Laboratory 01

Developing Client-side Web Applications with HTML5 and Visual Studio Code

1. LEARNING OUTCOMES

Upon completion of these laboratory exercises, you should be able to:

- Install and configure Visual Studio Code and the relevant extensions.
- Create static, semantically correct HTML5 web pages.

2. REQUIRED SOFTWARE

- Visual Studio Code (https://code.visualstudio.com/)
- Supported web browser (Chrome or FireFox recommended).

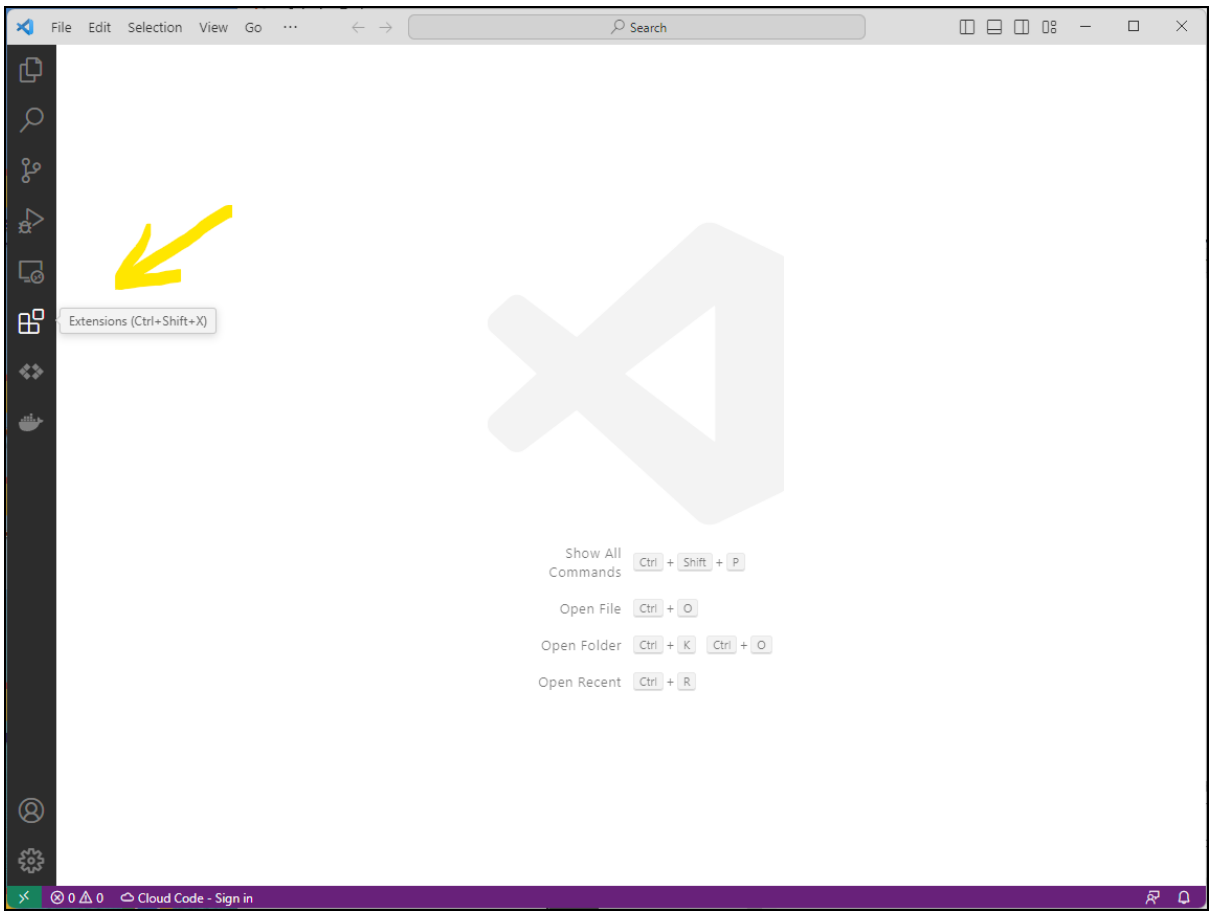
3. INSTALLING VISUAL STUDIO CODE

3.1 Follow the link provided in section 2 to download and install the latest version of Visual Studio Code.

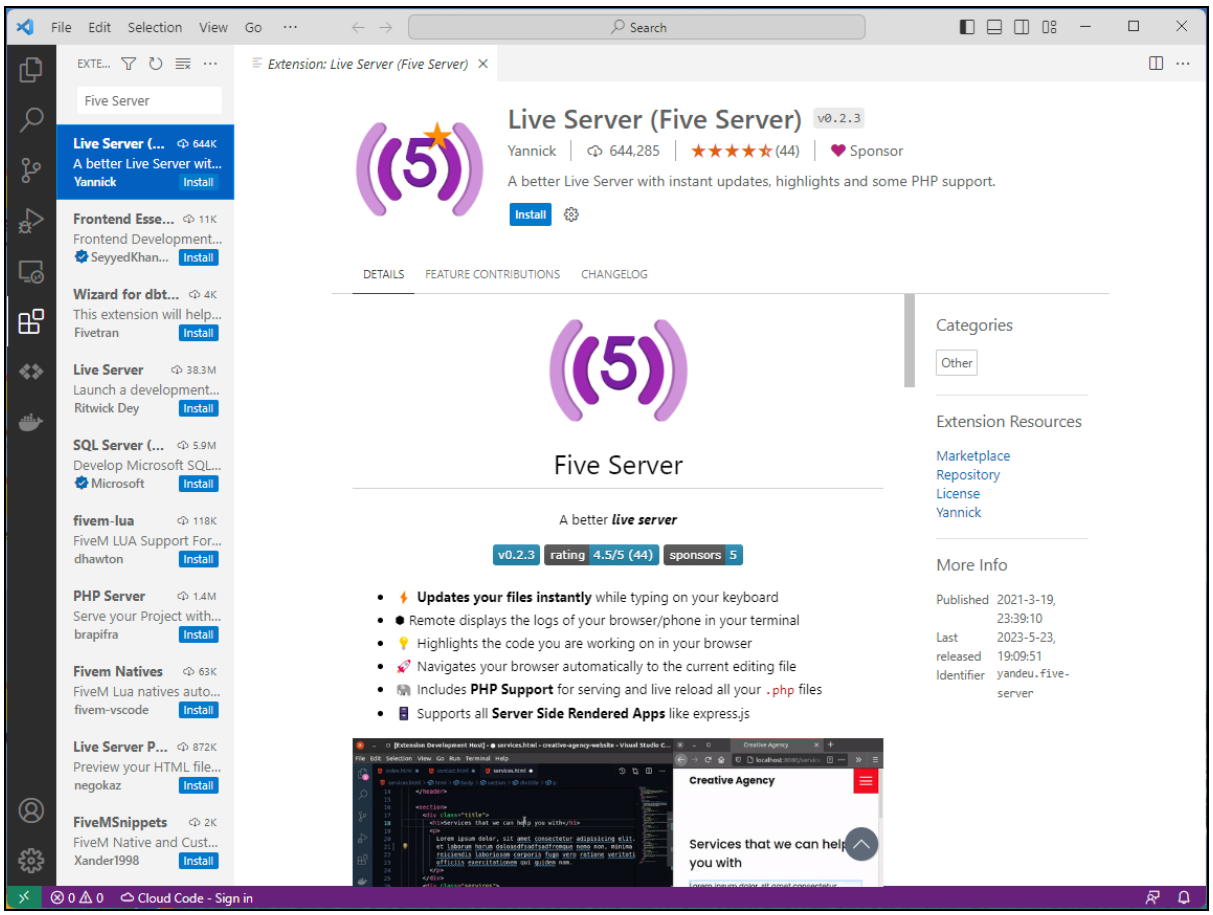
3.2 Once the installation finishes, click the “Settings” icon to configure the IDE to your liking.

3.3 Next, we’ll install an extension that allows us to preview our web pages during development.

a. Open Visual Studio Code and click on the Extensions icon:



b. Enter “Five Server” in the search box and you should find the “Live Server (Five Server)” extension by Yannick:



c. Click “Install” to install this extension.

Note that there are several other extensions that provide similar functionality, such as “Live Preview” from Microsoft. Feel free to install this or any other extensions that you find helpful.

4. CREATING A STATIC HTML5 WEB PAGE

4.1 In this exercise, we’ll create a simple one-page, static website using Visual Studio Code and HTML5.

4.2 First, create a folder on your computer named “Lab01” or similar.

4.3 In the Visual Studio Code IDE, select **File->Open Folder…** from the main menu, then navigate to the folder you just created in 4.2 and open the folder.

