

# **ART 347 Project 1**

## **Process Book**

[eecs.csuohio.edu/~rykustab/project1/](http://eecs.csuohio.edu/~rykustab/project1/)

### **Concept**

The concept for my project was a website that highlighted web accessibility and the various barriers that prevent many people from using the web. I also wanted to focus on creating interactive components that would help people understand these barriers better.

I wanted to make it less of a rulebook for web accessibility since there are many of those and so many rules that it would be very difficult to compile them all. I want the site to be more about why accessibility is important and helping people understand why they need to make the accessibility changes to their site. I also link to the other resources that provide deeper instruction.

### **Target Audience**

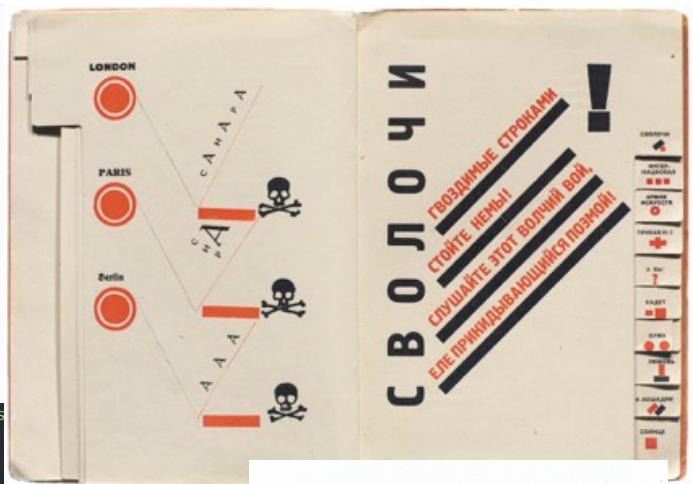
The target audience for this project is web developers. As you will see in the personas, there is not much that connects the audience other than their job. Their age, race, gender, ability, and pretty much everything else can differ. This means that it is important to focus on the one thing that connects them.

# KWHL Table

K	<p>Since I did some research for the previous project into accessibility, I have a general overview of the most important accessibility requirements.</p> <p>I also have a bit of knowledge in some of the aspects like color and alternate forms of browsing like screen readers, but definitely will need to look more into them</p>
W	<p>One thing I really want to do is simulations of visual disorders, and how that would affect one's ability to browse the web and even do simple tasks like reading an article. For this I will need to do some more research into how to properly simulate these conditions.</p> <p>Another thing I want to do is look more into how to best structure content in an accessible way. I did read a little bit about it, but I want to be able to push it and really show how something as simple and easy as structure can provide better accessibility</p>
H	<p>Most of my research is probably going to have to be online, since most of the knowledge about web accessibility and disability are always changing and being improved so I want to make sure I am using up to date information.</p> <p>I also might reach out to some people who have disabilities and talk to them about how it impacts their experience on the web and what accommodations help them or they would like to see</p>
L	<p>I ended up learning a lot, especially about screen readers. There are special labels (called aria-labels) that you can add to elements to help screen readers better identify the content.</p> <p>I also learned how to calculate relative luminance of colors and compare them</p> <p>I read articles from people who use screen readers about what site elements make it more difficult or less difficult to use</p> <p>I got more depth of knowledge in properly structuring websites</p>

# Mood Board

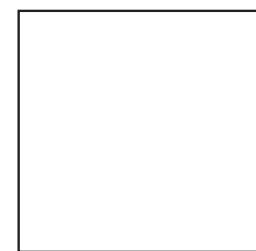
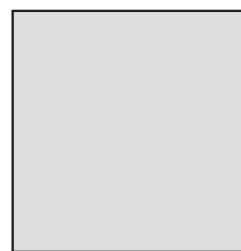
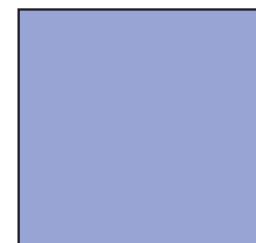
```
1 // An exceptionally useful comment
2 function func(param) {
3     var text = 'string';
4     for (var i = 0; i < param.length; i++) {
5         text += i;
6     }
7     return {
8         "text": text,
9         "boolean": false
10    };
11 }
12 </head>
```



## Font Family:

Red Hat Mono 300      Red Hat Mono 300  
Red Hat Mono 400      Red Hat Mono 400  
Red Hat Mono 500      Red Hat Mono 500  
Red Hat Mono 600      Red Hat Mono 600  
Red Hat Mono 700      Red Hat Mono 700

## Color Pallate



# Personas



## Matt Wallace

Senior Software Engineer

Since accessibility was not considered when he went to school, Matt is trying to learn about it as part of life-long learning.

