

Web Programming

with PHP and Javascript

Jess Fortier
Portland State University

January 23, 2013

THE INTERNET

Files → Server → Network → Browser → User

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
<html>
  <head>
    <title>Hello, World!</title>
  </head>
  <body>
    Hello, World!
  </body>
</html>
```

THE INTERNET

Files → Server → Network → **Browser** → User

- **Browser**: HTTP Communicator, HTML Interpreter

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
<html>
  <head>
    <title>Hello, World!</title>
  </head>
  <body>
    Hello, World!
  </body>
</html>
```

THE INTERNET

Files → Server → Network → Browser → User

- ▶ Browser: **HTTP** Communicator, HTML Interpreter
- ▶ **HTTP**: HyperText Transfer Protocol

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
<html>
  <head>
    <title>Hello, World!</title>
  </head>
  <body>
    Hello, World!
  </body>
</html>
```

THE INTERNET

Files → Server → Network → Browser → User

- ▶ Browser: HTTP Communicator, **HTML** Interpreter
- ▶ HTTP: HyperText Transfer Protocol
- ▶ **HTML** : HyperText Markup Language

```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01//EN"
"http://www.w3.org/TR/html4/strict.dtd">
<html>
  <head>
    <title>Hello, World!</title>
  </head>
  <body>
    Hello, World!
  </body>
</html>
```

HTML & CSS

```
<html>1
  <head>
    <title>Bacon Ipsum</title>
  </head>
  <body>
    <p>
      Bacon ipsum dolor sit amet chuck
      sirloin shank andouille.
    </p>
  </body>
</html>
```

HTML & CSS

Attribute-based formatting

```
<html>
  <head>
    <title>Bacon Ipsum</title>
  </head>
  <body bgcolor="black">
    <p color="white" align="center">
      Bacon ipsum dolor sit amet chuck
      sirloin shank andouille.
    </p>
  </body>
</html>
```

HTML & CSS

In-line styles

```
<html>
  <head>
    <title>Bacon Ipsum</title>
  </head>
  <body style="background-color:black;">
    <p style="color:white;
      text-align:center;">
      Bacon ipsum dolor sit amet chuck
      sirloin shank andouille.
    </p>
  </body>
</html>
```


HTML & CSS

Embedded, recycleable styles; separation of content and presentation

```
<html>
  <head>
    <title>Bacon Ipsum</title>
    <style>
      body{background-color:black;}
      p{color:white;}
      .centered{text-align:center;}
    </style>
  </head>
  <body>
    <p class="centered">
      Bacon ipsum dolor sit amet chuck
      sirloin shank andouille.
    </p>
  </body>
</html>
```

HTML & CSS

External, recycleable styles; separation of content and presentation

