Certificate in Computer Applications (CCA)
Study Material

CCA - 104 Web Technologies Part 1
(Unit 1 to Unit 3)

Supported by
Institute of Management Studies (IMS),
Ghaziabad-UP

About CCA Program

The certificate program focuses on computer fundamentals. This program provides a comprehensive introduction to Fundamentals of Information Technology; Computer Applications; Internet & Communication Technologies; Web Programming; and Soft Skills.

The program is designed and conducted by CSC Academy along with one of the leading Management Institute, Institute of Management Studies, Ghaziabad (UP). Some of the core subject faculty are associated in delivering this program.

After the completion of this course, student will be able to:

- Get a basic understanding of personal computers and their operations.
- Use of MS Office Tools - Like MS word, MS excel and Power point presentations
- Understand basics of Programming.
- Recognize and describe the working of Computer Networks.
- Get familiar with the basics of communication skills
- Develop good skills at writing business letters, emails, minutes of meeting and other business correspondence.
- Design and Implement interactive, responsive web site using HTM5L, CSS5 and JavaScript.
- Build Dynamic web site using server-side PHP Programming and Database connectivity.

The CCA program covers five course modules:

Unit 101: Fundamentals of IT & Programming

Unit 102: Data Communications

Unit 103: Soft Skills & Communications

Unit 104: Web Technologies

Unit 105: Cyber Security

The objective of this study material is to provide the students to enable them to obtain knowledge and skills in the related subject. This material is not in itself to be read alone, and student should use this in addition to the CCA online e-learning content study. In case students need any further clarifications or have any suggestions to make for further improvement of the material contained herein, they may give the same at CSC Academy Centre.

All care has been taken to provide content in a manner useful to the students.

Permission of the CSC Academy is essential for reproduction of any portion of this material.

Edition : June 2020

Published by : CSC Academy

About CSC Academy

CSC Academy was setup in 2017 that provides access to professional learning for learners of diverse backgrounds and educational needs. The CSC Academy is a not-for-profit society under the Societies Registration Act 1860 (Act 21 of 1860), as applicable to the Union of Delhi with its registered office in Delhi. The CSC Academy board comprises of the Additional Secretary, Ministry of Electronics & Information Technology, Government of India as Chairman, and others reputed members from academia. CSC Academy has received certificate from Income Tax Department under section 12 AA and 80 G.

The CSC Academy is committed to teaching, delivering of specialized courses/ training programs, leadership, communication skills and promotion of entrepreneurship among the rural masses in India. Presently, the CSC Academy is delivering various Government of India sponsored skill and education programs, in addition to courses from private sector.

About Institute of Management Studies, Ghaziabad (UP)

IMS Ghaziabad is a pioneer institute for management education in Northern India. It is the first institute of IMS Society Ghaziabad with 30 glorious years of excellence. IMS Ghaziabad offers full time AICTE approved & NBA accredited PGDM Programme which has been awarded the MBA equivalent status by the Association of Indian Universities (AIU), PGDM - International Business, PGDM - Big Data Analytics and MCA Programme are approved by AICTE and affiliated to Dr APJ AKTU, Lucknow.

Since its foundation IMS Ghaziabad has gathered a lot of feathers in its cap with global accreditations and memberships such as Accreditation Services for International Colleges (U.K), AACSB Business Education Alliance, National Assessment and Accreditation Council - 'A' Grade.

IMS Ghaziabad is amongst Top 10 best B-Schools in North India as per latest MBA and B School Rankings. It has been awarded as the "Best Campus for Industry Oriented Management Education in India / Asia Pacific 2019" by ASSOCHAM and the Education Post. It has been ranked as 5th in North India and 15th in India by Times of India B School Survey, February 2019, A++ Institute in Delhi - NCR by 9th Chronicle B-School Survey 2018.

Table of Contents

Course Outline

Course Objective

To familiarize with basics of the Internet programming and acquire knowledge and skills for creation of web site considering both client and server-side programming. It emphasizes to gain ability to develop responsive web applications.

Course Outcomes

At the end of this course, student should be able to:

1. Implement interactive web page(s) using HTML, CSS and JavaScript.
2. Design a responsive web site using HTML5 and CSS3.
3. Demonstrate Rich Inter Application.
4. Build Dynamic web site using server-side PHP Programming and Database connectivity.
5. Describe and differentiate different Web Extensions and Web Services.

Course Outline

Unit I Designing and Planning Web Pages

Designing and Planning Web Pages, Surveying the Possibilities, Website Evaluation Tool, Color Theory in Web Designing, Selecting a Color Scheme, Web Standards & Accessible Design, How People with Disabilities Access the Web, Planning & Organizing a Website.

UNIT II Introduction to HTML

Creating Pages with HTML, Basic HTML Markup, Basic Elements of HTML, Essential Tags, Common Tags, HTML Lists, Unordered Lists, Ordered Lists, Nested Lists, Creating Links, Linking to External Internet Sites, Creating a Data Table, Formatting Web Pages with Style Sheets, Introduction to Cascading Style Sheets, Anatomy of a Style, Applying Styles, Applying Styles to Data Tables, Page Layout Techniques, Layout with CSS, Layout with Tables, Using an external style sheet, Linking to an External Style Sheet.

UNIT III Introduction to Web Graphics

Introduction to Web Graphics, Copyright Law and Graphics on the Web, Understanding Web Graphics, Acquiring Images for Web Graphics, Cropping and Resizing, Adding Images to Your Web Page, Creating Navigation Buttons, Basic Shapes and Colors, Working With Text, Layer Basics, Basic Image Manipulation, Selection Tools, Layer Effects.

UNIT IV Scripting (JavaScript & CSS)

A Simple JavaScript Program, Validating a Website, Validating Your HTML, Validating Your CSS, Introduction to Web Authoring Software, Basic Features of Web Authoring Software, Constructing the Client Website.

UNIT V Introduction to Server, Database and PHP

Introduction to Server, Introduction to Server-Side Scripting, Database, Sever installation & Working (WAMP), Introduction to PHP, PHP Script designing, Registration & Login Page, Maintenance & Handling of Server, Creating contact us page, Database Creation & handling SQL Queries, Live Running of Website.

Reference books

1. Jeffrey C. Jackson, “Web Technologies-A Computer Science Perspective”, Pearson Education 2006.
2. Web Technologies, Black Book, Dreamtech Press.
3. Web Applications: Concepts and Real World Design, Knuckles, Wiley-India.
4. Internet and World Wide Web How to Program, P. J. Deitel & H M Deitel, Pearson.
5. Learning PHP, MySQL and JavaScript, Robin Nixon, O’Reilly.

Unit I Designing and Planning Web Pages

Unit 1.1: Designing & Planning Webpages – Part 1

Designing and Planning Web Pages

Introduction:

- It is tempting in a web design course to start creating and developing web pages right away.
- The main purpose of any website is to deliver specific information or services in an organized and user friendly manner.
- The success of the website is measured in terms of the number of visitors to the site and the ease with which the visitors find the required information.
- An effective and efficient website is highly influenced by how well interface is designed and managed.

What is a web site?

A Website is a collection of documents written in the HTML code for an individual, a business house or any other organization. It is typically dedicated to some particular topic or purpose.

- Based on their functionality, there are two types of website
  - Static Website
  - Dynamic Website
    - In static website contents are not expected to change frequently whereas in dynamic website contents are changing frequently.

COMPONENTS OF A WEBSITE:

- **Home Page and site-wide template design** to ensure an attractive, functional and consistent appearance of your website.
- **Integrated site navigation** to provide clear and consistent access to your site's content.
- **Look and feel** of your website, including colors, text and graphics, as well as the way it functions.
- **A Logo**: to be displayed in the left corner of each page of your website.
- **A site map** to provide a list of all pages on your site.
- **Website Search features** allowing user to search the website for content relevant to their specific interests.
- **About page** that includes:
  - A complete description of you and / or your company
  - Your website and / or company objectives
  - Your name, address, phone numbers and e-mail addresses

- **Feedback:** that facilitates the customers to ask some queries about your Products and Services.
- **A domain name**: Your 'address' on the internet, what people type into their browser to find you. You choose a word or phrase (Example:- mywebsite) and an extension (Example:- .com, .net, .edu), your domain name could be mywebsite.com
- **Web Hosting**: The physical place your website resides; includes the computer (called a server) as well as the connection to the Internet and the technology that makes your website work.
- **Copyright**: Displaying your copyright information at the bottom of each page. Your copyright might look like this: **Copyright @ Year CompanyName**

WEBSITE PLANNING:

The basic steps that help in planning a website are:

- Define your target audience:
  - ➢ You can tailor almost every aspect of your web site to your target audience - from the way you organize information to the kinds of fonts and images you use.
- Organize your concepts and materials:
  - ➢ You should be clear about the aim of creating your site, whether the aim of the site is:
    - to inform
    - to promote a product
    - to educate audience
    - to entertain the audience
- Create a directory structure (also called site map)
  - ➢ if the site is going to be very large and complex, then you will need to organize files into separate directories and sub-directories.
  - ➢ Developing a logical directory structure is an essential part of planning your web site.

- Design and refine the look and feel of the site
  - ➢ Some of the factors you can take into consideration to improve the look and feel of the web site are:
    - **Space and Balance:** Every thing should look proportionate and proper.
    - **Color:** The colors should look pleasant to the eyes.
    - **Font type and size:** Type face of the text and size of the text in the Web pages should be comfortable to read and make the matter easy to understand.
    - **Textures:** Background graphics or textures can be annoying while reading text. So be very careful and selective.
    - **Special Effects:** Multimedia can be added to your site to make your site appealing. More animation, graphics, sound may cause delay while accessing through a browser.
    - **Consistency:** Using a single color scheme throughout is a good way to achieve consistency.

Unit 1.2: Designing & Planning Webpages – Part 2

WEB PAGE DESIGNING:

Following are some principles about web page designing which will help you to design an effective web page.

- Present your web page in such a way that the user gets impressed within the first few seconds of visit.
- Keep on updating web pages on regular basis by providing fresh and latest information.
- Keep your web pages focused. Don't show everything on one page, use separate pages for separate topics.
- Make sure that the features used in the web site are compatible to all browsers.
- Ensure that buttons and links in the web site behave as expected.
- Use compressed images so that web page gets quickly loaded.

Five step process for effective website design

1. **Analyse**
   - Info / content
   - Target Audience
   - Top 10 Checklist
2. **Organise**
   - Navigation
   - Content
   - Page layout
   - Page design
3. **Develop**
   - Web page layout
   - Site layout
   - Web page construction
   - Graphics techniques
4. **Implement**
   - User Interaction
   - Final Checklist
   - FTP
   - Fine Tune
5. **Maintain**
   - Marketing
   - Optimisation
   - Traffic analysis

Analyse

Why do I want to create this web site?

