2019

Web Tech – SET08101

COURSEWORK #1

CIPHER WEB PAGE

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Contents

Introduction

Scope

The goal of this project is to create a website with a minimum of 2 classical ciphers. A more detailed break down of the requirements follows:

1. An area in which the user can type a message.
2. An area where the encoded message can be displayed to the user.
3. A way for the user to select different ciphers
4. A method to compute the data entered in the message area.
5. A method of decoding the user input.

Ciphers Chosen

I have chosen two common classic ciphers as they will be of more use to users compared to the lesser known ones. The ciphers are:

Caesar Cipher, this is an alphabet shift cipher. An example is a shift of +2 would be A = C.

More Code, this is a cipher consisting of different lengths of noises or beeps represented by text. Example "--." Represents 2 long beeps and 1 short.

Site Design

The design will be simplistic. This has been achieved by using a tile like system for selecting a cipher on the main page and smaller left aligned navigation bar with the same tile styling as the main.

To add some smoothness to the transitioning of pages the main body of each page will fade in from black over a short period, this attempts to remove the pop in of the page creating a smooth more pleasant page loading experience.

The small navigation bar is visible from the start, so the user has the option to change page should the user have selected the wrong cipher they can instantly change page.

Cipher result reveal. A similar quick and smooth reveal has been used when showing the output of the cipher script to the user. The area will fade in quickly from black.

Great care has been taken when deciding the length of fade as to not give the user a negative experience due to slow reveal times. The average reveal is less than a second and creates a positive easy on the eyes experience for the user.

A simple colour scheme consisting mainly of black and white has been chosen as it fits well into a simplistic design. A blue bar with a slight fade has been used to highlight the navigation bar without breaking the general colour scheme.

Software Design

Requirement Breakdown:

Below is an explanation of how I plan to provide the required feature.

An area in which the user can type a message.
I will create a division within the main body for the user to input data into. This will have an ID of "input_area".
Within this division a text area will be implemented, it will be given a default size based on rows and columns. As a "quality of life" autofocus will be used, this will be default allow the user to type into this text box without having to select or highlight it. This text box will be given the ID of "message".

An area where the encoded message can be displayed to the user.
Another division will be created within the main body used for displaying data output to the user.
The ID for this area will be "output_area".

A way for the user to select different ciphers
Some images will be used to create a tile type style on the main page and for the side mounted navigation bar. These images will have href's applied to them allowing the image to be clicked and used as a link rather than boring text. The navigation bar will work in the exact same fashion but positioned and sized differently.

A method to compute the data entered in the message area.
Two buttons will be created which will trigger JavaScript for encoding or decoding of the text the user has put into the input_area. The button will also trigger a separate JavaScript which will enable the fade in feature for the reveal of the script output.

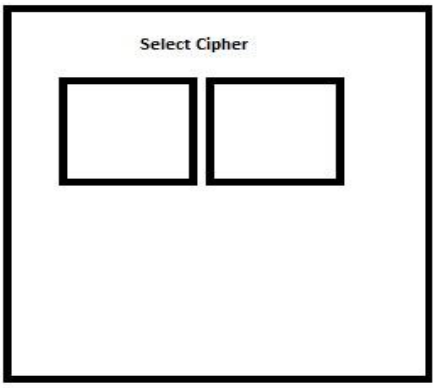
A method of decoding the user input.
There will be two buttons of each cipher page, one for encode one for decode. They will both take user inputs from the same text box however each button triggers a different JavaScript displaying the response in the same output area.

CSS
This area will contain the styling information for the divisions within the html. This method is a great way to neatly have the attributes for each area of the site within one section. Using CSS for developing this web page will make it easier for me to make changes to the styling when manipulating the shape, style and behaviour of each element of the html.

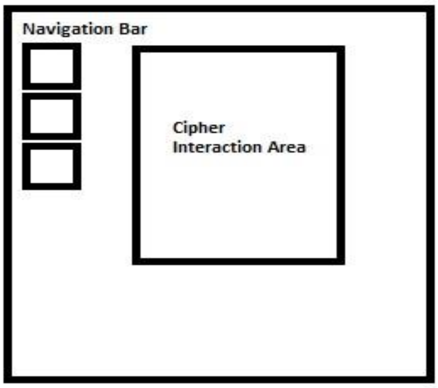
Page Design

Below is the rough design for the simplistic tile design.

