

# Web development Primer

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## Outline

- ▶ Definitions and semantics
- ▶ How websites work
- ▶ HTML:
  - the main web development scripting language
- ▶ Beyond HTML (JavaScript, PHP, CSS)
- ▶ Uploading your website (FTP)

## What's a website?

- ▶ A collection of WebPages, images and videos that are saved (hosted) on a server. These files are accessible via the internet according to certain protocols:
  - HTTP: hypertext transfer protocol
    - A protocol that transfers information from the web server to display in the user's browser.
  - FTP: file transfer protocol

## How to access a website?

- ▶ First, lets see how computers talk to each other over a network (the internet).
  - Each computer that is connected to the internet has an IP address (Internet Protocol address).
  - Think of it as a phone number.
  - Example IP address: 192.168.1.1

## How to access a website?

Whether its your personal computer, or a server that hosts many websites, all have their own IP addresses to communicate with other servers/computers over the internet.



Your computer  
192.168.1.100



A server hosting a website  
68.180.206.184

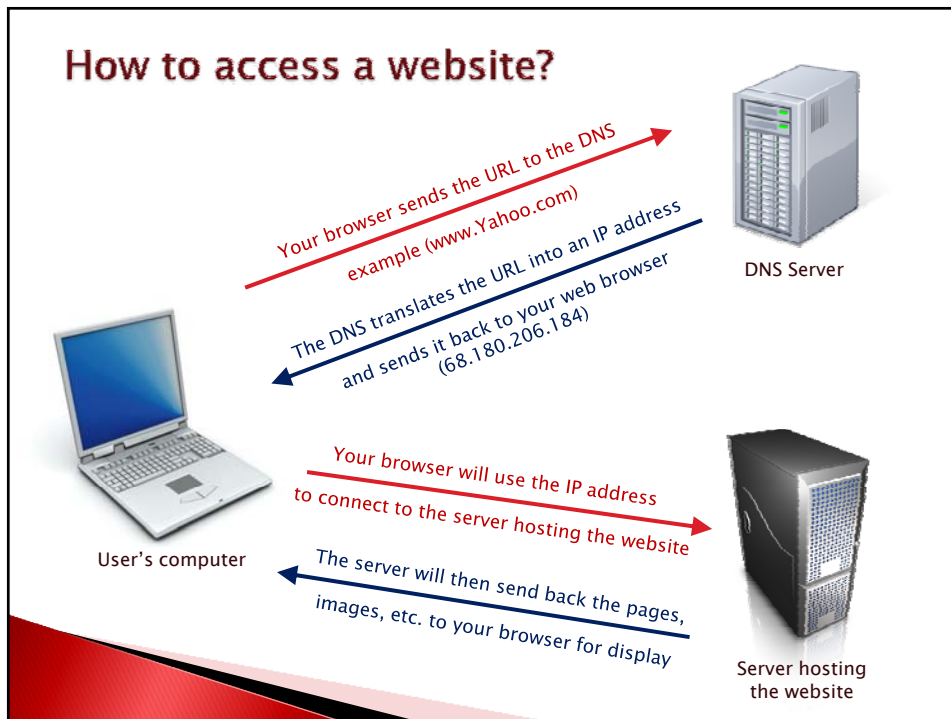
## How to access a website?

- ▶ But we never use numbers (IP addresses) to access websites!
  - We use URL (Uniform Resource Locator)
  - It's a unique name that is registered with DNS (Domain Name System).
  - The DNS translates the URL that you enter in your browser into an IP address. Your browser would then use this IP address to connect to the server that hosts the WebPages of the website.
  - DNS is the internet's "phonebook".

## How to access a website?

- ▶ The IP address or the domain could be used interchangeably
  - Like the phonebook in your cell phone: dial the number or use the name in the phonebook
- ▶ Even specific pages or sub folders could be accessed using the IP address OR the domain name:
  - `http://www.utoronto.ca`  
`http://142.150.210.13`
  - `http://www.utoronto.ca/contacts.htm`  
`http://142.150.210.13/contacts.htm`

## How to access a website?



## Why do I need to know this?

- ▶ When planning on developing a website, you need the following:
  - A server that hosts (saves) your web files:
    - You could set up your own server at home or buy hosting service from a hosting company.
  - A domain name (a.k.a. URL) that is registered with the Domain Name System (DNS):
    - This is what visitors would use to access your website
    - It is a separate purchase from your web hosting space
    - Could be registered through the same company you get your hosting service from. They add you to the “phonebook”.
  - And of course, your web files:
    - WebPages, Flash, Images, Videos, etc.

