Web Development
Week 2

Abertay

Topics

- Commenting Code

- Abstraction

- Client/Server paradigms

- JavaScript

- PHP

Comments

Comments

Bad Example

```
 9  <!DOCTYPE html><!-- declaration of document type and hersion (HTML5)-->
10  <html lang="en" dir="ltr"><!-- main element of page, lang declare english, and dir ltr -> left to right-->
11
12  <head><!-- head contains metadata not visible on main body of webpage-->
13    <meta charset="utf-8"><!-- encoding by utf-8-->
14    <title>Tech news</title><!-- title of webpage visible on browser bar-->
15    <link rel="stylesheet" href="css/master.css"><!-- adding external stylesheet of css-->
```

Comments

Good Example

```php
17  <?php
18  // Define valadation form variables / set to empty values
19  $nameErr = $emailErr = $genderErr = $websiteErr = "";
20  $name = $email = $gender = $comment = $website = "";
21
22
23  // Server request method for form valadation logic
24  if ($_SERVER["REQUEST_METHOD"] == "POST") {
25
26    // Name valadation check: Field not empty & Name only contains letters and whitespace
27    if (empty($_POST["name"])) {
28      $nameErr = "Name is required";
29    } else {
30      $name = test_input($_POST["name"]);
31      if (!preg_match("/^[a-zA-Z-' ]*$/",$name)) {
32        $nameErr = "Only letters and white space allowed";
33      }
34    }
35
```

Comments

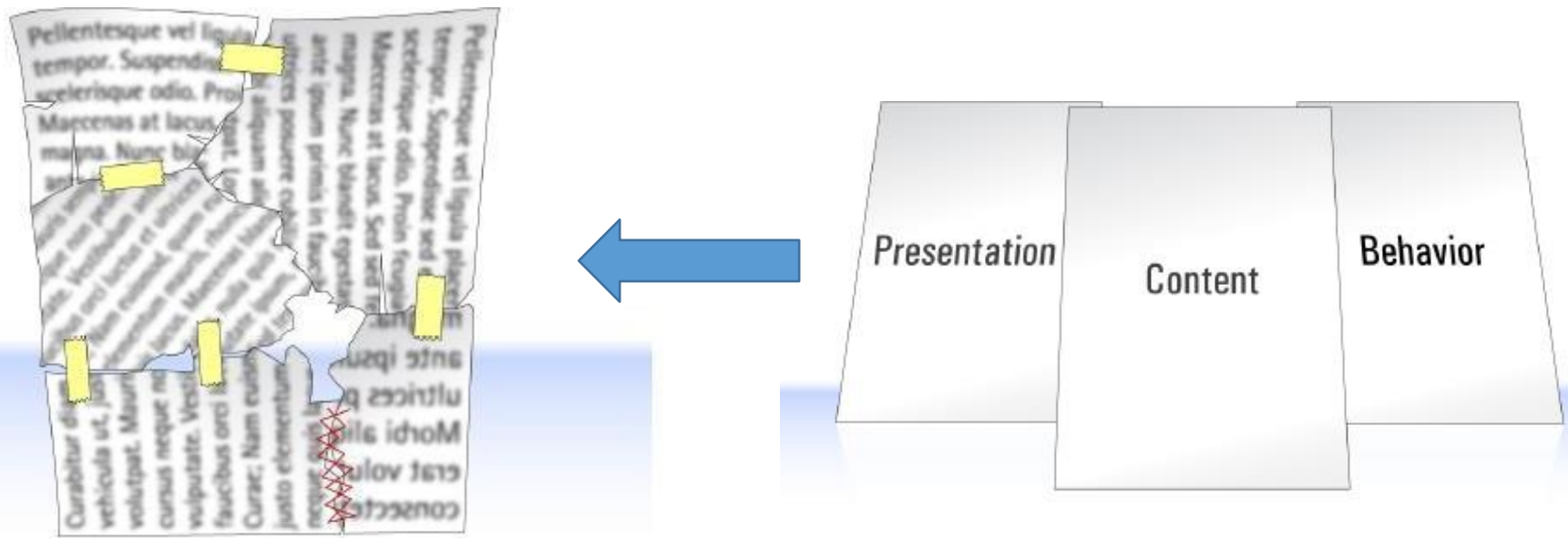# Good Example

```
1  <!--
2    Created on 07/03/2024
3    Last modified 07/03/2024
4    @author Alexander Purvis
5  -->
```
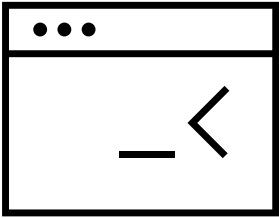
Abstraction

