CGS 3175: Internet Applications
Fall 2007

Web Site Design – Part 1

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Some More Practice – From CSS Part 2

7. Create an XHTML document and a linked style sheet that will generate the document shown below when viewed with a browser. Use the color charts on the two previous pages to set the colors.
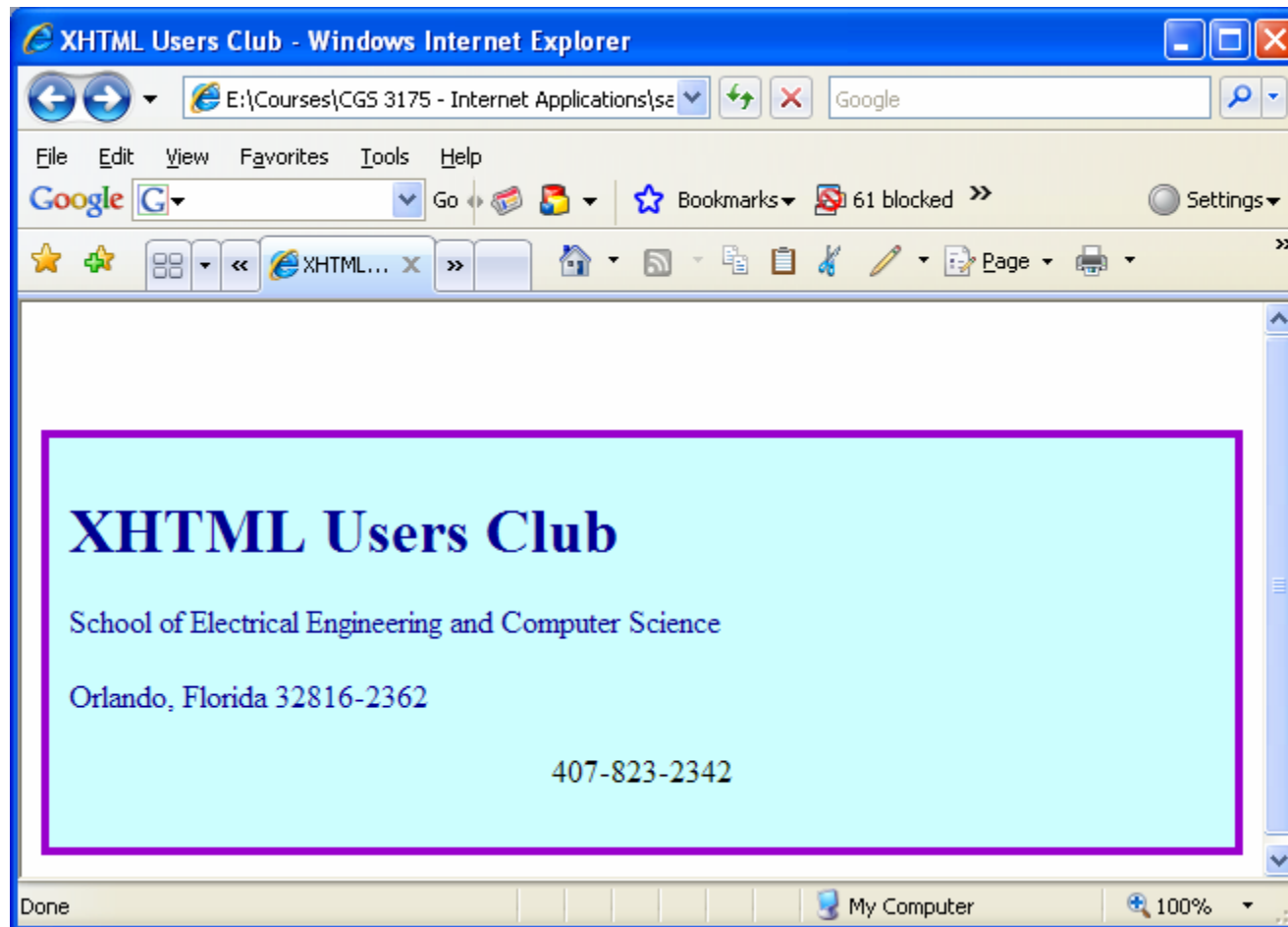
Practice Problem #7 – The XHTML File

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
    <head>
        <title>XHTML Users Club</title>
        <link rel="stylesheet" href="prac-prob-7.css" type="text/css" />
    </head>
    <body>
        <div class="box">
            <h1> XHTML Users Club </h1>
            <p></p>
            <p> School of Electrical Engineering and Computer Science
</p>
            <p> Orlando, Florida 32816-2362 </p>
            <p class="right"> 407-823-2342</p>
        </div>
    </body>
</html>
```

Practice Problem #7 – The Style Sheet

```
/* Cascading Style Sheet For Practice Problem #7 */


/* define a class called box */
div.box {
        margin-top:50px;
        background-color: #CCFFFF;
        color: #000090;
        border-style: solid;
        padding: 10px;
        border-color: #9900CC;
      }
/* define styles for <p> element */
p      {
        font-size:12pt;
      }


