ITEC-245 –Introduction to Scripting Languages

Unit 1
Introduction to Internet And Web Technologies

Contents

ITEC-245 –Introduction to Scripting Languages

Unit 1
Introduction to Internet And Web Technologies

Internet

What is the Internet?

The Internet is a system of linked networks that are worldwide in scope and facilitate data communication services such as remote login, file transfer, electronic mail, the World Wide Web and newsgroups.

Connecting to the Internet

Many home and small business users connect to the Internet via high-speed broadband Internet service. With broadband Internet service, your computer or mobile device usually is connected to the Internet the entire time it is powered on. Examples of broadband Internet service include cable, DSL, fiber, radio signals, and satellite.

Access Providers and Internet Service Providers (ISP)

An access provider or Internet Service Provider is a business that provides individuals and organizations access to the Internet for free or for a fee. Access providers are categorized as regional or national ISPs. A regional access provider usually provides Internet access to a specific geographic area. A national ISP is a business that provides Internet access in cities and towns nation-wide.

Internet Addresses

The Internet relies on an addressing system much like the postal service to send data and information to a computer at a specific destination.

An IP address, short for Internet Protocol address, is a number that uniquely identifies each computer or device connected to the Internet. The IP address usually consists of four groups of numbers, each separated by a period. The number in each group is between 0 and 255. For example, the numbers 72.14.207.99 are an IP address. In general, the first portion of each IP address identifies the network and the last portion identifies the specific computer.

These all-numeric IP addresses are difficult to remember and use. Thus, the Internet supports the use of a text name (Domain Name) that represents one or more IP addresses.

Domain Name System

A domain name is the text version of an IP address. As with an IP address, the components of a domain name are separated by periods.

IP address http://74.125.224.72
Domain name :google.com

Figure 1.1| IP Address and Domain name example

Domain Name system (DNS) is the method and system that the Internet uses to store domain names and their corresponding IP addresses. When you specify a domain name, a DNS server translates the domain name to its associated IP address so that data and information can be routed to the correct computer. A DNS server is an Internet server that usually is associated with an Internet access provider.

Every domain name contains a top-level domain (TLD), which is the last section of the domain name. Some primary examples are : .com, .gov, . org, .net, etc.

The organization that assigns and controls top-level domains is the Internet Corporation for Assigned Names and Numbers (ICANN pronounced EYE-can). For TLDs such as, .com, .net, and .org, you register for a domain name from a registrar, which is an organization that sells and manages domain names.

For international Web sites outside the United States, the domain name also includes a country code TLD (ccTLD), which is a two-letter country code, such as au for Australia and tt for Trinidad and Tobago. For example, u.tt is the domain name for the University of Trinidad and Tobago website.

World Wide Web

What is the World Wide Web?

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 consists of a worldwide collection of formatted electronic documents. Each electronic document on the Web is called a Web page, which can contain text, graphics, animation, audio, and video. Additionally, Web pages usually have built-in connections to other documents.

The World Wide Web Consortium (W3C)

The World Wide Web Consortium (W3C) is an international community where Member organizations, a full-time staff, and the public work together to develop Web standards. It was created in 1994 and is Led by Web inventor Tim Berners-Lee and CEO Jeffrey Jaffe, W3C's mission is to lead the Web to its full potential.

ITEC-245 –Introduction to Scripting Languages

Unit 1
Introduction to Internet And Web Technologies

Web Page

A web page is an electronic document commonly written in HyperText Markup Language (HTML).

Web Site

A Website is a collection of related Web pages stored on a Web Server.

Web Browsers

A Web browser or browser is an application that allows user to access and view Web pages. In regards to the Client-Server model, the browser is the client that runs on a computer that contacts the Web server and requests information (web pages).

Web Server

A Web server is a program that uses HTTP (Hypertext Transfer Protocol) to serve the files that form Web pages to users, in response to their requests.

Hypertext Transfer Protocol

Hypertext Transfer Protocol (HTTP) is the protocol that governs the communication between a web browser and a web server. It is the common Web language (dialect, or specification), allowing a Windows machine, for example, to sing in harmony with a machine running the latest and greatest version of Linux.

Various types of devices, with varying platforms, access the web thus, the web need to have some rules in place to be able to talk to one another, it's like learning to raise your hand to ask a question in class. HTTP lays out these ground rules for the Web. Because of HTTP, a client machine knows that it has to be the one to initiate a request for a web page; it sends this request to a server.

Web Hosting

What is a web host?

A web host is a company that provides space to store a website on a public server (running Web Server software).

Note, any computer can be used to host a website, but the computers used by web hosting companies are incredibly powerful with lots of hard disks and memory, highly optimized to deliver the website files to thousands of readers simultaneously.

