attribute.
```

This is rendered:

Here is some text related wrapped around the Polytechnic logo. It is very interesting to show how the text is wrapped around the image given the ALIGN=absmiddle alignment attribute.

HEIGHT="n", WIDTH="n"

HEIGHT and WIDTH specify the display height and width (in pixels) for the image -- if the picture does not fit, the browser should rescale the image to fit in the specified box. An example is HEIGHT="30" WIDTH="50"

ISMAP

Most browsers also support the ISMAP attribute. This attribute marks the image as an active *image map*. This allows the user to click the mouse over the image and have different regions of the image cause different actions.

BORDER="n"

If ISMAP is used, then the image is a hypertext link, and will be surrounded by a border to idicate this. BORDER specifies the width of this border. In particular, BORDER=0 specifies no border, which is rather good.

HSPACE="n", VSPACE="n"

These attributes specify the horizontal and vertical space, in pixels, to leave between the image and the surrounding elements.

LOWSRC="URL"
Specifies a low-resolution image file.

USEMAP="url"

Specifies a URL pointing to a client side imagemap, that is , a MAP element. For example, if the map element starts with <MAP NAME="niger">, then the map would be referenced as <IMG USEMAP="#niger"... >. smaller, low-resolution file specified by LOWSRC and will then load the larger SRC-specified image file.

Special Characters --

Character and Entity References

Certain characters, such as the left bracket (<), ampersand (&), etc. are reserved by HTML to represent special attributes such as the start of HTML elements, graphic characters, and so on. More so, there are many ISO-Latin 1 characters that you may wish to include in a document, but are not trivially available on a standard keyboard. HTML allows special referencing to represent these special characters. These are indicated by either *character references* or *entity references*.

Character References

These are composed of three parts:

- a leading ampersand character, (&),
- the decimal number corresponding to the character, preceded by a numbers symbol (#xxx)
- a terminating semicolon (;).

For example, the *character* reference for less than symbol (<) is <.

Note that this *number* depends on the character set being used - for example, in some character sets, the 60th character may not be the less than symbol. Therefore, it is more convenient (and universal) to have a *symbolic reference* for a character, as opposed to an absolute numeric reference. In HTML (and SGML) such references are called *entity references*.

Entity References

Entity references are similar, but use symbolic names to represent the characters. Entity references also have three parts:

- a leading ampersand character, (&),
- the name of the entity (in ascii characters)
- a terminating semicolon (;).

Thus the *entity* reference for less than symbol (<) is <.

Note: *Not all the valid characters have corresponding entity references. In these cases you need to use the direct numerical character references.*

The ISO data table document lists all the ISO Latin-1 characters for character references an entity references.

3.4 Comments in HTML

Comment lines are indicated by the special beginning tag <!-- This is a comment line --> placed at the beginning and end of *EVERY* line to be treated as a comment. Comments do not nest, and the double-dash sequence "--" may not appear inside a comment except as part of the closing --> tag. You must also make sure that there are no spaces in the start-of-comment string.

Thus, the line
<!-- This is commented out -->
is a valid comment line, but the line

Also,
< !-- This is commented out -->
is not valid, since there is a space between the left angle bracket and the exclamation mark.

3.5 Style Sheets

Style sheets are a language, separate from HTML. They are used for specifying formatting and layout properties for a document. It is used to display formatting information that can be stored as a separate piece of information, called a *style sheet*, and that the style sheet can then be *applied* to a document while it is being formatted for display.

For example, a style sheet could contain commands such as:

- Format H3 headings in blue 12pt Verdana.
- Format Paragraphs in 12pt times roman, with a left and right margin of 0.5".
  and so on.

CLASS attribute could be used to subdivide formatting instructions. Thus <P CLASS="contents"> could be given characteristics different from <P CLASS="abstract">.

3.5.1 Specifying Stylesheets

STYLE element is used to specify style in the HEAD. For example,
<HEAD>
<STYLE HREF="../styles/style_form.css"> ... </HEAD>

would give the URL of the style sheet to be loaded and used. Here the extension CSS refers to *Cascading Stylesheets*, one of the methods currently in use.

3.5.2 Example Style Sheets

As an example, the following is the style sheet used to format the different pages in this HTML documentation collection:

```
BODY {
      font-family:      arial, helvetica, sans-serif;
      colour:           black;
      background-colour: white;
    }

P    { margin-left: 5%;
      font-family: arial,helvetica,sans-serif
    }
PRE  { margin-left: 5%;
      font-family: "courier new", courier, monospace;
    }
H2,H3,H4
    { colour:  #669999;
      font-family: "arial black", arial, helvetica, sans-serif;
      font-weight: bold;
      margin-left: 0%;
    }

H3,H4,H5  {
     font family: “verdana”, Tahoma, courier, san-serif;
    font-weight: italics;
    margin-left: 5%};
    }

DIV.leftmarg
   {  margin-left: 5%;
      font-family: arial,helvetica,sans-serif;
    }

A         {text-decoration: none; }
A:active  {colour: #ff0000; text-decoration: underline}
A:visited {colour: #999999; }

.note    {colour: orange;}
.warning {colour: red; font-weight: bold}
```

Self Assessment Exercise

Mention the major division of HTML document

4.0 CONCLUSION

HTML is the bed rock of web design. The knowledge of it is an essential resource for a web designer. It becomes imperatively necessary for any meaningful web design because there is need for constant editing of some part of the code to ensure a perfect design especially when the need arises to reuse HTML code for another similar web design. Although many automatic HTML authoring software exist, it is a needed knowledge for web designers.

5.0 SUMMARY

Every element of a web design are embedded in HTML, therefore this unit took conscious effort to x-ray the various parts of a complete HTML code for a page. The basic division of HTML (that is the Heading, Title and the body) were discussion in detail. A quite number of HTML tags were explained, table and frames are essential components of web design; attention was adequately given to this. Also style elements, fonts, headings, colour etc. that give fancies and beauty to web design were elucidated in this unit.

6.0 TUTOR-MARKED ASSIGNMENT

i. What do you understand by *elements*?
ii. Mention the major division of HTML document
iii. Write a simple HTML document to illustrate the structure of HTML major divisions.

7.0 REFERENCES/FURTHER READING

Gottleber T. (2003). Even More Excellent HTML with Reference Guide. 2ed. Muskegon Country Community College.

Graham, I. (2000).*Introduction to HTML* http://www.utoronto.ca/webdocs/HTMLdocs/ Accessed in May 2007.

Willard, W. (2003). *HTML A Beginner's Guide*. (2nd ed.) (An Osborne Title).

UNIT 2 ADVANCED HTML ELEMENTS

1.0 INTRODUCTION

Almost all browsers allow a number of special HTML extensions. They sometimes involve new attributes to already existing elements. These attributes may not be the same for all browsers but most of the attributes are compatible with the common popular browsers. The usage of these elements in our HTML document improves the efficiency of the web page and our proficiency of using HTML for web page design.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain and use the advance HTML elements
- describe how to access resources on HTTP server
- reference files via FTP using URL convention.

3.0 MAIN CONTENT

3.1 Advanced HTML Elements

In this unit, the fundamental elements which are frequently used are discussed

FONT - Change font size/properties
CENTRE - Centreed blocks
BASEFONT - Set default font
APPLET - Embedded Java Applets
MARQUEE - Scrolling Text Marquee
MAP - Client-side Imagemap
FRAME - FRAME documents
EMBED and NOEMBED - Embedded data objects
MULTICOL - Multi-column text
WBR and NOBR - Word Break and No Word Break

Considered important to advanced web designer are references to other digital objects in a local or from a distant host. These are also dealt with in some sufficient details.

3.2 FONT Element

FONT element permits control of the size of the displayed font, when possible. Font sizes are defined in a range from 1 to 7 (the default base value, or basefont, is 3). You can then specify a change in font size using elements such as.

```
<P> This is <FONT SIZE=+2>resized +2</FONT> text.   <BR>
  This is <FONT SIZE=7>resized 7</FONT> text.   <BR>
  This is <FONT SIZE=-2>resized -2</FONT> text.   </P>
```

which is rendered as:

this is resized + 2 text.
this is resized 7 text.
this is resized -2 text.

Font size can be specified the *relative* to the current size (using + or -) or as an absolute size from 1 to 7.

3.2.1 FONT Element Enhancement

The FACE attribute is used for specifying the typeface. For example "FACE="bookman old style" would specify a bookman old style

font. The attribute is supported by most browsers. The FACE names are usually taken from the Windows font manager, so user needs to be familiar with the FONT names and have the FONTs installed for this to work. Clearly this will only work on machines that have the fonts installed locally.

Multiple fonts can be specified, separated by a comma - the browser looks through the font list, and chooses the first one it finds on the local system. For example, FACE="arial,helvetica,times" will first try Arial, then Helvetica if Arial is not present, and finally try times-roman. Here are some examples:

```
<P> <FONT FACE="arial,helvetica"> This is arial font</FONT>
<BR>
 <FONT FACE="vwedana,courier new"> This is courier New font
</FONT> <BR>
 <FONT FACE="tahoma,verdana"> This is Toahma font </FONT>
</P>
```

which is rendered as:

this is arial font
this is courier New font
this is Tahoma font

3.2.2 COLOUR Enhancements

FONT colour can also be controlled, using a COLOUR attribute. For example, COLOUR="red" or COLOUR="#ff0000" requests red text font. There are several supported colour names, but it is best to use RGB colour codes, as in COLOUR="#RRGGBB"
Examples:

```
<P> <FONT colour="blue"> This is blue colour</FONT>  <BR>
<FONT COLOUR="#33FF66">d This is green</FONT> text.
</P>
```

which is rendered as:

This is blue colour.
This is green colour.

3.3 CENTRE element

The CENTRE element is used to centre align block of text, figures, etc.

Example

<CENTRE>
this text is centreed
this is displayed as:
this test is centreed

3.4 APPLET Element

Applets are programs, written in the Java programming language, that can be embedded within HTML document and executed. This embedding is done via the APPLET element, while parameters required by the applet are passed with PARAM elements.

For example:

<APPLET CODE="Blink.class" WIDTH=300 HEIGHT=100>
<PARAM NAME="organs" VALUE="String 23">
<PARAM NAME="pk3" VALUE="3.221">
<PARAM NAME="speed" VALUE="4">
</APPLET>

The CODE gives the name of the application to run, WIDTH and HEIGHT give the space needed by it (in pixels) and PARAM elements, within APPLET, contain parameters to be passed to the applet. Some other attributes like HSPACE and VSPACE (horizontal and vertical space to leave around applet, in pixels) can be used. The presence of these attributes lets the applet communicate with JavaScript programs within the HTML document.

3.5 MAP element

MAP specifies the regions of a mapped image and the associated URLs within a structure of the form:

<MAP NAME="string" >
<AREA SHAPE="rect" COORDS="x1, y1, x2, y2" HREF="url_for_region">
..... *more shapes* ...
</MAP>
where (x1,y1) are the upper-left hand coordinates and (x2,y2) the lower right-hand coordinates for the rectangle.

Other possible shapes are

<AREA SHAPE="circle" COORDS="x1, y1, r" HREF="url_for_region">

<AREA SHAPE="polygon" COORDS="x1, y1, x2, y2 ... xn, yn" HREF="url_for_region">

With the circle, (x1, y1) is the centre and r is the radius. All coordinates are in pixels.

You can reference the map from within an IMG element using the USEMAP attribute. For example:

<IMG SRC="buly.gif" USEMAP="#string">
references the map named "string" listed above.

3.6 MULTICOL Element

MULTICOL specifies text do be displayed in multicolumn format. The COLS (= a number) attribute specifies how many columns to use, while GUTTER specifies the space to leave between the columns, in pixels. WIDTH specifies the width of the collection of columns, either as an absolute width in pixels, or as a percentage of the available width.

Almost any BODY element can appear inside MULTICOL, but some, such as BLOCKQUOTE, can lead to odd formatting due to the browser's miscalculation of text lengths within the columns.

MULTICOL is allowed inside MULTICOL -- but the text may look ridiculous!

MULTICOL only works on Netscape Navigator 3.0 and greater. Here is an example of MULTICOL:

```
<MULTICOL COLS=2 WIDTH="100%">
<P>
The Hypertext Markup Language (HTML) is a markup language
used to create hypertext documents that are platform
independent.  Initially, the application of HTML on the
World Wide Web was seriously restricted by its reliance
on the ISO-8859-1 coded character set, which is appropriate
only for Western European languages.  Despite this
restriction, HTML has been widely used with other languages,
```

using other coded character sets or character encodings, at the expense of interoperability. </P>
<P>
This document is meant to address the issue of the internationalisation (i18n, i followed by 18 letters followed by n) of HTML by extending the specification of HTML and giving additional recommendations for proper internationalisation support. A foremost consideration is to make sure that HTML remains a valid application of SGML, while enabling its use with all languages of the world. </P>
</MULTICOL>

Which is displayed as

The Hypertext Markup Language (HTML) is a markup language used to create hypertext documents that are platform independent. Initially, the application of HTML on the World Wide Web was seriously restricted by its reliance on the ISO-8859-1 coded character set, which is appropriate only for Western European languages. Despite this restriction, HTML has been widely used with other languages, using other coded character sets or character encodings, at the expense of interoperability.

This document is meant to address the issue of the internationalisation (i18n, i followed by 18 letters followed by n) of HTML by extending the specification of HTML and giving additional recommendations for proper internationalisation support. A foremost consideration is to make sure that HTML remains a valid application of SGML, while enabling its use with all languages of the world.

3.7 MARQUEE Element

MARQUEE is used to create a scrolling text marquee. For example:

<MARQUEE ALIGN="top">Scrolling text </MARQUEE>

creates a text marquee with the enclosed text scrolling along the frame. MARQUEE element is supported by the Microsoft Internet Explorer 2 and later version

3.8 EMBED and NOEMBED Elements

EMBED element (an empty element) is used to specify an arbitrary data object to be embedded within the document. This object can be

an audio file, a Virtual Reality Markup Language (VRML) data file, or even a spreadsheet. The display of this object is accomplished by a browser *plug-in*, that must be downloaded by the user and added to the browser. If a browser is not equipped with the required plug-in, the browser will usually warn the user that the embedded object cannot be displayed, and will display an empty box in its place.

The NOEMBED element, placed after an EMBED, can contain HTML markup to be displayed by a browser that does not understand EMBED. Unfortunately, browsers that understand EMBED will ignore subsequent NOEMBED content, *even if* they is unable to display the embedded object.

EMBED can take a number of attributes. The mandatory SRC attribute specifies the URL for the data to be embedded, while the optional TYPE attribute can specify the mime type for the data. ALIGN defines the alignment of the applet on the page (with the usual values, as per the IMG element), while HIDDEN means that the embedded object should be entirely hidden from view (useful, for example, for playing audio files in the background). HEIGHT and WIDTH specify the height and width of the embed region, and are mandatory. The optional HSPACE and VSPACE attributes can be used to add spacer (in pixels) around the object.

EMBED can also take arbitrary attributes specific to the embedded plug-in. Of course, to use these you have to know what they are!

Here is an example of EMBED

```
<EMBED SRC="/path/file.cmx WIDTH="100" HEIGHT="200" >
<NOEMBED>

<P>Sorry, but you do not have a Corel CMX plugin for
displaying Corel CMX image files. Here is an alternate
version, as a regular GIF

<IMG SRC="/path/file.gif" HEIGHT="200" WIDTH="100"
ALT="stupid example image">
</NOEMBED>
```

EMBED and NOEMBED are supported by Netscape 2+ and Internet Explorer 3+.

3.9 NOBR and WBR Elements

NOBR marks a block of text that should not contain line breaks -- line breaks are forbidden, on the text will be presented as a single line, without any word wrapping. This is useful for text that you do not wish to broken at word spaces, regardless of the page layout.

You can use WBR elements inside NOBR to allow for optional word breaks. Inside NOBR, a WNR marks a place where line breaking is allowed. WBR is thus lie a conditional BR element, in that it does not force a line break, but instead permits one where a break would otherwise be forbidden.

Here is an example of the use of WBR and NOBR

<NOBR>
There are no line breaks in this line, even though
it is incredibly long and tedious. This probably goes
right of the end of the display, only <WBR> breaks this lonely element, sitting alone, near the end of the line.
</NOBR>

which is displayed as (between the two horizontal rules):

There are no line breaks in this line, even though it is incredibly long and tedious. This probably goes right of the end of the display, only breaks this lonely element, sitting alone, near the end of the line.

3.10 URLs for HTTP Servers

As most HTML is served from HTTP (HyperText Transfer Protocol) servers, this is the most common URL you are likely to see. Consider the following examples:

http://www.w3.org/hypertext/Addressing/
http://www.openversity.org:1212/home.html
http://www.openversity.org/nigeria/books/html4ed/outline.html

The first part http: means that the documents are served by an http server. The double slash (//) means that the next part is the *name* of the server. This can have two parts, the Internet address of the server (essential) and the port number the server listens at (optional). In the first example www.w3.org the port number is not specified, so the browser assumes the default number for http servers (Port 80). In the

second case URL tells the browser that the http server is at port 1212. The port is specified *after* the server name, separated by a colon.

The final part specifies the file or resource being requested: this is separated from the address+port number pair by a slash (/). The resource is specified by a path *relative to* to the root directory of the server. Thus, in the third example, the document *outline.html* at www.openversity.org is found in the subdirectory .../nigeria/books/html4ed/ with respect to the HTTP server *root*.

3.10.1 Special HTTP URL Paths

A file or resource specification beginning with /cgi-bin/ is usually special: in the case of many servers, the cgi-bin string indicates a special reference to programs or scripts that can be executed by the server.

3.10.2 HTTP Directory Listings

If the file name is left out, the server tries to send you a default directory file. Usually this is a file named "index.html", but this default name can be modified (or turned off) by the server configuration files. You should always include the trailing slash if you are referencing a directory, for example /directory/ as otherwise the server will think you are requesting a file named directory as opposed to information about the directory.

3.10.3 Passing Parameters to the Server

The HTTP protocol supports the passing of arguments to the server. The general format is to postpone the arguments to the URL, separated from the URL by a question mark (?). The reason for this notation is simple: most requests of this type are requests to *search* a database, and the passed arguments are the search parameters.
The general form is as follows:

http://some.site.edu/cgi-bin/foo?arg1+arg2+arg3

There are two things to note
cgi-bin

The cgi-bin directory is a special location known to the server, containing executable programs or scripts. The reason is obvious: argument have to be passed to something that can act on those arguments, implying a program or script. The cgi-bin directory

contains programs/scripts that interface with the WWW - a URL can access and pass argument to programs/scripts in this directory, and these programs/scripts can in turn act on the arguments and return information, documents, etc. to the browser.

passed arguments

Arguments are appended to the URL, separated from it by a question mark (?). One can also send more than one argument, separated by a plus sign (+). Thus in the above the program/script foo is sent three arguments, arg1, arg2 and arg3.

3.10.4 Personal HTML directories

On many Web servers, users can have html documents in their own home directories, distinct from the special area reserved for administrative Web pages. The procedure for doing this depends on some degree on the server. In general the user needs to create a special file, placed in their home directory, that specifies where their personal 'root' html directory is. You then access files in this personal 'root' area by using a special URL path of the form: ~your_login_name/path/file, where the tilde (~) indicates that this is a 'personal' Web area. Again, this is a server-specific feature, and not all servers do this, or have this turned on. Ask your server manager for details about your local implementation.

3.11 FTP URLs

Files can be referenced via FTP using the URL convention. The general form is:

ftp://Internet.address.edu/file/path/file.txt

This form makes an anonymous FTP request for the indicated file from the indicated machine.

If you specify a directory instead of a file (by requesting a URL such as

ftp://Internet.address.edu/file/path/,

most browsers will give you a list of the directory contents and allow you to select files, or other directories.

NOTE -- If a URL points to a directory it ***must*** end with the slash character. This tells the URL that the desired target is a directory (i.e. the directory path/) and not a file.

You can access non-anonymous ftp resources by specifying, within the URL, both the username and password of the account you wish to access
For example:

ftp://open_versity:abuja@Internet.nigeria.edu.ng/path/ball.gif

allows you to access files on machine Internet.nigeria.edu belonging to user open_versity (password abuja). You can omit the password if you wish -- most browsers will then attempt the connection, but will prompt the user to type a password. Indeed, it is best to omit the password -- otherwise *everybody* who accesses this document will be able to read the HTML and know open_versity's password!

3.12 FRAME Element

The FRAME document lets you specify a display as having of a number of independent viewing frames, each of which can contain its own HTML document.

A multi-frame document does not contain a BODY element, instead it contains a FRAMESET element, which defines the sizes, locations and initial contents of the individual FRAMES.

Example:

