African Virtual University

Applied Computer Science: ITI 4105

WEB TECHNOLOGIES AND INTERNET PROGRAMMING

Julius Q. Azasoo

Foreword

The African Virtual University (AVU) is proud to participate in increasing access to education in African countries through the production of quality learning materials. We are also proud to contribute to global knowledge as our Open Educational Resources are mostly accessed from outside the African continent.

This module was developed as part of a diploma and degree program in Applied Computer Science, in collaboration with 18 African partner institutions from 16 countries. A total of 156 modules were developed or translated to ensure availability in English, French and Portuguese. These modules have also been made available as open education resources (OER) on oer.avu.org.

On behalf of the African Virtual University and our patron, our partner institutions, the African Development Bank, I invite you to use this module in your institution, for your own education, to share it as widely as possible and to participate actively in the AVU communities of practice of your interest. We are committed to be on the frontline of developing and sharing Open Educational Resources.

The African Virtual University (AVU) is a Pan African Intergovernmental Organization established by charter with the mandate of significantly increasing access to quality higher education and training through the innovative use of information communication technologies. A Charter, establishing the AVU as an Intergovernmental Organization, has been signed so far by nineteen (19) African Governments - Kenya, Senegal, Mauritania, Mali, Cote d'Ivoire, Tanzania, Mozambique, Democratic Republic of Congo, Benin, Ghana, Republic of Guinea, Burkina Faso, Niger, South Sudan, Sudan, The Gambia, Guinea-Bissau, Ethiopia and Cape Verde.

The following institutions participated in the Applied Computer Science Program: (1) Université d'Abomey Calavi in Benin; (2) Université de Ougagadougou in Burkina Faso; (3) Université Lumière de Bujumbura in Burundi; (4) Université de Douala in Cameroon; (5) Université de Nouakchott in Mauritania; (6) Université Gaston Berger in Senegal; (7) Université des Sciences, des Techniques et Technologies de Bamako in Mali (8) Ghana Institute of Management and Public Administration; (9) Kwame Nkrumah University of Science and Technology in Ghana; (10) Kenyatta University in Kenya; (11) Egerton University in Kenya; (12) Addis Ababa University in Ethiopia (13) University of Rwanda; (14) University of Dar es Salaam in Tanzania; (15) Universite Abdou Moumouni de Niamey in Niger; (16) Université Cheikh Anta Diop in Senegal; (17) Universidade Pedagógica in Mozambique; and (18) The University of the Gambia in The Gambia.

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Course Overview

Welcome to Fundamentals of web technologies and internet programming

Fundamentals of Web Technologies and Internet Programming is one of the courses offered by Faculty of Information Technology and Multimedia Communication at African Virtual University (AVU). This course is aimed at: exposing students to the latest internet technology; exposing students to technology which can be applied in web application development; and exposing students to methods of developing interactive and dynamic web application. This course is worth 3 credit hours and should be covered over 8 to 15 weeks.

Prerequisites

- Principles of programming
- Introduction to structured programming
- Introduction to object-oriented programming

Materials

The materials required to complete this course are:

- Computer lab
- Requisite software
- Internet connection

Course Goal

The objectives of this course upon completion are to:

- Expose students to the latest internet technology;
- Expose students to technology which can be applied in web application development; and
- Expose students to methods of developing interactive and dynamic web application

Unit

Unit 0: Evaluation of prerequisite knowledge

This unit will introduce students with little or no programming experience to the exciting world of Web-based applications.

Unit 1: Fundamentals of the World Wide Web

This chapter will help you to know all the concepts and technologies that are at stake for the proper functioning of the World Wide Web.

Unit 2: Introduction to Web Technologies

This chapter aims to help you practice the basic languages for the web client-side. The languages studied are HTML, CSS, JavaScript and XML.

Unit 3: Cascading Style Sheets

In this session, you learn an easier way to give your Web pages a consistent format and look using style sheets.

Unit 4: Client-Side Scripting: JavaScript

This topic will explain some important concepts like the client-server concept, client-side programming and server-side programming and the use of events, before delving into insertion of JavaScripts into web pages.

Unit 5: Web Hosting

This chapter aims to help you understand all about domain names, web hosting principles and web application Deployment on to the server.

Assessment

Assessment Method

Component	Details
End-of-Trimester **Final Examination**	**Mark: 60%** **Duration:** 3 hours **Focus Areas:** Application, analysis and synthesis type questions **Note:** NO objective/Multiple Choice Questions or True-False Questions
Continuous Assessment	**Mark: 40%** **Assignments:** (30%) [At least 2 Major Coursework Assignments] **Online/Classroom Participation:** (10%) [2 – 4 Scheduled Forum Discussion Sessions]

Assessment Criteria for Assignment
• Generally, good assignment must meet the following criteria: • Meets the stated requirements of the assignments • Follows the specified format of the assignment • Clear and logical flow of the presentation of the required solutions/report • Assignment written in good English • Uses recent and appropriate sources • Uses proper citation & referencing technique

Marking Scheme for Final Grade

Grade	Marks	Grade Points	Description
A	80-100	**4.00**	Outstanding
A-	75-79	**3.67**	Very Good
B+	70-74	**3.33**	Good
B	65-69	**3.00**	Pass
B-	60-64	**2.67**	Conditional Pass (Subject to CGPA=>3.00
C+	55-59	**2.33**	(Conditional Pass (Subject to CGPA=>3.00
C	50-54	**2.00**	Conditional Pass (Subject to CGPA=>3.00
C-	45-49	**1.67**	Fail
D+	40-44	**1.33**	Fail
D	35-39	**1.00**	Fail
F	0-34	**0.00**	Fail

Schedule

Scheduled Tutorial Session	**Activities**	**Estimated time**
Tutorial 1 [Refer to Semester Calendar for Scheduled Dates	Tutorial Session on Course Overview and on the Course Modules of **Unit 0** of the Course. • Students on this Course should familiarize themselves with the details of the Course including the learning materials and resources; assignments requirements and submission deadlines and as well as the grading system of the course • Students are also expected to familiarize themselves with the supplemental learning resources and materials of the Course Module.	2 hours
Tutorial 2 [Refer to Semester Calendar for Scheduled	Tutorial Session on the Course Modules of **Unit 1** of the Course. • Completion of the Course Modules of **Unit 1** of the Course • Complete and submit the relevant Unit-based Activities, Exercises, Self-Check Assignments of the Course Modules of **Unit 1** of the Course.	2 hours

Tutorial 4 [Refer to Semester Calendar for Scheduled Dates]	Tutorial Session on the Course Modules of **Unit 3** of the Course. • Completion of the Course Modules of **Unit 3** of the Course. • Complete and submit the relevant Unit-based Activities, Exercises, and Self-Check Assignments of the Course Modules of Unit 3 of the Course. • Participation in 2nd Scheduled Forum Discussion Session.	2 hours
Tutorial 5 [Refer to Semester Calendar for Scheduled Dates]	Tutorial Session on the Course Modules of **Unit 4** of the Course. • Completion of the Course Modules of **Unit 4** of the Course. • Complete and submit the relevant Unit-based Activities, Exercises, and Self-Check Assignments of the Course Modules of **Unit 4** of the Course. • Participation in 2nd Scheduled Forum Discussion Session.	2 hours
Tutorial 6 [Refer to Semester Calendar for Scheduled Dates]	Tutorial Session- Revision for End-of-Semester Exam. • Completion of the Course Modules of **Unit 5** of the Course. • Complete and submit the relevant Unit-based Activities, Exercises, and Self-Check Assignments of the Course Modules of **Unit 5** of the Course. • Completion and Submission of 2nd Major Coursework Assignment.	2 hours

Tutorial 7 [Refer to Semester Calendar for Scheduled Dates]	End-of-Semester Exam • Students will be expected to take a 3 Hour End-of- Semester Exam on Campus	2 hours

Unit 0. Pre-Assessment

Unit Introduction

The purpose of this unit is:

- To determine the student grasp of knowledge related to this course
- Introduce students with little or no programming experience to the exciting world of Web-based applications
- Gain the student's attention
- Establish the purpose of the course
- Provide the overview of the course

Unit Objectives

Upon completion of this unit you should be able to:

- dentify the importance of the course
- Familiarize themselves with the details of the Course including the learning materials and resources; assignments requirements and submission deadlines and as well as the grading system of the course
- Familiarize themselves with the supplemental learning resources and materials of the Course Module.

Key Terms

Internet: The Internet is a gigantic collection of millions of computers, all linked together on a computer network. The network allows all of the computers to communicate with one another. Internet is a global network that connects IP networks.

Web: The Web, also called the World Wide Web, is the part of the Internet that supports multimedia and consists of a collection of linked documents. It is a system of Internet servers that support specially formatted documents.

Computer network: A computer network is a high-speed communications medium connecting many, possibly dissimilar, computers or hosts.

Web site: Web site is a related collection of Web pages that is created and maintained by an individual, company, educational institution, or other organization.

Web page: The linked documents, or pages of information, on the Web are known as Web pages

Unit Assessment

Check your understanding!

Self-Check 1.1 (Essay)

1. List and explain five (5) importance of internet in the world today.
2. Using the Africa Virtual University website as a study case, discuss the importance of a website to a student.
3. Briefly differentiate between a website and web page.
4. Briefly differentiate between the internet and the World Wide Web.

Note:

- Students are to submit their work to the lecturer/facilitator via email not later than the communicated deadline for submission.
- Students should ensure that their work for submission bears their names, index numbers and course title and code

Grading Scheme

a.

Grading Criteria and Grades to be Awarded		
Criteria	Mark	Grade
High quality contributions on task with very strong evidence of learner having generated discussion analyzed information, drawn conclusions and help create a very lively debate.		
	5	A
Quality contributions focused on task with strong evidence of learner having generated discussion, analyzed information, drawn conclusions and help\create a lively debate.	4	B
Contributions focused on the task with some evidence of analysis, sharing teamwork.	3	B
Contributions focused on the task with little evidence of analysis, sharing and teamwork.	2	D
Contributions have been minimal with hardly any evidence of analysis, sharing and teamwork.	1	F
No contribution made toward the discussion or task.	0	F

Answers

After grading of submitted works:

- Answers to the Self-Check assignment should be discussed in the next tutorials.
- Lecturer/Facilitator should endeavour to hand-over graded assignments to students to enable them ascertain how they performed.
- Students should also understand the grading criteria for this course.

Unit Readings and Other Resources

The readings in this unit are to be found at the course-level section “Readings and Other Resources”.

Unit 1. Fundamentals of the World Wide Web

Unit Introduction

- This unit will help the student to know all the concepts and technologies that are at stake for the proper functioning of the World Wide Web.

Unit Objectives

Upon completion of this unit you should be able to:

- Describe the Internet and its associated key terms
- Describe the World Wide Web and its associated key terms
- Identify the types and purposes of Web sites
- Discuss Web browsers and identify their purpose
- Define Hypertext Markup Language (HTML) and the standards used for Web development
- Describe tools used to create HTML documents
- Discuss the five phases of the Web development life cycle
- Identify the criteria for determining an effective developed website

Key Terms

Internet: The Internet is a gigantic collection of millions of computers, all linked together on a computer network. The network allows all of the computers to communicate with one another.

Web browser: A Web browser, also called a browser, is a program that interprets and displays Web pages and enables you to view and interact with a Web page.

HTML: HTML is a set of specifications (each one with an individual markup tag) that can be used to define the elements of hypertext document. The objective of HTML is to specify how a particular text should be processed.

HTTP: HTTP is the acronym for Hypertext Transfer Protocol. HTTP is a communications protocol. It is also a set of programmes that determine how information is transferred from one computer to another computer.

DNS: Domain Name System (DNS): An Internet service that translates domain names into IP addresses.

URL: Uniform Resource Locator (URL) is the standard to state Internet document's location.

Web server: A web server is essentially a computer, but it is a special computer, in that it is networked and designed to respond to requests sent to

Learning Activities

Activity 1 - Planning for a web site

Introduction

As a web developing student, you have been approached by a director of a college to develop a website similar to that of Africa Virtual University (refer to http://www.avu.org/) for his college. Show how you will go about the planning and analysis phases of in the development of the website.

Activity Details

For eliciting the right requirements for the website, the questions the student should ask should include the ones encapsulated below:

- What is the purpose of this Web site?
- Who will use this Web site?
- What are the users' computing environments?
- Who owns and administrate the information on the Web site?
- Who decides if/where the information goes on the Web site?
- What tasks do the users need to perform?
- What information is useful to the users?
- What process concerns must be made?

Unit Summary

In this unit you have learned about the Internet, World Wide Web, and associated technologies, including Web servers and Web browsers. In this unit we have learned that a well-designed and implemented websites take skill and training to build. Thus, in generating a simple Web, a life cycle process is required to make the design of pages very easy. The Web Design and Development life cycle described shows the scope and depth of efforts needed for a professionally developed site. Therefore, in this unit you also learned that most Web development projects follow a five-phase life cycle.

Unit Assessment

Check your understanding!

Self-Check 1.1

Differentiate between URL and HTTP.

What is the relation between the following?

Web and the Internet

HTTP and TCP/IP

Describe how the internet works.

Distinguish between the World Wide Web and the internet.

Discuss the life-cycle phases involved in web design and development.

What are the advantages and the disadvantages of using the WYSIWYG and Markup Language approach in developing a hypertext document?

Grading Scheme

Grading Criteria and Grades to be Awarded		
Criteria	Mark	Grade
High quality contributions on task with very strong evidence of learner having generated discussion analyzed information, drawn conclusions and help create a very lively debate.	5	A
Quality contributions focused on task with strong evidence of learner having generated discussion, analyzed information, drawn conclusions and help\create a lively debate.	4	B
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Contributions focused on the task with little evidence of analysis, sharing and teamwork.	2	D

Contributions have been minimal with hardly any evidence of analysis, sharing and teamwork.	1	F
No contribution made toward the discussion or task.	0	F

Answers

After grading of submitted works:

- Answers to the Self-Check assignment should be discussed in the next tutorials.
- Lecturer/Facilitator should endeavour to hand-over graded assignments to students to enable them ascertain how they performed.
- Students should also understand the grading criteria for this course.

Unit Readings and Other Resources

The readings in this unit are to be found at course level readings and other resources.

Unit 2. Introduction to Web Technologies

Unit Objectives

By the end of this topic, you should be able to:

- Describe the Internet and its associated key terms
- Describe the World Wide Web and its associated key terms
- Address the Web URL
- Identify the types and purposes of Web sites
- Discuss Web browsers and identify their purpose
- Define Hypertext Markup Language (HTML) and the standards used for Web development
- Describe tools used to create HTML documents

Unit Introduction

The Internet is a group of computers and networks from different companies and various computer networks or operating systems connected to communicate, share, and exchange information. There are mainly two kinds of computers that participate to the Internet: those that request information and those that provide that information. As said already, this is a melting pot of different families, languages, and cultures of computer.

For computers from different companies to communicate, each computer that participates to this network (the Internet) needs special software that can interpret what other computers are "saying". This software is called a browser. There are different browsers on the market today. The most popular browsers are from Microsoft and Netscape.

This chapter will introduce you to the basic knowledge of Hypertext Markup Language or more popularly known as HTML. Without Hypertext Markup Language (HTML) and its associated technologies, the Web could not exist. In order to utilize these technologies effectively, you need to understand the main concepts behind the Internet and HTML. To achieve this objective, you will gain a better understanding of the Internet and the World Wide Web. You will be introduced to Web browsers, definitions of HTML and its associated key terms.

What is the internet?

One of the greatest things about the Internet is that nobody really owns it. So what is "the Internet"? It is a global collection of networks, both big and small, that connect together in many different ways to form the single entity that we know as "the Internet." Since its beginning in 1969, the Internet has grown from four host computer systems to tens of millions. However, just because nobody owns the Internet, it doesn't mean it is not monitored and maintained in different ways.

The Internet Society, a non-profit group established in 1992, oversees the formation of the policies and protocols that define how we use and interact with the Internet.The linking of computer networks is called internetworking, hence the name Internet. Internet links all kinds of organizations around the world-universities, government offices, corporations, libraries, supercomputer centres, research labs, and even individual homes. The number of connections on the Internet is large and growing rapidly.

How does the Internet work?

A home computer may be linked to the Internet using a phone-line modem, DSL or cable modem that talks to an Internet Service Provider (ISP). A computer in a business or university will usually have a network interface card (NIC) that directly connects it to a local area network (LAN) inside the business. The business can then connect its LAN to an ISP using a high-speed phone line like a T1 line. A T1 line can handle approximately 1.5 million bits per second, while a normal phone line using a modem can typically handle 30,000 to 50,000 bits per second.

ISPs then connect to larger ISPs, and the largest ISPs maintain fiber-optic “backbones” for an entire nation or region. Backbones around the world are connected through fiber-optic lines, undersea cables or satellite links. In this way, every computer on the Internet is connected to every other computer on the Internet.

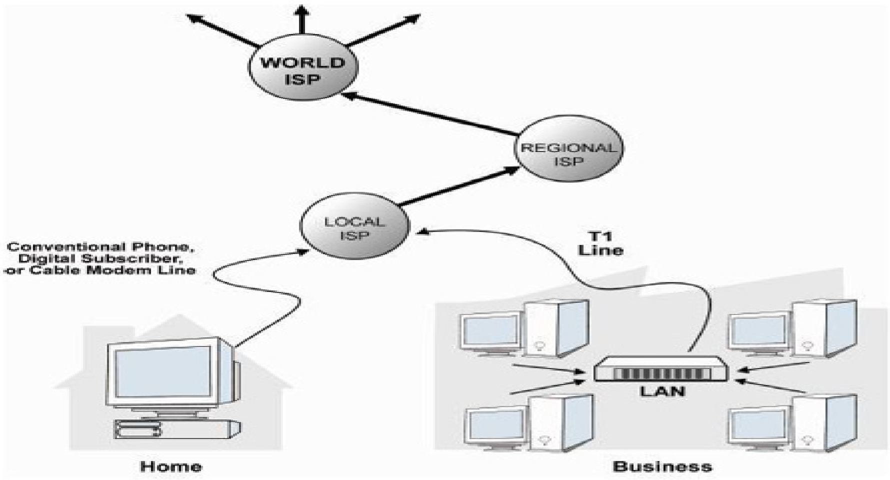


Figure 1.1: Internet atlas

What is a computer Network?

A computer network is a high-speed communications medium connecting many, possibly dissimilar, computers or hosts.

- A network is a combination of computers and telecommunication hardware and software.

The purpose is to provide fast and reliable information exchange among the hosts and between processes, or executing programs, on different hosts. The Web is one of the most widely used Internet services. Others include: e-mail, file transfer, audio/video streaming, and login to remote hosts, just to name a few. The Web also provides convenient ways to tap into these other Internet services.

The world wide web?

The World Wide Web is an Internet-based distributed information system. Anyone with a computer connected to the Internet can easily retrieve information by giving a Web address or by simply clicking a mouse button.

