Chapter 2

Basic HTML elements

Working with list in HTML

There are lots of occasions when we need to use lists. HTML provides us with three different types: Ordered lists, unordered lists, definition lists.

Since we are creating web app, we can create a project folder and inside of it, create a *cordova project* named **Activity2**. If you forgot how to convert a web app into a native android app using cordova from Chapter 1.

Once the cordova project folder is created, we open a text editor, and save the file in the **www** folder as **index.html.** If the Confirm Save As dialog appears asking: Do you want to replace it?, click on **Yes**
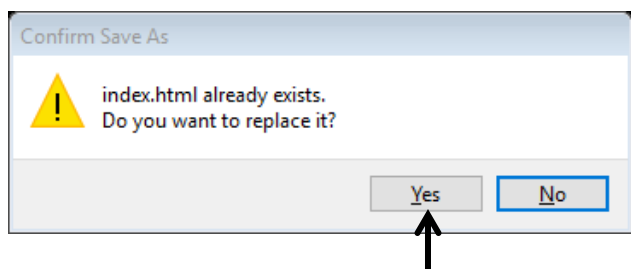
As the cordova project folder is created, the next step is to build the structure of the app view using HTML.

Ordered listed

Ordered lists are lists where each item in the list is numbered. For example, the list might be a set of steps for a recipe that must be performed in order, or a legal contract where each point needs to be identified by a section number.

The ordered list is created with the `<ol>` element.

Each item in the list is placed between an opening `<li>` tag and a closing `</li>` tag. (The **li** stands for list item.)

For example, we can create an ordered list as the following:


```
<h1 id="list" align="center">List</h1>
<h2>Ordered List</h2>
<p><b>How to pass ET570 with a good grade:</b>
    <ol id="list1">
        <li>Never miss classes</li>
        <li>Always participate in class activities.</li>
        <li>Dedicate at least 2 hours of my free time to practice the codes I learned in
        my class</li>
         <li> Never give up!</li>
    </ol>
</p>
```
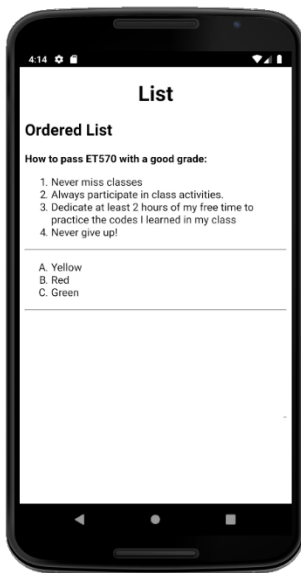
HTML

Ordered List – "type" attribute

Attributes provide additional information about HTML elements.

The **type** attribute of the <ol> tag, defines the type of the list item marker. Attributes provide additional information about HTML elements.

Type	Description
type="1"	The list items will be numbered with numbers (default)
type="A"	The list items will be numbered with uppercase letters
type="a"	The list items will be numbered with lowercase letters
type="I"	The list items will be numbered with uppercase roman numbers
type="i"	The list items will be numbered with lowercase roman numbers

Let's try the following ordered list with uppercase letters

```
<ol type="A">
    <li>Yellow</li>
    <li>Red</li>
    <li>Green</li>
</ol>
```
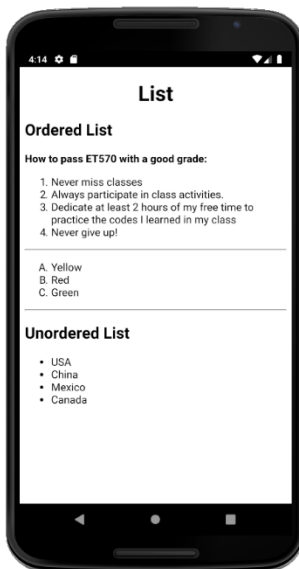**HTML**

Bullet or unordered listed

- Unordered lists are lists that begin with a bullet point (rather than characters that indicate order).
- The unordered list is created with the **<ul>** element.
- Each item in the list is placed between an opening **
** tag and a closing **
** tag.

```
<h2>Unordered List</h2>
    <ul>
        <li>USA</li>
        <li>China</li>
        <li>Mexico</li>
        <li>Canada</li>
    </ul>
```
DISPLAY

Definition listed, description list

Definition lists are made up of a set of terms along with the definitions for each of those terms.