/* define a class to align text to the right in paragraphs */
p.right  {
         text-align: center;
         color:black;
        }
```

Web Site Design

- Web sites are designed around the needs of its audience. You need to clearly define the audience. Why did they come to your site? What are they looking for?

- A Web site needs a clear and specific list of purposes. The list should include broad long-term goals as well as specific measurable objectives.

- A Web site should take advantage of the technologies that help it serve the needs of the audience, including text, images, sound, video, and interactivity.

Determining Your Site's Purpose

- Once you know **who** will be using your site, you need to think about **what** they will use your site for, and **why.**

- Part of the site's purpose will be determined from the user's reasons for visiting the site and is thus determined by the audience definition. The rest of the purpose is based on the organization's reasons for publishing the site.

- For example, consider the hypothetical Mark's Bike Web site:

  – The purpose of the Mark's Bike Web site is to increase the direct online sales of high-end bike equipment by 30% over then next three quarters. The site will display sixty key items from our line, with two types of color photos: the piece of equipment itself and the equipment installed on a bike. The site will make it easy for customers to find the equipment that best meets their needs and will make it easy for them to purchase the equipment online with a credit card.

Determining Your Site's Purpose

- The goals state the desired long-term results, such as "to increase the direct sales of high-end bike equipment by 30% over the next three quarters."

  - Goals are often organization centered, but they can be user centered as well such as " to provide a wider range of services to online readers of the newspaper."

- Objectives include specific means and methods used on the site to accomplish the goals, such as" to display 60 key items from our line…."

  - Objectives are often stated in user-centered terms.

