CTEC3451 – DEVELOPMNET PROJECT

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[School]

[Course title]

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Readables

Github link - https://github.com/KamWilliams/Final-Year-Project.git

# Introduction

## Background

Throughout a person’s life there are many things that they can do to improve themselves. This could be going to gym, playing a sport, or going to do some yoga. These are all great ideas to go along with when looking at self-improvement, the only problem is they all look at improving the person physically. Just like many other parts of the human body the brain is a muscle and needs to worked out for it to stay in shape and even get stronger. One of the best ways to do this is to start reading books.

Just like with all muscles, the phrase use it or lose it is used often. This means that if you don't keep practising or using a talent, you can lose it. For example, if a person does not exercise their physical body, they will most likely lose strength, stamina, and endurance. This also refers to the brain, if the muscles in the brain are not flexed regularly then eventually the brains cognitive abilities will lessen. This means its crucial to exercise the brain to keep it stimulated.

Every day, new studies on brain plasticity are published. We used to believe that once you've completely evolved, you're stuck with the tools you learned as a child. This is true to some extent, but it does not have to be. New understandings of our brains are revealing that they are significantly more adaptable than we give them credit for. The expression "you can't teach an old dog new tricks" comes to mind. We know that we can teach an old dog new tricks. We are lot more knowledgeable about how to go about it now, therefore it is now possible.

## Personal Motivation

As a child I was encouraged to read a lot of books, whether that was during school or at home by my parents. It has been proven by multiple studies that reading as a child can only benefit their development whether that may be at school, work, or life in general (Children's Bureau, 2017). Not only does reading benefit children but also people of any age.

As I have gotten older and was not encouraged as much by others to continue reading, the amount I read rapidly declined until I stopped reading all together. When begging to decide what I wanted to do my development project on, I was going through a personal development phase as I wanted to develop myself into a more well-rounded person as I had noticed I could help myself a lot more in life by making a few changes.

One of these changes I decided to make was to get back into reading. To me this was a no brainer as the benefits of reading are obvious to anyone. Reading books such as novels provides benefits such as entertainment whilst also stimulating parts of the brain that would not otherwise be stimulated through over forms of media entertainment. Reading books such as self-help books not only help improve oneself because the brain is being stimulated but you are learning about how to improve from a person (or group of people), that know a lot more than the reader.

## Objectives

As specified in the project contract, numerous objectives must be met for this project to be considered a success. To summarise what was said in the contract, they are as follows:

* Research into the benefits of reading
* Research for titles for library
* Investigation of system requirements
* Develop a simple to use web application to inform and display library

During the development of this project there where a few more objectives that I thought would need to be met for myself to consider this project a success:

* Create clean code that would be easy to read and maintain by someone other than myself
* Research into existing websites that offer similar services
* Develop a test plan based on different use cases
* To allow for html validation using W3C html validation service

# Research

## Reading and its Benefits

Learning to read is a sign of literacy and a gateway to further education (Scott G. Paris and Janis E. Jacobs 1984). In adults it can help to keep the brain active by stimulating areas of the brain that are not normally stimulated during everyday life. In children it can help develop them in their learning and make them better students. As their young children’s brain are more malleable than adults, reading can be a great tool to be used for their developing mind.

There are 7 main benefits that come when introducing reading to children, these are:

1. Supported cognitive development - Reading to young children has been shown to boost cognitive skills and aid in the cognitive development process. Cognitive development is defined as "the formation of thought processes, including remembering, problem solving, and decision-making, from childhood through adolescence to adulthood" (HealthofChildren.com). It is concerned with how a person observes and thinks about his or her surroundings through areas such as information processing, intelligence, reasoning, language development, attention span, and memory.
2. Improved language skills - Reading to young children daily, beginning in infancy, can aid in language acquisition, communication skills, social skills, and literacy abilities. This is because reading to your children in their early months activates the area of the brain that allows them to absorb the meaning of words and aids in the development of essential language, literacy, and social skills.
3. Preparation for academic success - Early reading with your child allows youngsters to interact with their parents and parents to communicate with their children. It allows youngsters to expand their vocabulary through exposure to new words, as well as build listening skills through hearing someone read to them, which are critical to their academic success.
4. Developing a special bond with your child - Reading to your young child on a regular basis can undoubtedly help you build a stronger relationship with them. Spending time with children is one of the most important things you can do to positively influence their development. Reading to your children is an excellent way to establish a regular, shared event in which you can look forward to spending time together. With shared reading, your child will learn to trust and expect you to be there for them. The value of trust to young children cannot be emphasised.
5. Increased concentration and discipline - Aside from generating shared time together, including regular reading time into your child's calendar has additional benefit: better discipline and attentiveness. Young children rarely stay still for lengthy periods of time, and it is sometimes difficult to persuade them to focus. However, if you introduce frequent reading to your children, you may see a shift in their behaviour. Toddlers may wriggle and become distracted during story time at first, but they will ultimately learn to sit still for the duration of the book.
6. Improved imagination and creativity - Young children have a natural ability to dream large and use their imaginations. Reading aloud to your child allows them to use their imaginations to explore people, places, times, and events beyond their own experiences. Reading as a creative hobby can introduce your child to a whole new universe. By expanding your child's imagination, he or she is more likely to dream bigger and act creatively in the future, which will help their education, job, and life.
7. Cultivating lifelong love of reading - "Every time we read to a child, we're sending a 'pleasure' message to the child's brain," says Jim Trelease, author of the best-selling The Read-Aloud Handbook. It's almost like a commercial, teaching the child to equate books and print with enjoyment." (ReadAloud.org)