To support multimedia, the Web relies on the Hypertext Transfer Protocol (HTTP), which is a set of rules for exchanging text, graphic, sound, video, and other multimedia files.As a communication medium, the Web consists of these major components

- Networks – The local-area and wide-area networks connecting computers world-wide forming the Internet.
- Clients – Web browsers that enable end-users to access the Web.
- Servers – Constantly running programs that serve up information to the Web.
- Documents – Web pages, mostly coded in HTML, that supply information on the Web.
- Protocols – The Hyper Text Transfer Protocol HTTP that Web clients and servers use to talk to one another and the TCP/IP (Transmission Control Protocol) on which HTTP depends.

So what is difference between Web page and a Web site?

- As Web pages are linked documents, or pages of information, on the Web, a **Web site on the other hand** is a related collection of Web pages that is created and maintained by an individual, company, educational institution, or other organization.

For example, as shown in Figure 1–2, many institutions, such as the Africa Virtual University, publish and maintain Web sites. Each Web site contains a home page.

News
Events
Open Education Week 2014 MARCH 10-15
Quick Links
AFRICAN VIRTUAL UNIVERSITY
UNIVERSITE VIRTUELLE AFRICAINE
UNIVERSIDADE VIRTUAL AFRICANA
Home
About
Students
Programs & Courses
Faculty
Partners
Multinational Support Project
Services
Media Center
Introduction
About AVU
General Information on AVU New Programs and Courses
Programs and Courses
Programs
Courses
AVU Current Offers >

Figure 1.2: Some Web pages from Africa Virtual University Web site.

Distinguishing Internet from World Wide Web

The World Wide Web (popularly known as the Web) is not synonymous with the Internet. The Internet and the Web are two separate but related things.

- The Internet is a massive network of networks, a networking infrastructure. It connects millions of computers together globally, forming a network in which any computer can communicate with any other computer as long as they are both connected to the Internet. Information that travels over the Internet does so via a variety of languages known as protocols.
- The World Wide Web, or simply Web, is a way of accessing information over the medium of the Internet. It is an information-sharing model that is built on top of the Internet. The Web uses the HTTP protocol (Application layer protocol of OSI model), only one of the languages spoken over the Internet, to transmit data. Web services, which use HTTP to allow applications to communicate in order to exchange business logic, use the Web to share information.
- The Web is just one of the ways that information can be disseminated over the Internet. The Internet, not the Web, is also used for e-mail, which relies on SMTP, Usenet news groups, instant messaging and FTP.

So the Web is just a portion of the Internet, albeit a large portion, but the two terms are not synonymous and should not be confused.

Wibe site types and Purporses

There are three general types of Web sites. They are internet, intranet, and extranet. For an internet site, which is also known as Web site, the public and everyone has access to the site. Companies, groups, individuals, and educational institutions use Internet sites for a range of purposes. For example, an individual might create a personal web site that includes his or her résumé to make it easily accessible to any concerned job owner. An educational institution may use a web site to disseminate vital information to all students such as courses, lecturers, admission forms and courses' fees.

Intranet is a confidential network that uses internet technologies to share and disseminate company information among employees. An intranet is contained within a company or organization's network. They are usually password-protected to provide additional security. It is used to share information such as forms, manuals, organization schedules, etc., with employees or members. It can also be used to aid working in groups and collecting feedback from employees.

Extranet is also a private network that uses internet technologies to share business information with select corporate partners or key customers. They are usually password-protected with the aim of restricting access to particular suppliers, vendors, partners, or customers.

Web Browsers

The Web utilises browsers, such as Internet Explorer or Netscape, to access Web documents called Web pages that are linked to each other via hyperlinks. To display a Web page on any type of Web site, a computer needs to have a Web browser installed.

There are several applications called Web browsers that make it easy to access the World Wide Web. Two of the most popular browsers are Netscape Navigator and Microsoft's Internet Explorer. Some other popular browsers today are Mozilla Firefox, Chrome and Apple Safari.

Figure 1.4 : Logos of popular Web browsers

Hyper Text Transfer Protocol (HTTP)

The Hyper Text Transfer Protocol (HTTP) is what Web clients and servers use to talk to one another. On the Web, browser-server communication follows the HTTP protocol.

When a user clicks a link or types an address into the address bar of their web browser, they are essentially requesting a document. The request must be handled and processed in some way. That way, in terms of browsers, is with HTTP, or Hyper Text Transfer Protocol. This is the http:// portion of the website address.

How does the HTTP work?

The browser looks at the HTTP address, and sends a request for the document that is supposed to be located at that address to the server where it resides. You could consider the server a 'neighbourhood' and the document as a 'house' in that neighbourhood. Think of the browser as the postman, delivering mail in that neighbourhood, and then to that particular house. The browser essentially serves as the go-between for the user and the server. It is used to display the document that has been requested through the HTTP. A server quietly waits for a request, constantly monitoring TCP port 80, as this is where the request will come into the server

Here is the summary of an HTTP operation:

1. Connection – A browser (client) opens a connection to a server.
2. Query – The client requests a resource controlled by the server.
3. Processing – The server receives and processes the request.
4. Response – The server sends the requested resource back to the client.
5. Termination – The transaction is done and the connection is closed unless another transaction will take place immediately between the client and server

URL

A URL may identify a host, a server port, and the target file stored on that host. URLs are used, for example, by browsers to retrieve information and by HTML to link to other resources

Components	**Explanation**
http://	Communication Protocol
www.w3.org	Name of the Internet host for the computer that stores the document.
/Consortium/Legal/privacy-statement	Path and document name
#Member	Anchor name

Table 1.1: URL Components

Web Servers

When you develop a website, it must be stored on a server. A server is essentially a computer, but it is a special computer, in that it is networked and designed to respond to requests sent to it over the Internet. A unique IP or Internet Protocol address is assigned to each server. An example of an IP number is 123.45.678.9.

TCP/IP

TCP/IP uses several protocols, the two main ones being TCP and IP.TCP/IP is built into most network operating systems nowadays and is used by the Internet, making it the de facto standard for transmitting data over networks. Even network operating systems that have their own IP protocol known as IPX, developed by Novell Netware, also support TCP/IP.

Domain Name System (DNS)

When the Internet was in its infancy, you could only make connections by providing the IP (Internet Protocol) address of the computer you wanted to establish a link with. For example, a typical IP address might be 202.x.y.z. This was fine when there were only a few hosts out there, but it became very unwieldy as more and more systems came online.

In 1983, the University of Wisconsin created the Domain Name System (DNS), which maps text names to IP addresses. This way you only need to remember www.avu.org, for example, instead of 202.x.y.z.

How does DNS work?

Human-readable names like “www.avu.org” are easy for people to remember, but they do not do machines any good. All of the machines use names called IP addresses to refer to one another. For example, the machine that humans refer to as “www.oum.edu.my” has the IP address 202.x.y.z. Every time you use a domain name, you use the Internet’s domain name servers (DNS) to translate the human-readable domain name into the machine-readable IP address. During a day of browsing and e-mailing, you might access the domain name servers hundreds of times!

Domain Names

A domain name is how others identify and get to your site. However, a domain name is not actually required. Your visitors could use the IP address that it attached to your domain name instead, but this can get very confusing. Remember, an IP address is a unique number that identifies the computer that your web pages are hosted on to other computers.

If we had to remember the IP addresses of all of the Web sites we visit every day that would we would have been an insurmountable task for us. Human beings just are not that good at remembering strings of numbers. We are good at remembering words, however, and that is where domain names come in.

Examples of domain names are:

- www.avu.org
- www.bbc.com.uk
- www.google.com
- ftp.microsoft.com
- encarta.msn.com
- www.mit.edu

HTML

HTML is a popular Markup language to develop a hypertext document. Specifically, Web servers such as Internet Explorer will act like an engine that will interpret HTML and display it in the correct form. The original HTML version was developed by Tim Berners-Lee and he was one of the creators of the World Wide Web (WWW).

Although HTML has solid fundamentals, the standards for new versions are still growing. You may find that each web server on the market is able to support different HTML variations.

Web Development Life Cycle

Like any system development, the web development life cycle is a systematic methodology used for planning, developing and managing a website. The web development life cycle begins with the initial investigation phase and ends with the operations and support phase. It begins with a request for a new website or an upgrade of an existing one to fulfil business needs. In reality, like any system development life cycle, the web development process is a dynamic activity in which changes usually take place at every phase upon obtaining comprehensive feedback, mainly from users.

The life cycle development methodology can be divided into five main phase: planning, analysis, design and development, testing, and implementation and maintenance.

Planning Phase

Phase one normally begins with a request to the information technology department; commonly known as a system request. Usually, this request involves the need for a new information system or an improvement to an existing one which could no longer fulfil its current business needs.

When developing a website for an organization, institution or any group, the system request may come from the top management, the strategic planning group, head of department or the staff of the information technology department itself. The initial investigation phase involves identifying the scope, the problem boundary and the strategy for the new website development plan.

Requirements Analysis Phase

Requirements are conditions or capabilities needed by a user to solve a problem or achieve an objective. They are descriptions of how a system should behave. The main objective of the requirement analysis is to understand the business requirements and develop a logical model for the new website to be developed.

t involves the development of a requirement model in which you will be required to clarify and elaborate the business process of the website to be developed. The information for developing this model can be obtained through information gathering techniques such as interviews, research, observation and sampling.

The results of requirements analysis include: a system requirements document which states management's and users' needs; alternative plans and costs involved in developing the desired website; and a proposed solution from yourself as the web developing expert.

Design Phase

In the design phase, all the outputs, inputs, interfaces and processes for the website will be identified. In addition, all the design controls, whether internal or external, will be built. This is to ensure that the system to be built is reliable, accurate, easy to maintain and safe to use.

The design is stated in the System Design Specification report. This report will be presented to the management and users for their comments and approval. The involvement of both users and management is critical to avoid any misunderstandings on what can be done using the new system, its implementation and costs.

Some main factors to be considered in website design are defining how to organize Web page content, selecting the appropriate Web site structure, determining how to use multimedia, addressing accessibility issues, and designing pages that will be suitable for the international audience. Websites can use any of several different types of structures, including linear, hierarchical, and webbed.

The linear Web site structure is appropriate if the information on the Web pages should be read in a specific order. The linear structure, for example, is used instances where the information on the first Web page is necessary for understanding information on the second webpage, you should use a linear structure. Here, each page would have links from one Web page to the next, as well as a link to the home page.

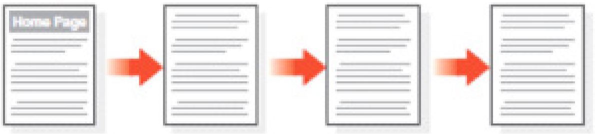


Figure 1.4 : The Linear website structure

The hierarchical Web site structure is one that connects Web pages in a tree-like structure as depicted in figure 1.5. It is suitable for a website with a main index or table of contents page that links to all other Web pages. Here, the main index page would display general information, and derivative pages would include more detailed information.

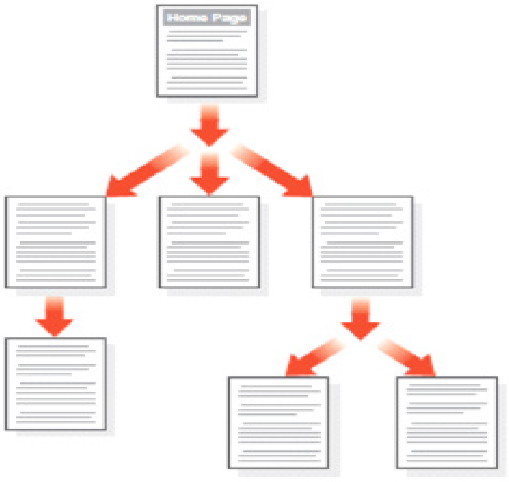


Figure 1.5 : The hierarchical Web site structure

The webbed website structure has no set organization, as shown in figure 1.6. It works best on Web sites with information that does not need to be read in a specific order and with many navigation options users can select. The World Wide Web uses a webbed structure, so users can navigate among Web pages in any order they choose. Majority of websites are a combination of the linear, hierarchical, and webbed structures.

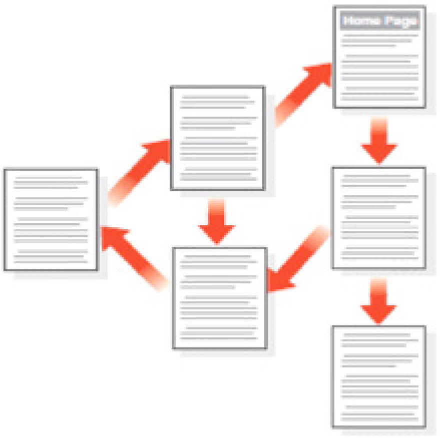


Figure 1.6 : The webbed website structure

Development and Implementation Phase

The objective of this phase is to bring the desired website into reality. In this phase, a new website is developed. Whichever methodology is chosen, the procedure is the same, that is to write the programs, to test, and finally after the system has been successfully developed, to be hosted on the desired server. The results of this phase are:

- *A website is produced and ready for use;*
- *Training of the website administrators; and migration of information to the new website;*
- *Conducting system evaluation to ascertain that the developed website is able to operate with complete satisfaction; and*
- *Ensuring that the cost and benefits of the website developed are as estimated.*

Support and Operation

In this phase, the information technology staff or site owner will update and add value to the new website. Updates will involve correction of errors (if any) and making changes that are appropriate. Meanwhile, activities to add value to the developed system may include activities such as adding new features and benefits.

Information system development is a process that changes on an occasional basis. Even the business process is often modified to take advantage of changes in information technology. Therefore, the website developed certainly needs to be updated after a long period of operatio

Good Website Interface Design

An interface design is an input language for the users to manipulate a system and an output which allows the system to produce the effects of the users' manipulation. For example, in a good communication channel, a user interface is like a two-way street. The user does not want to just see whatever the computer puts on the screen, the user also wants to tell the computer what to do. For instance, when a user surfs the internet, the user might "ask" the computer to show pages on a certain subject. The user may use a mouse to point and click on a button or hyperlink. Everything that the user tells the computer is input and what it conveys is the output. The way a user receives output and gives input depends entirely on the user interface.

A well-designed user interface will provide a good match between the user's task needs: skill level and learning ability. By now, you must be wondering what is a good design or what are the guidelines to designing a good website interface that would increase the user experience. Well, there are five main principles that you can follow:

a. Naturalness

- Use language which is natural to the user. Use vocabulary that is suitable for user, and not vocabulary for the system.
- The order of the dialogue should be geared towards the normal order of working for the user.

b. Consistency

- A consistent dialogue whereby the user can build up expectations of the dialogue.
- A consistent layout for the screen. This will help the user locate the icons.

c. Non-redundancy

- A non-redundant dialogue on your website requires the user to input only the minimum information for the system's operation.
- Adding a default value can support the non-redundancy.

d. Supportiveness

- This refers to the amount of assistance which the dialogue provides to the user in running the system.
- Assistance here refers to: the quantity and quality of information provided; the nature of easiness in navigating through the website; the fastness of website for providing requested information.

e. **Flexibility**

- Flexibility refers to how well it can provide for the different levels of user, familiarity and performance. For example, how a first time user can easily find information on the website.

Web Design Mistakes

There are several mistakes developers make in developing websites. The commonest ones are listed below:

- Poor load time
- Poor overall appearance
- Spelling/Grammar mistakes
- No contact information
- Poor content
- Poor navigation
- Broken links and graphics
- Poor browser compatibility
- Use of large slow loading graphics
- Too many graphics
- Pages scrolling to oblivion
- Too many graphic and/or line dividers
- Busy, distracting backgrounds
- Multiple banners and buttons
- Poor use of frames
- Poor use of tables

- Poor organization
- Different backgrounds on each page
- Over powering music set to auto play
- Too much advertising
- Large Welcome banners
- Multiple coloured text
- Text difficult to read
- Multiple use of different fonts
- Poor use of mouse over effect

Unit Summary

In this unit you have learned about the Internet, World Wide Web, and associated technologies, including Web servers and Web browsers. In this unit we have learned that a well-designed and implemented websites take skill and training to build. Thus, in generating a simple Web, a life cycle process is required to make the design of pages very easy. The Web Design and Development life cycle described shows the scope and depth of efforts needed for a professionally developed site. Therefore, in this unit you also learned that most Web development projects follow a five-phase life cycle.

Key Terms

Internet

Web browser

HTML

HTTP

DNS

URL

Web server

Web page

Website

Unit Assessment

Check your understanding!

Differentiate between URL and HTTP.

What is the relation between the following?

Web and the Internet

HTTP and TCP/IP

Describe how the internet works.

Distinguish between the World Wide Web and the internet.

Discuss the life-cycle phases involved in web design and development.

What are the advantages and the disadvantages of using the WYSIWYG and Markup Language approach in developing a hypertext document?

Unit 3: Cascading Style Sheets

Like HTML, style sheets adhere to a common language with set standards and rules. This language, called Cascading Style Sheets, or CSS, allows a Web developer to write code statements that control the style of elements on a Web page. Cascading Style Sheets enable you to control the style and layout of a webpage. They will enable you to specify link styles, fonts, margins, tables, colors, sizes, alignments and much more throughout your entire webpage.

In this session, you learn an easier way to give your Web pages a consistent format and look using style sheets.

What is Cascading Style Sheet?

A style is a rule that defines the appearance of an element on a Web page. A style sheet is a series of rules that defines the style for a Web page or an entire Web site. Cascading Style Sheets are used to specify particular styles for a character, a word, a group of words, a page or a whole web site.

Although you can change almost any behavior using these styles, including some behaviour that were not possible in HTML, CSS don't constitute an independent or complete language, the styles are used to control the display of items or sections on a web page.

CSS is not HTML. It is a separate language used to enhance the display capabilities of HTML. The World Wide Web Consortium (W3C), the same organization that defines HTML standards, defines the specifications for CSS. CSS is not used to add any content to your Web site; it just makes your content look more stylish.

Benefits of Using Cascading Style Sheets

There are several benefits of using cascading style sheets. They include:

1. The HTML code on the webpage controls the content, and the CSS controls the HTML. This allows you to create webpages that are suitable for all browsers.
2. One of the best benefits of using CSS within your webpages is the ease of updating your webpages. If you'd like to make a change to your design, instead of having to change dozens or even hundreds of webpages on your site, you can make one simple change to the CSS file, and it will automatically update all of the pages on your web site.
3. With CSS you can add visual elements such as colors, borders, margins, and font styles to your Web pages.
4. Style sheets allow you to change the style for a single element on a Web page, such as a paragraph, or to change the style of elements on all of the pages in a Web site.

Types of Cascading Style Sheets

There are three main techniques used to implement styles: inline, embedded, or external. These techniques are not exclusive; in other words, you can use just one, two, or all of them on the same page and on as many pages necessary. Table 2.13 summarizes the functions of the three types of style sheets.

Table 2.13: Types of Style Sheets and their functions

Types	Functions
Inline	• Added within your standard HTML tags. The style changes that specific tag, but does not affect other tags in the document. • Use inline style sheets for individual styles.
Embedded	• Added to the style sheet within the <head> tags of the HTML document to define the style for an entire Web page. • Use embedded style sheets for single Web page styles.
External	• Also known as the linked style sheet, here you create a text file that contains all of the styles you want to apply, and then you save the text file with the file extension .css. You then add a link to this external style sheet on any Web page in the Web site. • External style sheets give you the most flexibility and are ideal to apply the same formats to all of the Web pages in a Web site. External style sheets also make it easy to change formats quickly across Web pages. • Use external style sheets for styles that you want across the Web site.