4.4 Select **File->New File…** from the menu an enter **index.html** as the name. Save this file in your Lab01 folder and open it in the Visual Studio Code editor.

5. ADDING CONTENT AND SEMANTIC ELEMENTS

5.1 In this exercise, we'll edit our HTML file to add some content. Along the way, we'll be good HTML5 developers and make proper use of semantic tags.

5.2 This is going to be a website for pet lovers, so let's start by adding the <head> element and the basic HTML structure:

```
<!DOCTYPE html>
<html lang="en">
    <head>
        <title>World of Pets</title>
        <meta charset="UTF-8">
        <meta name="viewport" content="width=device-width, initial-scale=1.0">
    </head>
    <body>
        <!--Add your mark-up here...-->
    </body>
</html>
```

Questions for thought:

1. Where in the web browser does the content in the <title> element get displayed?
2. Is the <title> element important? Click here for an interesting article on that.
3. What is the purpose of the <meta> elements?

5.3 Next, we'll add some content to the document. Here are some general guidelines to follow when editing HTML content:

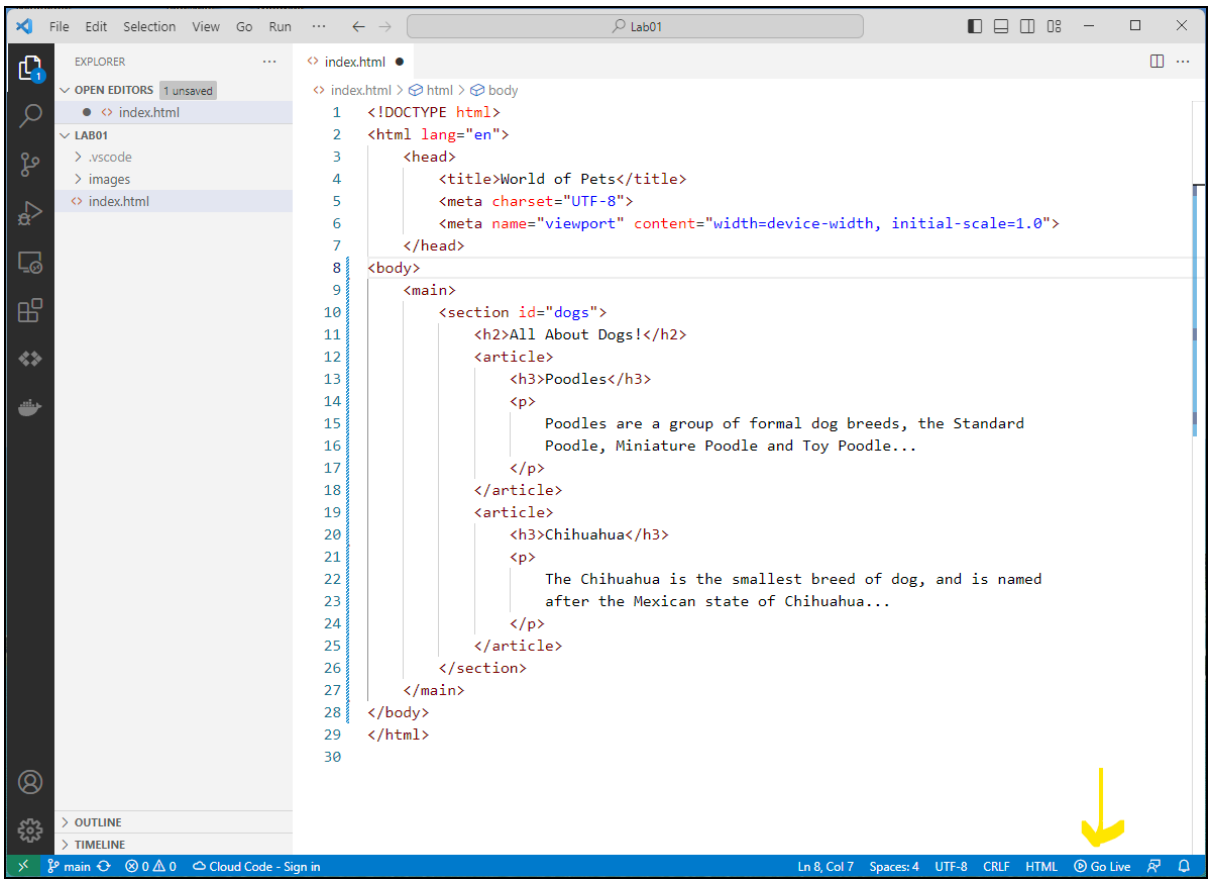
- All content that is to be displayed in the browser should be placed between the opening <body> and closing </body> tags.
- There must be one and *only* one <body> element.