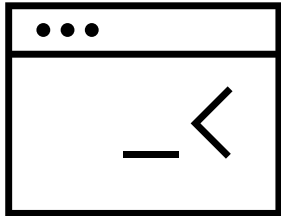# Abstraction in Web Development

Don't mix everything together in one file – Separate files for HTML, CSS, JS etc.
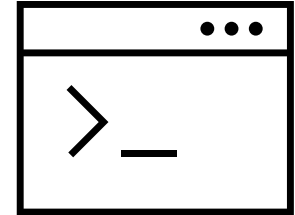
Abstraction in Web Development

My Top 10 TV Shows
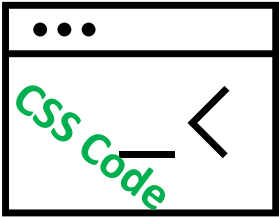Home Page HTML file

My Top 5 Films Home
Page HTML file

My Top 10 TV Shows
About Page HTML file

Abstraction in Web Development

My Top 10 TV Shows
Home Page HTML file

CSS Code

My Top 5 Films Home
Page HTML file

CSS Code

My Top 10 TV Shows
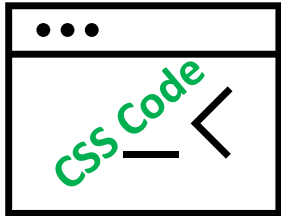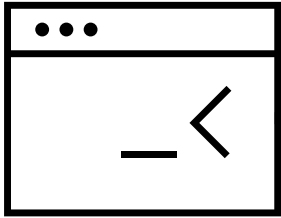About Page HTML file

CSS Code
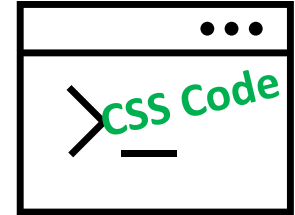
Abstraction in Web Development

My Top 10 TV Shows
Home Page HTML file

My Top 5 Films Home
Page HTML file

My Top 10 TV Shows
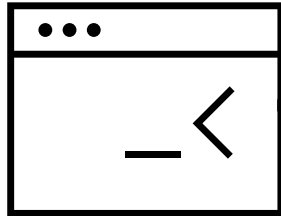About Page HTML file
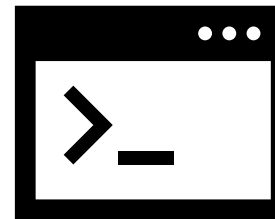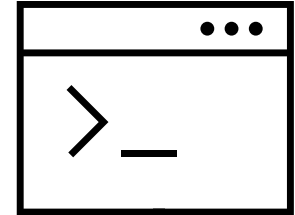
CSS file

Abstraction in Web Development

My Top 10 TV Shows
Home Page HTML file
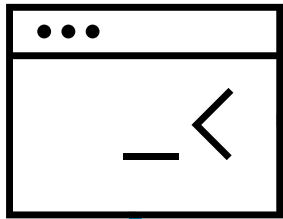
My Top 5 Films Home
Page HTML file
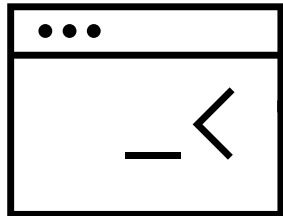
My Top 10 TV Shows
About Page HTML file
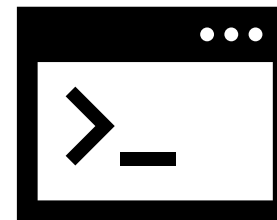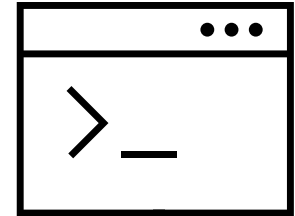
CSS file
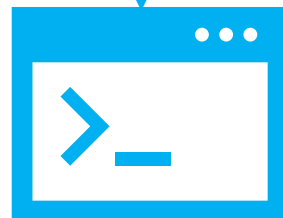
JavaScript file