Self-Check 2.5

Explain the difference between HTML and CSS.

Explain the importance of using Cascading Style Sheets.

HTML Tags and CSS Precedents

Each style sheet type also has a different level of precedence or priority in relationship to the others. Because style sheets have different levels of precedence, all three types of style sheets can be used on a single Web page. Here's how the tags are prioritized:

- HTML tags override all other tags.
- CSS inline tags override embedded and linked tags.
- CSS embedded tags override linked tags.
- CSS linked tags won’t override any other tags.

Syntax for CSS

No matter what type of style sheet you use, you must use a style statement to define the style. The following code shows an example of a style statement used in an embedded or external style sheet:

a.

```
p { font-family: arial;

   font-size: 12px;

   color: blue }
```

CSS tags are formatted like this:

The **selector** is a browser command, which is usually the HTML tag you’d like to format. This is the part of the style statement that identifies the page elements. In the above example, the selector is p (the paragraph tag). It is followed by a property, which is the attribute you would like to specify. Font-family, font-size and color are the properties in the above style sheet. The value specifies the value of the property. A colon follows the property, which is followed by the value and enclosed with curly brackets.

The embedded style statement above can be rewritten to an inline style sheet as:

```
<p style=”font-family: arial; font-size: 12px;
color: blue”>
```

For embedded or extended style statement, if the property value contains more than one word, it must be enclosed with quotes:

```
p {font-family: “Times New Roman”}
```

If you would like to include more than one property, you must separate them with a semicolon.

If you have multiple selectors that will require the same formatting, you can group them together by separating them with a comma. In the example below, all of the heading 1, heading 2 and heading 3 texts will be displayed in arial and red.

```
h1, h2, h3 {font-family: arial; font-size: 12px;
color: red}
```

If you have the same type of elements, but need to format them differently, the class selector can enable you to do that. For example, maybe you would like to display two types of paragraphs within your webpage – one centered and the other right aligned. The style statement format for these paragraphs using the embedded or extended style statement will look like this:

```
p.center {text-align: center}

p.right {text-align: right}
```

To indicate which paragraph this CSS should apply to, simply place the class within your paragraph tag like this:

```
<p class=”center”> Your paragraph that will be center
aligned using CSS.

</p>

<p class=”right”> Your paragraph that will be right aligned
using CSS.

</p>
```

Properties in Style Sheet

Style sheets allow you to control many different property values for various elements on a Web page. There are six main properties and related options that are used in style sheets. Table 2.14 shows these main properties and their property values.

Table 2.14: Style sheets properties and their related options

Property Name	Controlling options
Font	• family • size • style • variant • weight

Text	• alignment • decoration • indentation • spacing • white space
background	• color • image • position
Border	• color • style • width
Margin	• length • percentage
List	• image • position • type

In the next section, we will be discussing in detail the various types of cascading style sheet and illustrate with examples how they are applied in web development.

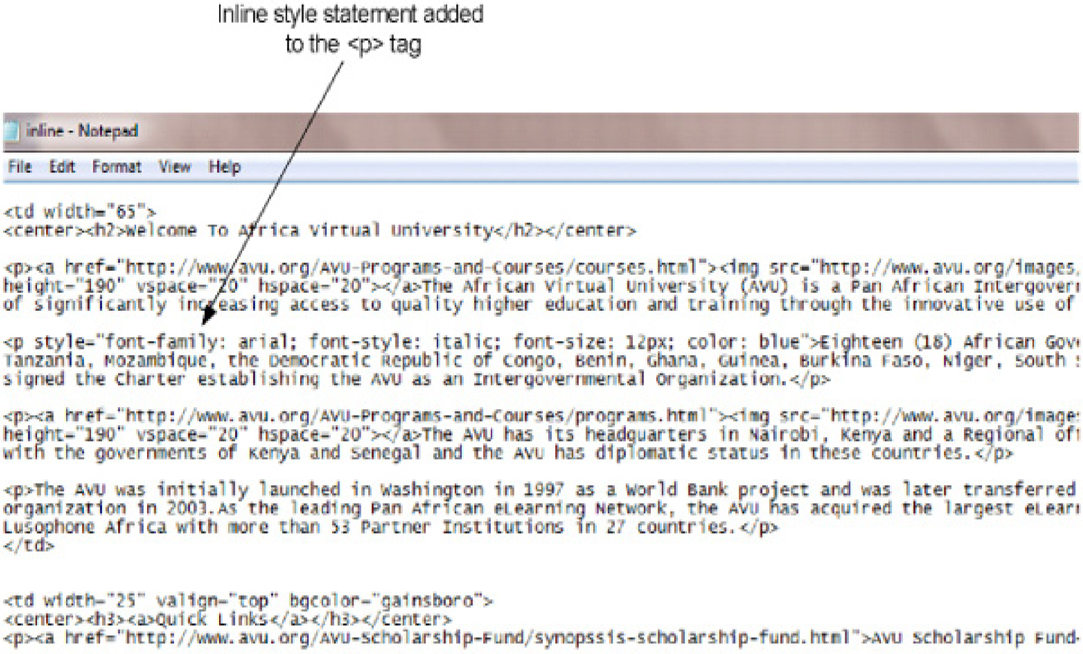
Inline Style Sheet

With an inline style sheet, you add a style to an individual HTML tag, such as a heading or paragraph. The style changes that specific tag, but does not affect other tags in the document. Since inline style sheet takes precedence over the other types of style sheets and affect the style for individual HTML tags, it is helpful when one section of a Web page needs to have a style different from the rest of the Web page.

Inline cascading style tags are used within standard HTML code using the STYLE parameter. The following example will remove the underline of an individual link:

```
<a href="http://www.yourdomain.com" style="text-decoration:
none">Your Created Link</a>
```

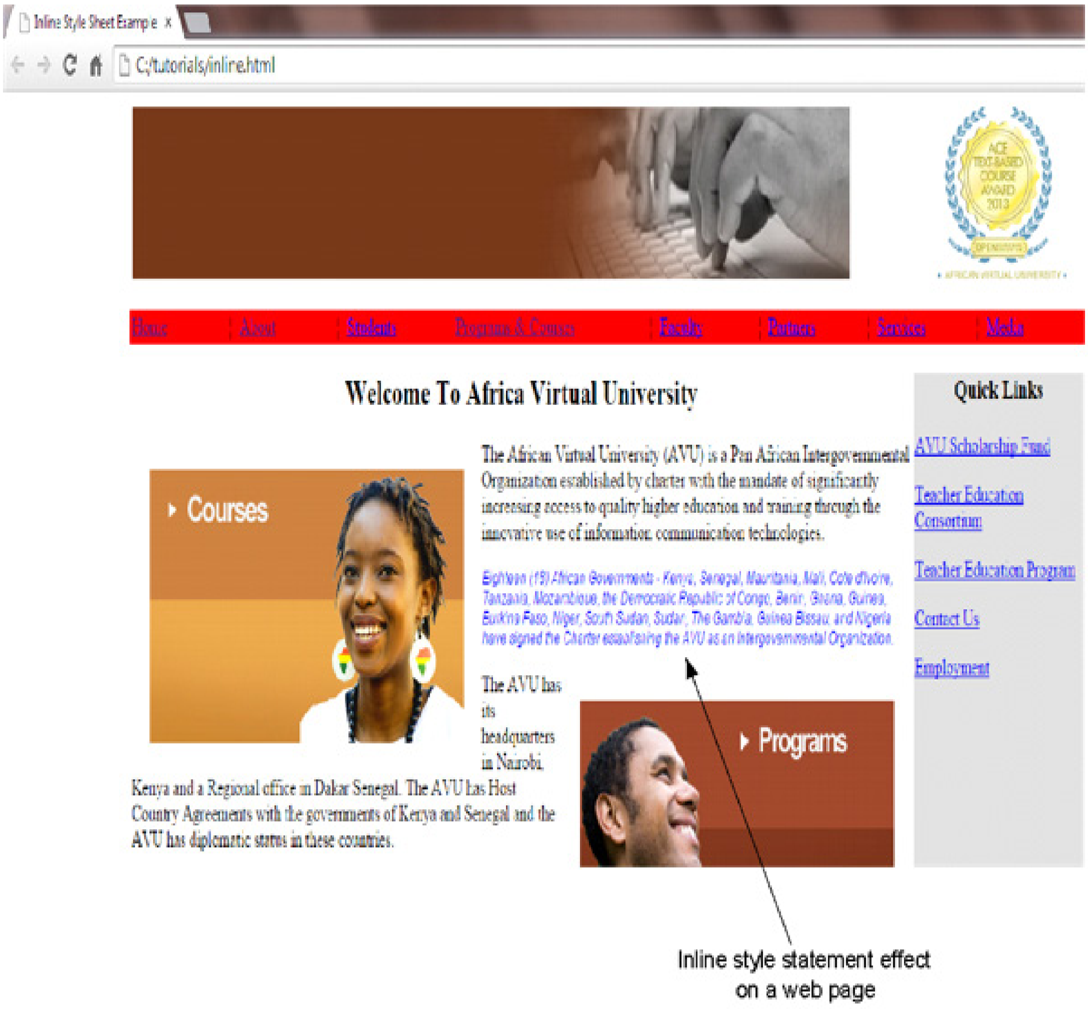
To vividly and lucidly see the effect of an inline style sheet in a web page, we are going to add one to the second paragraph of activity 4, where the <p> (paragraph) tag is the selector and a property that defines new font type, font style and color values for that paragraph. Figure 2.41 shows the inline style statement added to the <p> tag and figure 2.42 shows the effect of adding this inline style sheet to the targeted session of activity 2.4



Inline style statement added to the <p> tag

```
<td width="65">
<center><h2>Welcome To Africa Virtual University</h2></center>

<p><a href="http://www/avu.org/AVU-Programs-and-Courses/courses.html"><img src="http://www.avu.org/images
height="190" vspace="20" hspace="20"></a>The African Virtual University (AVU) is a Pan African Intergover
of significantly increasing access to quality higher education and training through the innovative use of

<p style="font-family: arial; font-style: italic; font-size: 12px; color: blue">Eighteen (18) African Gov
Tanzania, Mozambique, the Democratic Republic of Congo, Benin, Ghana, Guinea, Burkina Faso, Niger, South
signed the Charter establishing the AVU as an Intergovernmental Organization.</p>

<p><a href="http://www.avu.org/AVU-Programs-and-Courses/programs.html"><img src="http://www.avu.org/image
height="190" vspace="20" hspace="20"></a>The AVU has its headquarters in Nairobi, Kenya and a Regional of
with the governments of Kenya and Senegal and the AVU has diplomatic status in these countries.</p>

<p>The AVU was initially launched in Washington in 1997 as a World Bank project and was later transferred
organization in 2003.As the leading Pan African eLearning Network, the AVU has acquired the largest eLear
Lusophone Africa with more than 53 Partner Institutions in 27 countries.</p>
</td>


<td width="25" valign="top" bgcolor="gainsboro">
<center><h3><a>Quick Links</a></h3></center>
<p><a href="http://www.avu.org/AVU-Scholarship-Fund/synopssis-scholarship-fund.html">AVU Scholarship Fund
```

Figure 2.41: Inline style statement added to the <p> tag



Welcome To Africa Virtual University

The African Virtual University (AVU) is a Pan African Intergovernmental Organization established by charter with the mandate of significantly increasing access to quality higher education and training through the innovative use of information communication technologies.

Eighteen (18) African Governments - Kenya, Senegal, Mauritania, Mali, Cote d'Ivoire, Tanzania, Mozambique, the Democratic Republic of Congo, Benin, Ghana, Guinea, Burkina Faso, Niger, South Sudan, Sudan, The Gambia, Guinea Bissau, and Nigeria have signed the Charter establishing the AVU as an Intergovernmental Organization.

The AVU has its headquarters in Nairobi, Kenya and a Regional office in Dakar Senegal. The AVU has Host Country Agreements with the governments of Kenya and Senegal and the AVU has diplomatic status in these countries.

Inline style statement effect on a web page

Figure 2.42: Effect of inline style statement added to a web page

Embedded Style Sheets

Embedded style sheets are used to control the style of a single Web page. You can indicate how your entire page will appear including links, fonts, text and more, simply by using embedded style tags. The interesting thing with embedding style codes is that you can generate your own classes of code. This means that you can indicate different styles throughout your page and then call them within your page.

To add an embedded style sheet to a Web page, do the following:

- Insert a start <style> tag at the top of the Web page within the <head> tags that define the header section.
- After adding the desired style statements, you end the embedded style sheet by adding an end </style> tag.

- Put this style into action. Simply place the class element with the class name created for the selector of the sheet into your desired HTML opening tag where you would like the style to be used.
- In creating your sheet class, you can call it whatever you'd like. Just add your desired class name following your selector. For example, p.yourclassname. However, ensure you do not start your class name with a number, as it will not work in the Firefox browser.

Activity 2.6 lucidly illustrates how embedded style sheet is added to a web page

Learning Activity 2.6 – Adding Embedded Style Sheet

We are going to add an embedded style sheet to our created web page in this unit.

1. Create and add a class of code to a paragraph selector within the <head> tags like this:

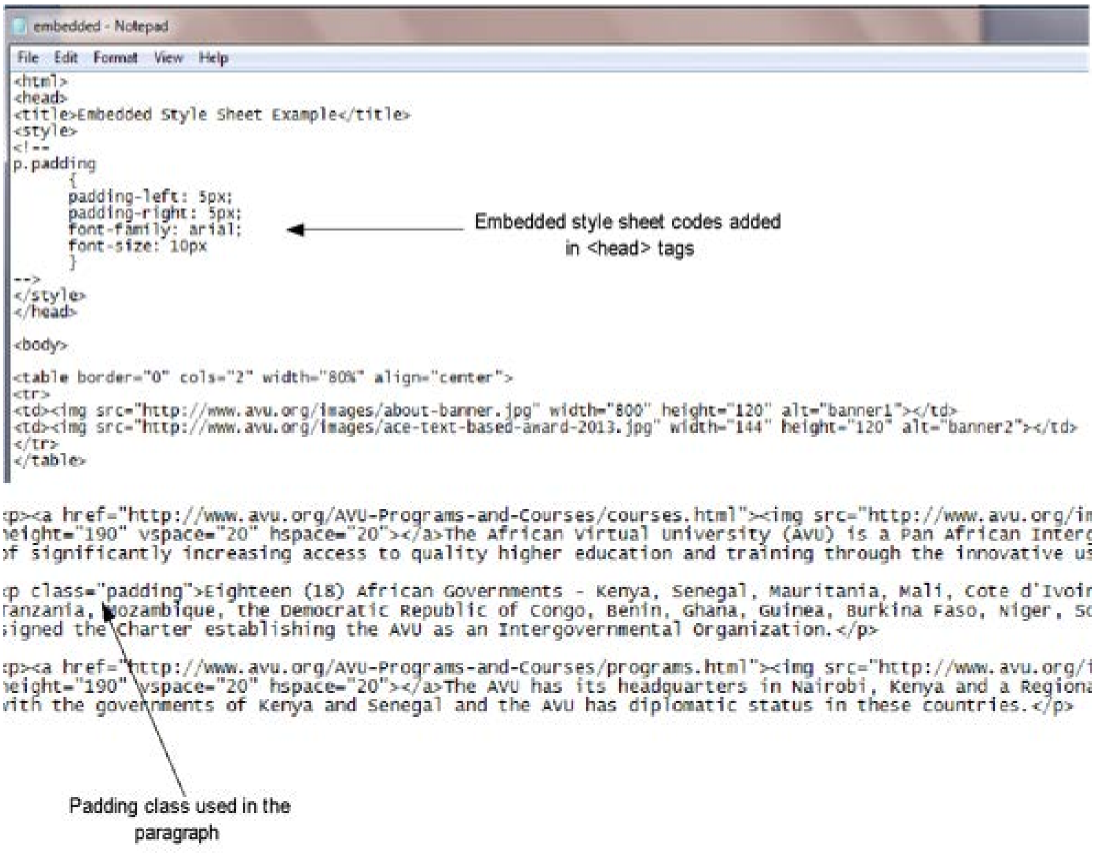
```
<head>

<style>

<!–

p.padding

{

padding-left: 5px;

padding-right: 5px;

font-family: arial;

font-size: 10px

}

-->

</style>

</head>
```

2. Add this style sheet to the second paragraph under “Welcome to Africa Virtual University” heading like this:

<p class=”padding”>

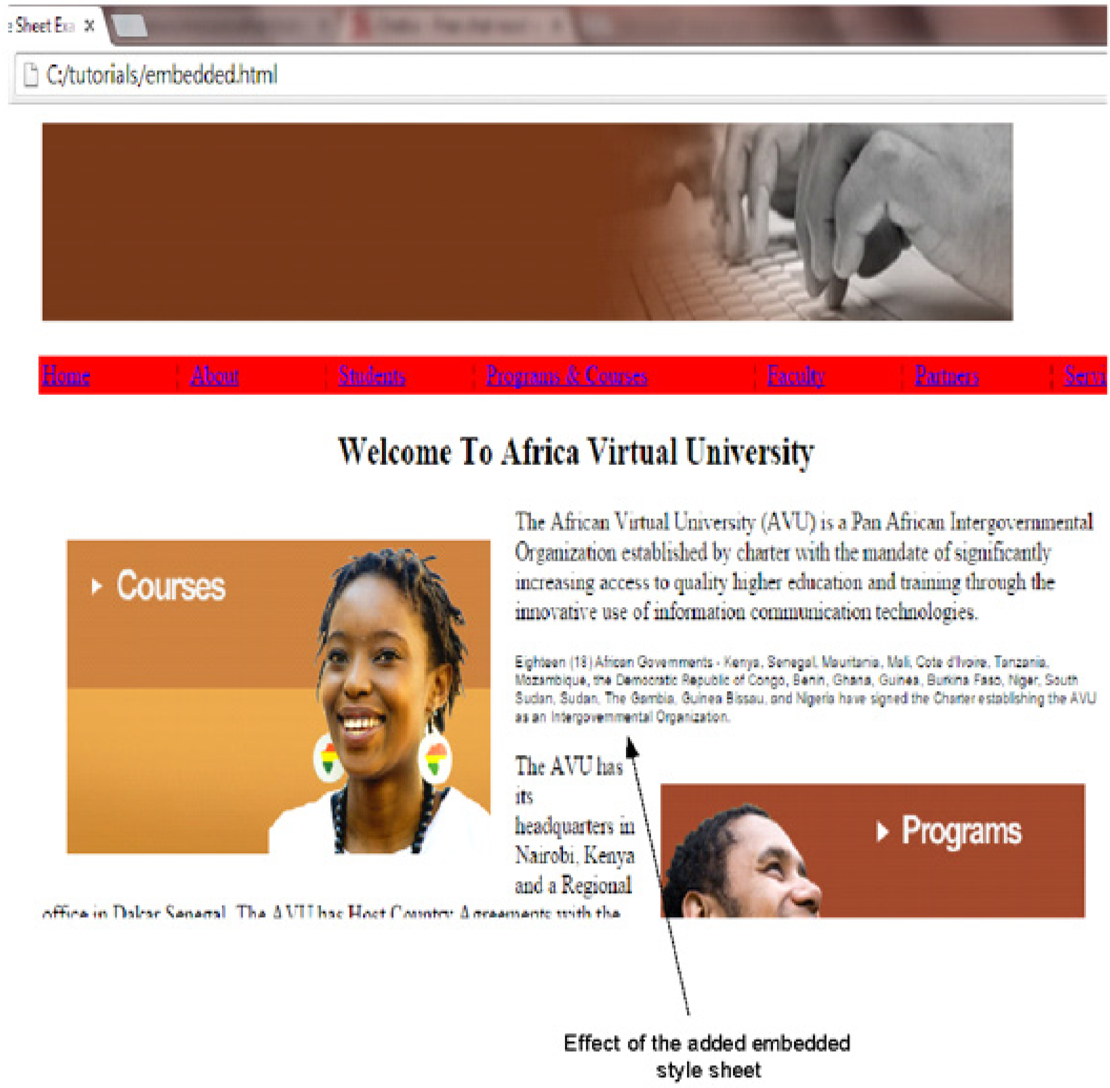
3. Save your work and view the effect of the style sheet in your browser.