```
<FRAMESET ROWS="10%,80%,10%">
<FRAME NAME="window1" SRC="doc1.html">
<FRAMESET COLS="50%,50%">
 <FRAME NAME="Frame1" SRC="doc2.html">
 <FRAME NAME="Frame2" SRC="buly.html">
 </FRAMESET>
 <FRAME NAME="lowerframe" SRC="doc3.html">
 <NOFRAMES>
 <BODY BACKGROUND.>
  display this if the browser does not understand FRAMESET
  </NOFRAMES>
  </FRAMESET>
```

The example above divides the display into three slices, the top and bottom are thin (10% of the display height), and the remaining 80% for the middle frame. The first slice is named window1 and it is initially loaded with the document doct1.html. The FRAME element defines the initial content of the cell (frames may be empty, in which case you leave out the SRC). The second slice is divided, by columns, into two frames named Frame1 and Frame2 and they are

loaded with documents doc2.html and buly.html. The bottom frame is named lowerframe, and it is loaded with doc3.html document.

A hypertext anchor can be instructed to target the returned data to a particular frame once the frame is named. TARGET attribute is used this purpose.

Example:
<A HREF="studentInfor.html TARGET="frame2"> Student Information</A>

The browser will place the data retrieved in the window named "frame2", regardless of where the link was selected.

From the example above, if a browser does not support frames, it will ignore all the frame elements, and will display the content of NOFRAMES. Conversely, if a browser does understand FRAMEs, it will ignore the content of NOFRAMES entirely.

However, programming FRAMEs is a more complicated than regular documents, so as much as possible, avoid creating pages with multiple framed areas. If you do, you may be losing a lot of space with the frame borders.

4.0 CONCLUSION

Some high level skill is needed in the design of a standard and proficient dynamic web site. Advanced knowledge of HTML will help to deploy a good and acceptable web page to client in standard organisation of international repute. Although this unit is not an en end in itself but it is a means to an end for candidates that has flare for quality web design.

5.0 SUMMARY

This unit elucidate some vital elements that are used in advanced web design. Elements like FONT, COLOUR, CENTRE, APPLET etc add lustre to web designer’s page. More so one of the major requirements of web design is ability to access remote digital contents; the discussions on the use of URL on HTTP server and FTP provide the in-depth knowledge of remote access to digital objects on the Internet using a standard web browser. Proper understanding of the structure is recommended for the students studying this unit.

6.0 TUTOR-MARKED ASSIGNMENT

i. What do you understand by *applets*?
ii. Write out a standard URL and explain its constituent parts.

7.0 REFERENCES/FURTHER READING

Gottleber T. (2003). Even More Excellent HTML with Reference Guide. 2 ed. Muskegon Country Community College.

Graham, I. (2000).*Introduction to HTML* http://www.utoronto.ca/webdocs/HTMLdocs/ Accessed in May 2007.

Willard, W. (2003). HTML A Beginner's Guide. 2ed. (An Osborne Title).

MODULE 3 DYNAMIC WEB DESIGN

UNIT 1 DYNAMIC WEB DESIGN

CONTENTS

1.0 INTRODUCTION

In Unit 4, we studied classical hypertext navigation which occurs among "static" documents, and, for *web users*, this experience is reproduced using static web pages. However, web navigation can also provide an *interactive experience* that is termed "*dynamic*". Content (text, images, form fields, etc.) on a web page can change, in response to different contexts or conditions. In this interactive experience, web pages must use presentation technology called, **rich interfaced pages**. The common programming task, known as **scripting**, is used to connecting diverse pre-existing components to accomplish a new related task. Those languages which are suited to scripting are typically called **scripting languages.** Scripting Languages like JavaScript or ActionScript, used for Dynamic HTML (DHTML) and Flash technologies, are frequently used to orchestrate media types (sound, animations, changing text, etc.) of the presentation. The scripting also allows use of remote scripting, a technique by which the DHTML page requests additional information from a server, using a hidden Frame, XMLHttpRequests, or a Web service.

Many languages for this purpose have common properties: they favor rapid development over efficiency of execution; they are normally implemented with interpreters rather than compilers; and they are strong at communicating with program components written in other languages.

Many scripting languages emerged as tools for executing one-off tasks, particularly in system administration. One way of looking at scripts is as "glue" that puts several components together; thus they are widely used for creating graphical user interfaces or executing a series of commands that might otherwise have to be entered interactively through keyboard at the command prompt. The operating system usually offers some type of scripting language by default, widely known as a shell script language.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain what a scripting language is
- list and explain the various types of scripting languages
- explain Job Control Languages (JCL) and Shells
- explain the concept of GUI scripting
- Describe server-side and client-side web programming languages
- List and explain text processing and general purpose dynamic languages; and
- Explain embeddable languages.

3.0 MAIN CONTENT

3.1 Scripting Programming Languages

The term *scripting language* is not technical, though embedding and dependence on a larger system are usually criteria. The name 'script' is derived from the written script of the performing arts, in which dialogueue is set down to be interpreted by actors and actresses--the programs. Early script languages were often called *batch languages* or *job control languages*. Scripting languages can also be compiled, but because interpreters are simpler to write than compilers, they are interpreted more often than they are compiled.

Scripting languages, commonly called **scripting programming languages** or **script languages,** are computer programming languages that are typically interpreted and can be typed directly from a keyboard. Thus, scripts are often distinguished from *programs*, because programs are converted permanently into binary executable files (i.e. machine code) before they are run. Although,there are some interpreters which

convert the script into some suitable binary form, for efficiency reasons, but this is transparent to the user. Normally, scripts remain in their original form and are interpreted command-by-command each time they are run. Scripts were created to shorten the traditional edit-compile-link-run process.

In a non-scripting language, managing memory and variables, and creating data structures tends to consume more programmer effort and lines of code to complete a given task. The scripter typically has less flexibility to optimise a program for speed or to conserve memory.
For this reason, it is usually faster to program in a scripting language; and script files are typically much smaller than equivalent C program files.

3.2 Type of scripting languages

Scripting language started simply as batch file in DOS to control the starting of the system using some commandline. But now it has grown into numerous types. Some of these are mentioned below.

3.3 Job Control Languages and Shells

A Job Control Languages (JCL) is a special command language used for batch processing. They are to identify jobs and state their requirement to nucleus (that is kernel, or supervisor or executive or core). That is, they are programming languages used for communicating the operating system. Most statements in the languages are directives - requiring immediate execution and are handled by command language interpreter. They are also called **monitor languages**.

Many of these languages' interpreters double as command line interfaces such as the Unix shell or the MS-DOS COMMAND.COM. Others, such as AppleScript, add scripting capability to computing environments lacking a command-line interface. Some common examples of JCL are AppleScript, DCL (on OpenVMS), JCL, JScript via Windows Script Host, VBScript via Windows Script Host, Windows PowerShell.

3.4 GUI Scripting

With the advent of Graphical user interfaces came a specialised kind of scripting language for controlling a computer. These languages interact with the same graphic windows, menus, buttons etc. that a system generates. These languages are typically used to automate repetitive actions or configure a standard state. In principle, they could be used to control any application running on a GUI-based computer; but, in practice, the support for such languages depend on the application and

operating system. Such languages are also called "macro languages" when control is through keyboard interaction. Examples are AutoHotkey, AutoIt, Eggplant, Expect, Automator

3.5 Application Specific Languages

Many large application programs include an idiomatic scripting language tailored to the needs of the application user. Likewise, many computer game systems use a custom scripting language to express the programmed actions of non-player characters and the game environment. Languages of this sort are designed for a single application; and, while they may superficially resemble a specific general-purpose language (e.g. QuakeC, modelled after C), they have custom features that distinguish them. Examples of application specific scripting languages are MATLAB, AutoLISP, Action Code Script, HyperTalk, LotusScript, MAXScript, Visual Basic for Applications

3.6 Web Programming Languages

An important type of application-specific scripting language is one used to provide custom functionality to dynamic web pages. Such languages are specialised for web applications and other Internet uses. However, most modern web programming languages are powerful enough for general-purpose programming. There are two ways to create this kind of interactive experiences; these are Server-side and Client –side scripting. The result of either technique is described as a **dynamic web page**, and both may be used simultaneously.

Client-side

Client-side scripting is used to change interface behaviours **within** a specific web page, in response to mouse or keyboard actions or at specified timing events. In this case the dynamic behaviour occurs within the presentation.

The Client-side dynamic content is generated on the client's computer. The web server retrieves the page and sends it as is. The web browser then processes the code embedded in the page (normally JavaScript) and displays the page to the user.

The innerHTML property (or write command) can illustrate the "Client-side dynamic page" generation: 2 distinct pages, A and B, can be regenerated (by an "event response dynamic") as document.innerHTML = A and document.innerHTML = B; or "on load dynamic" by document.write(A) and document.write(B).

The problems with client-side dynamic pages are:

- some browsers do not support the **language** or they do not support all aspects (like write command and innerHTML property) of the language.
- the information cannot be stored anywhere but the user's computer, so it cannot really be used for statistics gathering.
- search engines are not able to run client-side languages and cannot crawl links generated by them.
- some users have scripting languages disabled in their browsers due to possible security threats.

Ajax is a newer web development technique for creating client-side dynamic Web pages. Google Maps is an example of a web application that uses Ajax techniques.

Server-side

Using server-side scripting to change the supplied page source **between** pages, adjusting the sequence or reload of the web pages or web content supplied to the browser. Server responses may be determined by such conditions as data in a posted HTML form, parameters in the URL, the type of browser being used, the passage of time, or a database or server state.

Server-side dynamic content is a little bit more complicated.

1. The browser sends an HTTP request.
2. The server retrieves the requested script or program.
3. The server executes the script or program which typically outputs an HTML web page. The program usually obtains input from the query string or standard input which may have been obtained from a submitted web form.
4. The server sends the HTML output to the client's browser.

Server-side has many possibilities for dynamic content, but the use of it can be a strain on low-end, high-traffic machines. Some web sites use the Robots Exclusion Standard to keep web crawlers from accessing dynamic pages for this reason. If not properly secured, server-side scripts could be exploited to gain access to a machine.

3.7 Text Processing Languages

The processing of text-based records is one of the oldest uses of scripting languages. Text-based HTML editors evolved from basic text editors, but include additional tools specifically geared toward handling

code. In text processing, text (source) editors intended for use with HTML usually provide syntax highlighting. Templates, toolbars and keyboard shortcuts may quickly insert common HTML elements and structures. Wizards, tooltip prompts and auto-completion may help with common tasks.

Text HTML editors commonly include either built-in functions or integration with external tools for such tasks as source and version control, link-checking, code checking and validation, code cleanup and formatting, spell-checking, uploading by FTP or WebDAV, and structuring as a project.

Text editors require user understanding of HTML and any other web technologies the designer wishes to use like CSS, JavaScript and server-side scripting languages.

SELF-ASSESSMENT EXERCISE

List the types of scripting languages you have studied in this unit.

4.0 CONCLUSION

Many standard web applications require proper knowledge of dynamic web programming. Dynamic programming requires combination of may application which are embedded in HTML tags. A thorough knowledge of scripting languages, database management applications, animations, graphics applications, and HTML authoring packages is required in dynamic web application design and development. Scripting languages are very high level languages that can easily be interpreted by many standard browsers at a very high speed. Residual knowledge of early operation of batch processing and job control languages can easily help a prepare mind to write a meaningful dynamic web applications.

5.0 SUMMARY

In this unit, we had surveyed briefly the various scripting languages required in dynamic web design. This should have help students to have a prior knowledge of various applications on scripting languages. In dynamic web design, this scripting languages that look like dispatches of programming languages are normally embedded in HTML documents to carry out various operations like animations, form validation and various environmental activities on the web.

6.0 TUTOR-MARKED ASSIGNMENT

i. What do you understand by dynamic web design?
ii. List the types of scripting languages your have studied in this unit.

7.0 REFERENCE/FURTHER READING

Wikipedia (2006). Wikipedia, the free encyclopedia

UNIT 2 JAVASCRIPT

CONTENTS

1.0 INTRODUCTION

In unit 1 above, we discussed generally on scripting languages and their various types, now it is very necessary to discuss in detail a specific popular scripting language that is powerful and commonly used in dynamic web design.

The most powerful and common scripting language is **JavaScript**. JavaScript is a scripting language often used for **client-side** web development. It is a dynamic, weakly typed, prototype-based language with first-class functions. JavaScript was influenced by many languages and was designed to have a similar look to Java, but be easier for non-programmers to work with. The language is best known for its use in websites (as client-side JavaScript), but is also used to enable scripting access to objects embedded in other applications.

Despite the name, JavaScript is unrelated to the Java programming language; though both have a common debt to C syntax. The language was renamed from LiveScript in a co-marketing deal between Netscape and Sun in exchange for Netscape bundling Sun's Java runtime with their browser, which was dominant at the time. JavaScript semantics is much more similar to the Self programming language.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the concept of JavaScript
- describe variable declaration in JavaScript
- explain the use conditional statements in JavaScript
- list and explain the use of basic operators.

3.0 MAIN CONTENT

3.1 JavaScript

JavaScript is the most popular scripting language on the Internet, and works in all major browsers, such as Internet Explorer, Mozilla, Firefox, Netscape, and Opera.

JavaScript runs on the client rather than the server. It can respond to user actions quickly, making an application feel more responsive. Furthermore, JavaScript code can detect user actions which HTML alone cannot, such as individual keystrokes. Applications such as Gmail attempt to take advantage of this: much of the user-interface logic is written in JavaScript, and JavaScript dispatches requests for information (such as the content of an e-mail message) to the server. The wider trend of AJAX programming similarly seeks to exploit JavaScript's strengths.

JavaScript is a prototype-based scripting language with a syntax loosely based on C. Unlike C, the language has no input or output constructs of its own. Where C relies on standard I/O libraries, a JavaScript engine relies on a *host environment* into which it is embedded. There are many such host environment applications, of which web technologies are the best-known examples. These are examined first.

3.2 Uses of JavaScript

The primary use of JavaScript is to write functions that are embedded in or included from HTML pages and interact with the Document Object Model (DOM) of the page. Some simple examples of this usage are

- **JavaScript gives HTML designers a programming tool -** HTML authors are normally not programmers, but JavaScript is a scripting language with a very simple syntax! Almost anyone can put small "snippets" of code into their HTML pages
- **JavaScript can put dynamic text into an HTML page -** A JavaScript statement like this: document.write("<h1>" + name + "</h1>") can write a variable text into an HTML page

- **JavaScript can react to events –** it can change images as the mouse cursor moves over them **w**hen a page has finished loading. This effect is often used to draw the user's attention to important links displayed as graphical elements.
- Opening or popping up a new window with programmatic control over the size, position and 'look' of the new window (i.e. whether the menus, toolbars, etc. are visible).
- Validation of web form input values to make sure that they will be accepted before they are submitted to the server.
- **JavaScript can read and write HTML elements -** it reads and changes the content of an HTML element
- **JavaScript can be used to detect the visitor's browser** – that is, it can be used to detect the visitor's browser, and - depending on the browser - load another page specifically designed for that browser
- **JavaScript can be used to create cookies** - it is used to store and retrieve information on the visitor's computer

3.3 How to Put JavaScript in a Web Page

To insert a JavaScript into an HTML page, we use the <script> tag (also use the type attribute to define the scripting language).
So, the <script type="text/javascript"> and </script> tells where the JavaScript starts and ends:

```
<html>
<body>
<script type="text/javascript">
...
</script>
</body>
</html>
```

The word **document.write** is a standard JavaScript command for writing output to a page.

By entering the document.write command between the <script type="text/javascript"> and </script> tags, the browser will recognise it as a JavaScript command and execute the code line. In this case the browser will write *Hello World!* to the page:

```
<html>
<body>
<script type="text/javascript">
document.write("Hello World!")
</script>
```

```
</body>
</html>
```

Note: If we had not entered the <script> tag, the browser would have treated the document. Write ("Hello World!") command as pure text, and just write the entire line on the page. More so the use of semi colon as in traditional Java programming is optional, it is only required when you want to put more than one statement on a line.

JavaScript can be place both in the Head and body sections on a HTML document. JavaScripts in a page will be executed immediately while the page loads into the browser.

Scripts in the head section: will be executed when they are called, or when an event is triggered, go in the head section. When you place a script in the head section, it is loaded before anyone uses it.

Scripts in the body section: Scripts to be executed when the page loads go in the body section. When you place a script in the body section it generates the content of the page.

Meanwhile unlimited number of scripts can be placed in document, so one can have scripts in both the body and the head section.

Using an External JavaScript

Sometimes one might want to run the same JavaScript on several pages, without having to write the same script on every page. To simplify this, the script can be written in an external file. Save the external JavaScript file with a .js file extension.

Note: The external script cannot contain the <script> tag!

To use the external script, point to the .js file in the "src" attribute of the <script> tag:

```
<html>
<head>
        <script src="xxx.js"></script>
</head>
<body>
</body>
</html>
```

3.4 JavaScript Variables

A variable is a "container" for information you want to store. A variable's value can change during the script. You can refer to a variable by name to see its value or to change its value.

Rules for variable names.

- Variable names are case sensitive
- They must begin with a letter or the underscore character

Note: JavaScript is case-sensitive! A variable named strname is not the same as a variable named STRNAME!

Declare a Variable

Variable can be created using with the var statement:

var strname = *some value*

You can also create a variable without the var statement:

strname = *some value*

Assign a Value to a Variable

You can assign a value to a variable like this:

var strname = "varsity"

Or like this:

Strnam = “varsity”

The variable name is on the left side of the expression and the value you want to assign to the variable is on the right. Now the variable "strname" has the value "varsity".

Lifetime of Variables

When a variable is declared within a function, the variable can only be accessed within that function. The variable is destroyed after the execution of the function. These variables are called local variables. There can be local variables with the same name in different functions, because each is recognised only by the function in which it is declared. If a variable is declared outside a function, all the functions on the page can access it. The lifetime of these variables starts when they are declared, and ends when the page is closed.

3.5 Conditional Statements in JavaScript

Very often, when writing a program, different actions are performed base on different decisions. This can be done by the use of conditional statements.

The conditional statements in JavaScript are:

- **if statement** - use this statement if you want to execute some code only if a specified condition is true
- **if...else statement** - use this statement if you want to execute some code if the condition is true and another code if the condition is false
- **if...else if....else statement** - use this statement if you want to select one of many blocks of code to be executed

If Statement

You should use the statement if you want to execute some code only if a specified condition is true.

Syntax

if (*condition*)
{
code to be executed if condition is true
}

Note that if is written in lowercase letters. Using uppercase letters (IF) will generate a JavaScript error!

Example

```
<script type="text/javascript">
//Write a "Good morning" greeting if
//the time is less than 10
var d=new Date()
var time=d.getHours()

if (time<10)
{
document.write("<b>Good morning</b>")
}
</script>
```

If...else Statement

If you want to execute some code if a condition is true and another code if the condition is not true, use the if....else statement.

Syntax

```
if (condition)
{
code to be executed if condition is true
}
else
{
code to be executed if condition is not true
}
```

Example

```
<script type="text/javascript">
//If the time is less than 10,
//you will get a "Good morning" greeting.
//Otherwise you will get a "Good day" greeting.
var d = new Date()
var time = d.getHours()

if (time < 10)
{
document.write("Good morning!")
}
else
{
document.write("Good day!")
}
</script>
```

If...else if...else Statement

You should use 'the' if....else statement if you want to select one of many sets of lines to execute.

Syntax

```
if (condition1)
{
code to be executed if condition1 is true
}
```

```
else if (condition2)
{
code to be executed if condition2 is true
}
else
{
code to be executed if condition1 and
condition2 are not true
}
```

Example

```
<script type="text/javascript">
var d = new Date()
var time = d.getHours()
if (time<10)
{
document.write("<b>Good morning</b>")
}
else if (time>10 && time<16)
{
document.write("<b>Good day</b>")
}
else
{
document.write("<b>Hello World!</b>")
}
</script>
```

3.6 JavaScript Operators

Operators are symbols used in JavaScript to evaluate operands in a statement of expression. The various operators used in JavaScript are discussed below:

3.6.1 Arithmetic Operators

Operator	Description	Example	Result
+	Addition	x=2 y=2 x+y	4
-	Subtraction	x=5 y=2 x-y	3
*	Multiplication	x=5	

y=4
x*y 20

/ Division 15/5 3
5/2 2.5

% Modulus (division remainder) 5%2 1
10%8 2
10%2 0

++ Increment x=5
x++ x=6

-- Decrement x=5
x-- x=4

3.6.2 Assignment Operators

Operator	Example	Arithmetic Equivalent
=	x=y	x=y
+=	x+=y	x=x+y
-=	x-=y	x=x-y
*=	x*=y	x=x*y
/=	x/=y	x=x/y
%=	x%=y	x=x%y

3.6.3 Comparison Operators

Operator	Description	Example
==	is equal to	5==8 returns false
===	is equal to (checks for both value and type)	x=5 y="5" x==y returns true x===y returns false
!=	is not equal	5!=8 returns true
>	is greater than	5>8 returns false
<	is less than	5<8 returns true
>=	is greater than or equal to	5>=8 returns false
<=	is less than or equal to	5<=8 returns true

3.6.4 Logical Operators

Operator	Description	Example
&&	and	x=6 y=3 (x < 10 && y > 1) returns true
||	or	x=6 y=3 (x==5 || y==5) returns false
!	not	x=6 y=3 !(x==y) returns true

3.6.5 String Operator

A string is most often text, for example "Hello World!". To stick two or more string variables together, use the + operator.

```
txt1="What a very"
txt2="nice boy!"
txt3=txt1+txt2
```

The variable txt3 now contains "What a very nice boy!".

To add a space between two string variables, insert a space into the expression, OR in one of the strings.

```
txt1="What a very"
txt2="nice boy!"
txt3=txt1+" "+txt2
```

or

```
txt1="What a very "
txt2="nice boy!"
txt3=txt1+txt2
```

The variable txt3 now contains "What a very nice boy!"

3.6.6 Conditional Operator

JavaScript also contains a conditional operator that assigns a value to a variable based on some condition.

Syntax

variablename=(condition)?value1:value2

Example

greeting=(visitor=="PRES")?"Dear President ":"Dear "

If the variable visitor is equal to PRES, then put the string "Dear President " in the variable named greeting. If the variable visitor is not equal to PRES, then put the string "Dear" into the variable named greeting.

SELF- ASSESSMENT EXERCISE

Enumerate the uses of JavaScript

4.0 CONCLUSION

JavaScript basics, studied in this unit, are very much needed to develop a standard dynamic web page. Although there are many other scripting languages, JavaScript remains the most powerful and the most popularly used scripting language. More so the syntax is similar to many other ones, it is therefore preferred as a standard for teaching and learning Scripting language programming in this course.

5.0 SUMMARY

In this study unit, the general background of JavaScript language has been explored; the various uses were outlined; the methods of variable declaration were discussed; various conditional statements were studied. More so, all the five operators viz: arithmetic, assignment, comparison, logical, string and conditional operators were carefully explained and illustrated. **Note** were used to lay emphasis on possible causes of errors in web design using JavaScript. With interest and frequent practices, candidates can develop themselves to write good dynamic web pages.

6.0 TUTOR-MARKED ASSIGNMENT

i. Enumerate the uses of JavaScript
ii. Write a condition statement that will test the score of a candidate in an examination and grade the student as pass or fail, taken 50 as the pass mark.
Use conditional operator to achieve the same purpose.

7.0 REFERENCES/FURTHER READING

Wikipedia (2006). Wikipedia, the free encyclopedia.

UNIT 3 ADVANCED JAVASCRIPT

CONTENTS

1.0 INTRODUCTION

JavaScript is very versatile in dynamic web design. To do a thorough and efficient web design it must be understood beyond the level of definition, variable declaration and JavaScript operators. Although these form a vital building block that students must know as foundation, it must be taken to a higher level for advanced students. This unit helps the students to study deeper and write a more efficient code when designing a web page.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- explain the use of popup boxes
- write efficient JavaScript functions
- perform repetitive operation using JavaScript loops
- explain Break and Continue statements in JavaScript.

3.0 MAIN CONTENT

3.1 Advanced JavaScript

Advance JavaScript is geared towards writing a more powerful Java code in a HTML document to improve the efficiency of web design.

This is achieve in this unit through an in-depth study of some key features that come with JavaScript. Some of these features are Popup boxes, JavaScript functions, loops break and continue statements. Students can exploit other advanced features from references for further studies list at the end of this unit.

3.2 Popup Boxes

Popup boxes are used in JavaScript to ensure that the source of a particular information is from the user and not just accidentally accepted by the system during the run-time. In JavaScript, three kinds of popup boxes are possible: Alert box, Confirm box, and Prompt box.

Alert Box

An alert box is often used if one wants to make sure information comes through to the user.
When an alert box pops up, the user clicks have to click "OK" to proceed.

Syntax:

alert("sometext")

Alert box may have line breaks

alert(“sometext</br>”)

Confirm Box

A confirm box is often used if you want the user to verify or accept something. When a confirm box pops up, the user will have to click either "OK" or "Cancel" to proceed. If the user clicks "OK", the box returns true. If the user clicks "Cancel", the box returns false.

Syntax:

Confirm("sometext")

Prompt Box

A prompt box is often used if you want the user to input a value before entering a page. When a prompt box pops up, the user will have to click either "OK" or "Cancel" to proceed after entering an input value. If the user clicks "OK" the box returns the input value. If the user clicks "Cancel" the box returns null.

Syntax:

prompt("sometext","defaultvalue")

3.3 Java Script Functions

A function is a reusable code-block that will be executed by an event, or when the function is called.

To keep the browser from executing a script when the page loads, you can put your script into a function. A function contains codes that will be executed by an event or by a call to that function. It can be called anywhere call within the page (or even from other pages if the function is embedded in an external .js file). Functions can be defined both in the <head> and in the <body> section of a HTML document. However, to assure that the function is read/loaded by the browser before it is called, it could be wise to put it in the <head> section.

Example

```
<html>
<head>
<script type="text/javascript">
        function displaymessage()
{
        alert("Hello World!")
}
</script>
</head>
<body>
        <form>
        <input type="button" value="Click me!"
                onclick="displaymessage()" >
        </form>
        </body>
</html>
```

If the line: alert("Hello world!!") in the example above had not been put within a function, it would have been executed as soon as the line was loaded. Now, the script is not executed before the user hits the button. We have added an on Click event to the button that will execute the function display message () when the button is clicked.

3.3.1 Function Definition

The syntax for creating a function is:

```
function functionname(var1,var2,...,varX)
{
some code
}
```

var1, var2, etc are variables or values passed into the function. The { and the } defines the start and end of the function.

Note A function with no parameters must include the parentheses () after the function name:

```
function functionname()
{
some code
}
```

Note: Do not forget about the importance of capitals in JavaScript! The word function must be written in lowercase letters, otherwise a JavaScript error occurs! Also note that you must call a function with the exact same capitals as in the function name.

3.3.2 The return Statement

The return statement is used to specify the value that is returned from the function.
So, functions that are going to return a value must use the return statement.

Example

The function below should return the product of two numbers (a and b):

```
function prod(a,b)
{
    x=a*b
    return x
}
```

When you call the function above, you must pass along two parameters:

```
product=prod(2,3)
```

The returned value from the prod() function is 6, and it will be stored in the variable called product.

3.4 Java Script Loops

Loops in JavaScript are used to execute the same block of code a specified number of times.

Very often when you write code, you want the same block of code to run over and over again in a row. Instead of adding several almost equal lines in a script we can use loops to perform a task like this.

In JavaScript there are two different kind of loops

- FOR - this loops through a block of code a specified number of times
- WHILE - this loops through a block of code while a specified condition is true

3.4.1 For Loop

The for loop is used when you know in advance how many times the script should run.

Syntax

```
for (var=startvalue;var<=endvalue;var=var+increment)
{
   code to be executed
}
```

Example

The example below defines a loop that starts with i=0. The loop will continue to run as long as i is less than, or equal to 10. i will increase by 1 each time the loop runs.

```
<html>
<body>
<script type="text/javascript">
        var i=0
        for (i=0;i<=10;i++)
{
        document.write("The number is " + i)
        document.write("<br />")
}
</script>
</body>
</html>
```

Note: The increment parameter could also be negative, and the <= could be any comparing statement.

Result

The number is 0
The number is 1
The number is 2
The number is 3
The number is 4
The number is 5
The number is 6
The number is 7
The number is 8
The number is 9
The number is 10

3.4.2 While Loop

The while loop is used when you want the loop to execute and continue executing while the specified condition is true.

```
while (var<=endvalue)
{
   code to be executed
}
```

NoteThe <= could be any comparing statement.

Example

The example below defines a loop that starts with i=0. The loop will continue to run as long as i is less than, or equal to 5. i will increase by 1 each time the loop runs.

```
<html>
<body>
<script type="text/javascript">
var i=0
while (i<=5)
{
document.write("The number is " + i)
document.write("<br />")
i=i+1
}
</script>
</body>
</html>
```

Result

The number is 0
The number is 1
The number is 2
The number is 3
The number is 4
The number is 5

The do...while Loop

The do...while loop is a variant of the while loop. This loop will always execute a block of code ONCE, and then it will repeat the loop as long as the specified condition is true. This loop will always be executed at least once, even if the condition is false, because the code is executed before the condition is tested.