- promote your ideas, hobbies, or beliefs
- To advertise your company or product
- Make loads of money really fast
- Provide customer services and support
- To keep your customer base informed
- Give or sell information
- Create an 'Extended Business Card' for your company
- Provide internal information and services for your company

Analyse: Web Site Content

Before you can start deciding what content the site is going to contain you need to determine

- Who your target audience is.
- What age group are your users?
- What is there skill level with the Internet?
- How can I communicate effectively
- You also need to determine the purpose of your site. What is the site for?

Once you have determined these factors you can start to plan the content your site will have. Remember who your target will be when deciding on content:

Who is my target audience?
What type of visitors do I want my site to attract? What will be their age, sex and education? Will they search for my site because we share a hobby, like the same television shows or are they looking for specific information?

How can I communicate effectively?

Now that I know who the audience will be, what is the best way to communicate with them?

What information do I need?

If you are designing a **site for a client**, you will need to know the answers to the preceding questions as well as what their vision is for this site. Do they have a logo they want you to use, do they have specific colors in mind, do they want to include phone and fax numbers on their pages? If this is your own business site, these are questions you should answer also.

What content (data, graphics, photos, etc.) will be included?

This is the "big" job...gathering all the content that you want to include on your web site. Are you going to use photos? What kind of graphics do you want? And what information or data are you putting online?

Make a list of the items you think you will want to have on your website.

Audience analysis

Audience analysis is the starting point for any project. You need to figure out your audience's demographics:

- how old they are
- where they work
- what they earn
- where they live, anything that's appropriate

Your content has to have a goal

The key thing to remember about **audience analysis** is the goal: *to have a well-defined audience at the end of the process*. The only good audience definition is a specific target definition. The better you can pigeon-hole or niche your audience, the more likely your site will succeed.

A checklist for type of Content you may wish to include on your website

- Frequently updated information
- Product and Company articles
- Question and answers
- Online purchasing of products
- Guest book that your guests to your site can sign and add their own comments
- Web site forum or chat room to generate conversation between your web site users
- Web site search → very useful for larger sites
- Weekly poll, to poll your visitors on a particular question
- Quizzes and sweep stakes, with prizes to promote your products
- Free offers
- News
- Unique information
- Location maps
- Contact and Booking forms

Unit 1.3: Designing & Planning Webpages – Part 1

Organisation

Next to Analyse, organisation is one of the key tools to website design.

We've discussed who you feel your audience will be and what kind of information they will be looking for and what questions they will be asking. Now we need to help them find the information and the answers hopefully, by the shortest route possible.

There are three main elements in the organization of a web site. They are:

1 - **Structure:** The form of your web site and its navigation

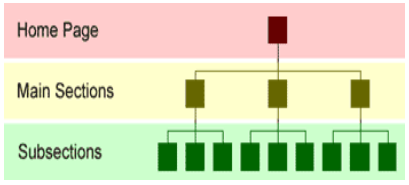
2 - **Content:** The substance of your web site

3 - **Layout:** The theme or method of presenting your web site

Organisation - Structure

Now we're going to look at the overall design of a web site and "how to structure a website". This is different from the individual pages within the site (i.e. content).

Site design includes the structure of your site, the different sections and navigation within those sections. It also encompasses the theme you choose.



As the diagram shows a web site is composed of three main areas:

•The Home Page

•The Main Sections

•The Subsections

Organisation - Structure

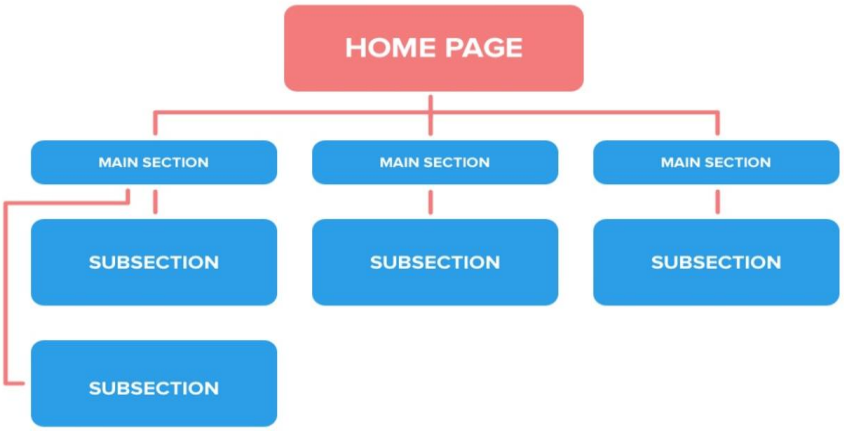
HomePage Do's

- Visitors first impressions
- Should tell the visitors what your site is about
- Answer questions on the 5 Ws
- Should provide index or table of contents
- Keep the home page short and to the point

Homepage don'ts

- Should not contain a lot of text
- Don't present your users with a huge list of links to every single page

Website Structure



Main Sections

Determining and naming the main sections of your site is very important. Sections should contain material grouped according to visitor needs - in other words, these are sizeable chunks of related information. For example, if you are creating a site for a tourist visiting Dublin, you would want to make it easy for the visitor to find the right information.

The main sections might include:

Travel	Restaurants	Pubs	Accommodation

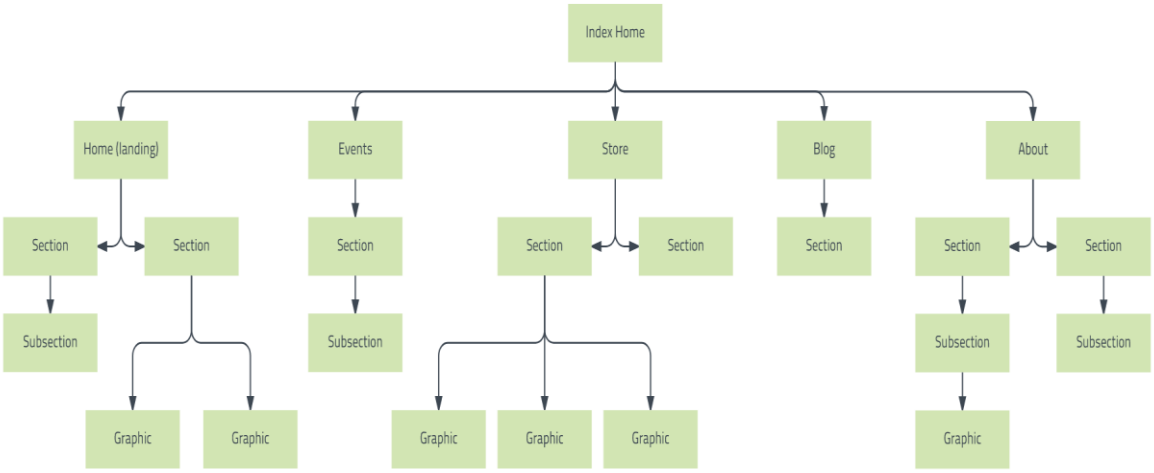
The main section is your site index on your homepage, it is the foundation to your navigation of the website.

Once you have divided your content into main sections, decide their order of importance

Subsections

Not all main sections necessarily need to have subsections, but most will require a further breakdown of information. It really depends on the amount of content on your site. When designing a new web site, keep in mind that the content will increase as you update and add information to the site. Build in room to expand as you determine your main and sub sections.

Once you have established the home page, main sections and subsections of the web site, organise them into order of importance and note it. This is the basic layout of your web site.



Organisation - Navigation

Now we need to help them find the user find the information and the answers to their questions and we hope we can do this by the shortest route possible

There are three different navigation methods.

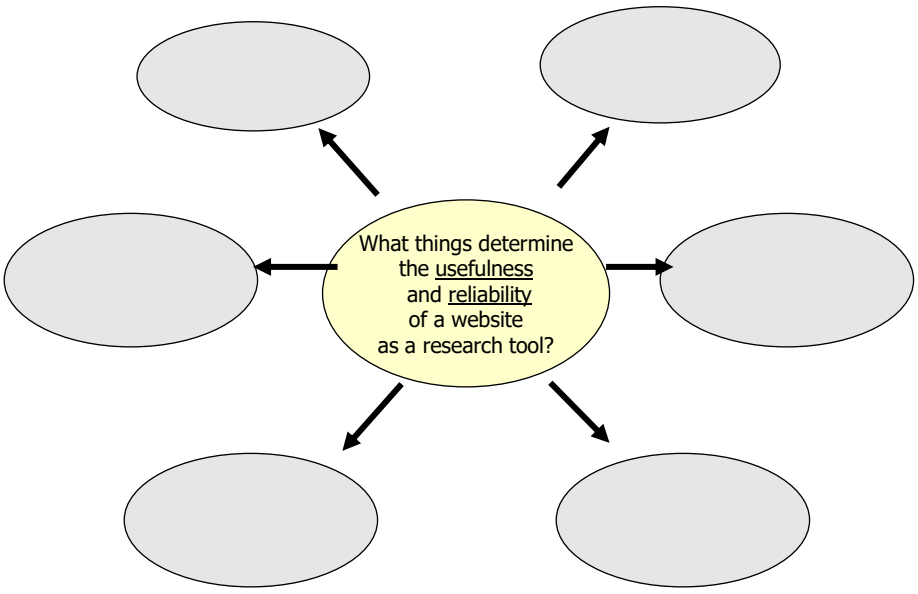
- **Linear navigation** - Moving in a straight line.
- **Database navigation** - Many branches from your main page.
- **Hierarchical navigation** - A completely connected website.

Surveying the Possibilities

The purpose of Surveying the Possibilities is to begin considering what makes a high-quality website.

- Our goal is learn to develop high-quality websites, we first must spend some time developing an understanding of what "quality" means.
- This is important because if websites aren't developed with quality in mind, visitors might be unable to find the content or features they're looking for, or they may be unable to access or use these features.
- Users don't give websites many chances. If they don't like a site, they may leave quickly and never return. If they like a site, they'll return to it again and again, plus they'll tell others about it.
- In addition to understanding website quality, you must spend some time planning a website before you begin to develop its content. Just as there are pre-writing steps that ought to be done prior to writing an essay, there are pre-coding steps to do before you create a website.
- Planning ahead will reduce the number of mistakes you'll make while constructing the site. In the work world, this will save you time and money.

Website Evaluation Tool

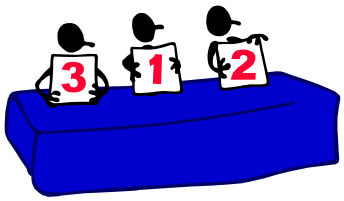


Why Evaluate Websites?

- Anyone can publish on the Internet.
- Many facts and resources are not verified.
- Websites are often used to give one point of view.
- Many sites have no editors.
- Many sites are market orientated.
- Sites are a mix of entertainment, information, and advertising.