Index.html

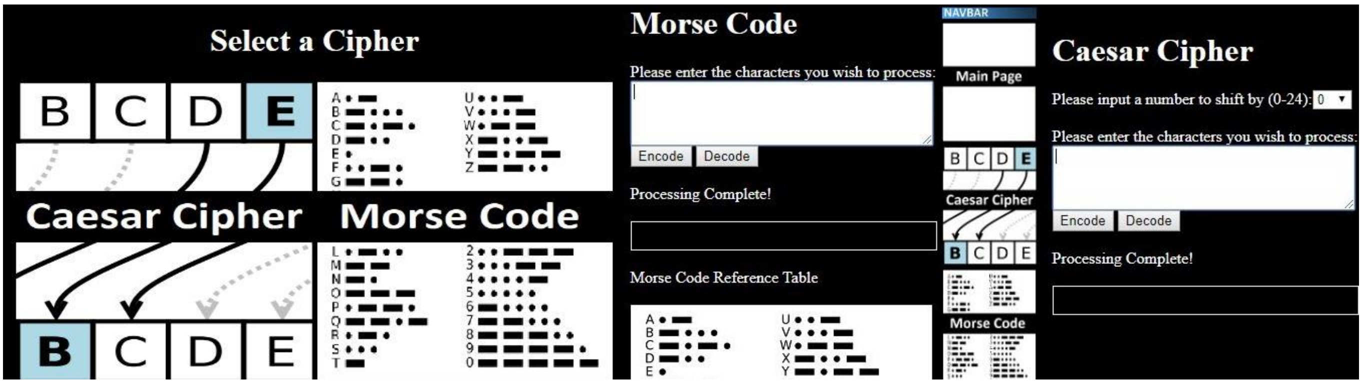


CC.html / MC.html



Below are the main elements of each page / feature to give comparison from draft to finished product.

Main Page | Morse Page | Nav Bar | Caesar Page



Morse Code

Please enter the characters you wish to process:

Processing Complete!

Morse Code Reference Table

Caesar Cipher

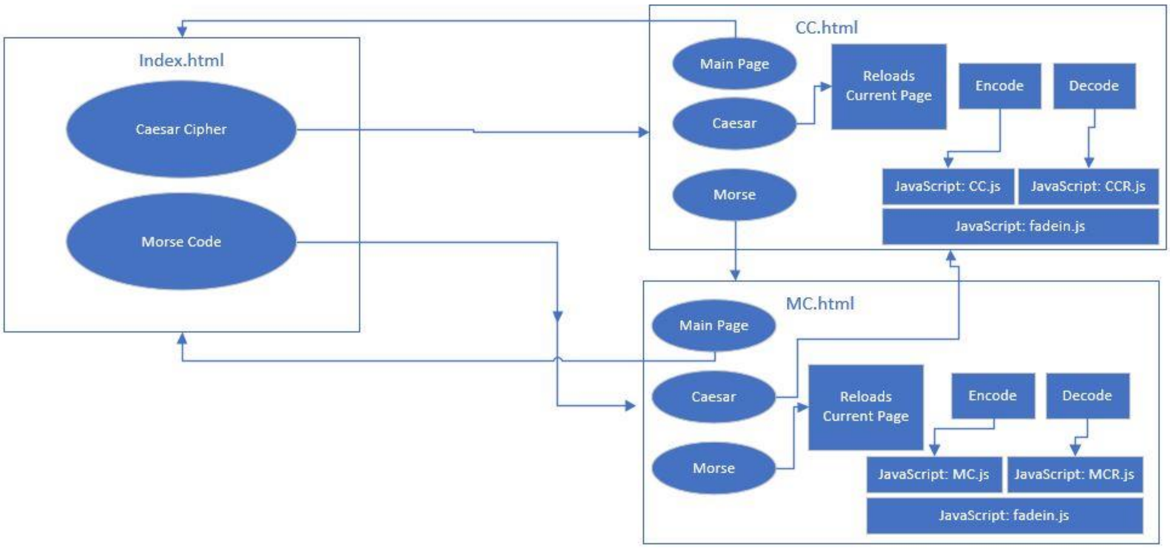
Please input a number to shift by (0-24):

Please enter the characters you wish to process:

Processing Complete!

Page Navigation Flow Chart

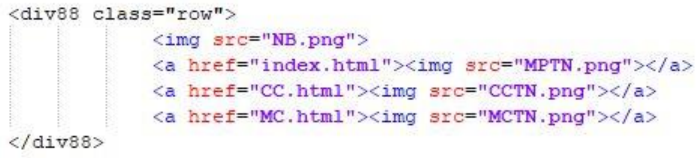
Below is a flow chart showing the flow of how each is linked.



