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Jobjo

Web Design and Development Workshop: Mastering the Web

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Promoting youth employment in remote areas in Jordan -(Job Jo)
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Workshop Material

- Download the code and tools for this workshop from:
  - http://staff.fit.ac.cy/com.aa/WebDesignWorkshop.zip

The Web

- The **WWW** (commonly referred as the **Web**) is a system of interlinked, hypertext documents (i.e., content) accessed via the Internet.
  - It is created to share files/documents and overcome the barrier of different file formats
  - **Hypertext** refers to text on a computer that will lead the user to other, related information on demand.
- **HyperText document** is sent or received over the network using **HyperText Transfer Protocol** (**HTTP**).

```
<!DOCTYPE html PUBLI
<html>
<!-- created 2003-12-12-->
 <head><title>XYZ</title>
 </head>
 <body>
 <p>
  voluptatem accusantium do
  totam rem aperiam eaque
 </p>
 </body>
</html>
```

The Process

- A **browser** is a software program which interprets the documents and displays it on the user's screen.
- Each document/resource needs to have an identifier in order to be accessed by others.
  - A Uniform Resource Identifier (URI) is a compact sequence of characters that identifies an abstract or physical resource.
  - The term "Uniform Resource Locator" (URL) refers to the subset of URIs that, in addition to identifying a resource by a name, it provide a means of locating the resource by describing its primary access mechanism (e.g., its network "location").

URIs and URLs

- Two pieces of information are given by a URI:
  - Name
  - Locator (URL)
- In turn two things are given by the URL:
  - The method or protocol by which to retrieve and display the document.
  - Exact location of the document.

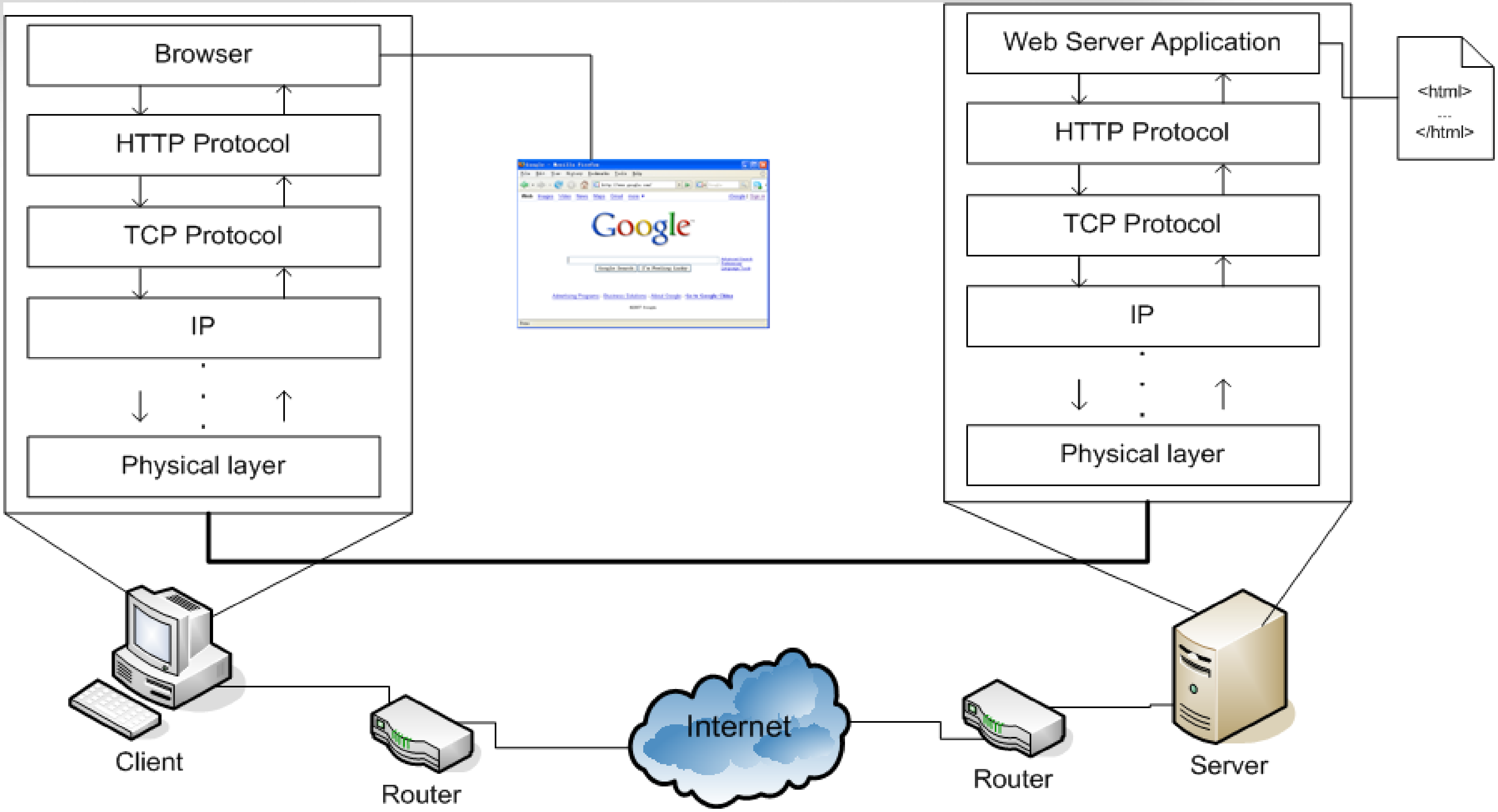
URL Example

- **http://staff.fit.ac.cy/com.aa/**
  - **http://** – specifies the protocol to transfer the information
  - **staff.fit.ac.cy** – specifies the hostname/domain name – i.e., the computer that hosts and serves the documents.
  - **com.aa/index.html** – specifies the path of a document on the computer – i.e., in this case my academic profile page.

The Languages

- **Hypertext documents (webpages, images, videos, etc)** are defined using a “markup” language called **HyperText Markup Language (HTML).**
- **The Design of Hypertext documents (i.e., webpages)** is defined using a language called **Cascading Style Sheets (CSS).**
- The Interaction of the User with **Hypertext documents (i.e., webpages)** is defined mainly using a language called **JavaScript.**

Putting it All Together



Browser

HTTP Protocol

TCP Protocol

IP

Physical layer

Google

Web Server Application

HTTP Protocol

TCP Protocol

IP

Physical layer

<html>
...
</html>

Client

Router

Internet

Router

Server

Web Content

- In its simplest form, Web Content is provided through the development of static files.
- These static files include the information that is to be presented to the user via the browser.
- Each of these static files corresponds to a so called web page.
- A collection of interlinked web pages on a server is called a web site.
- All these were achieved with the use of the Hyper Text Mark-up Language, or as it is commonly known HTML.

HTML Source Document

- HTML can be created using a simple text editor like Notepad or Notepad++.
- The file must be saved with the extension specified commonly as .html.
- A text-only document that consists of:
  1. **actual text:** the actual information/content of the webpage that is to be presented to the user.
  2. tags: A tag is an html code that is enclosed in angel brackets <>; used to layout the web page.

HTML Tag/Element

- HTML is considered to be a static language, meaning that the set of element types that it has is predefined and cannot be extended.
- Each element provides some information about the content of the document, or information about the document itself.
- Each element consists of three parts:
  - the start tag <h1>
  - the content this is my first paragraph.
  - the end tag </h1>

HTML Tag/Element Attributes

- Elements can also have attributes so as to provide additional information.
  - Attributes are added to the start tag of an element.
- In fact, each type of element has a predefined set of attributes that it can support.
- An element instance need not define all the element’s attributes as most can take default values.
- Each attribute has the following format:
  - attribute-name = “attribute-value”
- Different attributes in a tag are separated using a space.

HTML Image Element

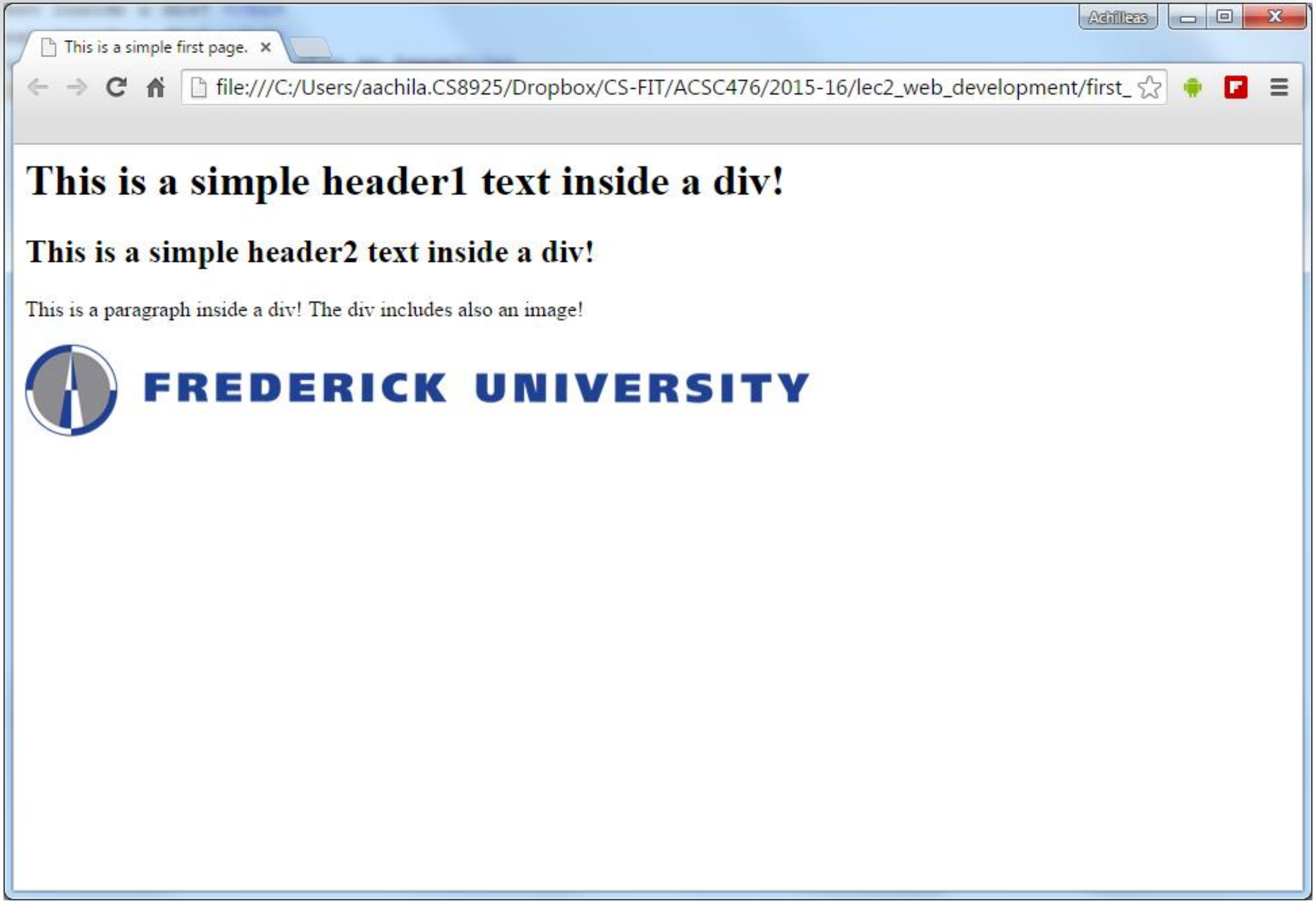
- For example, to insert an image in the document, the file location that stores the image as well as some additional information must be provided.
- <img src=”fitlogo.gif” alt=”FIT logo”/>
  - – This element instructs the browser to insert an image in the document.
  - – The file where the image is stored is indicated by the src attribute.
  - – The alt attribute defines the text that is to be shown if the image is not downloaded.

Our First HTML page/doc

```
<html>
<head> <title>This is a simple first page.</title> </head>
<body>
  <div>
  <h1> This is a simple header1 text inside a div! </h1>
  <h2> This is a simple header2 text inside a div! </h2>
  <p> This is a paragraph inside a div! The div includes an
image!</p>
  <img src="frederick-logo.png" alt="The logo of Frederick
University of Cyprus!" />
</div>
</body>
</html>
```

Note: As mentioned the alt attribute provides alternative information for an image if a user for some reason cannot view it (because of slow connection, etc).

The result

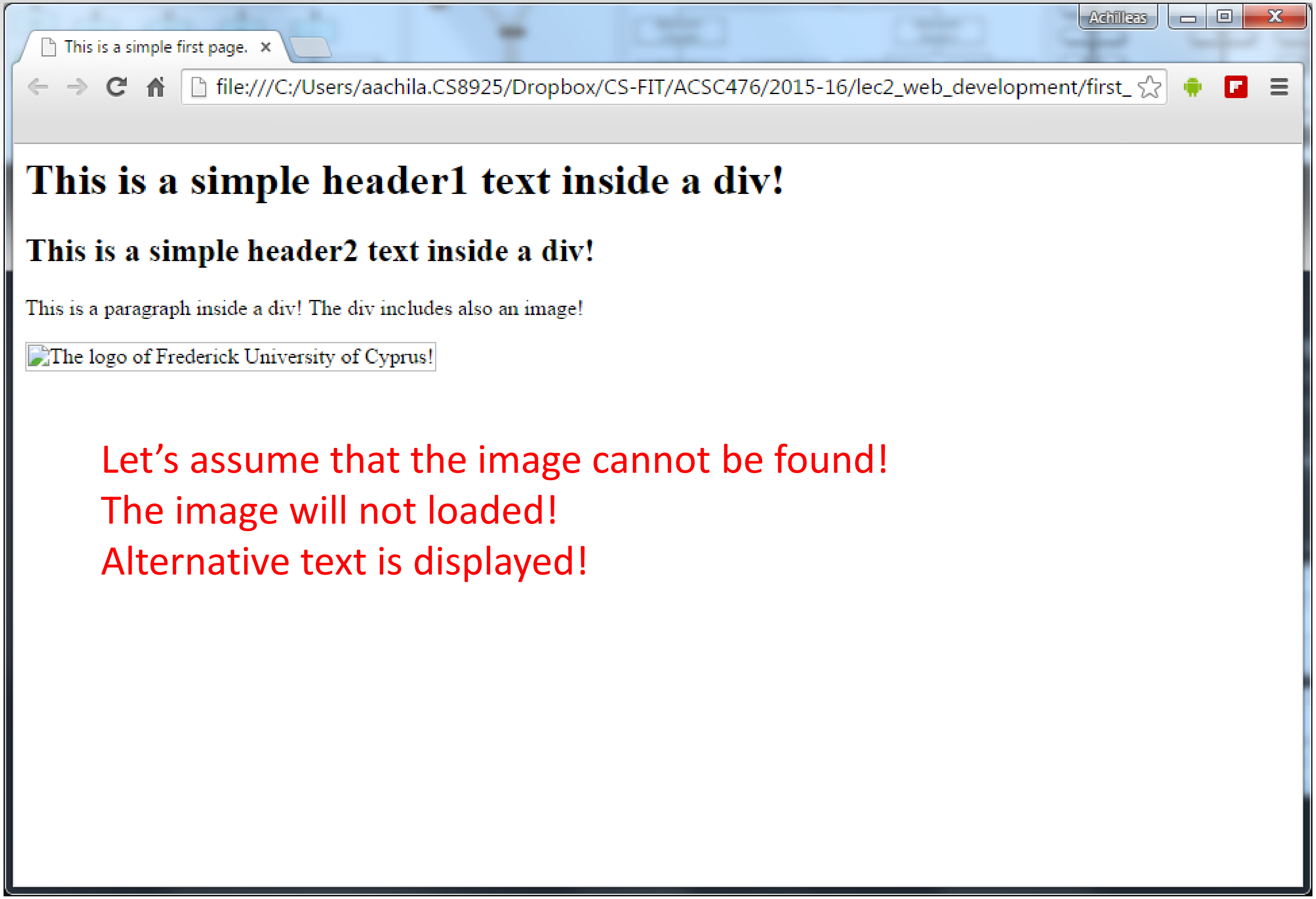

Achilleas
This is a simple first page.
file:///C:/Users/aachila.CS8925/Dropbox/CS-FIT/ACSC476/2015-16/lec2_web_development/first_
FREDERICK UNIVERSITY

This is a simple header1 text inside a div!

This is a simple header2 text inside a div!

This is a paragraph inside a div! The div includes also an image!

The result


Achilleas
This is a simple first page.
file:///C:/Users/aachila.CS8925/Dropbox/CS-FIT/ACSC476/2015-16/lec2_web_development/first_

This is a simple header1 text inside a div!

This is a simple header2 text inside a div!

This is a paragraph inside a div! The div includes also an image!

The logo of Frederick University of Cyprus!

Let’s assume that the image cannot be found!
The image will not loaded!
Alternative text is displayed!

Cascading Style Sheets (CSS)

- The Purpose of CSS: If HTML is the content and meaning

  ➡CSS helps to convey that meaning

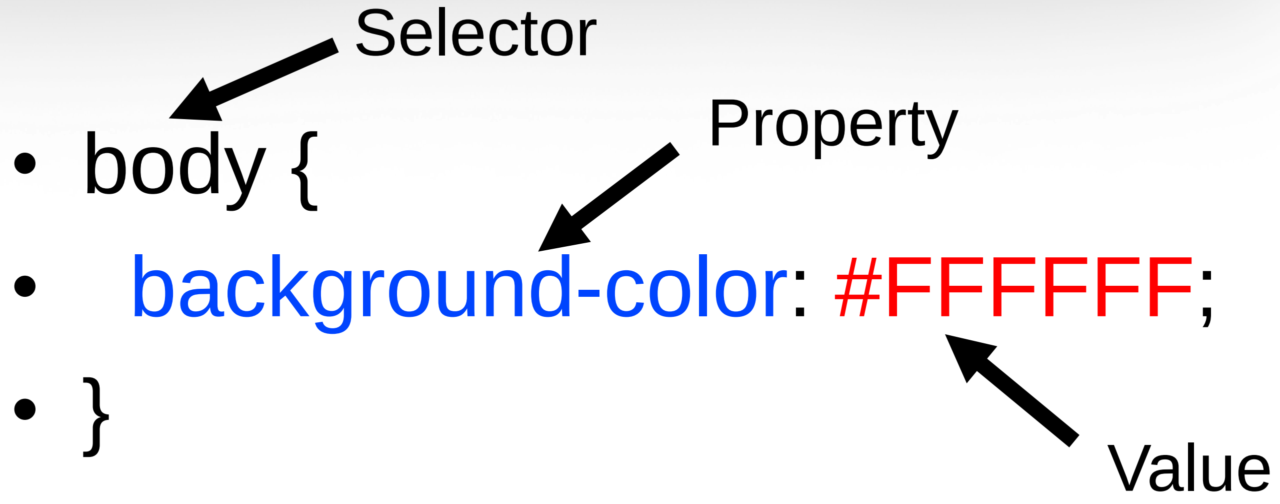
- Allows developers to separate the content from layout and design
  - Content and design inherently different in nature

  ➡ Change in content does not require change in design

CSS Zen Garden

- Site using consistent HTML content
- Differing external CSS files create dramatically different layout
- Support for multiple browsers
  - http://www.csszengarden.com
- hint: change the styles on the page

CSS Anatomy



Selector

- body {

Property

- background-color: #FFFFFF;
- }

Value

This also works:

body { background-color: #FFFFFF }

Example of hex color codes:

ColorSchemer Online Color Generator

Key Properties

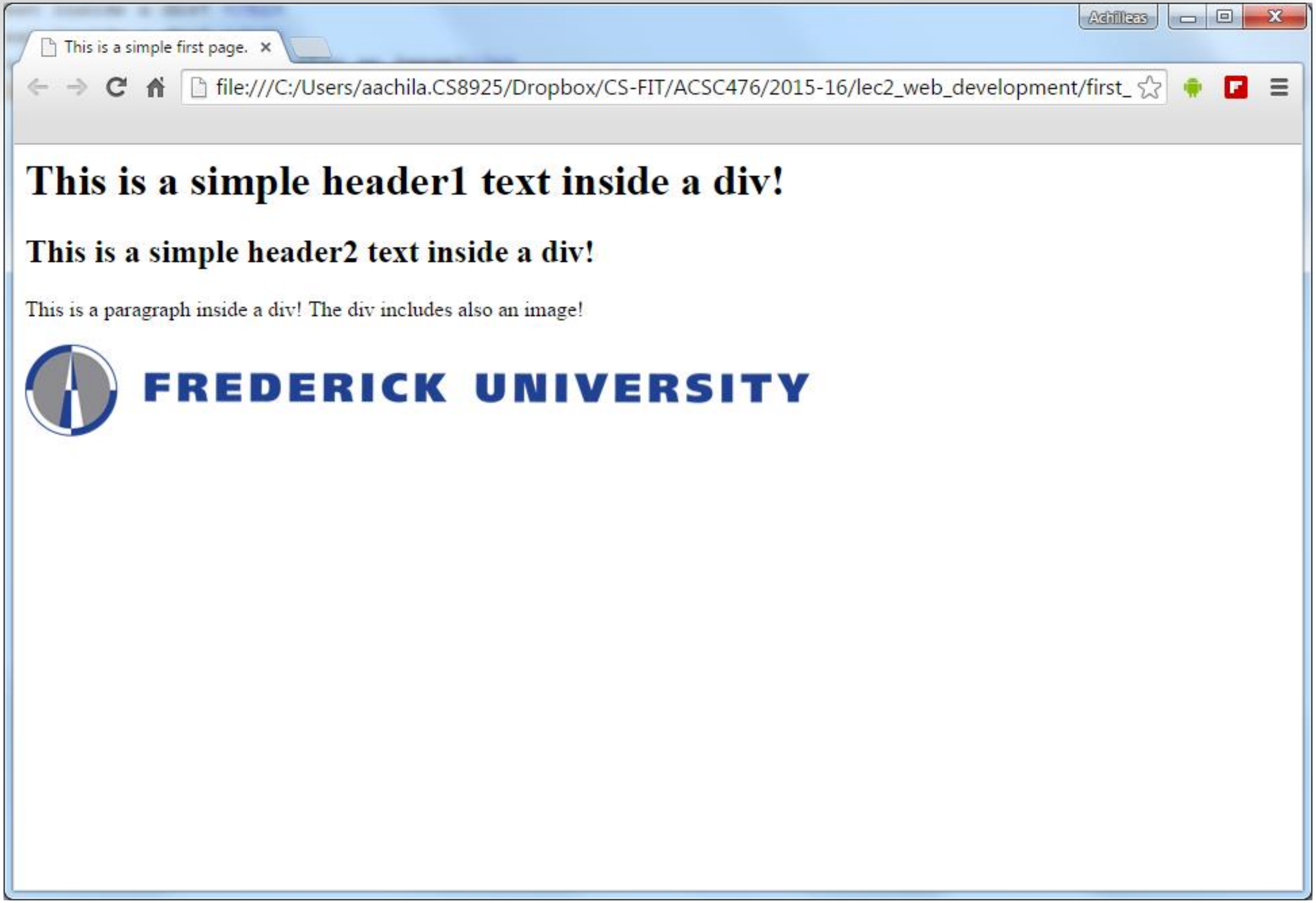
- background-color
- background-image
- color
- width
- height

- font-family
- font-size
- font-weight
- text-decoration
- text-align

Values & Units

- Values are typically keywords
  - ex: colors: red, blue
  - ex: text alignment: left, right, center
- Values, especially for layout
  - Pixels: 15px
  - Points: 12pt
  - Percentages- relative to size of parent: 50%

Remember our first page


Achilleas
This is a simple first page.
file:///C:/Users/aachila.CS8925/Dropbox/CS-FIT/ACSC476/2015-16/lec2_web_development/first_

This is a simple header1 text inside a div!

This is a simple header2 text inside a div!

This is a paragraph inside a div! The div includes also an image!

Remember our HTML

```
<html>
<head> <title>This is a simple first page.</title>
<link rel="stylesheet" href="styles.css">
</head>
<body>
  <div>
  <h1> This is a simple header1 text inside a div! </h1>
  <h2> This is a simple header2 text inside a div! </h2>
  <p> This is a paragraph inside a div! The div includes an image!</p>
  <img src="frederick-logo.png" alt="The logo of Frederick University of Cyprus!" />
</div>
</body>
</html>
```

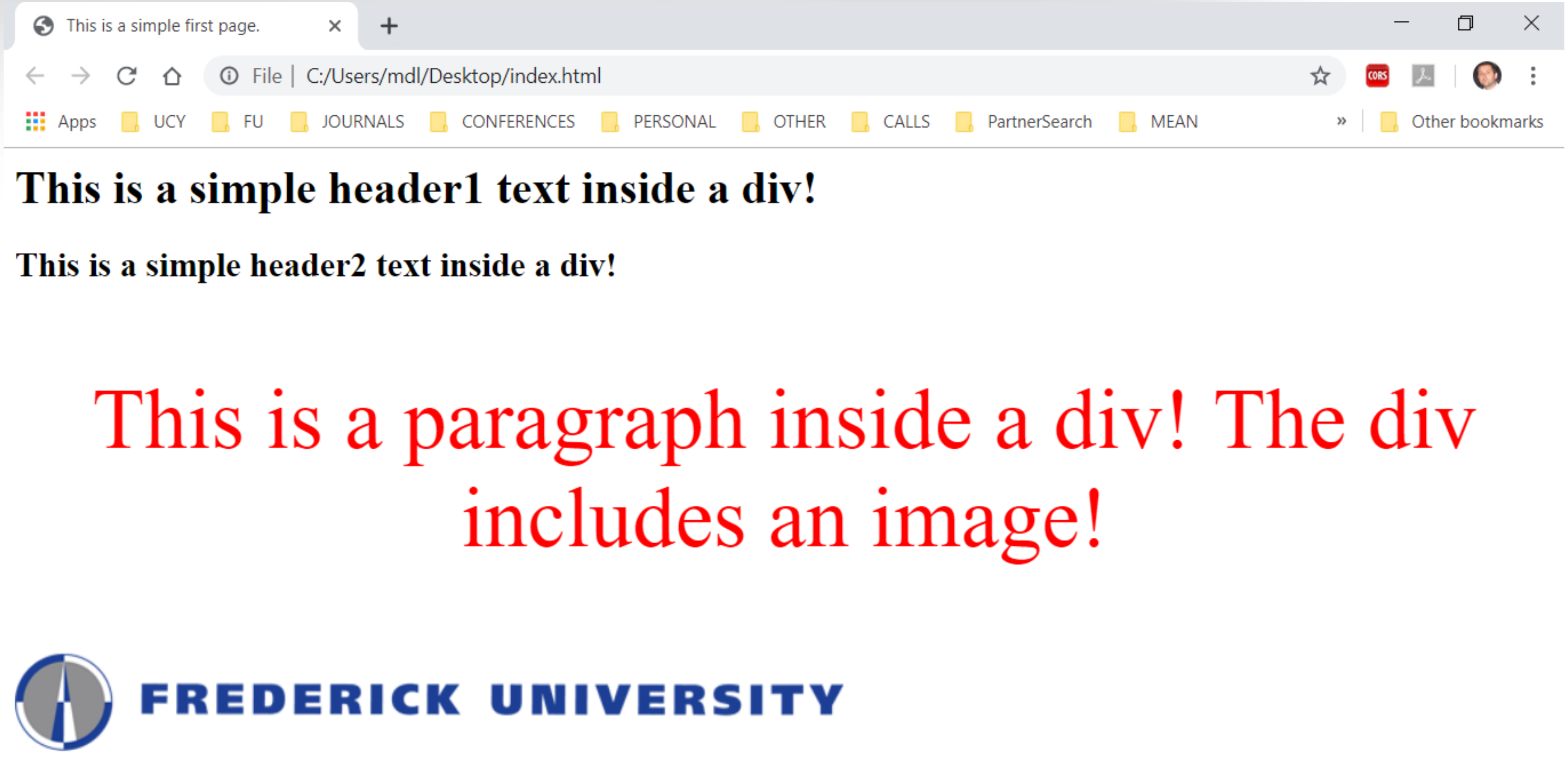
CSS Stylesheet – Generic selector

- Open a new tab in Notepad++.
- Type the following:

```
p {
    color: red;
    text-align: center;
    font-size: 60px;
}
```

- Save as styles.css

The Result



This is a simple header1 text inside a div!

This is a simple header2 text inside a div!

This is a paragraph inside a div! The div includes an image!

Change the HTML – ID selector

```
<html>
<head> <title>This is a simple first page.</title>
<link rel="stylesheet" href="styles.css">
</head>
<body>
  <div id=“blue”>
  <h1> This is a simple header1 text inside a div! </h1>
  <h2> This is a simple header2 text inside a div! </h2>
  <p> This is a paragraph inside a div! The div includes an image!</p>
  <img src="frederick-logo.png" alt="The logo of Frederick University of Cyprus!" />
</div>
<div id=“black”>
 <p> This is a paragraph inside another div! </p>
</div>
</body>
</html>
```

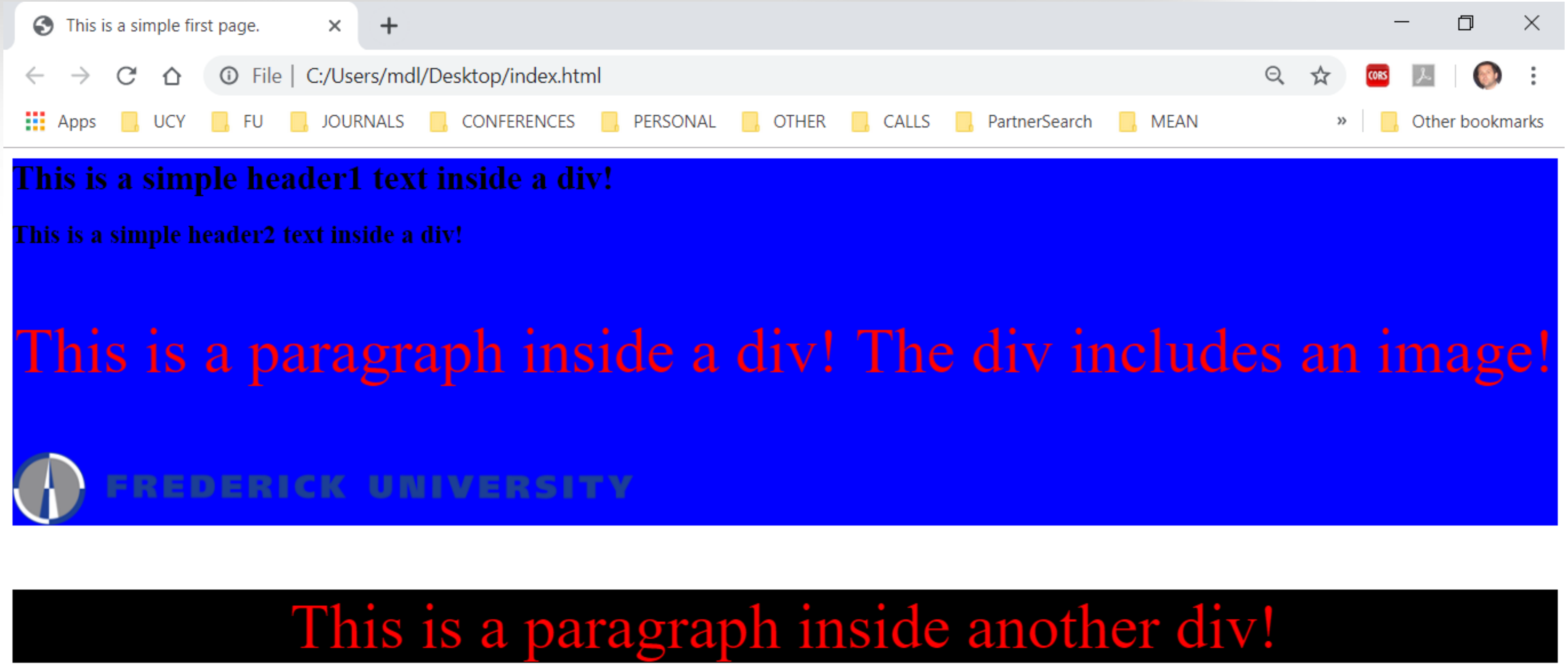
Change CSS Stylesheet – ID selector

- Add the following to styles.css:

```
p {
    color: red;
    text-align: center;
    font-size: 60px;
}
div#blue {
     background-color: blue;
}
div#black {
     background-color: black;
}
```

- Save the file.

The Result



This is a simple header1 text inside a div!

This is a simple header2 text inside a div!

This is a paragraph inside a div! The div includes an image!

This is a paragraph inside another div!

Change the HTML – Class selector

```
<html>
<head> <title>This is a simple first page.</title>
<link rel="stylesheet" href="styles.css">
</head>
<body>
  <div id=“blue” class="center">
  <h1> This is a simple header1 text inside a div! </h1>
  <h2> This is a simple header2 text inside a div! </h2>
  <p> This is a paragraph inside a div! The div includes an image!</p>
  <img src="frederick-logo.png" alt="The logo of Frederick University of Cyprus!" />
</div>
<div id=“black” class="center">
 <p> This is a paragraph inside another div! </p>
</div>
</body>
</html>
```

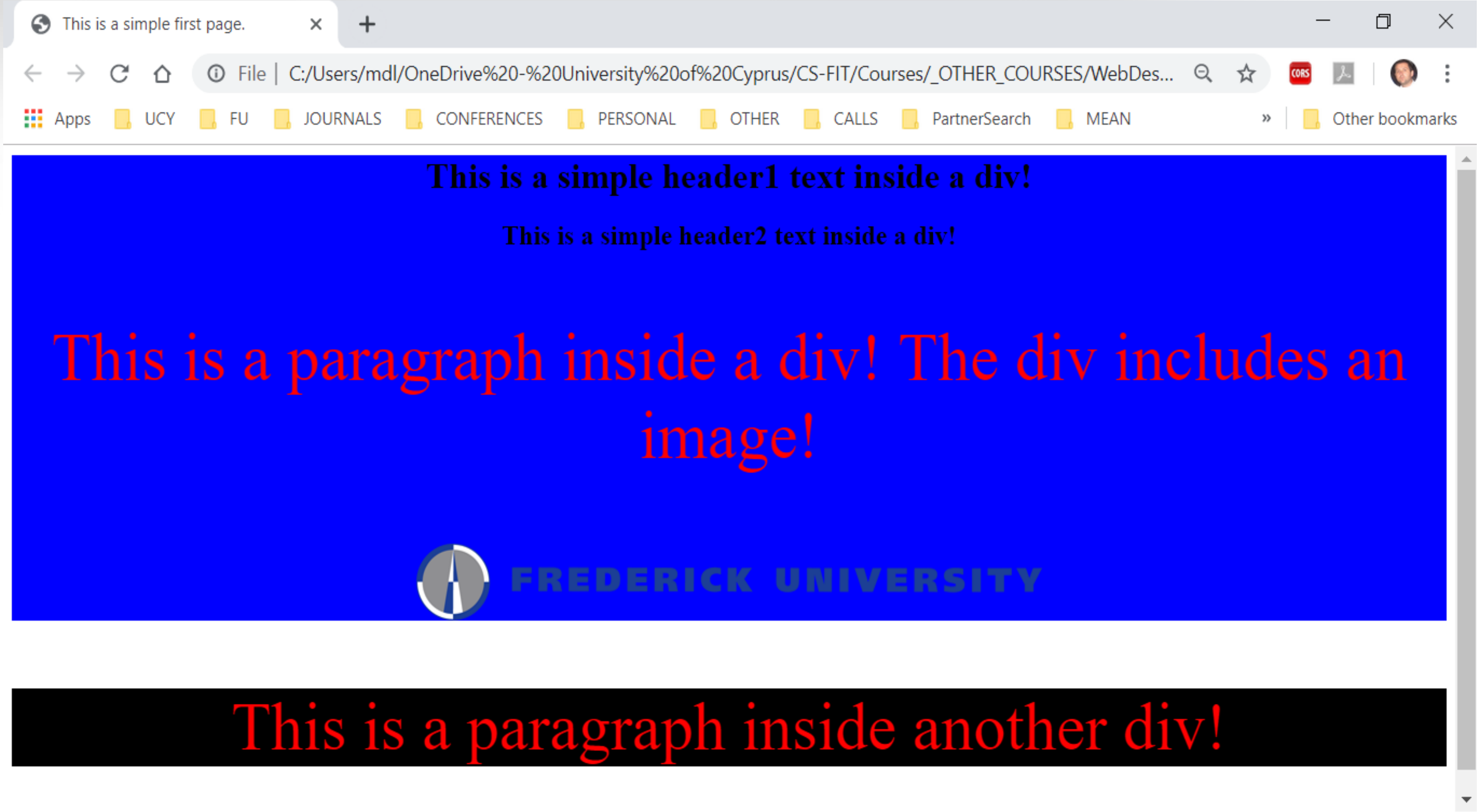
Change CSS Stylesheet–Class selector

- Add the following to styles.css:

```
p {
    color: red;
    text-align: center;
    font-size: 60px;
}
div#blue {
     background-color: blue;
}
div#black {
     background-color: black;
}
.center {
    text-align: center;
}
```

- Save the file.

The Result


This is a simple first page.
File | C:/Users/mdl/OneDrive%20-%20University%20of%20Cyprus/CS-FIT/Courses/_OTHER_COURSES/WebDes...
Apps
UCY
FU
JOURNALS
CONFERENCES
PERSONAL
OTHER
CALLS
PartnerSearch
MEAN
Other bookmarks

This is a simple header1 text inside a div!

This is a simple header2 text inside a div!

This is a paragraph inside a div! The div includes an image!

This is a paragraph inside another div!

JavaScript

- When considering client-side support, of most interest is the ability to provide *programmatic control in/over web content*.
- The technology that has dominated client side programming is ***JavaScript***.
- JavaScript was introduced by Netscape in 1995 and is supported by all popular web browsers including Chrome, Internet Explorer and Mozilla.
- It has the main characteristics of a scripting language.
  - This makes it relatively simple for use even by developers with no computer science background.

Dynamic HTML (DHTML)

- Manipulating the web page's structure is essential for creating a highly responsive UI
- Two main approaches
  - Manipulate page via JavaScript (as we learned in the previous lectures)
  - Manipulate page using JavaScript + with the help of a library (e.g., jQuery)

What is jQuery?

- jQuery is a lightweight, "write less, do more", JavaScript library.
- The purpose of jQuery is to make it much easier to use JavaScript on your website.
- jQuery takes a lot of common tasks that require many lines of JavaScript code to accomplish, and wraps them into methods that you can call with a single line of code.
- jQuery also simplifies a lot of the complicated things from JavaScript, like AJAX calls and DOM manipulation.

Reference jQuery

- The jQuery library is a single JavaScript file, and you reference it with the HTML <script> tag (notice that the <script> tag should be inside the <head> section):

```
<head>
<script src="jquery-3.3.1.min.js"></script>
……
</head>
```

- If you don't want to download and host jQuery yourself, you can include it from a CDN (Content Delivery Network).
  - Both Google and Microsoft host jQuery.
  - To use jQuery from Google or Microsoft, use one of the following:

```
<head>
<script src="https://ajax.googleapis.com/ajax/libs/jquery/3
.3.1/jquery.min.js"></script>
</head>
```

jQuery Syntax

- The jQuery syntax is tailor-made for selecting HTML elements and performing some action on the element(s).
- Basic syntax is: $(selector).action()
  - A `$` sign to define/access jQuery
  - A `(selector)` to "query (or find)" HTML elements
  - A `jQuery action()` to be performed on the element(s)

jQuery Syntax - Examples

- `$(this).hide()`
  - hides the current element.
- `$("p").hide()`
  - hides all <p> elements.
- `$(".test").hide()`
  - hides all elements with **class="test"**.
- `$("#test").hide()`
  - hides the element with **id="test"**.

The #id Selector

- The jQuery #id selector uses the id attribute of an HTML tag to find the specific element.
- An id should be unique within a page, so you should use the #id selector when you want to find a single, unique element.
- To find an element with a specific id, write a hash character, followed by the id of the HTML element:

```
    $("#test")
```

- **Example:** When a user clicks on a button, the element with id="test" will be hidden:
-
  ```
  $(document).ready(function(){
      $("button").click(function(){
          $("#test").hide();
      });
  });
  ```

The .class Selector

- The jQuery class selector finds elements with a specific class.
- To find elements with a specific class, write a period character, followed by the name of the class:

```
$(".test")
```

- **Example:** When a user clicks on a button, the elements with class="test" will be hidden:

```
$(document).ready(function(){
    $("button").click(function(){
        $(".test").hide();
    });
});
```

Change the HTML – add JavaScript

```
<html>
<head> <title>This is a simple first page.</title>
<link rel="stylesheet" href="styles.css">
<script src= "jquery-3.3.1.min.js"> </script>
<script src= “myapp.js"> </script>
</head>
<body>
  <div id=“blue” class="center">
  <h1> This is a simple header1 text inside a div! </h1>
  <h2> This is a simple header2 text inside a div! </h2>
  <p> This is a paragraph inside a div! The div includes an image!</p>
  <img src="frederick-logo.png" alt="The logo of Frederick University of Cyprus!" />
</div>
<div id=“black” class="center">
 <p> This is a paragraph inside another div! </p>
</div>
<div id=“new”></div>
<input type="button" id="myButton" value="Change stuff!"
onclick=“changeStuff()">
</body>
</html>
```

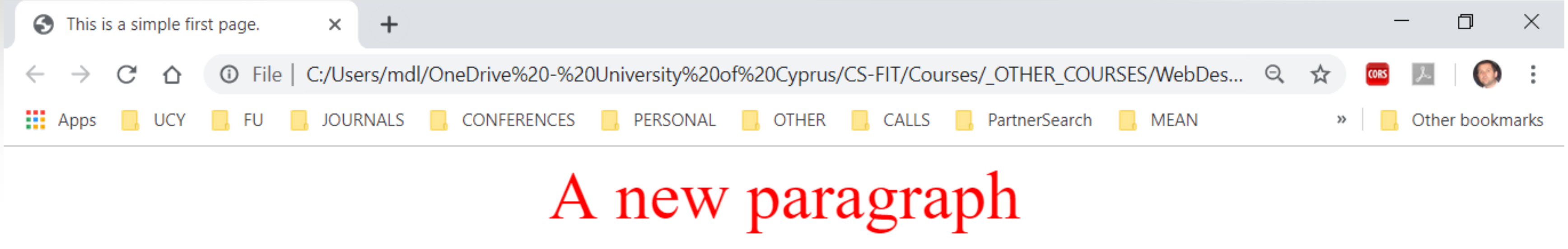
JavaScript – myapp.js

- **In Notepad++ open a new tab and add:**

```
function changeStuff() {
      $('#new').append('<p>A new paragraph</p>');
      $('.center').hide();
      $('#myButton').hide();
}
```

- **Save the file as myapp.js**

The result



This is a simple first page.
File | C:/Users/mdl/OneDrive%20-%20University%20of%20Cyprus/CS-FIT/Courses/_OTHER_COURSES/WebDes...
Apps
UCY
FU
JOURNALS
CONFERENCES
PERSONAL
OTHER
CALLS
PartnerSearch
MEAN
Other bookmarks

A new paragraph

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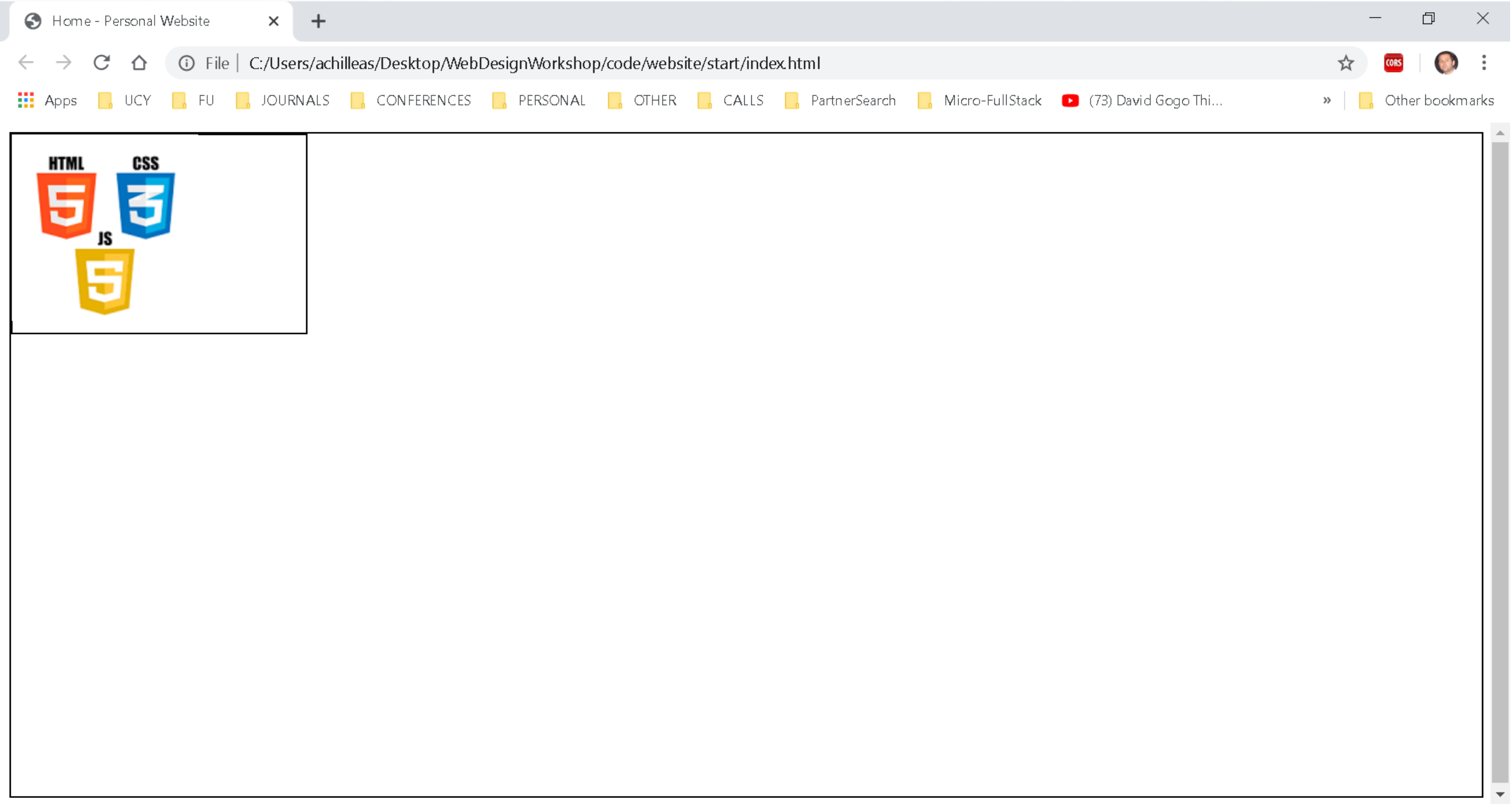
- **Part 2**

Exercise

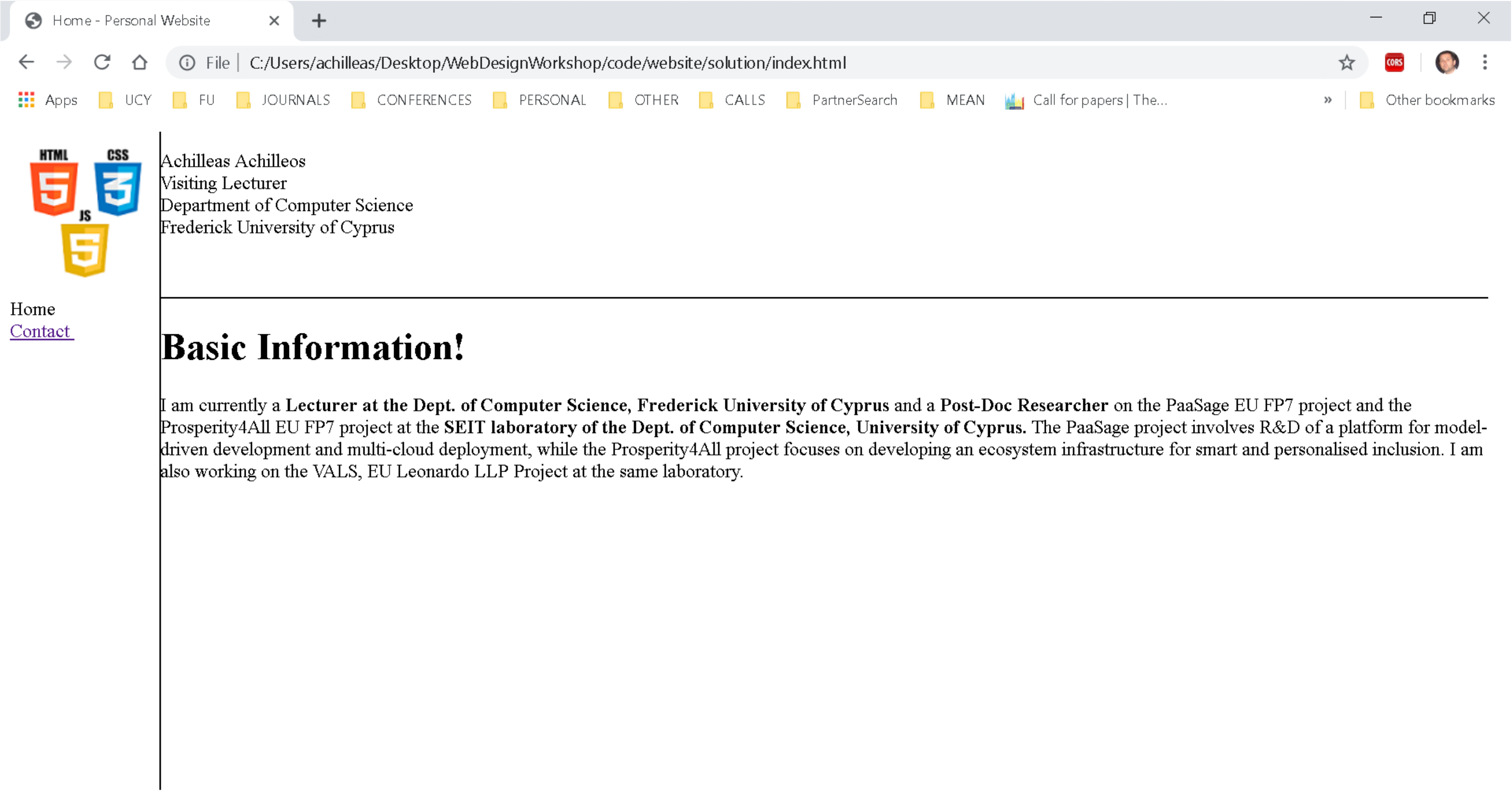
Exercise

- We will begin our exercise from the code/start folder that implements the page:



Exercise

- Step by step we will implement the following home page:



Achilleas Achilleos
Visiting Lecturer
Department of Computer Science
Frederick University of Cyprus

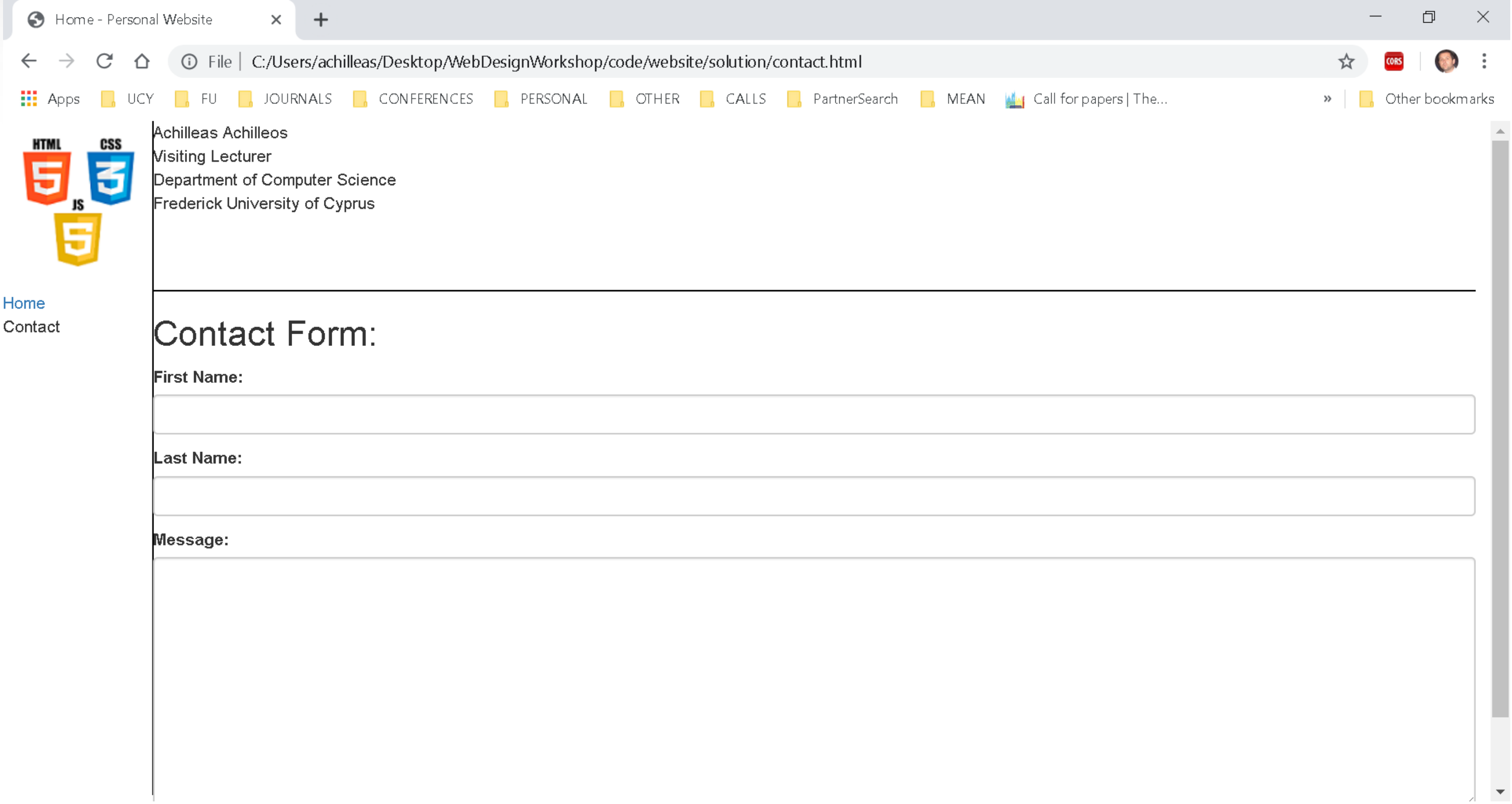
Home
Contact

Basic Information!

I am currently a **Lecturer at the Dept. of Computer Science, Frederick University of Cyprus** and a **Post-Doc Researcher** on the PaaSage EU FP7 project and the Prosperity4All EU FP7 project at the **SEIT laboratory of the Dept. of Computer Science, University of Cyprus.** The PaaSage project involves R&D of a platform for model-driven development and multi-cloud deployment, while the Prosperity4All project focuses on developing an ecosystem infrastructure for smart and personalised inclusion. I am also working on the VALS, EU Leonardo LLP Project at the same laboratory.

Exercise

- And the following contact page:



Achilleas Achilleos
Visiting Lecturer
Department of Computer Science
Frederick University of Cyprus

Home
Contact

Contact Form:

First Name:

Last Name:

Message:

Upload Website to Web Server

- Rename the website folder with your surname, e.g., achilleos.
- Extract the WinSCP-5.15.2-Portable.zip file.
- Run WinSCP.exe from the extracted folder.
- Choose New Site on the left panel.
- Choose Protocol FTP and No Encryption.
- Add cs.student.frederick.ac.cy to host.
- Add comscience to username.
- Add 8Bz$8Zx+ to password.
- Click Save.

Upload Website to Web Server

- Click Login.
- Drag and drop to upload the folder to the remote web server.
- When the upload completes you can access the website at the following URL:
  - http://cs.student.frederick.ac.cy/~comscience/achilleos/index.html

w3schools

- Excellent tutorials together with practical examples can be found in the w3schools web site: http://www.w3schools.com/html/
- It is stressed that students are expected to work with much more HTML elements than the examples shown in the class and lab.
- There is also an online editor at w3schools website that you can use to directly try different HTML elements.
  - http://www.w3schools.com/html/tryit.asp?filename=tryhtml_default

References

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