The definition list is created with the **<dl>** element.

Inside the <dl> element you will usually see pairs of **<dt>** and **<dd>** elements.

<dt> is used to contain the term being defined. **dt** stands for **definition term/title**

<dd> is used to contain the definition. **dd** stands for **definition description.**

Let's create the following definition list:

```
<h2>Definition List</h2>
  <dl>
      <dt><b>ET570 - Creating Smartphone Apps</b></dt>
      <dd><i>This course introduces the use and features of Smartphone in modern
      life.</i></dd>
      <br/>
      <dt><b>ET710 - Building and Maintaining Web Sites</b></dt>
      <dd>The course focuses on the skills needed to build, maintain, and administrate
      a website.</dd>
  </dl>
```

Managing images in HTML

There are many reasons why you might want to add an image to a web page: you might want to include a logo, photograph, illustration, diagram, or chart.

Images should…

- o Be relevant
- o Convey information
- o Convey the right mood
- o Be instantly recognizable
- o Fit the color palette

Stock photos

If you do not have photographs to use on your website, there are companies who sell stock images:

- o www.pexels.com

What is the best screen size to design for?

It is important to understand the size of the computer screen in order to coordinate the size of the image. Based on the worldwide screen resolution stats (nov 2016 – nov 2017) chart above and the charts below, these are the resolutions you need to be aware of in 2018.

- 360×640 – 21.54%
- 1366×768 – 12.85%
- 1920×1080 – 7.76%
- 375×667 – 4.94%
- 1440×900 – 3.32%
- 1280×800 – 2.67%

Image formats

PNG Portable Network Graphics

JPG or JPEG Joint Photographic Experts Group

BMP BitMaP

GIF Graphics Interchange format

The images on your computer screen are made up of lots of tiny squares known as pixels. The resolution of the screen is the number of pixels represented on it, and on most computers you can increase and decrease this number.

JPEG offers good quality when the image has many different colors.

GIF or PNG images are low quality images which are good for images with few colors or large areas of the same color (flat color). Example of them are logos, illustrations, and diagrams.

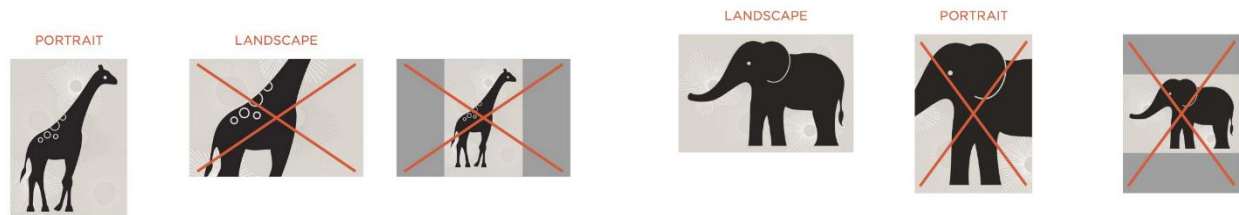**Exercise)** which format would you save the following images?

_____

_____

_____   _____

Image dimensions

The images you use on your website should be saved at the same width and height that you want them to appear on the page.

Cropping image

When cropping images it is important not to lose valuable information. It is best to source images that are the correct shape if possible.

Store images

As a website grows, keeping images in a separate folder helps you understand how the site is organized. Usually they are stored in sub-folder called "images".

On a big site you might like to add subfolders inside the images folder. For example, images such as logos and buttons might sit in a folder called interface, product photographs might sit in a page called products, and images related to news might live in a folder called news.

SVG - scalable vector graphics

The other image format is SVG - scalable vector graphics.

The **<image>** SVG element includes images inside SVG documents. It can display raster image files or other SVG files. A ***raster image*** is an image file defined as a grid of pixels. They're also referred to as *bitmaps*. Common raster image formats on the Web are JPEG, PNG, GIF, and ICO.

The only image formats SVG software must support are JPEG, PNG, and other SVG files. Animated GIF behavior is undefined.

Using SVGs is an easy choice once you consider the advantages they offer. For a client, you get superb quality on any device. For us as developers, there are even more reasons to use SVG.