This link between reading and "pleasure" is critical for later-life success. "Learning is the minimum need for success in every industry," says personal development coach and speaker Brian Tracy.

(Children’s Bureau, 2017)

The last benefit of reading to young children (Cultivating a lifelong love of reading), is probably one of the biggest reasons why so many adults enjoy reading. If you ask the majority of adult readers why or what got them into reading, a lot of them will probably say that they have loved reading since they were a child. The idea behind ‘Readables’ is help adults who have lost that love for reading from when they or were a child or gain a love for reading if they never had it in the first place. The goal is not to force the users of ‘Readables’ into loving the books on display, but by offering little bits of information, to peak interest and encouraging them to go and find out more for themselves. The books that are on display within the website will show 1 or 2 chapters per book and hopefully this will encourage the reader to either go and find the rest of the book for themselves or find similar books just like the one they have just read. This is done so that new readers will not become reliant on the website. By them having to go out and find more about the books on display they will find out where the best place for them to buy books is and where they can find more books like it. Hopefully by the end of their journey they will have found the convenient place to access these books and much more like it, which is the whole goal of the website.

## Existing Technologies

Before beginning to develop my project, I had a look around the internet to see if there were any similar websites already out there. This was mainly to help with the design process and gather ideas for my own project before starting the creation process. One similar website I found to the one I have decided to make was a website called ‘basicbooks.com’. Basic books is a publishing company, on their website they show all of the books that they publish. When looking around the website and encountering a book that piques interest, you will be taken to a webpage where it will show you where to buy this book and will even give the user a short snippet of what is inside the book for some of the books in their library. How this is similar to ‘Readables’ is that it shows off books that the user can get access to, whilst also allowing the user to read a small part of the book for free before the user decides to continue with their purchase of the book. The major difference between ‘Basic Books’ and ‘Readables’ is that ‘Basic Books’ only show books that they have published, as ‘Readables’ is not a publishing company not will it show books that they may have published but also books that they may not have published.

The goal of ‘Readables’ is to show off books that will hopefully get the user to start reading, so the books chosen to display will have been researched by myself in the hopes that the books I have chosen will be better suited for that purpose.

## Library

The research for the books to put in the library was an interesting part of this project for me. I was able to look the internet and find books of different genres that I might be interested in reading. As someone who wants to get back into reading but not knowing where to start or what books I would be interested in reading this part of the project development really sparked my interest. I was able to find some books that I will be interested in reading in the future. Not only that but was able to find places where I could learn more about different books I would have never of heard of prior to starting this project.

By doing this I was further able to prove that with a little bit of a push it is easy to find out about books that could pique your interest and where to get these books. Seeing how easy it was for myself to find this information, the goal of the ‘Readables’ website became a lot clearer to me. When first deciding to develop this website, I was in the mindset that I would have to spoon feed the user’s information so that they would enjoy reading again, but by how quickly I was able to find books that I was interested in I was in full belief that anyone could do the same. I felt like the users would have a much better experience if they were able to go off and find books that they were interested in.

# Analysis

## The End Goal

The overall goal of the project is to produce an online website with the idea of attempting to help adults develop the hobby of reading. There are so many benefits of reading, encouraging more people to read can only bring about positive change. Not only is reading an amazing tool for helping to keep the brain stimulated but a great tool for entertainment.

