

Other Topics of Interest

Chapter 7

ADVANCED CSS: LAYOUT

Approaches to CSS Layout

Fixed Layout

In a fixed layout , the basic width of the design is set by the designer, typically corresponding to an “ideal” width based on a “typical” monitor resolution.

The advantage of a fixed layout is that it is easier to produce and generally has a predictable visual result.

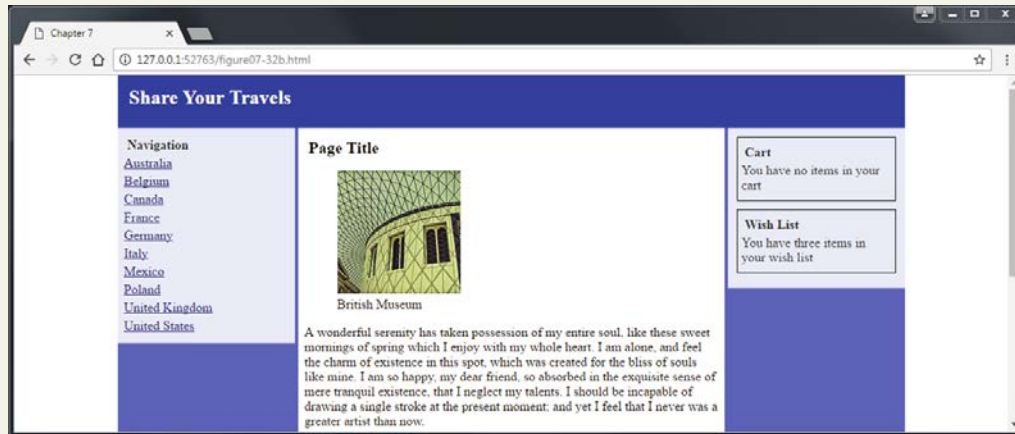


960px

Extra space to right

```
div#wrapper {
  width: 960px;
  background-color: blue;
}
```

```
<body>
  <div id="wrapper">
    <header>
      ...
    </header>
    <div id="main">
      ...
    </div>
    <footer>
      ...
    </footer>
  </div>
</body>
```



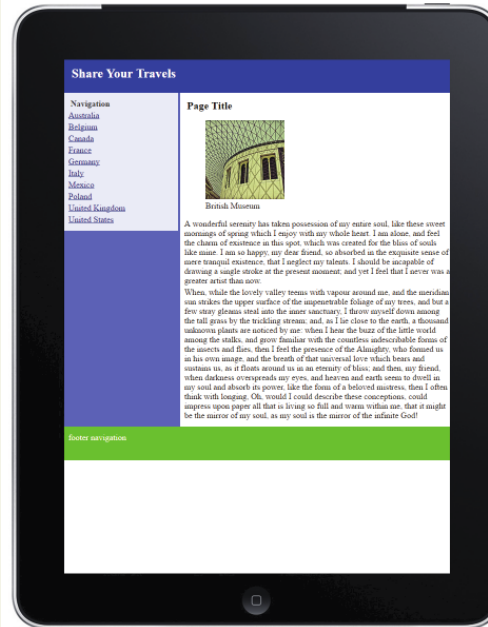
960px

Equal space to the left and to right

```
div#wrapper {
  width: 960px;
  margin-left: auto;
  margin-right: auto;
  background-color: blue;
}
```

Approaches to CSS Layout

Problem with Fixed Layout



The problem with fixed layouts is that they don't adapt to smaller viewports.

Approaches to CSS Layout

Liquid Layout

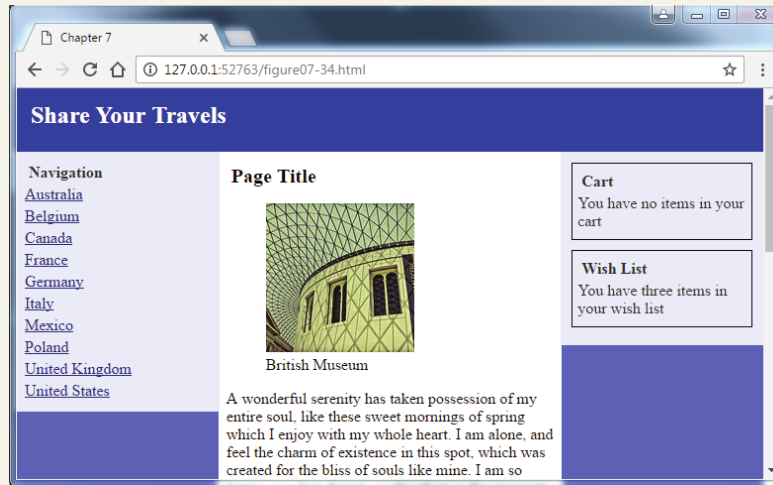
Liquid layout (also called a fluid layout) widths are not specified using pixels, but percentage values

The advantage of a liquid layout is that it adapts to different browser sizes

Creating a usable liquid layout is generally more difficult than creating a fixed layout