```
do
{
   code to be executed
}
while (var<=endvalue)
```

Example

```
<html>
<body>
<script type="text/javascript">
var i=0
do
{
    document.write("The number is " + i)
    document.write("<br />")
    i=i+1
}
while (i<0)
</script>
</body>
</html>
```

Result

The number is 0

3.5 JavaScript Break and Continue Commands

There are two special statements that can be used inside loops: **break** and **continue**.

Break

The break command will break the loop and continue executing the code that follows after the loop (if any).

Example

```
<html>
<body>
<script type="text/javascript">
    var i=0
    for (i=0;i<=10;i++)
    {
        if (i==3){break}
        document.write("The number is " + i)
        document.write("<br />")
    }
</script>
</body>
</html>
```

Result

The number is 0
The number is 1
The number is 2

Continue

The continue command will break the current loop and continue with the next value.
Example

```
<html>
<body>
<script type="text/javascript">
    var i=0
    for (i=0;i<=5;i++)
    {
        if (i==3){continue}
        document.write("The number is " + i)
        document.write("<br />")
```

```
    }
</script>
</body>
</html>
```

Result

The number is 0
The number is 1
The number is 2
The number is 4
The number is 5

SELF-ASSESSMENT EXERCISE

Before you conclude this unit, outline the popup boxes you have studied and write out their syntaxes.

4.0 CONCLUSION

It is shown clearly in this unit that some documents that would have taken a very lengthy coding can be handled in a more concise way by these advanced features that comes with JavaScript, this will make the design more efficient.

5.0 SUMMARY

This unit had given a more in-debt study of the use us JavaScript in dynamic web design. Features like popup boxes that permit a response from user; functions that allow routine activities to be carried out; loops that allow repetitive operations; break and continue commands that are used to exercise some control loop have been explored. The detail elements of these broad outlines were also discussed. Students are now better equipped to develop standard dynamic web pages.

6.0 TUTOR-MARKED ASSIGNMENT

i. Outline the popup boxes you have studied in this unit and write out their syntaxes.
ii. Differentiate between Break and Continue commands in JavaScript loop, illustrate you answer with example in each case.

7.0 REFERENCE/FURTHER READING

Wikipedia (2006). Wikipedia, the free encyclopedia

UNIT4 DATABASE

CONTENTS

1.0 INTRODUCTION

Database is one of the major tools needed in creating a dynamic website. Most of the website that belong to government, parastatals, agencies, corporate organisations and institutions of learning have underline databases to hold their information for dynamic processing. Various software are available to handle data storage and manipulation for these various bodies. The software are similar in structures and operations, with slight difference in command names and features. These variations bring some differences in data handling capabilities and flexibilities of usage. Some of the commonly use database management software are dBase, Microsoft Access, Visual FoxPro, MySQL, Microsoft SQL, Oracle etc. In this unit, we examined Visual FoxPro no teaching of database management system

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- create and manage databases
- create tables for data storage and manage the tables created
- create Queries and Reports
- design client/server applications

- implement client/server applications.

3.0 MAIN CONTENT

3.1 Database Design

A database is a collection of information that is related to a particular subject or purpose, such as tracking store inventory or maintaining a music collection. A database file can contain one or more tables, views, connections to remote data sources, and stored procedures. Databases provide the architecture for storing organisational data and have additional benefits as well. With a database, user can create table-level extensions such as field- and record-level rules, default field values, and triggers. Also one can create stored procedures and persistent table relationships. Database can be used to establish connections to remote data sources and to create views of local and remote tables.

When designing a database, first break down the information to keep in the database as separate subjects, and then decide how the subjects are related to each other so that the right information can be brought together when they are needed. Maintaining information in separate tables makes it easier to organise and maintain the data, as well as to build a high-performance application.

Here are the steps in the database design process

Determine the purpose of your database

Knowing the purpose will help database designer to decide the facts to store in the database.

Determine the tables

After having a clear purpose for the database, divide your information into separate subjects, such as “Employees” or “Orders.” Each subject will be a table in the database.

Determine the fields to be in the table

Decide what information to keep in each table. Each category of information in a table is called a field and is displayed as a column when the table is displayed. For example, one field in an Employee table could be Surname; another could be Staff No.

Determine the relationships

Look at each table and decide how the data in one table is related to the data in other tables. Add fields to tables or create new tables to clarify the relationships, as necessary.

Refine the design

Analyse the design for errors. Create the tables and add a few records of sample data. Check, if the tables can give the expected result.

There may be mistake or omission during the initial design. Think of it as a rough draft that can be refined later. Experiment with sample data and prototypes of forms and reports. With the database management software you are using, it's easy to change the design of your database as you are creating it. However, it becomes much more difficult to make changes to tables after they are filled with data and are built forms and reports. For this reason, make sure that you have a solid design before you proceed too far into building your application.

SELF-ASSESSMENT EXERCISE

List and briefly explain the steps in involved in database design process

3.2 Creating a Database

When you create a database, you gather tables together into one collection and gain the benefit of data dictionary features.

A data dictionary provides a greater flexibility in designing and modifying the database, without necessarily having to write code to create field-level and row-level validation or to ensure the uniqueness of values within primary key fields. The Visual FoxPro data dictionary enables user to create or specify:

- primary and candidate keys.
- persistent relationships between database tables.
- long names for tables and fields.
- captions on fields that display in Browse windows and Grid columns as headers.
- default values on fields.
- the default control class used in forms.
- input masks and display formats for fields.
- field-level rules and record-level rules.
- triggers.

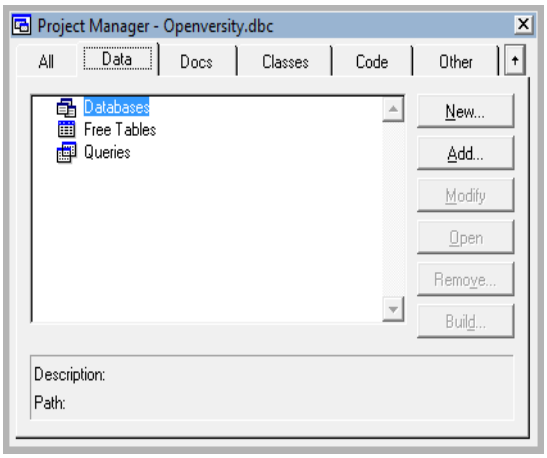
- stored procedures.
- connections to remote data sources.
- local and remote views.
- comments for each field, table, and database.

Some data dictionary features, such as long field names, primary and candidate keys, default values, field-level and record-level rules, and triggers, are stored in the .dbc file but are created as part of the process of building a table or view.

To create a new database

In the Project Manager (fig 13.1a and b)

- select the **Data** tab,
- then select **Databases** from the list
- choose **New**,
- the click **New Database** button on the on the New Database window.



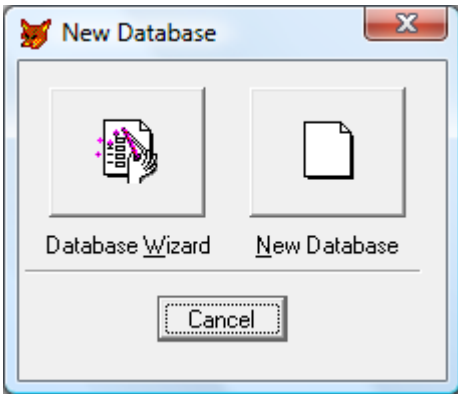


Figure 13.1b: New Database window

Fig. 13.1a: Project Manager Window

-or-

Use the CREATE DATABASE command.

For example, the following code creates and exclusively opens a new database called OpenVersity

CREATE DATABASE OpenVersity

3.3 Working with Tables

Table is a fundamental structure of a relational database management system. A table stores data in records (rows) and fields (columns). The data is usually about a particular category of things, such as customers, employees, or stock taking. Each Visual FoxPro table can be stored in its own file with a .dbf extension or contained in a database.

During database design database, specified the table fields and relationships needed for the application. As you create those tables, make more detailed choices about the data types, captions, and potential default values for each field, the triggers for each table, as well as the table indexes you build to establish relationships between tables.

A table can be created in a database, or just as a free table not associated with a database. A table created in a database has the following advantages over a free table:

- Long names for the table and for each field in the table.
- Captions and comments for each table field.
- Default values, input masks, and format for table fields.
- Default control class for table fields.
- Field-level and record-level rules.
- Primary key indexes and table relationships to support referential integrity rules.
- One trigger for each INSERT, UPDATE, or DELETE event.

3.3.1 Creating a Table

To create a new database table

In the Menu:

- select a **database**,
- then **New Tables**, and then
- click **New Table** from the New Table window

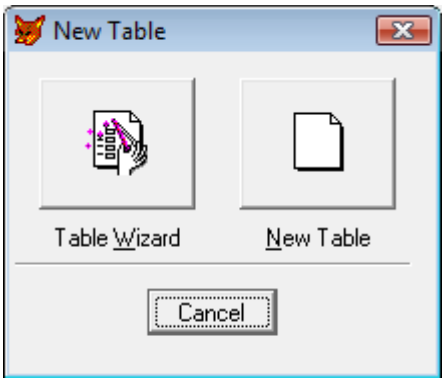


Fig. 13.2 : New Table Window

-or-

Use the CREATE TABLE command with a database open.

For example, the following code can be embedded in the a scripting language to create the table Academictbl with one column, called name:

```
OPEN DATABASE StudentRecord
CREATE TABLE Academictbl (name c(50))
```

As

```
<head>
<script language = “JavaScript”>
{
    Function Createtbl()
    {
        Open database StudentRecord
        Create Table Academictbl
    }
return()
}
</Script>
</head>
<body>
….