Web Site Design

- As a web site visitor, you have probably found that certain Web sites are appealing and easy to use while others seem awkward or just plain annoying.

- What separates the good from the bad?

  - Site organization

  - Site navigation

  - Page design

  - Text design

  - Graphic design

  - Accessibility considerations

www.nasa.gov

www.bls.gov

U.S. Department of Labor
Bureau of Labor Statistics

www.bls.gov

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About BLS | Jobs in BLS | Get Detailed Statistics | Economic News Releases | Glossary | What's New | Contact Us | Find It! In DOL

Inflation & Consumer Spending
Consumer Price Index • Inflation Calculator •
Contract Escalation • Producer Price
Indexes • Import/Export Price Indexes •
Consumer Expenditures • Price Index
Research

Wages, Earnings, & Benefits
Wages by Area and Occupation • Earnings
by Industry • Employee Benefits •
Employment Costs • State and County
Wages • National Compensation Data •
Collective Bargaining • Wage Calculator •
Compensation Research

Productivity
Productivity and Costs • Multifactor
Productivity • International Comparisons

Safety & Health
Injuries and Illnesses • Fatalities • Incidence
Rate Calculator • Profiles

U.S. Bureau of
Labor Statistics

Latest Numbers

CPI:
-0.1% in Aug 2007
Unemployment Rate:
4.6% in Aug 2007
Payroll Employment:
-4,000(p) in Aug 2007
Average Hourly Earnings:
+$0.05(p) in Aug 2007
PPI:
-1.4%(p) in Aug 2007
ECI:
+0.9% in 2nd Qtr of 2007
Productivity:

Employment & Unemployment
National Employment • National
Unemployment Rate • State and Local
Employment • State and Local
Unemployment Rates • Mass Layoffs •
Employment Projections • Job Openings and
Labor Turnover • Employment by
Occupation • Longitudinal Studies • State
and County Employment • Time Use •
Business Employment Dynamics •
Employment Research

At a Glance Tables
U.S. Economy at a Glance • Regions, States,
and Areas at a Glance • Industries at a
Glance

Publications
Occupational Outlook Handbook • Monthly
Labor Review Online • Compensation and