Evaluation Criteria

- Accuracy
- Authority
- Objectivity
- Currency
- Coverage
- Presentation



Accuracy

- Is the author(s) listed?
- Is the information organized with well-developed ideas and themes?
- Is the information free of spelling and grammatical errors?
- Is the writing clear?
- Are all the facts correct and verified?
- Are sources listed?

Authority

- Who published the document, and it is separate from the “webmaster”?
- Does the site offer an “in-site” search engine?
- Are the publisher’s credentials listed?
- Are the author’s credentials appropriate?
- Site’s domain is a preferred source (e.g., .org; .edu; .gov;)

Objectivity

- Is there bias present?
- Is fact and opinion clearly stated?
- Is hateful, defamatory, and/or inflammatory language used?
- Is the purpose of the website clearly stated?

Currency

- How current is the information on the website?
- How often is the information updated?
- Are any embedded text links or hyperlinks up-to-date?

Coverage

- Do the document’s links, graphics, and/or multimedia features compliment the document’s theme?
- Is any special software required to view any documents? If so, is there a “text-only” option?
- Do all site features function for all browsers?
- Does the site require the user to become a member to view any contents?

Presentation

- Are the menus and navigation tools easily visible?
- Do the pages load quickly?
- Is the site's layout logical?
- Is there a site map?
- Does the site use "pop-up" ads and/or is the advertising unobtrusive?

Assignment

- Examine your favourite website and determine
  - Its usefulness
  - Its reliability
- Complete the Website Evaluation Rubric with your overall conclusions.

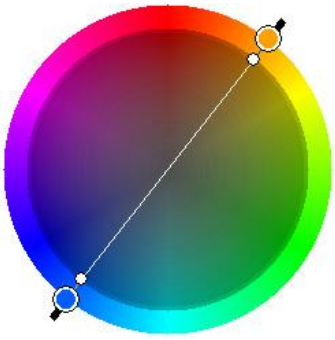
Web Site Evaluation Rubric

Criteria	Excellent	Adequate	Poor
Technical and Visual Aspects	o Informative graphics that enhance the topic o Spelling and grammar correct and writing is high quality o Links to further information and they are live and helpful	o Graphics do not relate well to topic o Spelling/grammar has some mistakes and writing is not always clear o Some are not live or useful	o No graphics or bad use o Spelling/grammar mistakes and writing is poor quality o None/few links that are not live or useful
Authority	o Preferred domains: k12, gov, edu, org o Author and organization are clearly stated o Contact information (email, address, etc.) clearly displayed o Site displays in search engines and only positive comments found	o Domain = .net, .com o Author and organization responsible hard to find o Contact information hard to find or not always available o Site displays in search engines but there are some negative comments	o o No statement of responsibility by author or organization o No contact information o Site has few displays and mostly negative comments
Objectivity	o Facts and opinions clearly stated and no generalizations found o Information appears to be unbiased o Purpose of web site is clearly stated	o Fact and opinion hard to distinguish o Bias is stated o Purpose of web site is not clearly stated	o No statement of responsibility by author or organization o Biased information passed off as fact o No attempt to explain the purpose of the web site
Content And Coverage	o Dates show when site was written and revisions o The purpose of the site is clearly indicated on home page o Amount of information shows depth of coverage o Care is taken to keep information current	o Dates are hard to find or not specific what the dates mean o Difficult to determine purpose and scope of content o Brief coverage of topic o Site has not been updated for some time	o No dates displayed o Unable to determine purpose and scope of content o Inadequate coverage of topic o Site has never been updated
Presentation	o Clear menus and easy navigation o Page loads quickly o No advertising or low profile ads	o Menus not always clear and navigation isn't easy o Page load time is somewhat slow o Some advertising or pop-up ads which distract viewer	o Inadequate menus and navigation o Page loads slowly o Advertising or pop-ups which are distracting and unrelated to content

Unit 1.4: Designing & Planning Webpages – Part 4

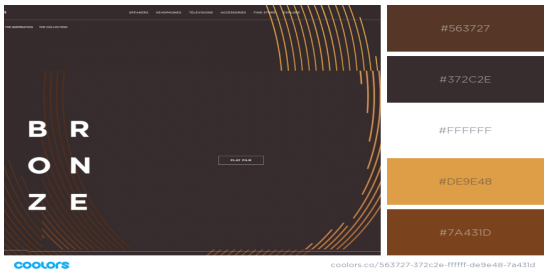
COLOR THEORY

- Color Theory is a set of principles used to create harmonious color combinations. Color relationships can be visually represented with a color wheel — the color spectrum wrapped onto a circle:



Colors on the Web

- When many people first start building their Web pages, they create pages in colors that they like.
  - It's very easy to set up a color scheme that clashes and is difficult for your readers to view for long periods or at all.
- Create visuals that are intended to be read
  - Offering the viewer enough contrast between the background (paper or screen) and the text is important



Colors and Contrast

- Text presentations ideally offer at least an 80% contrast between figure and ground. (Black text on a white background is ideal.)
  - If there is not enough contrast between figure and ground, a viewer will squint to view the text, causing eye fatigue.
  - Examples:

Good:

Black text on a white background

Bad:

Yellow text on a white background

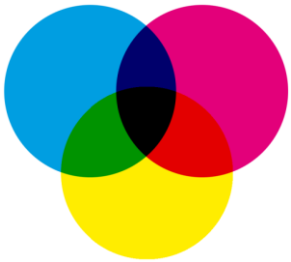
Blue text on a black background

Some cause illusions:

Red text on a blue background

PRIMARY COLORS

- In traditional color theory, Red, Yellow and Blue are the 3 colors that cannot be formed by any combination of other colors.
- All other colors are derived from these 3 hues



SECONDARY COLORS

- Green, orange and purple
- These are the colors formed by mixing the primary colors.

TERTIARY COLORS

- Yellow-orange, red-orange, red-purple, blue-purple, blue-green and yellow-green.
- These are the colors formed by mixing a primary and a secondary color. That's why the hue is a two word name, such as blue-green, red-violet, and yellow-orange.

- In design, you basically use two types of color schemes – **RGB** (red, green, blue) or **CMYK** (cyan, magenta, yellow, key/black).

- **Contrast** refers to the variance in illumination that makes an object distinct, and is measured in a scale of Contrast Ratio. Higher the contrast, more the distinction the object has (red text on a white background). Lower the contrast, lower the distinction the object has (medium blue text on a dark blue background).

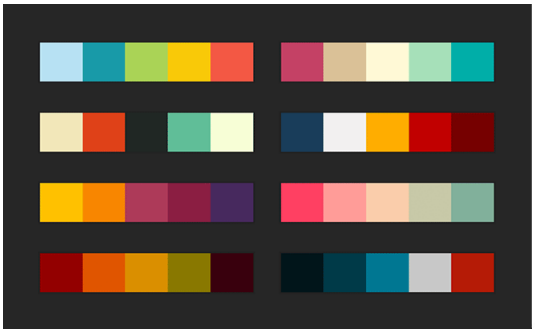
- **CMYK** is the subtractive color model, meaning you need to take colors away to get to white; the more colors you add, the closer you get to black. CMYK works on a scale of 0 to 100. If C=100, M=100, Y=100, and K=100, you get black; if all four colors = 0, you get white.

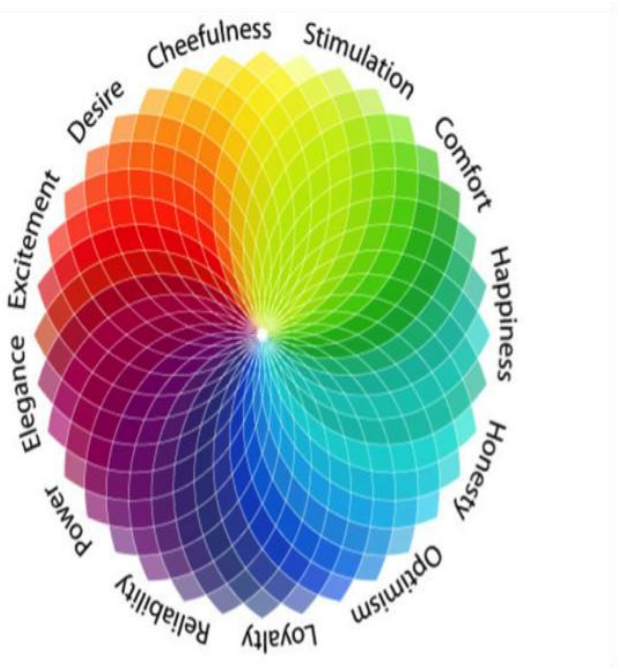
- **RGB** displays are more suited for digital displays; the more color you add, the closer you get to white, and vice versa. In computer design, RGB is created with scales ranging from 0 to 255. So, black is made when R=0, G=0, and B=0; White when R=255, G=255, and B=255.

Color Schemes

The way in which we perceive colors depends on the way in which they are used. There are different color schemes like:

- **Analogous:** This scheme is created by pairing one main color with the two colors right next to it on the color wheel.
- **Monochromatic**: It's basically one color, but you can use different tints and saturations for a neat, professional look.
- **Triadic**: Use this scheme to create a high contrasting scheme without changing tone. This is created by picking colors equally placed in lines around the color wheel.
- **Complementary:** This color scheme provides the highest contrast; choose this scheme to highlight important elements in your website design.
- **Split Complementary**: A slight variation of the complementary scheme, this scheme uses one dominant color and the two colors directly next to that color's complement.





Choosing the Best Color Combinations for your Website

- Now we have some basic knowledge of how colors are created and represented on computers, and how people more or less view colors, we can use these bits of knowledge to create the best color combinations for websites.
- you can also use your aesthetic sense, and of course, not losing sight of the branding requirements, to see what colors go well together.
- There should be harmony among the colors you choose. Start out with a limited set of colors, and add to it only if and when necessary.
- Too many colors will overwhelm both you, and the viewer.
- There are also various tools available to help you pick the best colors for your website design, in case you still feel confused or lost. Some of the best are Adobe Color CC, Mudcube Colour Sphere, Color Hunter, and the Color App.

Web standards & Accessible Design

- With all this diversity in the way people access the web, there's a very high probability that your website will look different to many of your visitors than it does to you.
- Despite these differences, the most important part of your website is its content, and all users should be able to access that. The only way to ensure that websites work across all devices and configurations is to develop in accordance with web standards.
- **Web standards** are the core set of rules for developing websites. It might be possible to develop sites that do not comply with standards, but doing so increases the likelihood that many people will be unable to access your site.
- The central organization who is responsible for creating and maintaining web standards is the World Wide Web Consortium (W3C).

