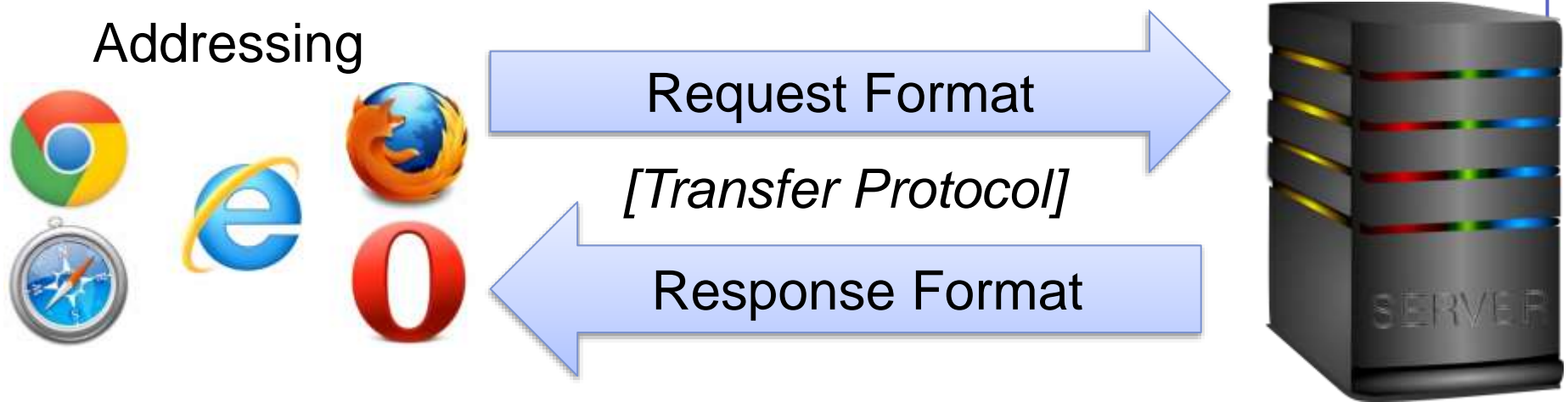


Software on/for the Web

- So far we talked about
 - Browsers
 - Web Servers
 - Protocols
 - additional software (Tor browser, ...)
- Apache.org offers various types of software for Web and Web-related projects...

Exercises 1.6 + 1.7

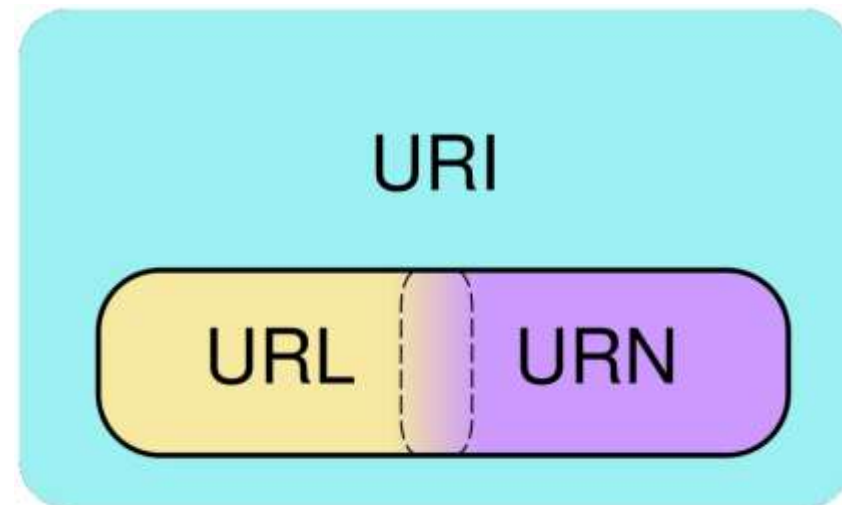
Basic WWW Entities



- Document Formats: HTML, DTD, ...
 - Transfer Protocol: HTTP
(ASCII-coded Request-Reply Protocol via TCP/IP)
 - Addressing: Uniform Identification Schema: Uniform Resource Identifier, URI
 - Resources have to be addressable (per name, per "address" or location)
 - Each Resource should be separately identifiable
- Document Format

Uniform Resource Identifier (URI)

- An URI functions as a locator ("address"), a name, or both
- Syntax for all types of IDs
`<uri> ::= <scheme>":"<scheme-specific part>`
- `<scheme>` defines a name schema for an URI
- `<scheme-specific part>` contains a particular ID according to the scheme
- Examples:
 - file – files within the local file system
 - ftp – File Transfer Protocol
 - http – Hypertext Transfer Protocol
 - mailto – E-Mail Address



Source: en.wikipedia.org

Uniform Resource Locator (URL)

- URL scheme definitions:
http, https, ftp, news, mailto, telnet, and others
- Scheme-specific part definitions of a general form
["//"] [user [":"password] "@" host [":"port] ["/"url-path]
- relative and absolute URLs are possible
 - Absolut:
dilbert.com/comics/dilbert/archive/images/dilbert20080112223505.gif
 - Relative: dilbert20080112223505.gif
 - But what is
<http://www3.dhbw-mannheim.de/index.php?id=inf> ???

