Lab 01 Introduction to Webpage Coding

Warm-up with HTML • HTML elements and comments • About CSS and JavaScript • onclick event • alert message box • innerHTML

Introduction

Hypertext Markup Language (HTML) is the main language for writing webpages. You will mainly explore the basics of HTML5 (the latest HTML version) in this lab and extend further in the next few weeks.

You will use Komodo Edit 7 for coding. This free and open-source editor is available in CSC machines and can be easily downloaded and installed in your computer (http://www.activestate.com/komodo-edit).

Task 1. Warm-up with HTML

Start Komodo Edit 7 in your computer.

Next, login Blackboard and download Lab01_Myself.html from the CS1102 course web.

A shown in Figure 1, open the file with (i) Komodo Edit, and then (ii) IE.

In Komodo Edit, you can click this icon to jump to IE:

![Figure 1](image.png)
Now, fill in the blanks below according to your observations:

(1) In an html file, all html contents are enclosed between the start and end tags:

```
<html>
</html>
```

(2) In a webpage, there are 2 sections: the head and body sections.

The **head section** is enclosed between the `<head>` and `</head>` tags.

The **body section** is enclosed between the `<body>` and `</body>` tags.

(3) Refer to **Figure 1**, the webpage title shows “Peter Pan”.

We can change the title in the head section (line 6):

```
<title>My name is Peter Pan.</title>
```

(TRY !!)

(4) The body section contains one heading and 2 paragraphs.

The **heading** is enclosed between the `<h1>` and `</h1>` tags.

Each **paragraph** is enclosed between the `<p>` and `</p>` tags.

(5) **TRY**: If we use `<h2>` for the heading (line 10), then ________________.

Your task - Describe the result.

(6) HTML contents are structured in the form of HTML Elements (**html**, **head**, **body**, **title**, **h1**, **p** ...). To show the relationship among the elements, we can **draw a DOM Tree**.

```
Your task - Complete the tree:
```

Q: What is the meaning of `DOCTYPE` in line 1?
A: It declares the type of this document so that the browser knows how to deal with the following contents.

Q: The line breaking position given in lines 13-14 is not shown correctly in the browser. Why?
A: HTML truncates multiple white-spaces to one single space. (A white-space is: a line break, tab, or space).
So the contents of lines 13 and 14 are shown as separated by one single space only, in one whole paragraph. Line wrapping occurs at the right margin of the browser window.

Q: Are there `<h3>`, `<h4>`, `<h5>`, etc.?  
A: Yes. HTML headings can be defined with the `<h1>` to `<h6>` tags.

Q: What is DOM?
A: It stands for “Document Object Model”. The HTML DOM deals with the contents in HTML documents.
(7) In our html code, we add **extra line breaks** and **indentations** to enhance the readability.

For example, the `title` element is enclosed within the `head` element, so we add more spacing (indent with tab) here:

```
<head>
  <title>Peter Pan</title>
</head>
```

Note that extra `white-spaces` (spaces, tabs, line breaks) do not affect a webpage's appearance in the browser window. However, it is important to make our code easy-to-read by yourself and others. Please spend some effort to adapt to the convention. **Advantages: easy to find out errors, easy to maintain your code, easy to work with others ...**

Your task - Put a ☑ under the code that has **proper line spacing and indentation**:

```
1  <!DOCTYPE html>
2  <html>
3  
4  <head>
5    <title>Peter Pan</title>
6  </head>
7  
8  <body>
9    <h1>Home Page of Peter Pan</h1>
10   
11   <p>
12     My name is Peter Pan. I have just started to learn basic webpage coding and programming.
13   </p>
14   
15   <p>
16     I'm ready for challenges and fun!
17   </p>
18  </body>
19 
20 </html>
```

(8) To properly indent our code, we use the **tab** key instead of the spacebar.

Your task - **Circle** the tab key in the keyboard:

![Tab key](image)

(9) We can add a hyperlink using the `<a>` element.

To specify a web address, we provide the reference attribute `href`=". ." in the start tag `<a>`.

Your task - At the bottom of the body section, add the hyperlink to CityU:

```
<h5>
  <a href="http://www.cityu.edu.hk">here</a>
  to go to CityU.
</h5>
```

**TRY** the link. Does it work? ________ (Yes / No)

** Show your answers to the Lab Helper. **

Helper's signature: _______________
Task 2. More on HTML

In this task, you'll study and fix a webpage as given in Figure 2.

What is COMPUTER PROGRAMMING?
Computer programming is the craft of writing useful, maintainable, and extensible instructions which can be interpreted by a computing system to perform a meaningful task.

Programming is interesting and challenging.

Are you prepared?

Figure 2. The expected HTML document

Now, download Lab01_HTML2JS.html from the course web. It looks wrong as shown in Figure 3.

Your tasks:

• Rearrange the structure of the contents according to Figure 3. Simply do it by cut-and-paste and then improve the code formatting by adding extra line breaks and tabs.

(You do not need to change lines 1-29. Please study lines 18-29 which serve as examples for you to do the job.)

Also make sure that the webpage can be displayed correctly like Figure 2.

• Study the explanations below:

  <style>..</style> : The style element - apply specific styles to the webpage, using the CSS language.

  HTML and CSS (Cascading Style Sheets) are two core technologies for webpages.

  Programming provides the content and structure, CSS the presentation style. (We will cover more about CSS later)

  <!-- .. --> : This is known as HTML Comment. Contents in <!-- .. --> are not shown in browser.

  We usually add comments to explain our code. For HTML, write <!-- .. -->.

  For CSS, write /* .. */.

  <strong>..</strong> : Text with strong importance (often displayed in bold)

  <em>..</em> : Emphasized text (often displayed in italic)

** Show your work to the Lab Helper. (Please make sure the webpage displays correctly and the code formatting is proper.)