Figures 2.43 and 2.44 illustrate how the codes are added and the browser view.


embedded - Notepad
File
Edit
Format
View
Help
Embedded style sheet codes added in <head> tags
Padding class used in the paragraph

```
<html>
<head>
<title>Embedded Style Sheet Example</title>
<style>
<!--
p.padding
      {
      padding-left: 5px;
      padding-right: 5px;
      font-family: arial;
      font-size: 10px
      }
-->
</style>
</head>

<body>

<table border="0" cols="2" width="80%" align="center">
<tr>
<td><img src="http://www.avu.org/images/about-banner.jpg" width="800" height="120" alt="banner1"></td>
<td><img src="http://www.avu.org/images/ace-text-based-award-2013.jpg" width="144" height="120" alt="banner2"></td>
</tr>
</table>

<p><a href="http://www.avu.org/AVU-Programs-and-Courses/courses.html"><img src="http://www.avu.org/im
height="190" vspace="20" hspace="20"></a>The African Virtual University (AVU) is a Pan African Interg
of significantly increasing access to quality higher education and training through the innovative us

<p class="padding">Eighteen (18) African Governments - Kenya, Senegal, Mauritania, Mali, Cote d'Ivoir
Tanzania, Mozambique, the Democratic Republic of Congo, Benin, Ghana, Guinea, Burkina Faso, Niger, So
signed the Charter establishing the AVU as an Intergovernmental Organization.</p>

<p><a href="http://www.avu.org/AVU-Programs-and-Courses/programs.html"><img src="http://www.avu.org/i
height="190" vspace="20" hspace="20"></a>The AVU has its headquarters in Nairobi, Kenya and a Regiona
with the governments of Kenya and Senegal and the AVU has diplomatic status in these countries.</p>
```

Figure 2.43: The creating of the embedded style sheet codes and adding it to the html tag



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The AVU has its headquarters in Nairobi, Kenya and a Regional office in Dakar Senegal. The AVU has Host Country Agreements with the

Effect of the added embedded style sheet

Figure 2.44: Browser view showing the effect of the added embedded style sheet

Note:

- The text you place after your CSS selector (.yourclassname) must be the same name as the code you place to call the style.
- For example, if your class code looks like this: p.myclass the code you use to call the style will look like this: <p class="myclass">

You will notice from activity 2.6 that the embedded style sheet code is placed within the comment tags which look like this: <!--your text-->. The comment tags are used to prevent older browsers that don't support style tags from displaying the CSS codes within their page.

External Style Sheets

They are the most comprehensive form of style sheet and can be used to organize the uniformity and look of many Web pages within a Web site. The external CSS involves creating a file that defines specific styles. This CSS file can be used throughout your entire web site to specify everything from body styles and headings to paragraphs and HTML tables.

Adding an external style sheet to a Web page involves a two-step process of creating an external style sheet and then linking this style sheet onto the desired Web pages. This file should be saved with a .css extension and uploaded to your server where you store your HTML files.

The sample code in table 2.15 below shows an example of an external style sheet:

```
body { font-family: arial;
    font-size: 12px }
h1 { font-family: georgia;
   font-size: 16px;
   font-weight: bold;
   color: blue }
p { font-weight: normal;
   color: blue }
a {text-decoration: none;
   color: blue}

table {font-family: Verdana, Garamond;
   font-size: 11pt}

th {color: white;
   background-color: blue;
   font-size: 11pt;
   text-align: left}
```

The format of the external style sheet is very similar to the format of the embedded style sheet. An external style sheet, however, does not need <style> tags to start and end the style sheet; it includes just the style statements.

For each Web page to which you want to apply the styles in an external style sheet, a <link /> tag similar to the sample code below must be inserted within the <head> tags of the Web page:

```
<link rel=”stylesheet” type=”text/css” href=”styles1.css” />
```

When using a style sheet, you must place a link to your style.css file within your HTML between your <head> and </head> tags like this:

```
<html>

<head>

<title>Page Title Here</title>

<link rel=stylesheet type=”text/css” href=http://www.yourdomain.
com/style.css />

</head>

<body>

Your Page Content Here

</body>

</html>
```

Activity 2.7 illustrates the setting of the Body, Link, Paragraph, and Table Styles of a web page using an external style sheet.

Learning Activity 2.7 – Setting the Body, Link, Paragraph, and Table Styles with an embedded style sheet

We are going to add an external style sheet to the web page we created earlier on, to which we added an embedded style sheet in activity 2.6.

1. Open a notepad and saved the file as style.css.

2. Create the external style sheet for setting of the Body, Link, Paragraph, and Table Styles of the web page by adding the following codes below to the style.css:

```
body {margin: 8pt;

   background-color: yellow}

p {font-family: Verdana, Garamond;

   font-size: 20pt}

table {font-family: Verdana, Garamond;

   font-size: 10pt;

   border-color: #6d6f7b;

   border-style: double}
```

```
th {background-color: #6d6f7b;
   color: white;
   text-align: left}
caption {font-size: 8pt;
   font-style: italic}
```

3. Save the file.

4. Upload the saved style.css file into your server hosting the web page.

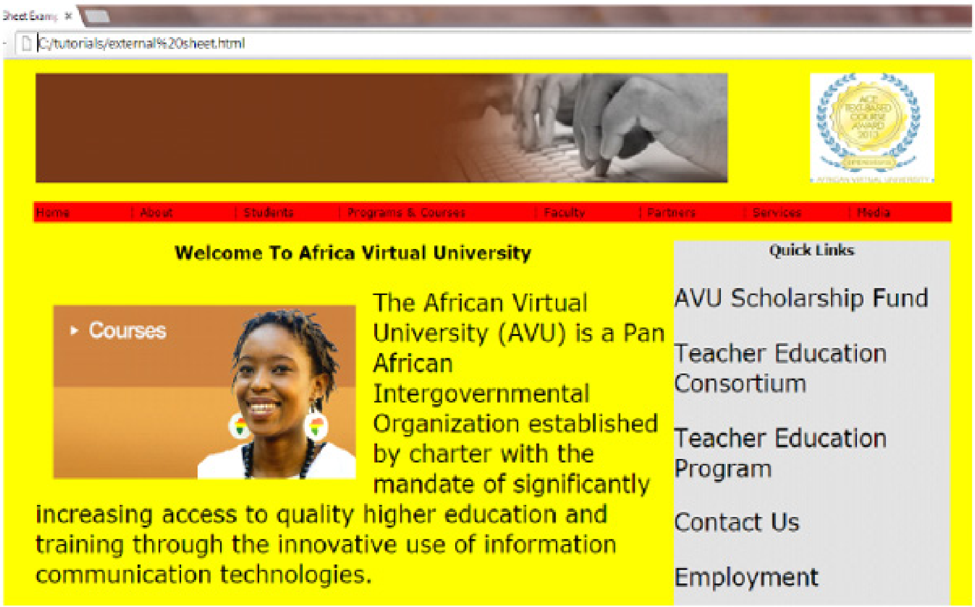
For illustration of external style sheet for this course, the created style sheet is uploaded on a Menyo Technologies server (www.menyotech.com).

5. Add a link of the external style sheet to the <head> tags of the web page as stated below:

```
<html>
<head>
<title>External Style Sheet Example</title>
<link rel=stylesheet type="text/css" href="http://menyotech.com/style.
css" />
</head>
```

6. Save the web page and preview it in your browser.

Figure 2.45 shows the browser view of activity 2.7.



Welcome To Africa Virtual University

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Quick Links

AVU Scholarship Fund

Teacher Education Consortium

Teacher Education Program

Contact Us

Employment

Figure 2.45: The browser view of external style sheet created in activity 2.7

Table 2.17 below explains the statements in the style.css file created in activity 2.8

Style sheet codes	Explanation
body {margin: 8pt;	Change the margin of the Web page body to 8 points.
background-color: #ffffff}	
	Sets the color of the background to yellow.
a {text-decoration: none;	Set the style for all link states to have no text decoration (that is, no underline) and to be displayed in the color black.
color: black}	
p {font-family: Verdana, Garamond;	Changes the style of all paragraph text to the font family Verdana or Garamond, depending on the fonts available on the user's computer.
font-size: 20pt}	
	Sets the font size to 20 point, which is slightly smaller than the font selected for the link text in the navigation menu.
table {font-family: Verdana, Garamond;	Set the style for table text to complement the style used for paragraph text with font size as 10pt.
font-size: 10pt;	
border-color: #6d6f7b;	The border-color is set to color code #6d6f7b with a double-line style.
border-style: double}	
th {background-color: #6d6f7b;	Sets the table header styles with all table headers displayed with a background color of #6d6f7b and white text.
color: white;	
text-align: left}	The text also will be left-aligned.
caption {font-size: 8pt;	Set the style of all table captions to appear in an 8pt italic font.
font-style: italic}	

Table 2.17: Explanation for the various statements in the style.css file created in activity 2.8

Using Cascading Style Sheets to Specify Webpage Formatting

Cascading Style Sheets will enable you to indicate all aspects of your webpage formatting, such as your webpage background color, font size, font color, font face, page margins and much more simply by including special CSS tags .

Defining style sheets for the body

In CSS, the body tag used in embedded or external sheets looks like this: body { }. The information that concerns how the body will be styled goes inside the brackets. Some formatting styles that can be used in the body tag are discussed below:

1. Formatting the Background and Foreground

With CSS, we can define different colors for the background and foreground of a webpage. This is done as follows:

```
body {background-color: 000000; color: ffffff}
```

The statement above sets the background of the web page as black background with a white foreground. Next to the background color is a colon, which is followed by the value (hexadecimal color code). A semicolon is placed at the end to tell the browser that this definition is complete and a new one is beginning.

2. Formatting Web page Margins

Adding margin to the body changes the margin of the Web page body to the specified point pixel. This is done as follows:

```
body {background-color: 000000; color: ffffff; margin: 100px
```

A good selection of fonts would be Arial, Verdana, Georgia, Times New Roman, and Sans-Serif. This is done as follows:

```
body {background-color: 000000;

   color: ffffff;

   margin: 100px;

   font-family: arial, verdana, georgia, “times new roman”,
sans-serif}
```

4. Formatting Font Size

Adding font size defines the size of the fonts, either using terms, such as small, or numbers, such as 1 or +1. It can also be defined in pixels. Browsers recognize and accept font sizing in a variety of ways. This is done as follows:

```
body {background-color: 000000;

   color: ffffff;

   margin: 100px;

   font-family: arial, verdana, georgia, “times new roman”,
sans-serif;

   font-size: 12px}
```

5. Formatting Spacing between Lines

The spacing between lines can also be defined in CSS. If not defined, it will naturally be set to 120% of the size of the font. However, if you want more line spacing than that between lines of text, you can indicate a different amount. This is done as follows:

```
body {background-color: 000000;

   color: ffffff;

   margin: 100px;

   font-family: arial, verdana, georgia, “times new roman”,
sans-serif;

   font-size: 12px;

   line-height: 160% }
```

Defining style sheets for the head tags

CSS can be used to indicate how your head tags should be formatted. For example, you can specify the font face and color of the <h1> tag within your webpage like this:

```
h1 {color: ff0000; font-family: arial, “times new roman”}
```

Defining style sheets for Formatting Paragraph Indentions and Letter Spacing

CSS can also control the indention of paragraphs and the spacing between letters in words. We can define the indention that should be used for each paragraph, by including the following code which will cause a five space indention at the beginning of each paragraph

```
p { text-indent: 5em }
```

To specify spacing between letters, use the following :

```
p { text-indent: 5em; Letter-spacing: 0.5em }
```

Specifying spacing between letters can also work when defining headings, such as:

```
h1 {color: ff0000; font-family: arial, “times new roman”; letter-
spacing: 0.5em}
```

Defining Style Sheets for Formatting Bulleted and Numbered Lists

CSS can be used to specify the kind of bullet style that should be applied in the <li> tag within a web page. You can also use images instead of bullet points, numbers, or roman numerals. For example, to use square bullets within an unordered list:

```
ul { list-style-type: square }
```

To use an image, use the following code:

```
ul { list-style-image: url (images/bullet.gif)
```

Defining Style Sheets for Formatting Hyperlinks

The default color for links is blue, and they are generally underlined. Yet, with CSS, you can change this. CSS creates different link styles:

- A visited link is one that the user has visited, and it is generally no longer blue to the user but it is still clickable.
- An active link is a link that has just been clicked. The link turns a different color between the time that the user clicks the mouse button down and then let’s goes of the mouse button, meaning that they have activated the link.
- A hovered link refers to the time that the user has their mouse cursor over a link, but has not clicked.

To control these links, we use the following in our CSS:

```
a: link { color: #008000;

     text-decoration: none }


a: visited { color: #cccccc;

     text-decoration: none}


a: active { color: #ff0000;

     text-decoration: underlined }


a: hover { color: #3300ff;

     text decoration: underlined }
```

Defining Style Sheets for Creating Tables within a Webpage

The use of tables can be very complex, time consuming and they are not necessarily search engine friendly. Therefore, instead of using tables, learn to use CSS classes and include the <div> tag where it is appropriate to do so in your HTML code.

Assuming that we want to add a navigational menu on the left hand side of a web page, normally, using HTML, we would create this with the use of tables. But we don't have to do that with CSS. To do this, the first thing we want to do is to set up a class. A class in CSS is a period followed by a codename for the class like the one below:

```
leftcolumn {position: absolute;

     width: 150px;

     top-margin: 20px;

     left-margin: 10px;

     background-color: #009900}
```

These codes could be used in your external style sheet and added to the <head> tags of your html codes or they could be used as embedded statements included in the <head> tags of your html codes as illustrated below:

```
<html>

<head>

<title>Creating Tables with CSS</title>

<style type= “text/css” title=”styleid” media=”all”>

<!–

.leftcolumn {position: absolute;

     width: 150px;

     top-margin: 20px;

     left-margin: 10px;

     background-color: #009900}

-->

</style>

</head>

<body>

</body>

</html>
```

Now, in the HTML code, we have to specify where we want our navigation to appear. This is done by using the .leftcolumn code name we set up. Since we’ve set our position as absolute, the CSS will align it just as we specified. To complete the navigation menu, the following code should be added to the <body> tags of the HTML document:

```
<div class=”leftcolumn”>

<a href=”link1.html”>Your First Link</a><br />

<a href=”link2.html”>Your Second Link</a><br />

<a href=”link3.html”>Your Third Link</a><br />
```

Your whole html document will look something like this:

```
<html>
<head>
<title>Creating Tables with CSS</title>
<style type= “text/css” title=”styleid” media=”all”>
<!–
.leftcolumn {position: absolute;
     width: 150px;
     top-margin: 20px;
     left-margin: 10px;
     background-color: #009900}
-->
</style>
</head>
<body>
<div class=”leftcolumn”>
<a href=”link1.html”>Your First Link</a><br />
<a href=”link2.html”>Your Second Link</a><br />
<a href=”link3.html”>Your Third Link</a><br />
</body>
</html>
```

Popular Cascading Style Sheet Codes and their Properties

We are ending this unit with some popular cascading style sheet codes and their respective properties.

Table 2.18: Popular Cascading Style Sheet Codes and their Properties

Property	Possible Values	Description
background	background-color background-image background-repeat background-attachment background-position	Sets all background properties
border	border-style border-color- border-width- border-bottom-width thin medium thick length color border-right-width border-top-width none hidden dotted dashed solid double groove ridge inset outset	Controls border properties
clear	left right both none	Prevents a floating element from being placed near the specified edge of another element.
display	none inline block list-item run-in compact marker table inline-table table-row-group table-header-group table-footer-group table-row table-column-group table-column table-cell table-caption	Determines how an element is displayed, or even if it is displayed.

position	static relative absolute fixed bottom clip left overflow right top vertical-align z-index	Determines how an element will be positioned.
visibility	visible hidden collapse	Determines whether an element is visible, invisible, or collapsed.
height	auto length %	Determines the height of an element.
line-height	Normal number length %	Determines the space between lines.
max-height	none length %	Determines the maximum height of an element.
width	auto % length	Determines the maximum width of an element.
max-width	none length %	Determines the minimum width of an element.

min-height	length %	Determines the minimum height of an element.
min-width	length %	Determines the minimum width of an element.
font	font-style font-variant font-weight font-size/line-height font-family caption icon menu message-box small-caption status-bar	Determines all font properties.
font-family	family-name generic-family	Determines fonts that will be used. If a font is not installed on a user's computer, the browser will try each font in the font family until one is found.
font-size	xx-small x-small small medium large x-large xx-large smaller larger length %	Determines the size of the font.

font-size-adjustment	none number	Used to adjust the font size if other elements or factors change the size of it.
font-style	normal italic oblique	Determines the size of the fonts.
font-stretch	normal wider narrower ultra-condensed extra-condensed condensed semi-condensed semi-expanded expanded extra-expanded ultra-expanded	Used to shrink or enlarge the span of the fonts.
font-variant	normal small-caps	Used to cause fonts to be displayed either as fonts in small capital letters or in normal letters.
font-weight	normal bold bolder lighter	Determines the weight or boldness of a font.

content	string url counter(name) counter(name, list-style-type) counters(name, string) counters(name, string, list-style-type) attr(X) open-quote close-quote no-open-quote no-close-quote	Creates specific content in a document.
quotes	none string	Determines the type of quotation marks used.
list-style	list-style-type list-style-position list-style-image	Determines the style of a list.
list-style-image	none url	Determines what image should be used for a list.
list-style-position	inside outside	Determines whether the list element is on the inside or the outside of the list item.

list-style-type	none disc circle square decimal decimal-leading-zerolower-roman upper-roman lower-alpha upper-alpha lower-greek lower-latin upper-latin hebrew armenian georgian cjk-ideographic hiragana katakana hiragana-iroha katakana-iroha	Determines the style of a list.
margin	margin-bottom margin-top margin-left margin-right	Used to determine and set margins on the page.
outline	outline-color outline-style outline-width	Determines the properties of an outline.
padding	padding-top padding-right padding-bottom padding-left	Sets padding properties.

text	color direction line-height letter-spacing text-align text-decoration text-indent text-shadow text-transform Unicode-bidi white-space word-spacing	Determines text properties.
a	:link :visited :focus :hover :first-child :lang :active	Determines link properties.