Web Address (URL)

A Web page has a unique address, called a URL (Uniform Resource Locator) or Web address.For example, the home page for COSTAATT's Web site has **http://www.costaatt.edu.tt** as its Web address.

A Web browser retrieves a Web page using its Web address. If you know the Web address of a Web page, you can type it in the Address bar at the top of the browser window.

For example, if you type the Web address http://www.costaatt.edu.tt in the Address bar and then press the enter key, the browser downloads and displays the Web page.

A Web address consists of a protocol, sub-domain, domain name, and sometimes the path to a specific Web page or location on a Web page. Many Web page addresses begin with **http://.** The http in the URL stands for Hypertext Transfer Protocol.

How the Web Works?

Ever wondered what happens when you type a Web address such as **http://www.facebook.com** or **http://www.google.com** into the browser and a page gets returned? Below will explain the aforementioned process, thus explaining how the web works.

Every computer that is connected to the Internet is given a unique address known as an **IP address**. When you connect to the Internet using an ISP you will be allocated an IP address, and you will often be allocated a new IP address each time you connect.

Every Web site, meanwhile, sits on a computer known as a **Web server**. When you register a Web address, also known as a domain name, such as facebook.com you have to specify the IP address of the computer that will host the site.

When you visit a Web site, you are actually requesting pages from a machine (web server) at an IP address, but rather than having to learn that computer's 12-digit IP address, you use the site's domain name, such as google.com or facebook.com.

When you enter something like **http://www.google.com**, the request goes to one of many special computers on the Internet known as **Domain Name Systems (DNS) servers**. These servers keep tables of machine names and their IP addresses, so when you type in **http://www.google.com**, it gets translated into a number, which identifies the computers that serve the Google Web site to you.

When you want to view any page on the Web, you must initiate the activity by requesting a page using a web browser. There are several behind the scenes processes that occur before you can view your web page in the browser. Such include:-

- The browser asks a DNS server to translate the domain name you requested into an IP address.
- The DNS server will search its database to acquire a corresponding IP address, once if finds a matching pair, it will forward the IP address back to the browser.

- The browser then sends a request to that server for the page you want, using a standard called Hypertext Transfer Protocol or HTTP (The said server should constantly be connected to the Internet—ready to serve pages to visitors).
- When the Web Server receives the request, it looks for the requested document and/or web resource and returns it to the browser.

Web Technologies

As mentioned above, the web consists of a worldwide collection of web pages, informally, the W3C has deemed HTML, CSS and JavaScript the three (3) core technologies/ languages that must be used to develop web pages and web applications. HTML provides the structure for web pages, CSS defines how the structure is presented and JavaScript provides the behavior for the web page/ web application.

HTML

HyperText Markup Language, commonly referred to as HTML, is the standard markup language used to create web pages. Web browsers can read HTML files and render them into visible or audible web pages.

As mentioned before, HTML is a markup language, which may sound complicated, although really you come across markup every day. Markup is just something you add to a document to give it special meaning; for example, when you use a highlighter pen you are marking up a document. When you are marking up a document for the Web, the special meaning you are adding indicates the structure of the document, and the markup indicates which part of the document is a heading, which parts are paragraphs, what belongs in a table, and so on. This markup in turn allows a Web browser to display your document appropriately. Because HTML is a Markup language it syntax consists of tags which describe content.

CSS

Cascading style sheets (CSS) is a collection of formatting rules that control the appearance of content in a web page.

Using CSS styles to format a page separates content from presentation. The content and/or structure of your webpage (the HTML code) resides in the HTML file, and the CSS rules defining the presentation of the code reside in another file, an external style sheet or in another part of the HTML document, usually the head section.

Separating content from presentation makes it much easier to maintain the appearance of your site from a central location because you don't need to update every property on every page whenever you want to make a change. Separating content from presentation also results in simpler and cleaner HTML code,

which provides shorter browser loading times, and simplifies navigation for people with accessibility issues for example, those using screen readers.

CSS gives you great flexibility and control over the exact appearance of your page. With CSS you can control many text properties including specific fonts and font sizes; bold, italics, underlining, and text shadows; text color and background color; link color and link underlining; and much more. By using CSS to control your fonts, you can also ensure a more consistent treatment of your page layout and appearance in multiple browsers.

JavaScript

JavaScript is a popular scripting language used to put energy and behavior into otherwise dead Web pages. It is deemed as the programming language of HTML and the Web and can be used to validate the data a user enters into a form (tell you if it is in the right format or not), provide drag and drop functionality, change styles on the fly, animate page elements such as menus, handle button functionality, etc.

Readings

References

1. Paul Wilton,2010 ,Jeremy McPeak, Beginning JavaScript, 4th Edition
2. Ellie Quigley,2011 ,JavaScript by Example, 2nd Edition