He does not have any disabilities, but his son has dyslexia and ADHD

### Demographics

- White
- 44
- Male



## Jenna Smith

College Student

Jenna has enjoyed learning a little bit about web accessibility, but wants to learn more

### Demographics

- Indian
- 20
- Female

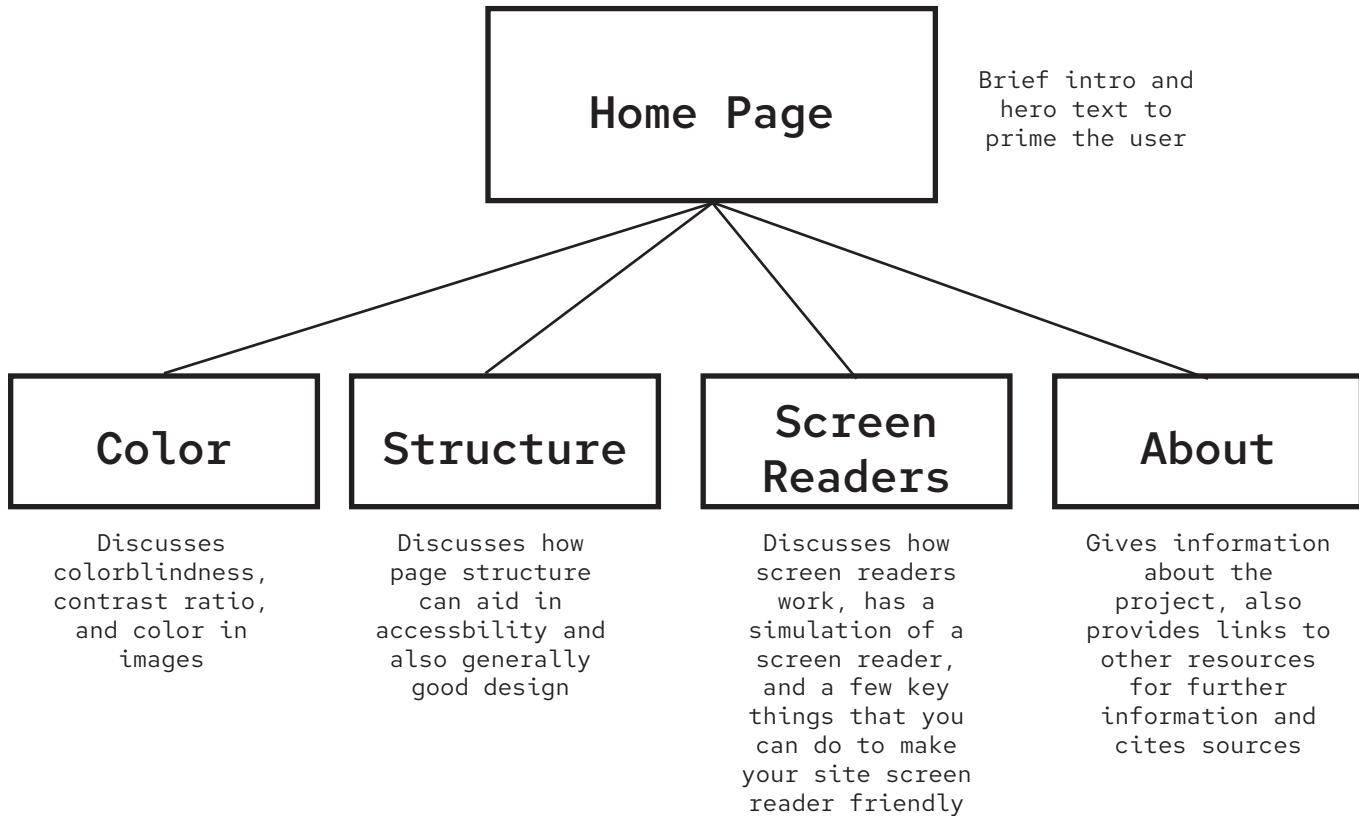
Jenna has deuteranomaly (colorblindness) and has experienced many of the barriers that come with it.

