



"Multi-Page Website"

This assessment task supports assessment against: AS91891; AS91893

Achievement standard: 91893 V1 - Use advanced techniques to develop a digital media

outcome (4 credits)

Level: 2 Credits: 4 Assessment: Internal

Student: Elliott Evans

Achievement	Achievement with Merit	Achievement with Excellence	
Use advanced	Use advanced techniques	Use advanced techniques	
techniques to develop a	to develop an informed	to develop a refined	
digital media outcome	digital media outcome	digital media outcome	

Achievement standard: 91891 V1 - Apply conventions to develop a design for a digital

technologies outcome (3 credits)

Level: 2 Credits: 3 Assessment: Internal

Student: Elliott Evans

Achievement	Achievement with Merit	Achievement with Excellence
 Apply conventions to	 Apply conventions to	 Apply conventions to
develop a design for a	develop an informed	develop a refined design
digital technologies	design for a digital	for a digital technologies
outcome	technologies outcome	outcome

The contents of this document, excepting certain components of this title page, are the complete and original work of Elliott M. Evans, 2020, unless specified otherwise.

Formatting for this document is specified as follows:

- All text from page 1 onwards is to be in Ubuntu Mono 12, excepting this page which is in Calibri 12 in accordance with the school standards.
- This document is produced in Google Docs, with the first page converted from .docx
- Code in this document is notated by **BOLDTEXT**, and user quotations notated by *italics*.



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PLANNING

CODE CONVENTIONS

- The code will be written using the standards for HTML5/CSS3, in the provided development environment <u>Brackets</u>. Code will be tested in both Google Chrome (v80.0.3987.149) and Microsoft Edge (v44.18362.449.0), and validated in the W3 <u>HTML5</u> and <u>CSS3</u> validators.
- Class/variable names will be written in the format
 prefix_snake_case. This is because (according to some studies)
 mixedCase and CamelCase take 13.5-20% longer to read, and lowercase
 is even less readable.
- I will use proper tab indent practices in order to achieve visually easy to understand code.
- I will use Double Quotations ("") instead of Single Quotations ('').
- I will leave empty lines between major code sections in order to achieve visually easy to understand code.

RESEARCH

Through my initial research, I identified three websites which contained some or all of the content or design choices I wanted to incorporate in my design. These sites were:

- https://blog.monstermuffin.org/
- https://homelab.blog/
- https://www.wired.com/2010/02/set-up-a-home-server/

These three websites have a few elements in common, namely they are simple, aesthetically pleasing, and provide both personal and subject-related information to the user.

PURPOSE

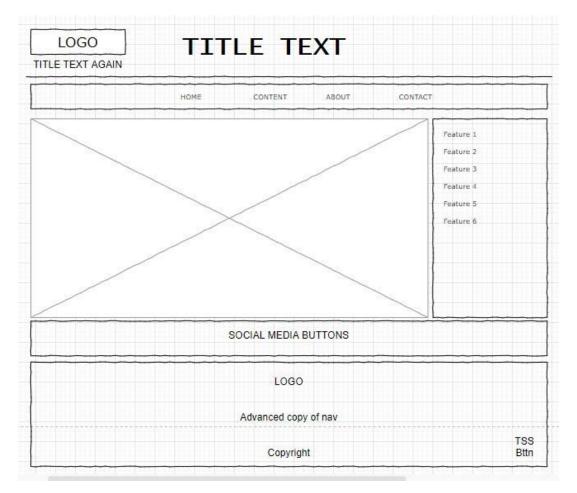
The purpose of this proposed website is to *inform* users of the *what*, *why*, and *how* of home server installations, or "homelabs". This website is primarily targeted at senior-level high school students who aspire towards a career in Information Technology.

I will also include a separate section which describes my personal setup.