Unit Summary

- A style is a rule that defines the appearance of an element on a Web page.
- A style sheet is a series of rules that defines the style for a Web page or an entire Web site. Cascading Style Sheets are used to specify particular styles for a character, a word, a group of words, a page or a whole web site.
- There are three main techniques used to implement styles: inline, embedded, or external.

Key Terms

Cascading Style Sheet

Inline Style Sheet

External Style Sheet

Embedded Style Sheet

Unit 4. Client-Side Scripting: JavaScript

Unit Introduction

This topic will explain some important concepts like the client-server concept, client-side programming and server-side programming and the use of events, before delving into insertion of JavaScripts into web pages.

Unit Objectives

By the end of this topic you should be able to:

1. Explain the importance of programming to the server;
2. Explain the concept of client and server in a web page;
3. State three applications that can be built with client-side scripting;
4. Insert scripts into web pages; and
5. Determine the needs of using events script.
6. Insert JavaScript into HTML documents;
7. Declare JavaScript variables and data;
8. Identify three types of functions that can be used in JavaScript; and
9. Use selected control structures and loops in JavaScript.

INTRODUCTION

One way to increase the interactivity of a web page is through the use of scripts. JavaScript is among the scripts you might have heard or read of. However, many people do not understand the usage and classification of scripts in HTML.

Script language can be considered as a non-complex programming language. Like other programming languages, JavaScript consists of instructions that can be executed. What differentiates it is it can be inserted into a HTML document. The results of a script can be viewed using a web browser like Netscape and Internet Explorer.

This topic will explain some important concepts like the client-server concept, client-side programming and server-side programming and the use of events, before delving into insertion of scripts into web pages. You will explore in further detail the characteristics of JavaScript, syntax like variables, operations and expressions, functions, control structures and loops for JavaScript

Client and Server

When the web server opens a website, the operations executed by the web server is not just a switch from HTML codes to text or pictures only. At the same time, the web server also functions as a client that interacts with other servers that have the HTML documents that you are accessing.

The easiest model to demonstrate the relationship between client and server is the processing of forms by the Common Gateway Interface (CGI) application. CGI is an application that is run from the web server. The web user fills in a form and it is sent to the CGI. The user's request is received by the CGI and the requested output is sent.

> CGI Script or Common Gateway Interface script is any application or set of instructions that receive data from HTML documents for performing certain operations on that data.

Client Programming

CGI is an example of a programme that is run on the web browser. However, there are several demerits associated with it:

- The need for the user to connect to the server before running any CGI script.
- If the connection is terminated or cut off, the CGI is unable to receive the web server's request.
- Only the programmer can modify the CGI program because the user is not authorised access and modify the web server.
-

CGI, however, has some merits associated with it:

- In special situations, CGI can only be run by certain users to avoid intrusions to the system that can slow down or spoil the web server's application. This restriction is set up by the system administrator

To solve several problems related to interaction between HTML documents and CGI, client-side programming is deployed. This process is no longer operated by the web server; it is operated by the client's script.

Some advantages of using client script include:

- Scripts run on web browsers will reduce the burden of processes that are performed by the server.
- The reaction or output generated on the web browser becomes faster.
- Users no longer need to send requests and wait for CGI output that is sent through the Internet.

Examples of client-side scripts are JavaScript and VBScript. There are other available client-side programming technologies like Java Applet and ActiveX that are capable of performing more complex operations like displaying graphics.

Operations of Client Programming

Operations on the client's computer normally use JavaScript or VBScript. It checks the contents of the form before sending it to the CGI. Data sent from the form to CGI has to be checked first to ensure that the data does exist and the data type is suitable for CGI.

To demonstrate further, suppose you are building a form to send the value of a textbox that contains the name of a person to CGI. At first, you may have to ensure that the textbox is not empty. The user will have to enter a name. Then you will have to ensure that no numerical digits are inserted because logically a human name does not contain digits.

It cannot be denied that java scripts are able to perform many processes in a HTML document. Given this, it This notwithstanding, they cannot fully replace the applications provided by CGI cannot fully replace the applications provided by CGI. Therefore, CGI has some advantages over scripts. For example, an online shopping program for example, cannot store buying data at the client-side as this would mean that data cannot be centrally kept up-to-date. In contrast, the data is combined in a database located at the web server. The role of CGI comes into play here, to access the data for processing and sending it back to the client.

Self-Check 3.1

10. What is CGI?
11. Discuss the merits and demerits of CGI.
12. What are some advantages of using scripts over CGI?

Programming at the Server-Side

Among examples of programmes at the server-side are CGI programmes, NSAPI/ ISAPI, Active Server Pages, Live Wire and Cold Fusion.

Programmers apply server-side programmes for several reasons:

a. The programme can be fully controlled. If there are changes to be made, the program file on the server only needs to be updated.

b. There is also no need to worry about the compatibility of the programme with the various web browsers available in the market. This is because some client-side scripts can only be run on certain web browsers.

c. Most of the data needed by applications are real-time data. An example is applications that involve a database. Users will perform a variety of operations on a website which results in the need to update particular data constantly.

d. In addition to this, new data may need to be added or old data may need to be deleted. It is impossible to keep this data at the client-side. Hence, applications and the data are better kept at the server.

Programming at the server-side, however, has some disadvantages:

e. Applications will rely wholly on the server. The client or web browser needs only to send requests via forms and then receive the result or decision from the server.

f. The server workload increases and may cause delay in the processing of data at the server. This situation can be aggravated when there are many requests from the client at a time.

Adding Scripts into the Web Page

The usual method of inserting a script into a web page is by using the <script> tag. This tag tells the web browser that all the text contained within it is script and not HTML. The syntax for using the <script> tag is as follows:

```
<script src=″url″ language=″script_type″>

<!-

Your script instructions appear here

. . .

->

</script>
```

- Url is the location and name of the script file if the script is located in a separate file. JavaScript script for example can be placed under a file name like script.js.
- Script_type refers to the type of script that is used. For instance, if using JavaScript it would read as Language= "JavaScript".
- The symbols <!-- and --> are used to hide the script from older versions of web browsers that do not support the script. If the symbols are not placed, these web browsers would read the script as part of the HTML document. This will damage the way the existing web page is displayed.

The <script> tag can be placed anywhere in the HTML document. It can be placed either in the <head> tag or <body>. However, many programmers choose to place it in the <head> tag to differentiate script code and other HTML tags that are display functions.

Self-Check 3.2

13. State two types of client-side scripts that are popular
14. Explain why programmers apply server-side programmes.
15. What is the purpose of <!-- and --> symbols?

Events in Scripts

Events are the result after an action is performed by the user. Examples of events are the click of a mouse button, pressing a button on the keyboard, double-clicking the mouse or moving the mouse cursor on the display screen. There are also external events that are not initiated by the user like page loading. Other examples of events are onclick, onblur, onload, etc. Table 3.1 lists and explains some popular event scripts.

Table 3.1: List of events and their explanations

Events	Explanation	Allowed Elements
Onblur	Run when an element loses focus. The user shifts either to a form or different form element by clicking the mouse or hitting the tab key.	<a>, <area>, <button>, <input>, <label>, <select>, <textarea>
Onchange	When a form element loses focus and its value is changed compared to the previous value.	<input>, <select>, <textarea>
Onclick	Run when an element is clicked.	Most html elements
Onfocus	When an element get the focus upon the click of a mouse or use of the tab key.	<a>, <area>, <button>, <input>, <label>, <select>, <textarea>
Onload	Performed when the window or frame containing the document is opened.	<body>, <frameset>
Onsubmit	When a form is sent via a click of the submit button on the form.	<form>

Learning Activity 1 - Inserting script into the web page

1. Open a text editor (like Notepad) in your system.

2. Type the following code:

```
<html>

<head>

</head>

<body>

<form>

<input type=”button” onclick=”alert (“hello world”) ” value=”click here”>

</form>

</body>

</html>
```

3. Store the file above as activity3.1.htm and display it using a web browser.

Introduction to Javascript

JavaScript can make HTML documents more interactive and provide operations that HTML cannot. JavaScript can provide functionality, such as password protection, browser detection, or display information, such as the correct time and date on a webpage, background colour changes and pop-up windows. JavaScript can be used to give the website designer more control over a user’s browser, and how that browser sees the webpages.

Using Javascript in HTML documents

For JavaScript, the declaration for <script> tag is as follows:

```
<script language= “JavaScript”>
```

The example below illustrates how JavaScript is inserted into html codes:

```
<html>

<head>

</head>

<body

<script language= “JavaScript”>

<!-

//print hello world!

 document.write(“hello world!”)

->

</script>

</body>
```

The example above will give the following output:

```
Hello World!
```

- The instruction document.write (“Hello World”) will display the text contained within (). The document is an object. Write is the method (or function) that we want to use within the document. It is presented with a period between the two words: document.write. The write method is actually presented as write() with what you want written inside the parentheses.
- The previous versions of web browsers that do not support this script will display the script code as normal text. To prevent this from happening, <! -- and --> can be used to make the script in between appear as comments to the web browser.
- The // symbol is also a symbol for comments that are on a single line only. This will prevent JavaScript from running the lines

Using the <noscript> Tag

If a user's browser is not JavaScript enabled, the script can't run. Usually, nothing will happen, but it is possible that the user will get error reports. This can be prevented by using the <noscript> JavaScript tag. It looks like this:

```
<noscript> <p>Sorry Your Browser Does Not Support JavaScript!</p> </
noscript>
```

Javascript events

Events in JavaScript generally happen when a website visitor, or user, does something. It may be something as simple as moving the mouse. When events happen, Event Handlers react to the events. For instance, when you click a link on a web page, an event handler takes you to the link that has been specified.

Event handlers often use variables and methods to perform the task that they have been told to do. Event handlers are assigned to objects in the HTML code.

We have looked at some examples of events already in this unit. We are going to see how they are applied in our JavaScripts.

onLoad

Events are not always user dependant. There is a way to cause an event to occur, without the user doing anything. The event handler for this is onLoad, which means that the event is the page loading in a web browser. Example of some onloads code is stated below

```
<body onLoad=”window.defaultStatus=’Amazing Stuffs Here’ ”>
```

This JavaScript code is placed inside the body tag of the HTML code. onLoad is the event handler, so when the page loads, it looks for the object, which is the window, checks to see if there is a status bar and finds one, and then assigns a string to it, which in this case is the words Amazing Stuffs Here in the status bar.

onClick

onClick is another user driven event handler. This event handler wakes up and starts doing things when a user clicks on a specified object. Here is the code:

```
<button onClick=”window.alert(‘Amazing Stuffs Here!’); return
false;”>Click It!</button>
```

When the button is clicked (event), the onClick (event handler) will create an alert box (object), which will say Life is good (string). We’ve made sure the button will simply say Click It! Now, note that we’ve said that the alert box is an object. In this case, the window is an object, and alert is both a method and an object.

unload

This is an event handler, and the event is when a page is closed, or left by the user. When the web page unloads in the browser window, something will be triggered. This is often used to open popup windows and such.

onFocus and onBlur

When a user interacts with a web page, the browser that is displaying that page focuses on what the user is doing. Users interact with web pages by using the mouse. When a user clicks a link, that link has the web browsers focus.

For example, a user comes to your page. He types something into a form on your page. That form’s input box has the focus of the browser. The user hits the submit button for that form. The input box loses focus, and this is called onBlur in JavaScript terms. The focus is now on the button, which is onFocus.

onChange and onSelect

onChange event handler comes into action when the user changes something on the page, such as the text in an input box. The other event handler, onSelect, comes to life when the user selects something. For instance, they might select an option with a radio button.

Variables

What are variables? Variables are temporary spaces for storing data that will be used to run JavaScript programme. The value of the variable can change when the script is run. You can refer to a variable by its name for the purpose of viewing the value contained within or to change the existing value.

Below are some few important rules that you need to heed when naming a variable:

a. Variable names are case sensitive, and

b. Must begin with an alphabet or underscore

You can declare a variable in two ways.

a. using the keyword var:

var intYear = value   i.e. var intYear = 1502

b. Without using the keyword var:

intYear = value   i.e. intYear = 1502

A variable can also have a value that is a string of text, such as:

var text = “Santa Clause Is Coming To Town” ;

Note that anytime you use a string, the string must be enclosed inside quotation marks.

Once a variable is declared in a function, the variable can be accessed in that function only. This type of variable is called a local variable. Therefore, you can declare a variable with the same name in another function. If the variable is declared outside the function, all functions in the programme can access that variable.

A variable needs more to make it do anything. In our example above, var number = 16 doesn’t actually do anything. It needs more code to make something happen - to make the variable matter. To make JavaScript print something on our page using a variable, the codes to use are as follows:

c.

```
<script type=”text/JavaScript”>

var number = 16;

var text = “Many years ago when”;

document.write(text + “ I was “ + number);

</script>
```

Functions

Function contains a portion of the code that will be run by events or a call to the particular function. One function is one set of instructions. You may use the same instruction repeatedly. Look at the instruction below:

```
alert(“Hello World!”)
```

Actually means that a text value; “Hello World!” has been sent to the function called alert.

Functions with arguments

A function is created by declaring its name, value (argument), and instructions as follows:

```
function function_name (argument1,argument2, etc)

{

instructions
```

An argument is a variable that will be used in function. You can pass value to function using argument. Below is an example of a function call with argument

Example of a function call includes argument:

Function_name (341, “Java‰, etc)

Value 341 will be assigned in argument 1 and “Java„ string will be assigned in argument 2. Meanwhile, function that does not include arguments must remain as such

```
Function Function_name()

{

instructions

}
```

The function call for the above function is:

The function call for the above function is:

Functions that return a value

Another type of function is a function that returns a value. Observe that this function uses the keyword “return” that is normally placed at the end of a function. The keyword return will resend a value to the instruction calling the function. For example, this function that calculates the total of two numbers:

```
function total(x,y)

{

result=x+y

return result

}
```

When this function is called, two values will have to be prepared to be sent to the function. A variable also has to be prepared to receive the value returned to the function.

Learning Activity 2 – Functions

1. Open your text editor application.

2. Type the codes below:

```
<html>

<head>

<script language= “javascript”>

function speech(text)

{

alert(text)

}

</script>

</head>

<body>

<form>

<input type= “button” onclick= “speech(‘Happy Day!’)” value=
“Always Happy”>

<input type= “button” onclick= “speech(‘Welcome!)” value=
“English”>

</form>

</body>

</html>
```

3. Save the above file as activity3.2.htm and display it using your web browser.

Selective Control Structures

When writing a programme code, you may wish to execute different instructions for different results. You can use selective control structures for this. In JavaScript there are three selective control structures:

(a) if instruction

(b) if...else instruction

(c) switch instruction

if instruction

This instruction is used when you wish to run a set of codes given that a particular condition is true. The syntax for this selective structure is as follows:

```
if (condition)

{

code to be run if condition is true

}
```

if...else instruction

This instruction is used when you wish to run one of two sets of instructions. This selective structure has the following syntax:

```
if (condition)

{

code to be run if condition is true

}

else

{

code to be run if condition is false

}
```

switch instruction

Use this instruction if you wish to run one of many instructions. The syntax for switch is as follows:

```
switch (expression)
{
case value1:
code that is run if expression = value1
break
case value2:
code that is run if expression = value2
break
default:
code that is run if expression is neither value1 nor
value2
}
```

Learning activity 3- if () and switch()

1. Open your text editor application.

2. Type the code below:

```
<html>
<body>
<script language= “Javascript”>
var date = new Date()
var time = date.getHours()
if (time < 12)
{
document.write (“<b>Good Morning</b>”)
}
else if (time < 7)
{
document.write (“<b>Good Evening</b>”)
}
else
{
document.write (“<b>Time to Sleep</b>”)
}
</script>
</body>
</html>
```

Self-Check 3

Change the following javascript below from a switch statement to an if Statement

```
<script language= “JavaScript”>

var date = new Date()

var today = date.getDay()

switch (today) {

case 1:

 document.write(“Today is Monday”)

break

case 2:

document.write(“Today is Tuesday”)

break

case 3: document.write(“Today is Wednesday”)

break

case 4: document.write(“Today is Thursday”)

break

case 5: document.write(“Today is Friday”)

break

default: document.write(“Today is a holiday”)

}

</script>
```

Looping Control Structures

When writing a programme code, it cannot be without you specifying a set of instructions to be run a few times. This can be achieved by using repetition instructions. JavaScript has provisions for a few types of repetition instructions as shown below:

a. while loop

The programme will run a specific set of instructions as long as the condition is true. The syntax for while is:

```
hile (condition)
{
code to be run when the condition is true
}
```

b. do...while loop

The programme will run a set of instructions once and will repeat it if the condition is true. The syntax for do...while is:

```
do
{
code that will be run
}
while (condition)
```

c. for loop

The repeat for a few times but it repeats a set of instruction based on a specified fixed number of times. The syntax for the instruction for is as follows:

```
for (initialization; condition; increment)
{
Code that will be run
}
```

Learning Activity 3.4 – CD Sales Calculator

Follow the following steps to design an html and JavaScript form to be used to calculate CD sales.