## Web development 101

## HTML

- ▶ HTML: HyperText Markup Language
- ▶ The dominant scripting language for web pages
- ▶ Files usually saved as .html or .htm
- ▶ index.html or index.htm are usually the default home page
- ▶ Written in form of tags, surrounded by angle brackets

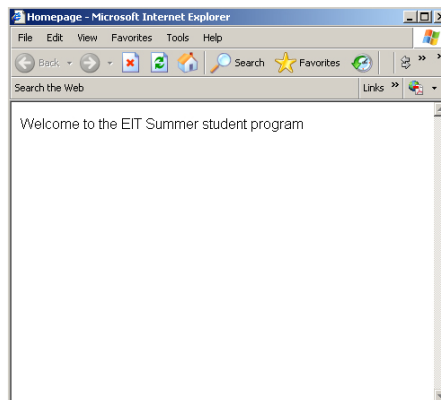
## HTML – Structure

```
<html>

<head>
<title>Homepage</title>
</head>

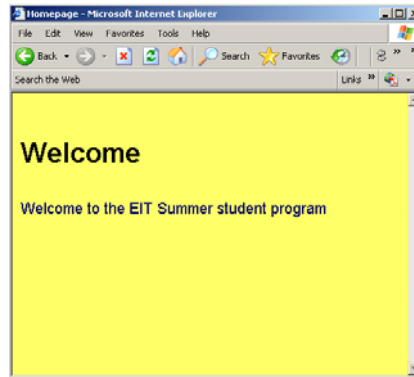
<body>
Welcome to the EIT Summer student program
</body>

</html>
```



## HTML – Structure

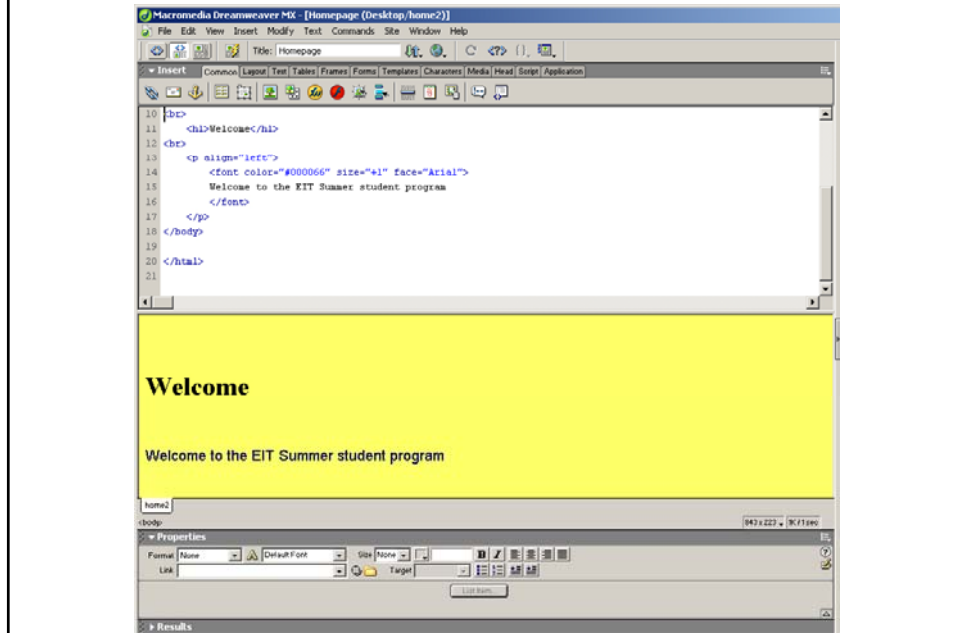
```
<html>
<head>
<title>Homepage</title>
</head>
<body bgcolor="#FFFF66">
<br>
<br>
<h1>Welcome</h1>
<br>
<p align="left">
  <font color="#000066" size="+1" face="Arial">
    Welcome to the EIT Summer student program
  </font>
</p>
</body>
</html>
```



## HTML – WYSISWYG

- ▶ WYSISWYG editors:  
What You See Is What You Get
- ▶ Content displayed during editing appears very similar to the final output
- ▶ Takes care of the coding for you
- ▶ Adobe Dreamweaver and MS FrontPage

## HTML - WYSISWYG (Dreamweaver)



**Web development is  
more than just HTML**

## HTML – integrating other codes

- ▶ HTML can embed or include other scripting code such as JavaScript, PHP or CSS.
- ▶ These scripting languages are used to affect the overall design and functionality of the website.
- ▶ They are usually integrated with the HTML file by:
  - embedding them in the HTML files with their own tags
  - or including them into the HTML file from an external file.