Working Conditions Online • Occupational
Outlook Quarterly • The Editor's Desk •
Career Guide to Industries • Economic News

http://www.bls.gov/bls/contact.htm

www.ucf.edu

www.ufl.edu

www.amazon.com

Web Site Organization

- How will visitors move around your site? How will they find what they need?

- The answers to these questions are largely determined by your Web site's organization or architecture.

- There are three common types of Web site organization:

    - Hierarchical

    - Linear

    - Random (sometime called Web organization)

Web Site Organization

- A diagram of the organization of a Web site is called a site map or storyboard. Creating the site map is one of the initial steps in developing a Web Site. Here is a sample storyboard.
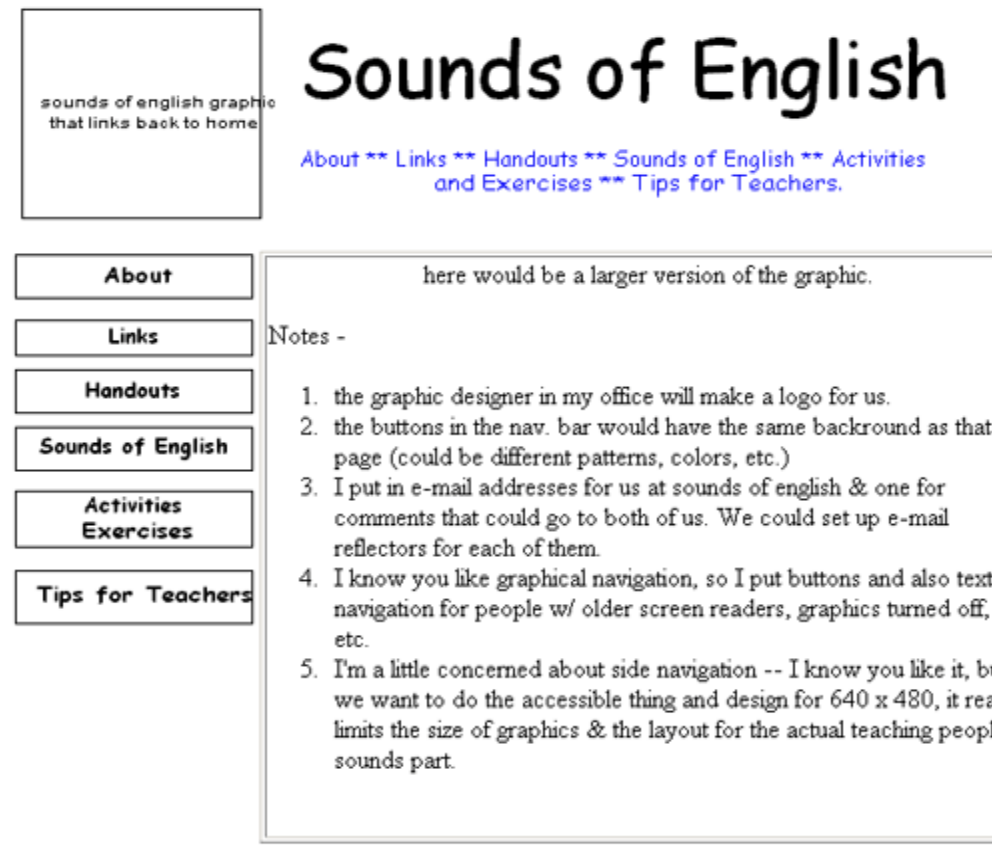
Hierarchical Organization

- Most Web sites use hierarchical organization.

- A site map for hierarchical organization is characterize by a clearly defined home page with links to major site sections. Web pages within sections are placed as needed.
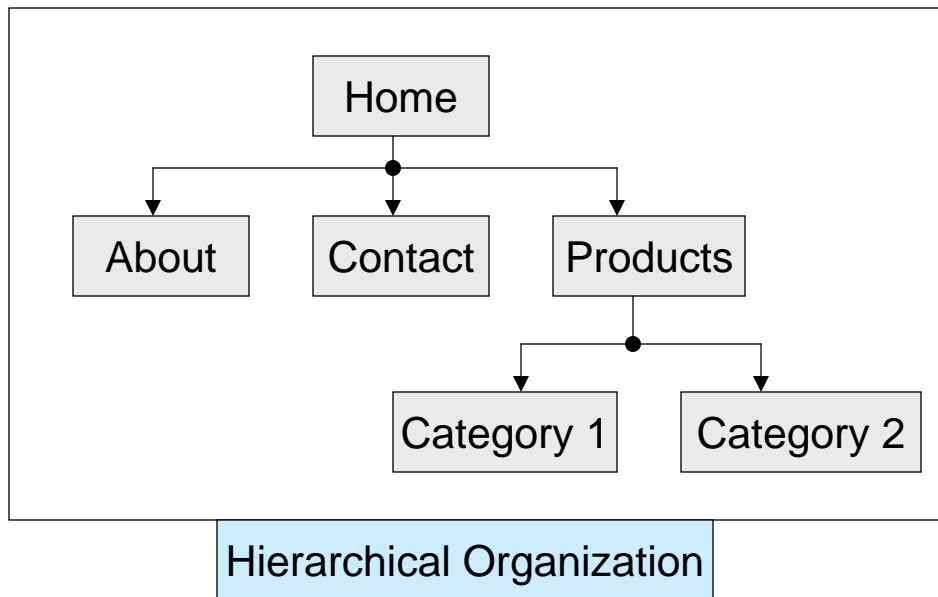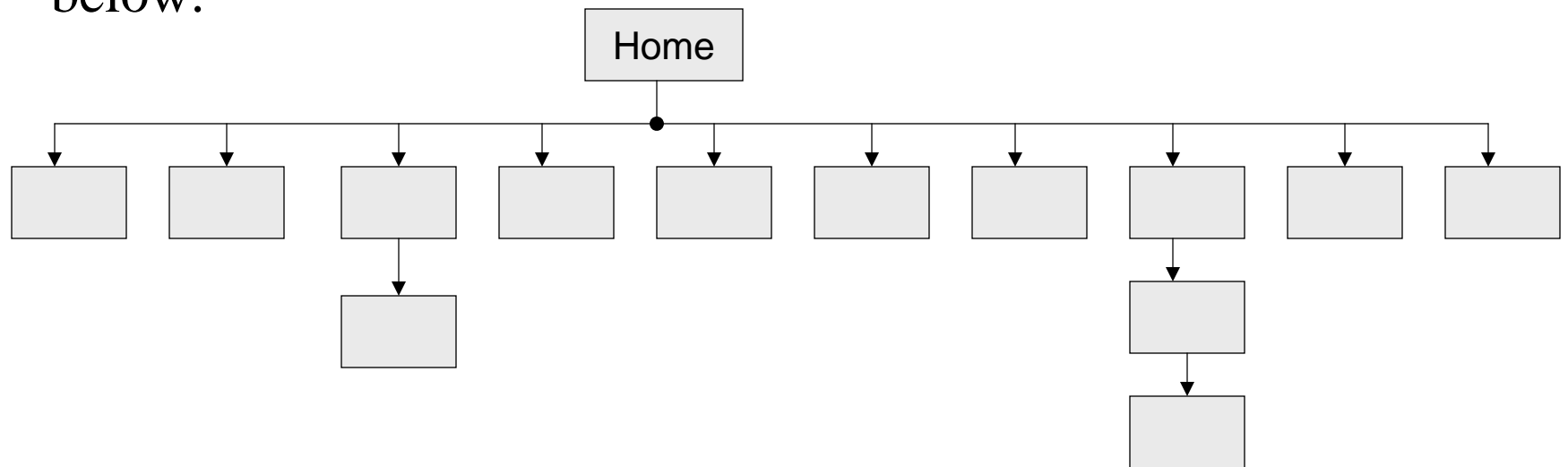
```
                    ┌──────────┐
                    │   Home   │
                    └──────────┘
          ┌──────────────●──────────────┐
          ▼              ▼               ▼
     ┌─────────┐   ┌──────────┐   ┌──────────┐
     │  About  │   │ Contact  │   │ Products │
     └─────────┘   └──────────┘   └──────────┘
                              ┌───────●───────┐
                              ▼               ▼
                       ┌────────────┐  ┌────────────┐
                       │ Category 1 │  │ Category 2 │
                       └────────────┘  └────────────┘
```

Hierarchical Organization

Hierarchical Organization

- Care should be exercised with this design to avoid making the hierarchy too shallow – meaning that there are too many major sections. An example of a very shallow hierarchy is shown below.

- Such a design should be broken down into small, easily managed topics or units, a process called chunking. For most Web page designs, each unit of information is a page.