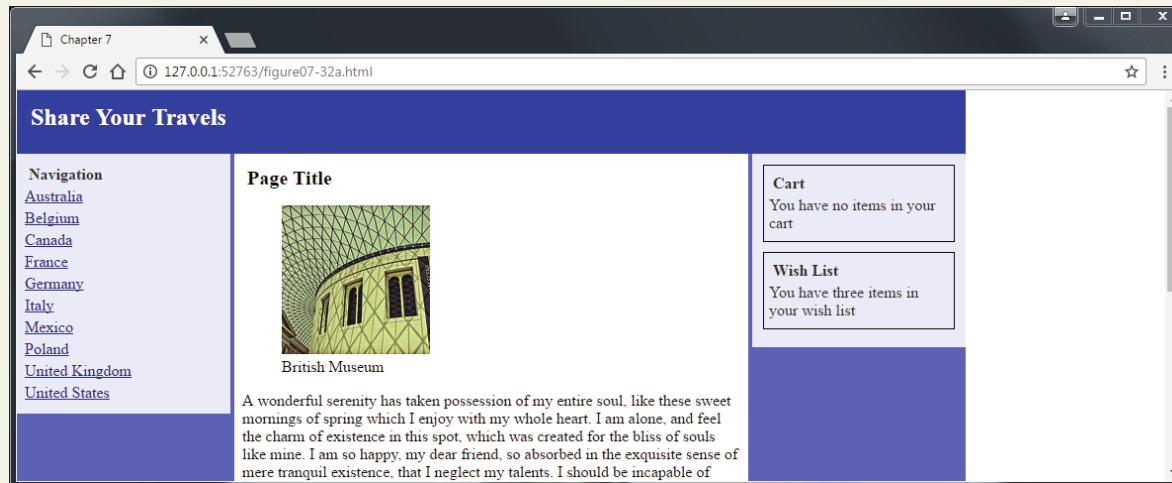
Approaches to CSS Layout

Liquid Layout



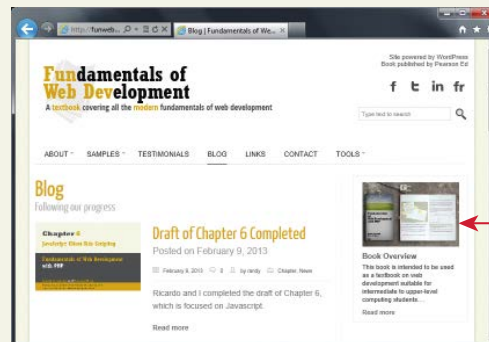
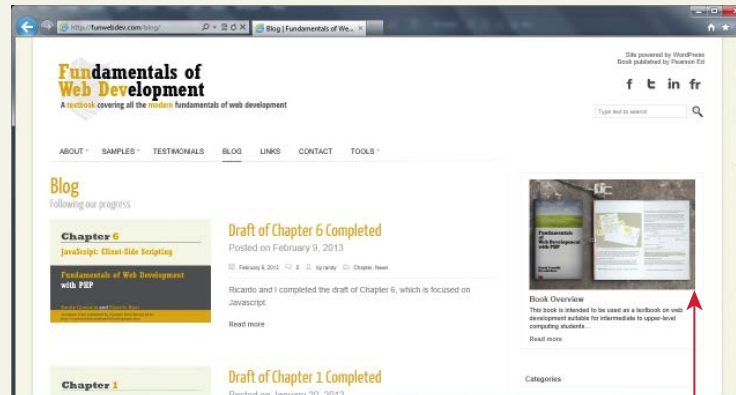
Fluid layouts are based on the browser window.

However, elements can get too spread out as the browser expands.



Responsive Design

Responsive Layouts



Notice how some elements are scaled to shrink as browser window reduces in size.



When browser shrinks below a certain threshold, then layout and navigation elements change as well.

In this case, the `` list of hyperlinks changes to a `<select>` and the two-column design changes to one column.

Responsive Design

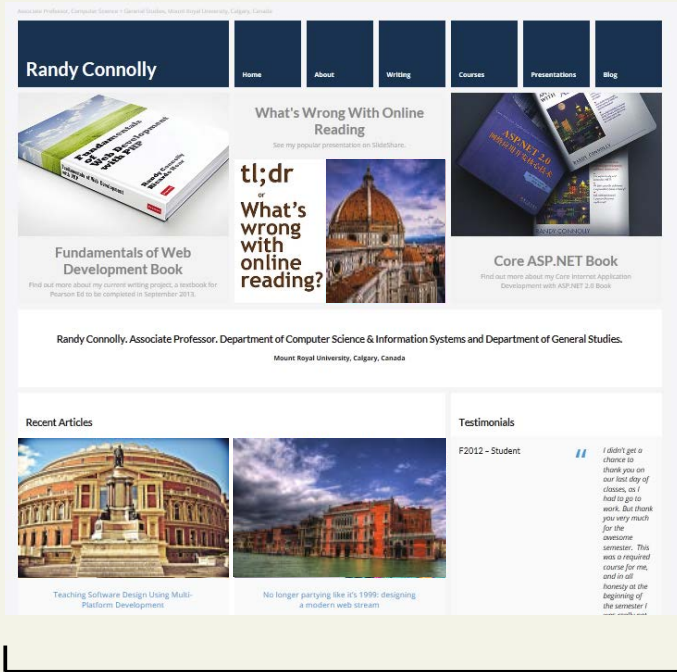
4 elements

1. Liquid layouts
2. Setting viewports via the `<meta>` tag
3. Customizing the CSS for different viewports using media queries
4. Scaling images to the viewport size

Responsive Design

Setting Viewports

- 1 Mobile browser renders web page on its viewport



960px

Mobile browser viewport

- 2 It then scales the viewport to fit within its actual physical screen

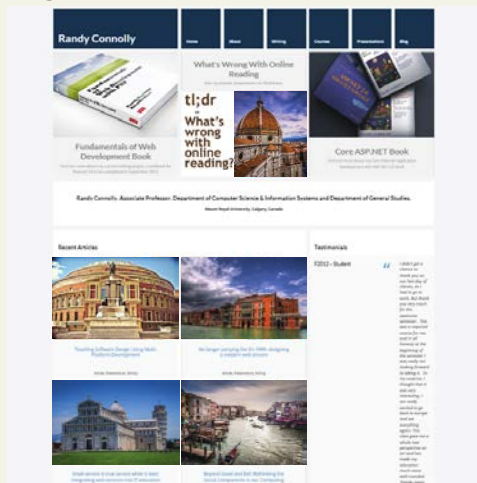


320px

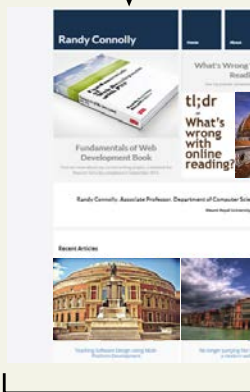
Mobile browser screen

Responsive Design

Setting Viewports



`<meta name="viewport" content="width=device-width" />`



320px
Mobile browser viewport

1 Mobile browser renders web page on its viewport and because of the `<meta>` setting, makes the viewport the same size as the pixel size of screen.

2 It then displays it on its physical screen with no scaling.



320px

Responsive Design

Media Queries

A media query is a way to apply style rules based on the medium that is displaying the file

Defines this as
a media query

Device has to
be a screen

CSS rules to use if device
matches these conditions

`@media only screen and (max-width:480px) { ... }`

Only use this style
if both conditions
are true

Use this style if width of
viewport is no wider
than 480 pixels

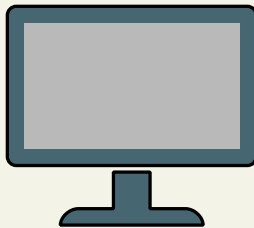
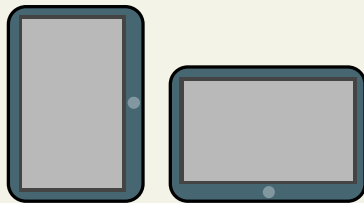
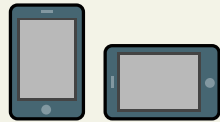
Responsive Design

Media Queries

- **width:** Width of the viewport
- **height:** Height of the viewport
- **device-width:** Width of the device
- **device-height:** Height of the device
- **orientation:** Whether the device is portrait or landscape
- **color:** The number of bits per color

