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Programming Usable Interfaces  
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## Final Project Write-Up

### Screen Sizes to Test:

1. 1200-px width
2. 430-px width (iPhone 14 Pro Max)

### Part 1:

The purpose of this website is to provide information about how coffee is grown and to give insight to CMU students and employees about how their daily coffee gets from a coffee farm into their hands. We do not realize the effort that goes into producing coffee or the different varieties of coffee that exist today. Often, we do not stop to question where things come from, so I want to encourage people to think coffee culture and how it has evolved over time. However, I also wanted to incorporate an interactive game to make the website more appealing.

I first give a brief overview regarding the history of coffee as well as a sampling of the most commonly-used coffee beans. I also detail how the coffee shop culture came to be. Then, I discuss information about how two coffee shops came to be on campus: La Prima and Redhawk Coffee. I selected three countries that each of these shops receive their coffee from, and wrote about either the farmer who produced it or the history of the area it comes from.

My interactive game makes my website engaging and will, hopefully, give users a break from the informational portion. The ability to customize gives the user autonomy and freedom, and it is fun to play around and see the elements changing both their shapes and colors. Most informational websites don't have interactive elements, so I am hoping that this will get users to appreciate what goes into their drink.

The target audience for this website is CMU students, alumni, faculty, and staff. I want to make it applicable to those around me, and to educate them about the coffee shops on campus. For this reason, I made the website university-specific as opposed to a more generalized site.

### Part 2:

All of my interactions are located in the section entitled "Interactive Game." The user is meant to go through the steps one-by-one in order.

- Click on one of the two radio buttons in "Step 1" of the game
  - A specialized outline of a coffee glass or mug should appear on the right-hand side after you have selected this option
- Click on one of the three radio buttons in "Step 2" of the game

- It should appear as though a portion of your glass has been filled with the espresso. The color of this fill should be different depending on which roast you select (light, medium, or dark).
- Click on the drop-down and select one of the four options in “Step 3” of the game
  - A portion of your glass should appear filled with your preferred milk type. This is in addition to the espresso type you selected in the previous step. The milk color should change depending on what milk type you have selected.
- Click on the drop-down and select one of the four types of syrups or select “no syrup” in “Step 4” of the game
  - The syrup will be added to the top of your glass (continuing to keep the espresso and milk choices that you selected previously). The color of the syrup changes depending on the type you have selected. This is the last step in the process, and the game is now over.
- Click on the button at the bottom of the game form entitled “Reset”
  - This clears all of your previous coffee selections and re-starts the coffee game.
- If you do not follow the aforementioned game order, you will get an alert saying that the prior steps need to be completed before you can continue.

### Part 3:

#### Tool #1

- I utilized the JavaScript library D3.js.
- I selected this library because it very beginner-friendly, and there was a lot of information on the web about how to navigate data selection and facilitate shape creation. Additionally, you have much more control when it comes to customizing your shapes and making detailed positioning changes. Additionally, being able to attach attributes directly to the shape’s definition (as opposed to creating CSS components) made changing the color of my shapes much easier. Additionally, I was able to utilize the existing code of the shapes I created, which saved a lot of time.
- I created both rectangles and polygons using D3; in order to do this, I utilized coordinate points to “plot” my polygon and used the .attr feature to change fill color, size, and stroke-color. I also used the viewBox feature to position my shape and take a snapshot so that the alignment would stay the same even if the page width changed. I manipulated my SVGs as well, often appending new shapes onto existing ones.
- D3 allowed me to create the illusion of the coffee cup filling, and gave me the freedom to create the unique edges of my iced coffee cup shape. It adds a fun, exciting component to my largely informational website, and allows me to customize colors to give the user autonomy and control of their interactions.