There are a few issues that must be addressed in order to accomplish this project. These are some examples:

* How will the text be displayed
* What is the best way to develop the website
* Best colour scheme, to easily display text
* How to make the website as easy to navigate as possible
* What books to display on the website
* Should there be back-end infrastructure developed

Before any development can begin decisions on how what to do about these points needs to be made. The website needs to be a standalone application that the user can access without download and at any time.

## Development Methodology

Just like with any development of a project, a development style had to be chosen before development began. When deciding what methodology to utilise both the agile and the waterfall development methodologies were options that made a lot of sense to use. When looking further into both methodologies, both methodologies seemed quite similar in their steps. Both methodologies would have been effective to use for this project, from my research I decided that the agile methodology would be better for larger projects or projects that are worked on in a group. Due to this I decided to utilise the waterfall methodology as I felt like I could achieve the same goal in a more effective manner. As it was just myself working on the project, I was able to keep track myself of where I was and what needed to be done. If I was working on the same project but in a group, I would have decided to use the agile methodology, this is because by using this methodology instead other people who were also working on the project would be able to get a better idea of each person has and has not done. Due to the waterfall methodology not including sprint meetings I was able to cut out a whole step of the development process without hindering the development process. As it was just me working on the project the sprint meetings were not necessary as I was able to keep track of what needed to be done myself.

# Design and implementation

## Frontend

When deciding how to design the frontend of the website there were a few styling options I had to consider. To help with the designing process I decided to look around the internet to find websites I like the design of. This was to get ideas of how I wanted to design my own website.

From my research I found that the majority of the websites that I liked were very minimalistic and contained minimal writing. This was the style I decided to go with, not only because I liked the style of it, but I did not want to overload the pages with text. I thought that websites that had a lot going on looked very clunky and found it difficult for the website to keep my attention as I wanted to move on from the page as quickly as possible.

Graphical user interface, text, application

Description automatically generated

(Figure 1)

This was the style of the front page, the first thing the users will see this. It’s a very minimalistic design only displaying important information i.e., letting the user know what website they have accessed and giving a little away of what the website is about.

Text

Description automatically generated

(Figure 2)

The html code for this section is very simplistic, I have attempted to make the headings for each part of the code very easy to understand, so that someone could come and look at the code and understand what part of the code does what.

|  |  |
| --- | --- |
|  | The heading class was used to begin the implementation of the header. In the CSS stylesheet there will be styles attached to this heading class that will decide the styling of each heading on the website. |
|  | The heading container is used to create a “container” for the heading. It will be used to create spacing and positioning of the heading class. |
|  | Each of these heading classes are used for the styling of the text for each part of the heading. |
|  | The main button class will be for the styling of the buttons that will throughout the website. |

I tried to make the headings used throughout the html development as clear as possible so that if someone else were to look at the code they could try and understand easier what everything did.

Another major decision I had to make when designing the frontend of the website was the navigation. How the user interacted with was an important decision that needed to be made. I wanted to make the website as simple to interact with as possible so that anyone could understand how to navigate their way through the website.

There were two major decisions I made when choosing how to allow the user to navigate through the website. The first was to create a navigation bar that would allow the user to find access every part of what is on that that page. And the second was to create a footer menu that the user could use to access any of the main pages throughout the website.

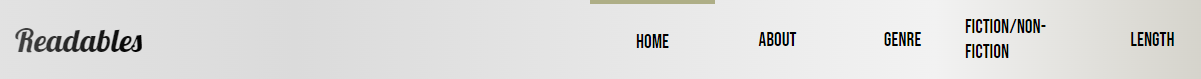
### Navigation bar

Logo

Description automatically generated with medium confidence

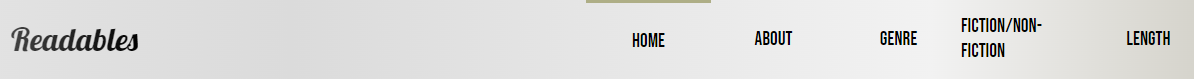
(Figure 3)

From here every section of the page can be accessed, once clicked the page will scroll to the chosen section. So that it is as accessible as possible, no matter where the user scrolls on each page the navigation section will always be on show.



(Figure 4)

Not only will the user be able access every section of the page from the navigation bar, but will also always be one click away from the home page, so that if the user gets lost on the website they will easily be able to find a familiar page so they can continue using the website.

