1st Year B.Sc (CS&IT)
CT1114. Web Development
HTML, CSS, JavaScript

Section 1:
Introduction and Course Overview

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Workshop Times

Workshops:
1st Semester: Thursdays, 11am-1pm,
Finnegan Suite (Top Floor, Block E, room BLE2012)
2nd Semester: TBA

Independent Study
In addition to the lecture notes and workshop exercises, you are expected to independently study each topic. Lecture notes alone do not provide sufficient depth.

Assignments
Approximately every 2 weeks there will be an assignment to submit.
Total marks for assignments: 20%.
Total marks for written exam (in April): 80%.

Workshops

- **1st hour: new material (lecture) and small exercises**
  - Lecturer: Sam (me!)

- **2nd hour: a larger exercise (sometimes to be submitted for marks)**
  - Lab Tutors:
    - Asad
    - Mashal
    - Lu

Overview of Syllabus

Web Page Design
   HTML: (HyperText Markup Language)
   CSS: (Cascading Style Sheets)

Client Side Scripting
   JavaScript (JS) and Dynamic HTML (DHTML)

Software

- You need a text (code) editor for editing code
- You need a web browser to run your work on

Good code editor software highlights code with colour coding of keywords, names, etc.

Good code editor software understands the programming language and will provide "intellisense" hints

Recommended:
- Visual Studio Code.   https://code.visualstudio.com/
- Or Sublime Text. https://www.sublimetext.com/
- Or notepad++. https://notepad-plus-plus.org/downloads/

Web Browser (Web Client)

Chrome

Powerful software which displays text, images, animations, etc. in a (mostly) consistent way, and supports user interactivity as well as interactions with web servers => quite capable of running full applications within a browser

Discord

During (and outside) class, we will be using a Discord chatroom to share links (URLs) and so you can post comments and questions at any time

https://discord.gg/vQA2gDaAbS

Please join the Discord Server indicated in this link. (It's recommended that you sign up for a Discord account rather than appear using a different anonymous name every week).

Say 'Hi' in there.

HTML

HyperText Markup Language
The language used to define the contents of web pages
Includes text, tables, hyperlinks, images, etc.

HTML is the language used to define webpage CONTENT and STRUCTURE

It is normally downloaded by your browser from a web server, and then interpreted and displayed (rendered) by your browser

CSS

Cascading Style Sheets
The language used to define the style of web pages
Includes colours, fonts, sizes, positions, etc.

CSS is the language used to define webpage VISUAL STYLE

It is normally downloaded by your browser from a web server, and then interpreted by your browser and used to define the visual style of an HTML page that references it

Javascript

A programming language that runs in the user's browser, providing interactivity, animation, calculations, and also the ability to change the HTML content of a page after it has been downloaded

Javascript is the language used to define the BEHAVIOUR and INTERACTIVITY of a webpage

It is normally downloaded by your browser from a web server, and then portions of it are executed as appropriate on an HTML page that references it

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W3Schools http://www.w3schools.com

Online tutorial site for internet languages
    HTML, CSS, ASP, PHP, JavaScript, etc
"Try it Yourself" editor
A very good source of reference for your own
independent study


```
Edit and Click Me >>          Your Result:

<html>
<body>                        My First Heading

<h1>My First Heading</h1>
                              My first paragraph.
<p>My first paragraph.</p>

</body>
</html>

Edit the code above and click to see the result.    W3Schools.com – Try it yourself
```

A Simple HTML Page

```html
<!DOCTYPE html>
<html>
  <head>
    <title>Simple Page</title>
  </head>
  <body>
    Hello World!
  </body>
</html>
```

This is a simplest-possible web page, without any CSS or Javascript. The <head>..</head> and <body>..</body> tags denote important sections in the document

Another HTML Page, including paragraphs and a span

```html
<!DOCTYPE html>
  <html>
    <head>
      <title>Another simple page</title>
    </head>
    <body>
      <p>This is a paragraph.</p>
      <p>This is another paragraph, containing a
<span>'span' section that we could use Javascript to
change the style or content of.</span>
      </p>
    </body>
</html>
```

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Creating an HTML File

Open a Text Editor

    e.g.   Notepad++   or Visual Studio Code (VS Code)

    NB: Microsoft Word is <u>not</u> a text editor!

Write some HTML

Save it as a .html file

    e.g.   mypage.html

Double click the file

    Your page will open in your browser

    It has not been delivered from a webserver in the normal way

    However your browser is still happy to open it

Exercise

Write a simple HTML page that contains at least two different paragraphs, as well as correct sections for head and body.

Providing IDs for your tags

Wherever you use a tag in HTML, your browser will create a separate software object which has style and content.
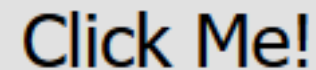
By giving an ID to a tag, you will make it easy to refer to that specific software object using Javascript code, so that for example you can change its content or style using Javascript.

Buttons

To create a clickable button in your page:

<button>Click Me!</button>

This should be inside the <body> section of the html document

A page with a button that reacts to clicks by alerting the user with a message

```html
<!DOCTYPE html>
  <html>
    <head>
      <title>A page with a button</title>
      <script>
        function handleClick() {
          alert("You clicked the button.");
        }
      </script>
    </head>
    <body>
      <button onclick='handleClick();'>Click Me!</button>
    </body>
  </html>
```

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A page with a button that reacts to clicks by modifying the content of a paragraph

```html
<!DOCTYPE html>
<html>
  <head>
    <title>A page with a button</title>
    <script>
            function handleClick() {
                    var p = document.getElementById('myParagraph');
                    p.innerHTML = "..A stately pleasure dome decree.";
            }
    </script>
  </head>
  <body>
    <p id='myParagraph'>
        In Xanadu did Kubla Khan..
    </p>
    <button onclick='handleClick();'>Click Me!</button>
  </body>
</html>
```

To see error messages, use..

In Firefox, use Tools > Web Developer > Browser Console
In Chrome, use More Tools > Developer Tools > (Console section)

For debugging in Javascript, you can also write directly to the console using **console.log("message");**

Exercise (not graded)

Make a webpage which contains a single paragraph and eight buttons. The buttons should be labelled with the names of the eight planets in our solar system.

When each button is clicked, the innerHTML content of the paragraph should be changed to reflect which planet has been picked.

Exercise: sample solution

My sample solution (next week) will also indicate, in the paragraph, how many times each button has been clicked.

It will use **variables** to store these click counts.