#### Tool #2

- I utilized Bootstrap, which is a JavaScript framework.
- I selected this framework because it helped me make my website responsive. I wanted to challenge myself to learn more about JS through this assignment, and Bootstrap helped

me to expand my arsenal. Though the learning curve was a bit steep at first, it was more productive to utilize this tool as opposed to creating flex boxes and adjusting for text size, height, width, and image size based upon dimensions.

- I used Bootstrap for my navigation bar, to ensure spacing, indentation, and ability to select were optimized. I also used Bootstrap to make my div containers and images responsive based on browser width selection. Bootstrap also helped me to incorporate breadcrumbs and update text font size.
- Using Bootstrap has helped me make my website responsive at far more than just two dimensions. I was also able to use it in tandem with D3.js so that my shapes were semi-responsive as well (though this needed adjustment on my end). It also makes the website readable and clear even at smaller mobile dimensions because of its automatic spacing and size adjustments.

#### **Part 4:**

Initially, I wanted to create a solely-informational website about all of the different varieties of coffee beans but, since there are over 100, I quickly realized that users would be uninterested in this much information. After the first round of T.A. and peer feedback, I decided to make it more CMU-oriented and discuss how our coffee shops procure their coffee beans. I decided to also incorporate more interactive elements like a map depicting where the coffee was grown and a quiz for users to complete after they read about the coffee. Then, during the second round of feedback, my peers felt my design was overwhelming and that I needed to apply the principle of quality over quantity. They also gave me design suggestions including changing font and text styles as well as adding color to my div containers to make them more aesthetically pleasing. Additionally, they also helped me with element placement and the information hierarchy of my website: at first, I wanted to make my interactive quiz multiple pages of slides, but they suggested that this would cause user drop-off if they did not know what overall step they were in the process. I also iterated on my digital prototype by making the theme more playful.

#### **Part 5:**

I do not come from a design background, so it was difficult for me to create a layout that was both aesthetic and practical. In terms of programming, it was tough creating my interactive game because my shapes would often disappear or appear incorrectly due to bugs and defects in my code because I struggled to learn D3.js initially. Even though I was using Bootstrap, it was still difficult to integrate every container or line of text I made because, at times, Bootstrap did not have the tools for this and I had to pull code from different frameworks to create my own customizable elements. Another Bootstrap limitation was that I could not change the buttons of my game because it did not currently exist in the framework.

## Accessibility Check:

### Homepage Summary:

The following apply to the entire page:

- \*Outline of coffee cup being used as logo\* Tartan Coffee
- \*aria-controls="navbarNavAltMarkup"\*
- \*aria-label="Toggle navigation"\*
- \*aria-label="breadcrumb"\*

**Summary**

Summary	Details	Reference	Order	Structure	Contrast
0	0	0	0	0	0
Errors	Contrast Errors				
0	5				
Alerts	Features				
6	5				
Structural Elements	ARIA				