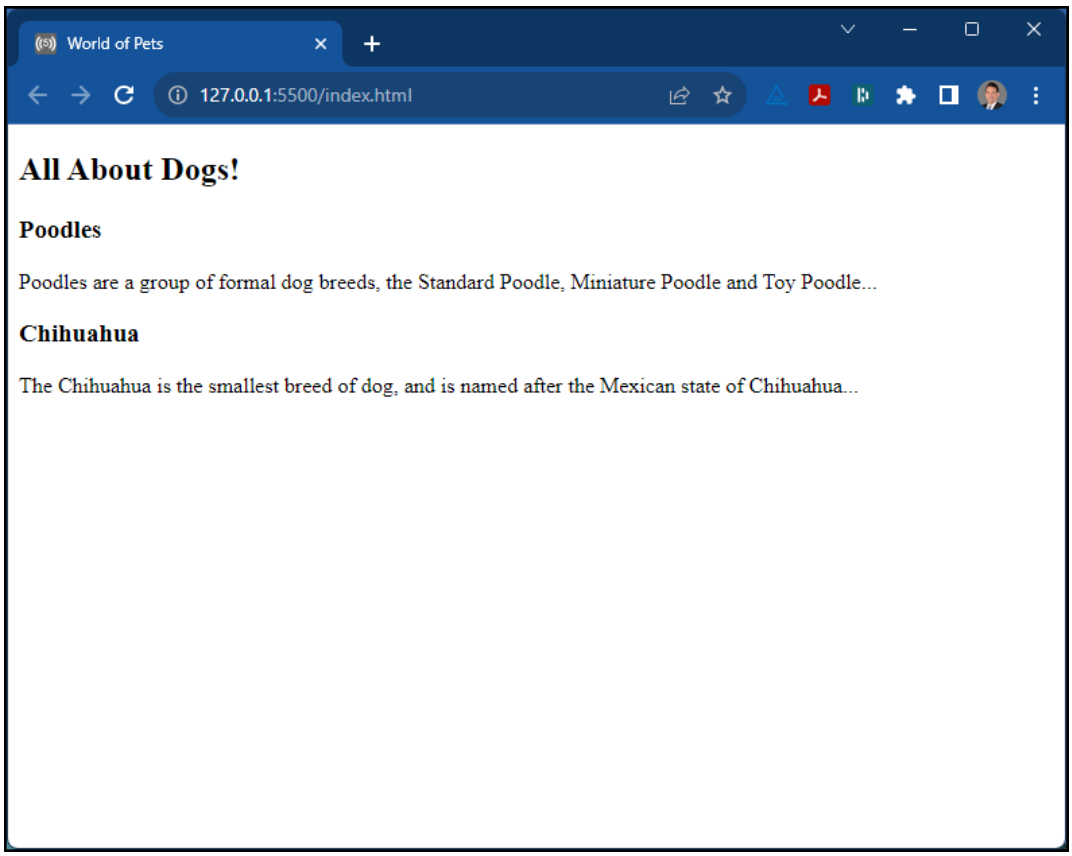
- Generally, you should have a <main> element within the <body> that demarcates the main content of the web page. You can have *only* one <main> element per page.
- <section> and <article> elements should be used as appropriate and are typically (but not necessarily) nested within the <main> element. For guidelines on the use of these semantic elements, refer to our FAQ in the INF1005 module on xSiTe (**Class Activities->FAQ**).
- Other semantic elements, such as <header>, <footer>, <nav>, <aside>, etc. can be used as appropriate.

