HEP 504
Web Development

Abertay

Introduction

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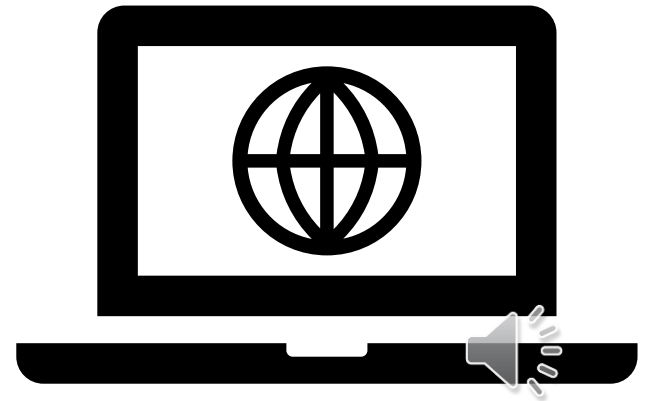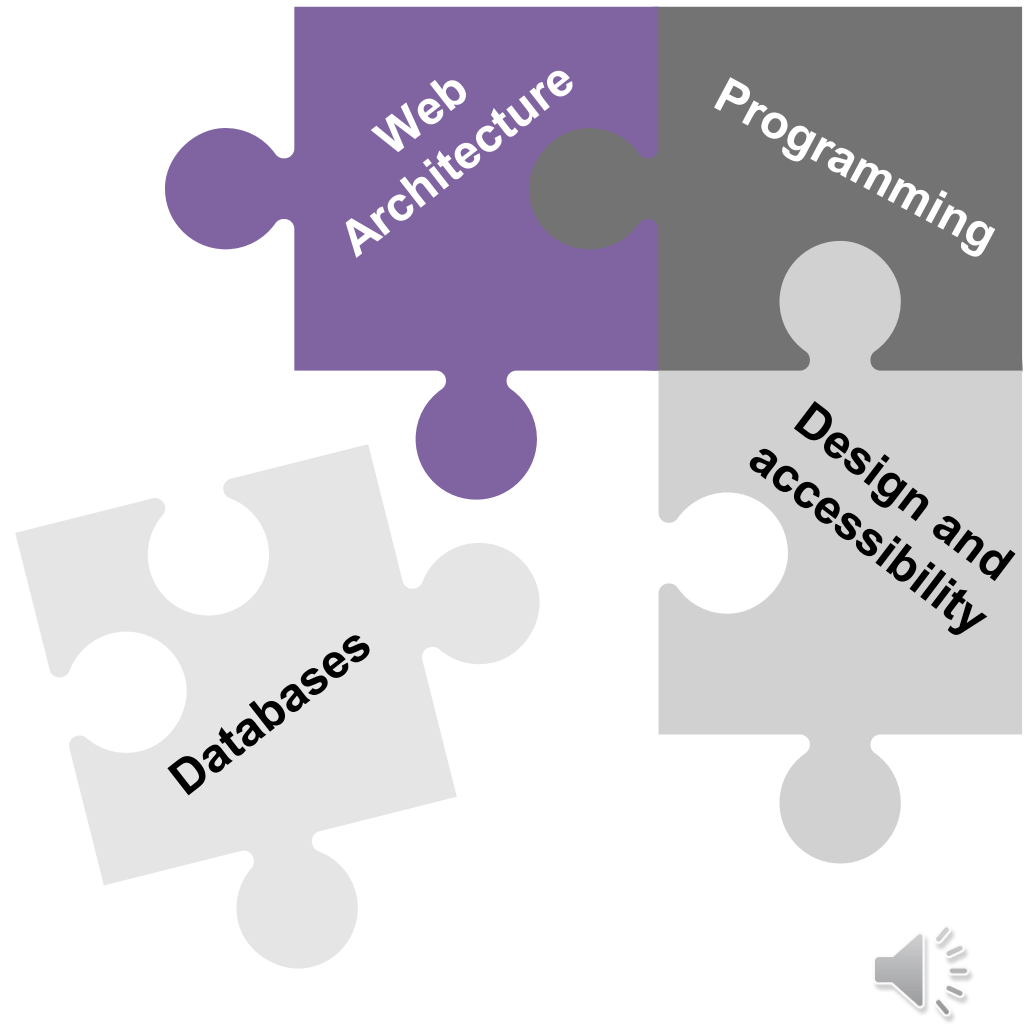Module Q&A
Weekly Discussions