The W3C has defined dozens of standards, including the standard markup languages we use to build websites. The standard markup languages we'll be using in this course are:

- **HTML** - Stands for *HyperText Markup Language*. HTML is the language that has historically been used to create documents on the web. It is plain text, but includes a variety of tags that define the structure of the document, and allow documents to include headings, paragraphs, images, links, lists, tables, and other features.
- **CSS** - Stands for *Cascading Style Sheets*. CSS is a language that is used in conjunction with HTML to control how web pages are displayed. The difference between HTML and CSS is that HTML defines the structure and content of the document, and CSS controls the presentation.
- **XML** - Stands for Extensible Markup Language. XML is a "meta language", a markup language that is used to create other markup languages. Hundreds of XML languages are in use today, including GML (Geography Markup Language), MathML, MusicML, and RSS (Really Simple Sindication). Since each of these languages was written in XML, their content can easily be shared across applications.
- **XHTML** - XHTML is a rewrite of HTML as an XML language. XHTML is very similar to HTML, but has stricter rules. HTML was relaxed about things such as case sensitivity (XHTML elements must be in lower case) and closing tags (all XHTML elements must be closed). Strict rules are necessary for all XML languages, because without it, interoperability between applications would be impossible. XML is the way of the future, and XHTML is the future language of the web

Web accessibility is about designing sites so as many people as possible can access and interact with them effectively and easily

Why is it an issue?

- Lack of standards in the early days of the web
- Ignorance of the needs of disabled web users
- Development tools were very poor at creating accessible website
- Limited advice and support available

Unit 2 Introduction to HTML

Unit 2.1 : Creating Pages with HTML – Part 1

OVERVIEW:
HTML-What is it?

- **What is HTML?**
- HTML is a language for describing web pages.
- · HTML stands for Hyper Text Markup Language
- · HTML is not a programming language, it is a markup language
- · A markup language is a set of markup tags
- · HTML uses markup tags to describe web pages

2

OVERVIEW:
HTML-tags

- **HTML Tags**
- *HTML markup tags are usually called HTML tags*
- · *HTML tags are keywords surrounded by* **angle brackets** *like <html>*
- · *HTML tags normally* **come in pairs** *like and *
- · *The first tag in a pair is the* **start tag,** *the second tag is the* **end tag**
- · *Start and end tags are also called* **opening tags** *and* **closing tags**

3

Tags Continued

- The opening and closing tags use the same command except the closing tag contains and additional forward slash /
- For example, the expression <B> Warning </B> would cause the word 'Warning' to appear in bold face on a Web page

Nested Tags

- Whenever you have HTML tags within other HTML tags, you must close the nearest tag first
- Example:

  <H1> <I> The Nation </I> </H1>

Structure of a Web Page

- All Web pages share a common structure
- All Web pages should contain a pair of <HTML>, <HEAD>, <TITLE>, and <BODY> tags

```
<HTML>
<HEAD>
<TITLE> Example </TITLE>
</HEAD>
<BODY>
    This is where you would include the text
    and images on your Web page.
</BODY>
</HTML>
```

Basics Elements of HTML

- A text header, denoted using the <h1>, <h2>, <h3>, <h4>, <h5>, <h6> tags.
- A paragraph, denoted using the <p> tag.
- A horizontal ruler, denoted using the <hr> tag.
- A link, denoted using the <a> (anchor) tag.
- A list, denoted using the <ul> (unordered list), <ol> (ordered list) and <li> (list element) tags.
- An image, denoted using the <img> tag
- A divider, denoted using the tag
- A text span, denoted using the tag

Essential Tags

There are four sets of HTML tags that are essential to form the basic structure for every HTML file:

Definition - **<html> </html>**This basically defines the document as web page. It also identifies the beginning and end of the HTML document. All other tags must fall between the html tags.

Header - **<head> </head>**The header contains information about the document that will not appear on the actual page, such as the title of the document, the author, which stylesheet to use and also meta tags.

Title - **<title> </title>**The title tag defines the title that will appear in the title bar of your web browser. The title must appear between the head tags.

Body - **<body> </body>**The body tags contain all the information and other visible content on the page. All your images, links and plain text must go between the <body> and </body> tags.

Common Tags

- **<HTML>:** It is the root of the html document which is used to specify that the document is html.
- **<Head>:** Head tag is used to contain all the head element in the html file. It contains the title, style, meta, … etc tag.
- **<Body>:**It is used to define the body of html document. It contains image, tables, lists, … etc.
- **<Title>:** It is used to define the title of html document.
- **<Head>:** It is used to define the heading of html document.
- **Paragraph(<p>) :** It is used to define paragraph content in html document.
- **Emphasis() :** It is used to renders as emphasized text.
- **Bold(<b>) :** It is used to specify bold content in html document.
- **Italic(<i>):** It is used to write the content in italic format.
- **<Small> (text) :** It is used to set the small font size of the content.
- **Underline(<u>) text:** It is used to set the content underline.
- **Deleted(<strike>) text:** It is used to represent as deleted text. It cross the text content.

Common Tags

- **Anchor(<a>):** It is used to link one page to another page.
- **List(<li>):** It is used to list the content.
- **Ordered List(<ol>):** It is used to list the content in a particular order.
- **Unordered List(<ul>):** It is used to list the content without order.
- **Scrolling Text(<marquee>:** It is used to scroll the text or image content.
- **Center( ):** It is used to set the content into the center.
- **Font(<font>):** It is used to specify the font size, font color and font-family in html document.
- **Line break(<br>):** It is used to break the line.
- **Image(<img>):** It is used to add image element in html document.
- **Tables(<table>):** Table tag is used to create a table in html document.
- **Tr:** It is used to define row of html table.
- **Th:** It defines the header cell in a table. By default it set the content with bold and center property.
- **Td :** It defines the standard cell in html document.
- **Form :** It is used to create html form for user.
- **Dropdown option :** It is used to select an option from a drop-down list.

OVERVIEW: *HTML-Elements*

HTML documents are defined by HTML elements.
An HTML element is everything from the start tag to the end tag:

Start tag * Element content End tag *

* This is a paragraph *
* This is a link *
*
*

***** *The start tag is often called the* **opening tag***. The end tag is often called the* **closing tag**.

HTML Element Syntax
· *An HTML element starts with a* **start tag / opening tag**
· *An HTML element ends with an* **end tag / closing tag**
· *The* **element content** *is everything between the start and the end tag*
· *Some HTML elements have* **empty content**
· *Empty elements are* **closed in the start tag**
· *Most HTML elements can have* **attributes**
Tip: *You will learn about attributes in the next chapter of this tutorial.*

OVERVIEW: *HTML-Elements*

Nested HTML Elements

Most HTML elements can be nested (can contain other HTML elements).
HTML documents consist of nested HTML elements.

HTML Document Example

```
<html>
<body>
<p>This is my first paragraph.</p>
</body>
</html>
```

HTML Example Explained

The element:

- * This is my first paragraph. *
- *The element defines a paragraph in the HTML document.*
- *The element has a start tag and an end tag .*
- *The element content is: This is my first paragraph.*

The <body> element:

```
<body>
<p>This is my first paragraph.</p>
</body>
```

- *The <body> element defines the body of the HTML document.*
- *The element has a start tag <body> and an end tag </body>.*
- *The element content is another HTML element (a p element).*

OVERVIEW:
HTML-documents?

- **HTML Documents = Web Pages**

  HTML documents **describe web pages**

  HTML documents **contain HTML tags** *and plain text*

  HTML documents are also **called web pages**

13

OVERVIEW:

HTML-documents?

- *The purpose of a web browser (like Internet Explorer or Firebox) is to read HTML documents and display them as web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page:*

```
<html>
<body>
<h1>My First Heading</h1>
<p>My first paragraph.</p>
</body>
</html>
```

Example *(Explained)*

The text between <html> and </html> describes the web page

The text between <body> and </body> is the visible page content

The text between <h1> and </h1> is displayed as a heading

The text between and is displayed as a paragraph

14

OVERVIEW:

HTML-Heading?

HTML headings are defined with the <h1> to <h6> tags.

```
h1 {
  display: block;
  font-size: 2em;
  margin-top: 0.67em;
  margin-bottom: 0.67em;
  margin-left: 0;
  margin-right: 0;
  font-weight: bold;
}
```

```
h2 {
  display: block;
  font-size: 1.5em;
  margin-top: 0.83em;
  margin-bottom: 0.83em;
  margin-left: 0;
  margin-right: 0;
  font-weight: bold;
}
```

```
h3 {
  display: block;
  font-size: 1.17em;
  margin-top: 1em;
  margin-bottom: 1em;
  margin-left: 0;
  margin-right: 0;
  font-weight: bold;
}
```

```
h4 {
  display: block;
  font-size: 1em;
  margin-top: 1.33em;
  margin-bottom: 1.33em;
  margin-left: 0;
  margin-right: 0;
  font-weight: bold;
}
```

```
h5 {
  display: block;
  font-size: .83em;
  margin-top: 1.67em;
  margin-bottom: 1.67em;
  margin-left: 0;
  margin-right: 0;
  font-weight: bold;
}
```

```
h6 {
  display: block;
  font-size: .67em;
  margin-top: 2.33em;
  margin-bottom: 2.33em;
  margin-left: 0;
  margin-right: 0;
  font-weight: bold;
}
```

15

OVERVIEW: *HTML-Attributes*

Attributes provide additional information about HTML elements.

HTML Attributes
· *HTML elements can have* **attributes**
· *Attributes provide* **additional information** *about an element*
· *Attributes are always specified in* **the start tag**
· *Attributes come in name/value pairs like:* **name="value"**

Attribute Example

HTML links are defined with the <a> tag. The link address is specified in the href attribute:
This is a link

Always Quote Attribute Values

Attribute values should always be enclosed in quotes.
Double style quotes are the most common, but single style quotes are also allowed.

OVERVIEW: *HTML-Attributes*

Tip: *In some rare situations, when the attribute value itself contains quotes, it is necessary to use single quotes: name='John "ShotGun" Nelson'*

HTML Tip: Use Lowercase Attributes

Attribute names and attribute values are case-insensitive. However, the World Wide Web Consortium (W3C) recommends lowercase attributes/attribute values in their HTML 4 recommendation. Newer versions of (X)HTML will demand lowercase attributes.

HTML Attributes Reference

A complete list of legal attributes for each HTML element is listed in our:
Below is a list of some attributes that are standard for most HTML elements:

Attribute Value Description

Attribute	Value	Description
class	classname	Specifies a classname for an element
id	id	Specifies a unique id for an element
style	style_definition	Specifies an inline style for an element
title	tooltip_text	Specifies extra information about an element (displayed as a tool tip)

OVERVIEW:

HTML-Paragraphs?

HTML Paragraphs

HTML paragraphs are defined with the tag.

Example

* This is a paragraph. *

* This is another paragraph. *

CODE	OUTPUT
<!DOCTYPE html> <html> <body> This is an example of paragraph This is second paragraph The number of lines in a paragraph depends on the size of the browser window. If you resize the browser window, the number of lines in this paragraph will change. </body> </html>	This is an example of paragraph This is a second paragraph The number of lines in a paragraph depends On the size of the browser window. If you resize the browser window, the number of Lines in this paragraph will change.