</body>
```

The new table is automatically associated with the database that is open at the time you create it. This association is defined by a backlink stored in the table’s header record.

3.3.2 Saving a Table as HTML

You can use the Save As HTML option on the File menu when you are browsing a table to save the contents of a table as an HTML (Hypertext Markup Language) file.

To save a table as HTML

Open the table.

- Browse the table by issuing the BROWSE command in the Command window or by choosing Browse from the **View** menu.
- Choose **Save As HTML** on the **File** menu.
- Enter the name of the HTML file to create and choose **Save**.

Naming Fields

Specify field names as you build a new table. These field names can be 10 characters long for free tables or 128 characters long for database tables. If a table is removed from a database, the table's long field names are truncated to 10 characters.

To name a table field, in the Table Designer, enter a field name in the Name box.

Choosing Data Types

As one creates each table field one also chooses a data type for the data the field is to store.

Some of the data type in FoxPro are text, numeric, currency, Character, Memo, and General fields. Values in the Numeric and Currency fields can be added but General, Text and Memo types cannot be summed. Currency data type uses 8 bytes of storage. Memo and General fields can be indexed.

3.4 Designing Client/Server Applications

Visual FoxPro provides users with the tools to create powerful client/server applications. Client/server application combines the power, speed, graphical user interface and sophisticated querying, reporting, and processing with the seamless multi-user access, massive data storage, built-in security, robust transaction processing, logging, and native server syntax of an ODBC data source or server. The synergy of Visual FoxPro and server strengths provides a powerful client/server solution for your users.

Goals for Client/Server Design

The goal of Client/Server Design is to balance several sets of requirements viz:

- to build the fastest, most productive application for users.
- to ensure the integrity of application data,
- to make the most of existing hardware investments,
- to build in scalability for the future, and
- to make the development process as streamlined and cost-efficient as possible.

The best way to meet these requirements is to design an application with these goals in mind.

Designing for High Performance

The following questions must be asked and answered when designing for high performance:

- which tables will be stored on the remote server once the application is implemented?
- which tables would be more efficiently stored as local lookup tables?
- what views will you need to access remote data?
- what business rules are enforced by the server, and how will your application interact with these rules?

3.5 Upsizing Visual FoxPro Databases

Upsizing is the method of moving databases, tables, and views from your system to a remote SQL Server or Oracle server. Before upsizing, have a a database, connect the database to an SQL data source ODBC data source, secure the necessary permissions on the server, estimate the size of your database, and check that the server has sufficient disk space, secure access to a SQL Server through an ODBC data source or named connection, back up your database, and all shared tables should be closed

3.5.1 Using the SQL Server Upsizing Wizard

After creating an ODBC data source and complete the necessary preparations on the client and server, you're ready to begin upsizing.

1. From the **Tools** menu, choose **Wizards**, and then choose **Upsizing**.
2. From the **Wizard Selection** dialogue box, choose **SQL Server Upsizing Wizard**.
3. Follow the directions in the wizard screens, as described in the following sections.
   You can choose **Cancel** at any time to exit the wizard; the wizard performs no actions on the server until you choose **Finish**.
4. When you're ready to upsize, choose **Finish**.
   After you choose Finish, the SQL Server Upsizing Wizard begins exporting the database to the server.

3.6 Implementing a Client/Server Application

When you have upsized a prototype or developed an application against remote data using remote views, you've gained access to the large data stores typically available in a server database. You can also take advantage of the security and transaction processing capabilities of the remote server. While remote views handle the main data management tasks, you can enhance your application by using SQL pass-through (SPT) technology to create objects on the server, run server stored procedures, and execute commands using native server syntax.

SQL pass-through technology allows SQL statements to be sent directly to a server. SQL pass-through statements, because they execute on the back-end server, are powerful ways to enhance the performance of your client/server applications.

SQL pass-through technology offers the following:

- the use of server-specific functionality, such as stored procedures and server-based intrinsic functions.
- the use of extensions to SQL supported by the server, as well as data-definition, server administration, and security commands.
- control over SQL pass-through Update, Delete, and Insert statements.
- control over remote transactions.

3.7 Using Visual FoxPro SQL pass-through functions

To use SQL pass-through to connect to a remote ODBC data source:

- Confirm a system's ability to connect your computer to your data source, using ODBC Test for ODBC.

- Establish a connection to the data source with the SQLCONNECT( ) or the SQLSTRINGCONNECT( ) function. e.g.

nConnectionHandle = SQLCONNECT('mynotes','ov','web')

Syntax
SQLCONNECT([*DataSourceName, cUserID, cPassword | cConnectionName*])
Returns Numeric
Arguments
DataSourceName
Specifies the name of a data source as defined in your Odbc.ini file.
cUserID
Specifies a user identifier used to log on to the data source.
cPassword
Specifies the password to the data source.
cConnectionName
Specifies a named connection created with CREATE CONNECTION.

Or

Syntax
SQLSTRINGCONNECT([*cConnectString*])
Returns
Numeric
Arguments
cConnectString
Specifies the data source connection string required by some ODBC drivers. If the function is without *cConnectString*, the SQL Data Sources dialogue box is displayed, allowing you to choose a data source.

- Disconnect from the data source with the SQLDISCONNECT( ) function.

3.8 Optimising Client/Server Performance

After the implementation of a client/server application, one might find areas where he/she may like to improve performance. This can be achieved on the client, network, and server. Client/Server performance can be optimised by:

- optimising Connection Use
- speeding Up Data Retrieval

- speeding Up Queries and Views
- speeding Up Forms
- improving Performance on Updates and Deletes

Meanwhile, the actual performance depends greatly on your system configuration and application requirements.

4.0 CONCLUSION

Database forms the back engine of many personal and corporate web applications. Proper management of an organisational data determines, to a greater extent, the reliability and dependability of the clients on the activities of the organisation. FoxPro database management software, with its interoperability capacity with many other standard multinational software, can be used as bedrock for a standard database design. As mentioned earlier, many more powerful database management software abound, one thing to note is that their operating principles are similar, although the architecture may be different. Once the principle of database design is mastered, you can blend from one application to another with ease.

5.0 SUMMARY

In this chapter, emphasis has been laid on the importance of database to a standard establishment. As a result, there have been an overview of database as a concept; what to consider when designing a database; how to work with the data containers (tables) in a database; marrying a database with HTML - the language of web design; and database design, implementation and optimisation on a network system. These key components are very essential in the design of a vibrant web site in this competitive information age.

6.0 TUTOR-MARKED ASSIGNMENT

i. Explain what you understand by a database with reference to objects and data storage capacity.
ii. Outline the basic steps to follow when designing a database

7.0 REFERENCES/FURTHER READING

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MODULE 4 WEB DESIGN TOOLS

UNIT 1 DEVELOPING WED PAGES WITH DREAM WEAVER

CONTENTS

1.0 INTRODUCTION

In units 3 and 4, we devoted reasonable time learn how to design a website from the scratch by using a text editor to write for ourselves HTML for web pages. Dreamweaver is an automatic web authoring tool originally created by Macromedia (now part of Adobe Systems). Initial versions of the application served as simple WYSIWYG HTML editors but more recent versions have incorporated notable support for many other web technologies such as CSS, JavaScript, and various server-side scripting frameworks. The software is available for both the Mac and Windows platforms. Dreamweaver is currently owned by Adobe Systems, which acquired Macromedia in 2005.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

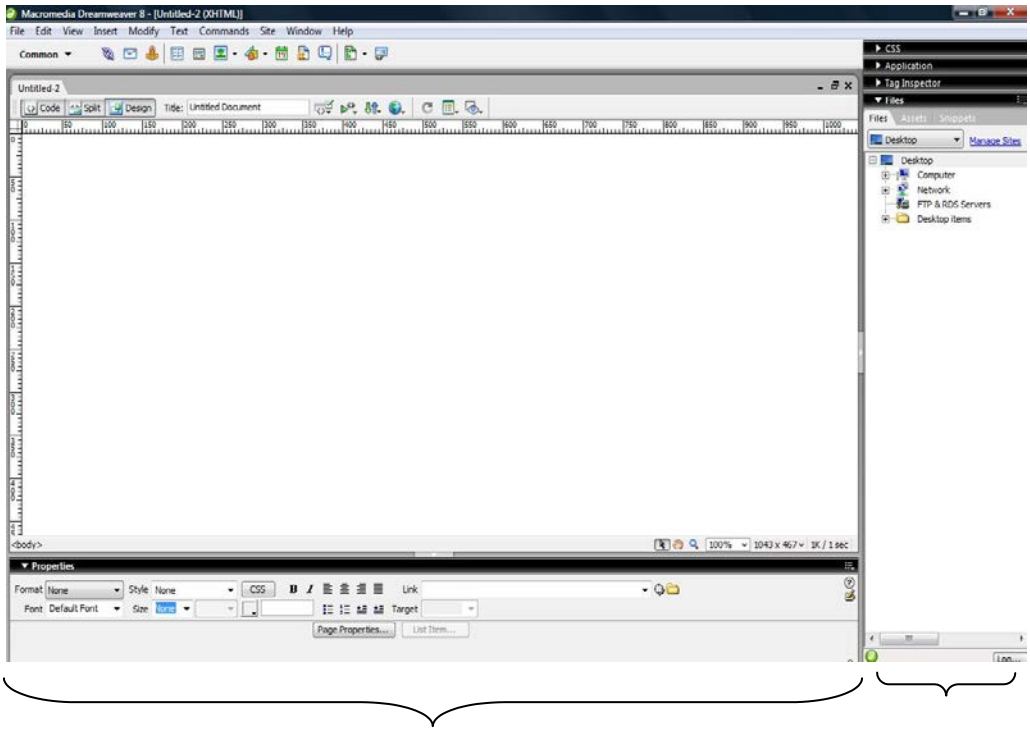
- build web pages
- explain the key components of Dreamweaver workspace effectively
- build websites
- format image objects
- set links to web resources
- create tables and frames.

3.0 MAIN CONTENT

3.1 Dreamweaver

Dreamweaver is software that uses Graphical User Interface to help user create a web page. It can display documents in three ways viz: Design view, Code view or both. Dreamweaver offers two separate areas that are very interesting, but which are also very separate. These are

document window and **site panel**. The site panel stores information about the site. It also enables individual documents to be opened or created and can open as many documents as possible; the document window allows contents to be added to the pages.



3.1.1 Building the first page

Before starting to work with Dreamweaver, there is a need to create a local site. This site defines the structure of the pages to be creating. A site is a storage location for all documents and files belonging to a particular website. A local requires a name and a local root folder which tells the Dreamweaver where to store the site's entire files.

A remote site contains files on the server that make up a website from the author's point of view rather than a visitor's point of view.

A local site holds files on the local disk that correspond to the files in the remote site. The files are edited on the local disk and then uploaded to the remote site.

3.1.2 Define a local site

Dreamweaver site definition sets some characteristics for a local site plus information on how the local site corresponds to a remote site.

To create a local site:

1. Create a folder in drive C (call Tutorial), then launch Dreamweaver.
2. Click Site > New Site
3. If the dialogue box is showing the Advanced tab, click Basic
4. The first screen of the Site Definition Wizard appears, asking you to enter a name for your site. In the text box, enter a name to identify the site within Dreamweaver in the Site Name field, type Tutorial. The site name lets you easily identify and select a site from a list of sites you've defined.
5. Click Next to proceed to the next step. The next screen of the wizard appears asking if you want to work with a server technology.
6. Select the No option to indicate that now, this site is a static site, with no dynamic pages
7. Click Next to proceed to the next step. The next screen of the wizard appears, asking how you to work with your files
8. Select the option labelled "Edit local copies on my machine, then upload to server when ready (recommended)"
9. The text box allows you to specify a folder on your local disk where Dreamweaver should store the local version of the site's files. It's easier to specify an accurate folder name if you browse to the folder rather that typing the path, so click the folder icon nest to the text box. The Choose Local Root Folder for Site dialogue box appears.
10. In the Choose Local Root Folder for Site dialogue box, start by navigating to a folder on your local disk where you can store all of your sites
11. Click Next to proceed to the next step.
12. The next screen of the wizard appears, asking how you connect to your remote server.
13. Now, choose None from the pop-up menu. Click Next to proceed to the next step.
14. The next screen of the wizard appears showing a summary of your settings.
15. click Done to finish.

Cascading the files in the folder creates a record of existing files so Dreamweaver can quickly updates links when you move, rename, or delete a file.

The site window now displays a list of all list of all the folders and files in the local site tutorial. The list also acts as a file manager, allowing you to copy, paste, delete move and open files just as you would in the file finder or explorer on your own computer.

3.2 The Document Window

The document window displays the current document approximately as It will appear in a web browser. The title bar of the Document window displays the page title and, in parentheses, the file name and an asterisk if the fie contains unsaved changes. The principle elements of the Document Area include.

Menu: Most functions in Dreamweaver can be accessed through the menus.

Insert Toolbar: Replaces the Object panel and is used to add components to your document.

Toolbar: Offers instant access to common actions as well as to the Code View.

Page title: title that appears when a visitor to the Web page bookmarks your site

File name: displays the path and the name of your file.

Window size: offers simulations of your various browser resolutions

File size/Download time

Launcher bar: One-click access to many panels and functions.

Tag Selector: Lists the appropriate tags for the selected object. Clicking a tag in the Tag Selector automatically takes you to the location of the tag in the Code View.

3.2.1 Setting the page properties

Right click to open the page properties dialogue box.

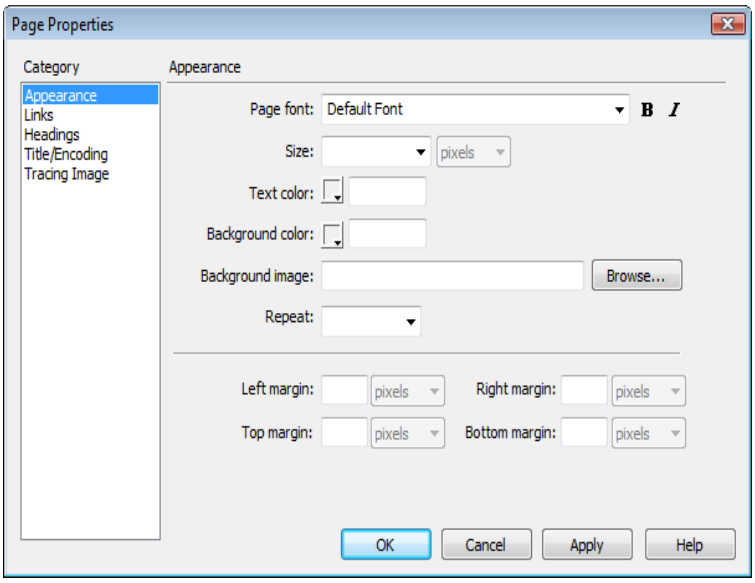
Type the title to **Welcome to my tutorial**. The title appears in the title bar of the Dreamweaver Document window and this is the title that will appear in the browser's Bookmarks or Favourites list, so it should be descriptive.

Click on the square next to Background Colour. When the colour palette appears you can select a colour swatch. If you want to choose a background image, you would use the Browser button next to Background image.

Now select the square of next to Text Colour and choose a dark colour for the text. Note that you can choose different colours for the **Link Colour** (text that is linked), Visited Links (previously selected by a viewer) and **Active Links** (the colour of the link while it is being selected).

Click Ok then save your page as **index.html**

3.2.2 The Property Inspector



Most changes you make to properties are immediately applied in the Document window. Which properties appear in the Property Inspector depends on the element selected. The Property inspector initially displays the most commonly used properties. Click the expander arrow in the lower right corner to of the Property inspector to see more of the element's properties.

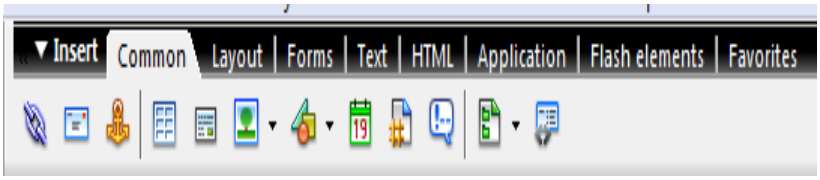
1. After closing the page properties window, click on the page and type the words "**Welcome to".** The property inspector displays property for whatever object is displayed.
2. Highlight the words.
3. Change the format to **Heading 1** and see how the size and style changes.
4. Change the font to **Arial, font size to 7** and then back to the default.
5. Click on the **Align Centre** icon to centre the text on the page.

6. Place the cursor after headline, hit Enter and then type **"Dreawweaver.tutorial.com".**
7. Highlight the new line and change the font size to **5.** Change the font colour by clicking on the gray box next to the text size window.

The text property inspector makes it very easy to keep track of attributes like format choice fonts and colour. When you select an element on a pages e.g. text or image the property inspector displays only the attribute options available for the element. You can access more advanced features by clicking on the small arrow in the bottom right corner of the property inspector.

3.2.3 The Insert Toolbar

The Insert Toolbar replaces the Object panels and is used to add components to your document. The Insert toolbar contains twelve objects but the commonly used are: **Common, Text, Table, Forms, Frames** and **Character.**



- The **Common object** contains the most commonly used objects, such as Image, Table, and Layer.
- The **Text object** allows you to insert text- and paragraph-formatting tags.
- The **Table object** places a table at the insertion point.
- The **Forms object** contains buttons for creating forms and form elements.
- The **Frame object** contains common frameset structures.
- The **Characters panel** contains special characters such as the copyright symbol, curved quotation marks, and trademark symbols.
- To insert a picture between your headline and address:
    1. Place your cursor just after the second line and hit Enter to open up a space.
    2. Click on the top button Object palette to choose an image, and browser. Click on the file called **welcome.jpg** and click select then click Ok.
    3. Place your cursor next to the image without selecting it, and then click on the Align Right icon in the Property

inspector and it will move to the right side of the page. Try Align Left and Align Centre.

4. Click on the picture and note that the property inspector automatically changes to show you the image properties its dimensions and location.

3.2.4 Previewing your work in a web browser

- Dreamweaver makes it easy for you to set up preview links to different browsers.
- To change or define your primary browser or define a secondary browser:
  1. Choose **File > Preview in Browser > Edit Browser List.>Add** and browse to relevant ***.exe** file.
- To preview your document in a browser:
  J Do one of the following:

  1. Choose File > Preview in Browser
  2. Press F12 to display the current document in the primary browser.
  3. Press Control+F12 to display the current document in the secondary browser.

3.3 Creating another page

1. With index.html open, choose File>New Window. This opens up a new page in a window, so you can have both pages open at the same time.
2. Repeat the procedures for setting page properties that you learned. Use **"background.jpg"** as the background.
3. Give it the title **"Tutorial 1",** and save as **tutorial1.html.**
4. Click on the top button on the Object palatte to choose an image. Browse to find an image and double click to select in then click OK.

3.3.1 Formatting the new text

1. Type this text:
   LESSON 1
   Tutorial 1
   Tutorial 2
   Tutorial 3
   Tutorial 4
2. Highlight the words **"LESSON".** In the property inspector, choose the **Heading 2** option from the Format pull-down menu. Use **Align**

centre icon to align it in the centre of the page. Choose the **Arial** option from the Font pull-down menu.

3. Now deselect **"LESSON 1"** and highlight **"Tutorial 1".** Leave it left aligned but change the format to **Heading 3.** In the size pull-down menu, choose **6.**
4. Change Tutorial 2, Tutorial 3 and Tutorial 4 to size **5** with colour **#FFFF00.**

3.3.2 Line and paragraph breaks

- When you want a single line break use a line break instead of a paragraph break.
- Place your cursor to the left of the text and press **Shift-Enter** to insert a **line break.**
- You can also insert a break tag by choosing Insert>Special Character>Line Break.

3.3.3 Adding a horizontal rule

- The horizontal rule tag creates a line that spans the Width of the Web Page.
- By changing the tag's attributes, you can alter the thickness of the rule and limit its span to only a portion of the page.
- To add the space just after the **"Tutorial 4",** then click on the HR buttons on the Common object.

3.3.4 Creating lists

Dreamweaver makes it easy to create ordered lists (set by numbers or letters), unordered lists (preceded by bullets) and definition lists (indented but not preceded by numbers or bullets). You can create lists as you type test into document, or you can highlight existing text and apply the list format. Lists can also be nested to create outline.

1. Position the cursor after **"Tutorial 4" ,** and add paragraph break.
2. Click the numbered or bullet list button in the property inspector.
3. Enter the items lists: **"Item 1", "Item 2", "Item 3".** Pressing Enter after each list item. After you finished press Enter twice.

3.3.5 Indenting text

1. Select all the list item
2. Click the Text Indent icon in the Property Inspector.

3.4. Aligning pictures against text

1. With the file **tutorial1.html** open, place your cursor to the left of **"LESSON 1".** Do not insert a paragraph break.
2. Click the image button on the objects tool. Browser to find **home. if** and double-click to select it. Click Ok.
3. Select the picture so the image property inspector will open. Change the image size to **70x70.** In the Align pull-down menu select **Absolute Middle.**
4. Type the word **''home''** in the Alt text box on the property inspector.

3.4.1 Wrapping text around a picture

1. Click on the extended arrow at the bottom right of the property inspector.
2. Add **10 H** space. This places 10 pixels on either side of the image, separating it from the text that appears on the right.

3.5 Setting Hyperlinks

To set the hyperlinks:

1. Type "**HOME**" below the last horizontal line and highlight it. Click the white box next to the word link in the Property Inspector and type index.html in the Property Inspector. Save the file, preview in your browser.
2. to set the image as hyperlinks, click the image and repeat the instruction above to create a link
3. instead of typing, click the folder icon search for the file you want to link to.
4. specify a web address as a link but you must type http:// before you type the address.

3.5.1 Setting internal links

For a long document, create a link at a specific location in the web page to immediately go to the top of the page.

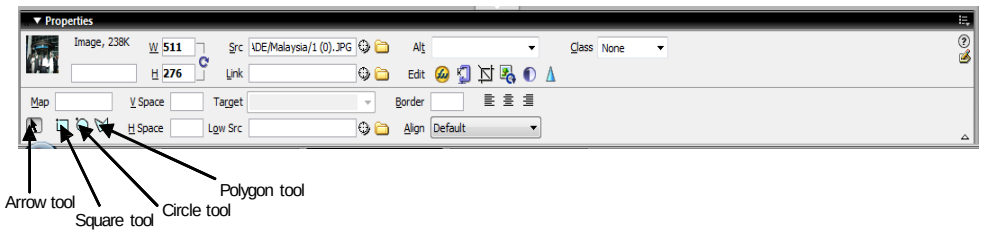
1. Click anywhere at the beginning o f the page. Click Insert> Name Anchor. When prompted for Anchor Name, just type "**top**"
2. Just after "Tutorial 5" press ENTER 15 times and then type "**TOP**". Highlight it and in the Property Inspector, type #top to make a link. Save and preview in the browser.

3.5.2 Creating image map

An image map is a single image where hyperlinks are assigned to different areas or "hotpots" of the image. The difference between a hyperlink image and image map I s for hyperlink image, the whole image is hyperlinked to one document only whereas the image map is a multi-hyperlinked image.

To create an image map:

1. Insert an image and select the image
2. Click the expander arrow in the lower right corner of the Property Inspector to see all properties
3. Type the name for the map in the Map Name field
4. Do one of the following to define the image map area:
   - select the **circle tool** and drag the pointer over the image to create a circular hotspot
   - select the **rectangular tool** and drag the pointer over the image to create a circular hotspot
   - select the **polygon tool** and define an irregularly shaped hotspot by clicking once for each corner point
5. Click on the **arrow tool** to close the shape. Arrow tool also enables one to select, relocate the hotspots and resize them by dragging the small blue boxes at the edge of each shape.
6. In the Hotspot Inspector, click the folder icon to browse and open a file when the hotspot is clicked, or type the file name in the Link field.
7. To make the linked document appear somewhere other than the current window or frame, enter a window name in the Target box or choose a frame name from the pop-up menu
8. In the **Alt box**, type alternative test that is displayed for the hotspot in a text only browsers.
9. Some browsers display this text as a tool tip when then user pauses the mouse pointer over the hotspot.
10. repeat steps 4 through 6 to define additional hotspots in the image map



3.5.3 Setting hotspot properties

The properties listed below appear in the Property Inspector when hotspot is selected

- **Map** specifies the image map's name. creates a unique name for each image map within a document
- **Link** specifies the file or URL to be displayed when the user clicks the hotspot. If you use a file, enter a path that is relative to your document (file names the begin with file:// are not relative)
- **Target** specifies frame or window in which the linked page should load. The target option is not available until the selected hotspot contains a link.
- The names all the frames in the current document appear on the list. If the specify frame does not exist when the current document is open in the a browser, the linked page loads into a new window that has the name you specified. The following reserved target names can also be chosen:
    - _blank loads the inked file into a new, unnamed browser window.
    - _parent loads the linked file into the parent frameset or window of the frame that contains the link. If the frame containing the link is not nested, the linked file loads into the full browser window
    - _self loads the link file into the same frame or window as the link. This target is implied, so you generally don't need to specify it.
    - _top loads the linked file into the full browser window, thereby removing all frames.

- **Alt**: specifies alternative text that appears in place o the image for text-only browsers or for browsers that have been to download images manually.

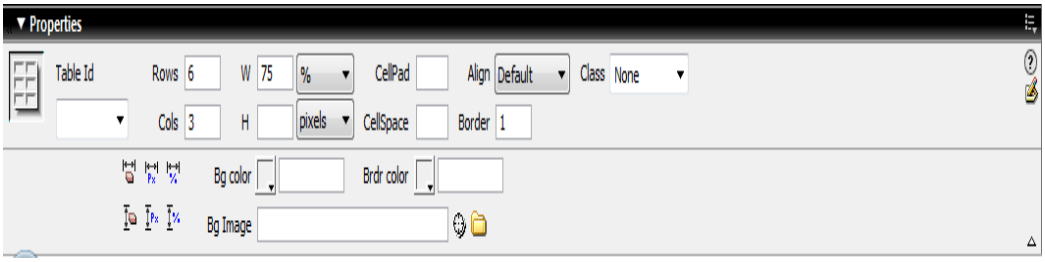
3.6 Creating Tables

Tables are useful for laying out data. They can also be used to control where test and graphics appear in a page. User can add content, modify cell and row properties and copy and paste multiple cells. Tables consist of three basic components – rows (horizontal spacing), columns (vertical spacing) and cells (intersection of a row and a column)

3.6.1 Inserting a table

- Place the cursor where want the table to appear on the page and click the Table button on the common panel o the Object palette or choose Insert> Table.
- In the dialogue box that appears, enter the following information: **6 rows and 3 columns**.
- Insert the background image and change the colour approximately. The width is 75%.
- Save the page as table.html.
- Type the following text in cells.

S/N	MAT_NO	NAMES
1	06/48226	Ifeanyichi Mary-Ann Ngozi
2	06/48235	Lamidi Yemisi
3	06/48238	Michael Victoria O.
4	06/48241	Muraina Latifat
5	06/48247	Ojo Toyin Eunice



- To name the table, in the Table Name field, type a name event schedule for the table.
- To select the table layout options:
  - Rows an Cols – set the number of rows and columns in a table.
  - W and H fields – set the width and height of the table and a number of pixels or as percentage of the browser's window.
  - Align – align the table to the browser's left, right or centre.
  - V Space and H Space – specify the amount of space (in pixel) to leave above, below, and on both sides of the table.
  - Clear Row Height and Clear Column Width – delete all table row height an column width values from the table
  - Convert Table Widths to Pixels – convert the table width from a percentage of a browser window to its current width in pixels

- Convert Table Widths to Percent – convert the current table width from pixels to a percentage of the browser's window.

- To set cell layout options:
  - CellPad – sets the amount of space between the cell content and the cell boundary. By default, cell padding is set to 1
  - CellSpace – sets the amount of space between a table and cells. By default, cell spacing is set to 2
- To set table borders options:
  - Border – sets the width of the table border in pixels. **Set it to 2**
  - Light Brdr and Dark Brdr – set border colours that have a highlight and shadow effect respectively, giving the border a three-dimensional appearance to a border. **Set pink colour to light border and set pink colour to dark brdr**.
  - Brdr – sets a border colour for the entire table.
  - Bg – set options to select the background image or background colour or the table.

3.6.2 Resizing Tables and Cells

To resize a table:

- Select the table
- Drag the selection handles to resize the table along that dimension. Dragging the corner handles resizes both dimensions.