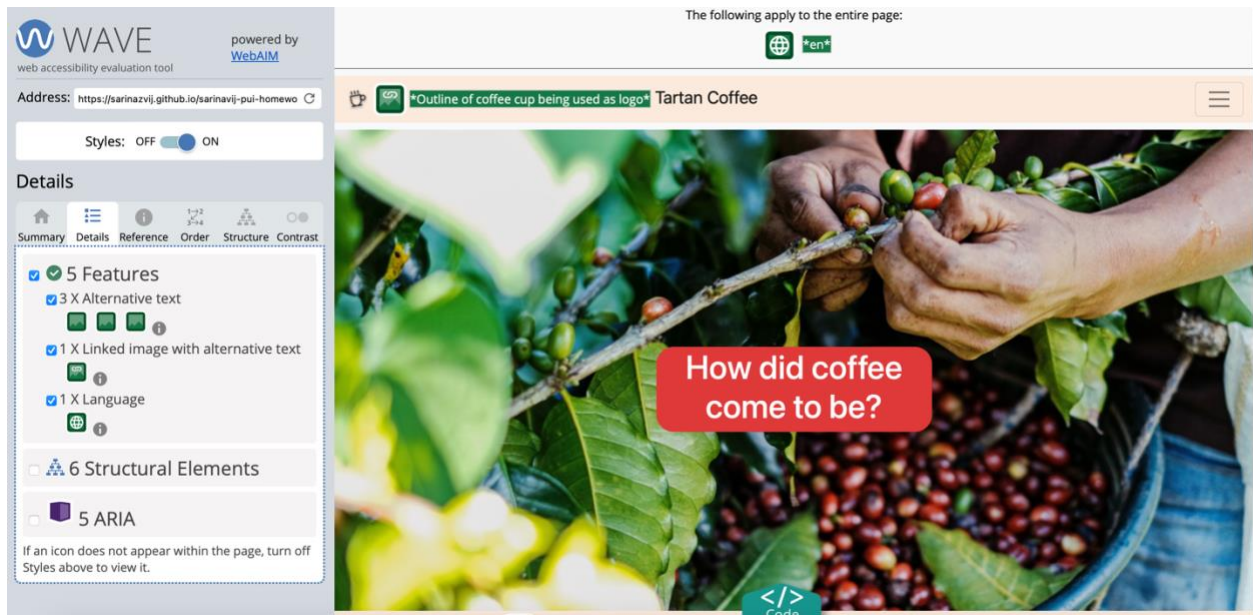
View details

Congratulations! No errors were detected! Manual testing is still necessary to ensure compliance and optimal accessibility.

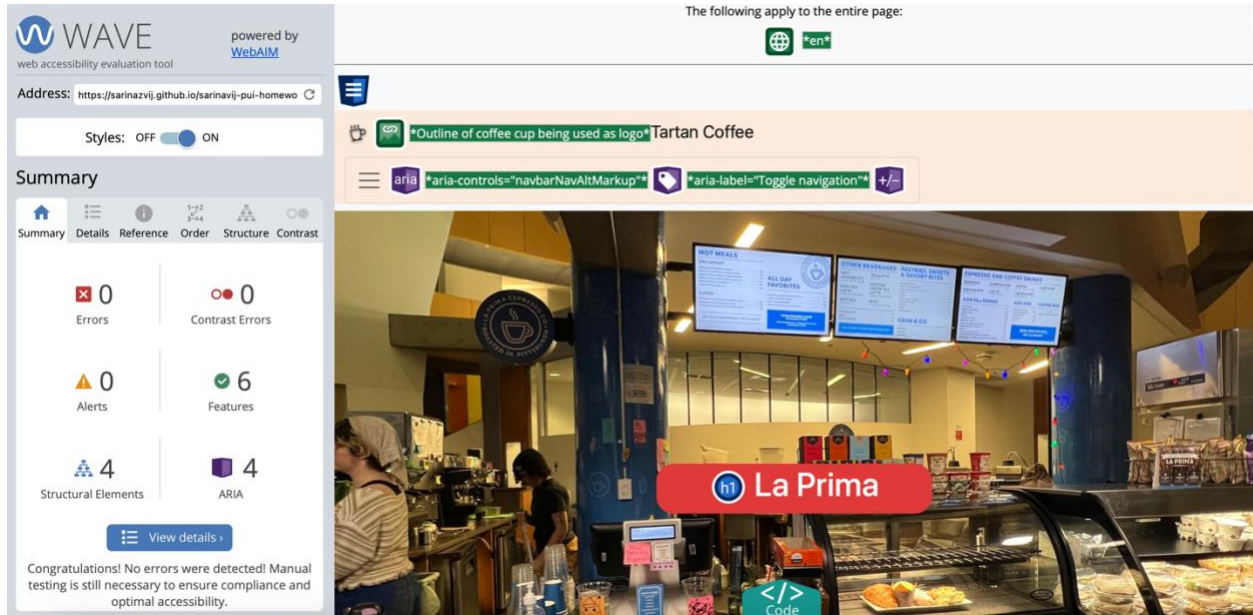
h1 How did coffee come to be?