```
<html>
  <head>
    <title>Bacon Ipsum</title>
    <link rel="stylesheet" type="text/css"
      href="style.css" />
  </head>
  <body>
    <p class="centered">
      Bacon ipsum dolor sit amet chuck
      sirloin shank andouille.
    </p>
  </body>
</html>
```

HTML & CSS

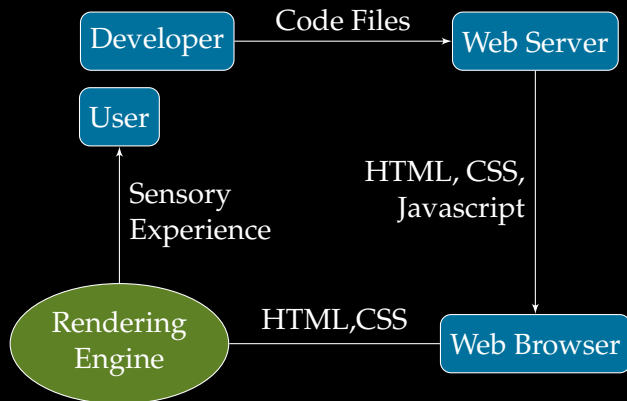
Trends in the Tech:

- ▶ maximizing code reuse
- ▶ improving semantics and modularity
- ▶ increasing interactivity and media support

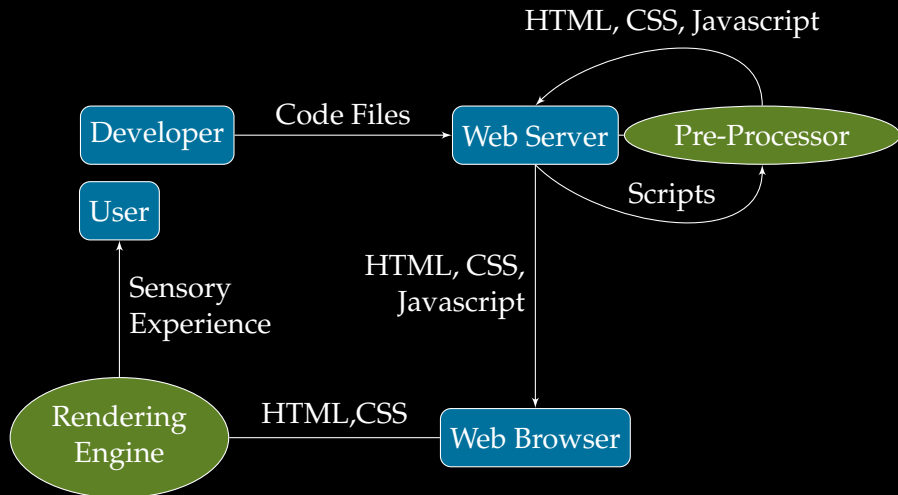
Trends in the Tools:

- ▶ generating code automatically
- ▶ enforcing MVC design patterns
- ▶ augmenting code dynamically

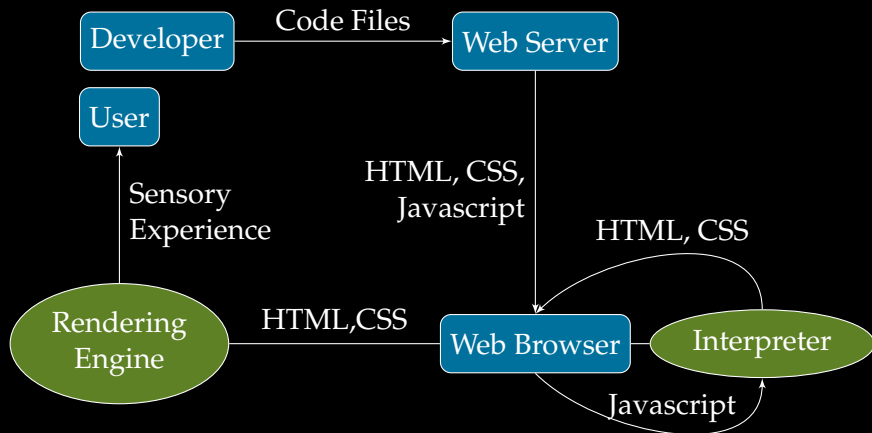
WEB DATA FLOW



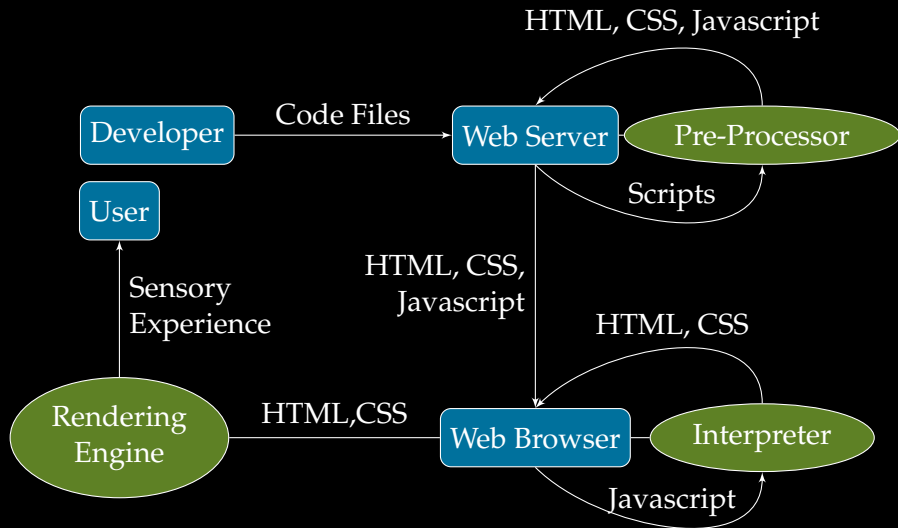
WEB DATA FLOW



WEB DATA FLOW



WEB DATA FLOW



COMMON TECHNOLOGIES

Server-side Scripting

- ▶ PHP
- ▶ Javascript
- ▶ Ruby
 - ▶ [Haml](#)
 - ▶ [SASS/SCSS](#)
- ▶ ASP
- ▶ JSP

Client-side Scripting

- ▶ Javascript
 - ▶ [CoffeeScript](#)

Fewer Client-Side Options

Adding client-side support for a language requires the browser to bundle an interpreter for that language, or for reliable plugins to be published.

COMMON TECHNOLOGIES

Server-side Scripting

- ▶ PHP
- ▶ Javascript
- ▶ Ruby
 - ▶ Haml
 - ▶ SASS/SCSS
- ▶ ASP
- ▶ JSP

Client-side Scripting

- ▶ Javascript²
 - ▶ CoffeeScript

Fewer Client-Side Options

Adding client-side support for a language requires the browser to bundle an interpreter for that language, or for reliable plugins to be published.

PHP

PHP: Hypertext Preprocessor³

```
<?php
    $myVar = 'Hello World!';
    echo $myVar;
?>
```

- ▶ Imperative
- ▶ Object Oriented (Class-based)
- ▶ Loosely typed
- ▶ Embeddable
- ▶ Good documentation of syntax and libraries
- ▶ Differentiates between single quotes and double quotes

JAVASCRIPT

Not related to Java!

- ▶ Imperative
- ▶ Object Oriented (Prototype-based)
- ▶ Functional
- ▶ Loosely typed
- ▶ Embeddable
- ▶ Server- and client-side
- ▶ Many robust libraries for out-of-the-box functionality
 - ▶ jQuery
 - ▶ mootools
 - ▶ Dojo
 - ▶ Node.js

WEB PROGRAMMING TOOLS

- ▶ Install an AMP stack (Apache server, MySQL, PHP)
- ▶ Get a good, lightweight text editor⁴
- ▶ Extend your browser's inspection tools (Optional)

Windows

- ▶ WAMP
XAMPP
- ▶ Sublime Text 2
Notepad++

Mac

- ▶ MAMP
XAMPP
- ▶ Sublime Text 2
TextWrangler

Linux

- ▶ BitNami LAMP
XAMPP
- ▶ Sublime Text 2
VIM

Chrome

- ▶ Firebug Lite

Firefox

- ▶ Firebug

Safari

- ▶ Firebug Lite

A BASIC PHP EXAMPLE

```
<?php
    $employeeArray =
        array('Tom','Jerry','Jack','Sally');

    for($i = 0; $i < sizeof($myBasicArray); $i++){
        echo $myBasicArray[$i];
    }
?>
```

A BASIC PHP EXAMPLE

Displayed: Names appear on the same line without spaces

```
<?php
    $employeeArray =
        array('Tom','Jerry','Jack','Sally');

    for($i = 0; $i < sizeof($myBasicArray); $i++){
        echo $myBasicArray[$i];
    }
?>
```

A BASIC PHP EXAMPLE

```
<?php
    $employeeArray =
        array('Tom','Jerry','Jack','Sally');

    for($i = 0; $i < sizeof($myBasicArray); $i++){
        echo $myBasicArray[$i] . '\n';
    }
?>
```

A BASIC PHP EXAMPLE

Displayed: Each name has its own line in source, but not on the web page