1. Start your text editor and type the following:

```
 <html>
<head>
<title>CD Sales Calculator</title>
</head>
<body>
<h1>CD Sales Calculator</h1>
```

```
<table border=”0” width=”344”>

    <tr>

<td width=”231”>Number of CDs ordered:</td>

      <td width=”93”><input type=”text” name=”txtQuantity” size=”10”
value=”0”></td>

      <td width=”1”><input type=”button” value=”Calculate”
name=”btnCalculate”></td>

    </tr>

    <tr>

      <td width=”211” colspan=”3”>At $2.95 for each CD</td>

    </tr>

    <tr>

      <td>Order Total:</td>

      <td width=”70”><input type=”text” name=”txtOrderTotal”
size=”10”></td>

      <td width=”70”><input type=”reset” value=”Reset”
name=”btnReset”></td>

    </tr>

  </table>

</form>

</body>

</html>
```

2. Save the file as CDsalescalculator.htm and preview it in your browser

3. After previewing the page, return to your text editor

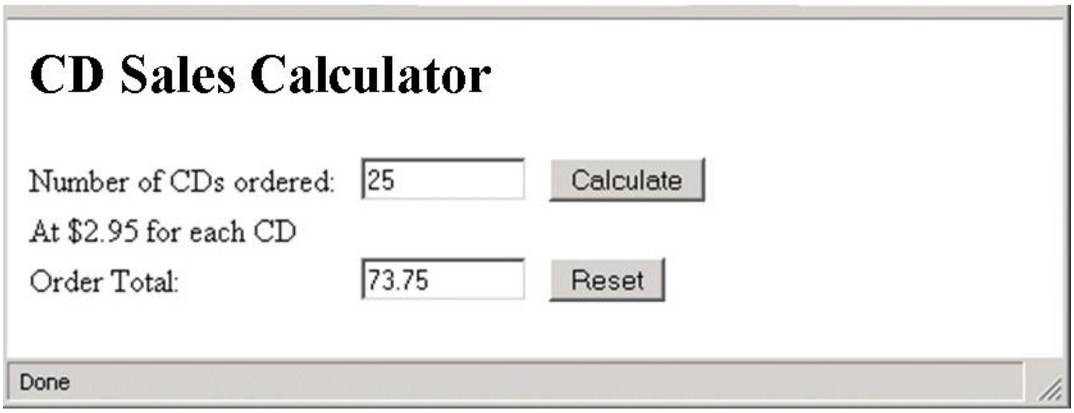
To use the parseInt() function, change the file as follows:

```
<html>

<head>

<SCRIPT language=”JavaScript”>

function calculateOrder()

{

    var quantity, totalOrder;

    quantity = parseInt(document.frmOrder.txtQuantity.value);
    totalOrder = quantity * 2.95;

    document.frmOrder.txtOrderTotal.value = totalOrder;

}

</SCRIPT>

<title>CD Publisher</title>

</head>

<body>

<td width=”211” colspan=”3”>At $2.95 for each CD</td>

    </tr>

    <tr>

      <td>Order Total:</td>

      <td width=”70”><input type=”text” name=”txtOrderTotal”
size=”10”></td>

      <td width=”70”><input type=”reset” value=”Reset”
name=”btnReset”></td>

    </tr>

  </table>

</form>

</body>

</html>
```

4. Save the file. Return to the browser and refresh it.

5. Enter a natural number in the top text box and click Calculate

Final work outlook



CD Sales Calculator

Number of CDs ordered: 25

At $2.95 for each CD

Order Total: 73.75

Unit Summary

- One way to increase the interactivity of a web page is through the use of scripts. JavaScript is among the scripts you may have heard or read of.
- CGI Script or Common Gateway Interface script is any application or set of instructions that receive data from HTML documents for performing certain operations on the server .
- Operations on the client's computer normally use JavaScript or VBScript.
- Among examples of programmes at the server-side are CGI programmes, NSAPI/ ISAPI, Active Server Pages, Live Wire and Cold Fusion.
- The usual method of inserting a script into a web page is by using the <script> tag.
- Events are the result after an action is performed by the user.
- Variables are temporary spaces for storing data which will be used used to run JavaScript programme.
- Function contains a portion of the code that will be run by events or a call to the particular function

Key Terms

Events

JavaScripts

Scripts

Function

Variables

Unit 5. Web Hosting

Unit Introduction

This chapter aims to help you understand all about domain names, web hosting principles and web application Deployment on to the server.

Unit Objectives

Upon completion of this unit you should be able to:

- Identify the Internet and How It Works
- Discuss what happens between the Server and Web browser
- Discuss the DNS and how the Internet Keeps Track of Names
- Introduced you to Web Hosting
- Discuss all about Domain Names
- Discuss how to select a web host
- Identify the File Transfer Protocol

How does the Internet work?

The Internet is essentially a huge network of computers that communicate with each other across the world. There are literally millions of computers that make up the Internet - including the one that your webpages reside on.

A home computer may be linked to the Internet using a phone-line modem, DSL or cable modem that talks to an Internet Service Provider (ISP). A computer in a business or university will usually have a network interface card (NIC) that directly connects it to a local area network (LAN) inside the business. The business can then connect its LAN to an ISP using a high-speed phone line like a T1 line. A T1 line can handle approximately 1.5 million bits per second, while a normal phone line using a modem can typically handle 30,000 to 50,000 bits per second.

ISPs then connect to larger ISPs, and the largest ISPs maintain fiber-optic “backbones” for an entire nation or region. Backbones around the world are connected through fiber-optic lines, undersea cables or satellite links. In this way, every computer on the Internet is connected to every other computer on

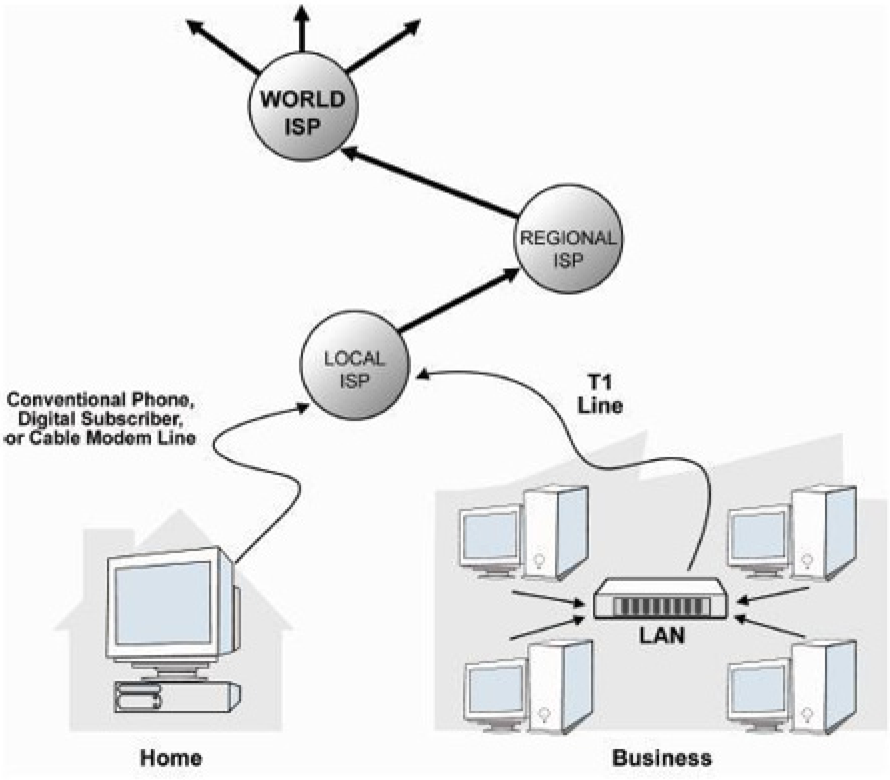


Figure 4.1: Internet atlas

From server to web browser – what happems?

Usually, most of us don't even think about what is happening when we click a link or put a web address into our browsers. All we think about is what we want or need to see. However, if you own a website, or plan to, it is important to have a basic understanding of what happens between the time a user clicks the link or types in the address and the time that your webpage is displayed in the browser. It may be fast, but there is quite a bit going on.

Hyper Text Transfer Protocol

The Hyper Text Transfer Protocol (HTTP) is what Web clients and servers use to talk to one another. On the Web, browser-server communication follows the HTTP protocol. When a user clicks a link or types an address into the address bar of their web browser, they are essentially requesting a document. The request must be 'handled,' meaning that it is 'dealt with' in some way. That way, in terms of browsers, is with HTTP, or Hyper Text Transfer Protocol. This is the http:// portion of the website address

How does the HTTP work?

The browser looks at the HTTP address, and sends a request for the document that is supposed to be located at that address to the server where it resides. You could consider the server a 'neighbourhood' and the document as a 'house' in that neighbourhood. Think of the browser as the postman, delivering mail in that neighbourhood, and then to that particular house.

The browser essentially serves as the go-between for the user and the server. It is used to display the document that has been requested through the HTTP. A server quietly waits for a request, constantly monitoring TCP port 80, as this is where the request will come into the server.

Here is the summary of an HTTP operation:

1. Connection – A browser (client) opens a connection to a server.
2. Query – The client requests a resource controlled by the server.
3. Processing – The server receives and processes the request.
4. Response – The server sends the requested resource back to the client.
5. Termination – The transaction is done and the connection is closed unless another transaction will take place immediately between the client and server.

TCP/IP

TCP/IP uses several protocols, the two main ones being TCP and IP.

TCP/IP is built into most network operating systems nowadays and is used by the Internet, making it the de facto standard for transmitting data over networks. Even network operating systems that have their own IP protocol known as IPX, developed by Novell Netware, also support TCP/IP.

TCP is used to connect one computer to another for the purpose of transmitting data. The computer that is requesting the document or data is identified with TCP technology, and time stamped. Again, Port 80 is used when a web document is requested, but there are other ports that are used and monitored as well. For example, TCP port 21 is the port that is used for FTP transfers, when users are uploading or downloading files. However, for HTTP requests, port 80 is always used.

You may type something simple like http://www.webpage.com or even www.webpage.com into your browsers address bar. But this is not exactly the request that is sent from the browser to the server. Instead, the request looks more like this (behind the scenes):

GET /index.html HTTP/1.1

Host: http://www.webpage.com

If an index.html page is available, the server responds with:

HTTP/1.1 200 OK

Date: Sat, 29 Nov 2014 13:48:32 GMT

Server: Apache/1.3.27 (UNIX) (Red-Hat/Linux)

Last-Modified: Fri, 28 Nov 2014 08:10:14 GMT

The server then allows the browser to access and display the webpage. Again, all of this happens in seconds, and the average user does not see all of this - and in most cases does not think about how the browser and server are communicating with each other.

Web Browser

Let us now understand how the webpage is displayed. A webpage is sent to the browser in a series of data packets. Each packet contains a header that tells the browser where that packet should be displayed on the page. The page is essentially broken up into various pieces for 'transport' between the server and browser, and then quickly reassembled by the browser when it arrives. Each data packet may be sent through different routers to ensure faster delivery of all of the components of the page.

The browser essentially sends the server a confirmation, letting it know that all packets have been received. If the server does not receive that acknowledgement, it will attempt to transmit the packets again. TCP treats everything as 'delicate' and makes sure that none of the packets are damaged during transmission as well.

The server also allows the connection to the port to remain open for a certain period of time, essentially saying 'can I be of further assistance?' This ensures that if you request additional pages from that website, they will be served quickly - usually faster than the first one that you requested, because the connection is already open, and the server is standing ready, anticipating what you may need.

DNS: Keeping track of names in the Internet

When the Internet was in its infancy, you could only make connections by providing the IP (Internet Protocol) address of the computer you wanted to establish a link with. For example, a typical IP address might be 202.x.y.z. This was fine when there were only a few hosts out there, but it became very unwieldy as more and more systems came online.

In 1983, the University of Wisconsin created the Domain Name System (DNS), which maps text names to IP addresses. This way you only need to remember www.avu.org, for example, instead of 202.x.y.z.

Domain Name System

The Internet uses IP numbers, but since many people use shared hosting, where more than one website resides on a server, we have the Domain Name System, or DNS, to act as addresses within an IP address.

An IP number is written in the form of 123.456.78.910. Clearly, a series of numbers like this is hard for people to memorize. So instead, you use a domain name. Your domain name is attached to your IP number. The entire system involves Domain Name Registrars, DNS Servers, and other elements as well.

IP Numbers

IP addresses are a series of unique numbers that are assigned to computers. Just as your own computer is assigned an IP number when it connects to the Internet, your website is on a server - which is essentially a computer - that also has a unique IP number assigned to it.

The term 'IP' or 'IP Address' is one that you will hear often in the online world, especially when you start building a website and open a Web Hosting account. IP stands for Internet Protocol, and every server on the Internet has a unique IP number, by which it is identified. The IP number is similar to a telephone number. It allows one computer to use a tool similar to a telephone (in this case a browser) to call another computer (a server).

An IP address takes up just 4 bytes of cyberspace, or 32 bits. A byte is also called an octet, with a value between zero and 255. So, IP addresses are actually numbers, written in a unique form. For example, an IP address may look something like this: 123.45.678.9. With 32 bits, it is possible for about 4 billion unique IP numbers to be assigned.

For easier identification, IP numbers cover specific 'ranges.' So that IP addresses from the same area are similar in nature, much like the area code and prefix of a phone number is similar in one area. Because there are literally billions of websites on the Internet, these ranges are especially important. For websites that are on a shared server, there is just one IP number, while websites that reside on private servers and dedicated servers have just one IP address.

Understanding Web Hosting

Web Hosting Company

After developing your website, you will have to host your webpages on a server. A Web Hosting Company essentially rents you space for the storage of your website files. Your visitors access your pages from the Internet, from the website hosting company's server. Your pages are available 24 hours a day, seven days per week, and 365 days per year - unless there is a problem with the server. They can be accessed by anyone with a computer, an Internet connection, and a web browser.

Of last, the options for Web Hosting services are awesome. There are different companies, who all offer different features, at different prices. In fact, the cost ranges from free to hundreds of dollars per month.

Some popular web hosting companies include:

- Host Gator – www.hostgator.com
- Host4Profit – www.host4profit.com
- Godaddy – www.godaddy.com

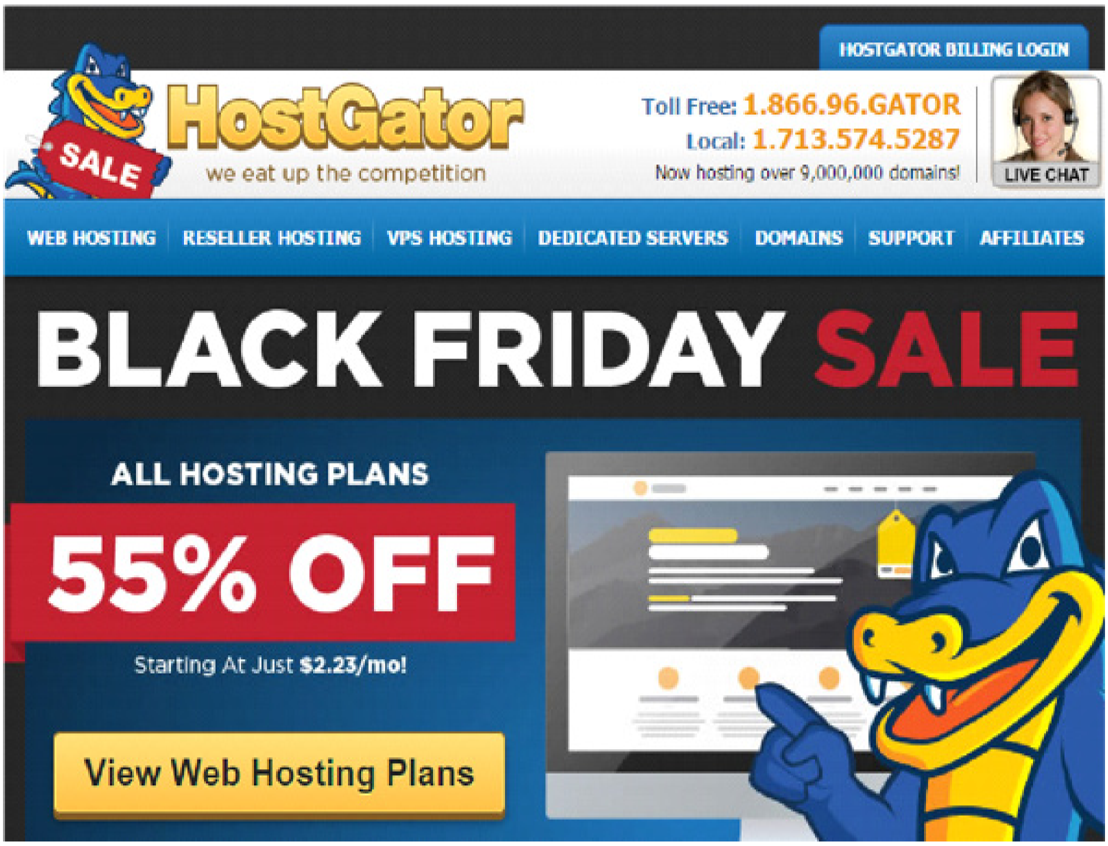


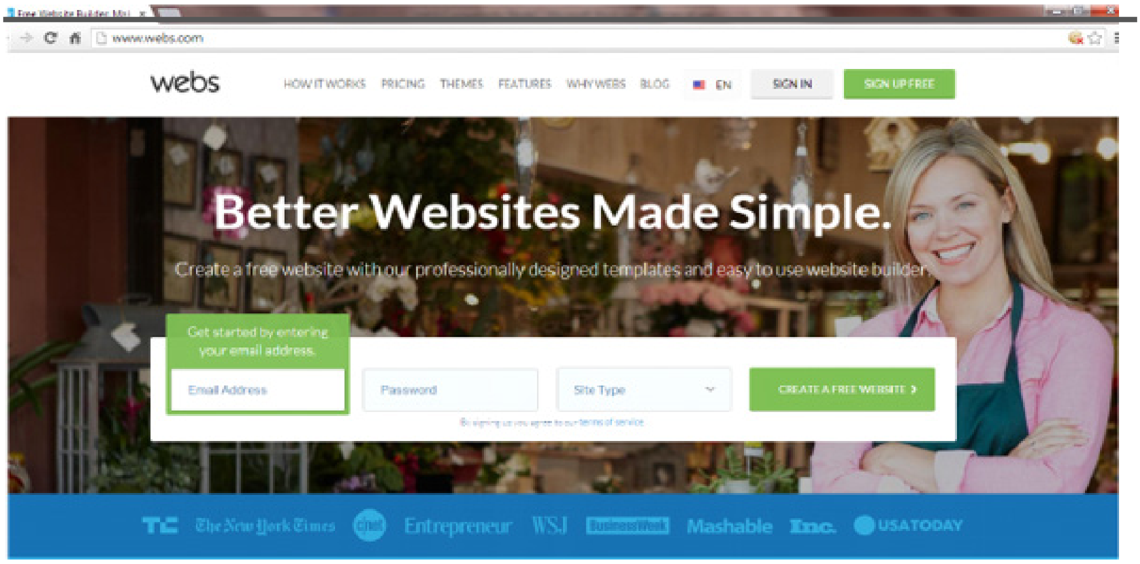
Figure 4.2: HostGator web hosting company home webpage

Let us look at some kinds of web hosting available on the market today with respect to pricing

Free Web Hosting Services

Do not be deceived! On the Internet, even 'free' comes with a cost. If 'free' was actually 'free,' most people would use free Web Hosting services. Unfortunately, this is not the case. Even those companies that offer free Web Hosting have an overhead, and you better believe that they are getting something out of hosting your website for free. Usually, they gain revenue from ads that are placed on your website - of which you have no control over. Paid Web Hosting services do not put ads on your pages.

Example of a free web hosting company is Webs (http://www.webs.com)



Better Websites Made Simple.

Create a free website with our professionally designed templates and easy to use website builder

Get started by entering your email address.

Figure 4.3: Webs home webpage

Paid Web Hosting Services

Paid Web Hosting services typically offer 24/7 support, and tons of features, depending on the package that you choose. Almost all Web Hosting services, free or paid, have a terms of service concerning the type of material that you host on their server, free services will limit you a great deal more than paid services.

Web Hosting Features

When it comes with web hosting, there are many features available. Cautiously think about what you need, and then choose your Web Hosting Company and package accordingly. Concentrate on what you need right now and just make sure that the Web Hosting Company offers that which you may need in the future. In the future, you can easily upgrade to a new package.

Selecting a Web Host

When you are ready to select a Web Host, you will find a wide range of prices, from very cheap, to very expensive. You may be tempted to go with the cheapest service, but in Web Hosting, it is important to remember that you get what you pay for. Usually, some Web Hosting companies may appear to be just like any other Web Hosting Company. Unfortunately, this is not the case, and what separates the good from the bad, in terms of Web Hosting companies that offer the same features, may be what goes on behind the scenes. Let us look at some features you should consider when choosing a web host.