This week's lecture

1. Web Definitions
2. HTML
3. CSS

Before we begin

Web Architecture

Programming
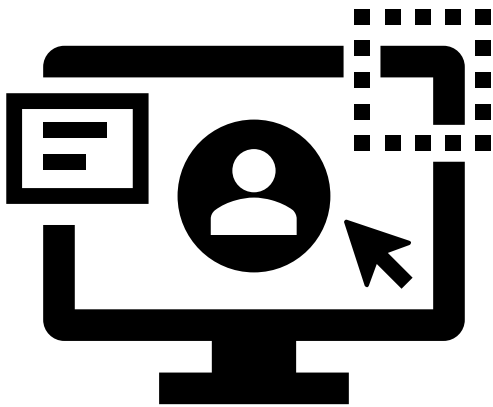
Databases

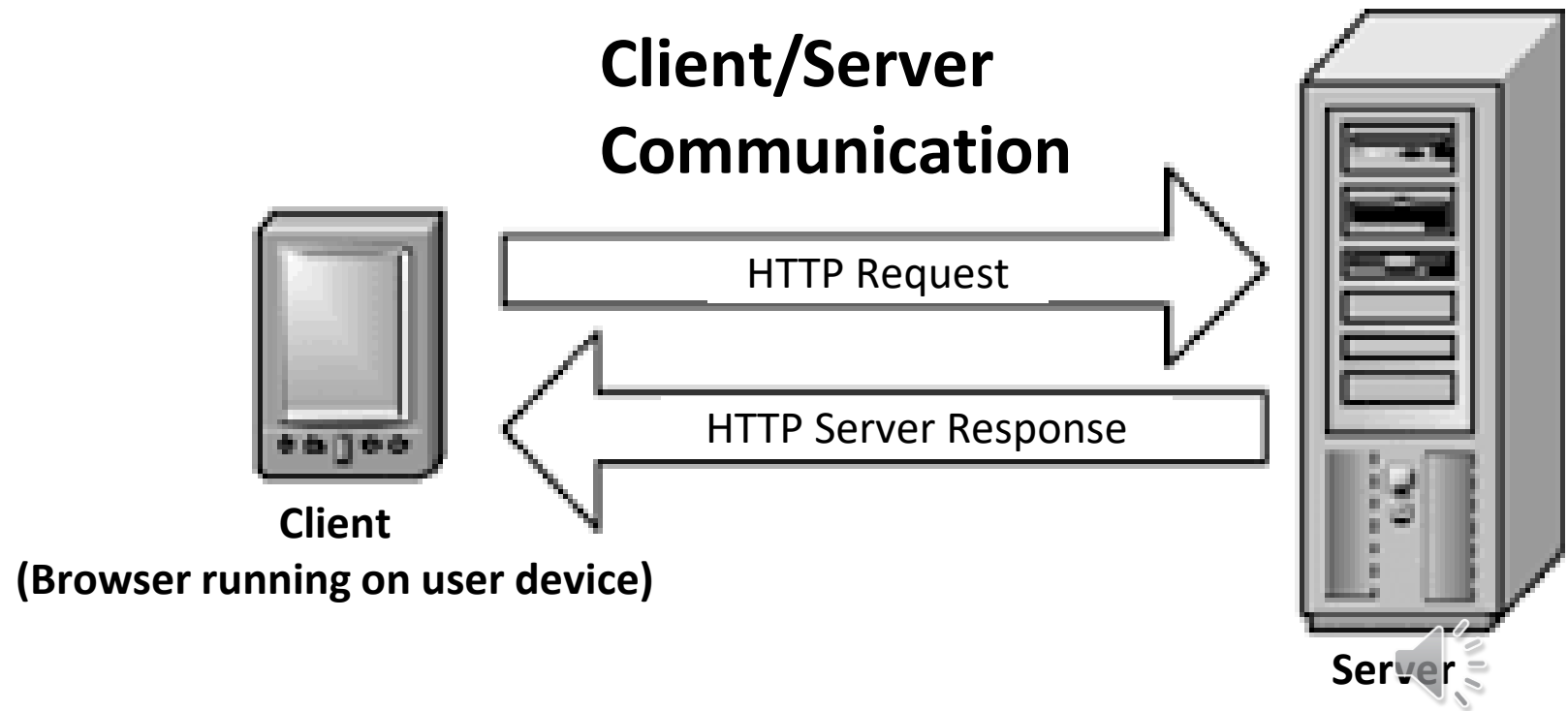Design and accessibility

Web Definitions

The Internet and the World Wide Web

The Internet = Global network of computers and devices