Responsive Design

Media Queries



styles.css

```
/* rules for phones */
@media only screen and (max-width:480px)
{
  #slider-image { max-width: 100%; }
  #flash-ad { display: none; }
  ...
}

/* CSS rules for tablets */
@media only screen and (min-width: 481px)
  and (max-width: 768px)
{
  ...
}

/* CSS rules for desktops */
@media only screen and (min-width: 769px)
{
  ...
}
```

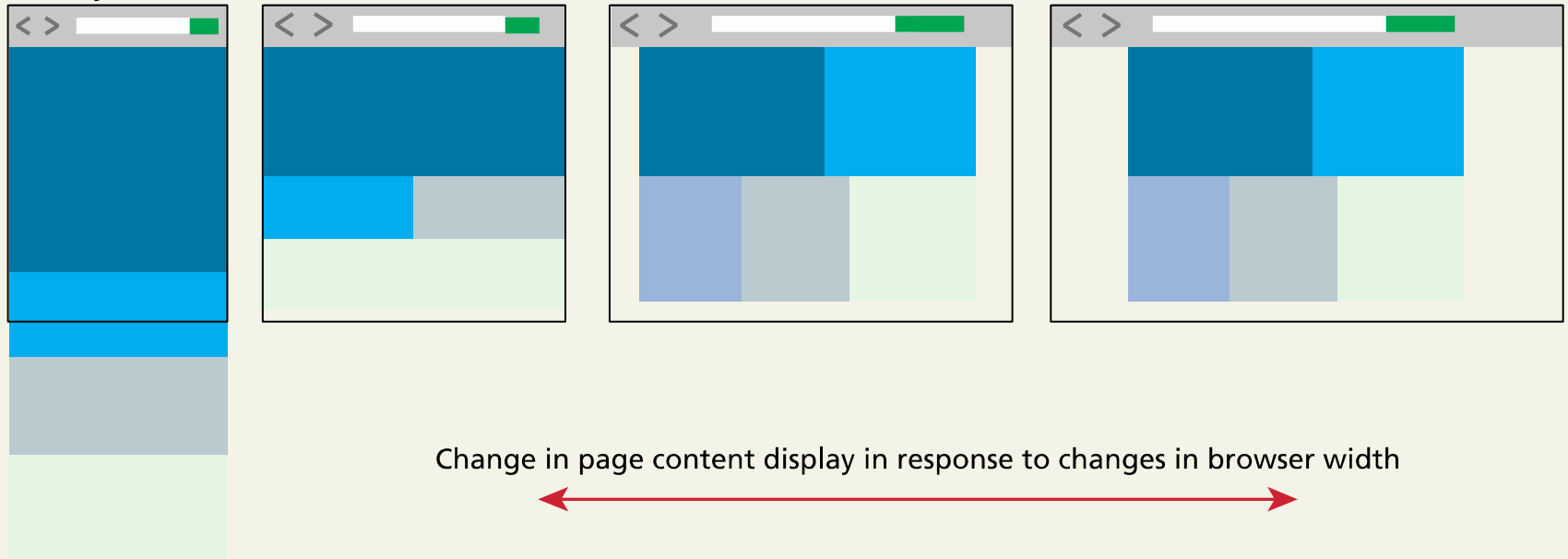
Instead of having all the rules in a single file, we can put them in separate files and add media queries to `<link>` elements.

```
<link rel="stylesheet" href="mobile.css" media="screen and (max-width:480px)" />
<link rel="stylesheet" href="tablet.css" media="screen and (min-width:481px)
  and (max-width:768px)" />
<link rel="stylesheet" href="desktop.css" media="screen and (min-width:769px)" />
```