Rules: URI, URN, and URL

Adresses have to conform to a particular rule set:

- Character set: ISO Latin-1 (similar to ASCII charset)
- No blank characters: Masking through %20.
- Reserved Characters, e.g.,:
 - Escape Char (%): identifies special characters
 - Hierarchy Char (/): Separation of directory and file names
 - Fragment Delimiter (#): Separation of URI of a data object from a Fragment or part of the data object
 - Query Delimiter (?): separates request string to a resource from its identification

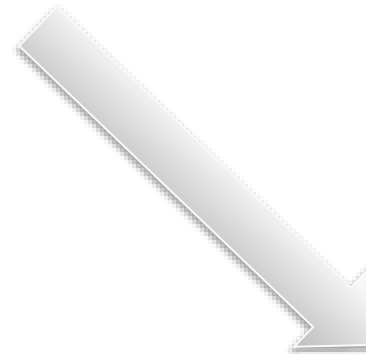
HTML and CSS



Source: <http://designhooks.com>

Basic HTML Document

```
<!DOCTYPE html>
<html>
  <head>
    <title>DHBW Mannheim</title>
  </head>
  <body>
    <h1>Hello World page</h1>
    <!-- this is a comment -->
    Hello again, World!
  </body>
</html>
```



Hello World page

Hello again, World!

HTML Concept and Syntax

- Text and formatting ("tags") is combined within HTML documents
- Tags start with a left-pointing angle bracket "<" and end with a right-pointing angle-bracket ">"
- Some tags have a closing tag (<h1>text</h1>), some don't ("empty elements", e.g.,
)
- Tags are interpreted by browsers as formatting and structuring
- Tags are closed in the opposite order they were opened
<i>some text</i>

Example Tag

Here follows a bold word.

is displayed as

Here follows a **bold** word.

Standard Generalized Markup Language (SGML, 1986)

- Meta language ("language about languages") to describe markup languages for documents
 - A markup language describes is made of text and annotations describing formatting, layout, and structure
- Defines abstract syntax which can be realised as different languages
- ISO Standard (ISO 8879:1986 Information Processing — Text and Office Systems — Standard Generalized Markup Language (SGML))

HTML

- HTML and HTTP were invented by Tim Berners-Lee
- Berners-Lee's goal was to create a simple markup language for presenting research results
- HTML (not HTML 5) is based upon SGML (international standard for marking up text for different physical devices)
- Most of the standards on the Web are developed/ratified by the W3C (World Wide Web Consortium)
www.w3c.org

- For the current HTML standard, the Web Hypertext Application Technology Working Group (WHATWG, whatwg.org) works with W3C.

"The Web Hypertext Application Technology Working Group (WHATWG) is a community of people interested in evolving the web through standards and tests. The WHATWG was founded by individuals of Apple, the Mozilla Foundation, and Opera Software in 2004, after a W3C workshop." [whatwg.org/faq]

HTML History

- HTML 1.0 (1992)
 - Supported only rudimentary elements (no images, no tables/forms/font/background images etc.)
 - Was only supported by browser Mosaic 1.0
- HTML 4.0 (12/1997)
 - Emphasis on using CSS for formatting
- XML 1.0 (02/1998)
 - Application of SGML concepts to HTML (XML is a subset of SGML)
 - Universal way of describing data and formatting
- HTML 4.01(12/1999)
 - Fixed some errors of HTML 4.0
 - Last HTML version

HTML History

- XHTML 1.0 (01/2000)
 - Same expressiveness as HTML
 - Conforms to XML syntax (can be checked programmatically)
 - Pages are based on three "templates" called "document type definitions" (DTDs)
 - XHTML 1.0 Strict: features of HTML 4.01 formulated in XML
 - XHTML 1.0 Transitional: Allows some formatting elements in addition to Strict
 - XHTML 1.0 Frameset: Supports framesets
 - More restrictive than HTML
- XHTML 2.0
 - Goal: solely XML-based format
 - 2009: W3C announced that XHTML 2.0 was discontinued

HTML History

■ CSS3

- modularized specification
- new speech output, gradient colors, backgrounds, text effects, ...

■ HTML 5

- replaces HTML 4.01, XHTML 1.0
- October, 2014: Standard (Recommendation)
- adds new HTML elements ("Widgets"), new DOM, ...
- supported by many browsers, but not fully implemented yet

■ HTML 5.1

- October, 2017: Standard (Recommendation)
- adds new HTML elements (e.g., Details and Summary Elements)
- ...