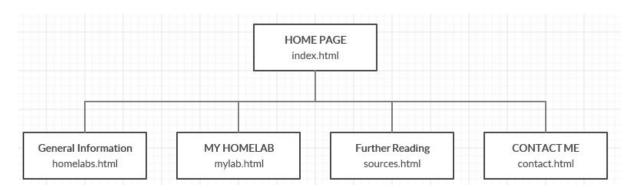


CONCEPTING

According to the assessment, I am required to make a website which



WEBPAGE HIERARCHY





DECOMPOSITION

In order to make the coding process simpler (and in order to comply with the assessment) I broke the task down into __ different components. Each component will be its own version of the code. The decomposed task is as follows:

- 1. Construct the base layout of a stock page using advanced techniques..
- 2. Design CSS @media query for small (≤500px wide) screens
- 3. Create individual web pages which appropriately reference each other.
- 4. Add content, Apply specific CSS colour and image stylings.
- 5. Finish the Writeup

DEVELOPMENT

Version 1

To the left we see the base framework for the website (missing all components), and to the right you can see most of the <head> section is filled with meta tags, as shown below:

This code already includes site-wide content such as fonts, repositories, and keywords. Page-specific content (titles, descriptions) have been left empty.

Next, I began developing the **<body>** section. As CSS was not present at this stage, I inserted this code into the **<head>** temporarily to improve visibility:

```
<!--TEMPORARY! REMOVE AFTER USE-->
<style>
    .red {
        background-color: red;
    }
    .yellow {
        background-color: lightyellow;
    }
</style>
```

This allows me to make different parts of the document visually distinct.

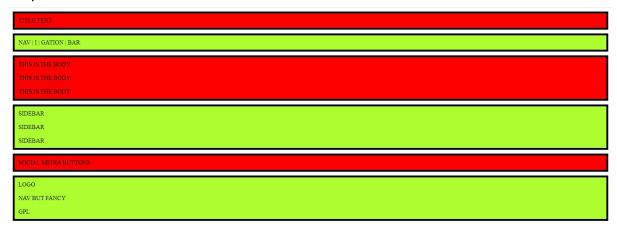
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REFINEMENT:

I decided to remove the LOGO and TITLE TEXT AGAIN sections from my page (as they were shown on the wireframe), as I felt that they didn't add anything to the website and only served to clutter the header area and create an alignment disjoint for the title.

Next I added in the building blocks for the template page of the website. These are the HEADER, the NAV, the BODY, the SIDEBAR, the SOCIAL MEDIA, and the FOOTER. As there is no CSS determining their width, these will display as plain text.



Next, I'll begin developing the CSS (Cascading Style Sheet) for the website. The file I will use for this template is **style.css**, already referenced in the **<head>** section of the template.





I removed the **<style>** tags from the **<head>** section of the HTML and placed it in the CSS file. This is still temporary, but avoids using space in the HTML file.

Next I added the background image for the website. As this will cover the entire page, it needs to go in the **html** superclass as follows:

```
html {
    background-image: url(images/background.jpg);
    background-size: contain;
}
```

This results in the following:



That image, background.jpg, appears as follows:



It represents binary code (dark green text) on a black background, a traditional motif of computer-type aesthetics. I sourced this image from wallpapercave.com, which requires it's

artists to use the CC BY-SA license (Attribution-ShareAlike)

The background image repeated several times on the page, but thanks to it's generic texture design it is hard to tell.



Next I wanted to work on the body of my website. I decided to copy a design from an experimental website template I designed in 2019. The aesthetic of this template is sleek and pleasant, similar to the websites I looked at on Page 2.



I will achieve this design through CSS in the **body{}** css tag, which all the content of the website is stored in.

I decided to have slightly smaller margins in this website, to compensate for the loss of space from having a sidebar

```
22 V body {
23     margin: 4% 8% 4% 8%;
24     padding: 2.5;
25     background-color: rgba(255,255,0.75);
26 }
Which result
```

Which results in this:





Next, I need to start replacing the aesthetically unpleasant red and green boxes from my website. This will start with the title **<div>**.



I stripped the title **<div>** of everything but the content and one class, which I titled **title** for obvious reasons.

I centered the text using the text-align property, and set the font-size property to 300%. I used a percentage size to ensure full window scaling.

Next I set the font styling, using the <u>Coda Caption</u> font (<u>Open Font License</u>, credit <u>Vernon Adams</u>). This can be seen below:



I chose this font as my title font because of its bold, impressive design and simple appearance. It also compliments the other fonts I have selected.

Next, we want to link the title over to the **index.html** page, which (while it doesn't exist as of yet) will eventually exist.