5.4 Let's start by entering the following code within the <body> element in index.html:

```
<body>
    <main>
        <section id="dogs">
            <h2>All About Dogs!</h2>
            <article>
                <h3>Poodles</h3>
                <p>
                    Poodles are a group of formal dog breeds, the Standard
                    Poodle, Miniature Poodle and Toy Poodle...
                </p>
            </article>
            <article>
                <h3>Chihuahua</h3>
                <p>
                    The Chihuahua is the smallest breed of dog, and is named
                    after the Mexican state of Chihuahua...
                </p>
            </article>
        </section>
    </main>
</body>
```

a. Click the "Go Live" button in the lower right corner of the Visual Studio IDE to run the website and view it in the browser. This button is provided by the Five Server extension that we installed earlier.


File Edit Selection View Go Run
Lab01
EXPLORER
OPEN EDITORS 1 unsaved
index.html
LAB01
.vscode
images
index.html
index.html
index.html > html > body
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4 <title>World of Pets</title>
5 <meta charset="UTF-8">
6 <meta name="viewport" content="width=device-width, initial-scale=1.0">
7 </head>
8 <body>
9 <main>
10 <section id="dogs">
11 <h2>All About Dogs!</h2>
12 <article>
13 <h3>Poodles</h3>
14
15 Poodles are a group of formal dog breeds, the Standard
16 Poodle, Miniature Poodle and Toy Poodle...
17
18 </article>
19 <article>
20 <h3>Chihuahua</h3>
21
22 The Chihuahua is the smallest breed of dog, and is named
23 after the Mexican state of Chihuahua...
24
25 </article>
26 </section>
27 </main>
28 </body>
29 </html>
30
OUTLINE
TIMELINE
main
0 0
Cloud Code - Sign in
Ln 8, Col 7
Spaces: 4
UTF-8
CRLF
HTML
Go Live



5.5 At this point we have one section for dogs that contains two articles, Poodle and Chihuahua. Following this example, add another section for cats. In this section you should feature at least two articles, Tabby and Calico. You may obtain the text content online (Wikipedia or another public domain source). Note that when you edit and save the HTML file, the web browser will automatically refresh and show your latest changes, thanks to the Five Server extension!

5.6 Now to make our web page more complete, we'll add both <header> and <footer> elements. Insert the following code after the opening <body> tag and before the <main> element:

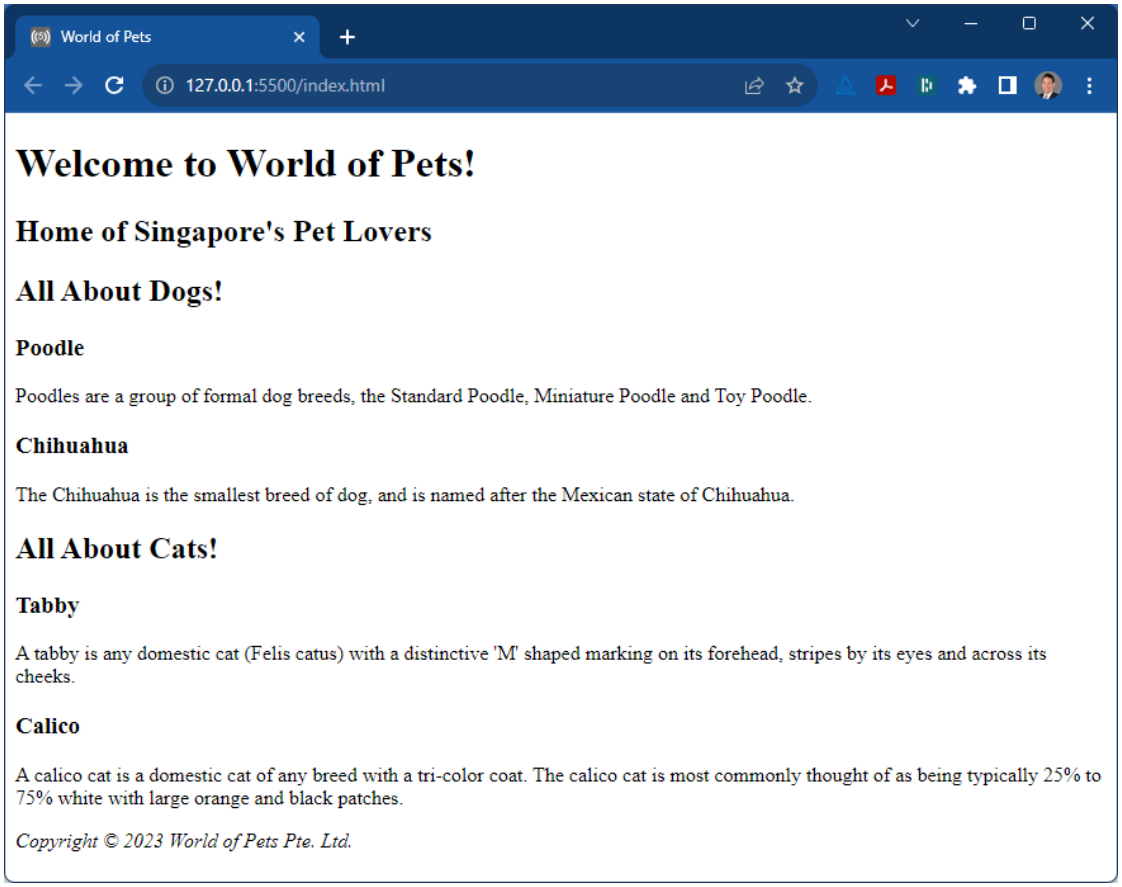
```
<header>
    <h1>Welcome to World of Pets!</h1>
    <h2>Home of Singapore's Pet Lovers</h2>
</header>
```

