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**Introduction and Software Design**

For my project, the main page opens as an index to all of the potential cyphers that the user can select from. In my index page I also provided a visual aspect, that allows the user to visibly see and get an idea of what exactly the cyphers are doing before they click on the link to use the cypher. My index page also has a design aspect, which is the CSS code that allowed me to size the images and also change the font and color. I provided three different links that the user can click on for their choice of cypher. I created a ROT13 cypher, a Caesar cypher, and a ASCII Code cypher. All have unique aspects for the user to try out.

Planning out this project was important to the overall success of the project. I started the project by researching possible cyphers that I wanted to implement into my page. I used the ROT13 cypher as a base point in JavaScript, since I have never worked in JavaScript before. After creating a JavaScript page and adding the code we worked on in lab, I created the html so that the user could interact with the cypher. I used this approach for all of the cypher pages. I then went to the internet to find some more commonly used cyphers. I found that the Caesar Cypher was the most popular, and easy for the user to figure out, so I decided that this would be a good starting point for beginners. For my last cypher choice, I wanted to be a little more creative and write a cypher that is not as commonly used. Last semester, I worked a lot with ASCII Code and I decided it would be a good choice for something more complicated since there is different code for uppercase and lowercase letters. I found that it was best to work on design last after the base is working properly from past experiences, so I planned to do the hard coding of the project first.

After succeeding in writing all of the code, I wanted to work on the HTML aspect so that the user can interact with the cypher. For this, I decided it would be best to look at past HTML I have written in my Android projects and the HTML that I have done in the Lab periods for class. I also conducted some research on spacing for the images that I planned on adding. I planned for user interaction with the cyphers, such as other buttons and a drop down menu where the user would be able to select the number of letters that they would like to offset the code by. I researched this on W3Schools. I found through this that it was important to give a proper value to the choices in HTML code so that it would work when implementing in the JavaScript.

I started the design phase by looking at designs that I have used and successfully implemented in past computer classes. Although I have never worked in CSS myself, there have been projects that I worked on where my professor helped me work through the CSS aspect. Inspired by my page on Tumblr, I decided to take a similar approach with the simplicity. By adding photos of the cypher, the user would have an idea of what type of cypher they are choosing before they open the page and read the description. This allows them to navigate to where they need without going through every page. I did a lot of research on sizing of images on Code Academy, since I knew that all of my images would not be the right or same size as the others, I needed to know how to resize them so it would be visually pleasing and fit on the page. Additionally, I decided to add in a border to the images to make the not-so-pretty cropped images a little more ascetically pleasing to the user. I researched and found an image on Giphy for the Caesar Cypher, an ASCII Table from the Ascii Table website, and a ROT13 Cypher image on Wikipedia. I also wanted to change the fonts between the body and the header, so that the user could clearly tell the difference between the purpose of the page and what it is designed to do. Finally I wanted the user to be able to tell when they were about to click on a link, which is where I decided to implement the hover design. I researched and found

on W3Schools that you can create a color change in the text when the user hovers over the link.

**Implementation**

```
if(upperOrLower == "1"){
    for(var idx=0; idx<splitt.length; idx++){
        var chara=String.fromCharCode(splitt[idx]);
        cypher_text.push(chara);
    }
}
else if(upperOrLower == "2"){
    for(var i=0; i<splitt.length; i++){
        var chara1=String.fromCharCode(splitt[i]);
        cypher_text.push(chara1);
    }
}
```

I was able to implement the upper or lowercase option by using the value behind the options I created.

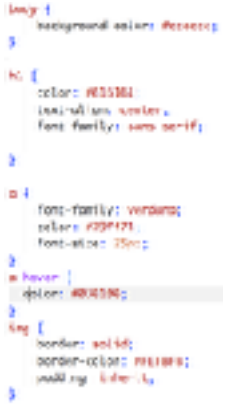
```
<button type="button" onclick="decode()" id="decode_button">Decode Everything
</button>
```

I added a new button that gives the option to decode the text for the user. This was done by creating a new method.

```
function decode() {
```

```
<label>Select the number you would like to offset the letters by:</label>
    <br>
    <select id = "numPicked">
        <option value = "1">One</option>
        <option value = "2">Two</option>
        <option value = "3">Three</option>
        <option value = "4">Four</option>
    </select>
```

I added in a drop down label with values that I could implement in the JavaScript code. By setting the value as a number to start, I was able to use the number in my code to decide how many letters to offset by.



This is the implementation of the css code that is used throughout the project. It is a simple code that keeps the sites user-friendly.

**Critical Evaluation**

Requirements for this project discussed the design and implementation of a website that consisted of a set pages about classical cyphers. Upon opening the links of the cyphers that I have designed, I provided a brief description followed by an example for the user to refer to. My site used only JavaScript, CSS, and HTML code to complete the project. Each cypher was allocated its own HTML, JavaScript, and CSS page. Each cypher page was carefully chosen in naming, so that another programmer could easily navigate and associate pages for their own purposes.

From my index page colors of background, font, and images were carefully chosen so that the site would be pleasing for a user to navigate through. Navigation and options are made clear in the header and links are visible to the user and there is an assist with the hover over to change color so that the user knows they will be clicking on a link.

There are three cypher pages for the user to choose from which are appropriately named to their purpose. As mentioned before, each page provides a brief description of the cypher that the user is about to interact with. There is a clear, text entry bar for the user to click in and enter a message of choice. After entering the message and clicking the encipher button, the message appears directly below and is clearly marked enciphered message. Decipher is designed to work in the same way. The deciphered text appears below the clearly marked "This is your decoded message:"

Possible improvements could have been within my overall design. Since each of the pages did not contain a lot of content to add, I found it harder to make larger design pages to the project. I found most of the design in the project was simply changing the font, color, or sizing of the text. I was able to add some design to the images that I also implemented, but I struggled with other design ideas after implementing text, layout, and the three images. Working on more potential design ideas could have added to my project nicely.

**Personal Evaluation**

I feel that I have learned a lot while working on this project. Prior to this course, I have never worked in JavaScript or CSS, and had very little knowledge in HTML. From working in the labs and attending the lectures, I learned a lot about the importance of CSS and design when working on web design. Working in labs with JavaScript, I quickly learned its similarities to Java and was able to research some of the methods that I wanted to use, but didn't quite know the code for. Once I got past the JavaScript portion, I found that the HTML portion was very similar to the little bit that I had worked with in Android Studio.

One challenge I faced in the HTML portion however, was the spacing of the images that I uploaded. The original sizing of the images were very large, and I was not sure how to change it. I originally assumed that it would be done within the CSS code, but quickly found out that it is easiest to change in the HTML itself. Another problem I found was once the image sizing was fixed, the spacing of the text and image on the page was not very ascetically pleasing for a user. Through some research I was able to find a solution, although I don't think that it is the best one to include in my code. One of the last challenges I faced was implementing a decode function. For some reason, the value from the HTML code was not successfully transferring over to the JavaScript code. I struggled with this for a while, even with research online I found that everything seemed to be working correctly. With the help of a friend from my home university, he found that using .innerHTML solved the issue because using the .value is looking the content as opposed to the string association with value.

Performance-wise, I believe that I did very well in working on a project I had very little familiarity with. Although it was challenging, I felt that I succeeded in making a decent design along with working JavaScript code that all users of all experiences are able to figure out. I hope to improve upon these skills for the remainder of the semester and implement them into my final project.

**References**

“How TO - Clickable Dropdown.” How To Create a Dropdown Menu With CSS and JavaScript, www.w3schools.com/howto/howto_js_dropdown.asp.“Can I change the size of an image?”

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