Hierarchical Organization

- Research psychology has determined that most humans can store only five to nine chunks of information at a time in short-term memory. This is often referred to in HCI (and other disciplines) as the "7 plus or minus 2 principle".

- Web designers adhering to this principle will try not to place more than nine major navigation links on a page, unless they are creating a very large site. Even then, they may try to chunk the navigation links into visually separate sections on the page with each group having no more than nine links.

Hierarchical Organization

- Care should also be exercised with hierarchical designs to avoid making the hierarchy too deep – meaning that there are too many links to follow to get to various major sections. An example of a too deep hierarchy is shown below.
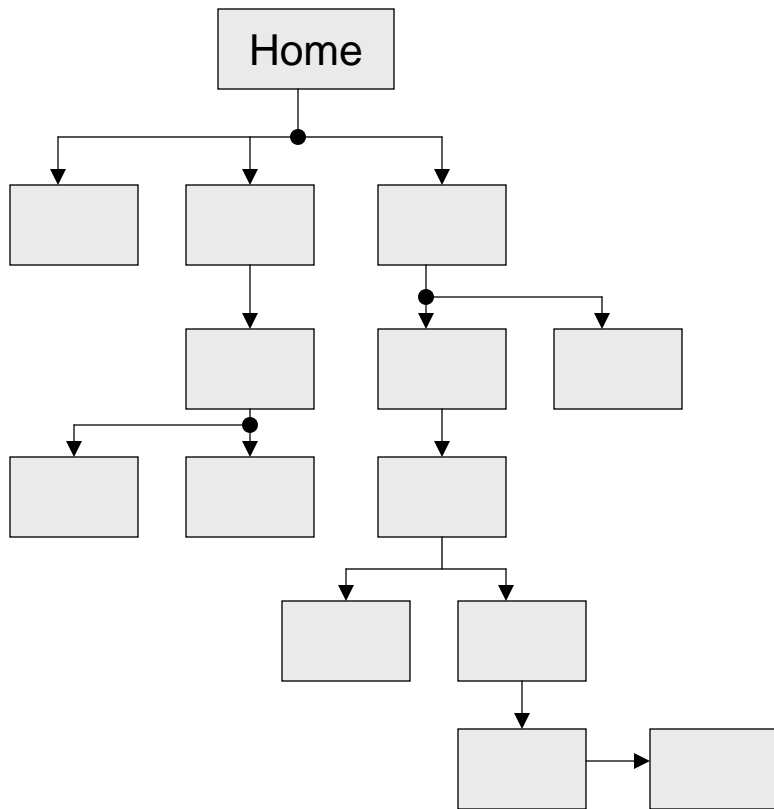
- The interface design "three click rule" says that a Web page visitor would be able to get from any page on your Web site to any other page on your Web site with a maximum of three hyperlinks. In other words, a visitor who cannot get what they want in three mouse clicks will begin to feel frustrated and may leave your site.

- This rule may be very difficult to satisfy on a large site, but in general the goal is to organize the site so that your visitor can easily navigate from page to page within the site structure.
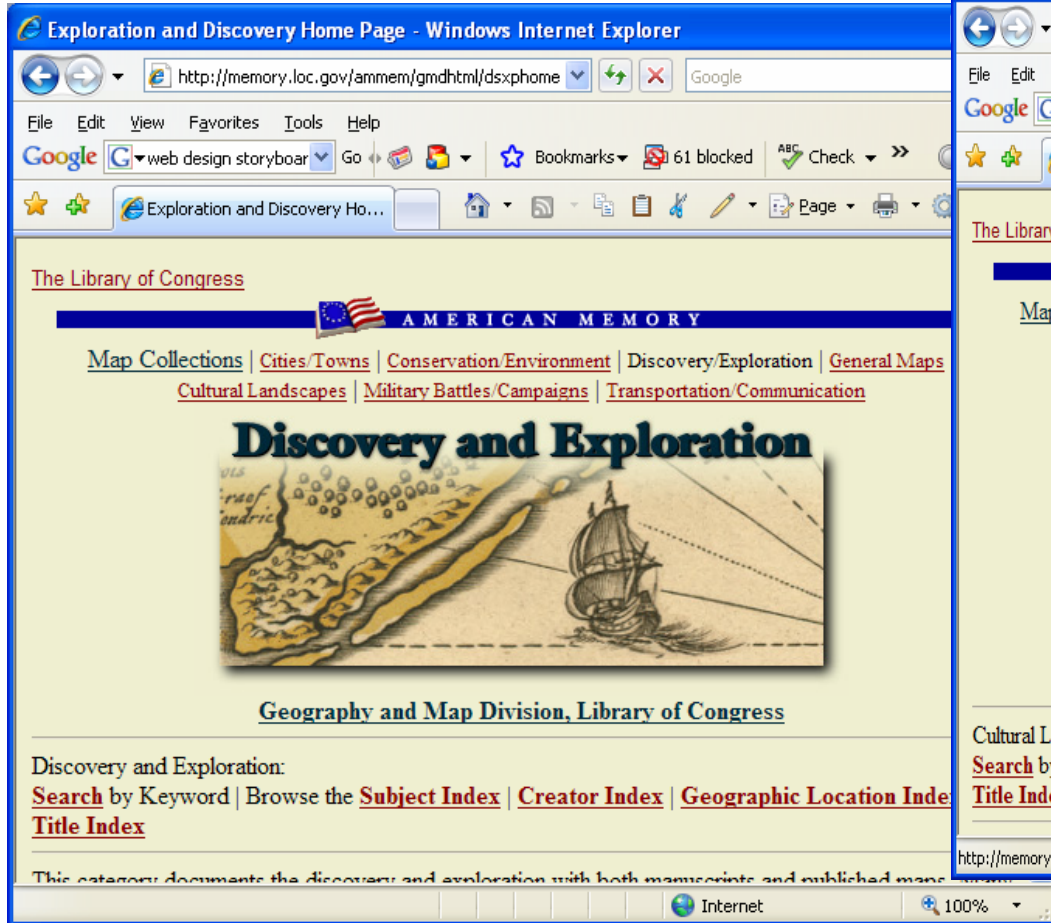
Hierarchical Organization

- An example of hierarchical organization is the Map Collections area of the Library of Congress site at:

  http://memory.loc.gov/ammem/gmdhtml/grndhome.html.

- The Map Collections Home Page contains the navigation to the main map areas. It functions as a map to the site and it is intentionally different from the content pages (see next page).

Hierarchical Organization

- The main content pages of a site usually have a similar look and feel. Two content pages from the Map Collections are shown below. Notice how similar the pages look.

Hierarchical Organization

