IS221: Web Applications Development

Lab 1 – Building a Basic HTML5 Document

Lab Overview

This lab provides an introduction to HTML5, helping students build a basic webpage using core HTML elements. By the end of this lab, students will be able to:

- Understand and use essential HTML5 tags to structure a webpage.

- Create an "About Me" webpage with text, images, lists, and hyperlinks.

- Apply basic styling using CSS for an improved visual presentation.

Background:

The Internet is an interconnected system of computers that communicate by exchanging data. One of the primary ways data is shared is through web pages, which are written in **Hypertext Markup Language (HTML)**. HTML defines the structure and content of web pages, allowing browsers to display text, images, links, and other multimedia elements.

The **World Wide Web Consortium (W3C)** establishes guidelines for web standards, ensuring that web technologies remain interoperable and accessible.

Lab Objectives:

By the end of this lab, students should be able to:
- Understand the concept of **Web Standard** and the significance of the **World Wide Web Consortium (W3C)**
- View the source code of existing web pages
- Understand the role of **HTML5** in web development.
- Learn the structure of an HTML document.
- Implement headings, paragraphs, lists, links, and images.
- Style a webpage using basic **CSS**.

Lab Requirements:
- Text Editor: Notepad++
- Web Browser: Google Chrome, Mozilla Firefox, Microsoft Edge, etc.
- Storage device: For saving your work.
- Notebook: To take notes during the lab.

Activity One: Setting Up Your Lab Folder

1. Create a new folder and name it **IS221_Lab1** on your desktop or USB flash drive.
2. Inside this folder, create three subfolders:
   - HTML (to store HTML files)
   - CSS (to store CSS files)
   - Images (to store image files).
3. Open **Notepad++**
4. Save a new file as **index.html** inside the html subfolder.
5. Confirm the file extension is `.html` before proceeding

Activity Two: Creating a Basic HTML Page

1. Open **index.html** in Notepad++.
2. Enter the following HTML structure:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <meta name="description" content="A simple webpage for IS221 Lab 1">
    <title>My First Webpage</title>
    <link rel="stylesheet" type="text/css" href="../css/style.css">
</head>
<body>
    <h1>Welcome to My Webpage</h1>
    <p>Hello, my name is [Your Name]. This is my first HTML page.</p>
</body>
</html>
```

3. Save the file and open it in a web browser to view the output.
4. **Modify the <head> section** by adding the following meta tag:

   `<meta name="description" content="This is a personal webpage created for IS221 Lab 1">`

   Question:
   Examine the above meta tag and explain the purpose of each section, including its role in web development and SEO. Additionally, provide an example of another meta tag with a different purpose and explain its function

5. Inside the <body> section, add:

   - A heading **(<h2>)** with your name.
   - Two paragraphs **(<p>)** about yourself.
   - Use **<hr>** to separate sections.
   - Use **
** for line breaks within paragraphs.

6. Enhance the text formatting:

- Use **<strong>** for bold and **<em>** for italics.
- Example:

```
<h2>John Doe</h2>
<p>Hello! My name is <strong>John Doe</strong>. I am a student at USP,
and I am excited to learn web development in IS221.
</p> <hr>
<p>My hobbies include <em>coding, photography, and playing
football</em>. I love exploring new technologies and creating websites.
</p><br>
```

7. Comment on the purpose of the <meta> tag inside your HTML file:

```
<!-- The <meta> tag provides metadata about the webpage. It helps search engines understand what the page is
about. -->
```

8. Save your work and refresh the web browser to view the changes made.

Activity Three: Enhancing Your Webpage Content

1. ***Add Sub-Headings***
   - Create a Sub-Heading titled "My Courses This Semester" using the <h2>...</h2> tag.
   - Below this sub-heading, add an introductory paragraph explaining the courses you are taking this semester. Example:

```
<h2>My Courses This Semester</h2>
<p>These are the courses I am enrolled in this semester. I am excited to learn
and enhance my skills in these subjects!
</p>
```

2. ***Create an Ordered List for Your Courses***
   - Now, let's create an **ordered (numbered) list** for the courses. The structure for an **ordered list** is as follows:

```
<ol>
<li>IS221 – Web Application Development</li>
<li>CS214 - Data Structures</li>
<li>MA111 - Discrete Mathematics</li>
</ol>
```

   - Save and refresh the browser.

3. ***Add Another Sub-Heading and Unordered List.***
   - Add a new Sub-Heading titled "My Favourite Websites" using <h2>...</h2>.
   - Below this sub-heading, add an unordered list (bulleted list) of your favorite websites. The code structure for an unordered list is similar to an ordered list.