This uses the following code:

```
va {
    color: black;
    animation: titleunhover 0.75s ease-in-out 0s 1 reverse;
    animation-fill-mode: forwards;
}

value (color: black; text-decoration: none;)
    to {color: rgb(62, 157, 31); text-decoration: underline;}

va:hover {
    animation: titlehover 1.5s ease-in-out -0.5s 1 normal;
    animation-fill-mode: forwards;
}

value (color: black; text-decoration: none;)
    to {color: rgb(62, 157, 31); text-decoration: underline;}
}
```

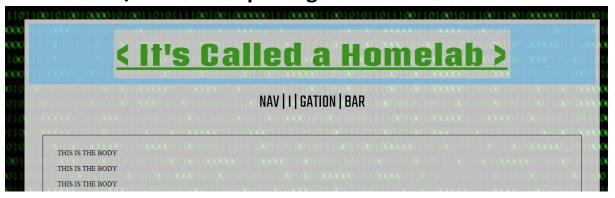
This code will cause the link to fade from black to THIS shade of green:

rgb(62, 157, 31)
over the course of
1.5 seconds, and then
fade out over .75
seconds when
unhovered.

BUG: @keyframes titleunhover triggered on page load.

BUG: @keyframes titleunhover runs full cycle, causing colour pulse.





Note in this image the blue border around the title (demonstrating paddings and margins, temporary effect), the change in the text of the title, the current **hover** animation of the title, and the changes to the Navigation Bar.

I added a FontAwesome icon to the title as a replacement for the < > symbols. I chose the free version of the **fa-server** icon. I would have used the duotone version of the icon, but it required a \$100/pa subscription. Note that the title is in a phase of animation.

It's Called a Homelab

I also removed the underline decoration from the title, as it was not compatible with the FA icon.

It's Called a Homelab

The Navigation Bar was the next order of business, and I started by changing it's background to a 3/4-transparent black tone to distinguish it from the area around it.

I am going to put off the navigation bar until last, as I need to consider the wider necessity of the different pages first.

The step I need to take next is the sidebar alongside the main content. To achieve this simply, I am using the display function FlexBox to achieve this function.

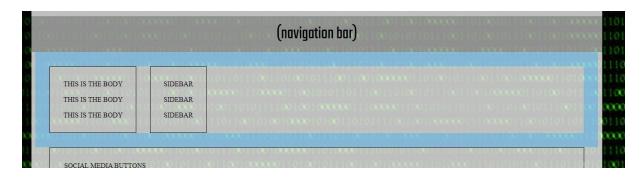


I first wrapped the Content and Sidebar **<div>**s in an extra div, which I (completely originally, in a stroke of genius) called **main**. I added a class, **main_col**, to the sub-divs.

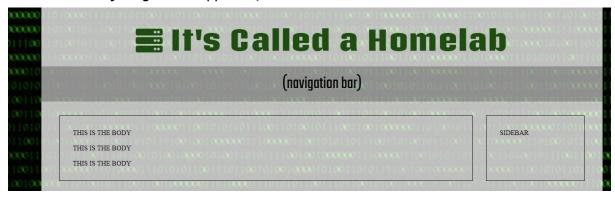
```
.main {
    margin: 2.5%;
    display: flex;
    padding: 00px;
}
.main_col {
    margin: 0px;
    margin-right: 2.5%;
}
```

The **display:flex** is active, and the overall categories margins are handled by the outer div. The exception is margin-right, which is used to separate the divs.

This results in the section looking like this:



When width stylings are applied, this is the final result:



Following on from this, we will add the Social Media buttons. As I do not intend to create actual social media accounts, I will instead link to their home pages.

I will have Reddit, Twitter, Facebook, Instagram, LinkedIn, Discord, and Google+ in the Social Media bar.



First is developing the base code. I will be developing this using the Reddit button.

HTML:

CSS:

.social { padding: 0px; } .social_button { width: 4vw; height: 4vw; text-align: center; font-size: 3.5vw; border-radius: 10px; padding: 2px; } .redd t_social { background-color: orangered; color: white; }

Output:

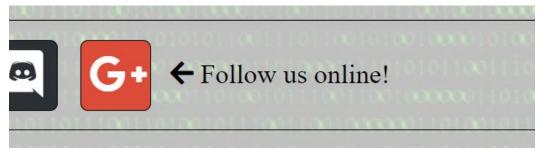


This icon scales with the view window at a flat rate of 4%.