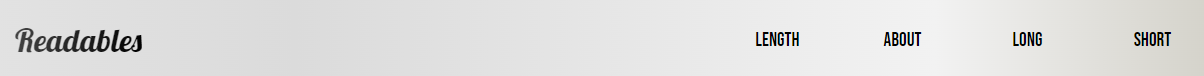












(Figure 5)

Each page will have a different navigation menu depending on the page and what sections are on the page. Each page has a highlight function on the navigation menu. Depending on where the user has scrolled to on the page that section on the navigation menu will light up.

Text

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated with medium confidence

Text

Description automatically generated with medium confidence

(Figure 6)

This figure shows how each link in the navigation menu will highlight itself as the user scrolls through each page. This was done to further help the user understand where they are on each page, plus I thought it added extra style to the page.

Text

Description automatically generated

(Figure 7)

The code above shows what is needed to create the html side of the navigation bar. I tried to make it as simplistic as possible.

|  |  |
| --- | --- |
|  | The navbar class is used to initiate the navbar, all code used to make up the navbar will be written inside this class. |
|  | The navbar container creates an invisible box for all the content within the navbar to be displayed. This class will also be used for sizing and positioning of the navbar on the webpage. |
|  | The navbar toggle classed is used for when the websites responsiveness comes is being utilised. Once the website has gotten to small enough size, it will create the menu in the top right corner in which the navbar will now be inside of. |
|  | The navbar menu class is to initiate the space for the navigation links. Inside of this class all the links in the navigation menu will be placed. |
|  | Navbar item is used to identify each navigation link. The class will be used to style the text within the navigation bar. I wanted to create a class that could be used so that each link would have the exact same CSS styling. |
|  | The navbar links class is used to edit the styling of the links within the navigation bar. The class is mainly be used to edit the colouring the links once they have been hovered over. |

### Footer menu

Text

Description automatically generated with medium confidence

(Figure 8)

For every major page the user can visit on the website there will be a link that allows them access that webpage. This will be displayed at the bottom of each page, always allowing the user to navigate their way around the website easily.

Text

Description automatically generated

(Figure 9)

This code shows how the footer is created within the html. The code has been written in such a way that each part of the footer has been separated by sections and divs.

|  |  |
| --- | --- |
|  | The footer container creates the space in which the footer will be placed inside of. In this instance it has been used to choose its display style (flex or grid), the alignment of the items, and to style the background of this section. |
|  | The footer links class has been used to decide how much space on the page the text inside the footer will take up on the page. |
|  | The footer links wrapper was used to decide how the text will be displayed, if the size of the webpage changes, the direction in which the text will be displayed will also change. |
|  | The footer links items will be used to style the actual text within the footer as well the links attached to the text. |
|  | At the bottom of the footer there is the logo of the website (that will take the user to the home page no matter where they are on the website) and a website rights text. The social media class is used to create the sizing of this section, dictating how much space the section will take up on the webpage. |
|  | The social media wrap class is used to dictate how the text will be displayed. If the sized of the webpage changes past a certain point, how the text will be displayed will also change. |
|  | The footer logo class is used to style the logo within the footer. |
|  | The website rights class is used for the styling of the website rights. It was mainly used to style to the colour of the text and to create a margin from the bottom the page. |

## Responsive

Just like with the vast majority of websites published today I wanted to create the website in such a way that it is accessible from multiple different devices with different screen sizes. This is so that the website is as easily accessible no matter what device they are trying to access the website from.

|  |  |
| --- | --- |
|  | Each of these sections of code will perform different functions depending on the size the screen being used to access the website. Depending on the size of the screen the sizing of the items on the webpage will be altered to better fit everything onto the page without any warping or losing anything that will be displayed on the full-size pages. |
|  |
|  |
|  |
|  |
|  |

## Java Script

With the java script for the website there was a few things I wanted to do. The first was create the mobile menu, which was used when the website reached a certain size. Instead of the navigation menu taking up space at the top of the screen I wanted to create a menu in which the user could click on to access all the links in the navigation menu. The second was the highlighting of the navigation bar links depending on where the user has scrolled to on the page.

### Mobile Menu

As mentioned previously the mobile menu is used when the screen size reaches a certain point to save space on the screen. Once the screen has reached a certain threshold the navigation bar will disappear, and three vertical lines will appear in its place. Once these vertical lines have been clicked the navigation menu will appear on the screen.

Background pattern

Description automatically generated

(Figure 10)

The navigation will look like this while the user is scrolling through the website, these three lines take up a lot less space than what the navigation bar would have done. Graphical user interface

Description automatically generated with medium confidence

(Figure 11)

Once the navigation menu has been clicked this is what the user will see. The links that they can use to navigate the page will appear on top of the webpage allowing the user to navigate the website with ease.