Let's discuss some of the benefits of SVG now.

1. Text-based format
SVG elements contain text, which greatly improves the accessibility of a website. But the main advantage is that this text is indexed by search engines. And a user can find an SVG file via Google.

2. Scalability
The quality of SVG images does not depend on the resolution. Unlike images of other formats or icon fonts, SVGs look perfectly sharp on any device with any screen size. Scalability also means that if you use the same image throughout the website but in different sizes, you use a single SVG. You do not have to create multiple copies of it as in the case of PNG. Instead, you embed the same image and define the size of it directly in SVG code.

PNG   **3X PNG**   **SVG**   **3X SVG**
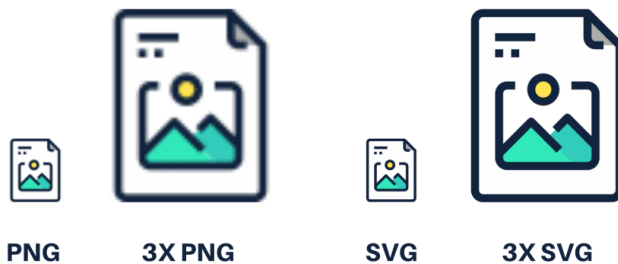
3. High performance
If you prioritize performance, you should use SVG. With SVG, there is no need for an HTTP request to load in an image file. The page loads faster as it has no files to download. Faster loading time translates into better webpage performance and higher search engine ranking. In turn, it improves user experience.

4. Small file size
The size of simple SVG files is defined by the colors, layers, gradients, effects, and masks that it contains. The size of a PNG or any other raster graphics file is defined by the number of pixels that it consists of. The larger a PNG image is, the heavier it gets in size. This is not the case for SVG icons, though. Also, SVGs can be optimized, and I will tell how later in this article.

SVG   PNG

8 KB   **16 KB**

5. Numerous editing and animating opportunities

Unlike raster images, vector images can be edited both in special vector drawing programs and directly in a text editor. You can also edit colors or sizes of SVG icons directly via CSS. As for animating SVGs, it can be done with the help of SMIL, Web Animations API, WebGL, or CSS animation. Scroll down to learn more about CSS animation of SVG images.

6. Integration with HTML, XHTML, and CSS

SVG was designed "to integrate with and extend other prominent open Web platform technologies, such as X/HTML, CSS, and Javascript", according to W3C. So, unlike different image formats, this format can be easily integrated with other documents and technologies.

7. W3C Document Object Model support

There is growing community support for SVG. The World Wide Web Consortium (W3C) has always claimed that the Internet cannot do without vector images. This organization basically created the SVG format, and they actively support it nowadays.

What Are the Inconveniences of SVG?

The large number of small parts makes the use of the SVG format irrational. The more parts an image consists of, the heavier it grows in size.

For example, here are two SVG maps of the United States. The second one is slightly more detailed than the first one. But the higher level of detail cost almost a fivefold increase in file size – 33 KB compared to 147 KB. If this map was not monochromatic, the increase would be much greater.

Less detailed   More detailed

33 KB   147 KB
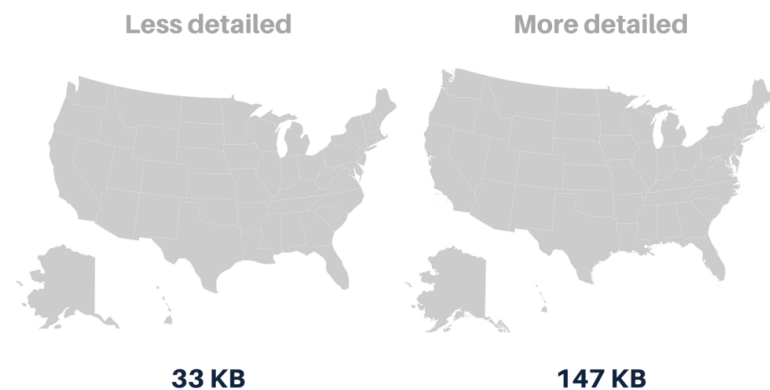
If the picture is linear and contains a few colors – SVG is a solution. However, if the details matter and there are a lot of them, PNG or JPEG may be more suitable. Also note that SVG cannot be used for photographs. If you use a photograph on your website, SVG is not the best option. You definitely should go with a raster image format.