To change the size of a row or a column

- Change the row height by dragging the bottom row border
- Change the column by dragging the right column border

3.6.3 Adding and Removing Rows and Columns

- To add a row – **Modify>Table>Insert Row**
- To add a column – **Modify>Table>Insert Column**
- To delete a row – **Modify>Table>Delete Row**
- To delete a column – **Modify>Table>Delete Row**.

3.6.4 Splitting and Merging Cells

- With the cursor in one of the cells, select two or more cells by dragging the mouse over the those cells
- To merge the two or more cells in the table, click merge cells in the Property Inspector.
- To split a merged cell, click the split cell button in the Property Inspector. In the Split Cell dialogue box, choose whether to split the cell into rows or columns and then enter the number of rows or columns.

3.6.5 Sorting Table

Table can be sorted based on the content of a single column. Sorting can equally be based on the contents of two or more columns; however tables that contain COLSPAN or ROWSPAN (tables that contain merged cells) attribute cannot be sorted.

- Put the cursor anywhere in the table:
- Choose Command>Sort Table from menu bar.
    - To sort the **Names** alphabetically –in **sort by** choose column 3; for **order** change to **alphabetically** and select **descending**

S/N	MAT_NO	NAMES
5	06/48247	Ojo Toyin Eunice
4	06/48241	Muraina Latifat
3	06/48238	Michael Victoria O.
2	06/48235	Lamidi Yemisi
1	06/48226	Ifeanyichi Mary-Ann Ngozi

3.7 Creating Frames

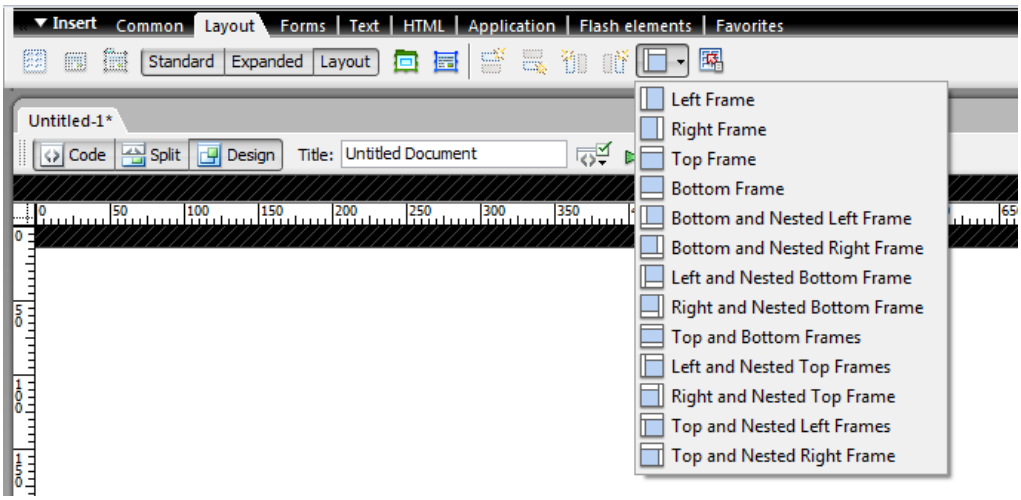
Frames divide a web page so that different files can be loaded into defined areas on the same page. Frames commonly define a **navigation** area and a **content area** for a page. When a Dreamweaver document is split into frames, it creates an untitled frameset file an untitled document in each of the new frames. What a user sees as a single Web page with two frames is actually three separate files: the frameset file and two files containing the content that appears inside the frames.

3.7.1 Creating a Frameset

- Choose Modify>Frameset>Split Frame **Up**
- In the frame on the button, choose Modify>Frameset>Split Frame **Left** to create two columns
- To name the frame, type a name in the Frame Name field. Name the top frame as **top**, left and bottom frame **main**.

3.7.2 Using a Predefined Frameset

Predefined framesets make it easy for one to select the type of frame s/he wants to create. The predefined frameset icons in the Frames panel of the Objects palette provide a visual representation of each frameset as applied to a selected document.



3.7.3 Deleting a frame

- Drag the frame borders all of the way off the page.
- Press Delete.

3.7.4 Selecting frame

- Press **Alt+Click** on the frame you want. Or click Window>Frames and choose the frame you want in the Frame Inspector.
- Click a frame border in the Document Window to select a frameset.

3.7.5 Inserting files into frames

- Press **Alt+Click** on the **left frame**, the frame property inspector changes. Choose **frame_left.html** as the SCR source file

- Press **Alt+Click** on the **top frame**, **Frame_top.html** as the SCR source file
- Press **Alt+Click** on the **bottom frame**, Choose **main.html** as the SCR source file
- Place your cursor on the border of the two columns and drag to resize the border so that all files can be seen clearly on the screen.
- Choose File>Save Frameset to save the frameset. Give a suitable name.
- Choose File>Save all so that Dreamweaver can save all opened files at a time

3.7.6 Setting frame properties

To see all the following frame properties, click the expander arrow in the lower right corner of the Property Inspector. Indicate for each of the frame whether you want to scroll, allow resizing, want the border to be seen, determine the colour of the border and the margin width and height (the space between the border and the content).

3.7.7 Linking files between frames

To link files

- Insert hyperlink to map image "what's new" to new.html. Choose target frame name as **main**.
- Insert hyperlink to map image "**the shop**" to main.html. Choose target frame name as main.
- Insert hyperlink to map image "**link**" "index.html". Choose target frame name as _blank (it will load the file "**index.html**" into a new browser window.

3.7.8 Creating non frame content

Dream weaver allows users to specify content to display in older and test-based browsers that do not support frames. When a browser that does not support frames loads a frameset file, the browser displays only the NOFRAMES content.

To create a NOFRAME content:

- Chose Modify>Frameset>edit NoFrames Contents. Dream weaver clears the Document window and the words "Noframes Content" appear at the top of the body area.
- Create the NoFrames Content in the Document window

- Choose Modify>Frameset > Edit NoFrames Content again to return to the normal view for the frameset document.

SELF- ASSESSMENT EXERCISE

Why would you prefer the use of Dream weaver in web design than writing HTML code using a text editor? Why?

4.0 CONCLUSION

This unit has elucidated the use of Dream weaver, an interactive web design application, to automatically author HTML code while designing a web page. The task of writing complex HTML code has been alleviated by this powerful software. Web designer need not be a programmer or a computer professional to design a good website. Dreamweaver has all it takes to write text, input graphics and maintain proper links to files, objects or other sites. The codes are automatically generated by this application. It is clear that with the use of this application, a little knowledge of HTML coding and the understanding of the flow of program execution, web designer can have better control on their design and complete a site design within a small time frame.

5.0 SUMMARY

This unit has provided a step-by-step practical approach to the use of Dreamweaver to design a website and upload the site for global use. The basic knowledge on the use of the application is explained in detail. The task of building the site, creating tables, frames, images, map, pictures, lines, links and non-frame contents were properly explain the order in this unit. By now students would have developed a better interest on web design as the issue of self coding has become highly reduces and even becoming extinct. A simple knowledge of the Dreamweaver application software eases the task of web design.

6.0 TUTOR-MARKED ASSIGNMENT

i. Why would you prefer the use of Dreamweaver in web design than writing HTML code using a text editor? Why?
ii. Since Dreamweaver can “weave” anything you want, is the knowledge of HTML coding still needed?

7.0 REFERENCES/FURTHER READING

CTBD and UMSB (2007). Notes: ICT Training Programme for Nigerian Executive. Multimedia University, Melaka.

Miller M. and Padgett T. (2003). *Web Design Using Dreamweaver*. West Georgia: McGraw-Hill.

UNIT 2 COREL PAINT SHOP

CONTENTS

1.0 INTRODUCTION

Corel Paint Shop sets the standard for affordable, professional image editing. User can edit photos; create graphics, draw, and paint, all within a highly customisable workspace.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

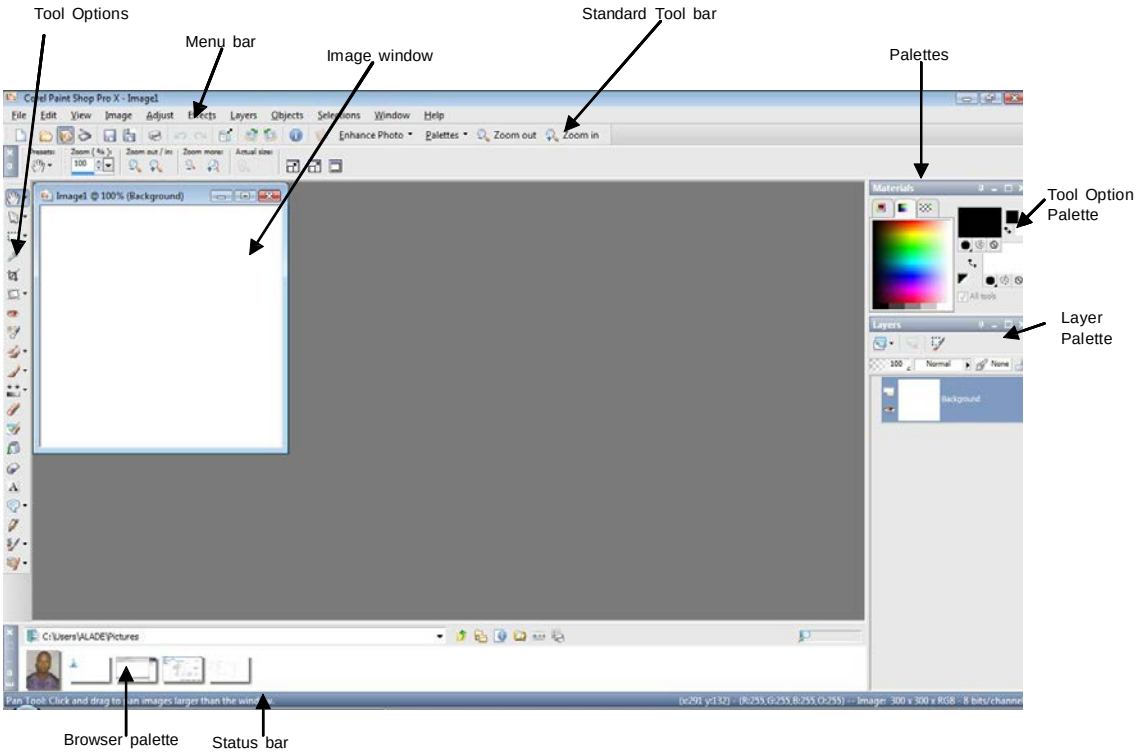
- identify different parts of Corel Photo Shop user interface
- manipulate images using Photo Shop application
- describe colours and materials in the application
- paint objects using raster painting
- explain different layers
- explain text
- identify and explain photographs.

3.0 MAIN CONTENT

3.1 Corel Paint Shop

Corel Paint Shot is graphic application software that blends images in various ways: it can import images from a digital camera, card reader, or scanner; it can capture images from the computer screen; it can duplicate an existing image or layer; or create an image.

3.2 Paint Shop User Interface



The Corel Paint Shop Pro workspace includes the following components

- **Menu bar** — displays commands for performing tasks. For example, the Effects menu contains commands for applying effects to images.
- **Toolbars** — display buttons for common commands.
- **Palettes** — display image information and help you select tools, modify options, browse through images, manage layers, select colours, and perform other editing tasks.
- **Status** bar — displays information about the selected tool or menu command, as well as information about image dimensions, colour depth, and pointer position. The status bar appears at the bottom of the main program window, and unlike other toolbars, it cannot be customised or moved.
- **Browser**: is used to browse files, folders and visually search for a particular image file.
- **Tool Options**: is visible when one of **Tools** is selected. The **Tool Options** palette contains settings and control for the active tool and is positioned, by default, just above the image area in your workspace.

Tools Options

Crop, paint, draw, type, and perform other image editing tasks.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

NO	Button	Function
1	Pan Tool	Use this tool to move the viewable portion of the image window when part of the image extends beyond the image window.
2	Pick Tool	Use this tool to move, rotate, and reshape raster layers, as well as select and modify vector objects.
3	Selection Tool	Use this tool to create a geometrically shaped selection. Such as a rectangle, ellipse, or triangle.
4	Dropper Tool	Use this tool to choose the foreground/stroke colour by right clicking.
5	Crop Tool	Use this tool to trim or eliminate unwanted edges of an image.
6	Straighten Tool	Use this tool to rotate a crooked photo so that it's straight.
7	Red Eye Tool	Use this tool to quickly correct the red-eye effect commonly seen in photos.
8	Makeover Tool	Use this tool's three modes- Blemish Fixer, Toothbrush, and suntan- to apply cosmetic fixes to a photo.
9	Clone Tool	Use this tool to brush over unwanted elements of a photo with a neighbouring area in the same photo.
10	Paint Brush	Use this tool to paint on your image with colours textures, or gradients.
11	Lighted/ Darken Tool	Use this tool to lighten areas you drag, or to darken area s as you drag with the right mouse button. This effect is stronger than effects produced by the dodge and burn tools.
12	Eraser Tool	Use this tool to erase raster layer pixels to transparency
13	Background Erase Tool	Use this tool to erase around the edges of the areas you want to keep in a photo
14	Flood fill	Use this tool to fill pixels of a similar tolerance level with the current

		foreground/stroke material by clicking or with the current background/fill material by right-clicking
15	Picture Tube	Use this tool to place theme-base artistic elements in your image.
16	Text Tool	Use this tool to place text on your image.
17	Preset shape Tool	Use this tool to add predefined shape {such as callouts, arrows, and starbursts} to your image.
18	Pen tool	Use this tool to create connected or unconnected lines, freehand curves, and Bezier curve segments.
19	Wrap Brush	Use this tool to shrink, grow, twist, to distort pixels in your photo
20	Oil Brush	Use this tool to simulate oil brush strokes on an art media layer.

3.3 Paint Shop Images

3.3.1 Getting Images into Paint Shop

Importing images from digital Cameras and Scanners

Before you can view and download image from a digital camera, card reader, or scanner you most install the special software (called drives) that enables your computer to connect to the camera, card reader, or scanner.

Determine which type of connection your camera, card reader, or scanner uses:

WIA: The default for non-WIA compatible computer running the windows XP and ME operating systems. Your camera, card reader, or scanner must support WIA.

Mounted Drive: The default for non-WIA computers, and the most common type of connection. Some camera and scanners, and must of card reader are viewed as an additional disk drive when they are connected to the USB port of your computer.

TWAIN: Most cameras and scanners are TWAIN-compliant. Use this setting if your camera, scanner, or card reader is TWAIN compliant.

To download from a WIA camera and scanner with windows XP or ME

1. Connect the camera, card reader, or scanner to the computer using the USB cable
2. Choose **file>import>from scanner or camera** to download the images to your computer.

To down load from a camera, card reader, or scanner that appears as a mounted drive

1. Choose **File>Open** to open the open dialogue. or choose **File>Browse** and use the browser to locate the images on the mounted drives
2. Navigate to the drive for your camera, card reader, or scanner.
3. Locate the image that you want to download in a folder or subfolder of that drive.
4. Select the images that you want to download and click **Open** to open the images in paint shop.

3.3.2 Opening Existing Images

To open an image file using the Open dialogue box

1. Do one of the following:
   - Choose **File>Open**.
   - Click the **Open** button.
2. In the **look in** drop-down list, select the folder where the file is stored.
3. Click the name of the file you want open. To select multiple files, press **ctrl** and click each name.
4. To view information or a preview of the image, choose an option **Details**. **Show preview** Mark this check box to display the selected image in the preview area. If you have selected multiple files, no preview is display, use the Browse windows instead.
5. Click **Open.**

Computer graphics area of two type: raster(also called bitmap) or vector. With paint shop, one create both raster and vector images.

Raster Images are composed of individual elements, called pixels, arrange in a grid. Each pixel has a specific location and colours. If you magnify raster data, you can see the individual pixels as squares of colons. An object in a raster image is defined by its pixels.

Raster images can display subtle changes in tones and colours, so they are most often used for images like photographs and digital artwork.

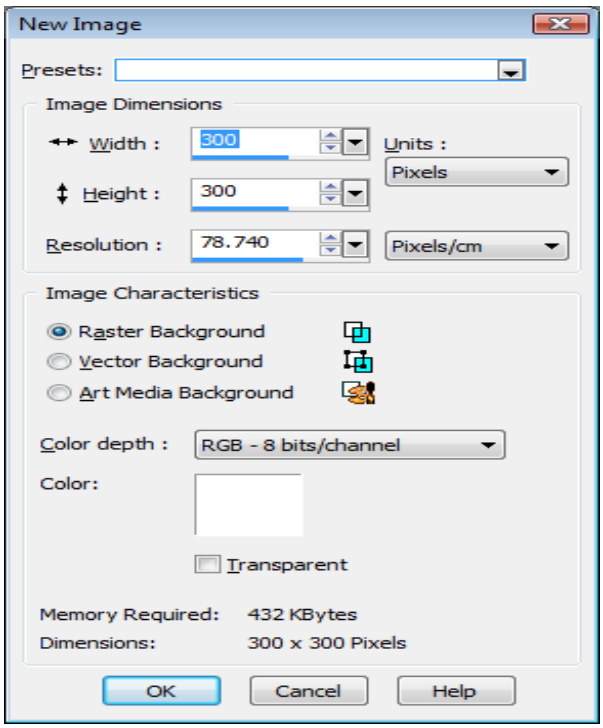
Raster images contain a fixed number of pixels, so when you magnify the image, you are magnifying the display size of the pixels. As a result, raster images can display jagged rather than smooth edges if magnified on screen or printed at a large magnification.

Vector graphics or images use geometric characteristics – lines, curves, and their locations – to define objects. In vector imagers you edit objects or shapes rather than pixels. Vector graphics do not lose clarity or detail when scaled to any size or printed at any resolution. They work well for technical illustrations or corporate logos.

In paint shop pro, you create and edit raster and vector data on separate layers. With some tools you created raster data (like brush stocks with the paint tool) and with other tools (like the Text and Preset Shapes tools) you can choose whether you want to create raster or vector data. In general, use vector objects if you will need to edit the object as an element separate from other parts of the image. For example, if you add a star to an image, you may want to change its size, colour or location. This is easier if the star is a vector object. You can create raster data on separation layers so you can easily edit or move them.

Three elements that contribute to the file size of the image

- **Image Size:** the physical dimensions of the image. In paints Shop, you define image height and width in pixels per inches, centimetres, or millimetres.
- **Image Resolution:** the number of pixels per inch (ppi) or pixels per centimetre in images. It is important to select an appropriate resolution. Too low a resolution causes pixilation, and large pixels produce coarse output. Too high a resolution adds to an image's memory requirements without producing a proportional increase in its quality.
- **Colour Depth:** the number of colours that a pixel can display. Each pixel's colour information is stored in a certain number of computer bits – from 1 bit to 24 bits. In a 1-bit image, each pixel can display only one of two colours (black or white). In a 24-bit image, each pixel can display one of 16 million colours. Images with a colour depth of 16 million colours look best because they contain the most colours, but they also require the most memory to store and edit. Many of paint shop effect and correction commands work on 16 million colour images only. Therefore, it is best to create most images using 16 million colours. When you have finished working on the image, you can decrease its colour depth and save it in another format.



3.3.3 To create a new image

1. Do one of the following to open the New image dialogue:

- Choose **File>New**; or
- Click the **New Image** button on the toolbar

2. Choose the image dimensions

- To , select preset size for the new image, in the **Presets** droplist choose a standard size for print materials (such as 4''×6'' or letter) or computer screens (such as 640×480pixels).The presets list defaults to the **Last Used** option, which specifies the setting that were used the last time you created a new image.
- To create an image using specific dimensions, in the **Image Dimensions** group box, set the following option: **Units** The units dimensions (pixels, inches, centimetre, or millimetres).
  Width The width of the new image.
  Height The height of the new image.
  Resolution The resolution of the new image. Specify the resolution units (pixels/inch or pixels/cm) in the drop-down list.

3. In the **Image Characteristics** group box, select from this options **Raster Background, Vector Background, or Art Media Background:** The type of bottommost layer. Choose a raster

background for most photographic applications. Choose a vector layer if you are create vector graphics. Choose an Art Medial Layer if you creating an image with the Art Media tools.

Colours: click in the colour box and set the background colour or material.

- For raster images, click the colour box to select from the material dialogue (for 16 million colour images) or the image palette (for images of all other colour depths). To choose a transparent background (for greyscale or 16 million colour images only), mark the Transparent check box.
- For vector images, choose the colour depth. Vector images start with a transparent vector layer.

4. Click **Ok**. The new image opens in the work space.

3.3.4 Saving a New Image File

To save a new file:

1. choose **file> Save**, press **Ctrl +S** or Click the **Save** button on the toolbar to open the Save As dialogue.
2. use the **Save In** drop-down list to navigate to the folder in which you want to save the image file. If you frequently save files to the same folder, click the 'favourites' folder and select a folder from the list.
3. in the **File Name** field, type a name for the file.
4. to save the file in a new format, select the format from the **Save As Type** list.
5. if the file format has save options, click the **Options** button to open the Save options dialogue. Select new settings, if appropriate. If you are not sure of the settings, use the default values. Click **OK** to return to the Save As dialogue.
6. click **Save** to close the dialogue and Save the file.

3.4 Working with Colours and Materials

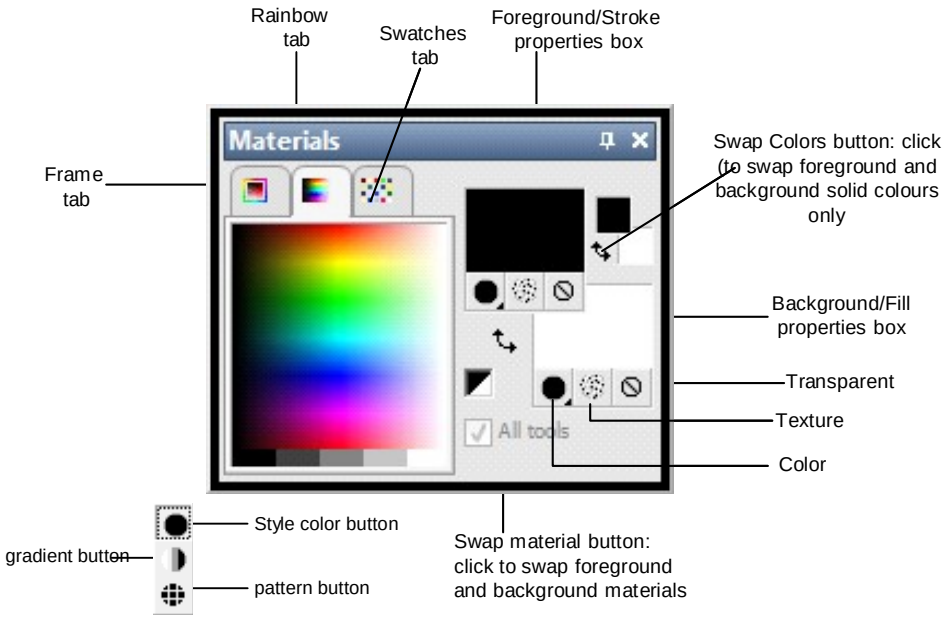
3.4.1 Basics of using the Materials Palette

The Materials palette offers a variety of ways to choose colons, styles, and materials for the raster and vector tools.

With paint Shop you can paint, draw, and fill with a variety of colours, styles, and materials. A style is the colour, gradient, or pattern. A material is the styles plus the optional texture. Select materials on the

palette. In general you use foreground materials for brush strokes and background materials for fills. When you paint with a raster brush, right-clicking the brush paints with the background materials and for fill tools, left-clicking fills with the foreground material. For text and vector shapes, the foreground colour is the stroke (or outline) of the text of shape and the background colour is the fill of the text or shape.

In general, it is best to select the tool you want to use, select the colour/material on the materials palette, set the other options, and then use the tool.



The main components of the material palette

Frame tab: it displays an outer Hue rectangle, as well as a strip containing white, three shades of grey, and black. You can drag the vertical slider to adjust lightness, and drag the horizontal slider to adjust saturation.

Rain brow: it displays the available colours panes, where you can click to select a colour. At the bottom of the tab you can click to select white, black. Or three shades of grey.

Swatches tab: display swatches, which are materials that can be saved to use again.

Foreground and Background Colour boxes: display the current foreground or background colour.

Foreground and Background material boxes: display the current foreground or background materials (the style – colour, gradient, or pattern – plus the texture).

Style button: specifies which style is currently selected: colour, gradient or pattern. To change between the most recently selected colour, gradient or pattern click the style button and select a new style. To define a new colour, gradient, or pattern, click a material box.

Texture button: turns the current texture on or off. To choose a new texture, click the Foreground Material or Background Material boxes

Transparency button: specifies whether the foreground or background Material is transparent (in other words, it has no style or texture). You use a transparent material primarily with vector objects and text – a transparent foreground has no outline (the objects or letters are filled only) and a transparent background has no fill (the objects or letters are outlined only). This button is unavailable for tools that require a foreground or background colour.

All Tools: if the check box is marked, the selected foreground or background materials apply to all tools. If the check box is cleared, the selected materials apply only to the active tool (such as the Paintbrush tool or the Preset Shapes tool).

3.4.2 To choose a Foreground or Background Solid Colour

1. On the materials palette, make sure the Foreground or Background style is set to **Colour** (not gradient or pattern), and either the Frame or Rainbow tab is active, then do one of the following:
   - To choose a foreground colour, click the **Foreground/Stroke** properties box, This will display the Material Properties dialogue.
   - To choose a background colour, click the **Background/Fill** properties box. This will display the material properties dialogue.
2. From the material properties dialogue's **Colour** tab, select the desired colour, and Click **OK.**

3.4.3 To choose a foreground or background material (colour, gradient, pattern, or texture)

1. On the Materials palette, do one of the following:

- to choose a foreground or background material, click the Foreground Material box. to choose a background material, click the Background Material **box** The Material Properties dialogue opens. In this dialogue, you can choose from all Paint Shop colours, gradient, patterns, and textures.

1. To choose the style, click the **Colour**, **Gradient**, or **Pattern** tab and select the appropriate settings.
2. To choose a texture check box and select a texture.
3. Click **OK**

3.4.4 To choose a colour from the Frame tab

1. On the Materials palette, click the **Frame** tab. It displays an outer Hue rectangle and an inner saturation rectangle, as well as a strip containing white, three shades of grey, and black.

2. On the saturation rectangle, click on the desired saturation
   - Left-click to set the **Foreground/stroke** colour (hold down the mouse button to display a tool tip with the cursor positions **RGB** value)
   - Right-click to set the **Background/Fill** colour (hold down the mouse to display a tool tip with the cursor position' s **RGB** value)

3. Drag the horizontal slider to further adjust the saturation.
4. Drag the vertical slider to adjust lightness

3.4.5 To choose a colour from the Rainbow tab's Available Colours Panel

1. On the materials palette, click the **Rainbow** tab.
2. Move the cursor over the Available Colours panel; its shape changes to a dropper. As you move the dropper around the panel, a ToolTip displays the colour value beneath the dropper tip.
3. Do one of following
   - To choose the foreground colour, left-click in the Available Colour panel.
   - To choose the background colour, right-click in the Available Colours panel.

   The foreground or Background Colour box displays the selected colour. If the style button is set to Gradient or Pattern, Change it to Colour so that the material is updated with

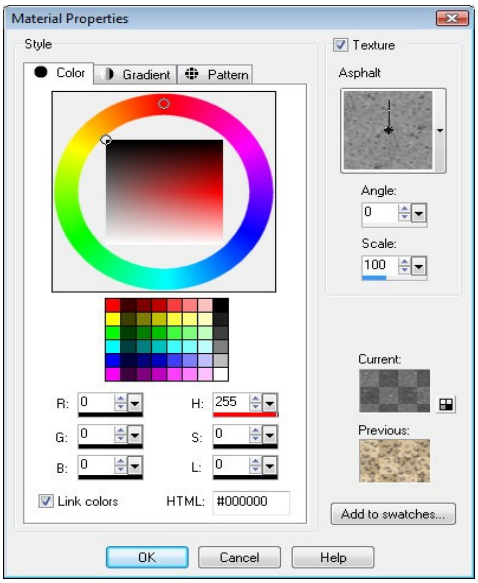
3.4.6 To apply the current materials to all tools

On the Materials palette, mark **All tools** check box. If you clear this check box, the current materials are applied to the active tool only
To reverse the foreground colour and background colours and vice versa. Click the Swap Colours icon

3.5. Choosing Colours

To display the Jasc Colour Picker, on the Materials palette, do the following:

- To choose foreground colour, click the Foreground Material box or Foreground Colour box
- To choose background colour, click the Background Material box or Background Colour box



If the Material box is clicked, the Material Properties dialogue opens (here you can choose colours, gradients, patterns and textures), click the Colour tab to display the Jasc Colour Picker.

If you checked a Colour box, the colour dialogue box opens and displays the Jasc Colour Picker; here you can choose colours only.

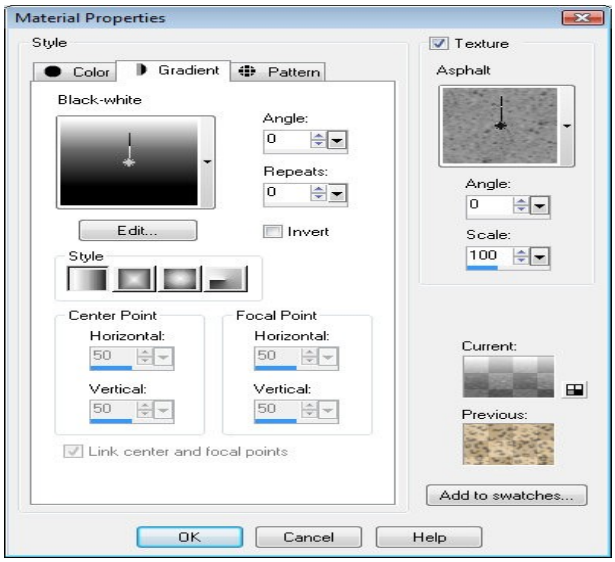
3.5.1 Choosing Gradients

To choose a foreground or background gradient:

1. on the Material palette, set the Foreground/Stroke style to **Gradient**, and then click the associated property box. This

displays the Material Properties dialogue, and the Gradient tab will be active.

2. click the Gradient drop-list to view thumbnail of the available gradients. If necessary, choose a Category containing the desired gradients.
3. click the desired gradient. This closes the drop-list. The gradient name will appear above the drop-list.
4. if desired, set the following gradients: **Style**, **Angle**, **Repeats**, **Invert**, **Centre Point**, and **Focal Point**.
5. to edit the colours, transition points, an opacity of the gradient, click Edit button.
6. to save this gradient as a swatch that you can access later, click the **Add to** swatches button, type a name, and press **Enter**.
7. click **OK**.

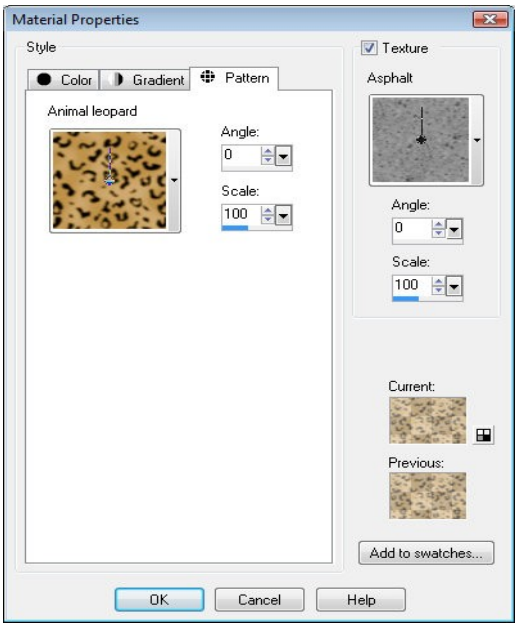


3.5.2 Choosing Patterns

To choose a foreground or background pattern:

1. on the Materials palette, set the Foreground/Stroke or Background/Fill style to **Pattern**, and then click the associated property box. This display the Material Properties dialogue, and the Pattern tab to be active.
2. click the **Pattern** drop-list to view a thumbnail of the available patterns. If necessary, choose a Category containing the desired pattern.
3. click the desired pattern. this closes the drop-list. The pattern name will appear above the drop-list.
4. if desired, set the **Angle**, and the **Scale**.
5. to save this pattern as a swatch tat you can access later, click the **Add to Swatches** button, type a name and press Enter.

6. click **OK**.



3.5.3 Choosing Textures

To select the current texture for the foreground or background material: On the Material palette, click the Texture style button on the Foreground Material box or the Background Material box. The most recently chosen texture becomes active.

To choose a new texture

1. with the current style set to Texture, on the Material palette don one of the following:

   - to choose a foreground texture, click the Foreground Material box
   - to choose a background texture, click the Background Material box.

   The Material Properties dialogue opens
2. mark the **Texture** check box
3. click the **Texture Type** drop-list an select a type of texture.
4. select the options for the texture – Angle and Scale.
5. to change the style of the material, click the **Colour, Gradient**, or **Pattern** tab and specify the option.
6. click **OK**.

3.5.4 Understanding Colour Depth

Colour depth, as earlier defined, is also called bit depth. It refers to the number of colours each pixel can display. As the colour depth increases, the number of colours an image can display increases.

To increase the colour depth of an image

Choose **Image**>**Increase Colour Depth** and choose the desired colour depth – 16 Colours (4-Bit), 256 Colours (8-Bit), or 16 Million Colours (24-Bit). Colour depths that are not available for the active image are grayed colour out.