Text

Description automatically generated

(Figure 12)

This code in the Java script is used to display the mobile menu. Once the page reaches a specific size this part of the code will automatically be activated and allow for the mobile menu to work efficiently.

Text

Description automatically generated

(Figure 13)

Once the user clicks on one of the navigation menus links this part of the code is used to automatically close the navigation menu. This was done to try improve quality of life for user if they were to use the navigation menu. If this part of the code was not there the user would have to chose what part of the webpage they would like to view and then close the navigation menu themselves. To me this seemed very unnecessary, if I was using a website that made me do, I would probably never visit the website again.

### Highlight

To create the highlight for the navigation bar I had to refer to the id of each section on the webpage. As I had already done to help with the styling, I was easily able to reference each of the webpage sections.

Text

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated

Text

Description automatically generated with medium confidence

Text

Description automatically generated with medium confidence

(Figure 6)

As the user scrolls through the webpage the highlight function will look like this. The highlight function is there to better help the user understand where they are on the webpage.

Text

Description automatically generated

(Figure 14)

This part of code in the JavaScript is used to create the active menu when scrolling. This is done so that the webpage can understand where it is and make a note of this on the back end of the website.

Text

Description automatically generated

(Figure 15)

This part of the code is used to add the highlight to the navigation menu. The important part of this code is the ‘scrollPos’. When the user scrolls past each scroll position the highlight will change depending on where they have scrolled to. Each if statement adds a highlight the section of the webpage it is focused on as well removing the highlight from the previous navigation menu highlight. If the user is scrolling down the if statement will remove the highlight from the previous navigation link, if the user is scrolling up the highlight will be removed from the navigation link after the current webpage (if we are looking at the links in order).

# Testing

For this project I used two forms of testing, the W3C markup validation service as well as peer testing. The W3C validation allowed me to make sure there was no errors in the code that I have written while peer testing allowed me to make sure that all of my links worked and the navigation through the website was as smooth and efficient as possible.

## W3C Markup Validation Service

To make sure that there were no mistakes in html code, I frequently used the W3C validation service to make sure that everything was in order. Each time I spent time working on the code during the development process I entered what I had done into the service to make sure everything was in order and made any changes that needed to be made if there were any errors.

Graphical user interface, application

Description automatically generated

(Figure 16)

Entering my code into this service frequently allowed for me to constantly make sure there were no fatal errors in my code during the development process.

## Peer Testing

To make sure that navigation through the website as smooth and simplistic as possible I decided to get some people I knew to try and use the website. This was interesting to me, because as I am the designer of the website no matter what I would understand how to navigate the website, but I wanted to see how someone who did not design the website would interact with it. From this a few minor changes had to be made. Some of the feedback I received lead to me creating the footer section on each page and a back button in the navigation bar once the users had accessed one the pages that displayed the books that they had access to on the website.

# Critical Evaluation

## Objectives and aims

As briefly mentioned earlier in the report the objectives outlined in the first contract are an essential component of the project. If the project's aims were not met, it would be regarded a failure. As the project went on, I realised a few more objectives that needed to be met for the project to be considered a success. Furthermore, the contract's objectives are an essential component of the system. To summarise the goals:

* Research into the benefits of reading
* Research for titles for library
* Investigation of system requirements
* Develop a simple to use web application to inform and display library
* Create clean code that would be easy to read and maintain by someone other than myself
* Research into existing websites that offer similar services
* Develop a test plan based on different use cases
* To allow for html validation using W3C html validation service

Based on the work completed, all these objectives were met. When we combine the aims and objectives, we can see that they have all been met. This is a good indicator of project success. While developing Readables, the initial idea behind it changed a somewhat but the core idea behind what it was supposed to be stayed the same.

## The good

Before beginning this project, I had very little experience in developing websites so for me it was challenge to learn while developing the website. This is something that I would love to pursue further and hopefully get better and better at it as I venture further into it. As this was my first website, I believe that I have done a good job, as I designed it completely from scratch.

## Enhancements

Despite developing a fully functioning website, there are several areas of development that I wish I could have delved further into. Mainly I wish I was able to do more with JavaScript as I feel like that is what I am least confident in.

# Conclusion

To summarise the endeavour, it was a pleasant and engaging learning experience. What has been learned over the last year will be extremely beneficial to future employment chances. Despite some minor flaws and the basic look and style of the website, the code works effectively and accomplishes what was intended from the start.

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