Adding images to a webpage

To add an image into a web page you need to use an **`<img>`** element. This is an empty element (which means there is no closing tag). It must carry the attribute src.

<img> attributes

src tells the browser where it can find the image file. This will usually be a relative URL pointing to an image on your own site.

alt provides a text description of the image which describes the image if you cannot see it.

height specifies the height of the image in pixels.

width specifies the width of the image in pixels.

Alignment of an image in a webpage

The align attribute was commonly used to indicate how the other parts of a page should flow around an image. It has been removed from HTML5 and new websites should use CSS to control the alignment of images.

The align attribute can take these values:

left aligns the image to the left (allowing text to flow around its right-hand side).

right aligns the image to the right (allowing text to flow around its left-hand side).

top aligns the first line of the surrounding text with the top of the image.

middle aligns the first line of the surrounding text with the middle of the image.

bottom aligns the first line of the surrounding text with the bottom of the image.

Let's try to build the following app view. In this case, we are going to save the image in **img** folder.

```
<h1 id="image" align="center">Images</h1>
<img src="img/tiger.png" alt="image of a tiger" width="80%">
```
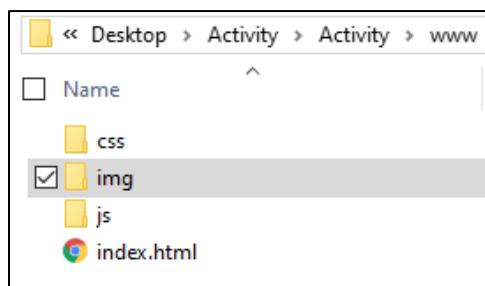
HTML

HTML5: figure and figure caption

HTML5 has introduced a new **`<figure>`** element to contain images and their caption so that the two are associated.

You can have more than one image inside the **`<figure>`** element as long as they all share the same caption.

The **`<figcaption>`** element has been added to HTML5 in order to allow web page authors to add a caption to an image.

For example, we can have two images of the same size inside **`<figure>`** and **`<figcaption>`** element

HTML

```
<figure>
      <img src="img/tiger.png" alt="image of a tiger" width="47%">
      <img src="img/tiger.png" alt="image of a tiger" width="47%">
      <figcaption>Tigers are found in India and some part of
      South-East Asian</figcaption>
</figure>
```

Links

Links are the defining feature of the web because they allow you to move from one web app to another — enabling the very idea of browsing or surfing

Writing Links

Links are created using the **<a>** element. Users can click on anything between the opening **<a>** tag and the closing **** tag.

By default, links will appear as follows in all browsers:

- An unvisited link is underlined and blue
- A visited link is underlined and purple
- An active link is underlined and red

Some of **<a>** attributes are **href** and target:

— **href:** Specifies the URL of the page the link goes to.
— **target:** Specifies where to open the linked document. Some of the value of attribute target are: _blank, _parent, _self, _top

Linking to other sites

Links are created using the **<a>** element which has an attribute called **href**. The value of the href attribute is the page that you want people to go to when they click on the link.

For example, we are going to make a link to the words **click here**

When we click on **click here**, it will go to the QCC website

```
<h3>Linking to other sites </h3>
<p>For more information about the college, click in the following link:
<a href="http://www.qcc.cuny.edu">Queensborough Community College</a></p>
```

Opening Links in a New Window

If you want a link to open in a new window, you can use the **target** attribute on the opening <a> tag. The value of this attribute should be**"_blank"**

```
<h3>Linking to other sites </h3>
<p>For more information about the college, click in the following link:
<a href=http://www.qcc.cuny.edu target="_blank" >Queensborough Community
College</a></p>
```

Email Links

To create a link that email to a specified email address, you use the **<a>** element, follow by the attribute **href** starts with **mailto:** and is followed by the email address you want the email to be sent to.