Then insert the following code after the closing </main> tag and before the closing </body> tag:

```
<footer>
    <p><em>Copyright &copy; 2023 World of Pets Pte. Ltd.</em></p>
</footer>
```

Note that we used the (emphasis) tag in order to make our copyright notice appear in italics, however the preferred way to decorate text is with CSS, which we'll learn in a future lesson. Also note the use of a *character entity* to display the copyright symbol.

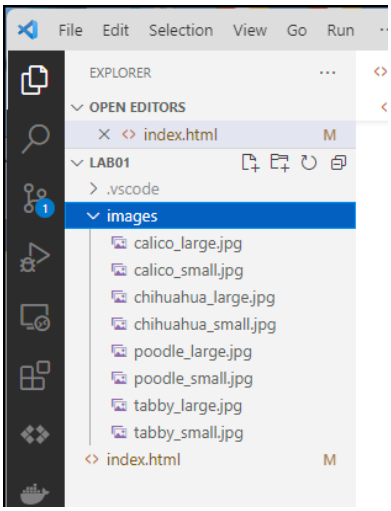
Save your file and view it in the browser – it should look similar to the one below:



6. ADDING IMAGES

6.1 To make our website a bit more attractive, we'll add some images. First you need to download the images from xSiTe. The images are in a .zip file called **images.zip**, located in the same content section where you obtained this Lab document. Download the .zip file and then unzip (decompress) the file.