JavaScript file

Client/Server-Side Scripting

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Clients - Servers

- Clients initiate the transactions
- Servers respond to the requests

Client Request

Server Response

Client
(Browser running on user device)
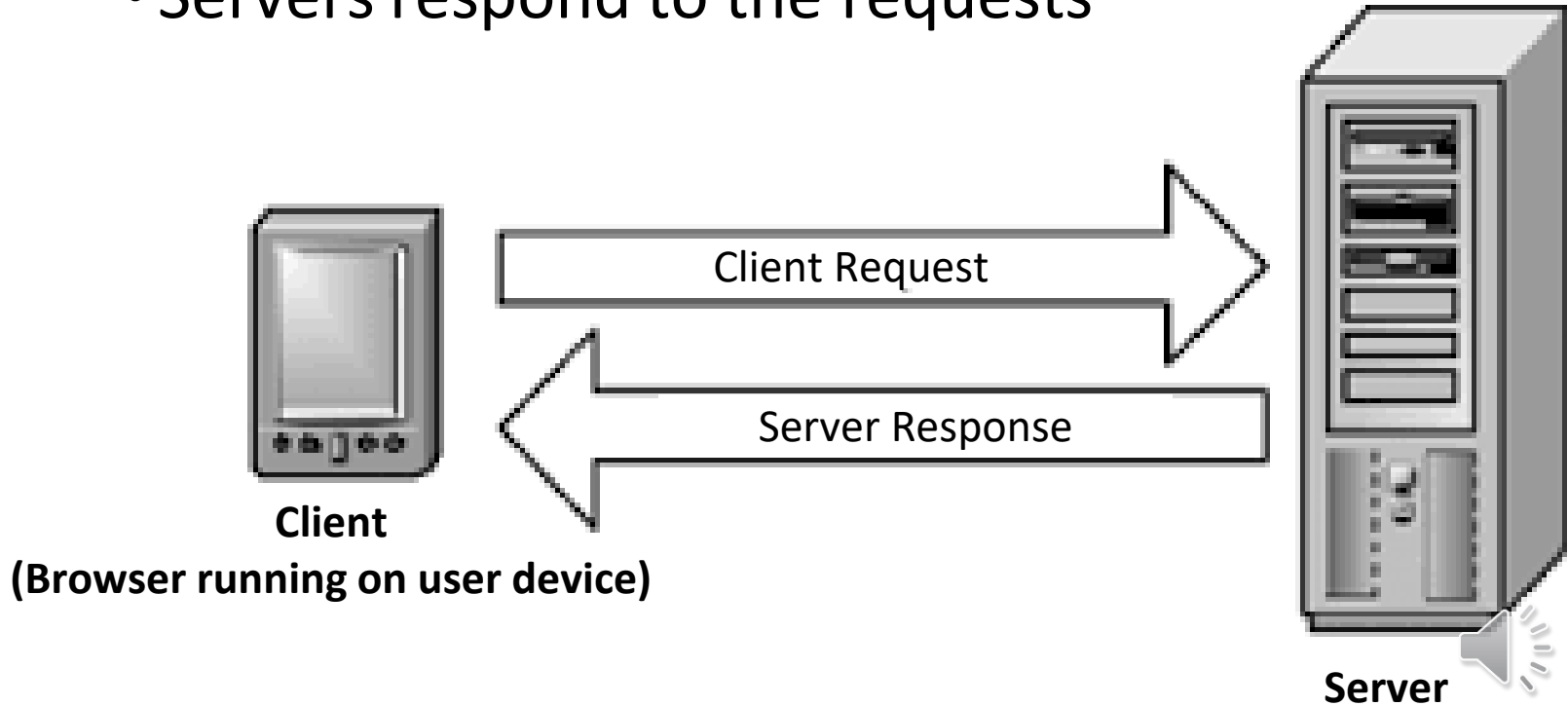
Server

What is Client-side Scripting?

Examples:

- HTML
- CSS
- JavaScript

What is Server-Side Scripting

Examples:

- PHP
- SQL
- Python

JavaScript

JavaScript

Has the potential to make web pages act like desktop software –Rich Internet Applications (RIAs) / Web Apps
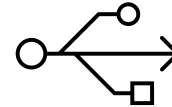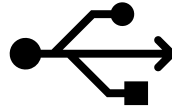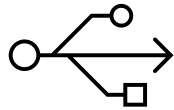
- Updates to the DOM without the need to send an http request.

- Adds interactivity such as mouseovers, auto suggest, form validation

- All modern browsers have built-in support for JavaScript

JavaScript Example Code

```html
<!DOCTYPE html>
<html>

<head>

<script>
function myFunction() {
  document.getElementById("demo").innerHTML = "I am so disappointed in you :(";
}
</script>

</head>


<body>

<h2>Alexander's JavaScript Demo</h2>

<p id="demo">Don't press the button!</p>

<button type="button" onclick="myFunction()">Go on try me</button>

</body>
</html>
```

JavaScript Example Code

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</body>
</html>
```

JavaScript Example Web Page

JavaScript Example Code

Some Improvements