3.6 Making a Palette Colour Transparent

Palette images with fewer colours such as GIF and PNG file do not support transparent backgrounds, but is needed in a way to make part of an image transparent when displays on a Web page. Paint Shop has two ways to make a colour transparent:

- use the Set Palette Transparency command. To set transparent colour, the image must have one layer only an must use an image palette (colour depth must be less than (24-bits)
- edit the image in 24-bit colour, then use the GIF or PNG optimisers to export a copy of the image. This does not change the colour depth or pattern layer of the original image file and keeps all Paint Shop effect and commands available.

To make one image colour transparent:

1. choose **Image**>**Palette**>**Set Palette Transparency**
2. if you are prompted to reduce the colour depth and number of layers, click Yes to continue and then choose the options for decreasing the colour depth
3. on the Set Palette Transparency dialogue, select an option:
   - to undo transparency of a colour, select **No Transparency**
   - to make the background colour transparent, select **Set the transparency value to the current background colour**
   - to assign a specific colour to be transparent, click the colour on the image itself, enter a value in the edit box of the **Set Transparency value to a palette entry** option, or click the colour to select from the current colour picker
4. to view the transparency on the image, click the **Proof** button
5. click **OK**. The colour is now transparent; however, it may still be displayed until you hide it.

To view or hide the transparency of a colour

Choose **Image**>**Palette**>**View Palette Transparency**.

3.6.1 Brush and Paint Options

The brush and pain options help to create hundreds of different brush strokes when using the raster painting tools. The following options are available on the Tool Options palette for painting.

Shape — specifies the shape of the brush tip. You can create rectangular, elliptical, or angled brush tips by starting with the round or square shape and modifying it with the Thickness and Rotation options.

Size — determines the pixel size of the brush. You can adjust the Size value using the keyboard as well as through the Tool Options palette.

Hardness — determines how sharp the edges of the brush are. A setting of 100 gives you the sharpest, hardest edge; lower values produce an increasingly softer, fading edge.

Step — determines the distance between applications of paint during a single, continuous paint stroke. Lower values produce a smoother, more continuous appearance; higher values create a choppier appearance.

Density — determines the coverage of the brush stroke. (For the Eraser tool, this setting determines the level of erasing.) Higher values result in complete coverage; lower values produce spottier coverage, as though you're spraying the paint. When using the Airbrush tool, you should set Density to values lower than 100.

Thickness — determines the width of the brush stroke. A setting of 100 gives you a completely round or completely square brush (depending on the Shape setting). As the Thickness setting decreases, the brush becomes increasingly narrow.

Rotation — applies rotation to the brush tip. (Rotation is not visible on a circular tip.)

Opacity — determines how well the paint covers the image surface. At 100% opacity, the paint covers everything. At 1% opacity, the paint is almost completely transparent. For the Eraser tool, this setting determines the level of erasing.

Blend mode — determines how painted pixels are blended with pixels on underlying layers. The blend modes are the same as layer blend

modes. The Paint Behind blend mode, for example, paints behind the image on the active layer. No paint is visible when the topmost layer and the active layer are both fully opaque.

Rate — determines the rate at which the Air Brush tool applies paint (from 0 to 50). A value of 0 applies a consistent amount of paint even when the speed of the brush stroke varies. Higher values apply more paint when the brush slows down or pauses.

Continuous — specifies whether paint builds up as you apply multiple strokes of less than 100% opacity over the same area. If this check box is marked, paint maintains a continuous colour and repainting an area has no effect. If this check box is unmarked (the default), each brush stroke over the same area applies more paint; the colour darkens until it reaches 100% opacity.

Wet Look Paint — mimics wet paint, with soft colour inside and a darker ring near the edge. The effect is more visible with lower values for the Hardness setting

3.6.2 To use the Flood Fill tool

1. On the Tools toolbar, choose the Flood Fill tool
2. Choose the foreground or background colour and material o fill the area with.
3. On the Tool Options palette, specify the Match Mode option
4. Select the Blend Mode options:
    - Bled Mode: How filled pixels are blended with pixels of underlying layers.
    - Opacity: The opacity for the fill. At 100% opacity, the paint covers everything; at 1% opacity, the paint is almost transparent
5. Position the cursor over the area of the selection or image that you want to fill, and then do one of the following:
    - Click the left mouse button to fill with the foreground material
    - Click the right mouse button to fill with the background material

3.6.3 Cloning Parts of Images

This is a powerful way to edit images by using the parts of an image as a paint source. The paint source can be part of the same layer, another layer in the image, a merged image or a layer from another image.

3.6.4 To use the Colour Brush

1. On the Tools toolbar, choose the **Clone Brush** tool
2. On the Tool Option palette, choose the brush tip, size, opacity, and other options
3. Mark the **Align node** check box to have Clone Brush tool paint from the point of the source area relative to the first point you click on the target area each time you stop and start painting. You can click and drag over the target area to fill the source image. Clear the check box to have every stroke copy the same data
4. Mark the **Sample merged** check box to clone data from al layers merged together. Clear the check box to clone data from the current layer only.
5. On the source image, right-click or press **Shift** and click the centre point of the source area.
6. Click and drag on the image you want to change to paint the cloned area.

3.7 Working with Layers

Layers are like separate sheets that you combine to create a final composition.

Each layer you add begins as a transparent sheet over the background. As you add brush strokes, vector objects, or text, you cover up parts of the Background layer. Transparent areas allow you to see the underlying layers. You can stack multiple layers to create artistic compositions, photo collages, or complex illustrations.

There are nine types of layers: Background, Raster, Vector, Art Media, Mask, Adjustment, Group, Selection, and Floating Selection. Corel Paint Shop Pro supports up to 500 layers. The actual number of layers allowed in an image may be limited by the amount of memory in your computer.

3.7.1 Using the Layer palette

To display of hide the Layer palette:
Choose View>Layers palette or press F8

3.7.2 Create New Layers

Create new layers to use for placing new elements in your images.

To create a new layer

1. one of the following:

    - to create a new raster layer click the New Raster Layer button or choose Layers>New Raster Layer
    - to create a new vector layer, click the New Vector Layer button or choose Layers>New Vector Layer

2. Edit the layer properties as desired and click OK

Duplicating Layers

To duplicate a layer within the same image:
Do one of the following;

- Click its name on the Layer palette, then choose **Layers**>**Duplicate**
- Right-click its name on the Layer palette, then choose **Duplicate** from the context menu.
- Click its name on the Layers palette, choose **Edit**>**Copy** to copy the layer, and then choose **Edit**>**Paste**>**As New Layer**

The duplicate layer is added just above the current layer.

3.7.3 To rename a layer

1. On the Layers palette, right-click the name of the layer and choose Rename form the context menu
2. Type the name and press Enter

3.7.4 Shown and Hiding of Layers, Groups and Vector Objects

Use the Visibility toggles the Layers palette to make layer, layer groups, or vector objects visible of invisible in the image. These items remain in the image but are hidden. When a layer is visible, the Visibility toggle displays. When a layer is hidden, the Visibility toggle is crossed.

3.7.5 Changing the Opacity Layers

The opacity of a layer can be varied from 100% (full opacity) own to 0% (transparent). When a layer is partially transparent, layers below it

show through. The overall opacity of a layer and the opacity of individual layer pixels are independent of each other.

3.7.6 To Set the Opacity of a layer or layer group

On the layer palette, click the name of the layer

1. Do one of the following:
   - drag the Opacity slider to the desired percentage
   - double-click the layer name to display the Layer Properties dialogue and change the Opacity setting, and click OK

3.7.7 To move a layer within the image canvas

1. on the Layers palette, select the layer you want to move
2. on the Tool toolbar, click the Move tool
3. click and drag in the image to move the layer to a new position
4. to limit the Move tool to the current layer, press and hold the Shift key while you click the image and drag the layer.

3.7.8 To delete a layer

1. Make sure nothing is selected outside the layer you wish to delete
2. On the Layers palette, click the name of the layer you want to delete
3. Click the **Delete** Layer button on the Layers palette toolbar, right-click and choose Delete from the context menu, or drag the layer to the **Delete Layer** button

3.8 Working with Text

3.8.1 Creating Text

Text tool is used to create text on images. Choose text colours on the Material palette and text options o the Tool Options palette, then click in the image and enter text in the Text Entry dialogue.

To Create Text

1. On the Tools toolbar, choose the **Text** tool **A**
2. On the Materials Palette, make the desired **Foreground/Stroke** property and **Background/Fill** property settings. The foreground settings determines the text outline, while the background setting determines the text fill (the area within characteristics)

- For standard text with no outline, set the Stroke width on the Tool Options palette to 0, or click the **Foreground/Stoke** property's **Transparent** button
- For hollow text, click the **Background/Fill** property's **Transparent** button

4. On the Tool Options palette's **Create as** drop-list, choose the type of text:
5. Choose a text direction in the Direction drop-list
6. Choose the basic text formatting options, including **Font, Size, Stroke** width (if you are using a Foreground/Stroke in the Material palette), **Font style**, and **Alignment**
7. Choose **Anti-alias** option from drop-list (Off, Sharp or Smooth)
8. Optionally, you can choose a Line Style (affects on the stroke) as well as Join and Miter settings. Normal text uses the default line style labelled +Solid in the **Line Style** drop-list
9. The **Warp** check box affects text fit to a path. When marked, the text will "warp" around the curves of the path (if the path is not curved, you would not see the effect).
10. When creating a text to fit to a path, to Offset setting allows you to define the distance between the text and the path to fit to. This setting will have no effect for text not fit to a path.
11. The last Text tool options include:
    - **Leading**: sets the vertical space between text lines
    - **Kerning**: sets the horizontal spaces between characters. Kerning values are expressed as 1,000 being equal to one EM
    - **Auto Kern** check box: marks this option to factor in the font's built-in kerning values
    - **Tracking**: allow the user to set an equal amount of space across selected characters.
12. Once all Tool Options are ready, click in the image where you want to place the text. The Text Entry dialogue opens. Note the following points regarding where you click to place the text:
    - to place text on the image (text not fit to a vector path), do not click near a path.
    - To place text on a vector object or path without attaching to the object or path, hold down the **Alt** key and click.
    - To place text on a vector or path, place the Text tool cursor on top of the object or path (the cursor shape will change.
13. Type the text. As you type in the dialogue, the text displays on the image. To add a line break, press **Enter**
14. To change any of the text formatting options, in the Text Entry dialogue, highlights the words or characters that you want to change, and then make changes on the Tool Options palette.

15. Mark **Remember Text** check box to display the entered text the next time you open the Text Entry dialogue.
16. Click **Apply**. The text displays on the image. If you've added vector text, note also that this will be reflected in the layers palette

3.8.2 Editing vector text

1. To open the Text Entry dialogue, of one of the following:

    - Open the Tools toolbar, click the Text tool, position the cursor over the text in the image until the cursor change then click, or
    - Right-click the text and select Edit Text or
    - On the Layer palette, right-click the object or
    - On the Layer palette, right-click on the text object and select Edit Text from the context menu

    The Text Entry dialogue opens with the text highlighted
    In this dialogue box, you can only change highlighted text. If no text is highlighted when you choose the options, the options affect new text you type at the cursor position.
2. Edit the entry in any of these ways:
    a) To format all text, keep it all highlighted and choose options on the Tool Options palette or choose new colours or materials on the Material palette.
    b) To format one or more characters, click and drag to highlight the text you want to change, and choose options on the Tool Options or Materials palette
    c) To add new text, click where you want to insert it and begin typing
    d) To delete text, highlight the text and press Delete key

3.8.3 To move vector text

1. On the Tool toolbar, click Object Selection tool.
2. Select the text you want to move. A bounding box surrounds the text.
3. Move the cursor inside the bounding box, the cursor changes to thin air cross button
4. Click and drag the text anywhere within the image.

3.8.4 To move raster text

On the Tool toolbar, select on of the Selection tools

1. Select the text you want to move
2. Move the cursor inside the selection marquee, the cursor changes to the thin air cross
3. Click and drag to text anywhere within the image

3.8.5 Applying Effect to Text

Applying any of Paint Shop effects to raster text to create endless varieties of looks: Apply to a drop shadow or a bevelled edge, turn text into brush strokes or coloured chalk. For vector text, convert it into a raster selection, and the apply effects.

3.8.6 Creating Text on Objects Path

There are two ways to create text on a path:
1. Create the path first and then create new text on the path or
2. Create the path and the text as separate objects, and then fit the text to the path.

To create text on a path

1. use the vector drawing tools to create a vector shape
2. click **Text** tool
3. In the Tool Options palette's Create as drop-list, choose **Vector**
4. Select other options (font, size, alignment, offset, etc.) as desired. Use the Materials palette to set the text's Background/Fill property as well as its Foreground./Stroke property
5. move the cursor over the line or shape until the cursor changes and then click. The Text Entry dialogue displays. To place text on a vector object or path without attaching to the object or path, hold down the **Alt** key and click.
6. enter the text and click **OK**. The text displays along the path of the space

3.8.7 To fit text to a path

1. Create a vector line or shape.
2. Click the Text tool.
3. Choose Vector from the Create As drop-list in the Tool Options palette.
   If the Materials palette is not displayed, choose View Palettes Materials.

4. On the Materials palette, click the Foreground and Stroke properties box, and choose a colour for the text outline.
5. Click the Background and Fill properties area, and choose a colour for the text fill.
   If you want to create standard text with no outline, click the Transparent button in the Foreground and Stroke properties box.
   If you want to create hollow text, click the Transparent button in the Background and Fill properties box.
6. Click on the line or shape.
7. To place text on a vector object or path without attaching to the object or path, hold down Alt and click.
8. In the Text Entry dialogue box, type text.
9. Click Apply

3.9 Working with Photographs

3.9.1 To choose a photo-sharing service

1. Choose **File > Preferences > General Program Preferences**.
2. In the pane on the left, click **Photo Sharing**.
3. Choose a photo-sharing service from the list of available services.
4. Click **OK**.

3.9.2 To send images to a photo-sharing service

1. In the Browser palette, select the images that you want to upload to a photo-sharing service.
2. Right-click one of the selected images and choose **Photo Sharing**.
   The Photo Sharing dialogue box appears.
3. In the Connection Info group box, enter the user name (e-mail address) and password for the photo-sharing service.
   The Upload Album field displays the name of the album where the images will be stored on the Photo Sharing site. By default, the album is named with the current date; however, you can enter a new name for the album.
4. Click **Upload**.
   After the images are uploaded, you are prompted to visit the Web site for the photo-sharing service. Click **Yes**

SELF-ASSESSMENT EXERCISE

Explain the two types of computer graphics discussed in this unit.

4.0 CONCLUSION

Graphics and image making remains an essential component of Web designs. Fanciful and colourful site attracts many Internet users at first site. Intelligent combination of colour and images therefore becomes an essential ingredient for any would be efficient web designer. Therefore it becomes imperative to lay this foundation very well. This has been effective demonstrated in this unit.

5.0 SUMMARY

Photo Shop is world-wide acceptable graphics application software. This unit surveyed the fundamental necessities of this important package in sufficient detail. The foundations of the application's user interface as well as creation of images were well laid in this unit. The basic manipulations of images, colours, materials and paintings were discussed in fair details. Emphases were laid on layers, text and photographs which are all needed for an intelligent web designer.

6.0 TUTOR-MARKED ASSIGNMENT

i. Draw and explain the major parts of Photo Shop Pro Graphical User Interface.
ii. Explain the two types of computer graphics discussed in this unit.

7.0 REFERENCES/FURTHER READING

CTBD and UMSB (2007). *Notes: ICT Training Programme for Nigerian Executive*. Multimedia University, Melaka.

Corel Corporation (2005). Corel Paint Shop Pro X application online help. colour

UNIT 3 CREATING IMAGES FOR THE WEB

CONTENTS

1.0 INTRODUCTION

Unit 2 was dealt in subsistent detail with the basic needs for image creation and manipulation to give and fanciful pictorial objects in layers. Since the objective of this course is to prepare candidates for Web design, there is need to advance the unit to handle Web requirement of images. This is the main focus of this unit

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- create images for the Web
- save images for the Web
- work with different image files GIF, JEPG, and PNG
- preview images in Web browsers.

3.0 MAIN CONTENT

3.1 Creating images for the Web

You can save and optimise images for the Web to reduce the image file size and make images load more quickly. Using the Web tools, you can create backgrounds for your Web pages, map and slice images to create hotspots or rollovers. You can also protect your images by adding watermarks with creator and copyright information

3.2 Saving images for the Web

Majority of Web browsers recognise GIF and JPEG images, these two formats are used most often for saving Web images. Newer versions of the Web browsers can also recognise the more recent PNG format, and many Web browsers also support Windows Wireless Bitmap (WBMP) and iMode formats, which are popular formats for wireless devices.

When images are saved for the Web, there are three major considerations: layers, colour depth, and file size.

Layers

Because none of the current Web browsers can display layered images, you need to flatten an image before saving it for the Web.

Colour depth

Some computers are only capable of displaying up to 256 colours. If an image on a Web page contains more colours, the Web browser uses its own dithering method to display the image. This can produce colour distortion. If you reduce the colour depth of the image to 8 bits (256 colours) before placing it on your Web page, its appearance will be more consistent.

Web file formats and file sizes

File size affects the majority of users accessing a Web page. As the size of an image file increases, it takes more time to download, so viewers have a longer time to wait. You should use a file format that reduces the image size while keeping the quality as high as possible.

Choose from the following file formats when saving image for use on the Web

- GIF — compresses line art and images with areas of similar colours. It supports 8-bit (256) colour. There are two versions of GIF: 89a, which can save transparency and information, and 87a, which cannot. Both are recognised by most browsers and use lossless compression.
- JPEG — compresses photographic images efficiently. It supports 24-bit (16.7 million) colour, uses lossy compression, and is recognised by most browsers.
- PNG — compresses images more efficiently. It supports up to 24-bit (16.7 million) colour and uses lossless compression. It is not as

widely used as JPEG, so some features of this format are not available for older browsers.

- Wireless Bitmap (WBMP) — this format is used with many wireless devices. The images are black and white and have lossless compression.

3.3 To flatten an image

- Choose Layers Merge Merge All (Flatten).

3.4 Working with GIF Files

Corel Paint Shop lets you optimise GIF files to maximize quality while minimizing file size. You can save images with or without transparency, depending on how you want to display them on your Web pages.

Paletted images (those with 256 or fewer colours, such as GIF or PNG files) do not support transparent backgrounds, but you often need to make part of your image transparent for a Web page. For example, you may have a round logo and want the background of the Web page to display around the logo. In this case, you can choose not to display one colour.

Most Web browsers can choose not to display one colour, effectively making that colour transparent.

The GIF Optimiser dialogue box contains four tabs where you configure the transparency, colour, and format options of the file. The fifth tab displays estimated download times of the image at various modem speeds.

GIF Optimiser Transparency tab

You can choose to base transparency on existing image or layer transparency, or you can sample a colour in the image that you want to make transparent. If you have a selection in your image, you can base the transparency on the selection.

GIF Optimiser Partial Transparency tab

A GIF file cannot contain partially transparent pixels. All pixels must be either transparent or opaque (visible). Original images may contain partially transparent pixels if the image does not have a background layer, and you have reduced the opacity of a layer, added a mask, feathered a selection, or used a brush at a reduced opacity setting. You can determine whether the partially transparent pixels become

transparent or opaque, and whether they are blended with another colour.

If you mark the None option in the Transparency tab, the options in this tab are unavailable.

GIF Optimiser Colours tab

GIF images have an 8-bit colour depth, which means they can display up to 256 colours. Because these colours are stored in a palette, an image containing 256 or fewer colours is called a paletted image. To reduce file size, you can have fewer than 256 colours. You can use the options in this tab to select the number of colours and the type of palette used.

GIF Optimiser Format tab

GIF images can be interlaced or non-interlaced, which affects how the image is displayed on a computer with a slow Internet connection. You can also save the image to an older version of the GIF format to enhance compatibility with older applications.

GIF Optimiser Download Times tab

This tab displays the size of the compressed file and estimated download times for four different Internet speeds. If the file size is too large, you can decrease it by clicking reducing the number of colours.

Using the Transparent GIF Wizard

You can open the Transparent GIF Wizard from the GIF Optimiser dialogue box. This wizard guides you through the steps of optimising a GIF file.

To optimise and save a GIF file

1. Choose **File>Export >GIF Optimiser**.
   The GIF Optimiser dialogue box appears, and the preview windows show the current image on the left and the resulting GIF file on the right.
2. Click the **Transparency** tab, and choose one of the following options:
   - **None** — produces a GIF file that does not use a transparency setting
   - Existing image or layer transparency — uses the current transparency information from the image

- **Inside the current selection** — for images with a selection, makes everything within the selection transparent
- **Outside the current selection** — for images with a selection, makes everything outside the selection transparent
- **Areas that match this colour** — bases the transparency on a colour you select. Click the colour box to select a colour or choose a colour from the image by moving the cursor over the image, and clicking a colour. Then set or type a tolerance factor in the Tolerance control to determine how closely colours must match the selected colour before they become transparent.

3. Click the **Partial Transparency** tab and choose one of the following options
   - Use full transparency for pixels below x% opacity — determines the opacity value at which pixels become transparent. Pixels below the opacity value you set become transparent. Pixels above the opacity value become opaque. As you lower the value, you reduce the number of transparent pixels.
   - Use a 50% dither pattern — makes partially transparent pixels opaque using either the colour chosen for blending or the image colour (depending on the blending option), then applies a 50% dither pattern to make colours look more natural
   - Use error diffusion dither — makes partially transparent pixels opaque using either the colour chosen for blending or the image colour (depending on the blending option), then applies an error diffusion dither to make colours look more natural
4. Choose one of the following options to determine how partially transparent pixels are blended
   - **Yes** — blends the partially transparent pixels with the colour in the Blend colour box. To choose a new colour, click the colour box, and choose a colour from the Colour dialogue box. Partially transparent pixels below the value you set above are blended with this colour.
   - **No** — uses the existing image colour at 100% opacity
5. Click the **Colours** tab, and type or set a value in the **How many colours do you want**? control to determine the number of colours you want in the image.

   As you remove colours, the size of the file decreases, but so does the quality of the image. Use the preview windows to help you determine the best balance between file size and image quality.
6. Type or set a value in the **How much dithering do you want**? control.

The range is 16 to 256 colours. This determines the way Corel Paint Shop Pro arranges pixels in an image to compensate for missing colours in the adjacent pixels.

7. Choose one of the following options to determine the image palette

   - **Existing Palette** — lets you use an existing image palette
   - **Standard/Web-safe** — lets you use the Web-safe palette for images that you want to use on the Web
   - **Optimised Median Cut** — lets you reduce the image to only a few colours. If you choose this option, you can mark the Boost selected colours check box to give the colours more weight by a factor of the value you set. The selected colours stand out from the rest of the image. To boost colours, make a selection of an area that contains these colours and then mark this check box.