As discussed before, there is not necessarily much that connects the audience other than an interest in web design and accessibility. I decided on two very disparate personas to highlight this variance.

Matt is someone who is an example of a person who is engaging in life-long learning, whereas Jenna is still at the beginning of her career.

The difficulty with such a diverse audience is that there are not common references or themes that everyone would be able to relate to. So I tried to keep the content as neutral as possible, which I also think helped keep it focused on accessibility which is the most important point.

# Site Map



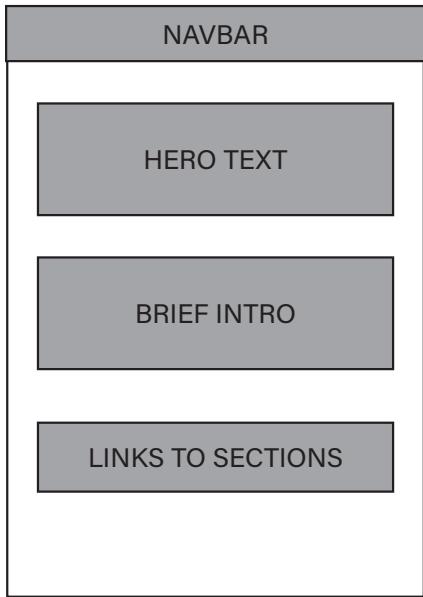
## Navigation

All the pages will be accessible through a navigation bar on every page. I decided not to have interpage links since there is not a set order to the pages and they are not super related in terms of content, just theme.

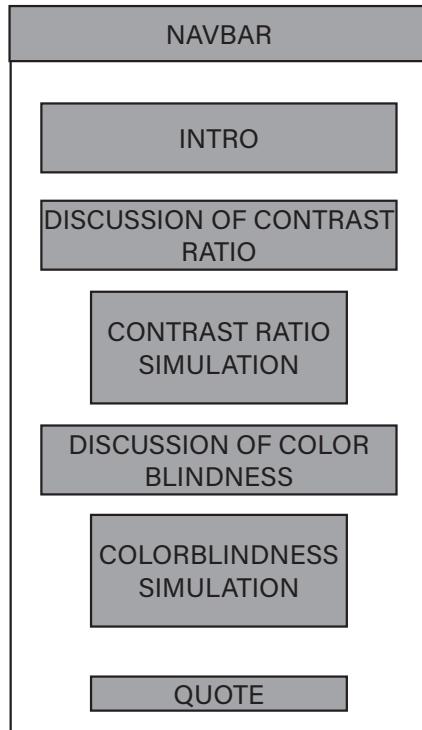
The exception to this is the home page which will have links to the three main content pages so that the user has an actionable item to do when they reach the end of the first page.