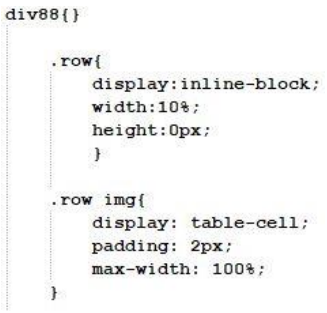
Implementation

Navigation Bar

Below is the content of the division created for the Navigation Bar. Also shows the CSS used to manipulate this positioning and auto sizing depending on window size. Padding has been used to create a small gap between each image to avoid overlap.



```
<div88 class="row">
            <img src="NB.png">
            <a href="index.html"><img src="MPTN.png"></a>
            <a href="CC.html"><img src="CCTN.png"></a>
            <a href="MC.html"><img src="MCTN.png"></a>
</div88>
```



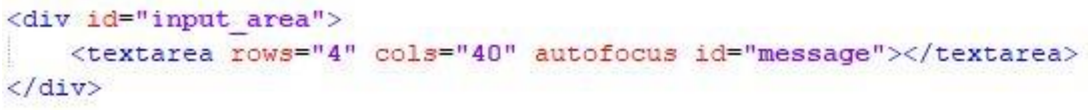
```
div88{}

    .row{
        display:inline-block;
        width:10%;
        height:0px;
        }

    .row img{
        display: table-cell;
        padding: 2px;
        max-width: 100%;
    }
```

User Input Area

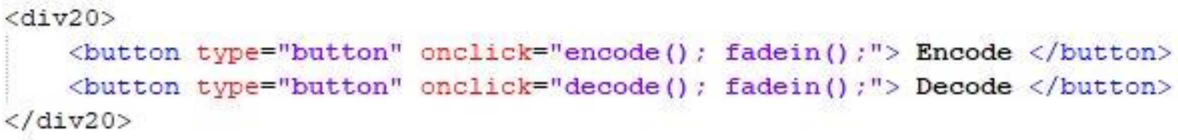
Setting the rows and cols allows for the manipulation of the default text area size. Auto focus is a quality of life setting as it allows the user to immediately type into the box without having to select it. The JavaScript function will get an element by searching for the divisions ID of "input_area".



```
<div id="input_area">
    <textarea rows="4" cols="40" autofocus id="message"></textarea>
</div>
```

Buttons

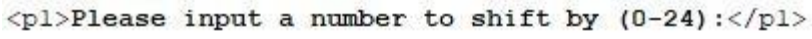
Each page contains 2 buttons, they on click trigger 2 different JavaScripts. The first will be for encoding the user input and the second is the fadein transition effect. The second will be for decoding the user input.



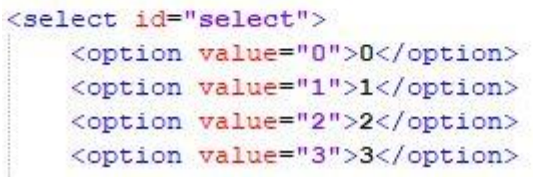
```
<div20>
    <button type="button" onclick="encode(); fadein();"> Encode </button>
    <button type="button" onclick="decode(); fadein();"> Decode </button>
</div20>
```

Caesar Shift Select

A drop-down menu was implemented to allow the user to select the number of shifts required for the Caesar Cipher. Here is an example of some selections.



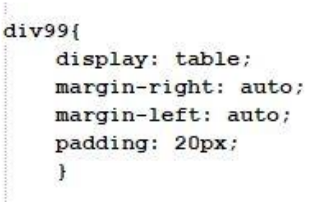
```
<p1>Please input a number to shift by (0-24):</p1>
```



```
<select id="select">
    <option value="0">0</option>
    <option value="1">1</option>
    <option value="2">2</option>
    <option value="3">3</option>
```

Main body manipulation

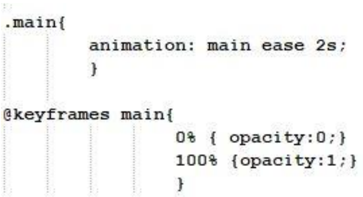
This is the CSS used to manipulate the size and position of the main section of the two cipher pages. It forces the page to centre and readjust depending on the size of the window. Padding allows for an area around the division to add spacing around the area to avoid clashing with the edge of the page.



```
div99{
    display: table;
    margin-right: auto;
    margin-left: auto;
    padding: 20px;
    }
```

Main body fade transition

Div99 is a division that covers the entire main centre section of the page. By applying a class of "main" it has allowed me to apply an animation of fading upon page load.

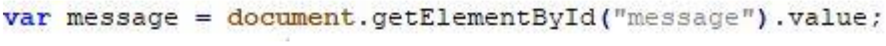


```
.main{
        animation: main ease 2s;
        }

@keyframes main{
                0% { opacity:0;}
                100% {opacity:1;}
                }
```

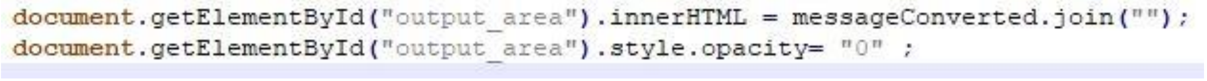
JavaScript

Below is the code I have used to search the html for the "message" element and store its content as and variable to be used in the script.



