Cyber Post 500
Basic Web Development
Activity 1 – HTML and CSS

HTML (Hyper Text Markup Language) is used to tell the browser how the content of a webpage should be organized. It is used to describe the structure of webpages by marking how different sections of content should be displayed as different elements on the page.

HTML **tags** are the labels that mark sections of content. They usually come in pairs called open tags and close tags. For example, the `<body>` tag opens the section of content that will be the body of the page and the `</body>` tag closes that section.

Tags can be nested inside of each other to organize content hierarchically. For example, a table is made up of rows so a `<table>` tag might have several `<tr>` and `</tr>` (table row) tags nested inside it before the corresponding `</table>` tag.

CSS (Cascading Style Sheets) can be used to modify how the browser interprets and displays HTML information. Common attributes modified in a style sheet include colors, fonts, borders, and alignment. A style sheet can be linked to an HTML document using the `<link>` tag.

1. Open "activity1.html" in a text editor and read through it.
2. Which one of these tables do you think this webpage will have on it? _____

a.

one	two	three
foo	bar	baz

b.

one	foo
two	bar
three	baz

3. Open "activity1.html" in a browser.
4. What tag is used to tell the browser what to name the tab? _____
5. What happens if the <h3> tag is changed to <h2>? _____
6. Add a row at the bottom of the table that has the words "four" and "bat" in its cells.
7. Add a column on the left side of the table that has the numbers "1", "2", "3", and "4" in its cells.
8. Open "style.css" in a text editor and read through it. The blocks of code modify the attributes of elements used in the "activity1.html" webpage. A block starts with the name of the tag being modified and then lists the attributes being changed inside curly brackets { }.
9. Change the background color of the table to your favorite color by modifying the "table" block.
10. Make the width of the table's cells twice as wide by modifying the "td" block.

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Activity 2 – SVG Drawings

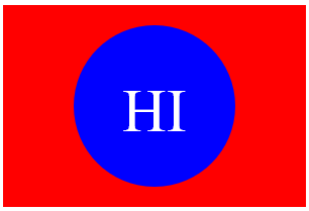
SVG (Scalable Vector Graphics) is another markup language, but instead of marking sections of content for a webpage it is used to describe graphical elements for a drawing. An SVG drawing can be embedded into an HTML webpage inside an `<svg>` tag.

Inside an SVG drawing, tags like `<rect>`, `<circle>`, and `<text>` are used to describe shapes and text to make up the image. Each of these tags has **attributes** which describe the size, position, and formatting of the shape it creates.

A CSS style sheet can also be used to modify the attributes of SVG elements. A common way to do this is to give a **group** of SVG elements (marked with a `<g>` tag) a **unique id** and then make a block in the style sheet to modify anything with that id.

1. Open "activity2.html" in a text editor and read through it.
2. Which one of these drawings do you think this webpage will have on it? _____

a.



b.

3. Open "activity2.html" in a browser.
4. What is the id of the group of shapes that make up this drawing? _____
5. Change the text in the drawing to say your name instead.
6. Make the rectangle green instead of red.
7. Move the circle so that it is just inside the left edge of the rectangle instead of in the center.
8. Open "style.css" in a text editor and read through it. Find the block of code that modifies the drawing in the "activity2.html" webpage. It starts with a # symbol and the id of the group.
9. What will happen if you hover your mouse over the drawing in the browser? _____
10. Change this behavior so that the drawing disappears entirely when you hover over it.

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Activity 3 – Event-Driven JavaScript

JavaScript is a programming language that is often used to write code for browsers to interpret as part of webpages. JavaScript code can be embedded into HTML and SVG documents by using the `<script>` tag, though modern browsers disable this code by default to prevent security risks. Using JavaScript allows web authors to dynamically control elements of their webpages and even make them interactive.

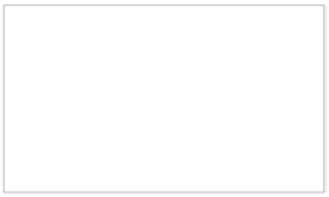
On an interactive webpage, the browser reacts to the user's actions. Each action is known as an **event**, and this kind of program is called **event-driven**. The code tells the browser to **listen** for certain events and then how to **handle** those events when they happen by using the `addEventListener` method:

```
.addEventListener("eventname", handlerFunctionName);
```

This listener can be added to a specific element on the page, such as an SVG drawing. Several different events can be listened for by that element, including the user's keyboard and mouse actions. Each different event has its own **unique name**. The code inside the **handler function** will be run whenever the listening element "hears" that specific event. This code can then do whatever the web author wants, for example dynamically change HTML and SVG elements on the page to react to the user's actions.

1. Open "activity3.html" in a text editor and read through it.
2. Which one of these do you think this webpage will look like when you first open it? _____

   a. 

   b. 

3. Open "activity3.html" in a browser. The page has an interactive SVG drawing. Try clicking inside it.
4. What element is the event listener added to? _____
   (HINT: Look at the function `initialize(event)` and find the call to `addEventListener`.)
5. Does the handler function run if you click outside of this element? _____
6. Open the developer tools in the browser and look at the console. What happens in the console when you click inside the drawing? _____
7. Find the line of code that does this. What is the name of the function it uses? _____
8. What will happen if you right click inside the drawing? _____
9. Find the spot in the code where it says "Add your code here!" (near the bottom) and add code so that a right click will have the same result as a left click. *(HINT: Use copy and paste!)*
10. Design your own SVG drawing and modify the right click code so that it uses your stamp instead.