The World Wide Web = A collection of information and resources, accessible via the Internet using web browsers

Clients and Servers

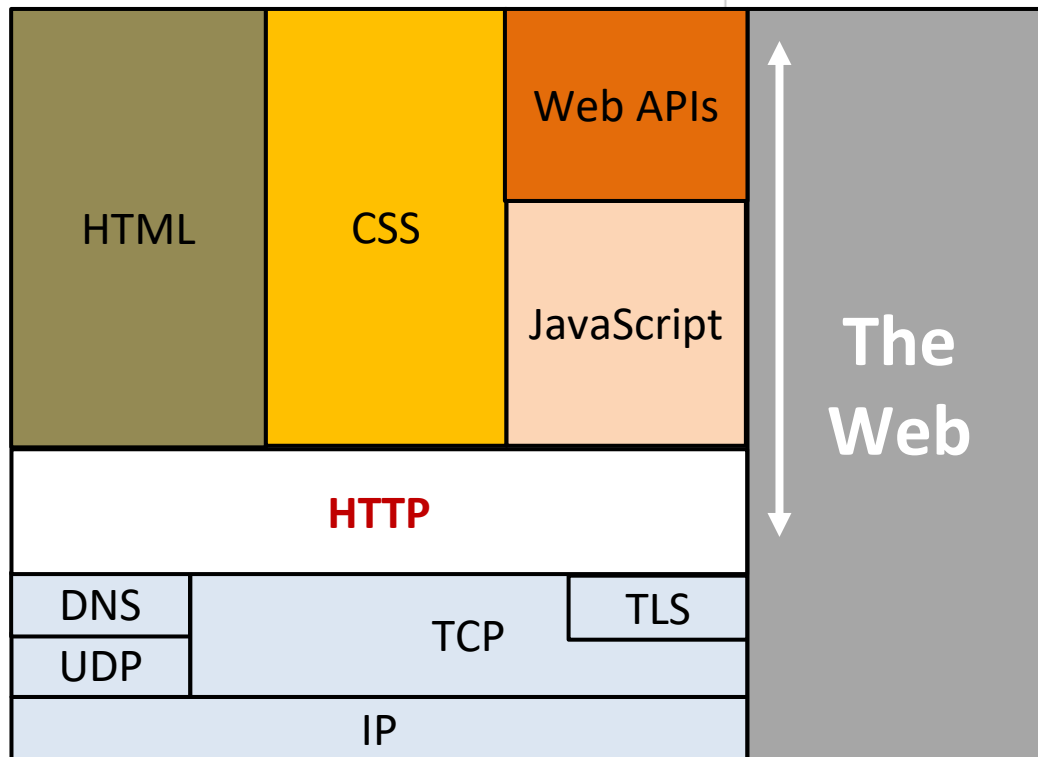**Client/Server Communication**

HTTP Request

HTTP Server Response

Client
(Browser running on user device)

Server

HTTP

- Stands for Hypertext Transfer Protocol

- Developed in the early 1990s

- Continuously extended and updated

HTTP

Hyper Text Transport Protocol

HTML	CSS	Web APIs	The Web
		JavaScript	
HTTP			
DNS	TCP	TLS	
UDP			
IP			

URL - Uniform Resource Locator

https://www.abertay.ac.uk/about/

URL - Uniform Resource Locator

1
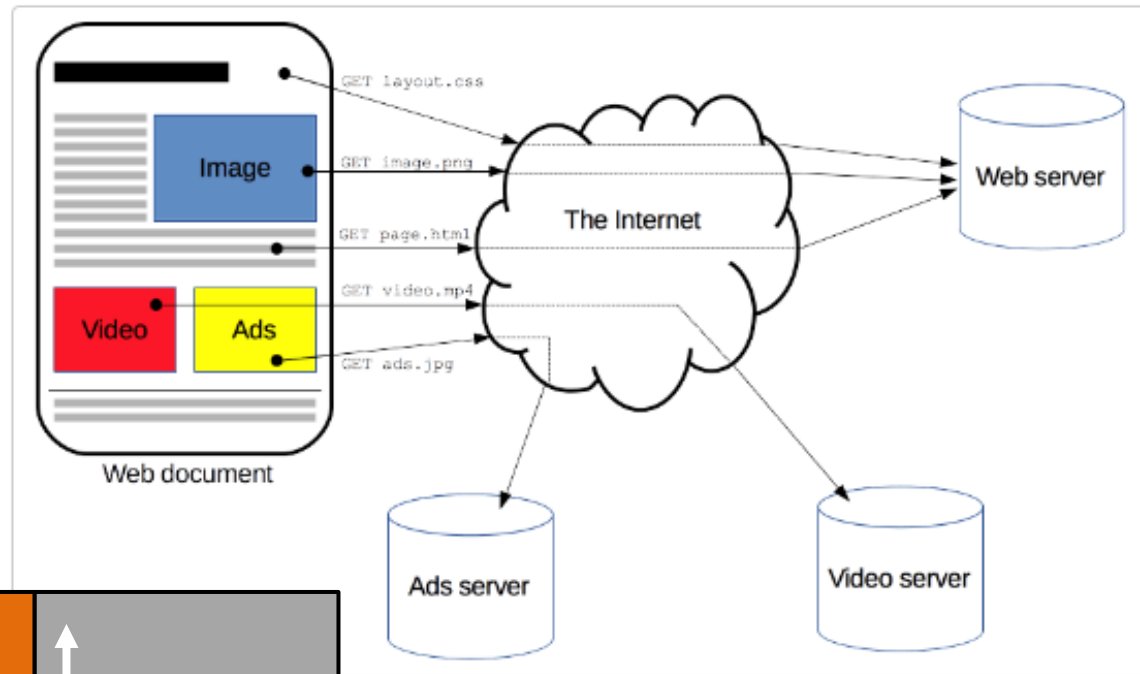
https://www.abertay.ac.uk/about/

1. The Protocol

URL - Uniform Resource Locator

[1] [2]
https://www.abertay.ac.uk/about/

1. The Protocol
2. Subdomain

URL - Uniform Resource Locator

1	2	3

https://www.abertay.ac.uk/about/

1. The Protocol
2. Subdomain
3. Domain Name

URL - Uniform Resource Locator

1	2	3	4

https://www.abertay.ac.uk/about/

1. The Protocol
2. Subdomain
3. Domain Name
4. Domain Extension

URL - Uniform Resource Locator

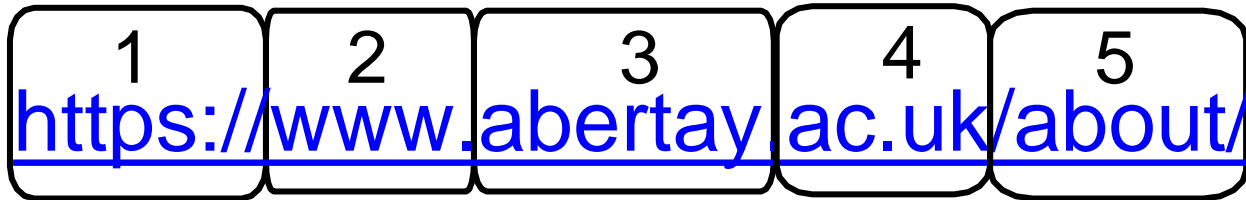| 1	2	3	4	5
https://	www.	abertay	.ac.uk	/about/
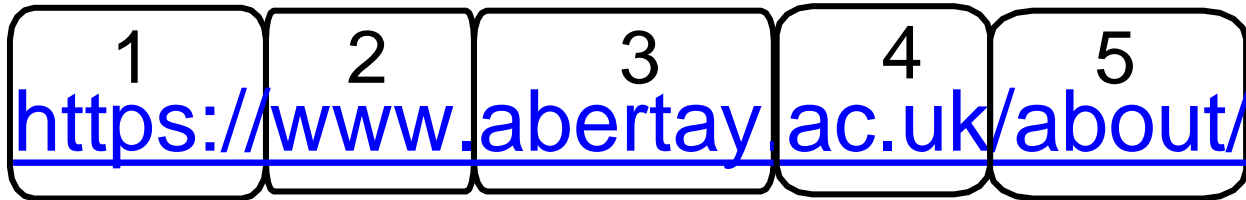
1. The Protocol
2. Subdomain
3. Domain Name
4. Domain Extension
5. Resource Path

URL - Uniform Resource Locator

1	2	3	4	5
https://	www.	abertay.	ac.uk	/about/

1. The Protocol
2. Subdomain
3. Domain Name
4. Domain Extension
5. Resource Path
6. Other Parameters

Other Protocols

http://	Hypertext Transfer Protocol used to make request for pages from web servers then send them back to the browser that made the request
https://	Secure Hypertext Transfer Protocol encrypts the data sent between the browser and the web server using a digital certificate
ftp://	File Transfer Protocols still commonly used to transfer large files across the internet and upload source files to a web server
file://	Used to indicate that a file is on the local hard disk or a shared directory on a LAN

https

Adding SSL/TLS protocol to HTTP

The main motivation is to secure communication between two points (client and server).

More information on cryptography and session keys can be found through the link below
http://searchsecurity.techtarget.com/definition/session-key

HTTP Status Codes

When a response is sent back this has 2 parts
- Header, that includes a status code
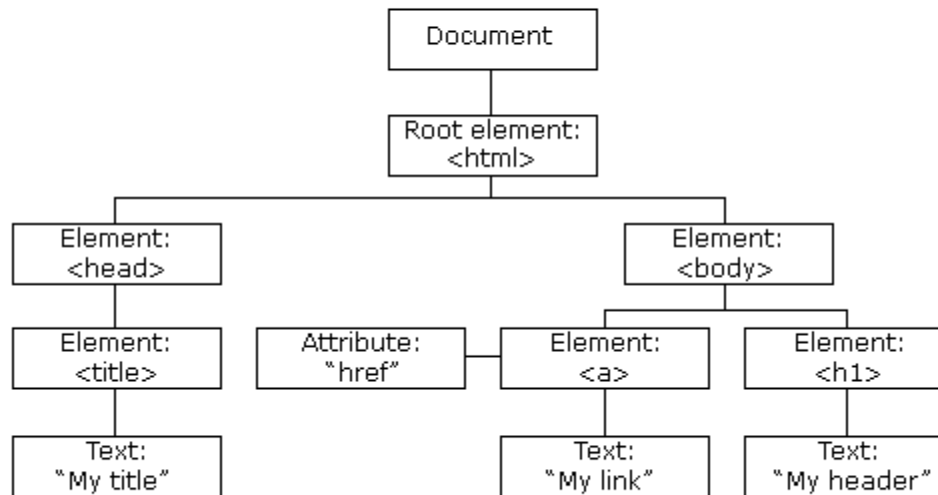- Payload – data returned to client

Status Codes
- 1xxx Information messages
- 2xxx Successful (e.g. 200 OK)
- 3xx redirection
- 4xx Client Error (e.g. 401 Bad Request)
- 5xx Server Error (e.g. 500 Internal Error)

What is the DOM?