```
<h2>My Favourite Websites</h2>
<ul>
    <li>USP Home</li>
    <li>Moodle</li>
    <li>YouTube</li>
    <li>Stack Overflow</li>
</ul>
```

4. *Add Hyperlinks to Your List*

Now, we will add clickable hyperlinks to the website list so users can visit them directly.

- Update the USP Home list item to include a hyperlink using the <a> tag:

```
<li><a href="http://www.usp.ac.fj" target="_blank">USP Home</a></li>
```

- The target=**"_blank"** attribute ensures the link opens in a **new tab**.
- Similarly, add hyperlinks for the remaining websites:

```
<ul>
    <li><a href="http://www.usp.ac.fj" target="_blank">USP Home</a></li>
    <li><a href="http://www.elearn.usp.ac.fj" target="_blank">Moodle</a></li>
    <li><a href="https://www.youtube.com" target="_blank">YouTube</a></li>
    <li><a href="https://stackoverflow.com" target="_blank">Stack
Overflow</a></li>
</ul>
```

- Save and refresh the browser.

5. *Hyperlink Text within a Paragraph*

- Find the paragraph where you wrote about the University of the South Pacific.
- Modify it so that "University of the South Pacific" becomes a clickable hyperlink:

```
<p>The <a href="http://www.usp.ac.fj" target="_blank">University
of the South Pacific</a> is a leading institution for higher
education in the Pacific region.
</p>
```

- Save and refresh the browser.

6. *Adding a Line Break and Horizontal Rule*

To enhance readability, add line breaks (<br>) and a horizontal rule (<hr>) between sections.

- Add a line break (<br>) after the paragraph under My Courses This Semester:

```
<p>These are the courses I am enrolled in this semester. I am excited to
learn and enhance my skills in these subjects!</p>
<br>
```

- Add a horizontal rule (<hr>) before the My Favourite Websites section to separate it visually:

```
<hr>
<h2>My Favourite Websites</h2>
```

7. *Adding and Formatting Images on Your Web Page*

- Add a sub-heading titled "My Pictures" using the <h2> tag.
- Save two images of yourself into the images folder. Test different image formats (e.g., .jpg, .png, .gif) and observe the differences in quality and transparency.
- Rename your image files to short and meaningful names.
- Use the <img> tag to insert your first image

```
<img src="images/photo1.jpg" alt="My Profile Picture" title="This is my
profile picture" width="300" height="200">
```

- Adding a Caption Below the Image- To add a **caption** under the images, use the <figcaption> tag inside a <figure> container:

```
<figure>
    <img src="images/photo1.jpg" alt="A picture of me at a university event"
title="This was taken at a university event" width="300" height="200">
    <figcaption>This photo was taken at a recent university
event.</figcaption>
</figure>
```

- Save your work and refresh your browser.
- When you have successfully completed all the steps for this lab activity, then you should have your About Me page similar to the figure shown below:

About Homer J. Simpson

Hi. My name is Homer J. Simpson.
I'm from **Fiji**, and am studying BSc majoring in **Computing Science** and **Engineering Technology** at University of the South Pacific.

My favourite food is doughnuts and love watching TV. I love spending my time at Moe's with my best friends Lenny and Carl.
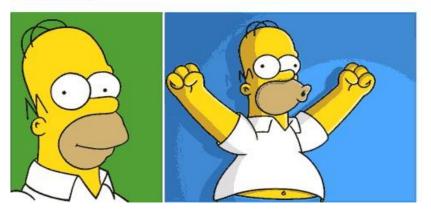
My Courses This Semester

1. CS111
2. IS221
3. IS323

My Favourite Websites

- USP Home
- Moodle
- The Simpsons

Pictures of Me

Activity Four: Adding CSS for Styling

1. ***Adding Internal CSS to Your HTML Document***

   Before moving to an external CSS file, let's add some basic styling directly into the <head> section of your HTML file.

   - Open your index.html file in Notepad++.
   - Inside the <head> section, add a <style> element to define your CSS rules.
   - Save your file and refresh the browser to see the updated styles.

```html
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1.0">
    <title>About Me</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            background-color: #f2f2f2;
        }

        h1 {
            color: blue;
            text-align: center;
            border-bottom: solid thin black;
            padding-bottom: 5px;
        }

        p {
            font-size: 16px;
            color: black;
        }
    </style>
</head>
```

2. ***Creating an External CSS File***

To keep your styling separate from your HTML, create an external CSS file and link it to your HTML page.

   - Open Notepad++ and create a new file.
   - Save the file as **style.css** inside the **css** subfolder.
   - Add the following CSS rules:

```
/* Global Page Styles */
body {
    background-color: #f2f2f2;
    font-family: Arial, sans-serif;
}

/* Heading Styling */
h1 {
    color: blue;
    text-align: center;
    border-bottom: solid thin black;
    padding-bottom: 5px;
}

/* Paragraph Styling */
p {
    font-size: 16px;
    color: black;
}

/* Image Styling */
img {
    border: 2px solid black;
    border-radius: 10px;
    padding: 5px;
    box-shadow: 3px 3px 10px rgba(0, 0, 0, 0.2);
}

/* Image Caption Styling */
figcaption {
    font-style: italic;
    text-align: center;
    margin-top: 5px;
}
```

- Save your style.css file.

3. *Linking the External CSS to Your HTML File*

Now, update your **index.html** file to **link the external CSS file**.

- Open **index.html** and replace the internal <style> section with a link to the CSS file:

```
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>About Me</title>
    <link rel="stylesheet" type="text/css" href="css/style.css">
</head>
```

- Save the file and refresh the browser. Your styles should now be applied from the external style.css file.