After adding all the specified icons, the resultant product:



I ensured that each of these logos strictly followed colour guidelines, from the simple Reddit **orangered** to the complex instagram **radial-gradient**. The right space looked empty, so I added a tagline.

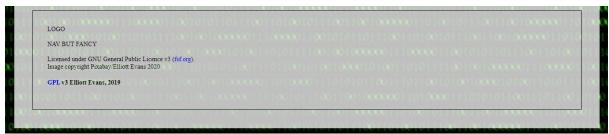


I uploaded my files to Github, available at https://elliott-evans.qithub.io/2020-homelab-assessment/template.html

With Scoppin set 1

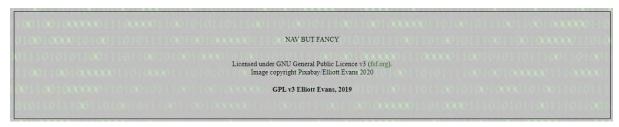
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The next part of the website to get the full treatment is the Footer.



The first thing I needed to do was clean up the text. This meant removing the LOGO text (as I decided against a logo).

I then centered the text and added <hr>> lines around the Nav But Fancy section of the website.



I used the GPL v3 license for this, as I always do, because it is one of the more permissive licenses. I also placed the standard **gpl.txt** in the folder.

It is finally time to configure the <nav> section of the page. This will include the following tabs, where 2nd tier items are included in dropdown menus

- Home (index.html)
- Home Server Zone (homelab.html)
 - What Is A Homelab? (whatlab.html)
 - Why Is A Homelab? (whylab.html)
 - O How Is A Homelab? (howlab.html)
- Blog (blog.html)
 - Don't Have PHP
- My Homelab (mylab.html)
 - My Hardware (myhardware.html)
 - My Software (mysoftware.html)
- About Me (about.html)
- Contact Us (contact.html)



I forgot to document my development of the navigation, but the final result is as so:





I changed the **dropdown:hover {background-color: ;}** property from having a 0.8 alpha value to a 0.95 alpha value, in order to improve visibility.



Things continued to look good after I added the dropdown options, so I replicated these results in the footer navigation area.



HOME	HOME SERVERS	BLOG	MY HOMELAB	ABOUT ME	CONTACT US
101001	What's A Homelab?	Missing	My Homelab		
PHIC	Why's A Homelab?		My Hardware		
	How's A Homelab?		My Software		1101100101001000010100110
	Licensed und Image	er GNU Ger copyright Pi	eral Public Licence ixabay/Elliott Evan	e v3 (fsf.org). s 2020	
		GPL v3 Ell	iott Evans, 2019		

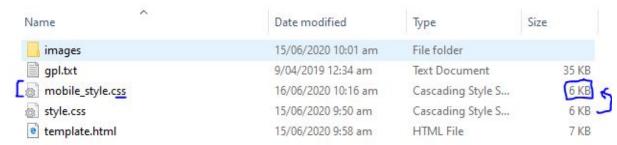
I replicated the navigation in the footer in a table format, including a colour change on hover effect and an explanation of why there are no blogs.

As per the DECOMPOSITION header, this is the end of Version One.

Version 2

As per the Decomposition, the purpose of Version 2 is to improve mobile device usability by redesigning the website's css file (or rather, adding a second one) for narrow screens.

I created this document with the name **mobile_style.css**, and initially it contains the same code as **style.css**.

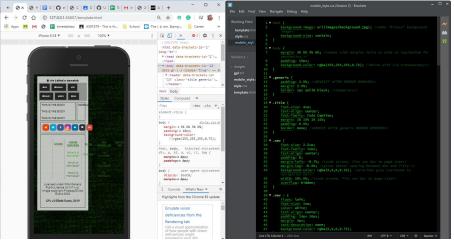


For the website to choose between the two options, we require that we specify that the minimum width for the main style sheet be one greater than the maximum width for the mobile style sheet to take effect. If both values were the same, we may run into a bug in which an exactly 500px wide display would try and use both CSS files, breaking the website.