18

OVERVIEW:

HTML-Paragraphs?

· *HTML documents are divided into paragraphs.*
· *Paragraphs are defined with the tag.*

Example
* This is a paragraph *
* This is another paragraph *

Note: *Browsers automatically add an empty line before and after a paragraph.*

Don't Forget the End Tag
Most browsers will display HTML correctly even if you forget the end tag:

Example
* This is a paragraph*
* This is another paragraph*
The example above will work in most browsers, but don't rely on it. Forgetting the end tag can produce unexpected results or errors.

Note: *Future version of HTML will not allow you to skip end tags.*

19

OVERVIEW:
HTML-Paragraphs?

HTML Line Breaks
Use the <br /> tag if you want a line break (a new line) without starting a new paragraph:

Example
* This is
a para
graph with line breaks *
The <br /> element is an empty HTML element. It has no end tag.
*
 or
*
In XHTML, XML, elements with no end tag (closing tag) are not allowed.
Even if <br> works in all browsers, writing <br /> instead works better in XHTML and XML applications.

HTML Output - Useful Tips
You cannot be sure how HTML will be displayed. Large or small screens, and resized windows will create different results.
With HTML, you cannot change the output by adding extra spaces or extra lines in your HTML code.
The browser will remove extra spaces and extra lines when the page is displayed. Any number of lines count as one line, and any number of spaces count as one space.

20

OVERVIEW:
HTML-Paragraphs Examples

HTML paragraphs
How HTML paragraphs are displayed in a browser.
```
<html>
<body>
<p>This is a paragraph.</p>
<p>This is a paragraph.</p>
<p>This is a paragraph.</p>
</body>
</html>
```

Line breaks
The use of line breaks in an HTML document.
```
<html>
<body>
<p>This is<br />a para<br />graph with line breaks</p>
</body>
</html>
```

Poem problems
Some problems with HTML formatting.
```
<html>
<body>
<p>
My Bonnie lies over the ocean.
My Bonnie lies over the sea.
My Bonnie lies over the ocean.
Oh, bring back my Bonnie to me.
</p>
<p>Note that your browser ignores the layout!</p>
</body>
</html>
```

21

OVERVIEW:

HTML-Formatting

HTML uses tags like <b> and <i> for formatting output, like **bold** *or italic text.*

These HTML tags are called formatting tags

Often renders as <b>, and renders as <i>.
However, there is a difference in the meaning of these tags:

<b> or <i> defines bold or italic text only.

* or means that you want the text to be rendered in a way that the user understands as "important". Today, all major browsers render strong as bold and em as italics. However, if a browser one day wants to make a text highlighted with the strong feature, it might be cursive for example and not bold!*

HTML Text Formatting Tags

Tag	Description
<b>	Defines bold text
<big>	Defines big text
	Defines emphasized text
<i>	Defines italic text
<small>	Defines small text
	Defines strong text
<sub>	Defines subscripted text
<sup>	Defines superscripted text
<ins>	Defines inserted text
<del>	Defines deleted text

22

OVERVIEW:

HTML-Formatting Examples

Preformatted text

```
How to control the line breaks and spaces
with the pre tag.
<html>
<body>
<pre>
This is preformatted text.
It preserves both spaces
and line breaks.
</pre>
<p>The pre tag is good for displaying
computer code:</p>
<pre>
for i = 1 to 10
print i
next i
</pre>
</body>
</html>
```

"Computer output" tags

```
How different "computer output" tags will be
displayed.
<html>
<body>
<code>Computer code</code>
<br />
<kbd>Keyboard input</kbd>
<br />
<tt>Teletype text</tt>
<br />
<samp>Sample text</samp>
<br />
<var>Computer variable</var>
<br />
<p><b>Note:</b> These tags are often used to
display computer/programming
code.</p>
</body>
</html>
```

23

OVERVIEW:*HTML-Formatting Examples*

Address

How to define contact information for the author/owner of an HTML document.

```
<html>
<body>
<address>
Written by Zafar.com<br />
<a href="mailto:us@example.org">Email us</a><br />
Address: kicsit <br />
Phone: +92 - 03335859331
</address>
</body>
</html>
```

Quotations

How to handle long and short quotations.

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN"
"http://www.w3.org/TR/html4/loose.dtd">
<html>
<body>
A long quotation:
<blockquote>
This is a long quotation. This is a long quotation. This is a long quotation. This is a long quotation. This is a long quotation.
</blockquote>
<p><b>Note:</b> The browser inserts white space before and after a block quote
element. It also inserts margins.</p>
A short quotation:
<q>This is a short quotation</q>
<p><b>Note:</b> The browser inserts quotation marks around the short quotation.</p>
</body>
</html>
```

24

OVERVIEW: *HTML-Images*

· HTML Images - The <img> Tag and the Src Attribute
· In HTML, images are defined with the <img> tag.
· The <img> tag is empty, which means that it contains attributes only, and has no closing tag.
· To display an image on a page, you need to use the src attribute. Src stands for "source". The value of the src attribute is the URL of the image you want to display.

Syntax for defining an image:

```
<img src="url" alt="some_text"/>
```

The URL points to the location where the image is stored. An image named "boat.gif", located in the "images" directory on "www.w3schools.com" has the URL: http://www.w3schools.com/images/boat.gif.
The browser displays the image where the <img> tag occurs in the document. If you put an image tag between two paragraphs, the browser shows the first paragraph, then the image, and then the second paragraph.

HTML Images - The Alt Attribute

The required alt attribute specifies an alternate text for an image, if the image cannot be displayed.
The value of the alt attribute is an author-defined text:

```
<img src="boat.gif" alt="Big Boat" />
```

OVERVIEW: *HTML-Images*

The alt attribute provides alternative information for an image if a user for some reason cannot view it (because of slow connection, an error in the src attribute, or if the user uses a screen reader).

HTML Images - Set Height and Width of an Image
The height and width attributes are used to specify the height and width of an image.
The attribute values are specified in pixels by default:
**

Tip: *It is a good practice to specify both the height and width attributes for an image. If these attributes are set, the space required for the image is reserved when the page is loaded. However, without these attributes, the browser does not know the size of the image. The effect will be that the page layout will change during loading (while the images load).*
Basic Notes - Useful Tips

Note: *If an HTML file contains ten images - eleven files are required to display the page right. Loading images takes time, so my best advice is: Use images carefully.*
Note: *When a web page is loaded, it is the browser, at that moment, that actually gets the image from a web server and inserts it into the page. Therefore, make sure that the images actually stay in the same spot in relation to the web page, otherwise your visitors will get a broken link icon. The broken link icon is shown if the browser cannot find the image.*

OVERVIEW: *HTML-Images Examples*

Insert images
How to insert images into an HTML document.

```
<html>
<body>
<p>
An image:
<img src="smiley.gif" alt="Smiley face"
width="32" height="32" />
</p>
<p>
A moving image:
<img src="hackanm.gif" alt="Computer man"
width="48" height="48" />
</p>
<p>
Note that the syntax of inserting a moving
image is no different from a non-moving
image.
</p>
</body>
</html>
```

Output:
An image: 

A moving image: 

Note that the syntax of inserting a moving image is no different from a non-moving image.

OVERVIEW: *HTML-Images Examples*

Insert images from different locations
How to insert an image from another folder or another server.

```
<html>
<body>
<p>An image from another folder:</p>
<img src="/images/chrome.gif" alt="Google Chrome" width="33" height="32" />
<p>An image from W3Schools:</p>
<img src="http://www.w3schools.com/images/w3schools_green.jpg" alt="W3Schools.com" width="104" height="142" />
</body>
</html>
```

Aligning images
How to align an image within the text.

```
<html>
<body>
<p>An image
<img src="smiley.gif" alt="Smiley face" align="bottom" width="32" height="32" />
with align="bottom".</p>
<p>An image
<img src="smiley.gif" alt="Smiley face" align="middle" width="32" height="32" />
with align="middle".</p>
<p>An image
<img src="smiley.gif" alt="Smiley face" align="top" width="32" height="32" />
with align="top".</p>
<p><b>Tip:</b> align="bottom" is default!</p>
<p><img src="smiley.gif" alt="Smiley face" width="32" height="32" />
An image before the text.</p>
</body>
</html>
```

OVERVIEW: *HTML-Images Examples*

Let the image float
How to let an image float to the left or right of a paragraph.

```
<html>
<body>
<p>
<img src="smiley.gif" alt="Smiley face" align="left" width="32" height="32" />
A paragraph with an image. The align attribute of the image is set to "left". The image
will float to the left of this text.
</p>
<p>
<img src="smiley.gif" alt="Smiley face" align="right" width="32" height="32" />
A paragraph with an image. The align attribute of the image is set to "right". The image
will float to the right of this text.
</p>
</body>
</html>
```

Make a hyperlink of an image
How to use an image as a link.

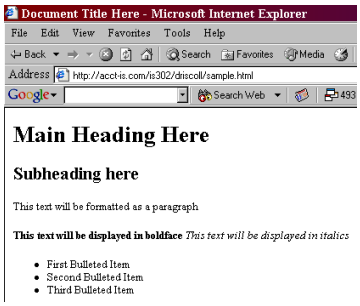
```
<html>
<body>
<p>Create a link of an image:
<a href="default.asp">
<img src="smiley.gif" alt="HTML tutorial" width="32" height="32" />
</a></p>
<p>No border around the image, but still a link:
<a href="default.asp">
<img border="0" src="smiley.gif" alt="HTML tutorial" width="32" height="32" />
</a></p>
</body>
</html>
```

Unit 2.2 : Creating Pages with HTML – Part 2

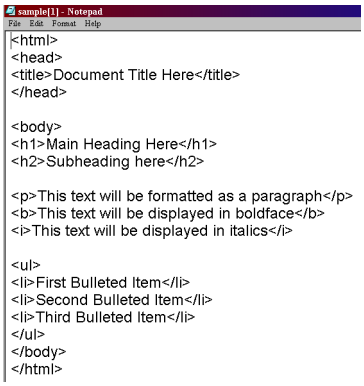
THE WEB DEVELOPMENT PROCESS

What Does HTML Look Like?

Sample Web Page



HTML that generated this Sample Web Page*



* You can see the code underlying a Web page by selecting View / Source from your browser menu.

2

HTML List

HTML offers two ways for specifying lists of information. All lists must contain one or more list elements. Lists may contain:

•**An unordered list(<ul>):** This will list items using plain bullets.

•**An ordered list(<ol>):** This will use different schemes of numbers to list your items.

HTML List

HTML offers two ways for specifying lists of information. All lists must contain one or more list elements. Lists may contain:

•**An unordered list(<ul>):** This will list items using plain bullets.

•**An ordered list(<ol>):** This will use different schemes of numbers to list your items.

HTML Unordered List

An unordered list is a collection of related items that have no special order or sequence. This list is created by using HTML tag. Each item in the list is marked with a bullet.

Example:

```
<!DOCTYPE html>
<html>
<body>
<h2>An unordered HTML list</h2>
<ul>
  <li>MCA</li>
  <li>MBA</li>
  <li>BCA</li>
</ul>
</body>
</html>
```

Output:

An unordered HTML list
•MCA
•MBA
•BCA

HTML Unordered List

The type Attribute You can use type attribute for tag to specify the type of bullet you like. Disc,square and circle are the type of unordered list.By default it is a disc. Following are the possible options:

<ul type="disc">
<ul type="disc">
<ul type="disc">

Example:

```
<!DOCTYPE html>
<html>
<body>
<h2>An unordered HTML list</h2>
<ul type="disc">
  <li>MCA</li>
  <li>MBA</li>
  <li>BCA</li>
</ul>
</body>
</html>
```

Output:

An unordered HTML list
- MCA
- MBA
- BCA

HTML Ordered List

If you are required to put your items in a numbered list instead of bulleted then HTML ordered list will be used. This list is created by using tag. The numbering starts at one and is incremented by one for each successive ordered list element tagged with <li>.

Example:

```
<!DOCTYPE html>
<html>
<body>
<h2>An unordered HTML list</h2>
<ol>
  <li>MCA</li>
  <li>MBA</li>
  <li>BCA</li>
</ol>
</body>
</html>
```

Output:

An unordered HTML list
1. MCA
2. MBA
3. BCA

HTML Ordered List

You can use type attribute for tag to specify the type of numbering you like. By default it is a number. Following are the possible options: Following are the possible options:

<ol type="I">
<ol type="i">
<ol type="a">
<ol type="A">
<ol type="1">

Example:

```
<!DOCTYPE html>
<html>
<body>
<h2>An unordered HTML list</h2>
<ol type="A">
  <li>MCA</li>
  <li>MBA</li>
  <li>BCA</li>
</ol>
</body>
</html>
```

Output:

An unordered HTML list

A. MCA
B. MBA
C. BCA

Nested List

A nested list or a sublist is a list within a list. The trick to marking nested lists up correctly in HTML is to recognize that the sublist is actually a child of a list item and not of a list.

Example:

```
<ul>
  <li>Fruit
    <ul>
      <li>Bananas</li>
      <li>Apples
        <ul>
          <li>Green</li>
          <li>Red</li>
        </ul>
      </li>
      <li>Pears</li>
    </ul>
  </li>
  <li>Vegetables</li>
  <li>Meat</li>
</ul>
```

- Fruit
  - Bananas
  - Apples
    - Green
    - Red
  - Pears
- Vegetables
- Meat

HTML Link (Creating Link)

HTML links are hyperlinks. You can click on a link and jump to another document. When you move the mouse over a link, the mouse arrow will turn into a little hand.

Syntax:

link text

Example:

Visit our College Website

Local Links:

A local link (link to the same web site) is specified with a relative URL……..

Example:

HTML Images

Creating a Table

- The first step to creating a table is to specify the table structure:
  - the number of rows and columns
  - the location of column headings
  - the placement of a table caption
- Once the table structure is in place, you can start entering data into the table.

11

Creating a Table

Tables are defined with the <table> tag.

A table is divided into rows (with the <tr> tag), and each row is divided into data cells (with the <td> tag). td stands for "table data," and holds the content of a data cell. A <td> tag can contain text, links, images, lists, forms, other tables, etc.

Table Example

```
<table border="1">
<tr>
<td>row 1, cell 1</td>
<td>row 1, cell 2</td>
</tr>
<tr>
<td>row 2, cell 1</td>
<td>row 2, cell 2</td>
</tr>
</table>
```

How the HTML code above looks in a browser:

row 1, cell 1	row 1, cell 2
row 2, cell 1	row 2, cell 2

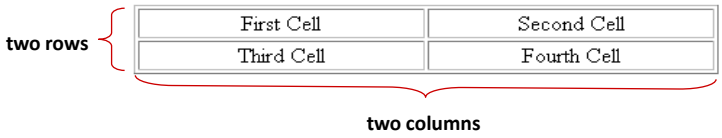
Using the <table>,<tr>, and <td> Tags

- Graphical tables are enclosed within a two-sided <**table**> tag that identifies the start and ending of the table structure.
- Each row of the table is indicated using a two-sided <**tr**> (for table row).
- Within each table row, a two-sided <**td**> (for table data) tag indicates the presence of individual table cells.

13

The General Table Syntax

```
<table>
 <tr>
    <td> First Cell </td>
    <td> Second Cell </td>
 </tr>
 <tr>
    <td> Third Cell </td>
    <td> Fourth Cell </td>
 </tr>
</table>
```



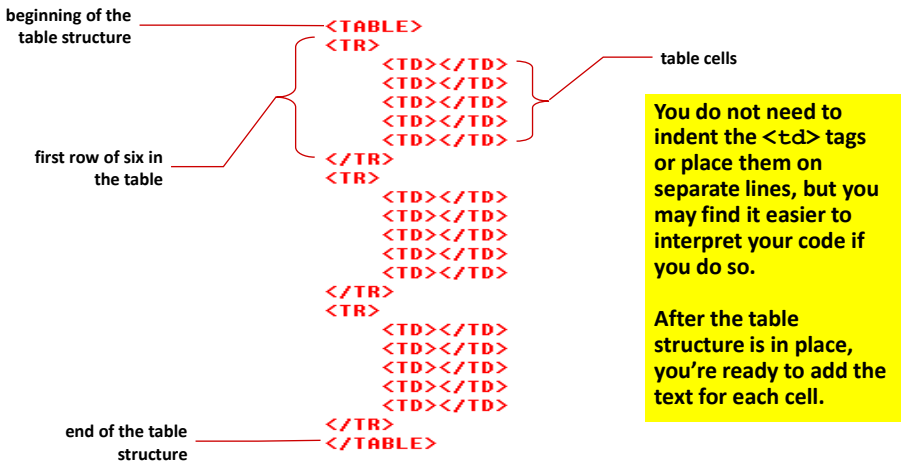
14

Columns within a Table

- HTML does not provide a tag for table columns.
- In the original HTML specifications, the number of columns is determined by how many cells are inserted within each row.
  - for example, if you have four **<td>** tags in each table row, that table has four columns
- Later versions of HTML provide increased support for controlling the appearance of table columns.

15

HTML Structure of a Table



16

Creating Headings with the <th> Tag

- HTML provides the **<th>** tag for table headings.
- Text formatted with the **<th>** tag is centered within the cell and displayed in a boldface font.
- The **<th>** tag is most often used for column headings, but you can use it for any cell that you want to contain centered boldfaced text.

17

Adding Table Headings to the Table

Text in cells formatted with the <th> tag is bold and centered above each table column.

Group	Runner	Time	Origin
Men	1. Peter Teagan	2:12:34	San Antonio, Texas
Men	2. Kyle Wills	2:13:05	Billings, Montana
Men	3. Jason Wu	2:14:28	Cutler, Colorado
Women	1. Laura Blake	2:28:21	Park City, Colorado
Women	2. Kathy Lasker	2:30:11	Chicago, Illinois
Women	3. Lisa Peterson	2:31:14	Seattle, Washington

table headings

```
<table>
   <tr>
      <th>Group</th>
      <th>Runner</th>
      <th>Time</th>
      <th>Origin</th>
   </tr>
   <tr>
      <td>Men</td>
      <td>1. Peter Teagan</td>
      <td>2:12:34</td>
      <td>San Antonio, Texas</td>
   </tr>
```

18

Creating a Table Caption

- HTML allows you to specify a caption for a table.
- The syntax for creating a caption is: **<caption align="alignment">caption text</caption>**
  - ***alignment*** indicates the caption placement
  - a value of ***"bottom"*** centers the caption below the table
  - a value of ***"top"*** or ***"center"*** centers the caption above the table
  - a value of ***"left"*** or ***"right"*** place the caption above the table to the left or right

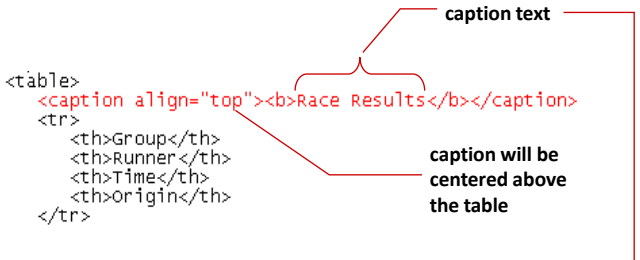
19

Table Captions

- Only **Internet Explorer** supports all caption values.
- **Netscape** supports only the "**top**" and "**bottom**" values.
- The **<caption>** tag works only with tables, the tag must be placed within the table structure.
- Captions are shown as normal text without special formatting.
- Captions can be formatted by embedding the caption text within other HTML tags.
  - for example, place the caption text within a pair of **<b>** and **<i>** tags causes the caption to display as bold and italic

20

Result of a Table Caption



Race Results

Group	Runner	Time	Origin
Men	1. Peter Teagan	2:12:34	San Antonio, Texas
Men	2. Kyle Wills	2:13:05	Billings, Montana
Men	3. Jason Wu	2:14:28	Cutler, Colorado
Women	1. Laura Blake	2:28:21	Park City, Colorado
Women	2. Kathy Lasker	2:30:11	Chicago, Illinois
Women	3. Lisa Peterson	2:31:14	Seattle, Washington

21

Modifying the Appearance of a Table

- You can modify the appearance of a table by adding:
  - gridlines
  - borders
  - background color
- HTML also provides tags and attributes to control the placement and size of a table.

22

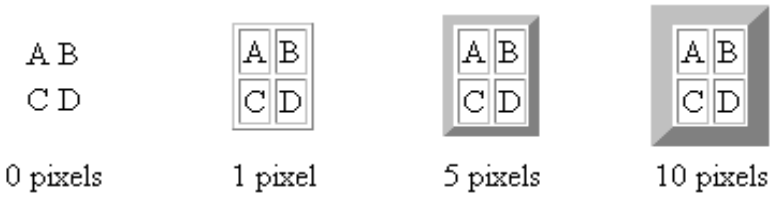
Adding a Table Border

- By default, browsers display tables without table borders.
- A table border can be added using the border attribute to the **<table>** tag.
- The syntax for creating a table border is: **<table border="value">**
  - ***value*** is the width of the border in pixels
- The **size** attribute is optional; if you don't specify a size, the browser creates a table border 1 pixel wide.

23

Tables with Different Borders Values

This figure shows the effect on a table's border when the border size is varied.



24

Adding a 5-Pixel Border to a Table