# Wire Frames

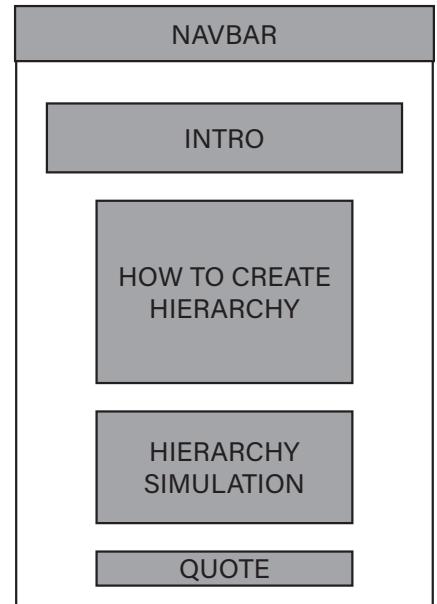
## Home



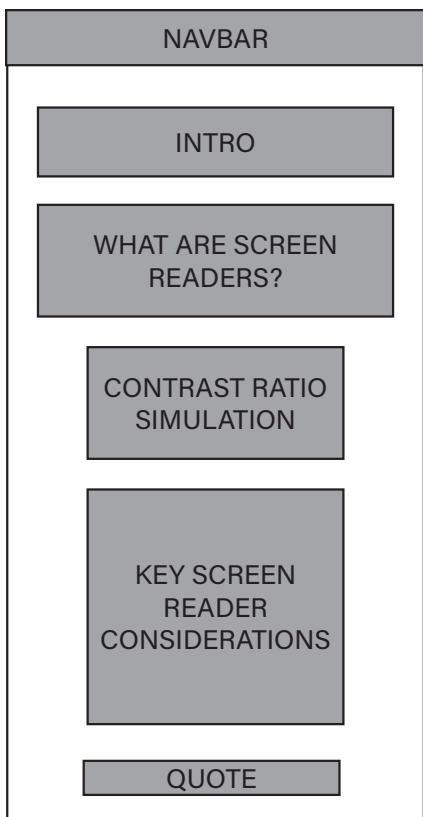
## Color



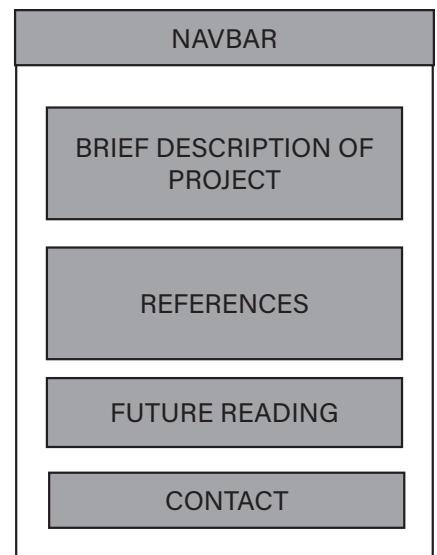
## Structure



## Screen Readers



## About



# Interactive Components

## Contrast Ratio Analyzer

This element helps compare two colors to see if they will pair well on screen. By calculating the relative luminance of the colors, I determined the contrast ratio and what standard it met. From this the user is then told what level of type the colors work for.

█ Foreground □ Background

*This is how your text looks in full color:*

This is sample text at size 14px.

This is sample text at size 20px.

*This is how your text looks in grayscale:*

This is sample text at size 14px.

This is sample text at size 20px.

**Contrast Ratio: 21.0**

*This is a good contrast ratio! This meets AAA requirements and can be used for any text.*

## Colorblindness Simulator

This element helps simulate different color vision deficiencies and how they may make images look. I used a shirt that highlighted the differences and allowed the user to flip between deficiencies to see the extreme difficulties.



Typical  
Vision

Deutanopia  
(Green-Blind)

Protanopia  
(Red-Blind)

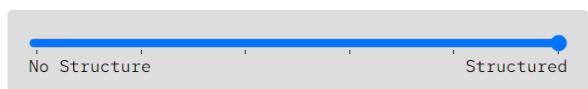
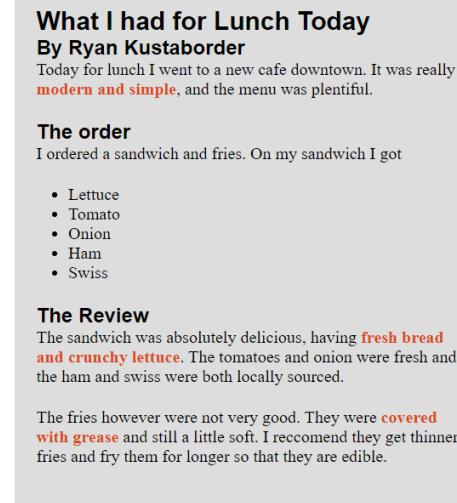
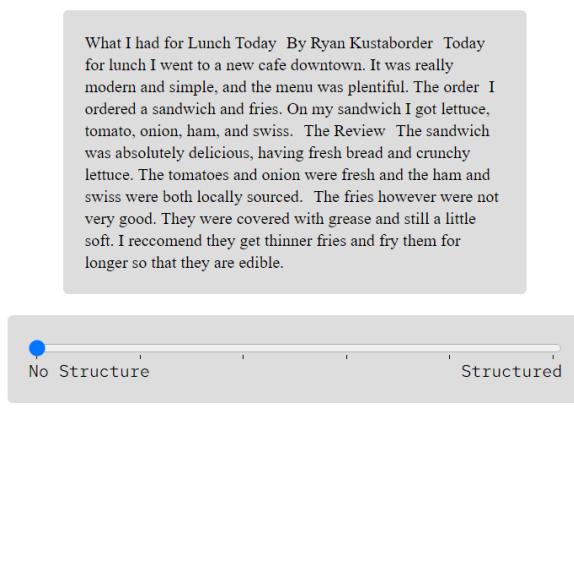
Tritanopia  
(Blue-Blind)