I chose **500px** because according to JavascriptFix, 'Most mobile phones have a device-width of 480px or lower'. Thus, 500px should encompass the average and slightly above.

```
<link rel="stylesheet" media='screen and (min-width: 50lpx)'
href="style.css"> <!--css page for site-->
<link rel="stylesheet" media='screen and (max-width: 50px)'
href="mobile_style.css"> <!--css page for mobile version of site-->
```

To develop this, I am going to split the screen and make the changes in live CSS, like so:



Note how ugly the website looks at the moment, mostly due to the bottom navigation bar area taking up too much space.

Mass copyon section

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Having removed the table containing the footer nav (using **display: none;** on the table's css) immediately makes a significant improvement to the usability of the website, however, there are still two elements that are causing issues: the sidebar, and the social media buttons.

The Sidebar, coming above the social media buttons, is first on our list. To fix this, I am going to reuse the code from the dropdown part of the navigation bar and place the navigation below the body of the page.

Fixing the social media buttons was quite simple, as all I had to do was reduce some excess padding and readjust the margins.



Name of the second section of the second sec

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Right now, most of the website looks fine. There are two elements, however, which do not look fine.

These elements are the Title, and the Navigation.



The title was a simple fix, I increased the size from **4vw** to **8vw**, a 100% increase.

The navigation is a more challenging fix.



I fixed the navigation by vastly reducing the margins of the navigation buttons. If I had more time, I would find a way to centre the navigation buttons.

As it is, the website now looks satisfactory for mobile device use, and as such I consider Version 2 to be complete.



Version 3

The stated goal for Version 3, as per the decomposition, is:

To create individual web pages which appropriately reference each other.

First I will readjust the navigation (as per the refinement below), and then split the pages off into the original (which I will rename index.html in accordance with coding conventions).

REFINEMENT:

Instead of having each of the individual subsets of the Home Server Zone and My Homelab sections as individual pages, as is displayed in the right of this box, I will hold them all on the parent page in question as sections defined by headings. This makes it easier for users to navigate around those pages.

- Home (index.html)
- Home Server Zone (homelab.html)
 - What Is A Homelab? (whatlab.html)
 - Why Is A Homelab? (whylab.html)
 - How Is A Homelab? (howlab.html)
- Blog (blog.html)
 - o Don't Have PHP
- My Homelab (mylab.html)
 - My Hardware (myhardware.html)
 - My Software (mysoftware.html)
- About Me (about.html)
- Contact Us (contact.html)

This is a new box, describing errors.

I suffered a serious issue regarding Version 3's folder, and so I had to recreate it from the Version 2 folder. This is now found at Version 3b.

Name	Date modified	Туре	Size
images	23/06/2020 10:17 am	File folder	
rep	23/06/2020 10:17 am	File folder	
e about.html	23/06/2020 10:38 am	HTML File	9 KB
e blog.html	23/06/2020 10:38 am	HTML File	9 KB
e contact.html	23/06/2020 10:38 am	HTML File Text Document HTML File HTML File	9 KB 35 KB
■ gpl.txt	9/04/2019 12:34 am		
e homelab.html	23/06/2020 10:38 am		9 KB
index.html	23/06/2020 10:44 am		9 KB
mobile_style.css	17/06/2020 12:21 pm	Cascading Style S	6 KB
e mylab.html	23/06/2020 10:38 am	HTML File	9 KB
style.css	23/06/2020 10:40 am	Cascading Style S	6 KB

^ as above, the current folder. At this point, the license has a larger file size than any of the webpages.

I updated the nav and nav-table as needed, and duplicated it to the other pages.