```html
<!DOCTYPE html>
<html>

<head>

<script>
function myFunction() {
  document.getElementById("demo").innerHTML = "I am so disappointed in you :(";
  document.getElementById("myButton").remove();
}
</script>

</head>


<body>

<h2>Alexander's JavaScript Demo</h2>

<p id="demo">Don't press the button!</p>

<button id="myButton" type="button" onclick="myFunction()">Go on try me</button>

</body>
</html>
```
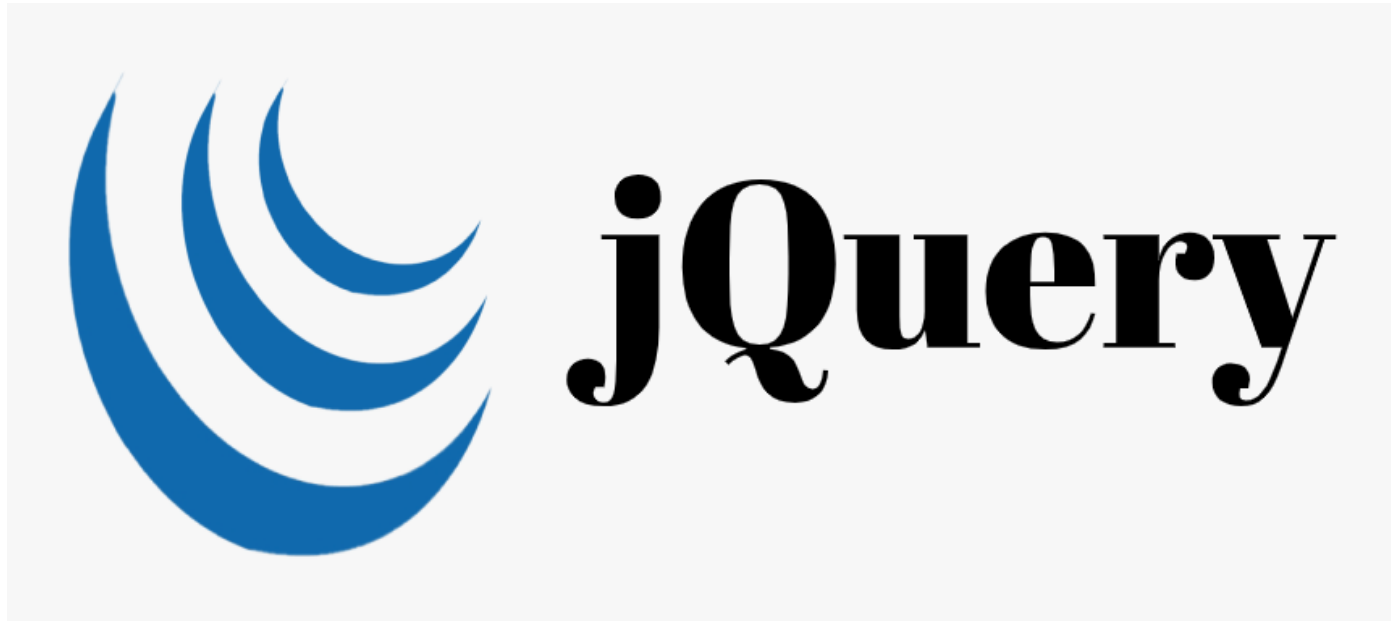
JavaScript Example Web Page

Alexander's JavaScript Demo

Don't press the button!

[Go on try me]

JavaScript Example Web Page

Alexander's JavaScript Demo

I am so disappointed in you :(

Key ideas

- Javascript allows us make functions that can add interactivity to a websites and create Web Apps

- JavaScript libraries e.g. jQuery

- Including JavaScript functions in a separate .js file is good practice and what you should do in your assessments

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

PHP

PHP

What is PHP?

- PHP is a self-referentially acronym for Hypertext Preprocessor

- PHP code is executed on the server, and the result is returned to the browser as plain HTML

- It runs on various platforms (Windows, Linux, Mac OS X, etc.)

- It is compatible with almost all servers in use today

- Supports a wide range of databases

PHP

What Can PHP Do?

- It can add, delete, or otherwise modify data in a database

- It can be used to control user-access

- It can read, write, delete, and create files on a server

- And lots more!

PHP is Server Side

- PHP code is executed on the server

- The Client can't prosses PHP code

- As PHP code has access to all features of the server
  - It can perform complex calculations
  - Interface with a database hosted on the server

Server side

- Because the interpreting software is on the server, the php files have to be transferred to the server using ftp to work

- You will have access to a server and ftp software e.g. Filezilla

- Hopefully any problems you may have had in week one have been resolved but please let me know in the discussion if they have not been yet

PHP Code

<?php

. . . .

?>

PHP code should be saved to .php files

PHP Example Code