Achromatopsia  
(Monochromacy)

# Interactive Components (cont.)

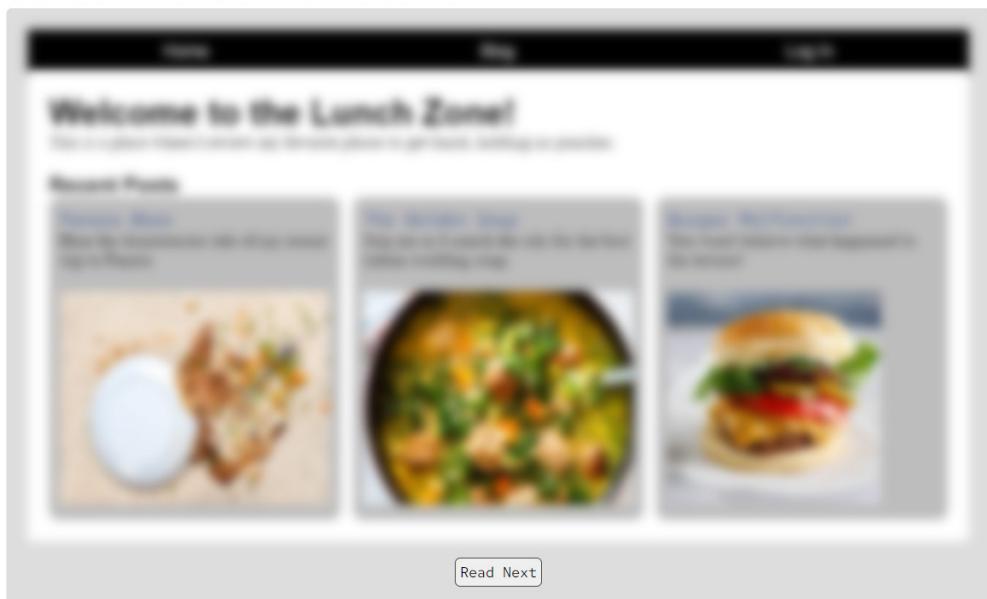
## Structure Simulator

This element demonstrates how structure greatly increases readability. The user is given a slider that makes the content more structured at each level.



## Screen Reader Simulator

This element acts as a rudimentary screen reader. The user gets to experience having a website read out by the computer, without being able to clearly see the content. While it is far from a true screen reader, it can help at least introduce the user to the experience.



# Home Page

Home

Color    Structure    Screen Readers

About

# Accessibility Matters.

We live in a world where the lack of access to the internet can hold people back. As developers, **we are responsible for making sure that as many people, no matter their age, ability, or aptitude, can use the web without barriers**. But before we can address the many barriers to access on the internet, we must first understand the challenges.

Color

Structure

Screen Readers

## Color

Color vision deficiency, commonly referred to as colorblindness, is an umbrella term for a group of conditions that limit the ability to distinguish between different colors. While true monochromatic vision is relatively rare, **1 in 22 people experience some level of color vision deficiency.** The most common way that colorblindness presents itself is a difficulty distinguishing between two specific colors.

### What colors mix well?

One way of analyzing the accessibility is by getting the **Contrast Ratio** of the two colors. To do this we can compare the **Relative Luminance** of each color. You can think of the relative luminance of a color as how bright it would be if you put a monochrome filter over it. [Read more about calculating contrast ratio here.](#)

For those with low-vision or color vision deficiency, colors with a small contrast ratio can be difficult to distinguish. This is because brightness plays a major role in visual perception, so even if two colors have different RGB values, they still may be difficult for our eyes to process as separate colors.

To get a sense of what colors produce good contrast ratios, play around with the below simulator.

█ Foreground █ Background

This is how your text looks in full color:

This is sample text at size 14px.

This is sample text at size 20px.

This is how your text looks in grayscale:

This is sample text at size 14px.

This is sample text at size 20px.

**Contrast Ratio: 21.0**

This is a good contrast ratio! This meets AAA requirements and can be used for any text.

One important note regarding contrast ratio is that it is not an exact rule. **Even some color pairs that have a high contrast ratio may be difficult to differentiate.** So while contrast ratio can be a good guide, always take a look and make sure the colors work well together.

### Color in Images

Images have become omnipresent on the web, and it is not hard to see why. They allow us to show lots of information in a compact way that may be difficult to express in words. But **images can be major barriers to access** for those with vision impairments. This is true not only for those with low vision, but also true for an often forgotten about group of people. Images can be a major barrier for those with color vision deficiencies.

Colorblindness can present a number of challenges when using the web. Often times information that may be clear to someone with typical sight may be much harder or even impossible to read with colorblindness. One area where these barriers are extremely common is online shopping. Many **patterns and gradients may not be perceived by a user with colorblindness**, which may result in them getting a product that looks different than what they think it does. To illustrate this, see how the shirt below would appear with a few different common color vision deficiencies.



As you can see, this shirt looks totally different from each different user's eyes. In this case, your caption could be "Orange to Teal Vertical Gradient T-Shirt". This gives the user all of the information they need to make their decision. Not only does this help with low vision, it also helps when images don't load or any other reason the image is not able to get all the information across.

So how can you make your images more accessible? There are a few ways. One way is to add a text description or caption to go with all your images. This helps make it clear what information the user should get from the image. Another option is to use [tools that help display patterns in different ways](#) to help the user perceive any patterns. Remember: **When in doubt, it never hurts to clarify.** Clear and concise information helps everyone, not just those with vision impairments.

**"The power of the Web is in its universality. Access by anyone regardless of disability is an essential aspect."**

- Tim Berners-Lee

# Structure

# Structure

From vision to reading, there are lots of disabilities that can make it difficult to read large amounts of content. These issues are especially common on the internet due the screen of the device adding extra compounding factors. Luckily for us, there is a powerful tool that can help make websites easier to read.

**Hierarchy** is the use of multiple levels (styles) of type and images to help the user identify the important information.

## How do we create hierarchy?

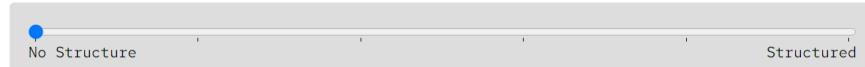
**Paragraphs** - Paragraphs are great for readability. Their consistency in style makes it much easier for users to read lots of content. They are also very resilient to size changes, making them easy to scale. It is often recommended to use a font with serifs as they are easier to read at a small size.

**Headers** - Paragraphs are great for grouping small amounts of content together, but can become too great in number for large content. To help organize the content even more, headers can help break those paragraphs into sections and even sub-sections. This helps the user group ideas together and increases flow.

**Lists** - On almost all websites you will need to display a list of content. Inline lists are okay for lists of just two or three items, but any more than that you will want to display the list more clearly to help the user see all the items easily.

**Pull Quotes** - An often overlooked design tool is a pull quote. Pull quotes are created by further emphasizing text inline in the middle of a paragraph. By turning the most important information into pull quotes, the user can quickly scan the page and get the info they need.

What I had for Lunch Today By Ryan Kustaborder Today for lunch I went to a new cafe downtown. It was really modern and simple, and the menu was plentiful. The order I ordered a sandwich and fries. On my sandwich I got lettuce, tomato, onion, ham, and swiss. The Review The sandwich was absolutely delicious, having fresh bread and crunchy lettuce. The tomatoes and onion were fresh and the ham and swiss were both locally sourced. The fries however were not very good. They were covered with grease and still a little soft. I recommed them get thinner fries and fry them for longer so that they are edible.



As you can see, the more structure that the page has, the easier it is to read the content and identify the important information. The great thing about this is that not only does it make your page more accessible, it will also look better and be easier for everyone. **Accessibility considerations help everyone, not just people with disabilities.** So make sure to create well structured pages. Everyone will thank you for it.