```
<?php
    $employeeArray =
        array('Tom','Jerry','Jack','Sally');

    for($i = 0; $i < sizeof($myBasicArray); $i++){
        echo $myBasicArray[$i] . '\n';
    }
?>
```


A BASIC PHP EXAMPLE

```
<?php
    $employeeArray =
        array('Tom','Jerry','Jack','Sally');

    for($i = 0; $i < sizeof($myBasicArray); $i++){
        echo $myBasicArray[$i] . '<br />';
    }
?>
```

A BASIC PHP EXAMPLE

Displayed: Each name has its own line on the page, but not in source

```
<?php
    $employeeArray =
        array('Tom','Jerry','Jack','Sally');

    for($i = 0; $i < sizeof($myBasicArray); $i++){
        echo $myBasicArray[$i] . '<br />';
    }
?>
```

AN EMBEDDED PHP EXAMPLE

```
<html>
  <head><title>Embedded PHP Demo</title></head>
  <body><h1>Employees</h1>
    <?php $associativeEmployeeArray = array(
      'Tom' => 'Web Developer',
      'Jerry' => 'Project Manager',
      'Jack' => 'Designer',
      'Sally' => 'Software Engineer'); ?>
    <table border="1" cellpadding="3" cellspacing="0">
      <thead><tr><td>Name</td>
        <td>Job Title</td></tr></thead>
      <tbody><?php
        foreach ($associativeEmployeeArray as
          $employee => $title){
          echo "<tr><td>$employee</td>
            <td>$title</td></tr>";
        }
      ?></tbody>
    </table>
  </body>
</html>
```

A JAVASCRIPT FORM EXAMPLE

```
<html>
```

```
  <head><title>Javascript Demo</title>
```

```
  <script>
```

```
    function addEmployee() {
```

```
      var name = document.getElementById("employee-name").value;
```

```
      var job = document.getElementById("job-title").value;
```

```
      var row = "<tr><td>"+name+"</td><td>"+job+"</td></tr>";
```

```
      document.getElementById("employees").innerHTML += row;
```

```
    }
```

```
  </script> </head>
```

```
  <body>
```

```
    <form name="new-employee">
```

```
      Name: <input type="text" id="employee-name"><br />
```

```
      Title: <input type="text" id="job-title"><br />
```

```
      <input type='button' onclick='addEmployee()' value='Submit Emp
```

```
    </form>
```

```
    <table>
```

```
      <thead><tr><td>Name</td><td>Job Title</td></tr></thead>
```

```
      <tbody id="employees"></tbody>
```

```
    </table>
```

```
  </body>
```

```
</html>
```

A KEYBOARD INPUT EXAMPLE

AN ANIMATION EXAMPLE

```
<script type="text/javascript">
    function Stickman() { this.x = 0; this.y = 0; this.dir = 'R'; }

    Stickman.prototype.changeDir = function(dir) { this.dir = dir; }

    Stickman.prototype.draw = function() {
        document.getElementById('stickman').style.left = this.x;
        document.getElementById('stickman').style.top = this.y;
    }

    Stickman.prototype.move = function() {
        switch (this.dir) {
            case 'L': this.x -= 1; break; // Also 'U', 'R', and 'D'
        } this.draw();
    } var mrStick = new Stickman();

    window.addEventListener('keydown', function(event) {
        switch (event.keyCode) {
            case 37: mrStick.changeDir('L'); break; // Also 38, 39, and 40
        } }, false);

    setInterval('mrStick.move()', 20);
</script>
```

END NOTES

¹Check out [w3schools](#) to read up on HTML.

²Check out [Tizag's Javascript tutorials](#)

³PHP is a [recursive acronym](#)

⁴For our purposes, heavy duty editors like "Eclipse for PHP Developers" will be cumbersome and unnecessary. If given the choice between your computer's basic text editing environment and a bulky project management editor, choose the former.