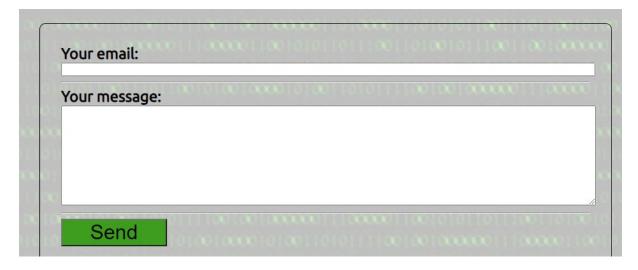


Version 4

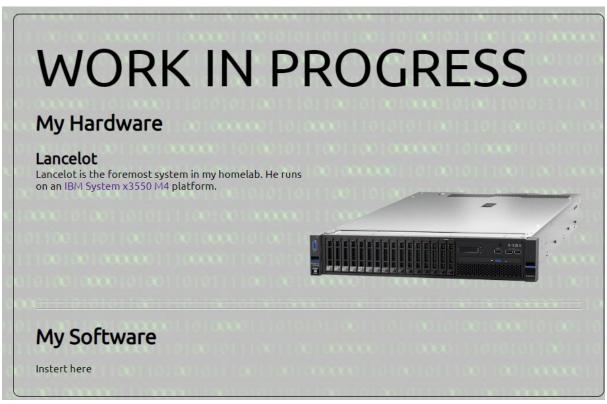
The goal that I stated for Version 4, as per its specifications in the decomposition, are:

Add content, Apply specific CSS colour and image stylings.

For the Contact page, I used <u>formspree.io</u> to create a simple html contact form, which looked acceptable.



I didn't have time to complete the My Homelab section of the report, so I just wrote a sentence about my main system and inserted a picture of it.





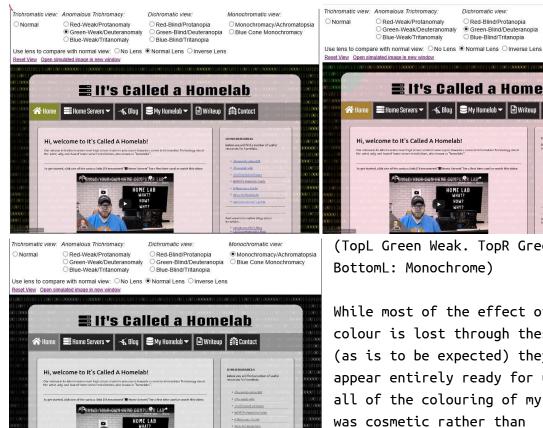
USABILITY

The methods used for the usability testing are as follows:

- Usability test for colour-blind persons, via color-blindness.com
- Usability test for different browser softwares, in this case Google Chrome and Opera. Mozilla Firefox and Microsoft Edge, although conventionally options, are no longer as such as they currently both use derivatives of the Chromium codebase (as of Jan 15 2020).
- Usability test for non-desktop users, testing iPhone 5/SE (via Chrome Developer Tools), Huawei Nova 3i (personal device), and ASUS C201p Chromebook (personal device).
- Usability tests by target audience.

CoBliS Colour Blindness Simulator

Given that my website is primary green, I will test with Green-weak, Green-blind, and monochrome.



(TopL Green Weak. TopR GreenBlind. BottomL: Monochrome)

Dichromatic view.

It's Called a Homelab

■ Home Servers ▼ 🔏 Blog SMy Homelab ▼ 🖹 Writeup 🏥 Contact

O Blue-Weak/Tritanomaly

Hi, welcome to It's Called A Homelab!

FRENING: WIND COMPINED HIS INDIGEN PURE LAB

Green-Weak/Deuteranomaly

Blue-Weak/Tritanomaly

With normal view: O No Lace O Not are Control of the control o

Monochromatic view.

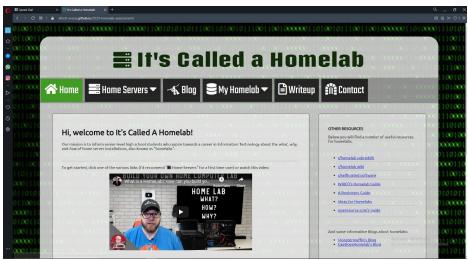
While most of the effect of the colour is lost through these tests (as is to be expected) they still appear entirely ready for use, as all of the colouring of my website was cosmetic rather than functional.

Browser & Device Testing:

Chrome 83.0.4103.116, Desktop and iPhone 5s Views:



Opera Ver XX:



Huawei Nova 3i (Chrome Browser for Android)

As can be seen on this page, the website displayed as expected on all four of my chosen testing platforms.