- Each main section may have one or more subpages.

- Some sites with hierarchical organization may use a consistent design for the home page and the content pages (unlike the Map Collections case). Either method is acceptable practice.

- Most commercial sites, such as Amazon and eBay use hierarchical organization.

Linear Organization

- When the purpose of a site or series of pages on a site is to provide a tutorial, tour, or presentation that needs to be viewed in a sequential fashion, linear organization is most useful.

| Home | → | Lesson 1 | → | Lesson 2 | → | Lesson 3 | → | Summary |

Linear Organization
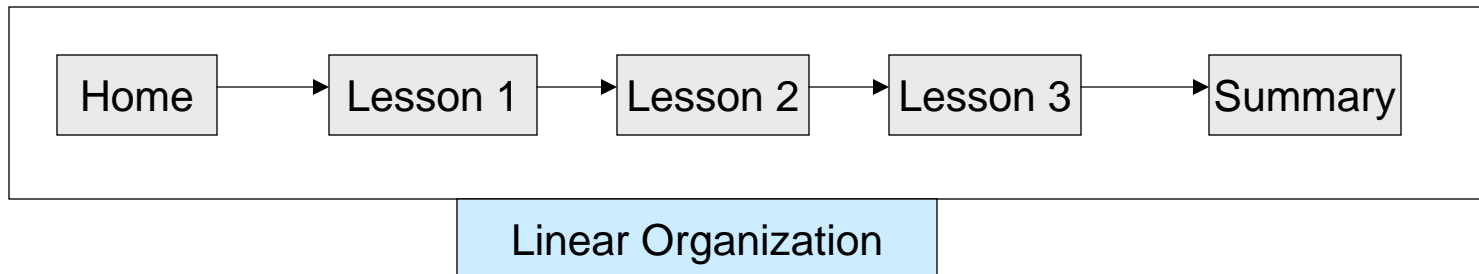
Linear Organization

- Some Web sites use hierarchical organization in general, but with linear organization in a few small areas.

- An example of this type of organization is the National Library of Medicine site at: http://www.nlm.nih.gov. The main site organization is hierarchical with linear organization used for tutorials.

Linear Organization

Linear Organization

The "Next" link is the link to the next page in the linear presentation.

Random Organization

- Random organization (also sometimes referred to as Web organization) offers no clear path through the site. There is often no clear home page and no discernable structure.

- Random organization is not as common as hierarchical or linear organization and typically found only on artistic sites or sites that strive to be especially different.

- This type of organization is typically not used for commercial Web sites.
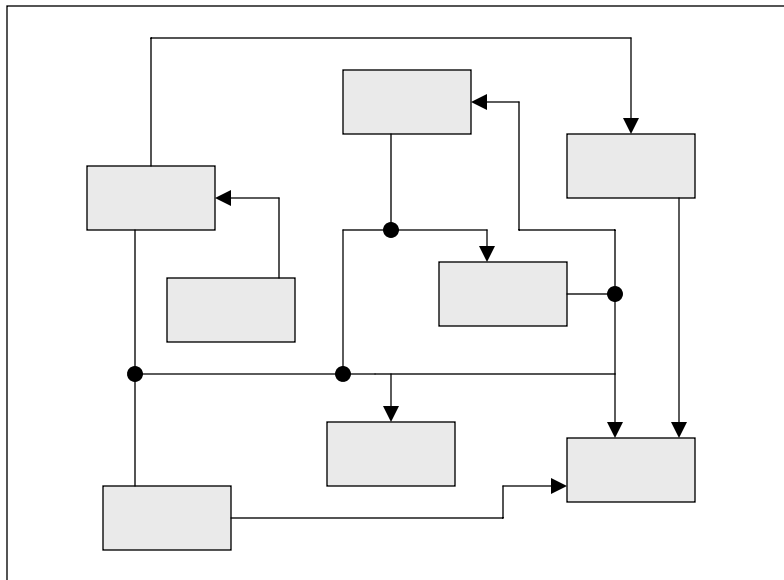
Random Organization

Web Site Navigation

- Sometimes Web developers are so close to their sites that they can't see the forest for the trees. A new visitor will wander into the site and not know what to click or how to find out what it offers.

- Clearly labeled navigation on each page is helpful and it should be in the same location on each page for maximum visibility. You don't want the visitor to feel lost in the site.