## HTML – embedding other codes

Opening tag → `<script type="text/javascript">` → Name of scripting language: e.g. javascript, CSS

```

<head>
<script type="text/javascript">
<br />
function loadIframe(iframeName, url) {
  if ( window.frames[iframeName] ) {
    window.frames[iframeName].location = url;
    return false;
  }
  return true;
}

function changeIframeSrc(id, url) {
  if (!document.getElementById) return;
  var el = document.getElementById(id);
  if (el && el.src) {
    el.src = url;
    return false;
  }
  return true;
}
</script>
</head>

<body>

```

The embedded code

Closing tag → `</script>`

## HTML – loading code from external file

```
<head>  
  
<script type="text/javascript" src="ddaccordion.js"> </script>  
  
</head>
```



Source of file



This JavaScript (.js) file should be in the same directory as the html (.html) file

## JavaScript

- ▶ Object Oriented Programming (OOP)
  - Programming that uses "objects" and their interactions to design applications (C++, JavaScript, PHP, Action Script)
- ▶ Fundamentals of OOP:
  - **Class:** Defines the abstract characteristics of a thing (object), including the thing's characteristics (its attributes, fields or properties) and the thing's behaviors (the things it can do, or methods, operations or features).
  - **Object:** A particular object from a class.
  - **Instance:** A particular object.
  - **Method:** An object's abilities. In language, methods are verbs. Methods are also referred to as functions.

## JavaScript

- ▶ JavaScript is an OOP language that is used mainly to write functions for websites:
  - Pop up window or msg.
  - Mouse over effects
  - A Dynamic navigation menu
  - Calendars
  - Password protection
  - Calculations and more

## CSS: Cascading Style Sheets

- ▶ CSS is a stylesheet language used to describe the presentation of a document
  - Mechanism for adding style (e.g. fonts, colors, spacing) to Web documents.
- ▶ Simple syntax, uses a number of English keywords to specify the names of various style properties.
- ▶ Main advantage:
  - Separating style from content.
  - Layout and position of certain items (such as navigation) can be completely consistent across a site.

## PHP: Hypertext Preprocessor

- ▶ HTML and JavaScript are examples of scripting languages that are used for client-side web development
- ▶ PHP is a server-side scripting language
  - PHP scripts are executed on the server
- ▶ PHP supports many databases (MySQL, Informix, Oracle, Sybase, Solid, PostgreSQL, Generic ODBC, etc.)
- ▶ PHP is an open source software (OSS)
  - PHP is free to download and use.
  - MySQL is an open source software too, free to use.
  - Therefore, PHP and MySQL are often used together

## PHP: Notes

- ▶ The server that is hosting the website should have PHP and MySQL installed.
- ▶ HTML files that have PHP code embedded in them are usually given the file extension of .php
  - This is unlike JavaScript or CSS, where HTML files can still have the extension of .html even if they have JavaScript or CSS code embedded in them.
  - But the HTML coding is still the same and the PHP code is encapsulated with tags
- ▶ Index.php could replace index.html as the default home page

## PHP: “server-side scripting”

The code in the index.php file that's stored on the server:

```
<html>

<head>
  <title>Homepage</title>
</head>

<body>
  <?php echo '<p>Welcome</p>'; ?>
</body>

</html>
```

The code in the index.php that is sent to your browser after being pre-processed on the server:

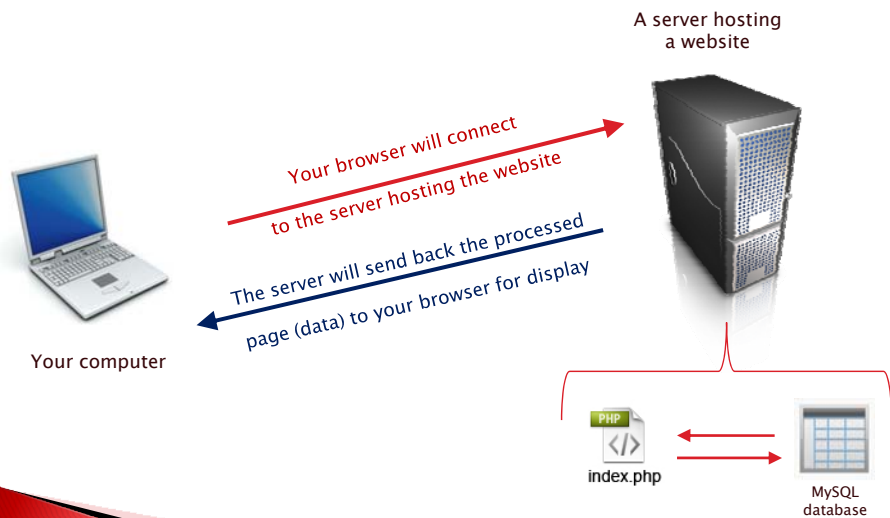
```
<html>

<head>
  <title>Homepage</title>
</head>

<body>
  <p>Welcome</p>
</body>

</html>
```

## PHP and MySQL



## Uploading your website

### FTP: File Transfer Protocol

- ▶ Recall, HTTP is the communications protocol that is used by browsers to **retrieve** data from a server that hosts the site and **display** them as visual elements (text/images) on your screen
- ▶ FTP is the communications protocol used to **transfer** data (files) from one computer to another through a network (e.g. internet).
- ▶ Free FTP programs:
  - FileZilla (my personal favorite)
  - SmartFTP
  - CoffeeCup