   - **Optimised Octree** — lets you optimise an image that contains only a few colours

   Depending on your needs, you may want to try both the Optimised Median Cut and the Optimised Octree options and choose the one that gives you the best results.

8. In the Options group box, mark the **Include Windows colours** check box to include the 16 standard Windows colours in the palette.
   If the image will be used on the Web, mark the check box.
9. Click the **Format** tab, and choose one of the following options

   - Non-interlaced — produces an image that downloads one line at a time, starting from the top
   - Interlaced — produces an image that is displayed incrementally in several passes, and detail is added each time

Choose the Interlaced option with larger images so that the viewer can get an idea of how the image looks while waiting for it to download.

10. Choose one of the following options:
    - Version 89a — lets you save transparency information. It is selected automatically if the image contains transparent pixels.
    - Version 87a — lets you save an image that does not contain a transparency setting
11. Click **OK** to open the Save As dialogue box, and navigate to the folder in which you want to save the new image and type a name for the file.
12. Click Save.

3.3.2 Using the Transparent GIF Wizard

1. Choose **File > Export > GIF Optimiser**.
   The GIF Optimiser dialogue box appears.
2. Click **Use Wizard**, and follow the instructions.
3. Click **Finish** to close the wizard and open the Save As dialogue box,
   where you type a name and select a location for saving the GIF file.

3.5 Working with JPEG Files

Corel Paint Shop lets you optimise JPEG files to maximize image quality and minimize file size.

Don't lose more data — each time you open and save a JPEG, image data is discarded. It is a good idea to keep a copy of the original image.

JPEG Optimiser Quality tab

You can use compression to reduce the size of the JPEG file. When you compress a JPEG image, you delete image information. As you increase the compression, you lower the quality of the image. You can use the image preview window to help you find the best balance between file size and image quality.

You can also reduce the file size with chroma sub-sampling, which averages the colour information for every 2 × 2 square of pixels. You can change this setting to have a larger area of colour information averaged.

JPEG Optimiser Background Colour tab

You can determine transparent pixels are blended in your image.

JPEG Optimiser Format tab

You can determine how an image appears as it is being loaded. You can optimise the JPEG so that the image downloads one line at a time, starting from the top.

If you have a large image, you can choose to have the image display incrementally in several passes; detail is added with each pass. This allows the viewer to see the image as it is being downloaded.

JPEG Optimiser Download Times tab

You can view the size of the compressed file and estimated download times for four modem speeds.

To optimise and save a JPEG file

1. Choose **File > Export > JPEG Optimiser**.
   The JPEG Optimiser dialogue box appears. The preview windows show the current image on the left and the resulting JPEG file on the right.
2. Click the **Quality** tab, and set or type a value in the Set compression value to control.
3. Choose a colour sampling method from the Chroma Subsampling drop-list if you want to change the default setting.
4. Click the **Background Colour** tab, click the Background colour box, and choose a colour.
5. Click the **Format** tab and choose one of the following options:
   - **Standard** — downloads one line a time, starting from the top
   - **Progressive** — displays incrementally in several passes, and detail is added each time
6. Click **OK** to open the Save As dialogue box, navigate to the folder in which you want to save the new image, and type a name for the file.
7. Click **Save**.

To use the JPEG Wizard

1. Choose **File > Export > JPEG Optimiser**.
   The JPEG Optimiser dialogue box appears.
2. Click **Use Wizard** and follow the instructions.

3.6 Working with PNG Files

Corel Paint Shop Pro lets you optimise PNG files to maximize quality and minimize file size.

The PNG Optimiser dialogue box contains three tabs where you configure the colour, transparency, and format options of the file. The fourth page displays estimated download times of the image at various modem speeds.

PNG Optimiser Colours tab

You can choose the colour depth for the PNG file — the greater the colour depth, the longer it takes to download the image. Use this tab to select a colour depth for your PNG image and, for paletted images, the method of colour reduction, number of colours, and amount of dithering.

PNG Optimiser Gamma tab

PNG images contain a gAMA chunk, which controls gamma levels of an image. The gamma setting helps the image appear consistent across multiple display devices. If in doubt, you should use the default PC value.

PNG Optimiser Transparency tab

You can choose to base transparency on existing image or layer transparency, or you can sample the colour in the image that you want to make transparent. If you have a selection in your image, you can base the transparency on the selection. You can also base transparency on the Alpha channel.

PNG Optimiser Format tab

PNG images can be interlaced or non-interlaced, which affects how the image is displayed on a computer with a slow Internet connection.

PNG Optimiser Download Times tab

This tab displays the size of the compressed file and an estimate of the download time at four modem speeds.

To optimise and save a PNG file

1. Choose **File > Export PNG Optimiser**.
   The PNG Optimiser dialogue box appears. The preview windows show the current image on the left and the resulting PNG file on the right.
2. Click the **Colours** tab, and choose one of the following image type options
   - **Palette-Based** — for images with 256 colours or less
   - **Grayscale** (8-bit)
   - 16.7 million colour (24-bit)

If you choose the Palette-Based method, you can choose how many colours are used in the image and how much dithering is applied.

3. Click the **Transparency** tab, and choose one of the following transparency types
   - **No transparency** — saves the image without transparency
   - **Single colour transparency** — lets you make one colour transparent by clicking a colour swatch or clicking a colour in the image, and entering a value in the Tolerance control.
   - **Alpha channel transparency** — uses the current selection or alpha channel transparency of the image. Choose what part of the image will be transparent by choosing Existing image or layer transparency, Inside the current selection, or Outside the current selection option.
4. Click the **Gamma** tab, and set or type a value in the Gamma control if you want to change the default value.
5. Click the **Format** tab, choose one of the following options:
   - **Non-interlaced** — the image downloads one line at a time, starting from the top
   - **Interlaced** — the image is displayed incrementally in several passes; detail is added with each pass. Use this option with larger images so that the viewer can get an idea of how the image looks while waiting for it to download
6. Click **OK** to open the Save As dialogue box, navigate to the folder in which you want to save the new image, type a name for the file, and click Save.

To use the PNG Wizard

1. Choose **File > Export > PNG Optimiser**.
   The PNG Optimiser dialogue box appears.
2. Click **Use Wizard** and follow the instructions.
3. Click **Finish** to close the wizard and open the Save As dialogue box, where a name is typed and a location is selected for saving the GIF file.

3.7 Previewing images in Web browsers

You can use your Web browser to see how your active image will look on the Web. Corel Paint Shop Pro creates an HTML page that displays your image in Windows Bitmap, GIF, JPEG, or PNG format. You can select up to three browsers. You can also change the Web browser in which you preview images, and you can add and delete Web browsers.

To preview image files in Web browsers

1. Choose **View> Preview in Web Browser**.
   The Preview in Web Browser dialogue box opens.

2. In the Select Image Formats list, click each format in which you want to preview your image.
3. Do one of the following to select a background colour for the Web page
   - Click the **Background colour** box, and choose a colour from the Colour dialogue box.
   - Right-click the **Background colour** box, and choose a recently used colour.
4. In the Image Size group box, do one of the following
   - Mark the Use default check box to keep the original image dimensions.
   - Unmark the Use default check box and type or set new image dimensions (in pixels) in the Width and Height controls.
5. Click **Preview**.

If you choose only Windows Bitmap in the Select Image Formats list, the program opens the Web Browser and displays the image.

If you selected any other format, the program opens the appropriate Optimisation dialogue box. Select your choices for optimising the image, and click OK.

To change Web browsers

1. Choose **File > Preferences > File Locations**.
   The File Locations dialogue box appears.
2. From the File types list, select **Web Browsers**.
3. Select a browser from the list.
4. Click **Edit**.

To add Web browsers

1. Choose **File > Preferences > File Locations**
   The File Locations dialogue box appears.
2. From the File types list, select **Web Browsers**.
3. Click **Add**.
   The Browser Information dialogue box appears.
4. Click **Browse**.
   The Web Browser Path dialogue box appears.
5. Navigate to the folder containing the Web browser executable file (with a file name extension ".exe"), and click **Open**.
6. Click **OK**.

To delete Web browsers

1. Choose **File > Preferences > File Locations**.
   The File Locations dialogue box appears.
2. From the File types list, select **Web Browsers**.
3. Select the browser you want to delete.
4. Click **Delete** to remove the browser from the list.
5. Click **OK**.

SELF-ASSESSMENT EXERCISE

What's the difference between loss and lossless compression?

4.0 CONCLUSION

Web design involves working with a number of applications at a time. For optimal performance of a site, special consideration should be given to the type of graphics used and the overall effect on the site. Heavy graphics will slow down the loading and operation of a site. Knowing different type of graphic files and there effect will enable a web designer to design a quality, non-annoying site for his/her clients.

5.0 SUMMARY

This unit has advanced the course opened in unit 10. In this unit, the effect of images' layer, sizes, and colour debts on a site has been discussed. Also the effects of different file formats on file sizes were explained. Different graphic file formats like GIF, JPEG, PNG and WBMP their characteristics differences on file sizes and the relative advantage of one over the other were given adequate attention to enable a web designer have the knowledge of their various effects on a website being design for a client. Various ways to optimise these file formats were outlined, all with the aim of coming out with high performance site. The unit ended with the issue of blending images with the desired browser which may involve adding, changing and deleting browser(s).

Corel Corporation (2005). Corel Paint Shop Pro X application online help.

6.0 TUTOR-MARKED ASSIGNMENT

i. What is interlacing?
ii. What's the difference between loss and lossless compression?

7.0 REFERENCE/FURTHER READING

CTBD and UMSB (2007). *Notes: ICT Training Programme for Nigerian Executive*. Multimedia University, Melaka.

UNIT 4 ANIMATIONS

CONTENTS

1.0 INTRODUCTION

One of the most frequently observed events that easily catch the attention of website user are the moving objects on a web page. It is always noted that when a website is opened, an object or objects is moving or a text string is changing or moving on the page. This event is called animation. That is adding of special visual or sound effect to a text of an object. Some application packages have animation as a rudimentary application component, while in some, like Power Point, this is well developed. Animation Shop is a specialised package for these major activities of design.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

Bring animation into a web design using Animation Shop wizard to:

- save animation
- optimise animation file
- create new animations
- explain the effect and transitions.

3.0 MAIN CONTENT

3.1 Creating Animation with Animation Shop

Animation Shop is a powerful yet easy-to-use program that creates animations from one or more graphic images and offers a wide variety of effects and transitions for enhancing animations.
Used as a standalone application or as a complement to Paint Shop, animation Shop allows users to easily create animations for use on a Web site or in a presentation. Animation Shop's straightforward interface allows anyone to create effective buttons, banners or other animated effects without a steep learning curve.

3.2 Using the Program's Wizards

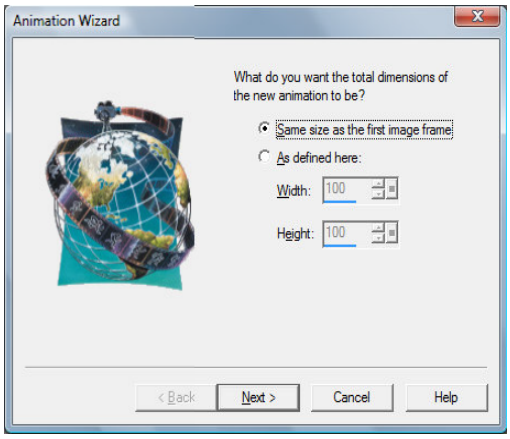
The Animation Wizard provides a quick, automated way to create an animation. Once you start up the wizard, you are guided through the process by a series of simple wizard pages on which you choose all the properties you'll need to create an animation.

Starting the wizard

- Start the Animation Wizard in one of these ways:
  i. Choose **File>Animation Wizard,** or
  ii. Click the **Animation Wizard** button on the toolbar.
- A series of wizard pages will appear, prompting you in creating an animation. After finishing each page, click the **Next** button at the bottom of the page to move to the next page. You may more forward or backward by clicking the **Back** and **Next** buttons to Wizard pages.

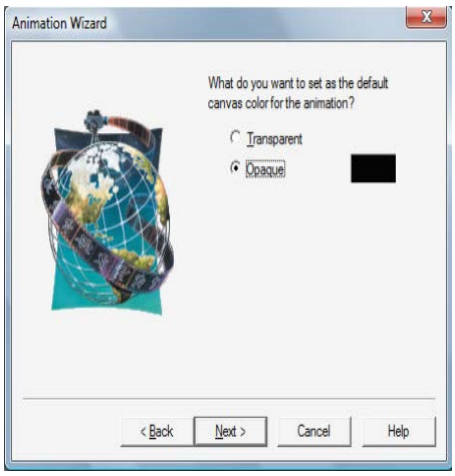
The first page of the Animation Wizard prompts you to set dimensions of the animation frames.

- Choose the "same size as the first image frame" option if you want all frames to match the size of the first frame (you will then add the first frame in a later Wizard page).
- Choose the "As defined here" option to activate the Width and Height edit the boxes for you to set the exact dimensions of the animation frames. Dimensions are measured in pixels.
- Click **Next** to move to the next Wizard page.



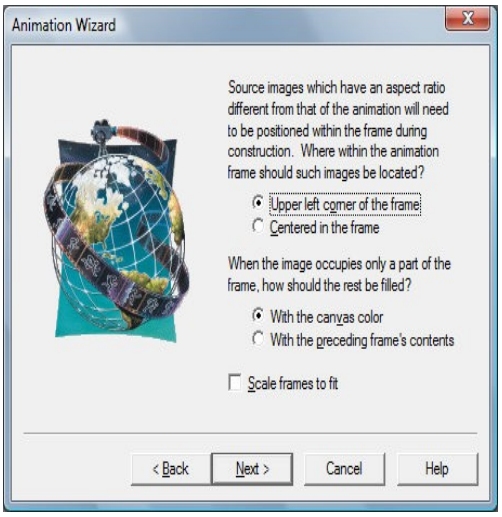
The second page of the Animation Wizard prompts you to set a transparent or an opaque canvas colour.

- Choose the "Transparent" option to allow any images behind your animation to show through in the canvas. A transparent canvas is indicated by the current colour setting in the "Transparency" tab of the General Program Preferences.
- Choose the "Opaque" option to select a canvas colour for your animation. The current canvas colour appears in the colour box to the right of this option. Left-click inside this box to display the Colour dialogue box; right-click inside this box to display the Recent Colours dialogue box. You can then choose your custom colour. The canvas will use the dimensions you set in the previous Wizard page.
- Click **Next** to move to the next Wizard page.



The third page of the Animation Wizard prompts how to place frames in the animation. If the images to be added do not have he same dimension as the frame size, then set in the first Wizard page, choose one of the following positioning options:

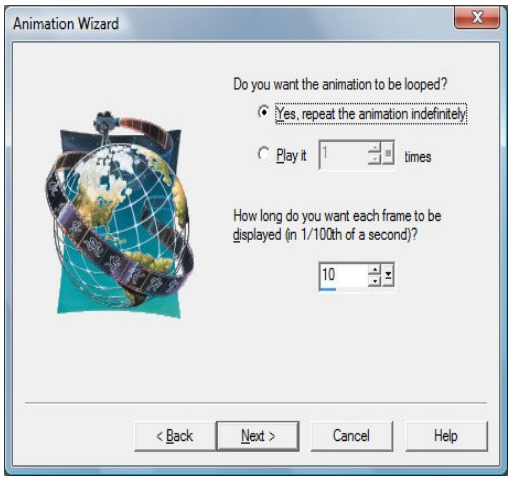
- Choose the “Upper left corner of frame” option to align all images having aspect rations different than the first image in the upper left corner of their image in the upper left corner of their respective frames.
- Choose the “Centred in the frame” option to centre all images in their frame regardless of each image’s aspect ration.
- If an image's dimensions are smaller than the first image, the empty area surrounding the image can be filled in one of two ways:
- Choose the “With the canvas colour” option to fill in the smaller-sized image’s empty area with the canvas colour.
- Choose the “With the preceding frame’s contents” option to fill in the smaller-sized image’s empty area with the contents of the previous frame. If there is no previous frame, the “with canvas colour” option will be used.
- If images need to be scaled frames to fit inside frames:
    - Mark the “Scale frames to fit” check box. This will resize the image to fill the frame while maintaining the image’s aspect ration. If you do not mark this check box, parts of images that have large dimensions than the frame size may not be visible.
- Click **Next** to move to the next Wizard page.



The fourth page of the Animation Wizard prompts you in setting the looping and delay animation properties.

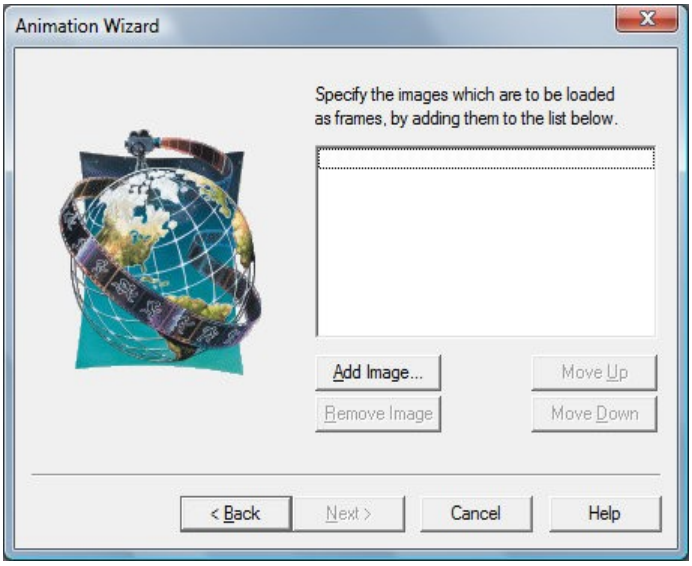
- Choose the “Yes, repeat the animation indefinitely” option to continuously cycle your animation until you manually stop it (see the Note below). Choose the “play it in times” option to play your animation the number of times you set in the edit box.
- Set the display time for each frame in the display time edit box. All frames in the animation will be set to the same display time. These values can be changed later while editing the animation.

- Click **Next** to move to the next Wizard page.



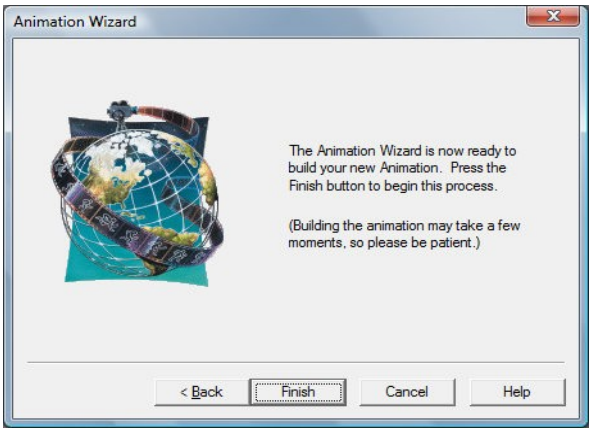
The fifth page of the Animation Wizard prompts you in adding images to your animation. You must include at least one image to create an animation.

- Click the **Add Image** button. The open dialogue box will appear.
- Choose the file(s) for your animation.
- To select multiple images at once from the Open dialogue box, hold the **<Ctrl>** key while clicking on filenames. You can also select consecutive files by holding <**Shift**> and clicking on the first and last filenames in your selection. If your image files are located in more than one folder, you will need to re-enter the Open dialogue box for each folder.
- If you wish to delete an image you have added to the list, do so by clicking on the filename to select it and then clicking the Remove Image button.
- Verify the order of your images and reorder any of them by selecting one or more image files and clicking on the Move Up and Move Down buttons.
- At the end of adding images, click the **Next** button to move to the final Wizard page.



The final page of the Animation Wizard prompts you to finalize the Wizard to create the animation.

- Click the Finish button. The Animation Wizard will generate your animation, close the Animation wizard pages, and open the animation in a Frames View window.
- To see what your animation looks like when played, choose **View > Animation,** or click the View Animation button on the toolbar.
- The Play View window will appear and the animation will play.



3.3 Saving Animation

- To save changes to an animation, choose **File > Save,** or click the Save button on the toolbar. If you are saving modifications to a previously saved animation but are not choosing a different animation format, choosing Save will simply save the file to the hard disk.
- If you are performing either of the following actions:
  - Saving a new animation

- Saving an existing animation to another file format by choosing **File> Save As.**

- The **Save As** dialogue box will appear. Available file formats include GIF, MNG, AVI, FLC, ANI, and FLI. Follow these steps to save the animation.
- To save the file in a different directory, choose the new directory in the **"Save in"** drop down box. If necessary, use the up one Level button to help navigate, or the Create New Folder button to create a new folder.
- To rename the file, enter the new name in the "File name" field.
- To choose a new file type, do so in the **"Save as type"** drop down box.
- Click the **Save** button. To save the file in MNG format, the file will be saved and the dialogue box will close. To save in GIF, FLC, FLI, or AVI format, additional dialogue boxes will appear as described in the next section.

3.4 Optimising the file

Saving an animation in GIF, FLC, FLI, or AVI, format starts up Animation Shop's optimisation process. Use the second page, **Animation Quality Versus Output Size,** as described below:

- Adjust the optimisation slider on the left side of the wizard page to one of the four levels indicated by the mark on either side of the slider. When optimising a file, you can choose to preserve image quality and consequently save a larger file, or you can sacrifice some image quality for a smaller file size. Note that the window to the right of the slider will display details specific to the slider setting.

Mark the "Use these settings when saving unoptimised files" check box to skip the optimisation interface and have Animation Shop automatically optimise with the current settings whenever an animation file is saved. Do not mark this check box if you wish to use the optimisation interface when saving a file.

- Click the Customise button to access these additional optimisation settings:
  - Customising Colour Setting.
  - Customising Optimisation Settings
  - Customising Partial Transparency Settings
  - Customising Canvas Colour Settings

Use the third page, **Optimisation Progress,** as described below:

- This wizard page merely monitors Animation Shop's progress in optimising your file. When the process is finished, click the **Next** button.

Using the fourth page, Optimisation Preview, as described below:

- This Wizard page allows the preview of optimised animation before completing the Optimisation Wizard. At the end of preview, click the **Next** button.

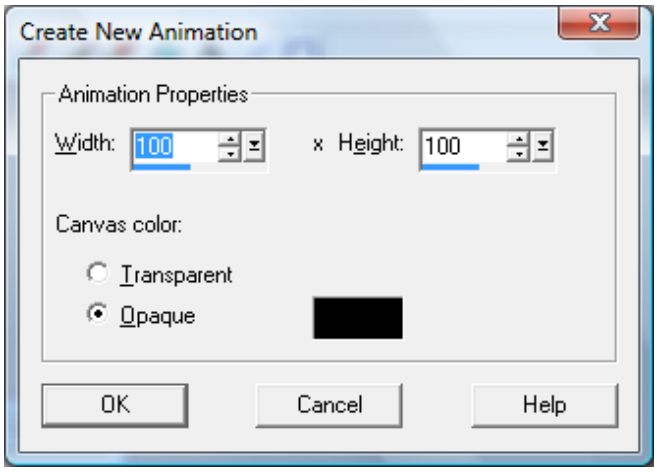
Use the fifth page, **Optimisation Results**, as described below:

- This Wizard page provides information about the animation's file size and estimated download times at various speeds. This can be helpful for animation to be used on a web page. The "Current File" column displays pre-optimisation file information. The "Optimised File" column displays file information after optimisation.
- Click the Finish button. The animation will be modified based on the wizard page choices and the Optimisation Wizard will close.

3.5 Creating New Animation

Using the New Animation dialogue box:

- Choose **File>New**. OR press **Ctrl+N.** OR click the New Animation button on the toolbar. The Create New Animation dialogue box will appear.
- Use the dialogue box as follows:
  - Set the width and height pixel value in the "Width" and "Height" edit boxes.
  - Set a canvas colour for the animation by choosing either the "Transparent" option or the "Opaque" option. Choose "Transparent" to use a transparent canvas. The "Opaque" option is used to for solid canvas colour. The current colour is displayed in the colour box next to this option. Left-click inside this box displays the Colour dialogue box; Right-click will display the Recent Colours dialogue box. You can then choose your own canvas colour.
- Click the OK button in the Create New Animation dialogue box.



The new animation will be created and will contain one frame using the dimension s and canvas selected.

3.6 Animation Effects and Transitions

The five items in the Effects menu provide a variety of transitions and effects on can apply the animations. By inserting and applying these transitions and effects, one can quickly, easily, and automatically create a sequence of dynamic animation frames.

The five menu items allow the use of the application to:

- Insert an image transition
- Insert an image effect
- Apply an image effect
- Insert a text effect
- Apply a text effect

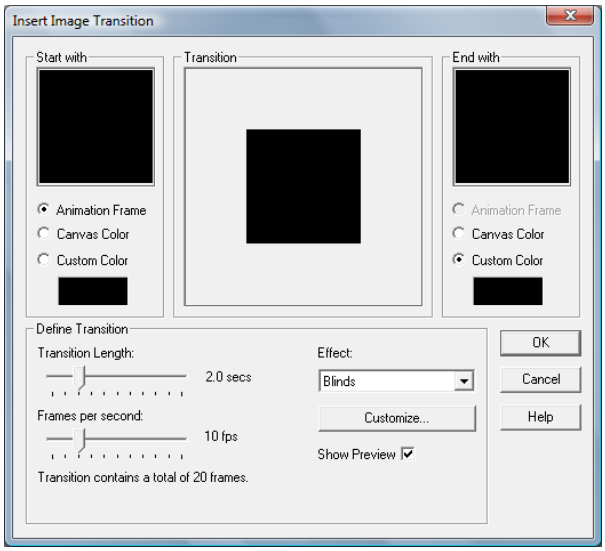
3.6.1 Inserting an Image Transition

Image transitions move user from one image to another using a visual transformation. The transitions are created by rendering and adding frames to an animation. There are many different effects one can create using the various transition offers by Animation Shop. Some transitions work best between two dissimilar images, and some work best with similar images.

To experiment the effect that works best for animation:

- Open and animation
- Select one frame to apply the transition. This is called source frame.

- Choose **Effects>Insert Image Transition**, or right-click on the selected frame and choose **Insert Image Transition** from the context menu. The Insert Image Transaction dialogue box will appear
- Define the transition using the options in the Insert Image Transition dialogue box
- Click OK when finished with the definition. The transition frames will be added after the source frame



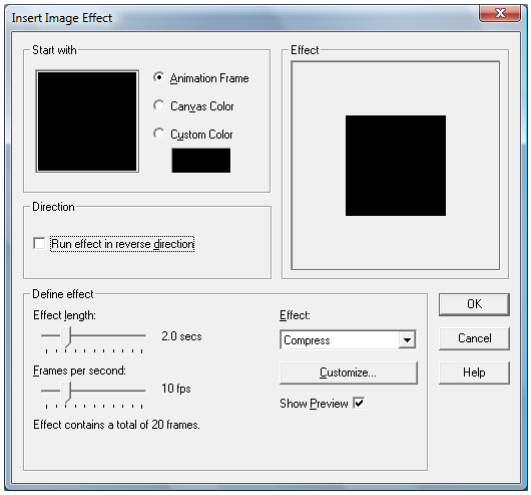
3.6.2 Inserting an Image Effect

Inserting an image effect provides a way to create additional fames using a visual transformation. There are many different effects that can be created using the various options offered by Animation Shop

To experiment the effect that works best for animation, insert an image that effect as described below:

- Open and animation
- Select one frame to apply the effect either before or after. This is called the “Start with” or “source” frame. If multiple frames are selected, the effect would be added relative to the current frame by the “current selection” border colour defined in the Frame View tab of the General Program Preferences. If no frames are selected, the most recently selected frame will be the source frame.
- Choose **Effects>Insert Image Effect**, or right-click on the selected frame and choose **Insert Image Effect** from the context menu. The Insert Image Effects dialogue box will appear
- Define the effect using the options in the Insert Image effect dialogue box

- Click OK when finished with the definition. The new frames will be added to the animation.

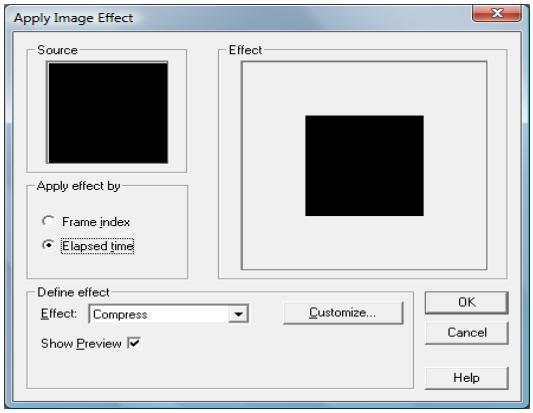


3.6.3 Applying an Image Effect

Applying an image effect provides a way to replace selected frame with frames using a visual transformation. There are many different effects that can be applied using the various options offered by Animation Shop.

To experiment the effect that works best for an animation, apply an image effect as described below:

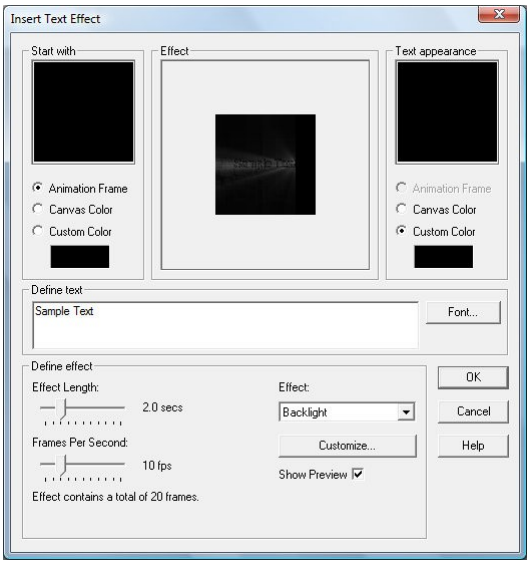
- Open and animation
- Select a frame or frames (called the “source” frame(s)) to apply the effect.
- Choose **Effects>Apply Image Effect**, or right-click on a selected frame and choose **Apply Image Effect** from the context menu. The Apply Image Effect dialogue box will appear
- Define the effect using the options in the Apply Image Effect dialogue box
- Click OK when finished with the definition. The effect frame(s) will be replaced with frames containing the effect you applied.



3.6.4 Inserting a Text Effect

Inserting a text effect provides a way to create additional frames the provide an eye-catching textual transformation. There are a variety of text effects you can use. Experiment to find the effect that works best for you're an animation is demonstrated below:

- Open an animation
- Select a frame or frames to insert the effect. If multiple frames are selected, the effect will be inserted relative to the current frames. If no frames are selected, the most recently selected frame will be the source frame.
- Choose **Effects>Insert Text Effect**, or right-click on a selected frame and choose **Insert Text Effect** from the Frame context menu. The Insert Text Effect dialogue box will appear
- Define the effect using the options in the Insert Text Effect dialogue box
- Click OK when finished with the definition. The new frames will be added to the animation.



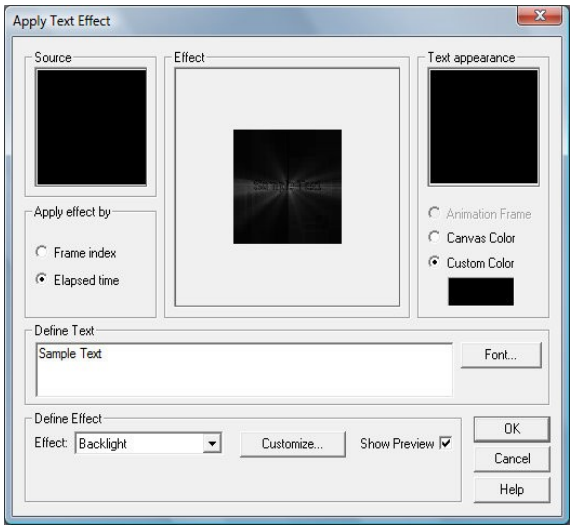
3.6.5 Apply a Text Effect

Applying a text effect provides a way to replace selected frames with frames that provide an eye-catching textual transformation. There are a variety of effects you can apply using various options offered by Animation Shop. Experiment to find the effect that works best for an animation is demonstrated below:

- Open an animation
- Select a frame or frames to insert the effect. If multiple frames are selected, the effect will be inserted relative to the current frames. If

no frames are selected, the most recently selected frame will be the source frame.

- Choose **Effects>Apply Text Effect**, or right-click on a selected frame and choose **Apply Text Effect** from the Frame context menu. The Apply Text Effect dialogue box will appear
- Define the effect using the options in the Apply Text Effect dialogue box
- Click OK when finished with the definition. The new frames will be replaced with frames containing the effect applied.



SELF -ASSESSMENT EXERCISE