```
<table border="5">
   <caption align="top"><b>Race Results</b></caption>
   <tr>
      <th>Group</th>
      <th>Runner</th>
      <th>Time</th>
      <th>Origin</th>
   </tr>
```

Only the outside border is affected by the border attribute; the internal gridlines are not affected.

Race Results

Group	Runner	Time	Origin
Men	1. Peter Teagan	2:12:34	San Antonio, Texas
Men	2. Kyle Wills	2:13:05	Billings, Montana
Men	3. Jason Wu	2:14:28	Cutler, Colorado
Women	1. Laura Blake	2:28:21	Park City, Colorado
Women	2. Kathy Lasker	2:30:11	Chicago, Illinois
Women	3. Lisa Peterson	2:31:14	Seattle, Washington

25

Controlling Cell Spacing

- The **cellspacing** attribute controls the amount of space inserted between table cells.
- The syntax for specifying the cell space is:

  <table cellspacing="value">

  - ***value*** is the width of the interior borders in pixels
  - the default cell spacing is 2 pixels

- Cell spacing refers to the space between the cells.

26

Defining Cell Padding

- To control the space between the table text and the cell borders, add the **cellpadding** attribute to the table tag.
- The syntax for this attribute is:

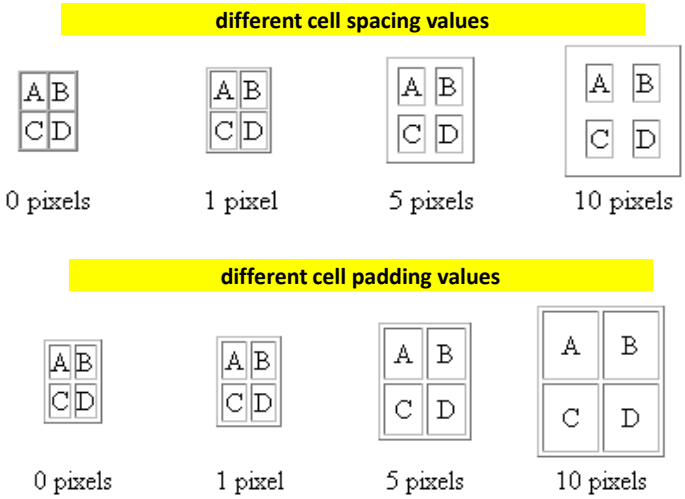
  <table cellpadding="value">

  - ***value*** is the distance from the table text to the cell border, as measured in pixels
  - the default cell padding value is 1 pixel

- Cell padding refers to the space within the cells.

27

Tables with Different Cell Spacing Values



28

Formatting Web Pages Using Style Sheets

CSS

What is CSS?

- A simple mechanism for controlling the style of a Web document without compromising its structure.
- It allows you to separate visual design elements (layout, fonts, colors, margins, and so on) from the contents of a Web page.
- Allows for faster downloads, streamlined site maintenance, and global control of design attributes across multiple pages.

30

Graphics and Hyperlinks

- Graphics on the web are what make a web page interesting
- Hyperlinks are what make it a “web”

Cool Web Pages

- What is the coolest thing on a web page?
- What makes a web page special?

Graphics

- Question: How does a web page include graphics?
- Are the graphics included in the HTML file or separate files?

Graphics on WWW

- Types of Graphics Files
- Graphics in HTML
- How graphics appear
- Making Cool Graphics in Photoshop

Graphics: JPGs

- JPG (JPEG) is a file format standing for Joint Photographic Experts Group
- Use .jpg ending on files
- JPGs are the best for color photos and high-color images
- Scanned photos should be saved as JPGs
- Photoshop, Fireworks or other image editor is good for editing JPGs

Graphics: GIFs

- GIF stands for Graphic Image Format
- .gif ending on GIF files
- GIFs are perfect for graphical images with only a few colors (e.g. text headers)
- Very bad for photographs
- Photoshop, Fireworks, PowerPoint and others good for GIFs

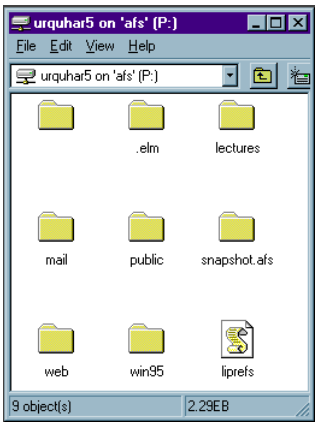
Graphics in HTML

- <img src="URL"> or <img src="file.name">
- Can include size parameters
  - <img src="URL" height=80 width=240>
  - <img src="**dru.gif**" height=25 width=100>
- Note: No closing tag!

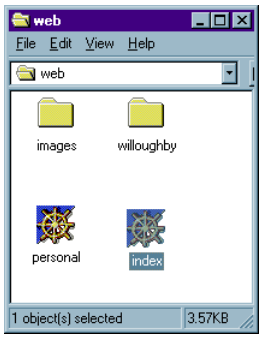
File Names

- Spaces in file names are no-nos for the WWW
- Internet Explorer is fine with spaces, Netscape does not work with spaces in file names
- cASe SenSitiViTY

Folders (Directories)



AFS Space or P Drive



Web Directory

Hierarchy

- A hierarchy is a layered system with some levels being higher and some lower
- AFS/P Drive is a higher level directory than its sub-directory, web
- Web directory has sub-folders, e.g. images
- Path to images from web is images/filename
- Good news: Dreamweaver takes care of this for you!

Case Sensitivity

- Index.html and index.html are the same file to MS Windows, but not to a web server
- Inserting Graphics:
  - MVC-003S.JPG vs. Mvc-003s.jpg
- Many people have problems with their websites because of this

Web Page Fonts

- Web pages load fonts from the system fonts
- Each computer has different system fonts
- If a computer doesn't have the font you specify, the page won't look right –Times Roman is substituted

Types of Graphics Files

- JPGs (.jpg) - Photographs
- GIFs (.gif) - “Graphics” - non photographic images

Pixels

- A pixel is a colored square dot.
- Many of these dots make up an image.
- Computer monitor resolution is measured in pixels
  - e.g. 800x600 is 800 pixels wide by 600 pixels tall
  - 1024x768
  - 640x480
  - These settings can be changed in control panels

Monitor Resolution

- Most monitors are set to 800x600 or 1024x768
- 800x600 is 20% of monitors currently
- 1024x768 is 80%
- If you have an image 750 pixels wide, it will fill almost the whole screen
- Question: If your monitor is set to 1600x1200 resolution, how much of the screen will that image fill?

High Resolution

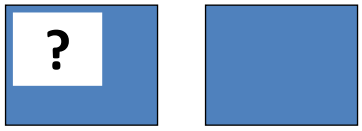
- The larger the number, the higher the resolution
  - 1024x768 is higher than 800x600
- I use 1024x768 resolution usually

The curse of the 5 megapixel camera

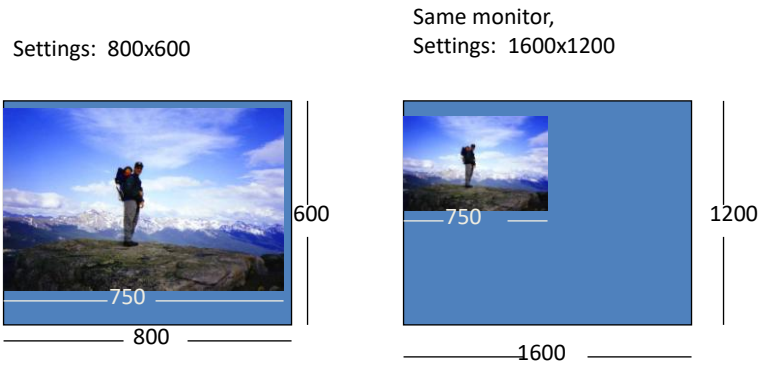
- 5 MP = 2500 x 2000 pixels
- 1600 x 1200 = ?? MP ??
- 2500 x 2000 on an 800x600 monitor gives you this→

Graphics and Resolution

- Determine how much of the screen an image will cover:
  - You have an image that is 750 pixels wide and 500 pixels tall
  - How will it look at 800x600 monitor resolution?
  - How will it look at 1600x1200?
  - Draw monitor box and draw image inside it

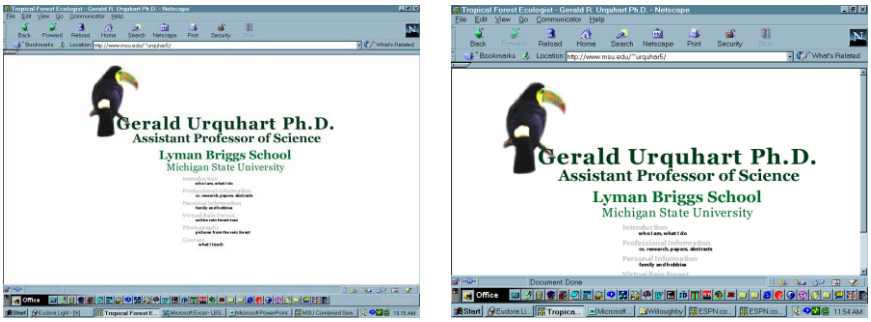


Resolution and Pixels



Resolution and Pixels

Same page, two different resolutions



Which monitor is at 800x600 and which is at 1024x768?

How big should your pictures be?

- Assume that people have a monitor resolution of 800x600
- How big should you make your images?

Scanning Images

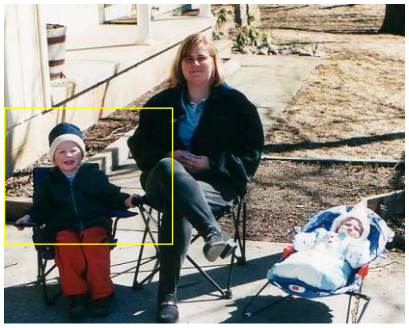
- Scanners scan in DPI - dots per inch
- Each dot becomes a pixel
- 300 DPI means 300 Pixels/inch of image
- If you scan a 6” x 4” photo at 300 DPI, how big will the picture be?

Scanning

- 300 DPI x 6 inches = 1800 pixels
- 300 DPI x 4 inches = 1200 pixels

- Answer: 1800 x 1200 pixels
  - Is this too big for a web page?

A 1800x1200 image on an 800x600 monitor



Re-sizing Images

- You should design your web page so that everything will fit on the screen or fall below. Nobody likes to scroll to the right!
- A picture of your family wouldn't be any good if all you could fit on the screen is one family member at a time

Two ways to resize

- Resize the image in Dreamweaver by grabbing a corner and dragging (hold down shift key to keep it proportional)
- Resize the image in a graphics program and then re-save it.
  - This makes a smaller file, good for faster downloads

Making Graphics in Photoshop

- Photoshop allows very cool graphics
- Hard to use, but worth the effort

Key Concepts

- Photoshop uses Layers for different elements
- Type is editable
- Arrow Tool allows you to move the current layer
- Paint bucket
- Eye Dropper
- Magic Wand
- Save for Web – JPG or GIF

Structure of the Image Tag

- **An image tag specifies a file that contains an image:*<img src="filename" alt="description">***
- **src is the abbreviation for “source”**
- **filename uses the same rules for absolute and relative pathnames as anchor tags**
- **alt value specifies an alternative form for the image, usually a textual description**

Structure of the Image Tag

- **The alt tag was introduced to assist persons who are visually impaired**
- **Screen readers don't know what the image is, but they can read the description of the alt tag**
- **HTML requires alt tags**
- **When an image is not available or loads slow, browsers display the alt information**

Image File Types

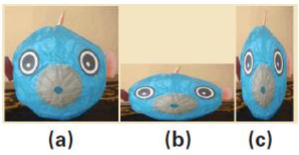
- **the file name needs to use the correct file extension**
- **.gif, .png, .jpeg and .jpg are frequently used extenstions**

Attributes for Image Tags

- **The attributes width and height of the image tag can be used to specify the size of an image**