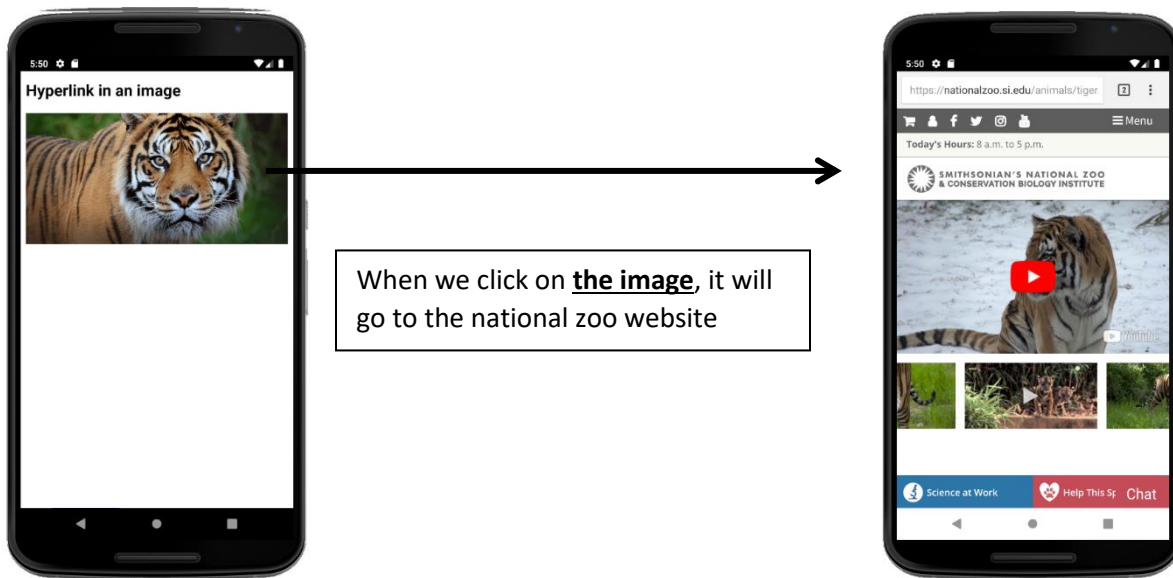Let's make a hyperlink to send an email to professor Wu.

When we click on **prof. Wu** , it will go to the user default email account

```
<h3>Linking to an email address </h3>
<p>Send an email to: <a href="mailto:hwu@qcc.cuny.edu">Professor Wu</a></p>
```

How to link an image to other side

To use an image as a hyperlink, we must place the `<img>` tag inside the (in between) the `<a>` tag:

When we click on **the image**, it will go to the national zoo website

HTML

```
<h2>Hyperlink in an image</h2>
<a href="https://nationalzoo.si.edu/animals/tiger"><img src="img/tiger.png"
alt="image of a tiger" width="100%"></a>
```

Navigation Bars

Having easy-to-use navigation is important for any web site. Later in the class, you will use CSS to transform the HTML menus into good-looking navigation bars. For now, we can create navigation bar using **`<nav>`** tag. The **`<nav>`** tag defines a set of navigation links in an inline form. The nav tag is not supported in Internet Explorer 8 and earlier versions.
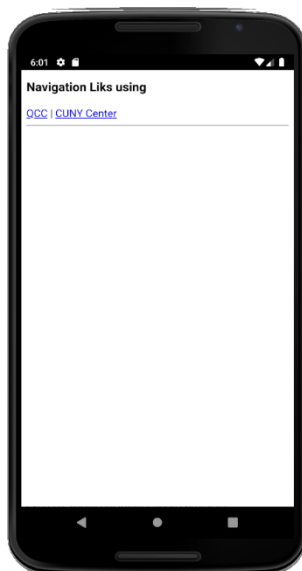

HTML

```
<h3> Navigation Liks using </h3>
<nav>
  <a href="http://www.qcc.cuny.edu" target="blank">QCC</a>
  <a> | </a>
  <a href="http://www2.cuny.edu/" target="blank">CUNY Center</a>
</nav>
```

Linking to other pages on the same site

To link the pages within the same, you will need to create and organize the html files in their respective folder. You will need to create parents folder, child folders, grandchildren folders (if it is necessary), etc.