**"Accessible design is good design - it benefits people who don't have disabilities as well as people who do. Accessibility is all about removing barriers and providing the benefits of technology for everyone."**

- Steve Ballmer

# Screen Readers

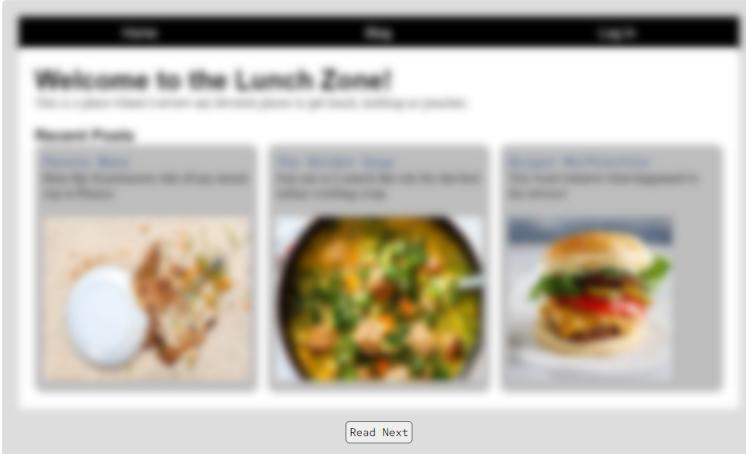
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## Screen Readers

About **2.2 billion people** are affected by some form of vision impairment. While a majority of those with vision impairments retain some level of sight, their vision will dramatically affect their ability to use the web. Many Blind people use **Screen Readers** which read the content of the page and allow them to interact with the page using a series of commands.

### How do Screen Readers Work?

#### Screen Reader Simulation



#### Designing for Screen Readers

There are many ways that we can help make our sites more screen reader friendly ([View a more complete list here](#)), but below we will highlight a few.

**Alternate Text** - When using images, always provide alternate text that goes along with your image. This can be done with an image caption, but it is best practice to use the 'alt' attribute built into HTML. Alternate text should communicate the information that the image is meant to provide the user. Make sure that you do not just describe the image, but focus on the information the user needs.

**Buttons** - Make sure to properly label your buttons! While arrows and symbols are great to look at, they might not make sense out of context. Many screen readers have the ability to get a list of all buttons on the page, and this removes them from the context of the page. If you want to keep the look of your buttons, you can use the label tag to attach extra text to help clarify their function.

**Links** - Link text should be descriptive. While we are all tempted to shorten links into simple 'Click Here' to take up less space, this is not best practice. Just like with buttons, screen readers often get all of the links on the page so they are easier for the user to select. Without descriptive link text, the user has no way of differentiating the links out of context.

**Hovering** - Interactivity is one of the most important features of web design. But always keep in mind that not everyone can use their mouse to interact with your elements. Avoid features that require the user to hover over an element to interact with it.

**Headers** - Make sure to use actual header tags for your headers. While the visual effect can be achieved using paragraphs with CSS, most screen readers use the element tag to help determine the content of the page.

**"The one argument for accessibility that doesn't get made nearly often enough is how extraordinarily better it makes some people's lives. How many opportunities do we have to dramatically improve people's lives just by doing our job a little better?"**

- Steve Krug

# About Page

Home

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About

## About

This site was created as a project for ART 347 at Cleveland State University. The goal of the project was to call attention to web accessibility as it is an often overlooked aspect of web development. Through simulations and examples, the user will hopefully get a better idea as to how to better make their sites accessible and get a better feel for the barriers that currently face those with disabilities today.

### References and Further Reading

- [WebAim](#)
- [Equal Entry](#)
- [Colour Blind Awareness](#)
- [American Foundation for the Blind](#)
- [Pilestone Colorblindness Simulator](#)
- [MDN Web Docs](#)
- [When to use the section tag](#)
- [Top 10 Features for Designing Websites for Screen Readers](#)
- [W3 Accessibility Standards](#)
- [Calculating Relative Luminance](#)

# Mobile & Small Screens

Home

## Structure

From vision to reading, there are lots of disabilities that can make it difficult to read large amounts of

In terms of adjustment for smaller screen sizes such as mobile devices, the site does okay. A few of the simulations get a little messy, but overall the result is sufficient and all the text is readable.

If I had more time I would like to have spent a bit more time on the mobile version, but I also think that since it is a resource site it is most likely going to be viewed on a computer since few people like to read lots of information on their phone.

Home

### Structure

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No Structure Structured

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