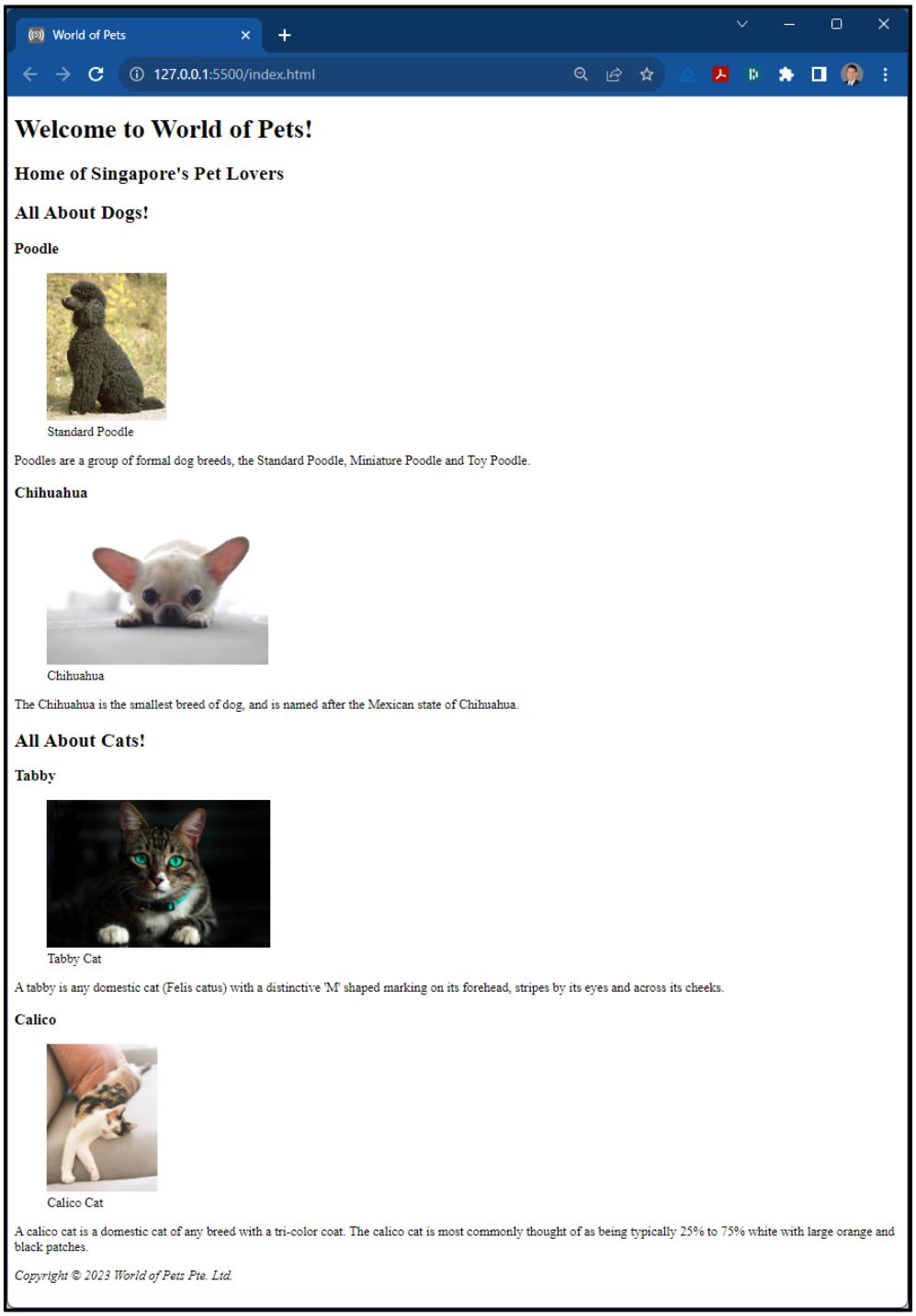
6.2 We'll create a sub-folder under the Lab01 folder for storing our images so that we can reference them in HTML using *relative paths*. In Visual Studio Code, right-click on the Explorer pane and select **New Folder…** from the pop-up menu, and name the folder **images**. Now copy all of the images you downloaded from xSiTe into the newly created sub-folder. Your website folder structure should look like this:



6.3 Next, we will utilize the <figure> and <figcaption> semantic elements to display our images. We'll also nest the images within the <a> element so that clicking the link opens the larger version of the image. Insert the following code after the <h3>Poodle</h3> heading:

```
<figure>
    <a href="images/poodle_large.jpg">
        <img src="images/poodle_small.jpg" alt="Poodle"
             title="View larger image...">
    </a>
    <figcaption>Standard Poodle</figcaption>
</figure>
```

Following this example, add all of the remaining images. When finished, your web page should look similar to the following:

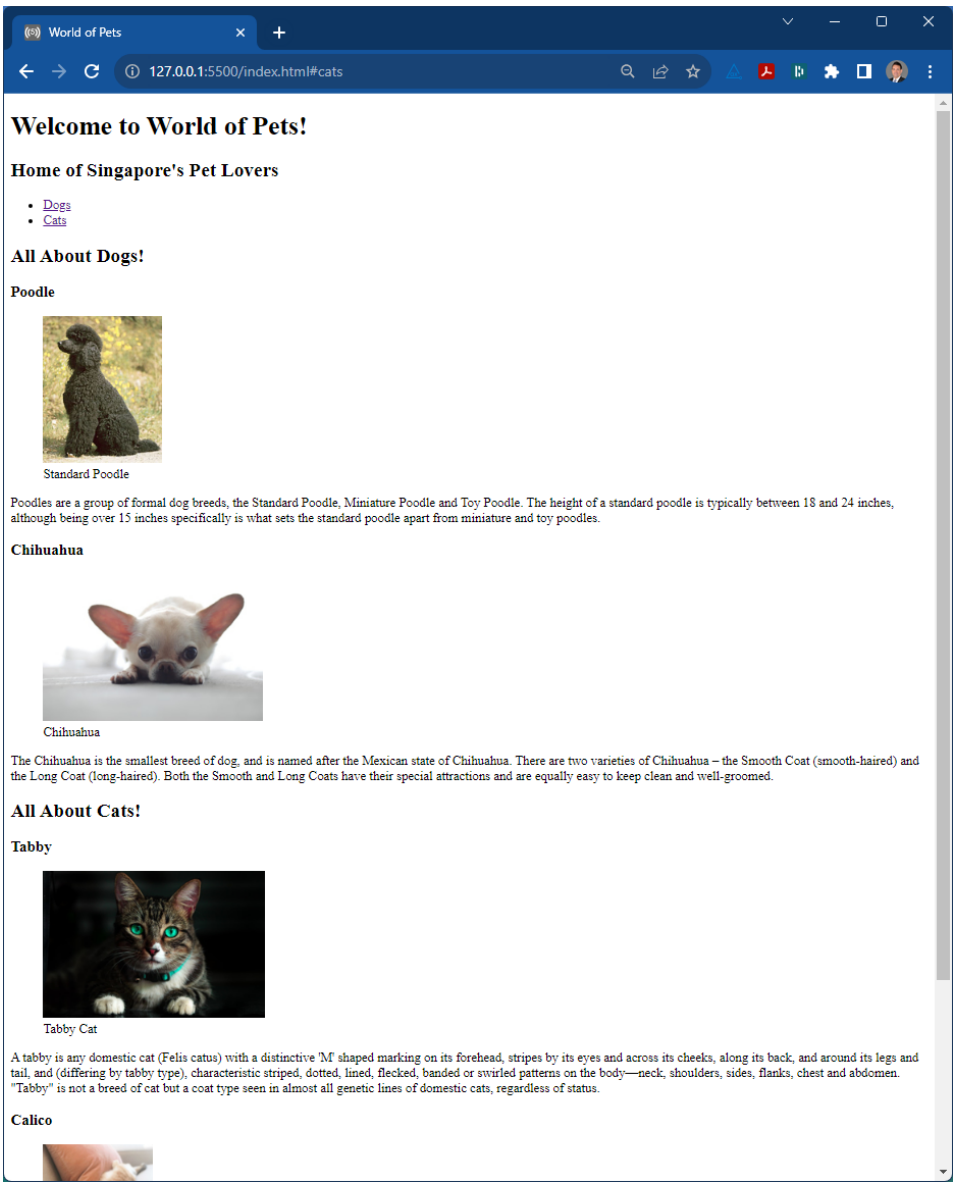


7. ADDING NAVIGATION LINKS

7.1 For our last exercise in this Lab lesson, we'll add some navigation links near the top of the page to allow the user to quickly jump to the desired section (in future lessons we'll replace this with a proper menu bar). Insert the following code after the <header> element and before the <main> element:

```
<nav>
    <ul>
        <li><a href="#dogs">Dogs</a></li>
        <li><a href="#cats">Cats</a></li>
    </ul>
</nav>
```

You can also add more text content to each article. Your completed website with the navigation links should look similar to this:



8. SUBMISSION OF LAB ASSIGNMENT

8.1 In order to receive credit for this Lab assignment, ***you must submit your completed work to xSiTe LMS before the end of the Lab session***. To submit your work:

b. Save all files and close Visual Studio Code.

c. In your File Explorer, navigate to the location where you saved your project and right-click on the folder name (e.g. Lab01), then select 'Send to -> Compressed (zipped) folder' and ZIP up your entire folder. **Note: only .zip format is acceptable, do not use .rar, .7z, or any other format.**

d. In the INF1005 module on xSiTe, go to **Assessments->DropBox** and locate the Dropbox folder for Lab01. Click the link to open the Lab01 Dropbox then hit the **Add a File** button to submit your .zip file. You may also add comments if desired. Be sure to hit **Submit** to complete your submission.

e. Remember to save a copy of your work as we will be building upon this website in subsequent Lab assignments.

9. ADDITIONAL PRACTICE

9.1 Once you've completed this Lab assignment, you are encouraged to try out the following online HTML tutorials and references:

a. W3Schools: www.w3schools.com/html/

b. HTML Dog: www.htmldog.com/guides/html/

c. HTML in Visual Studio Code: https://code.visualstudio.com/docs/languages/html