Responsive Design

Responsive Design Patterns

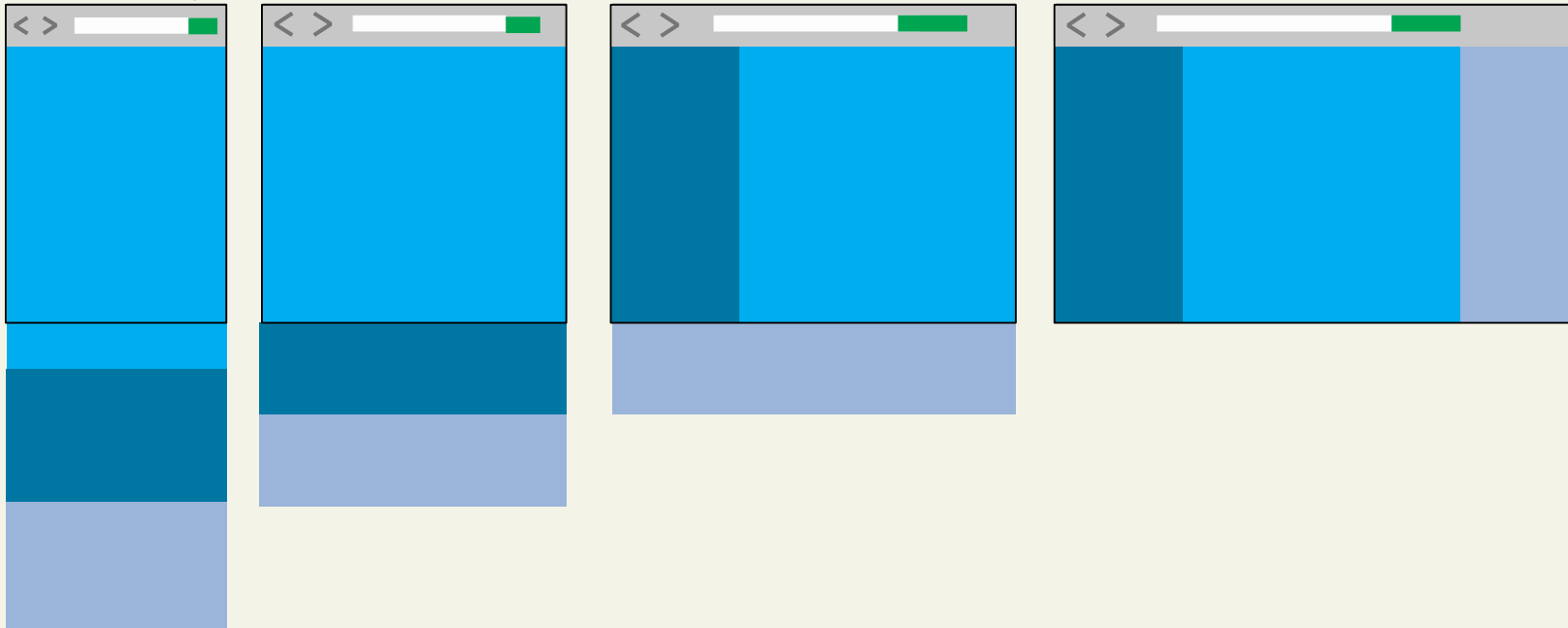
Mostly Fluid



Responsive Design

Responsive Design Patterns

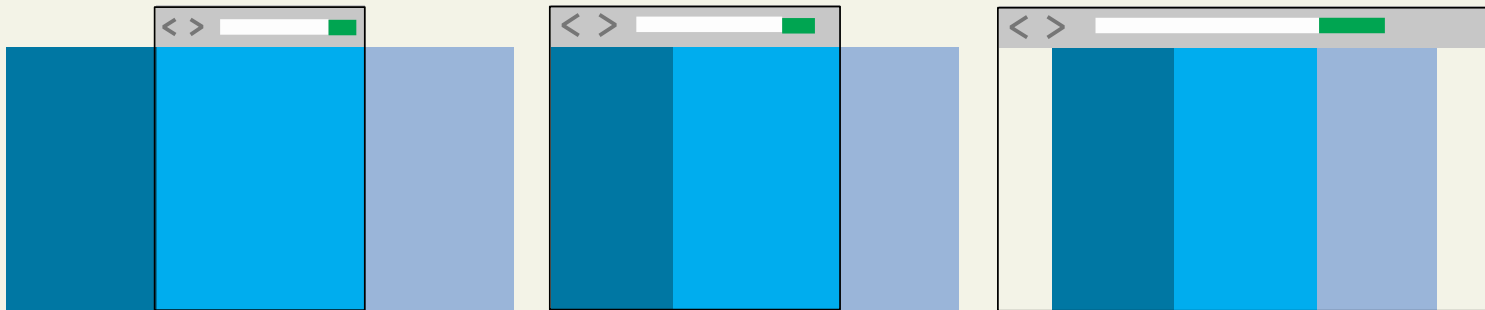
Column Drop



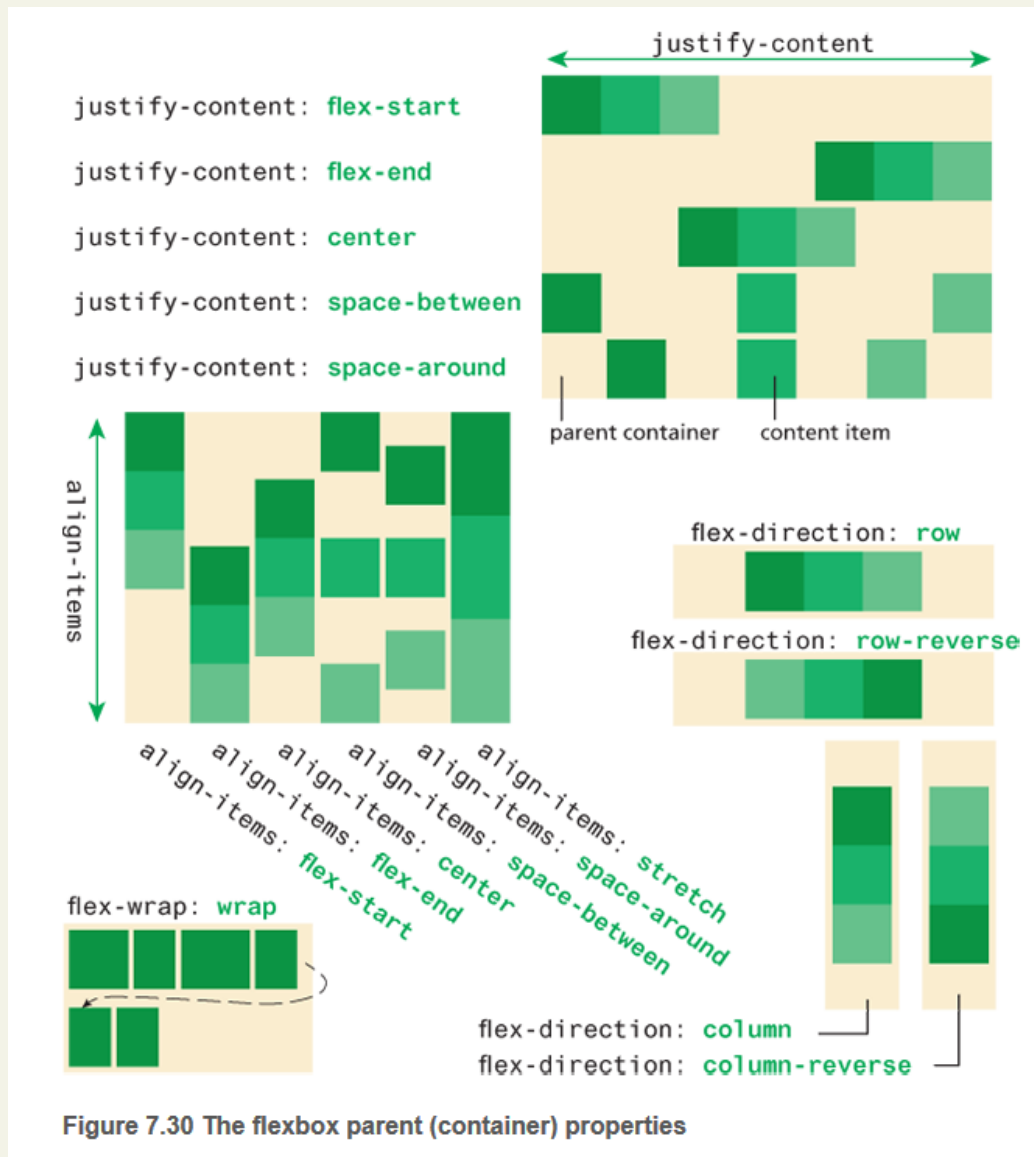
Responsive Design

Responsive Design Patterns

Off Canvas

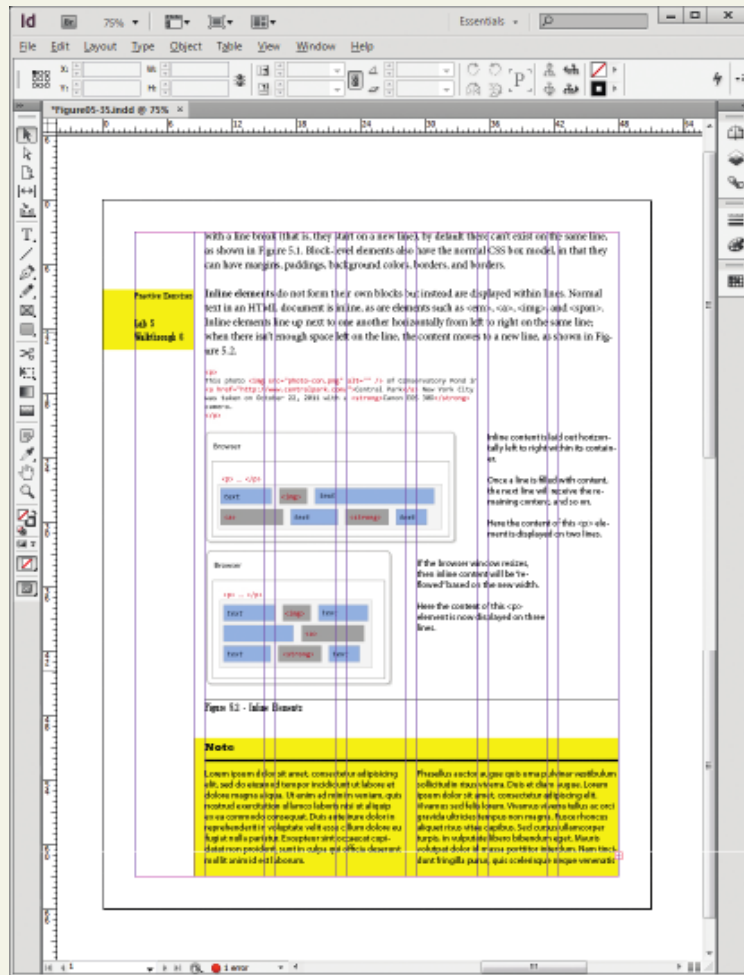


Flexbox Layout

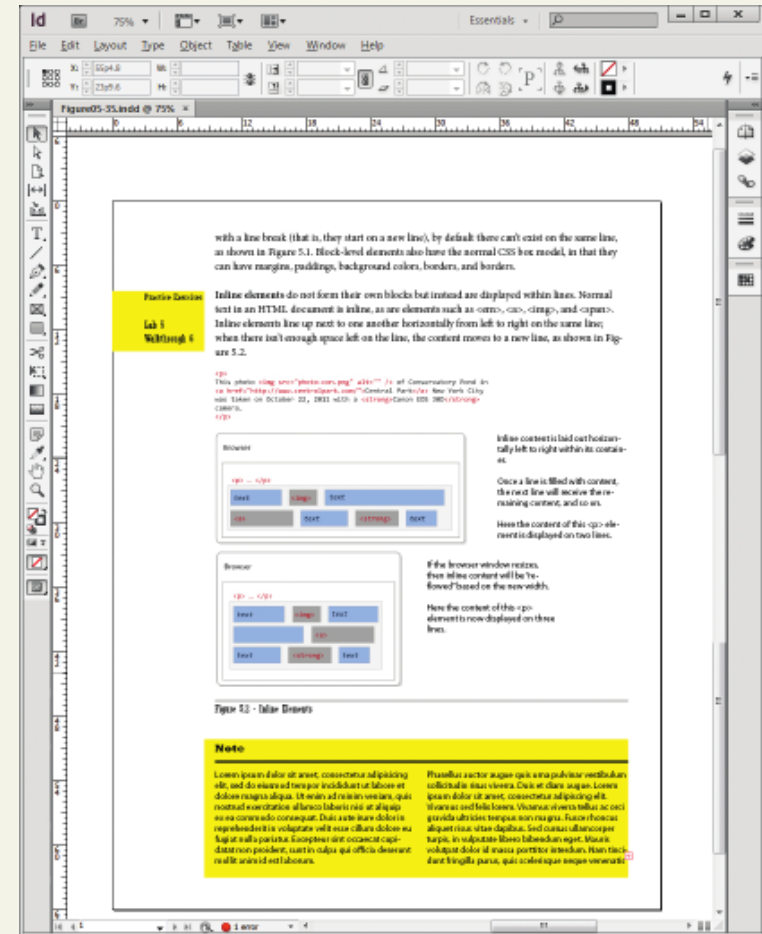


CSS Frameworks and Preprocessors

Grid in print design



Most page design begins with a grid. In this case, a seven-column grid is being used to layout page elements in Adobe InDesign.



Without the gridlines visible, the elements on the page do not look random, but planned and harmonious.

CSS Frameworks and Preprocessors

Using Bootstrap

```
<head>
  <link href="bootstrap.css" rel="stylesheet">
</head>
<body>
  <div class="container">
    <div class="row">
      <div class="col-md-2">
        left column
      </div>
      <div class="col-md-7">
        main content
      </div>
      <div class="col-md-3">
        right column
      </div>
    </div>
  </div>
</body>
```

CSS Frameworks and Preprocessors

CSS Preprocessors

```
$colorSchemeA: #796d6d;  
$colorSchemeB: #9c9c9c;  
$paddingCommon: 0.25em;
```

This example uses Sass (Syntactically Awesome Stylesheets). Here three variables are defined.

```
footer {  
  background-color: $colorSchemeA;  
  padding: $paddingCommon * 2;  
}
```

You can reference variables elsewhere. Sass also supports math operators on its variables.

```