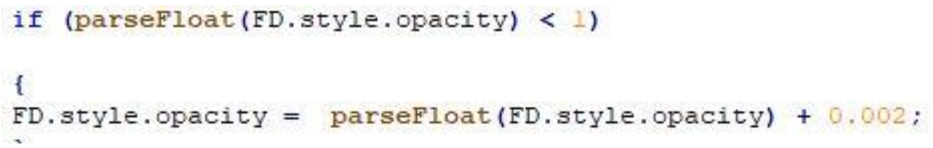
```
var message = document.getElementById("message").value;
```

This is the method used to display the response from the JavaScript into the "output_area" division. It also sets the opacity to 0 making it invisible. This is required for the fadein.js to work.



```
document.getElementById("output_area").innerHTML = messageConverted.join("");
document.getElementById("output_area").style.opacity= "0" ;
```

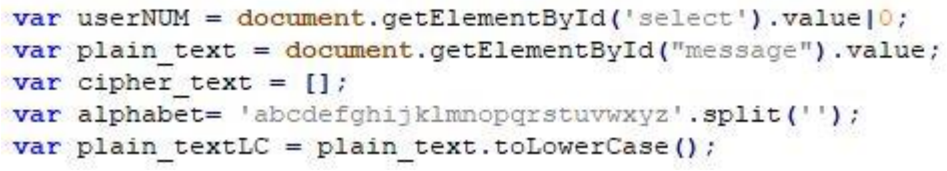
Fade Effect. Here is the loop for checking the opacity setting set by the encode/decode script. As it has been set to 0 it will adjust it until visible in small increments giving a quick fade in effect.



```
if (parseFloat(FD.style.opacity) < 1)

{
FD.style.opacity =  parseFloat(FD.style.opacity) + 0.002;
```

This is how the variables for the Caesar cipher are created. By searching for ID's. The alphabet is declared and the user input is automatically converted to lower case for ease of translation.



```
var userNUM = document.getElementById('select').value|0;
var plain_text = document.getElementById("message").value;
var cipher_text = [];
var alphabet= 'abcdefghijklmnopqrstuvwxyz'.split('');
var plain_textLC = plain_text.toLowerCase();
```

Evaluation

Comparison Requirement vs Delivered
The finished web page provides the user with the option of 2 different classical ciphers to choose from as well as the necessary functionality for the ciphers to work fully such as a text area, display area and buttons to engage the JavaScript.
Additional presentation features such as main body fade in and output reveal have been added above the original requirements to provide the user with a more enjoyable browsing experience.

Possible Improvements
Converting the text output of the Morse Code into audio would have been a nice improvement however I was unable to make this feature work correctly and it did not make it into the final version of the web page.

Problems
The page appears to be suffering from load flash when using the chrome browser. I was unable to replicate this problem on Internet Explorer, Edge or Firefox. This issue appears to be a problem with chrome or potentially an isolated issue with the chrome installed on this machine.

Personal Evaluation

Previous to the start of this module I have had no hands on experience with JavaScript and very little recent experience using HTML / CSS. Recently I have completed a script written in python which has taught me about reading and writing in that language. I feel the skills I have learnt from that language are somewhat transferable to JavaScript as the operate in a similar fashion.

HTML with CSS made manipulating areas of the web page in terms of position and size relatively easy. I have doubts if the methods I have used are the most stable or efficient way, however the methods used through out have proven to be robust during testing.

I decided to keep the page and scripts as simple as possible to match my level of experience. The simplistic design features are not only easy for the user to operate but easier for me to implement and manipulate into the vision I have.

Stackoverflow.com has been a very useful tool for solving problems while writing JavaScript as any problem one might have, has most likely already happened to someone else and there is information about troubleshooting / fixes for this problem.

Lecture notes and Labs have been massively useful with regards to crafting the HTML / CSS of the web page. Especially helpful with guidance on creating a Caesar cipher.

Summative Evaluation

I feel I have delivered every requirement for this project that is within my experience level. Some attempts were made to improve the web page design such as fade in / out animations, this was successful however other features were not, such as text audio for Morse code. Overall there were only minor problems during development and the vision I had originally thought of has been delivered.

References

Transition Information

Stack Overflow. (2015). Pure JavaScript fade in and out - fade in not working. [online] Available at: https://stackoverflow.com/questions/29073294/pure-javascript-fade-in-and-out-fade-in-not-working [Accessed 7 Mar. 2019].

Morse Code Information

L, E. (2017). *js decoding morse code*. [online] Stack Overflow. Available at: https://stackoverflow.com/questions/43726344/js-decoding-morse-code [Accessed 7 Mar. 2019]

Caesar Cipher Information

Wells, S. (2019). *Lab 5 - More JS & Some Design*. 1st ed. [ebook] Edinburgh: Napier University, p.7. Available at: https://moodle.napier.ac.uk/course/view.php?id=28452 [Accessed 7 Mar. 2019].