```
<img src="puffer.jpg" width="200" height="200" alt="origami puffer fish">
```

- **The photo puffer.jpg will appear as 200 × 200 pixels, even if the actual size of the photo is 2000 × 2000**
- **Specify only the width or the height of an image**



(a) (b) (c)

Figure 4.6 The effect of changing width and height attributes on a square image: (a) 200 × 200, (b) 200 × 100, (c) 100 × 200.

Styling Position for Images

- Images are inserted in the page at the point in the text where the tag is specified in the HTML, and the text lines up with the bottom of the image
- Messy? Hard to read?
- A better way to place images in text is to flow the text around them

Styling Position for Images

- You can either position the image on the left with the text to its right, or vice versa
- To make the text flow *around* the image, use the *style attribute* in the image tag with the value
  "float:left" or "float:right“
- To display an image without any text around it, enclose it in paragraph tags

Making an Image Link

- **We do not have to use text as the anchor**
- **Images can be used as well**
- **Combine an anchor tag with an image tag:**

```
<a href="history_red_square.html"><img
  src="red.gif" alt="Red Box"></a>
```

- **When the page displays, the usual highlighting that links receive will be used to mark the .gif as a link**

Absolute Pathnames (URLs)

- **In these anchor tags, the hyperlink reference is an *entire* URL**
  - The Web browser needs to know how/where to find the page
- **A URL is made from:**
  - a protocol specification, ***http://***
  - a domain or IP address, ***www.bioz.com***
  - a path to the file, ***/bios/sci/russell.html***

Relative Pathnames

- **Often links refer to other Web pages on the *same site***
- **These pages are all be stored in the same or nearby folders**
- **These anchor tags use *relative pathnames***
- **A relative pathname describes how to find the referenced file *relative* to the file in which the anchor tag appears**

Going “Deeper” in a Folder

- **When the file containing the anchor and the referenced file are in the same folder—we just give the file name**

Russell

- **When the referenced file is “deeper” in the directory, we simply give the path from the current folder down to the file**

Russell

Box Model of CSS

- **CSS considers every HTML5 element to be enclosed in a "box"**
  - the boxes will not be visible, unless you make them visible
- **can clearly visualize content, padding, border, and margin**

Globally Speaking

- **so far, we have placed our style information either in the head or directly in the tag**
- **if we want to easily have the same style information on multiple pages, to have a consistent "look and feel" we should instead use a Style File**

Adding Class to Style

- ***A class is a family of styling* specifications with a common name**
- **The class is given in two places:**
  - In the style definition inside the style tags in the <head>
  - At the site in the HTML code when the code is used

Adding Class to Style

<h2 class="scientist"> . . . </h2>

- **For the style definition, we append the class name (scientist) to the tag with a dot: h2.scientist**
- **Plain <h2> tags are styled with those features that apply to all <h2> tags**
- **Each separate class gives additional styling specifications**

```
<html>
 <head><title>Stylin' Commands</title></head>
  <style type="text/css">
    h1 {background-color : lightgray;
        color : white;
        }
    h2 {background-color : lightgray;
        font-size : x-large;
        text-align : right;
        }
    p {font-style : italic;
       }
  </style>
 <body>
   <h1>Comments on the Universe</h1>
      <h2>Albert Einstein </h2>
      <p>Only two things are infinite, the universe
           and human stupidity, and I'm not sure about
           the former.</p>
      <h2>Bill Waterson </h2>
      <p>The surest sign that intelligent life exists
           elsewhere in the universe is that it has never
           tried to contact us.</p>
       <h2>Charles Schultz </h2>
       <p>Don't worry about the world coming to an end
           today. It is already tomorrow in Australia.</p>
  </body>
</html>
```

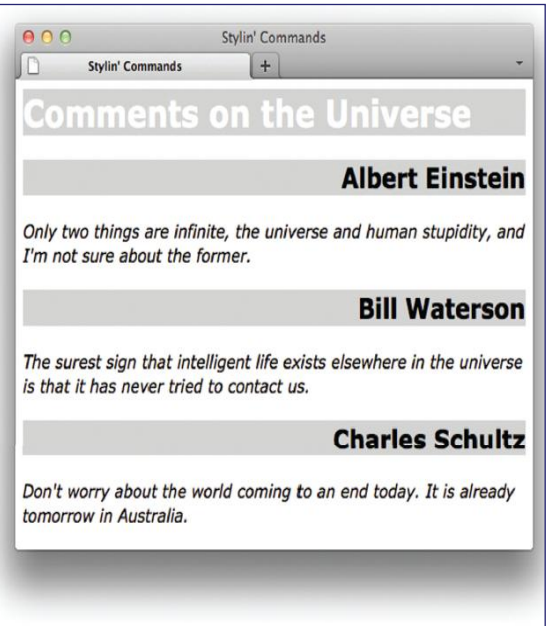


Figure 4.8 Global style information specified in the head section of the page.

```
<html>
 <head><title>Stylin' Commands</title></head>
  <style type="text/css">
    h1 {background-color : lightgray;
        color : white;
        }
    h2 {background-color : lightgray;
        font-size : x-large;
        text-align : right;
        }
    p {font-style : italic;
       }
  </style>
 <body>
   <h1>Comments on the Universe</h1>
      <h2 style="text-align:left">Albert Einstein </h2>
      <p>Only two things are infinite, the universe
           and human stupidity, and I'm not sure about
           the former.</p>
      <h2>Bill Waterson </h2>
      <p>The surest sign that intelligent life exists
           elsewhere in the universe is that it has never
           tried to contact us.</p>
       <h2>Charles Schultz </h2>
       <p>Don't worry about the world coming to an end
           today. It is already tomorrow in Australia.</p>
  </body>
</html>
```

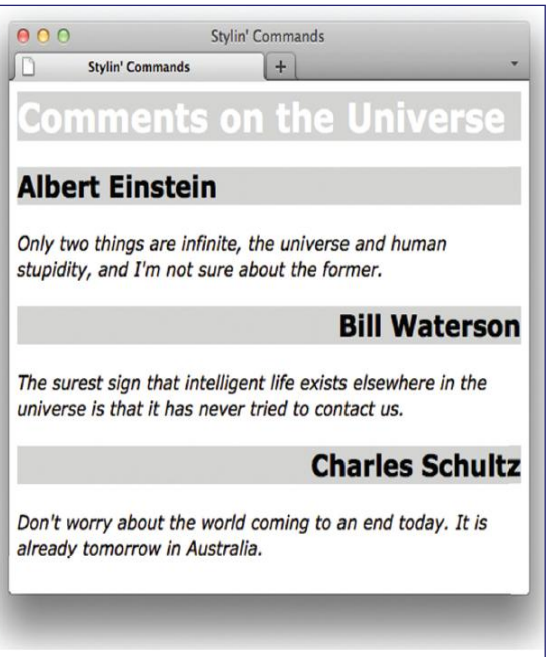


Figure 4.9 Overriding the global style information by styling an <h2> tag.

```
<html>
 <head><title>Stylin' Commands</title></head>
  <style type="text/css">
    h1 {background-color : lightgray;
        color : white;
        }
    h2 {background-color : lightgray;
        font-size : x-large;
        text-align : right;
        }
    h2.scientist {
        color : red;
        }
    h2.cartoonist {
        color : blue;
        font-family : comic sans MS;
        }
    p {font-style : italic;
       }
  </style>
 <body>
   <h1>Comments on the Universe</h1>
       <h2 class="scientist">Albert Einstein </h2>
       <p>Only two things are infinite, the universe
            and human stupidity, and I'm not sure about
            the former.</p>
       <h2 class="cartoonist">Bill Waterson </h2>
       <p>The surest sign that intelligent life exists
            elsewhere in the universe is that it has never
            tried to contact us.</p>
        <h2 class="cartoonist">Charles Schultz </h2>
        <p>Don't worry about the world coming to an end
            today. It is already tomorrow in Australia.</p>
  </body>
</html>
```

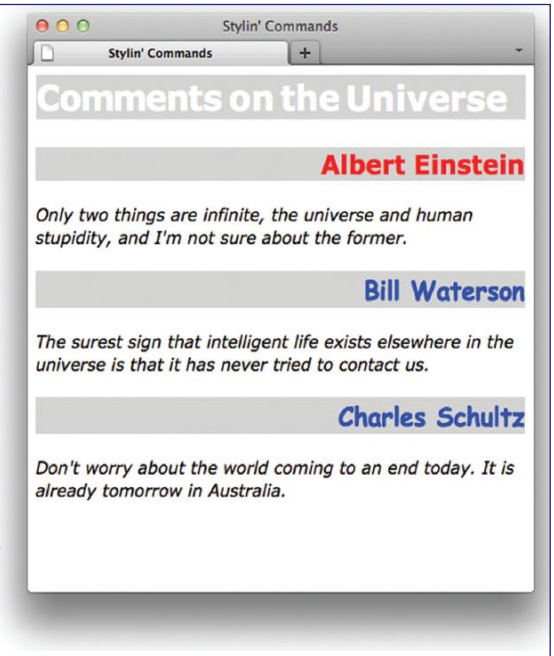


Figure 4.10 Using class naming to style <h2> tags in different ways.

Pseudo Classes

- **There are properties to change the style of links**
- **The default is for links to be blue and underlined**
- **Style the anchor tag:**

  a:link {color : darkviolet; text-decoration : none}
  a.me:link {color : gray; text-decoration : none}
  a:hover {color:red}

Pseudo Classes

- **These styles are slightly different from the other tags**
- **The anchor tag has several different *states* that can be styled separately**
- **These states are referred to as pseudo classes**
- **The three main states are link, hover, and visited**

Pseudo Classes

- **link: the style for an unvisited link**
- **hover: the style for when the cursor hovers over a link**
- **visited: the style for links that have been visited**

Navigation Bars

- **common on the tops of many web pages**
- **can be horizontal or vertical**
- **built using an unordered list of links**
  - turns off the bullets & together
    - list-style-type: none
    - li.top {display:inline}