When a web page is loaded, the browser creates a **D**ocument **O**bject **M**odel of the page.

The HTML DOM Tree of Objects

HTML

Intro to HTML

HTML stands for Hypertext Markup Language.

HTML documents are made up of elements.

These elements are represented by tags
      (<html>, <body>, <p>)

Tags can also contain additional information about the element
      (<a href="...">, <img src="w3schools.jpg" >)

HTML - tags

HTML5 : TABLE OF ELEMENTS

\<head> tags a closer look

```
<!DOCTYPE html>
<html>
<head>
<style>
body {
    background-color: lightblue;
}
</style>
</head>
```

Head Section

Ok so what if I want a web page header?

```
<!DOCTYPE html>
<html>
<head>
<style>
body {
    background-color: lightblue;
}
</style>
</head>

<body>

<h1>My Web Page Needs a Header</h1>
<p>This is a paragraph.</p>

</body>

</html>
```

Web Page Header

CSS

CSS

CSS stands for Cascading Style Sheets.

Define the presentation of a web documents.

Enables separation of content from design

CSS rules are applied to HTML elements through selectors (by tag, class, or ID).

CSS Selector

Selector	Example	Example description	CSS
.class	.intro	Selects all elements with class="intro"	1
#id	#firstname	Selects the element with id="firstname"	1
*	*	Selects all elements	2
element	p	Selects all <p> elements	1

http://www.w3schools.com/cssref/css_selectors.asp

CSS

```
<!DOCTYPE html>
<html>
<head>
<style>

</style>
</head>

<body>

<h1>My Web Page Needs a Header</h1>
<p>This is a paragraph.</p>

</body>

</html>
```

My Web Page Needs a Header

This is a paragraph.

CSS

```html
<!DOCTYPE html>
<html>
<head>
<style>
body {
  background-color: lightblue;
}
h1 {
  color: white;
  text-align: center;
}
p {
  color: darkblue;
  font-family: verdana;
  font-size: 20px;
}

</style>
</head>

<body>

<h1>My Web Page Needs a Header</h1>
<p>This is a paragraph.</p>

</body>

</html>
```

My Web Page Needs a Header

This is a paragraph.

CSS properties

CSS Property Groups

- Color
- Background and Borders
- Basic Box
- Flexible Box
- Text
- Text Decoration
- Fonts
- Writing Modes

- Table
- Lists and Counters
- Animation
- Transform
- Transition
- Basic User Interface
- Multi-column

- Paged Media
- Generated Content
- Filter Effects
- Image/Replaced Content
- Masking
- Speech
- Marquee

The "CSS" column indicates in which CSS version the property is defined (CSS1, CSS2, or CSS3).

Color Properties

Property	Description	CSS
color	Sets the color of text	1
opacity	Sets the opacity level for an element	3

http://www.w3schools.com/cssref/default.asp

Separating Style
Form Content

- CSS can be separated from HTML files
- Create a css file that you can re-use and assign as needed

```
<!DOCTYPE html>
<html>
<head>
  <link rel="stylesheet" href="/html/styles.css">
</head>
<body>

<h2>CSS Paddining</h2>
<div> This Element has a padding of 70px.</div>

</body>
</html>
```

1. Link to the external CSS file
2. Div tag used in HTML to apply the CSS which applied style in the .CSS file

Separating Style
Form Content

There are many alternatives for linking external CSS files and you should use which ever best suites the needs of the project

Alternative CSS linking method examples

1️⃣ `<link rel="stylesheet" href="https://www.w3schools.com/html/styles.css">`

2️⃣ `<link rel="stylesheet" href="styles.css">`

1. Uses a full URL to link to a style sheet
2. Links to a style sheet located in the same folder as the current page

Independent Research

https://www.w3schools.com/