

# WebTech Report

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## Abstract

The goal of this assignment was design and implement a website using HTML, CSS and Javascript with multiple pages with the ability to encrypt and decipher messages using already existing ciphers. The ciphers used were Caesar Cipher, ROT13 and Al Bhed. I started my research into ROT13 which was pre-discussed and looked at as a starting point in lectures and lab sessions. Once this cipher was implemented correctly and functioning, I used a similar framework in code having to only change a few variables to make it work for the remaining ciphers. The website was made for easy navigation, with the pages linked to one another and the color palette scheme helped shape the visual design of the website to be cohesive. By implementing a functioning script for all ciphers and keeping the same style among the pages, all goals set from the start have been met and the assignment was a success.

## 1 Introduction

The aim of this coursework was to design and implement a website consisting of a set of pages about classical ciphers. The site was to be implemented using HTML, CSS, and Javascript.

The site has to include at least an index.html page, a design.html page, and one additional html page for each cipher that was to be implemented in Javascript.

I started my research into the Rot13 cipher [1], which we investigated in the labs which is a special case of the Caesar Cipher [2] which was used in Ancient Rome to encipher secret messages. This lead me to finding a compiled list of various ciphers that have been invented and used throughout the ages [3]. Having browsed and researched all of them, I got a fair understanding of the different methods that were used to encode text and started to think which ones could be possible for me to implement in Javascript. After reading about the substitution ciphers [4] it reminded me of a fictional language, 'AlBhed' [5], in one of my favourite video game series 'Final Fantasy' which was constructed and operated in the same manner. This lead me to look at the language in dept and implement it on the website.

## 2 Software Design

The ability to reach any page of the website instantly has always been a plus point to me and makes navigating or finding anything swifter and easier. To do so I decided to go with a navigation bar at the top of each page which is stuck there even when scrolling.

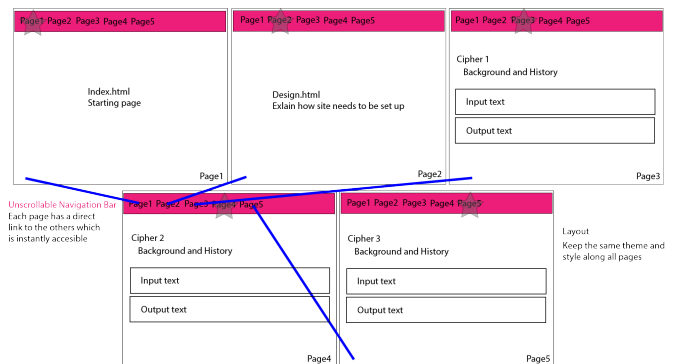


Figure 1: Website - Prototype layout

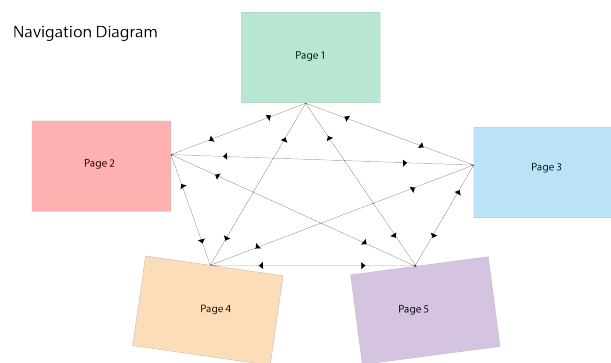


Figure 2: Navigation Diagram - page relation

I wanted the deciphering pages to make it clear that you can enter text into them so I made sure the text fields would stand out with the background colors being dark. The colors used for the website were put together by the Coolers website [6]. I generated many different color schemes and in the end chose the one that felt most pleasing to the eye.

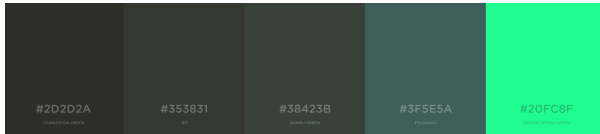


Figure 3: Color Scheme

```

20 {
21     var letter = albhed[input];
22     cipher_text.push(letter);
23 }
24 }
25
26 document.getElementById("output").innerHTML +=
    cipher_text.join("");
27 }

```

### 3 Implementation

I first coded all the necessary features with little regard for what it looked like wanting to make sure everything worked before improving the visual design. A simple black and white version was used at first which I then changed according to the color palette I had chosen.

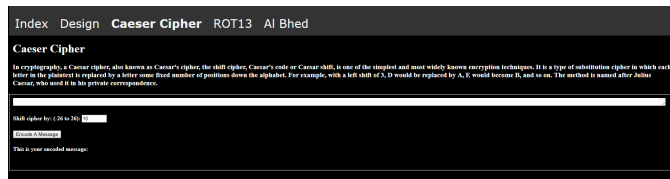


Figure 4: Caesar Cipher - without color palette

To write and organize all my code I utilized the Brackets [7] software. It is very simple to use, has a clear layout and many different useful features; such as a live preview of the changes you make in your code.

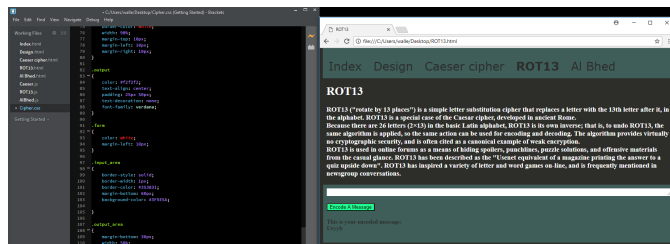


Figure 5: Bracket Software - previewing side by side

Listing 1: AlBhed Cipher Script

```

1 function encode()
2 {
3     var plain_text = document.getElementById("message").value;
4     var cipher_text = [];
5     var alphabet = ['A','a','B','b','C','c','D','d','E','e','F','f','G','g',
6     'H','h','I','i','J','j','K','k','L','l','M','m','N','n','O','o','P','p',
7     'Q','q','R','r','S','s','T','t','U','u','V','v','W','w','X','x','Y','y',
8     'Z','z'];
9
10    var albhed = ['Y','y','P','p','L','l','T','t','A','a','V','v','K','k',
11    'R','r','E','e','Z','z','G','g','M','m','S','s','H','h','U','u','B','b',
12    'X','x','N','n','C','c','D','d','I','i','J','j','F','f','Q','q','O','o',
13    'W','w'];
14
15    for (var idx=0; idx<plain_text.length; idx++)
16    {
17        input = alphabet.indexOf(plain_text[idx]);
18        if(input == -1)
19        {
20            cipher_text.push(plain_text[idx]);
21        }
22        else

```

### 4 Critical evaluation of the implementation

The requirements and design plans of the coursework have been met.

The website looks adequate but not enticing enough to use for any prolonged periods of time. Personally I would grow tired of it soon after getting past the excitement of encrypting and deciphering messages with different cipher methods.

Unfortunately I was unable to implement a fourth or further cipher(s).

Additional possible options to explore are different palette schemes or layouts to make it appear more elegant and perhaps easier to use. The various sections of the elements and layout should be more seamless as a whole.

Other ideas are to perhaps integrate another visual element or audio, which does not interfere with the use of the website. Instead, it would enhance the user experience in a complimentary manner.

### 5 Personal evaluation

There were many different parts to this coursework that I was to an extent unfamiliar with and had to start from the very beginning. Understanding how LaTeX worked and how to achieve the placement of items and text took some time and experimenting with the aid of various Google help threads.

Knowing different coding languages as well as rules and implementations, it took me some time to adjust. After spending some significant hours practising and correcting my errors, I felt I was successfully organizing and writing clean code.

Another part of this coursework that required me to learn from scratch and make sure I understood everything was GitHub and its numerous features. Fortunately there were many online tutorials which explained the main features in detail thus allowing me to upload and save all my work as required.

## References

- [1] Wikipedia, “Rot13.”
- [2] Wikipedia, “Caesar cipher.”
- [3] Wikipedia, “Category: Classical ciphers.”
- [4] Wikipedia, “Substitution cipher.”
- [5] Wikia, “Al bhed.”
- [6] Coolors, “Generate coolors.”
- [7] Brackets, “A modern, open source text editor that understands web design.”