@mixin rectangle($colorBack, $colorBorder) {  
  border: solid 1pt $colorBorder;  
  margin: 3px;  
  background-color: $colorBack;  
}
```

A mixin is like a function and can take parameters. You can use mixins to encapsulate common styling.

```
fieldset {  
  @include rectangle($colorSchemeB, $colorSchemeA);  
}
```

A mixin can be referenced/called and passed parameters.

```
.box {  
  @include rectangle($colorSchemeA, $colorSchemeB);  
  padding: $paddingCommon;  
}
```

Sass source file, e.g., source.scss



The processor is some type of tool that the developer would run.

```
footer {  
  padding: 0.50em;  
  background-color: #796d6d;  
}  
  
fieldset {  
  border: solid 1pt #796d6d;  
  margin: 3px;  
  background-color: #9c9c9c;  
}  
  
.box {  
  border: solid 1pt #9c9c9c;  
  margin: 3px;  
  background-color: #796d6d;  
  padding: 0.25em;  
}
```

The output from the processor is a normal CSS file that would then be referenced in the HTML source file.

Generated CSS file, e.g., styles.css

Chapter 10

EXTENDING JAVASCRIPT WITH JQUERY

jQuery

Builds on top of the JavaScript syntax

Expands functionality with:

- Animation tools
- User interface elements

AJAX

Asynchronous JavaScript with XML

Allows a browser to send messages to the server without interrupting the flow of what's being rendered in the browser.

Makes the browser multi-threaded

Chapter 19

WEB SERVICES

Web Services

An overview

Web services are the most common example of a computing paradigm commonly referred to as **service-oriented computing** (SOC).