i. Why would you prefer using Animation shop wizard to create an animation?
ii. What is the possible effect of using animation wizard?

4.0 CONCLUSION

It has been emphasised that Animation provides an eye-catching transformation effect on texts and objects; it becomes a must used event in web design especially as a mean of advertising a website. Animation may be use to display the area of emphasis to the user, it is sometimes hyperlinked to other page in a site or to another site entirely. So it has become and essential to especially for games and advertisement on the Web.

5.0 SUMMARY

In this unit, emphases have been laid on how to create animation using Animation Shop wizard and new one from the scratch using the same application; and how to save an animation. The bulk of animation operation is on Effect and Transition, as result of this, much time was

dedicated to look into how insert image transition, image effect and text effect, more so how to apply image and text effects were also discussed.

6.0 TUTOR-MARKED ASSIGNMENT

i. What is animation?
ii. Mention two (2) uses of animation
iii. Why would you prefer using Animation shop wizard to create an animation?
iv. What is the possible effect of using animation wizard?

7.0 REFERENCE/FURTHER READING

CTBD and UMSB (2007). *Notes: ICT Training Programme for Nigerian Executive*. Multimedia University, Melaka.

UNIT 5 MACROMEDIA FLASH

CONTENTS

1.0 INTRODUCTION

It has been said in the previous units that HTML is ideal for creating static websites where text and images are placed at fixed position. But is does not really support dynamic web design where text, images and animation are moving around on the screen. In this unit, we shall look at a dynamic web animation application for easy and quick design of animation on a web page.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- list the requirements to viewing flash movies
- draw and explain Macromedia flash workspace
- use Flash tools to draw, paint, fill, erase, select, resize, move, reshape, and transform objects in flash workspace
- add text using text tool
- segment and group objects.

3.0 MAIN CONTENT

3.1 Multimedia Flash

Traditionally, these effects were achieved with animated GIF images or java applets. Flash is web dynamic application software that blends text, graphics and animation together in an unimaginable way for a fanciful web design. Flash are small programs, like java applets, that can be embedded into HTML pages. It is easier to create animation in flash without programming skills. Unlike animation GIF, Flash supports interactivity. In Flash, user can simply control animation. This makes dynamic web design more interesting with Flash, and user can make significant progress in his/her design in a very short time.

3.2 Viewing Flash Movies

In order to view flash movies, a flash player is needed or Flash plug-in to be installed. The shockwave Flash plug-in come with the newest Netscape browser and from Windows 98 upward. It is also available for downloading free on the Internet from Macromedia site.

3.3 Flash Drawing and Painting Tools

The tools in the toolbox allow the user to draw, paint, select, and modify artwork, as well as change the view of the Stage. If it doesn't appear, go to Window>Tools.

The toolbox is divided into four (4) sections:

i. The Tools section – contains drawing, painting and selection tools
ii. The View section – contains tools for zooming and painting in the application window.
iii. The Colour section – contains modifiers for stroke and fill colours
iv. The Option section displays modifiers fro the selected tool, which affect the tool's painting or editing operations.

Drawing with Pencil Tool

Pencil tool is used in much the same way a real life pencil is used to draw. Simply select the tool and drag on the Stage to draw with the pencil tool. You can press the Shift key while dragging to constrain line to vertical or horizontal directions. You also specify the colour with the Stroke Colour Tool. You can apply smoothing and straightening to the lines by setting the **Pencil mode modifier**.

- click the Pencil tool and choose Straighten from the Pencil Mode modifier.
- on the Stage, try to draw a line.
- next draw a square and a rectangle
- Choose Smooth from the Pencil Mode modifier and draw a wave
- try to use the other mode modifier.

When you select the Pencil tool, the Property Inspector displays its settings. You can select the colour, the thickness and the style of the line draw with the Pencil tool.

Drawing with Oval Tool

The oval tool is used to make circular objects.

- Select the tool and drag on the Stage to draw a circle that spans between the start and the end point.
- Press the Shift key while dragging to ensure your circle is perfectly round
- Specify the colours with the **Stroke** and **Fill Colour** Tools.

Drawing with Rectangle Tool

The Rectangle Tool is used to make rectangle objects.

- Select the tool and drag on the Stage to draw the rectangle that spans between the start and the end points.
- Press Shift key while dragging to constrain the proportions to for the rectangle, to ensure the rectangle I s a perfect square.
- Specify the colours with the **Stroke and Fill Colour** tools
- Specify rounding of the corners with the with **Round Rectangle Options** at the bottom of the toolbox.

Drawing Lines with Line Tool

The Line tool is pretty much the same as with the Pencil tool except that it can only draw straight line

- Select Line tool and drag on the Stage to draw a straight line between a start and end points
- Press the Shift key while dragging to constraint the possible angles for the line. By default this will only allow for lines that are either horizontal, vertical or 45 degrees between.
- Change the stroke colour because Line tool only draws outline.

3.4 Painting and Filling Shapes

Painting with Paint Brush

Paint Brush tool draws brush-like strokes, as if you were painting. It allows user to create special effects including calligraphic effects. It draws both a fill and an outline. Shift key can be pressed while dragging to constrain drawing to vertical or horizontal directions

Brush Modes
Specify the brush Modes in order to define the way the tool works

- **Paint Normal** – paints over lines and fills on the same layer
- **Paint Behind** – paints in blank areas of the Stage on the same layer, leaving lines and fills unaffected
- **Paint Selection** – applies a new fill to the selection when you select the Fill Modifier or the Fill panel.
- **Paint Fills** – paints fills an empty area, leaving lines unaffected.
- **Paint Inside** – paints the fill in which you start a brush stroke and never paint lines. This works much like a smart colouring book that never allows you to paint outside the lines. If you start the point in an empty area, the fill doesn't affect any existing fill areas.

Brush Size: In Brush options, there is a drop that lets you select the size of the brush. Simply click the brush you want.

Brush Shape: This option lets you select the shape of the brush. Experiment this with different shapes and see the effect.

Filling with Paint Bucket tool

This tool can change the colour of the existing paint and also fill empty areas surrounded by lines. It can paint with **solid colours**, **gradient** fills and **bitmap fills**. Paint Bucket tool can also be used to adjust the size, direction and centre of gradient and bitmap fills. It can also be used to fill areas that not entirely enclosed.

Draw a circle with Oval tool

- Click the Paint Bucket tool and click the Colour tool and choose the gradient colour
- Click the middle of the circle and fill it with gradient colour
- Choose one of the Close options to have Paint Bucket tool fill a shape that has gaps.

Using the Fill Transform tool

This tool can adjust the size, direction or centre of a gradient bitmap fill.

- Select the Fill Transform tool
- Click on the shape fill with gradient fill – the centre point and the bounding box appear together with the editing handles
- Experiment with each handle to change the width, size and the rotation of the fill.

Ink Bottle tool

This tool is used to change the stroke colour, line width and style of lines or shape outlines. It is specifically used for lines.

- Click the Ink Bottle tool
- Change the stroke properties using the Property Inspector such as colour, width size and style of the stroke.
- With the tip of the Ink Bottle pointer, click on the edge of the oval.

3.5 Erasing

The Erase tool works like a classic eraser. It is simply selected and drag over the Stage on the object to be erased. When double click, it deletes everything on the Stage.

Using Eraser Mode Option

Specify the **Eraser Mode** in the options listed at the bottom of the toolbox.

Erase Normal – erases strokes and fills on the same layer
Erase Fills – erases only fills; stroke are not affected
Erase lines – erases only strokes, fills are not affected
Erase selected fills – erases only the currently selected fills and does not affect strokes, selected or not.
Erase Inside – erases only the fill on which you begin the eraser.

Faucet Options

This option is used to remove segments of filled areas

- Select the Eraser tool
- Click the Faucet modifier
- Click the stroke segment or filled areas you want to delete

3.6 Selecting Objects

To modify an object, it must be first selected. Macromedia provides a variety of methods for making selections, such as Arrow tool, Lasso tool, and keyboard commands. Flash highlights objects and strokes that have been selected with a dot pattern. Selected boxes are highlighted with bounding boxes in outline layer colour that contains selected group.

3.7 Selecting Objects Using the Arrow tool

It allows selection of entire set of objects by clicking an object or dragging to enclose the object(s) within a rectangular selection marquee
To select an object:

- Select the Arrow tool and
- Click the object

To select connected lines

- Select the Arrow and
- Double-click on of the lines

To select a filled shape and its stroked outline

- Select the Arrow tool and
- Double-click the fill

To select objects within a rectangle area

- Select the Arrow tool
- Drag a marquee around the object or objects you want to select (instances, groups, and type must be completely enclosed in the selection).

3.8 Moving Objects

Objects can be moved with mouse

- Select the Arrow tool
- Select the line
- Click on the line while holding down the mouse button, move to the new position

Or Use the arrow key on the keyboard to move the object

3.9 Reshaping Lines and Shapes

Use Arrow tool to turn a straight line into a curve. Make sure the line is selected

- Select the Arrow tool
- Click on the line, and while holding down the mouse button, drag the curve.
- Release the mouse button and the curve is finished.

3.10 Transforming Objects

Free transform tool is use to transform objects, groups, instances or text blocks. Transformation can be performed individually or you can combine several transformations, such as moving, rotating, skewing, and distortion

- Move the pointer over and around the selection
- The pointer changes to indicate the available transformation function on the selection.

3.11 Segmenting and Grouping

When you place a line or shape of the same colour to overlap each other, Flash will automatically combine them into one shape or line. If the overlapping is on different colours, Flash will segment them when you move them away. These effects can be prevented by groping the objects.

Grouping Objects:

- Select the objects you want to group
- Click **Modify>Group**
- Modify the content of the content of the group by double-clicking using the Arrow tool on the object
- When you finish, double-click outside the group.

3.12 Adding Text Using Text Tool

To create text, place text block on the Stage using the **Text tool**. When creating static text, it can be placed on a single line, this expands as you type; or in a **fixed-width block,** or **fixed-height block** that respectively expands and wraps words automatically. You can create a fixed-width by dragging the handle on the corner of a text block. Set the font and paragraph attributes of text using the **Property Inspector**. In creating a

text, Flash uses current text attributes. To change the font attribute of existing text, you must first select the text.

Breaking text apart

- Click the Arrow tool
- Choose **Modify>Break Apart**. This will break the text into individual characters.
- Choose **Modify Break Apart** again to convert them into shapes
- Now you can manipulate the text.

SELF-ASSESSMENT EXERCISE

Outline how to use Paint Bucket to fill an oval object. Show the result of the steps.

4.0 CONCLUSION

The complexity of coding is an enormous task for animation of objects. Application software like Macromedia Flash becomes an inevitable tool for animation design in web-based programming. This application relieves the designer of the web of another dimension of programming possibly from learning how to code in java.

5.0 SUMMARY

In this unit, we studied Macromedia Flash as a package that can be used ease animation in web design rather the stressful exercise of coding. The requirements for Flash movie were mentioned. Various tools used for animation design were discussed in sufficient detail. Objects' movement, shaping, transformation, segmentation, and grouping were discussed, and the schematic steps to carry these operations out were outlined. More so, the unit explained manipulation of text as an essential component of animation.

6.0 TUTOR-MARKED ASSIGNMENT

Questions

i. Out line how to draw a triangle using Pencil tool. Carry out the steps and show your result.
ii. Out line how to use Paint Bucket to fill an oval object. Show the result of the steps.

7.0 REFERENCE/FURTHER READING

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MODULE 5 WEB MANAGEMENT

Unit 1 Website Planning and Management

UNIT 1 WEBSITE PLANNING AND MANAGEMENT

CONTENTS

1.0 INTRODUCTION

Anything that will come out well and successfully must have a good initial plan. Planning is the bedrock o f every good success. If there is good planning and commitment to the plan, there would definitely be a desired success. It is not all successful projects that best serve the designers effectively but rather a successful and maintained project. Website designs not an exception to this golden rule of life, in fact it is more required in this most dynamic activity of life. Before designing a site, there must be a good plan, the plan must follow a standard to which the designer must be committed, although innovations that may improve the quality of the design may come in the course of the design and implementation. After the design, the site must be maintained through regular improvement and updating.

2.0 OBJECTIVES

At the end of this unit, you should be able to:

- set a plan overview of the site to be designed
- set the design architecture
- describe interface design
- draw a good layout style for a design project
- maintain the site for consistent use.

3.0 MAIN CONTENT

3.1 Site Planning and Management

Site planning and management is the life wire of a site. An unplanned site will produce a poor outlook with many deficiencies in operation, and eventually discouragement to the clients visiting the site. An un-updated site contains old tails; also un-maintained site will soon go into extinct. So the interface, the navigation, the menu/button architecture, the page layout, the database etc. must be adequately planned and maintained. This unit consider a broad overview of site planning and management.

3.2 Designing the Architecture of a Site

Design architecture of a site requires series of questions to be answered by the designer of the site. These probing questions spell out the mostly the entire demand from the site. Some standard questions to be considered by a website designer are highlighted below:

1. If one currently exists, what are the good and bad points of the existing site?
2. What is the purpose of the proposed site?
3. Who are the Potential Users?
    - Potential students
    - Existing students
    - The 2 above
    - Other researchers
    - Funding bodies, Industry with lots of money
4. What do those potential users want?
    - Interesting projects
    - A way of telling the world about their projects
    - Looking for opportunity to collaborate
    - Looking for new products that will make them lots of money

5. What is the communication goal to each group of potential users?
    - Persuade them to do a research project in the lab
    - To secure a job
    - For collaborate in research or business
    - Gross income multiplier (GIM) - lots of money
6. Are there corporate constraints that you have to conform to?
    - University
    - Informatics
    - International software standard
    - Clients culture
    - Personal design potentials
7. What information could be presented?
    - existing research projects
    - future research projects - risky
    - research students
    - research equipment
    - staff and their interests
    - research papers, thesis and publications - list of pdf
    - Sports and Games
    - Legendaries
    - Subjects and education
    - Business information
8. How do you structure the information?
    - by categories, or
    - by in list for, or
    - by as set of links, or
    - by departments, or
    - a way yet to be determined
9. What is the purpose of the laboratory?
    - to do research
    - to build robots
    - to train students in research
    - to get grants
    - to publish papers
    - to develop web pages
10. Why would any of the potential users bother to look at the site?
11. Is it worth developing?

After all these consideration, the designer may then decide whether to continue with the design of leave it.

3.3 Layout and Human Interface

After been convince of the need to continue the design, the next thin to put into consideration is the in interface of the site. The interface can attract or dispel the clients that visit the design. In designing the interface, some principles should serve as guide for the builder of the site.

3.4 Interface Design Principles

1. Feel natural to the user: use an abstraction of a situation we are familiar with e.g. spread sheet to an accountant
2. Put the user in control: the user decides what next not the computer. The User wants to know: Where am I? What can I do here? How did I get here? How do I get back? Return to index at the bottom of every page; Use feedback to inform the user and give her confidence
3. Consistency: eliminates ambiguity; the same symbol should always mean the same thing the same icon should always cause the same action
4. Redundancy causes confusion: more than one way to do something can confuse user, although this may be justified for different input modes - text link + image rollover, many similar options may clutter user interface
5. Consistent style: consistent look and feel help many pages in a site to feel part of a whole site; change to site look and feel can go to a new site or sub-site; re-using buttons etc will speed up down loads due to caching
6. On dynamic pages always give the user the opportunity to validate input, this eliminates costly errors entering the system, and gives the user confidence

3.5 Page Layout Styles

A good layout style achieves the following goals:

- consistent look and feel through out site
- useful Information presented in an attractive manner.
- fluid navigation with simple fast links.
- reduced time in web development through use of templates

3.5.1 Purpose of top (home) page

The home page:

- serves as the front door which is to be opened to get in
- is an index to the site
- provides Information about the site
- provides information about the establishment
- should give everything you ever want to know about the site

Top page should be meaningful even when no images have been down loaded. Limit the information detail on each page - users don't scroll, they navigate using the visible options.

A sense of proportion brings relationship between elements and should not be cluttered

There should be content hierarchy:

- what is the 1st thing you want users to notice on your page?
- when you open a page, what are the 1st 3 things you notice?
- do this match up with the goals of the site?

Abuse of screen space should be avoided (negative space)

The content of the home pages should be structured and not random
Navigation or Information: How much of screen area is used for navigation? is a question that needs to be answered. Good pages should be dominated by content of interest to user, not by navigation (at least 50% preferably 80% of area should be content)

3.5.2 Comparing pages

The following questions should be asked to evaluate the effectiveness of the layout:

- What is the 1st thing you notice?
- What use is made of colour? - monotone, 2 or 3 colours, conservative, bright, overbearing
- What use is made of depth? - flat, depth by shading, 3D
- Is related information grouped? - is grouping effective?
- How are those groups separated? - negative space, colour, navigation style
- Are several navigation styles used? - how are they separated?
- What is the proportion of content to navigation?

- What is your emotional response to the page? - bored, excited, like to be here

3.5.3 Common Layout Styles

Bland: this is uninteresting, lacking in creativity, not attractive.

Simple Index Style: navigation dominates, not much information content, efficient, not very creative.

Advanced Index Style: use graphics, images, roll overs to give more attractive feel and to increase information content.

Graphical Index Style: increases content with images of products - this one is gaudy, without a lot of content.

Popup Menu Style: caters for multiple users, gives large indexes without using lots of space, modeless interface.

Side Tab Style: wastes page space below the tabs, suited to frames

Top Tab Style: at top of every page -> consistent look and feel, flexible navigation, user can get to anywhere in site from any page, minimises use of page space for navigation, and allows the use of components and templates.

Site Navigation

Whether you use buttons, roll overs, tabs, or text links to navigate as a site grows it can become a tangled web of interconnections if you don't plan it. The result is a site that is difficult to navigate and expensive to maintain.

There are two views of site layout: the navigation view and the links view

Navigation view: this view connects the pages in the site together

Links view: the page links the various digital contents in the website, text files, graphical objects, and video contents.

3.6 Site Maintenance

Web activities is highly competitive, for a site to met regular demand of users, it must be maintained. Maintenance entails regular update of website information/database and security of data from corruption and unauthorised access either on the repository or during transmission. The follow must be regular activities of site designer or owner:

3.6.1 Regular Updates

In most cases, every client visiting a site is expecting the latest information on the site or search item(s). One crucial demand of every websites is a regular update on information on the site. User are always excited when retrieve an article on the day it was published on the web. Consistent occurrence of such makes the client a regular customer of the site and an advocate of the site to his/her user group. So it is required that information on the site be updated regularly

3.6.2 Database Security

The most important asset of an organisational dynamic website is the site's database. Every effort must be put in place to ensure high security of the database. There are various ways to keep a database secure:

A. Passwords

A password is a secret code that offers a user access to a database for creation, modification or deletion. There are two types of passwords to database access. The type of password protection chosen determines the level of user access's to the database and the objects it contains.

i. Database password

With database password, users must enter that password before they are allowed to open the database. Adding a database password is an easy way to prevent unwanted users from opening your database; however, once a database is open, no other security measures are provided unless user-level security has been defined as well. Database password is stored in an unencrypted form. If this will compromise the security of the password-protected database, then define user-level security to control access to sensitive data in that database.

ii. Security account passwords

User-level security passwords are used for a workgroup. When user-level security has been defined for a workgroup; you can use a security

account password. A security account password ensures that no user can log on using another user's name.

B. Temporarily Restricting Database Access

This is another measure use to secure the contents of a database. Database administrator, often needs to temporarily restrict access to a database during maintenance. The best way to do this is to put the database in single-user mode or to allow only members of database owner, database creator, and system administrator to access the database.

C. Data Encryption or decryption

Encrypting a database compacts the database file, and makes it indecipherable by a utility program or word processor. Encrypting a database doesn't restrict access to objects by users. Decrypting a database reverses the encryption. One must either be the owner of the database or, if the database is secured, a member of the Administration group with “open exclusive” permission to encrypt or decrypt the database. It is recommended that a copy of the original database under a different name, drive, or folder before encrypting it.

During transmission on the communication channels, it is possible to intercept data packets by the hackers; this may be to spy the content of the packet or to corrupt the packet making it unusable by the client. Therefore, data encryption is necessary to prevent hackers during data transmission.

3.6.3 Authentication of Web User

When building a Web site for a company intranet or a commercial server for Internet commerce, the first step in securing the Web application is to understand the relationship of operating system and the Web server application (e.g. IIS) security processes. Authentication is the process of determining the identity of a user. Once a user has been positively identified, Web Server application can then control what resources that user can access.

3.6.4 Securing ASP and HTML Pages

The primary function of Web Server is to download, under controlled access conditions, HTML and ASP pages from the local server to the remote browser. Ensure limited access to the application's Web pages and graphics by setting directory and file permissions on the .htm, .asp, and .gif files.

Also, access can be programmatically controlled to certain pages by establishing user-level permissions in a Session object. Let the user provide a logon name and password, and then validate the information against a database. Once a legitimate user is identified, get the user's permission level and store it in a Session object for later use. Then one can hide certain HTML links based on the permission level that is stored in that user's Session objects.

4.0 CONCLUSION

It is not an over-emphasis to say that the usage and dependability a website depend directly on planning and maintenance of the site. An unplanned site will automatically produce a poor design. A poor design looses clients' interests and confidence in the site. Therefore, there is need for pre-planning of a web design and its post-implementation maintenance.

5.0 SUMMARY

This unit has emphasised the need for planning and maintenance in a web design like any other software design. Probing questions that can facilitate a good web design were raced under designing the architecture of the site. Human interface and page layout styles, which are fascinating to the site users were explained in sufficient details. Justice was also done to maintenance of the site's components like the database, web server application, and the applications in the client-tier and middle-tier layers – HTML and ASP respectively.

6.0 TUTOR-MARKED ASSIGNMENT

Theory

i Enumerate the web design interface principles you have studied in this unit.

Practical assignments

ii. Visit ten sites you commonly use and describe their layout styles? Does each site conform to good user interface principles in 1 above?
iii. Use the above principles and choose one of the styles to design the page layout for the web site you are developing.

7.0 REFERENCES/FURTHER READING

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