First Target Audience Tester

My first tester was Luke Van Zijl, who had the following to say:

Aesthetically the website is great, my only issues are that the main content boxes don't draw the eye as much as I'd like and the gap to the right of the navigation bar draws the eye too much. The plentiful links allow quick and clear travel across the website. I really like how there are multiple links to the same page, like the header going to the home page and the footer links. A feature that'd allow me to more quickly and easily see what page I'm on would help in situations where I have to go between tabs frequently.

Second Target Audience Tester

My second tester was Ayman Shah, who had the following to say:

Elliott's website was a very easy and helpful tool to use. The Navigation stood out but not in an over-imposing way, the cursor was easy to locate and the arrows beside the text made it clear that there was a dropdown feature implemented. All the links(including other resources, social links and the footer) were placed uniformly and gave very clear instructions as to what they were for. The website itself was minimal in the design, with a white transparent container and content separated with boxes with black borders and rounded corners. But it still looked really neat and nice and worked especially well with the background image and colour scheme. The only visual aspects were the colours, design and symbols, so it felt lacking with imagery, there was some cool colour change animation with the title which conveniently also linked back to the home page. Overall the website was very easy to understand, use and fulfilled its purpose.

. .

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FURTHER REFINEMENT

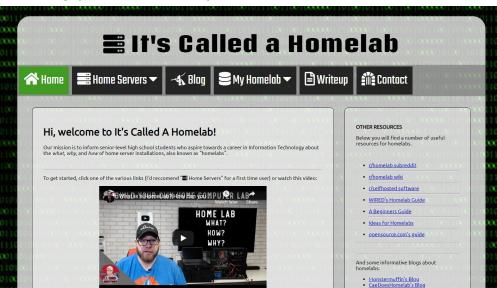
From the first round of testing, I identified the following issues:

- Navigation bar is too obtrusive in comparison to the content.
- The navigation bar doesn't indicate where you are.

Version 5

Instead of changing the navigation bar, I took things the other way. Using some nifty background-color effects, I increased the opacity of the background for the boxes, and especially the main content. This really causes the website to POP at you. Also note that I added content to the main section of the page.

Also seen in this image is a green highlight, which applies to whichever <nav> tag you are currently on.



As seen below, there is a similar effect going on with the table, which lets you know which column you are on.





USER TESTING:

My backup tester was Aurion Mead, who had the following to say:

It is a very cool looking site combining a variety of digital styles while holding true to the aesthetic of the overall site. It was easy to use and was very clear with large text that was easily readable. The semi-transparency of the background was confusing at first but the lower level of transparency behind the main content was quite nice. Overall a very good website for its purpose.

While not a perfect review, the only criticism was in regards to an active design choice.

FURTHER DEVELOPMENT

In the process of further developing my website, I would like to focus on moving as much of the website as possible to a **.php** format. This would make editing snippets easier, as all of the headers for all the different pages would be on one single file instead of spread across the pages. It would also (in conjunction with SQL) enable me to create and manage a searchable blog, which I feel would improve the user experience of the website.



IMPLICATIONS

INTENDED AUDIENCE

All of the testers for my application confirmed that the program is appropriate for the intended audience, which is NCEA level teenagers. I asked 3 different NCEA students to review the usability (see USABILITY) and with slight modifications in one case, they all agreed that it was appropriate (if challenging) for their audience.

AFSTHFTTCS

I ensured that my website followed a strict White→Green→Black colour scheme throughout, and avoided including any garish elements in the design. There is only minor variation in shades of colours, which was used to improve user interface and ease of understanding. This is reflected in the user testing phase.

TP OBITGATIONS

I have confirmed that both of the sources for images in my code are of copyright-free nature. Both sources (wallpapercave.com and pixabay.com)

have some form of this, with <u>wallpapercave.com</u> using the license (NonAttribution-ShareAlike) license and <u>pixabay.com</u> using a proprietary free-commercial non-attribution <u>license</u> (found here).

SECURITY / PRIVACY

The website, being static, does not store or reproduce any data inputted by the user into any function, with the exception of the "contact us" form. As such, there is very little risk posed to the user in regards to the protection of their data. The static form provider I use (formspree.io) is trusted by the US Center for Disease Control and freight provider UPS, among other major companies, so I consider any risk from their end to be low. They are also open source.