Equipment

The first thing you want to consider when comparing Web Hosting services is the availability of requisite equipment. You want to make sure that the Web Hosting Company has enough equipment to maintain the load that they are to carry, and that the equipment is reliable. Clearly, you want a Web Hosting Company that has lots of bandwidth across multiple servers.

Bandwidth and Server Space

At the same time, you have to consider how much of their bandwidth and server space is already being used by other clients. So, instead of inquiring about overall capacity, ask about available capacity - that which is not currently being used.

Guaranteed Up-time

Clearly, you want a reliable Web Hosting service. From time to time, you will have to deal with outages and downtime, but look at the guaranteed up-time that the Web Host offers. Preferably, you shouldn't accept anything less than a 99% uptime guarantee.

Customer Support

Also, you must sure that the Web Hosting Company is capable, not just reliable. Obviously, you need to know what type of equipment they are using, and you also need to know about the human side of the equipment, in terms of technical support. Will someone be there to answer your questions or address your problems at three in the morning? If not, look for a different Web Host, because there are too many out there that have great features, and offer 24/7 support

Security

Importantly, you need to know that your site is secure. Viruses and spam are big problems, and if your Web Hosting Company isn't using proper security measures, you will be subjected to these things. Find out what methods are being used to protect clients from these threats.

Types of Web Hosting

There are various types of web hosting services available to host your website. Before signing up for web hosting services, it is important to understand what kind of service your website needs, the kind of server you or your business needs, your budget, and what type of services the web host offers. There are four basic types of web hosting: free, shared, dedicated and collocated. Let us discuss them extensively.

Free Hosting

Free web hosting can be a good choice when you just want to build a non-critical website for fun. Very often in a free hosting environment, connection speed is slow, website can be down frequently, and advertising banners is automatically added to your website. Some companies require you to purchase your domain name to receive free hosting services from them, while others offer you a free subdomain under them, such as "yourname.webhost.com". Be careful as you will not be able to transfer these free subdomains. Webs.com provides free hosting to people who needs one.

Some other constraints associated with free hosting are discussed below:

i. **Resource limitation:**Resource limitations are something that anyone considering a free hosting account should expect and be prepared for. The space and bandwidth is free, and therefore extremely limited. You can usually put several dozen pages on a free Web Hosting account, but you will be extremely limited in terms of audio or video.

ii. **Customer support:**Support is another issue. Most free

Web Hosting Companies only offer support to those who pay for the service. If something goes wrong, and you can't fix it yourself, you are essentially out of luck. The free hosting service may not even offer backups of your site, which could be devastating. If you have a small site, however, you can do your own backups by just retaining copies of everything either on your own system, or on another site.

iii. **Email:**Not all free hosting services offer email. Those that do will have great limitations on email, and the email that is sent out and received will have an effect on your bandwidth.

However, a free hosting company is beneficial to some.

- With a free hosting company, you can learn technical skills that you do not currently know.
- It is also a good place to start out with your website if you have a personal website, as opposed to a business website.

Shared Hosting

When you select shared hosting, you are basically sharing a server with other website owners, and all of the websites on that server also share the IP address. However, each site is unique because of its domain name. When your site is on a shared server, it also shares all of the resources of that server with the other sites that reside on it, such as disk space and bandwidth. With shared hosting, there is a slower performance of your website, because space and bandwidth are being used by other sites, or in terms of the effect that software one site owner uses may affect your site. This happens more often on a Windows server than on a UNIX server (these types of servers will be discussed later in this unit).

Dedicated Hosting

With a dedicated hosting, you have an entire server to yourself. It isn't shared with anyone else, the IP address is only used for your site, and all of the server's resources are yours to use. Dedicated hosting typically costs a great deal more than shared hosting, but the benefits of dedicated hosting usually make it well worth the extra cost.One major drawback of a dedicated server is that you must have someone to administer the server. Some web hosting companies will include this in the cost, while others will charge an additional fee for administrative duties. You can also bring in your own administrator, or administer the server yourself, if you have the technical knowledge to do so**.**

Collocated Hosting

In this type of hosting, you will purchase your own server and have it housed at a web host's facilities. You will be responsible for the server itself. An advantage of this type of hosting service is you have full control of the web server. You can install any scripts or applications you need

Web Server Platform – UNIX versus Windows

There are two web server platforms, UNIX and Windows. These two web server platforms are functionally equivalent, but they all depend on what your hosting needs are, and what you are most comfortable with. When choosing your web server platform, the first thing to note is that the system that you develop your webpages on, UNIX or Windows, has nothing to do with the server that will store and display them. Furthermore, the type of server, UNIX or Windows, has no effect on what type of computers can access the webpages. The visitors system has no effect on which one you choose.

Differences between UNIX and Windows Servers

The following are the differences that exist between UNIX and Windows Servers.

- UNIX systems are historically more reliable and stable than Windows servers.
- Web hosting companies using Windows servers tend to charge more than those using UNIX. This is because the Linux and other operating systems used on the UNIX server are open-source application, thus, effectively reducing the expenses of the hosting company.
- Unlike UNIX, Windows is owned by Microsoft, and is not open-source software. This means that if improvements or upgrades are needed, we must wait on Microsoft to make them.
- UNIX is not able of running many applications, such as MS Access Databases or ASP (Active Server Pages). They also cannot handle Visual Basic or VBScripts. Windows, on the other hand, can handle all of these. UNIX has other alternatives, however, such as the ability to handle CGI, MySQL databases, and PHP.
- If you will need to include media files, such as audio and videos, you will most likely need a Windows server. However, Shockwave, Real Media Files, Flash, and MP3s can be handled by either UNIX or Windows.

Basic features for using Web Host

Here are some basic features you should look for when selecting a Web Host:

- 24/7 reliable tech support
- Your own domain name (www.yourname.com)
- At least 10GB of monthly transfer (traffic)
- Depending on the size of your site, a minimum of 50MB of server space with the option to upgrade later if needed
- Unlimited true POP email accounts - name@yourdomain.com
- Unlimited email aliases
- Email forwarding
- Unlimited autoresponders
- Your own unrestricted CGI-Bin
- Access to SSL Encryption for secure transactions

- Access to SSL Encryption for secure transactions
- Access to a shopping cart
- MySQL Database
- Perl
- PHP
- htaccess password protection
- Server Side Includes (SSI) support
- Design (and upload to) your site using HTML editing software
- Microsoft FrontPage Server Extensions for those utilizing FrontPage
- Unlimited free access to your server via FTP/Telnet
- Easy access to your log files
- Statistics on visits to your site
- No hidden fees
- Referral program

Domaine Names

A domain name is a unique name that identifies an internet resource such as a website. A domain name is how others identify and get to your site. However, a domain name is not actually required. Your visitors could use the IP address that it attached to your domain name instead, but this can get very confusing. Remember, an IP address is a unique number that identifies the computer that your webpages are hosted on to other computers

Domain Name Registrars

Domain name registrars are governed by the Internet Assigned Numbers Authority, or IANA, as well as other associations throughout the world. They ensure that domain names are registered and recorded, and then DNS Servers, which are essentially hardware and software, work to make sure that IP addresses and domain names are matched up, forwarding the domain name to the appropriate IP address, without the visitor to that IP address ever knowing it happened.

There are literally thousands of domain name registrars in the world, who are all regulated by ICANN. You can choose any one of these registrars when you are ready to purchase a domain name. The most well known registrars are

- Register.com,
- Network Solutions,
- GoDaddy.com, and
- NameCheap.com.

They have different prices, and are in competition with each other, even though they are all regulated by ICANN. You can simply register a fresh domain name from any of their websites. Payment is usually done with a visa or master card, an electronic check, a money wire, or by using the PayPal payment system.

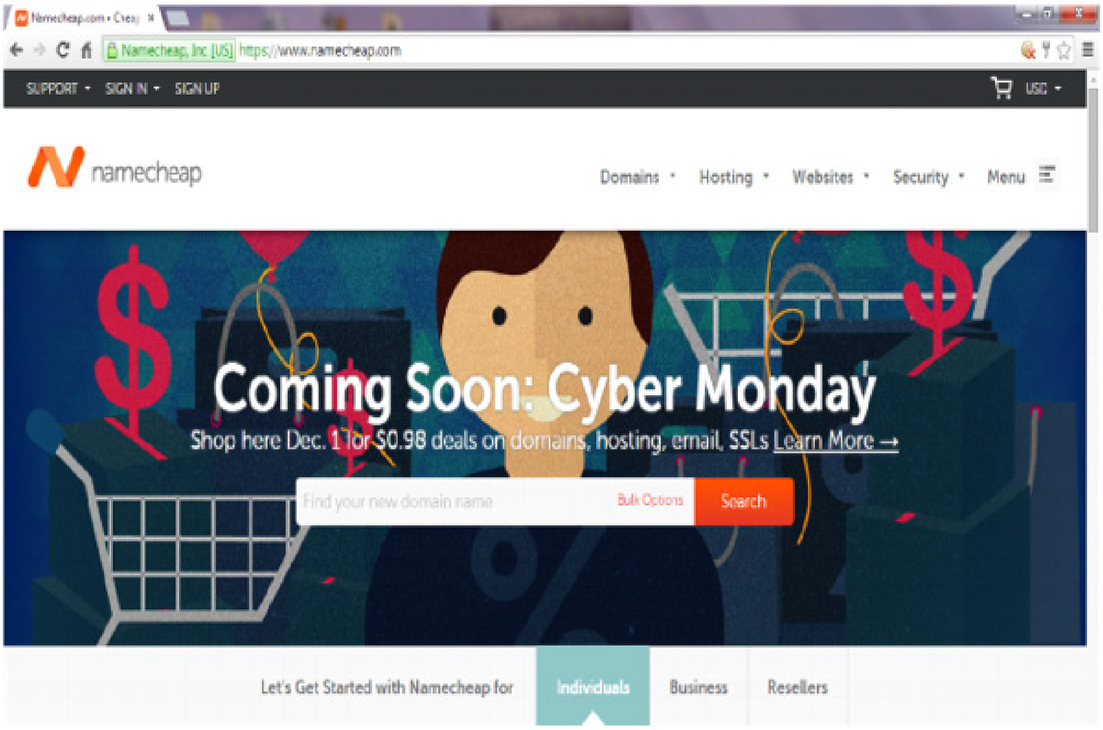

Namecheap.com • Chea
Namecheap, Inc [US] https://www.namecheap.com
SUPPORT
SIGN IN
SIGN UP
USD
namecheap
Domains
Hosting
Websites
Security
Menu
Coming Soon: Cyber Monday
Shop here Dec. 1 for $0.98 deals on domains, hosting, email, SSLs Learn More →
Find your new domain name
Bulk Options
Search
Let's Get Started with Namecheap for
Individuals
Business
Resellers

Figure 4.4: NameCheap domain name registration webpage

What is a Good Domain Name?

So what makes a domain name very appropriate for your website? The following guidelines should be followed when purchasing a domain from a registrar.

i. You must select a domain name that contains your most relevant keyword phrase, as some search engines place relevancy on them. You can find rich keywords for your domain name at WordTracker (http://freekeywords.wordtracker.com).

ii. You must select a domain name that will be easily remembered.

iii. Avoid using abbreviations or anything that will be difficult for your visitors to remember.

iv. Avoid using hyphens, as the non-hyphenated version will be much easier for your visitors to remember and receive more traffic.

v. Avoid using numbers, or anything you will need to spell out, as it will cause confusion. For example, if you verbally tell someone your domain name is investment4u.com, they will immediately try to type in investmentforyou.com. For this reason, every time you tell someone your web address, you would need to spell it out for them.

vi. Keep your domain name as short as possible. The shorter the name, the easier it will be to remember.

Putting your Website online

Till now, we have looked at all the requisite stuffs you need to know about the web host and domain name suitable for your website to run online successful. Now, we are practically going to learn how to put your designed web pages online.

So you purchased your domain name and a web host account. What next

Linking Your Domain Name to Your Web Host

When you purchase a domain name and you do not change the DNS, anyone who attempts to visit your website address will be directed to either an error page or some other page provided by the domain registrar. You can leave it like this for as long as you wish, and this is considered a parked domain.

Not everyone purchase domains for the purpose of using them for a website. For example, someone may have found a domain name available that they feel could potentially be worth a great deal of money. They purchase the domain, and leave it parked, until such time that they wish to either use it or sell it.

DNS entry format vary from one hosting company to the next. Again, this information comes from your hosting company, and is usually contained in the welcome email. If you are not able to locate it, contact the Web Hosting Company. For example, a DNS entry looks like this:

Primary Name Server: ns1.yourhostingcompany.com (123.45.67.8)

Secondary Name Server: ns2.yourhostingcompany.com (123.54.67.8)

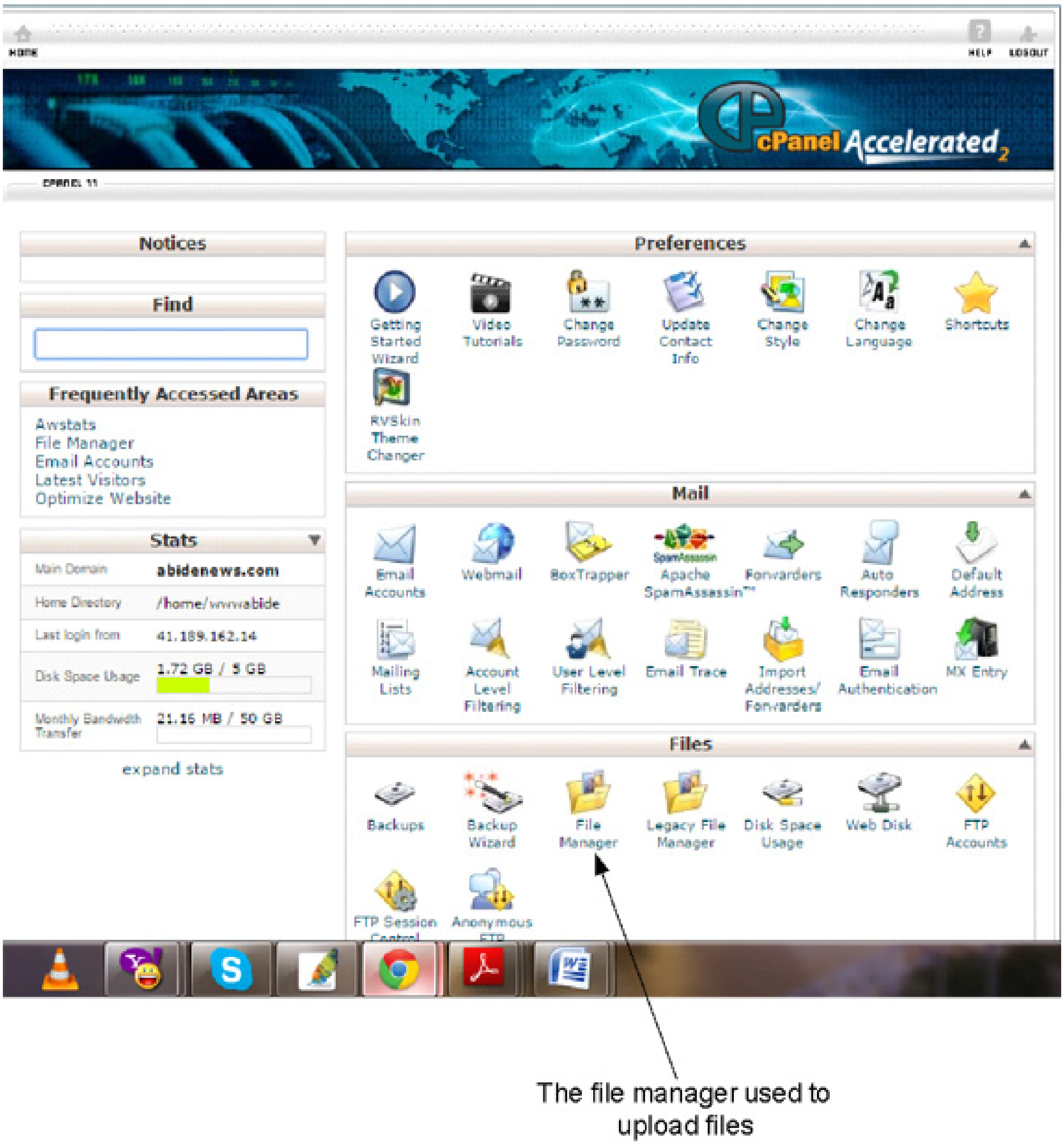
After you have changed the DNS entry, you will usually have to wait 24 to 48 hours for the DNS to propagate. Until then, your site can be accessed with the IP number that the hosting company provided you with, but the rest of the Internet world will not be able to access your site without that IP number, and will have to wait.

Uploading Your Website to Your Server

In uploading of your website to you server, there are usually two ways to do this, with the most common being File Transfer Protocol, or FTP. Usually, special software, called FTP software or an FTP client, is required for this.

FTP allows the transfer of files from one computer to another. In this case, you are transferring files from your computer to the computer that is your web server. The Web Hosting Company should give you the details that are needed to connect to the server using FTP, including your username, password, port information, and the FTP address. Other than this, however, they will not tell you how to use the software, since there are many FTP software titles available on the market.

You can also upload your files through a web interface, if your Web Hosting Company offers it. For example, you go into your control panel for your Web Hosting account, click a button that says 'upload files' and then select the files that you want to upload, and the directory you want them uploaded to, and then hit the 'upload' or 'submit' button.



Main Domain: abidenews.com
Home Directory: /home/wwwabide
Last login from: 41.189.162.14
Disk Space Usage: 1.72 GB / 5 GB
Monthly Bandwidth Transfer: 21.16 MB / 50 GB

The file manager used to upload files

Figure 4.5: The Cpanel provided Hostgator Web Host

The following should also be taking into consideration when uploading your files online:

- Your Web Host should tell you which directory in the account to upload files to. In most cases, this is the public html folder.
- If you have a firewall, you may have to lower the security setting on your firewall to allow the transfer of files with FTP.
- When you are using FTP software, you will need to select whether the files that

are being transferred are ASCII or binary. If you do not use the correct settings, the files can become corrupted during the transfer, and will not display properly on either end, whether they were uploaded to your server, or downloaded to your computer. Most of the newer FTP clients will automatically detect the correct setting for this, but some do not.Remember that HTML documents and text documents, including those with the extensions of SHTML, DHTML, HTM, TXT, CGI, ASP, JS, and C, should be transferred in ASCII mode. Graphics, executable programs, and other types of media files, such as video, should be transferred in binary mode.

- The very first page that you want your visitors to see when they arrive at your website must be named index.html, index.htm, index.shtml, or index with one of the other acceptable file extensions - but the word 'index' is essential. This is often referred to as your home page.