The main homepage of a site written in HTML (and the homepages of each section in a child folder *recommended) is called **index.html**
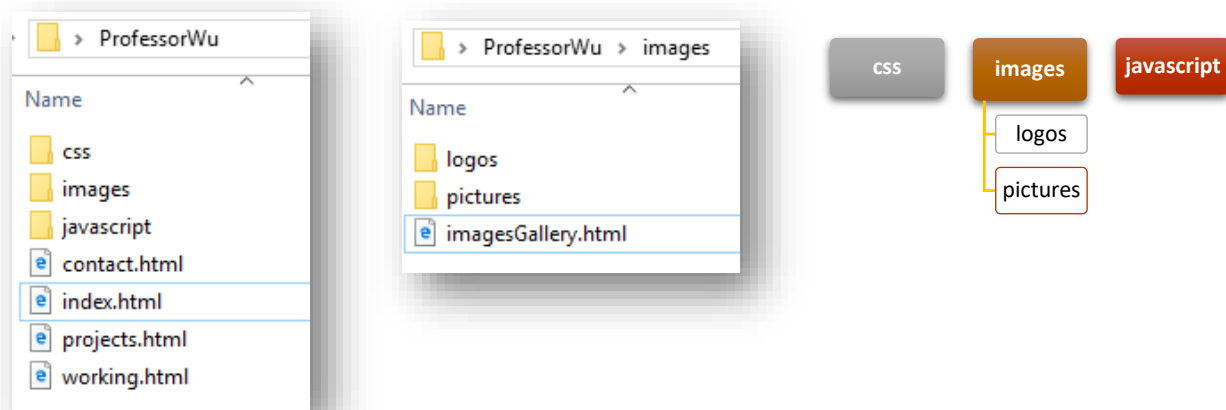
How to link a webpage within the same site?

- o To link to a file in the same folder, just use the file name

    ```
    <p><a href="projects.html">Professional Projects</a></p>
    ```

- o To link a file in a child folder, use the name of the child folder, followed by a forward slash, then the file name

    ```
    <p><a href="images/imagesGallery.html">Project Gallery Images</a></p>
    ```

- o To link to the homepage from a child folder, or to one folder before it, use **../**

    For example, if you are writing a code in webpage imagesGallery.html, which is located in a child folder "images", and you want to make a link to go back to the index page, which is located in a parent folder, you will write the code as the following:

    ```
    <p><a href="../index.html">Go back to homepage</a></p>
    ```

Linking to a specific part of the same page

Before you can link to a specific part of a page, you need to identify the points in the page that the link will go to. You do this using the **id** attribute (which can be used on every HTML element).

The value of the **id** attribute should start with a letter or an underscore (not a number or any other character) and, on a single page, no two id attributes should have the same value.

To link to an element that uses an **id** attribute you use the <a> element again, but the value of the href attribute starts with the **#** symbol, followed by the value of the **id** attribute of the element you want to link to.

Example)
identify the part of your page where the **id bottom** will return when is clicked:

```
<img src="img/ny.jpg" id="bottom" alt="New York City">
```

When the word **Go to Image** is clicked, it will link to an element with id **bottom:**

```
<p><a href="#bottom">Go to Image</a></p>
```

This is possible if the image is at the same webpage. If the link is in the other webpage, the code has to link to the webpage that it has followed by the id name:

```
<p><a href="index.html#bottom">Top</a></p>
```

Example) Create navigation bars using <ul> element.

DISPLAY

Navigation Bars Using "ul"

- Different type of lists
- Tables and Attributes
- Images and Figure
- Different type of links

HTML

```
<h3>Navigation Bars Using "ul"</h3>
<ul>
   <li><a href="#list1">Different type of lists</a></li>
   <li><a href="#tables2">Tables and Attributes</a></li>
   <li><a href="#images">Images and Figure</a></li>
   <li><a href="#links">Different type of links</a></li>
</ul>
```

In this case, we are using internal links that will link to a specific part of the same page. For that, we have to mark the element that the link has as reference using the **id** attribute. For example, to make an internal link to the Different type of lists, we can id el **<ol>** element with **id="list1"**

HTML

```
<ol id="list1">
        <li>Never miss classes</li>
        <li>Always participate in class activities and finish them on time</li>
        <li>Dedicate at least 2 hours of my free time to practice the codes I learned in
        my class</li>
        <li> Seek help from my professor, classmates, or tutors in case I do not
        understand the class material</li>
        <li> Never give up!</li>
</ol>
```