Helper's signature: __________
From HTML to JavaScript

JavaScript is a scripting language that can be used to create interactive and dynamic effects in a webpage. Now you’re going to explore some simple uses of JavaScript.

Task 3. Show a message box (onclick, alert)

Make Are you prepared clickable shown in Figure 4.

Your task: Change

```
<p>
<em>Are you prepared?</em>
</p>
```

to

```
<p onclick="alert('Welcome!');">
<em>Are you prepared?</em>
</p>
```

Test it: Open it in the browser and click "Are you prepared?". The "Welcome!" message appears.

Explanation: `<p onclick=""> specify what to do when the element is clicked (namely "the onclick event"). `alert('Welcome!');` - show a message box by calling the JavaScript function: `alert`

Note that JavaScript is case sensitive: `alert` should be all in lowercase. DON’T type `ALERT` or `Alert`.

Each JavaScript statement is ended with a semi-colon (;).

Task 4. Add dynamic effect to Are you prepared?

In this task, you will put an image `CS1102` in the webpage and add some trick on it:

(i)

What is COMPUTER PROGRAMMING?

Computer programming is the craft of writing useful, maintainable, and extensible instructions which can be interpreted by a computing system to perform a meaningful task.

Programming is interesting and challenging.

When the mouse moves over the image, Are you prepared will change to Have Fun!

(ii)

What is COMPUTER PROGRAMMING?

Computer programming is the craft of writing useful, maintainable, and extensible instructions which can be interpreted by a computing system to perform a meaningful task.

Programming is interesting and challenging.

When the mouse moves away, Have Fun! will change back to Are you prepared?
<table>
<thead>
<tr>
<th>Step 1</th>
<th>Download CS102.gif from the course web.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 2:</td>
<td>Add an image tag for the image.</td>
</tr>
<tr>
<td></td>
<td>Test it!</td>
</tr>
<tr>
<td>Step 3:</td>
<td>Add an ID to Are you prepared?:</td>
</tr>
<tr>
<td></td>
<td>p onclick=&quot;..&quot; id=&quot;Msg&quot;</td>
</tr>
<tr>
<td>Step 4:</td>
<td>Add the event handlers for the image:</td>
</tr>
<tr>
<td></td>
<td><code>&lt;img src=&quot;CS1102.gif&quot;</code></td>
</tr>
<tr>
<td></td>
<td><code>onmouseover = &quot;document.getElementById('Msg').innerHTML='..';&quot;</code></td>
</tr>
<tr>
<td></td>
<td><code>onmouseout = </code></td>
</tr>
</tbody>
</table>

---

**Study the explanations below:**

- `<img src=".." />`
  
  An *Image* element. The source file of the image is given through the *src* attribute. Note: We do not write start and end tags like `<img ..> .. </img>`. We only write one single tag: `<img .. />`.

- `<.. id=".." ..>`
  
  The *ID* attribute. We can set an ID for an HTML element so that we can use the ID to refer to the element from other places. (Yes! The ID will be useful when we write JavaScript or CSS.)

- `<.. onmouseover=".." > <.. onmouseout=".." > <.. onclick=".." />`
  
  The *events* for which we can specify the response action using JavaScript.

- `<.. = ..;`
  
  An *assignment statement* in JavaScript. LHS is changed according to RHS.

- `document.getElementById('..')`
  
  Fetch the element with the given ID within the HTML document.

- `document.getElementById('..').innerHTML`
  
  The embedded content of an element between the element's start tag and end tag.

- **Double-quotes ("..") and single-quotes('..')**
  
  We use a pair of quotes (either double-quotes or single-quotes) to enclose a string in JavaScript and also the value of an HTML attribute (eg. the ID).
Exit-Test - Complete the summary below.

We have just covered various ____________ in this lab:
<____> and <_____> define 2 main sections in an HTML document.
Head section: <title>, ________
Body section: ________, ________, ________, _____, ____
We write comments as: ________

____________________ is important for readability.
I need to add proper ___________ and ___________ in my code.
To indent a line, I press the ________ key (but not striking the spacebar repeatedly).

3 Web technologies:
• HTML : for the ________ and structure of web documents
• CSS : (Cascade ____________) for the presentation style
• ___________ : for interactive and dynamic effects

Using ____________ , we can tell the browser what to do upon the
happening of an______ (e.g., onclick, ____________, ____________).
We have used JavaScript in 2 ways:
(1) Calling a function: e.g. __________________
(2) Assignment of value: e.g. document.getElementById('Msg').innerHTML='…';

In <p id="..">, the ____________ is given such that we can refer to
the element by typing __________________ later.
To refer to the embedded content between <p id=".." > and ________, we
write document.getElementById(".." ).______________.

** Show your answers to the Lab Helper.

This is the end of the Lab. Please fill in and submit the Progress Sheet attached below.
You have learnt a lot in this lab. If needed, please redo again and review all covered skills. You may then proceed to the
Follow-up Reading and Activities for this Lab, which can be found at the course web.

Lab01 - Progress Sheet

Student name and EID : __________________ [E.g. Chan Siu Pang (spchan31)]
Helper's signature : ________ (____/____)
Student belongs to : ________ (Lab session)
Remarks : __________________________
e.g., late / not this group / join 2nd time

Progress & performance -  
(Please circle)
Rated by the student : [poor] 1 --- 2 --- 3 --- 4 --- 5 [excellent]  
Rated by the helper : [poor] 1 --- 2 --- 3 --- 4 --- 5 [excellent]

References:
5: Very familiar with the contents. Easily complete the Exit-Test.
4: Spend effort to review through doing the Exit-Test. Afterwards, get 100% familiar with the contents.
3: Have basic ideas about all the contents after learning through the Exit-Test.