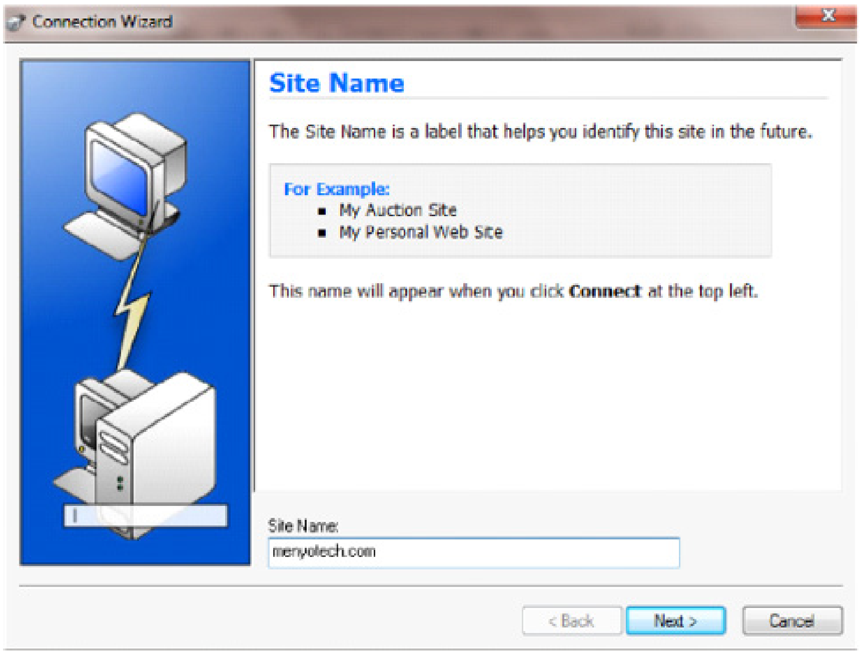
File Transfer Protocol

File Transfer Protocol, better known as FTP, is a procedure used to upload and download files to and from your web server. In order to use FTP, you'll need to download and install a software program on your computer.

- If you are a Mac user, you may want to use a program called, Fetch. (http://www.ipswitchft.com/products/fetch/features.asp).
- If you have a Windows system, you may want to use a program called, WS FTP Pro (http://www.wsftp.com).

For this tutorial, we will be focusing on WS FTP Pro. After opening the connection wizard, the following steps:

1. Enter your website name within the 'Site Name' section where indicated.



Site Name

The Site Name is a label that helps you identify this site in the future.

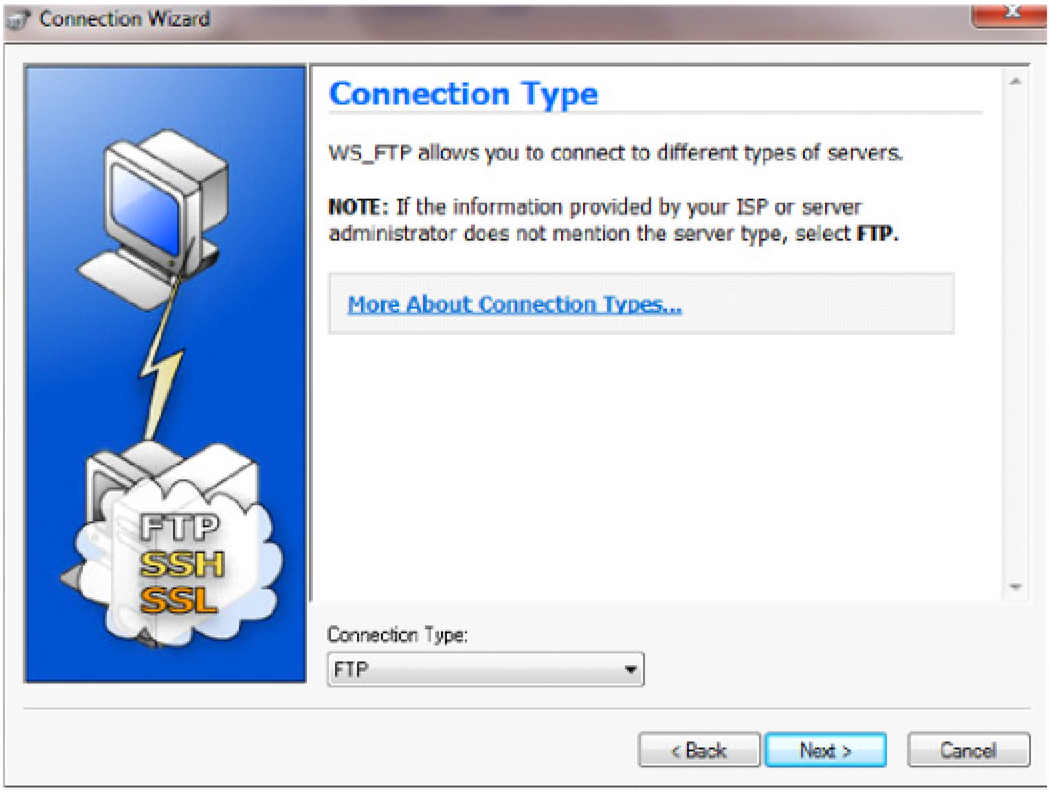
For Example:
- My Auction Site
- My Personal Web Site

This name will appear when you click **Connect** at the top left.

Site Name: menyotech.com

Figure 4.6: Connection wizard – Entering site name

2. Enter your connection type. This is normally FTP.



Connection Type

WS_FTP allows you to connect to different types of servers.

NOTE: If the information provided by your ISP or server administrator does not mention the server type, select **FTP**.

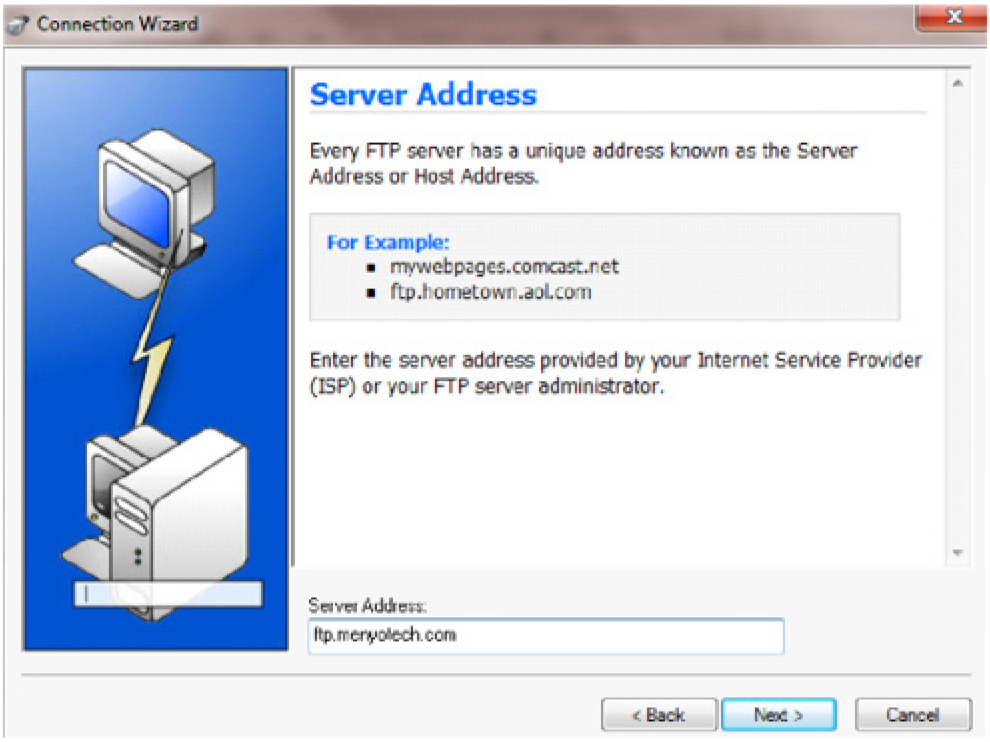
More About Connection Types...

Connection Type:

FTP

Figure 4.7: Setting the connection type

3. Enter your server address.



Server Address

Every FTP server has a unique address known as the Server Address or Host Address.

For Example:

- mywebpages.comcast.net
- ftp.hometown.aol.com

Enter the server address provided by your Internet Service Provider (ISP) or your FTP server administrator.

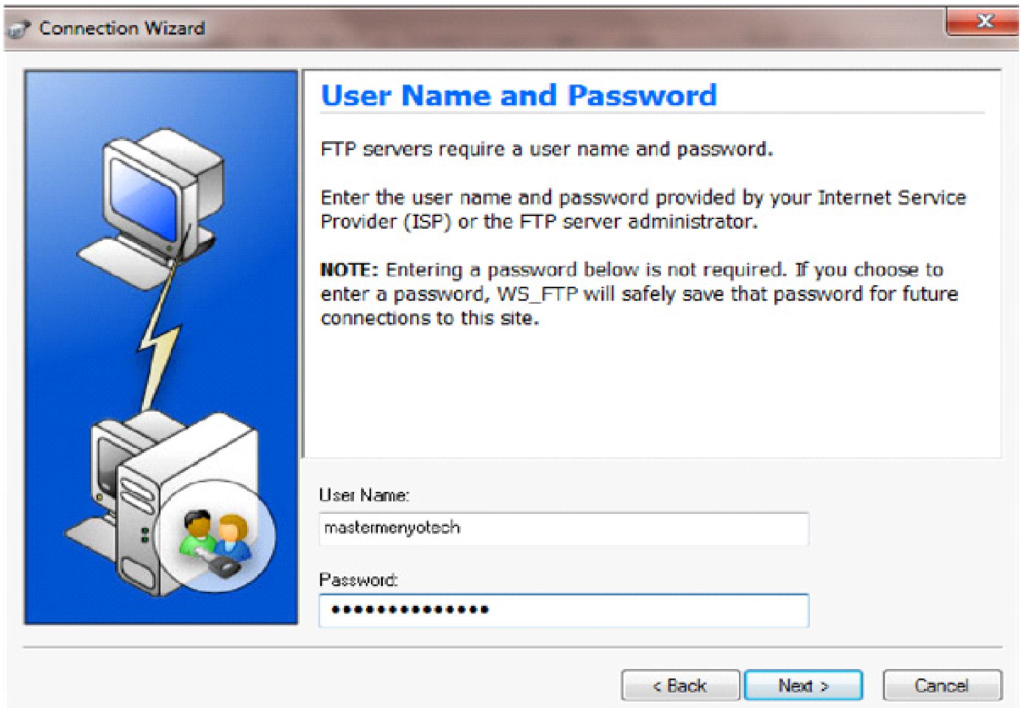
Server Address:

ftp.meryotech.com

Figure 4.8: Setting the server address

This information is provided by your web host. If you're not sure, contact them for assistance.

4. Enter your user name and password. You should have received this information within your 'Welcome' message from your Web Host when you signed up. If you didn't, contact your Web Host for assistance.



User Name and Password

FTP servers require a user name and password.

Enter the user name and password provided by your Internet Service Provider (ISP) or the FTP server administrator.

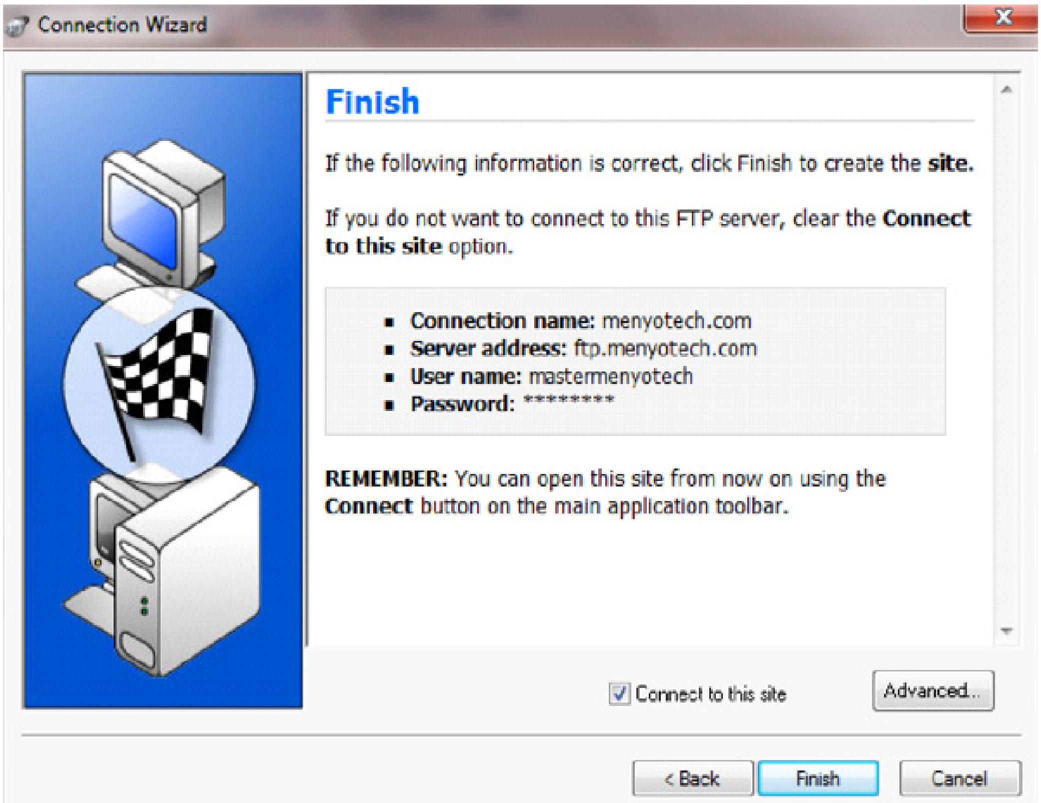
NOTE: Entering a password below is not required. If you choose to enter a password, WS_FTP will safely save that password for future connections to this site.

User Name: mastermenyotech

Password: ••••••••••••••

Figure 4.9: Entering the username and password for the wizard

5. This is the confirmation screen. If everything is correct, click on 'Finish' and the software will connect to your web server.



Finish

If the following information is correct, click Finish to create the **site.**

If you do not want to connect to this FTP server, clear the **Connect to this site** option.

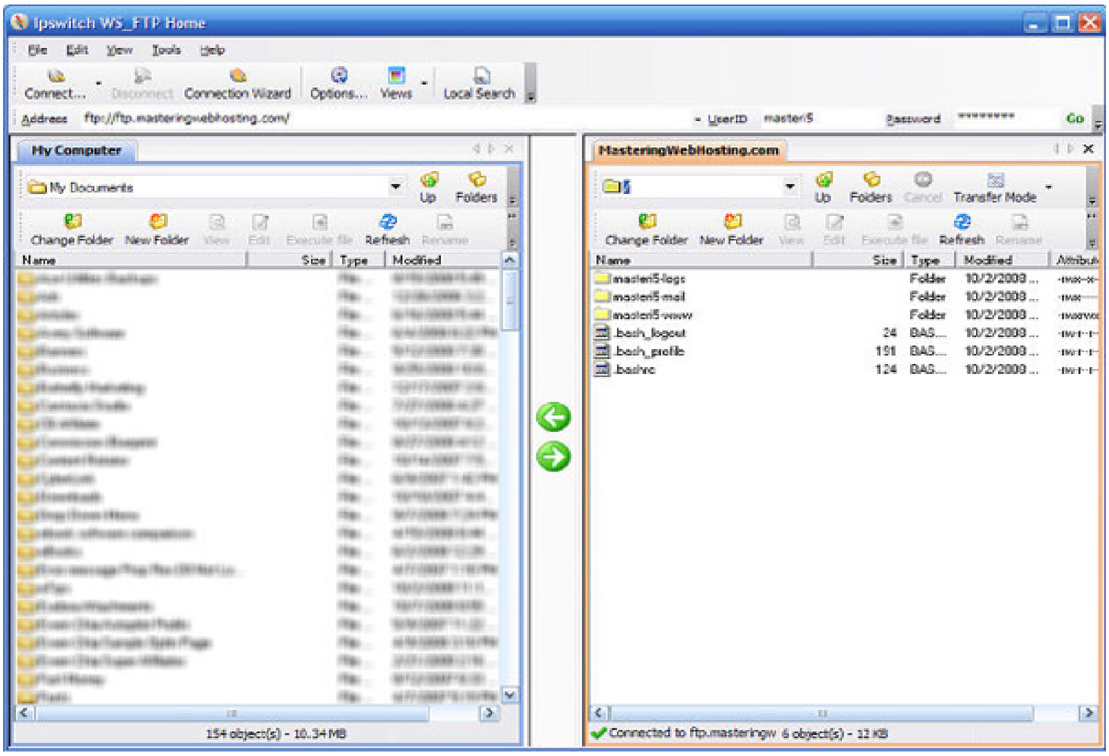
- **Connection name:** menyotech.com
- **Server address:** ftp.menyotech.com
- **User name:** mastermenyotech
- **Password:** ********

REMEMBER: You can open this site from now on using the **Connect** button on the main application toolbar.

☑ Connect to this site

Figure 4.10: Final setup stage for wizard

As soon as the software receives a connection, the following screen will load:



Ipswitch WS_FTP Home
File Edit View Tools Help
Connect... Disconnect Connection Wizard Options... Views Local Search
My Computer
My Documents
Up Folders
Change Folder New Folder View Edit Execute file Refresh Rename
MasteringWebHosting.com
Cancel Transfer Mode
Go

Address ftp://ftp.masteringwebhosting.com/ UserID master5 Password ********

Name	Size	Type	Modified	Attribu
master5-logs		Folder	10/2/2008 ...	-rwx-x-
master5-mail		Folder	10/2/2008 ...	-rwx---
master5-www		Folder	10/2/2008 ...	-rwxrwx
.bash_logout	24	BAS...	10/2/2008 ...	-rw-r--r
.bash_profile	191	BAS...	10/2/2008 ...	-rw-r--r
.bashrc	124	BAS...	10/2/2008 ...	-rw-r--r

154 object(s) - 10.34 MB

Connected to ftp.masteringw 6 object(s) - 12 KB

Figure 4.11: The uploading page of the FTP

The next time you want to connect to your server, you can simply click on the 'Connect' button on the left side of the toolbar at the top. The files on your computer are displayed within the left window and the files on your web server are displayed on the right.

To upload your files, your first step will be to locate the files you would like to upload from your computer, which is within the left window. Your next step will be to click on the menyotec-www folder, within the right window, to place your files on your server.

However, the menyotec text would actually be your username. It's normally the first eight characters within your domain name. However, if there are other domains with a similar domain name, your username will most likely be the first seven characters of your domain name, followed by a number.

Unit Summary

- The Hyper Text Transfer Protocol (HTTP) is what Web clients and servers use to talk to one another.
- TCP/IP stands for Transmission Control Protocol/Internet Protocol, the suite of communications protocols used to connect hosts on the Internet.
- There are two web server platforms, UNIX and Windows.
- A domain name is a unique name that identifies an internet resource such as a website.

- Domain name registrars are governed by the Internet Assigned Numbers Authority, or IANA, as well as other associations throughout the world.
- File Transfer Protocol, better known as FTP, is a procedure used to upload and download files to and from your web server.

Key Terms

HTTP

DNS

Domain name

FTP

Web hosting

Unit Assessment

Explain how the internet works.

Differentiate between HTTP and TCP

Define Domain Name System.

List and explain the types of web hosting available on the market today.

Discuss the characteristics of a good domain name.

Explain the basic things one should look out for when choosing a web host.

What is FTP?

Differentiate between shared hosting and dedicated hosting.

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