- Larger sites will often provide breadcrumb trails which are personalized to show each visitor where they currently are in the site and how they got to that location. You've probably seen these at some sites you've visited before, but a good example of this can be found at http://www.fdic.gov (see next page).

Web Site Navigation

This "breadcrumb trail" shows that the visitor has arrived at this page by coming from the home page to the consumer protection page followed by the consumer resources page and are currently at the consumer alerts page. These are hyperlinks which allow the user to rapidly return to any page along the trail.

Navigation Bars

- Navigation bars, either graphic or text-based, make it obvious to your users where they are and where they can go next.

- The U.S. Department of Justice site uses a vertical text-based navigation bare down the left side of the page. You can see this at: http://www.usdoj.gov. This is shown on the next page after clicking the Jobs link. Notice that the "Current Vacancies" link is shown on a contrasting background to provide a visual cue that the visitor is at that location. The page header and page title also display the text "Current Vacancies". The navigation bar indicates other choices available to the Web site visitor.

Navigation Bars

Note the title bar indicates location

Contrasting background to indicate location

Navigation Bars

- Sometimes graphics are used to convey navigation, as is the case in the Web site for the U.S. Department of Transportation at http://www.dot.gov.

- The tabs provide horizontal graphics-based navigation on this site. The "text" for the navigation is actually stored in image files. This technique of placing text in navigation images is used to create interactive Web pages. In this case, Javascript (we'll learn this later in the semester), is used to detect when the visitor has placed the mouse over an image of text which then displays an alternate image.

Navigation Bars

Part of the HTML file for the DOT Site
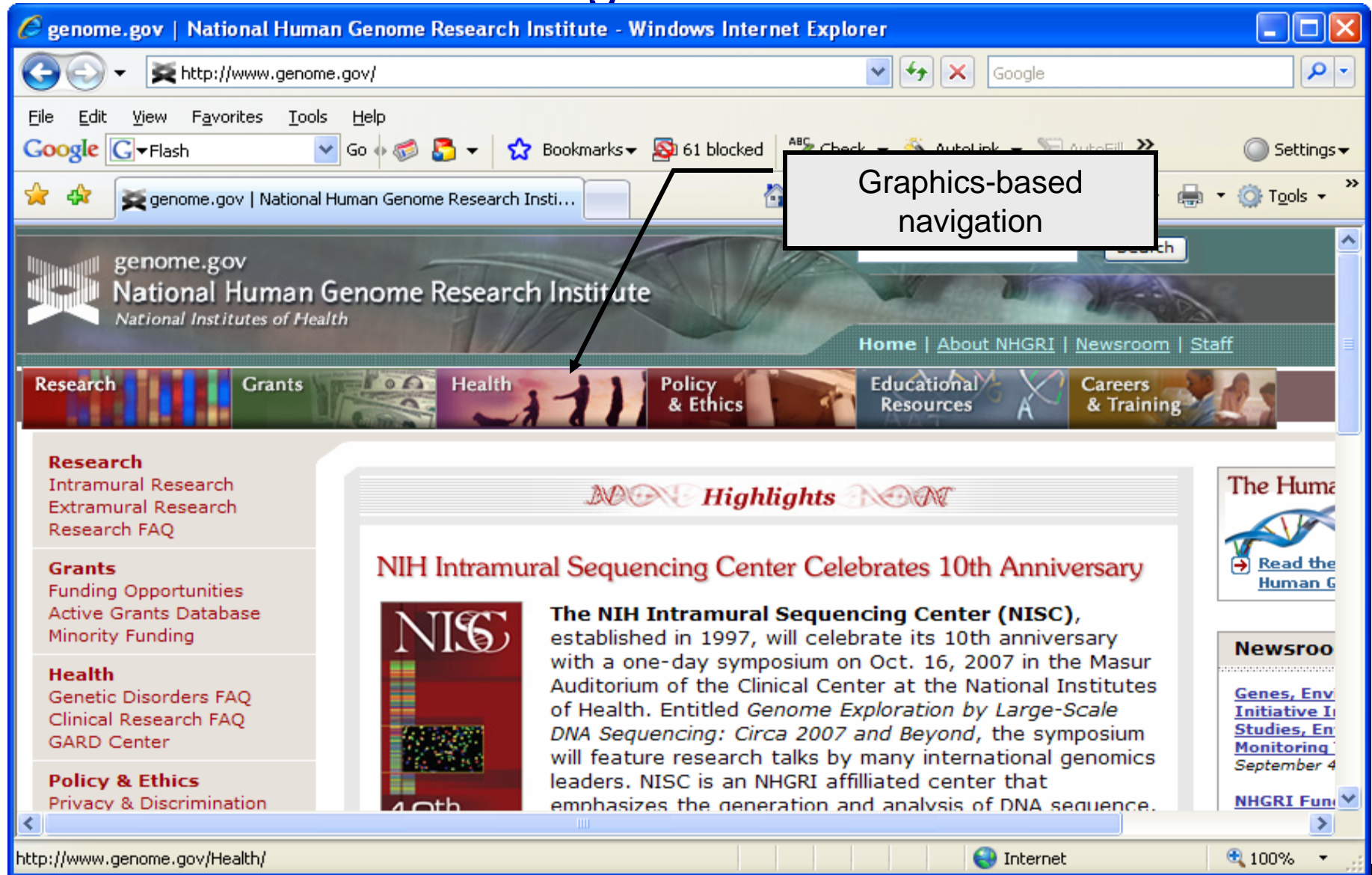
```
        if ((x=MM_findObj(a[i]))!=null){document.MM_sr[j++]=x; if(!x.oSrc) x.oSrc=x.src; x.src=a[i+2];}