A **service** is a piece of software with a platform-independent interface that can be dynamically located and invoked.

Web services are a relatively standardized mechanism by which one software application can connect to and communicate with another software application using web protocols.

Web Services

Benefits

- they potentially provide interoperability between different software applications running on different platforms
- Use HTTP and XML – universally supported standards
- they can be used to implement something called a **service-oriented architecture (SOA)**
- they can be offered by different systems within an organization as well as by different organizations

An Example Web Service

Consider the Google Geocoding API:

The Google Geocoding API provides a way to perform geocoding operations via an HTTP GET request, and thus is an especially useful example of a RESTful web service.

Geocoding typically refers to the process of turning a real-world address into geographic coordinates, which are usually latitude and longitude values

Reverse geocoding is the process of converting geographic coordinates into a human-readable address.

An Example Web Service

More details

In this case the request will take the following form:

<http://maps.googleapis.com/maps/api/geocode/xml?address>

An example geocode request would look like the following:

http://maps.googleapis.com/maps/api/geocode/xml?address=British%20Museum,+Great+Russell+Street,+London,+WC1B+3DG
&sensor=false

From trendsmap.com

A Flickr Example

The Flickr web service provides a photo search service. The basic format for this service method is:

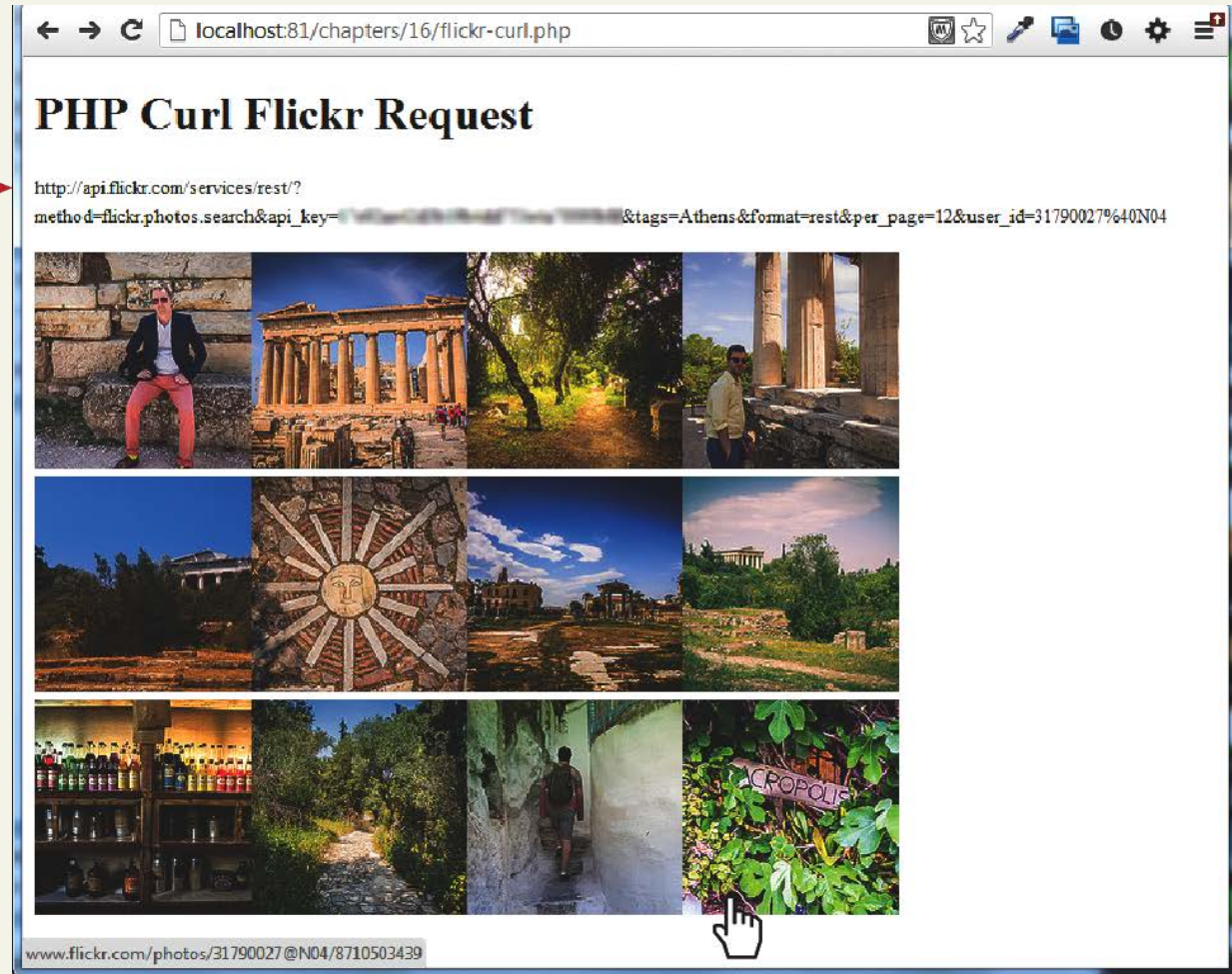
```
http://api.flickr.com/services/rest/method=flickr.photos.search  
&api_key=[enter your flickr api key here]&tags=[search values  
here]&format=rest
```

The service will return its standard XML photo list

A Flickr Example

Using the Flickr API to search for 'Athens'

Web service request



URL of image link

Consuming JSON Services

JSON (JavaScript Object Notation) web service requires almost the same type of PHP coding as consuming an XML web service.

An example:

- Use Microsoft Bing Maps web service to geocode a client's address.
- It returns the latitude and longitude of the address
- Then another web service, GeoNames, could be used to search their database (>10 million entries) to find nearby amenities
- Return to the Bing Maps web service to generate a map displaying the client's location and the surrounding amenities.