```
<!DOCTYPE html>

<html>
<head>
   <meta charset="UTF-8">
   <title>Web Page with php, ow my!</title>
</head>

<body>

<h1>I am a HTML Heading</h1>
<p>I am a HTML paragraph.</p>

<?php
echo "I am a PHP message Hello from the server! Plese enter your details below";
?>


</body>

</html>
```

PHP Example Web Page Hosted on Server

I am a HTML Heading

I am a HTML paragraph.

I am a PHP message Hello from the server!

PHP Example Web Page <u>NOT on Server</u>

I am a HTML Heading

I am a HTML paragraph.

PHP Form Web Page Hosted on The Server

PHP Form Validation Example

Name: [_____]

E-mail: [_____ 🔓]

Website: [_____]

Comment: [   ]

Gender: ○ Female ○ Male ○ Other

[Submit]

Your Input:

PHP Form Web Page <u>NOT on Server</u>

PHP Form Validation Example

"> Name: [   ]

E-mail: [   ]

Website: [   ]

Comment: [   ]

Gender: ○ Female ○ Male ○ Other

[Submit]

Your Input:"; echo $name; echo "
"; echo $email; echo "
"; echo $website; echo "
"; echo $comment; echo "
"; echo $gender; ?>

Operator	Name	Example	Result
+	Addition	$x + $y	Sum of $x and $y
-	Subtraction	$x - $y	Difference of $x and $y
*	Multiplication	$x * $y	Product of $x and $y
/	Division	$x / $y	Quotient of $x and $y
%	Modulus	$x % $y	Remainder of $x divided by $y
**	Exponentiation	$x ** $y	Result of raising $x to the $y'th power

PHP String Operators

```php
<?php
echo "RPi" . " Zero W";  // join few text strings
echo "<br/>";

$pin = "7";
echo "Pin number is " . $pin . " GPIO";
// join two text strings and variable (text string)
echo "<br/>";

$val = "1";
echo "Pin number and value " . $pin . " " . $val;
// join a text string and two variables (text strings ) - also need to add a space character
```

PHP if...else Statements

```php
if (condition) {
  code to be executed if this condition is true;
} elseif (condition) {
  // code to be executed if first condition is false and this condition is true;
} else {
  // code to be executed if all conditions are false;
}
```

PHP Loops

- In PHP, we have the following loop types:

- while - loops through a block of code as long as the specified condition is true

- do...while - loops through a block of code once, and then repeats the loop as long as the specified condition is true

- for - loops through a block of code a specified number of times

- foreach - loops through a block of code for each element in an array

PHP Get and Post Methods

echo $_GET["name"];   This will retrieve the desired name data from the server

echo $_POST["name"]; This will post the desired name data from the server

PHP Interesting Post Method Facts

The data sent to the server with the POST method is stored in the body of the HTTP request

The information is passed to the web server will not be visible in the URL

POST requests are never cached and do not remain in the browser history

POST requests cannot be bookmarked

POST requests have no restrictions on data length
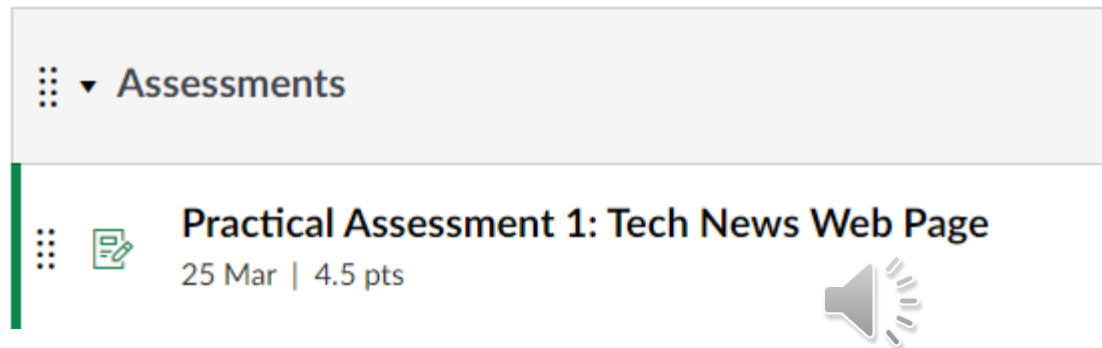
Practical Assessment 1

Abertay

Practical Assessment 1

Due: 25 March at 12:00 (noon) GMT

Weighting: 25%

Assessment Brief Available: