Coursework Report

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Web Tech - Edinburgh Napier University

1 Introduction

1.1 Usecase

As our world plunges forward into a reality where technology and data become more and more part of our daily lives the need and want for secuirity measures and encrpytion grows. This has launched an industry with countless potential moving forward with new and innovative ways to keep peoples data protected.

1.2 Ciphers and Web

What better way to familiarize ourselves with these concepts than to create and deploy our very own simple encryption /decryption functions implemented into our very own website. Web was a great starting point for deploying a service quickly and conviniently. Web is also excellent when it comes to the sheer number of users you can very easily reach as many devices are equiped with browser support. Although it has it's limitations Javascript has all the tools necessary to put together the encryption and encoding part of the project. CSS and html however tedious can be a great starting point to UI generally but also are great for simple projects such as these.

1.3 Goals

The main goal of this assignement is to experience the difficulties and challeneges faced in creating and maintaining UI that is intuitive and functional without giving up visual appeal. Another goal of this assignment is in handling and parsing data. However simple the task and out Ciphers might be, alot can be learned in creating and implementing these Ciphers.

2 Software Design

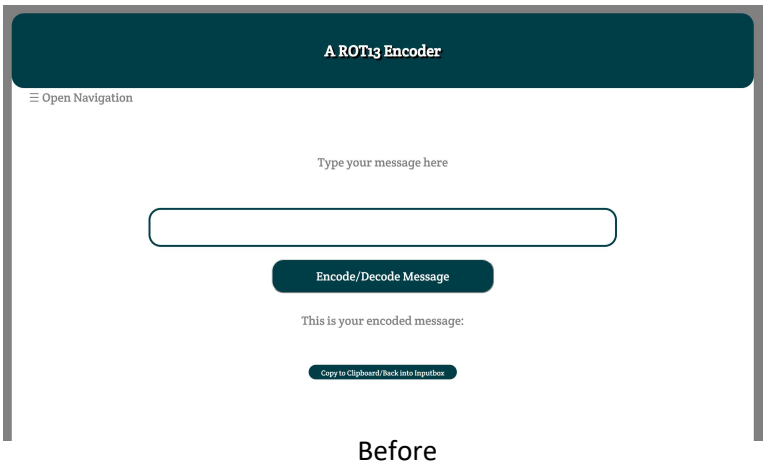
2.1 UI

The design choice for the website was the same from the beggining, with attention to being minilistic and soft on the eyes in every way possible. Given the simplicity of our websites functionality it's best to keep things clear and simple void from unneccessary clutter.
Headers, buttons, body, and most divs on the website use a border radius property to curve the element edges giving it a distinct modern look.
Flat colors are used for the backrounds inspired mostly by Googles material design phylosophy.

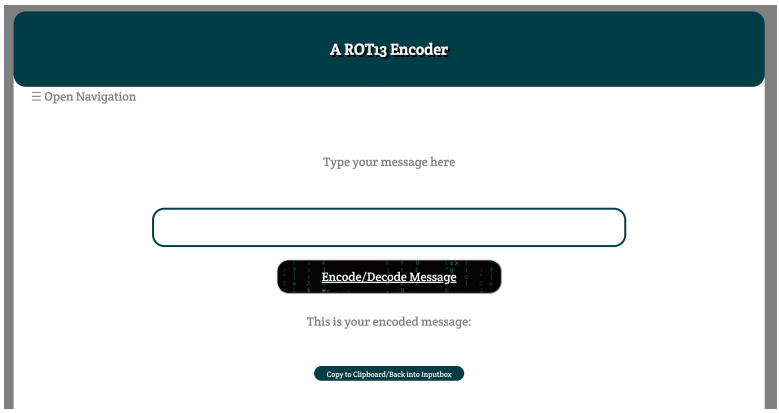
2.2 Colors and fonts

Turqouise for the backround of headers and buttons but also to highlight links and selected text. Gray is used as the font color for the labels and input/output texts furthering soft on the eyes design choice.
Buttons on the homepage are fitted with hover property so that backround changes to an image representing the Cipher of choice, this same technique is used to achive the 'matrix make it rain effect on the encode and decode buttons on the Cipher pages.

Demonstration of 'hover' property used to achieve this effect



Before
\/\/\/\/
After



2.2 Scalability

When designing the website lots of attension was given to the CSS elements to make sure that all elements stay uniform and center with respect to other elements on the page. This results in a website that scales very well to diffrent displays and screen ratios despite lack of proprietary planning.

3 Implementation

To achieve the scalability mentioned above the CSS 'display:grid' was implemented and used to structure all of the main elements in the page.
i.e. The 2x2 grid on the Homepage (see figure 4.1).
By giving determining column and row values and alignment the conformative UI layout designe is set in place.

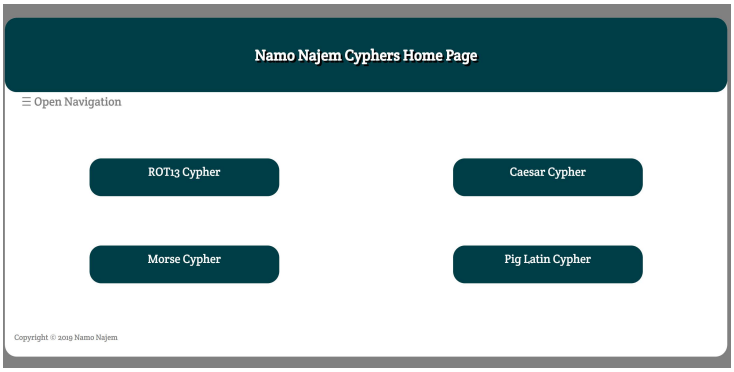


Figure 3.1 Home Page

3.1 Home Page

Home page of the website is holds most important design choices as it's the face of the whole assigment and first impressions to the user must be great as expectations are met. Following the same design queues and consistency with the Cipher pages, from the buttons to the hover animations. Simplicity also being one

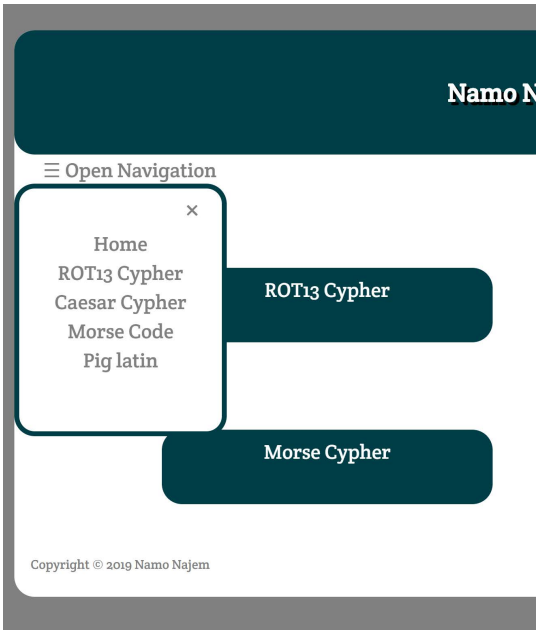


Figure 3.2 Side Navigation

3.2 Side Navigation

We need something to be able to navigate between the diffrent pages in our site and a side navigation bar was the clear choice in this regard.
Having the navigation on the side provides a design that can be easily added to any of our pages and doesn't sacrifice on making the pages longer in height. This saves on vertical space, something precious when having pages designed not to make much use of the horizontal space available.

3.3 Copy button

In order to make interaction with the UI smoother it was fit to implement a copy button that when pressed copies the text from the output field back into input to allow for faster decoding.

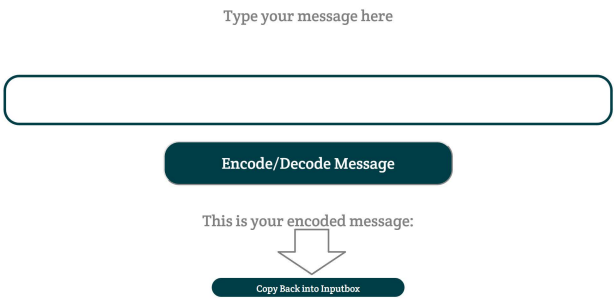
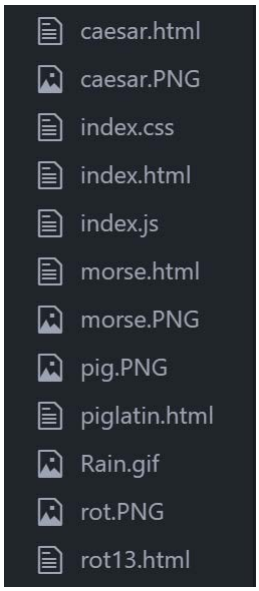


Figure 3.3 copy button

4 Structure

The website supports multiple pages and html documents, one for the main page, and one page for each Cipher respectively. However all pages and almost all CSS for the website is in a single CSS file names index.css. This allows for less repeated code among similar or in most cases identical elements. The same adaptation applies to the javascript required for functionality as yet again alot of functions appear on many pages simoultaneously.

Below is a list of all file names that compose the website



5 GitHub Pages

Deploying the website is key in completing this assignment because of the ease and wide array of options available. GitHub pages was selected as it suites are needs well and is amongst the easiest to setup.

All that needs to be done is for all required files to be places in a branch with an index.html that acts as a starting point for our website, when said branch is selected GitHub automatically hosts the website and deploys a link that can be accessed by anyone, and given our implementation of a navigation bat all is set into place.

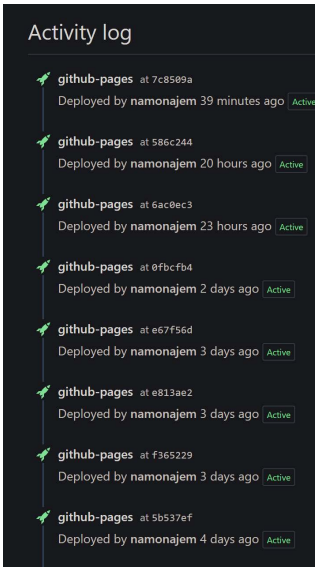


Figure 5.1 GitHub Pages activity log menu

6 Critical Evaluation

The minimum requirement for this assigment was the use of HTML JS and CSS exclusively to create a website that allowed, encoding and decoding messages with all neccessary elements and a way to switch between Ciphers implemented. All of those requirements have been met and further efforts have been made to polish the experience.

7 Ciphers

All Ciphers apart from the ROT13 from the practicals has been written up from scratch, there are a few simple flags to deter from invalid input.

7.1 ROT13 Cipher

The ROT13 Cypher is an ancient roman Cypher designed around the latin alphabet and as it's name suggests rotates the index by 13 charecters. Therefore the same technique used to encode the message can also be used to decode.

7.2 Caesar Cipher

Caesar Cipher is a cypher very similar to the ROT13 Cypher in that charecters are shifted a certain indexes to the right, some Caesar Ciphers can include a setting to select how much to shift the index.

7.3 Morse Cipher

Morse Cypher can encode from english to Morse Code and decode Morse Code back into English. Techniques used include spaces to split Morse letters and '/' to split Morse words from one another. This allows for precise and easy decoding where might otherwise not be possible

7.4 Pig Latin Cipher

The Pig Latin Cypher translates English into pig latin english by adding '-way' to the end of every word that starts with a vowel. If a word starts with a constant or

more than one constanant then all constanants until the first vowel and moved to the end of the word followed by a 'ay'.
The decision had to be made to include '-' in the pig latin as decoding would otherwise not be properly possible.

8 Conclusion and Reflection

8.1 Strengths and Weakness

Strengths of my assignment include a strong consistency in design choices and uniformity between all the UI elements, a simple yet distinctive look to the presentation, and intuitive placement of said elements. Scalability of the presentation a strong case for deployability.

The greatest weakness of the assignment is the messiness of CSS code. Alot is left to be desired in the techniques used to implement CSS. JS flags for bad input are very rudimentary and could be further improved.
The inclusion of a keyed cypher would also have been a great addition to the project.

8.2 Personal Evaluation

Coming into this module I felt almost something to prove as I am very vocal with my hates toward bad UI and how much of a dealbreaker it can be when using a service/product. This module is the second time I've had to implement UI and the first time it to this extent. My eyes are opened towards alot of the difficulties and restraints of implementing good UI effectively. Even though my apprecitation for great implementation has increased you can say I'll be a bit more forgiving when i encounter the next UI bug in my favorite APP etc.

9 References

https://en.wikipedia.org/wiki/Caesar_cipher

https://en.wikipedia.org/wiki/ROT13

http://www.snowcrest.net/donnelly/piglatin.html

https://morsecode.scphillips.com/translator.html

https://en.wikipedia.org/wiki/Morse_code

http://www.learnmorsecode.com/

https://
www.w3schools.com/css/
css_grid.asp