Consuming JSON Services

More examples

URL of service request for static road map image

Zoom level (between 1 and 21)

`http://dev.virtualearth.net/REST/v1/Imagery/Map/Road/43.6516321,-79.4085317/16?`

`key=[your api key]`

`&mapSize=600,400`

Width and height of map in pixels

`&pp=43.6516321,-79.4085317;66`

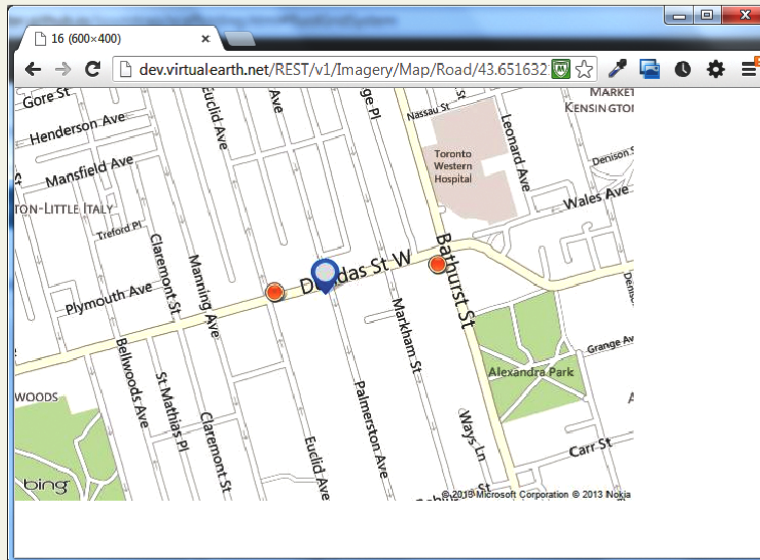
Location of marker (marker 66 = blue circle)

`&pp=43.6520854,-79.4061892;34`

`&pp=43.6516601,-79.4095859;34`

Location of other markers (amenities) with
marker 34 = orange circle

Location (latitude and
longitude) of center of map



Using Google Maps

A popular mashup platform

Consider a photo-sharing website. You could build a map view that plots user photos onto a map using the location information associated with the image.

The user can change views either by zooming in or out or by dragging the map.

Each time, the application must ask the web service for the list of images in the new view range.

The browser then redisplayes accordingly.

Using Google Maps


A sample mashup

Travelogue! - TEST HEADER






Google


you involuntarily yield the immense superiority to him, in point of pervading dignity. In the present instance, too, this dignity is heightened by the pepper and salt colour of his head at the summit, giving token of advanced age and large experience. In short, he is what the fishermen technically call a "grey-headed whale."

Let us now note what is least dissimilar in these heads—namely, the two most important organs, the eye and the ear. Far back on the side of the head, and low down, near the angle of either whale's jaw, if you narrowly search, you will at last see a lashless eye, which you would fancy to be a young colt's eye; so out of all proportion is it to the magnitude of the head.




Grand Canal from Rialto Bridge in Venice

Share:     



Related Photos



Chapter 21

CONTENT MANAGEMENT SYSTEMS

Managing Websites

The most significant drawback to the sites you have created so far is that these sites require a software developer to edit the code in order to make changes

For a small company, this can be a significant problem, since they cannot afford a full-time programmer on staff.

These companies want a system that is

- Easy for a nontechnical person to make changes to
- Consistent and professional looking across the site
- Cost effective

Managing Websites

Components of a Managed Website

A typical website requires :

Management provides a mechanism for uploading and managing images, documents, videos, and other assets.

Menu control manages the menus on a site and links menu items to particular pages.

Search functionality can be built into systems so that users can search the entire website.

Template management allows the structure of the site to be edited and then applied to all pages.

Managing Websites

Components of a Managed Website

User management permits multiple authors to work simultaneously and attribute changes to the appropriate individual. It can also restrict permissions.

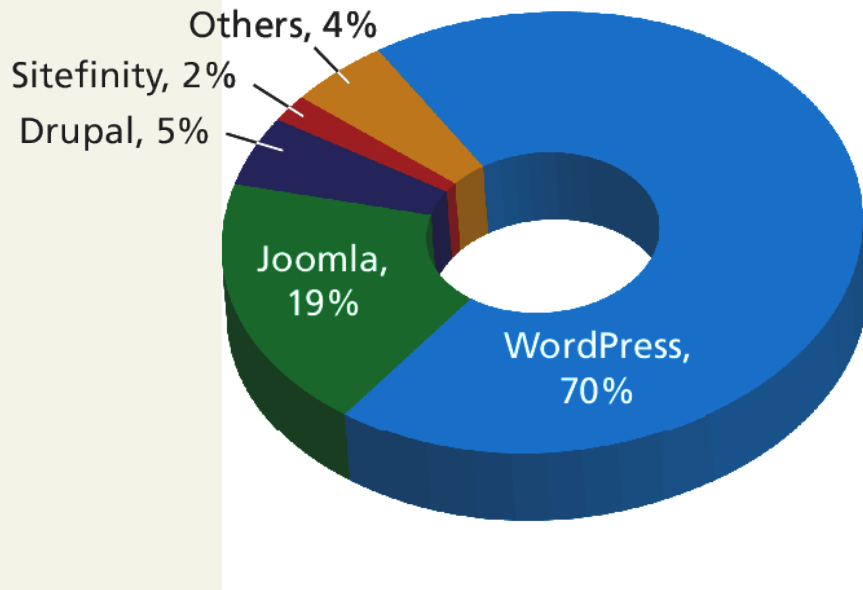
Version control tracks the changes in the site over time.

Workflow defines the process of approval for publishing content.

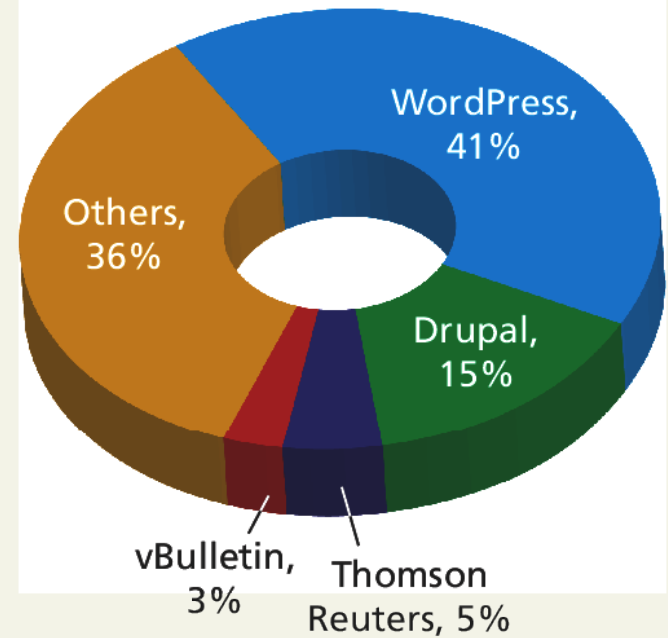
WYSIWYG editor allows nontechnical users to create and edit HTML content and CSS styles without manipulating code.