ACID2 Test

tinyurl.com/s5ecp

- ACID2 is a test suite published by the Web standards project released in 1995
- ACID2 tests browsers' HTML and CSS features
- ACID2 is the successor of the ACID test (1998)

Hello World!



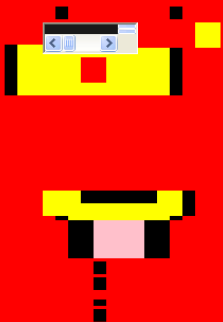
Reference

Hello World!



**Firefox 2.0.0.12,
Windows XP**

Hello World!



**Internet Explorer 7.0.5730.11,
Windows XP**

Your first Web Page

XHTML

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>Hello, this is my first HTML page!</p>
  </body>
</html>
```

HTML 5

```
<!DOCTYPE html>
<html>
  <head>
    <title>My First HTML Page</title>
  </head>
  <body>
    <p>Hello, this is my first HTML page!</p>
  </body>
</html>
```

Exercise 1.8

HTML Page Structure

```
<html>
```

```
<head>
```

```
<title>Page title</title>
```

```
</head>
```

```
<body>
```

```
<h1>This is a heading</h1>
```

```
<p>This is a paragraph.</p>
```

```
<p>This is another paragraph.</p>
```

```
</body>
```

```
</html>
```

Source: www.w3schools.com

HTML & HEAD Tag

■ html Tag

- Indicates beginning and end of an HTML document

■ head section Tag

- Contains meta information (information about the document)

```
<meta charset="UTF-8">
```

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

```
<!-- the user's visible area of a web page - responsive Web design -->
```

```
<meta name="keywords" content="Web Engineering I">
```

- Can be used to define inline styles (<style>) or scripts (<script>)

- <title> defines the document's title being shown in Browser's title bar

- Special application: re-direction

- The following code sends a user (redirects him) to google.de after 5 seconds

```
<meta http-equiv="refresh" content="5; url=http://www.google.de">
```

Tags

■ Body Tag

- Contains all visible content
- Can contain JavaScript event code
`<body onclick="alert('Hello World');">`

■ Headings

- `<h1> ... <h6>`
- e.g., `<h1>This is heading 1</h1>`

■ Paragraphs

- `<p>My paragraph.</p>`
- To test text flow, a lore ipsum generator (e.g., www.loremipsum.de) can be used

■ Links (anchor Tag)

- `DHBW Mannheim`



HTML Attributes

- HTML elements can have attributes
- Are used to specify additional settings
- Are set in name/value pairs: name="value"
- Single or double quotes (e.g., <p title='Terrence "Terry" Gene Bollea'>)

```
<div id="top_div">
  <a href="#bottom_div">Go to bottom </a>

</div>

<div id="bottom_div">
  <a href="#top_div">Go to top </a>
</div>
```

Unique ID

Hyperlink to ID

Example: <http://freundealumnidhbwmannheim.alfahosting.org/wordpress2/#portfolio-image/1/>

Relative and Absolute URLs

- Absolute URLs point to a resource directly while relative URLs relate to a particular path
- Example:
 - Files on hard disk:
 - `c:\data\www\htdocs\file1.html`
 - `c:\data\www\htdocs\others\file3.html`
 - www root is `c:\data\www\htdocs\`
 - Absolute Path to `file3.html`: `www.mydomain.de/others/file3.html`
 - Relative Path to `file3.html` (within `file1.html`): `./others/file3.html`

The Link Tag

- Can be used to provide additional information on a document
- Has to be placed within the head element of a page
- Has no matching close tag
- There is no text encapsulated and thus nothing is rendered/displayed

Example

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

Text Formatting: Lists

■ Ordered (numbered) Lists

```
<ol start="4" style="list-style-type: decimal">
<li>Element 1</li>
<li>Element 2 </li>
<li>Element 3 </li>
</ol>
```

■ list-style-type values:

- decimal = 1.,2.,3.,4.
- lower-roman = i.,ii.,iii.,iv.
- upper-roman = I.,II.,III.,IV.
- lower-alpha or lower-latin = a.,b.,c.,d.
- upper-alpha or upper-latin = für A.,B.,C.,D.
- none = no numbering

■ Unordered Lists

```
<ul style="list-style-type: disc">
<li>Item 1</li>
<li>Item 2</li>
<li>Item 3</li>
</ul>
```

■ list-style-types: disk, circle, square, none



4. Element 1
5. Element 2
6. Element 3

- ◆ Item 1
- ◆ Item 2
- ◆ Item 3

- ◇ Item 1
- ◇ Item 2
- ◇ Item 3

- Item 1
- Item 2
- Item 3

- Item 1
- Item 2

Exercise 2.1