}

//-->

</script>

<meta http-equiv="Content-Style-Type" content="text/css">

<base href="http://www.dot.gov/index.cfm">

<link href="dotstyles.css" rel="stylesheet" type="text/css">
</head>

<body leftmargin="2" topmargin="0" onLoad="MM_preloadImages('buttons/homeR.gif','buttons/citizenServicesR.gif','buttons/bus


<table width="622" height="73" border="0" align="center" cellpadding="0" cellspacing="0" background="images/header.jpg">

<tr><td><a href="#content"><img src="buttons/invisibleB.gif" alt="Skip Navigation" width="20" height="20" border="0"></a></
<form name="cn" action="http://search.google.dot.gov/dot/DOTSearchProcess.asp">

<div align="right">

<input type="hidden" name="ie" value="">

<input type="hidden" name="site" value="DOT_Pages">

<input type="hidden" name="output" value="xml_no_dtd">

<input type="hidden" name="client" value="DOT_Pages">

<input type="hidden" name="lr" value="">

<input type="hidden" name="proxystylesheet" value="DOT_Pages">
```

The external (linked) style sheet reference
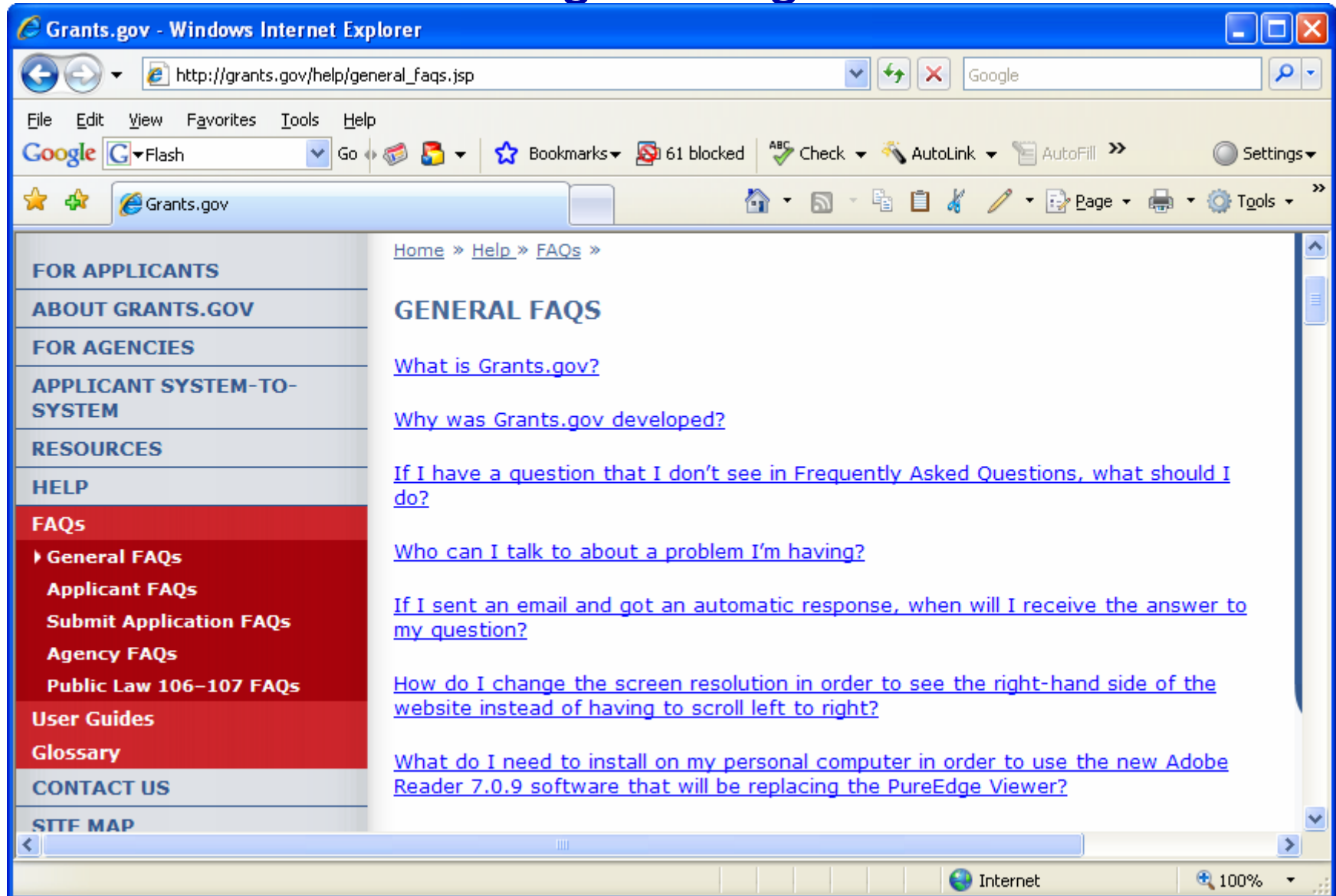
Graphic-based navigation button definitions

Navigation Bars

Graphics-based navigation

Page Design

- Short Pages – A Web page is considered long if it is three or more screen lengths. Long pages are usually slower to load. Most visitors will only be interested in portions of a long page, so consider breaking a long page into multiple short pages – possibly using linear organization to link the ideas.

- Table of Contents – When a long Web page must be kept in a single file, a table of contents or bulleted list at the top of the page can provide links to specific parts of the page (we saw some of this capability with our footnote example in XHTML – Part 2). This helps the visitor find exactly what they need. Lots of examples of this abound, but you can see one at http://grants.gov.help.general_faqs.jsp that's pretty representative of this technique.

Page Design

Design Principles

- There are four visual design principles that you can apply to the design of just about anything: repetition, contrast, proximity, and alignment. These design principles help to create the "look and feel" of your project, whether it be designing a Web page, a button, a logo, a CD cover, a brochure, or a software interface.

- Using these principles properly will ensure that your message is effectively communicated.

Repetition

- When applying the principle of repetition, the designer repeats one or more elements throughout the product.

- The repeating aspect ties the work together.

- Take a look at the homepage of National Pro Fastpitch Softball at http://www.profastpitch.com. The repetition of the "tab" icons helps to unify the navigation areas. Page content areas are divided using a number of similar shapes – again repeating the shape.

Repetition

Contrast

- When applying the principle of contrast, the designer should make elements very different (add contrast) in order to make the design interesting and direct attention.

- When designing Web pages, good contrast should be present between the background color and the text. Notice how the navigation bars pop out on the previous page due primarily to the contrast change in background color. In general, this site uses dark text on a light background. This provides good contrast and makes for easier reading for the visitor.

- As a point of comparison consider the site shown on the next page. Which has better contrast? Look particularly at the navigation links on the next page.

Contrast

Proximity

- When applying the principle of proximity, the designer should place related element physically close together. Unrelated items should have space separating them.

- The placing of interface items together gives visual clues to the logical organization of the information or functionality.

- Notice how the navigation links in the profastpitch site (shown on page 40) are close together on the left hand side of the page. This creates a visual group on the page and makes navigation easier to use.

Alignment

- When applying the principle of proximity, the designer should organize the page so that each element placed has some alignment (vertical or horizontal) with another element on the page.

- Looking again at the profastpitch site on page 40, notice how both vertical and horizontal alignment have been used on the site.

Things to Try Yourself

8. Visit some of your favorite Web sites and determine if they use hierarchical, linear, or random organization. Do any of these sites provide a site map?

9. Pick three of your favorite sites and list for each of them three things you really like about the design and three things that you either don't like or feel could use some improvement.