Types of CMS

Top 9,000,000 Sites



Top 10,000 Sites

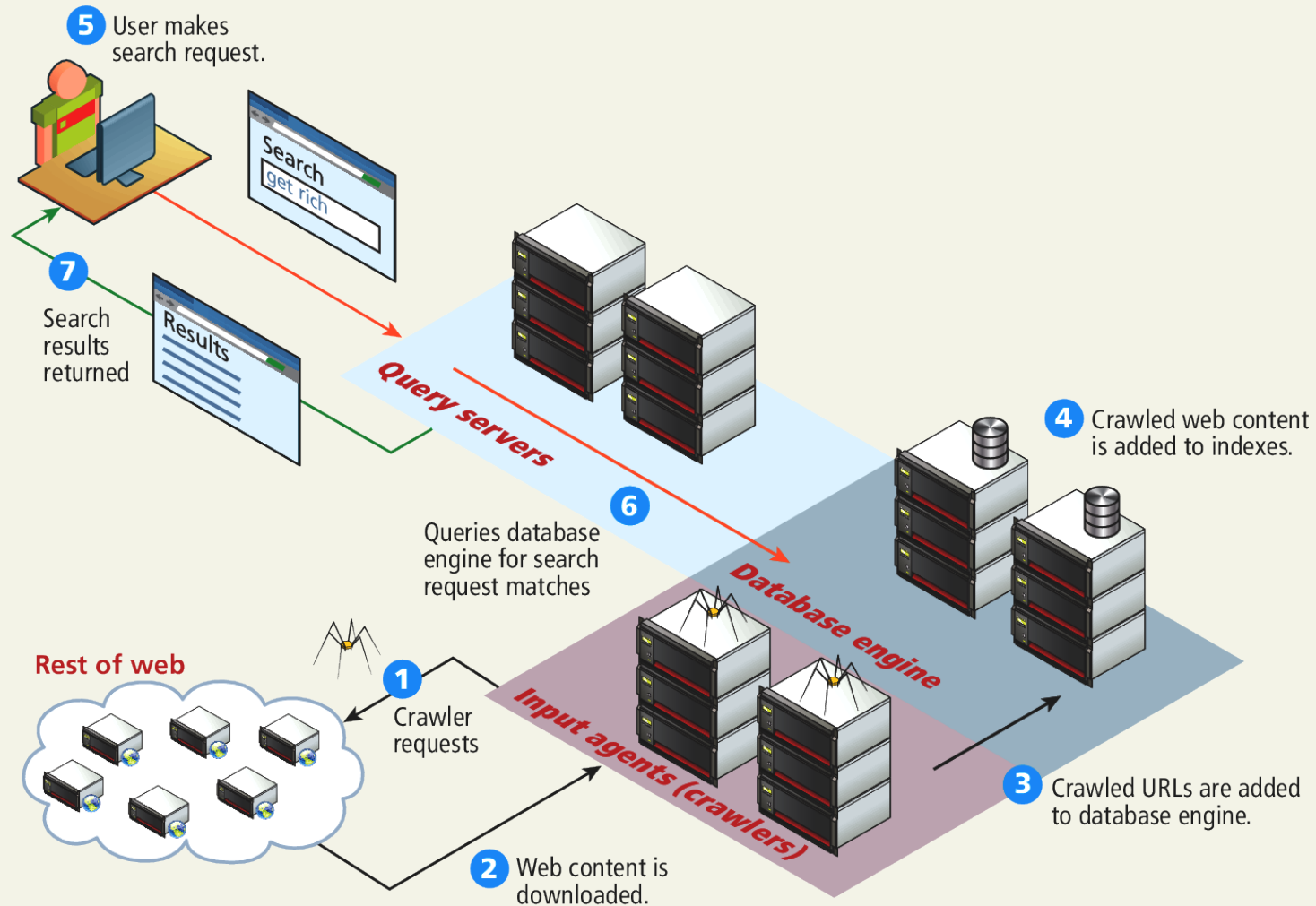


Chapter 23

THE HISTORY AND ANATOMY OF SEARCH ENGINES

Search Engine Overview

Lots of components



Crawlers

Spiders, robots, wanderers

Web crawlers refer to a class of software that

- downloads pages
- identifies the hyperlinks, and
- adds links to a database for future crawling

A crawler can be written to be autonomous, so that it populates its own list of fresh URLs to crawl, but is normally distributed across many machines and controlled centrally.

Scrapers

“Readers” of my website

Scrapers are programs that identify certain pieces of information from the web to be stored in databases.

Sometimes combined with Crawlers. There are several classes of Scraper:

- URL Scrapers
- Email Scrapers
- Word Scrapers
- Media Scrapers

PageRank

Bringing order to big data

PageRank is an algorithm, published by Google's founders in 1998.

According to the authors, PageRank is

a method for computing a ranking for every web page based on the graph of the web.

The *graph of the web* being referred to looks at the hyperlinks between web pages, and how that creates a *web* of pages with links.

- Sites with thousands of backlinks are surely more important than sites with only a handful of backlinks

PageRank

Visualized

Modern ranking algorithms take much more into account than simple backlinks.

- Search History
- Geographic Location
- Authorship
- Freshness of the pages

Search Engine Optimization

White-Hat

Search engine optimization (SEO) is the process a webmaster undertakes to make a website more appealing to search engines, and by doing so, increases its ranking in search results for terms the webmaster is interested in targeting.

- For many businesses the optimization of their website is more important than the site itself.
- Sites that appear high in a search engine's rankings are more likely to attract new potential customers, and therefore contribute to the core business of the site owner.

Search Engine Optimization

White-Hat

An entire area of research into SEO has risen up and can be broken down into two major categories:

- **White-hat SEO** that tries to honestly and ethically improve your site for search engines, and
- **Black-hat SEO** that tries to game the results in your favor.

Good URLs

White Hat Technique

If product 71829 is an air filter, for example, then a URL that would help us identify that this is a product in a category would be

`/products/AirFilters/index.php?productID=71829`

A step further would be to add the name of the filter in the URL in place of the product's internal ID.

`/products/AirFilters/BudgetBrandX100/`

vs. the original

`/products/index.php?productID=71829`

Images

White Hat Technique

Many search engines now have a separate site to search for images.

- The filename is the first element we can optimize, since it can be parsed for words. Rather than name an image of a rose **1.png**, we should call it **rose.png**.
- The judicious use of the alt attribute in the tag is another place where some textual description of the image can help your ranking.
- Finally, anchor text, like the text in URLs. If you have a link to the image somewhere on our site, you should use descriptive anchor text such as “full size image of a red rose,” rather than generic text “full size.”

Content

White Hat Technique

It seems odd that content is listed as an SEO technique, when content is what you are trying to make available in the first place.

- search engines tend to prefer pages that are updated regularly over those who are static
- If your website allows users to comment or otherwise write content on your site, you should consider allowing it.
- Entire industries have risen up out of the idea of having users generate content

Black-Hat SEO

Content Spamming

Keyword Stuffing

Hidden Content

Paid Links

Link Spam