Code

### Homepage Details:

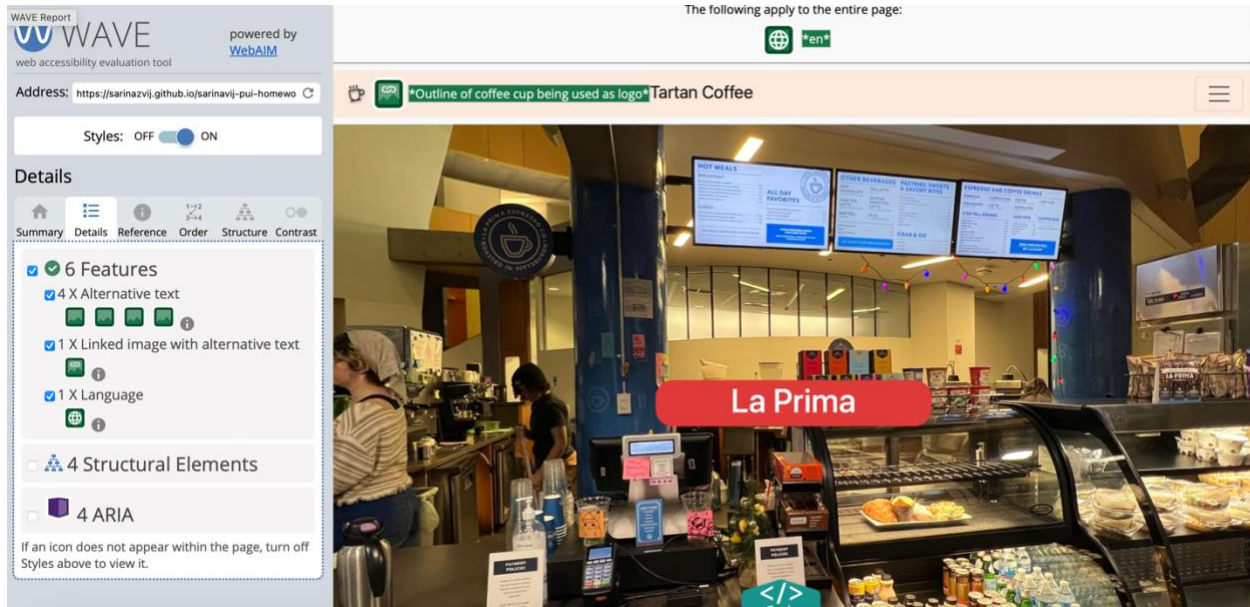


## La Prima Summary:

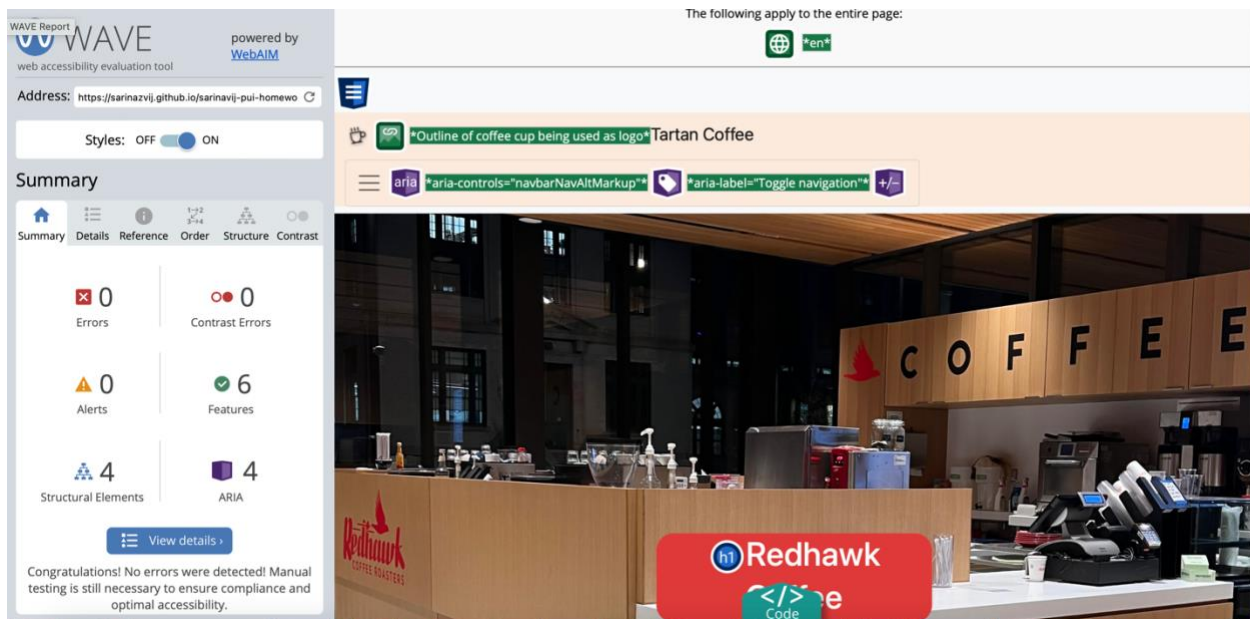


## La Prima Details:

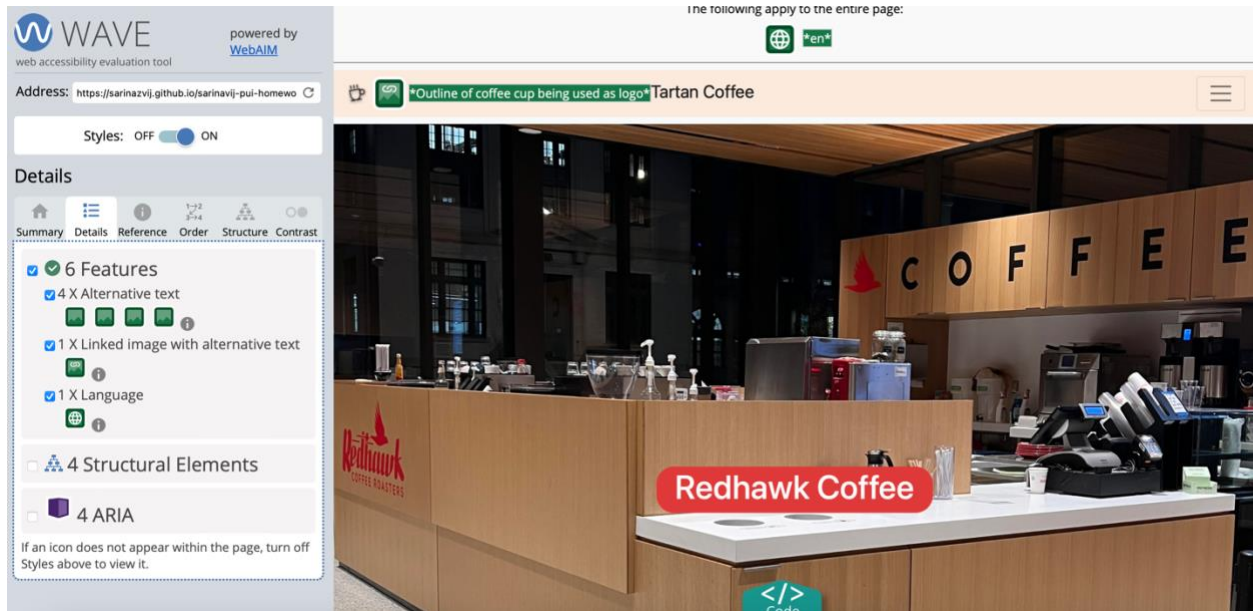




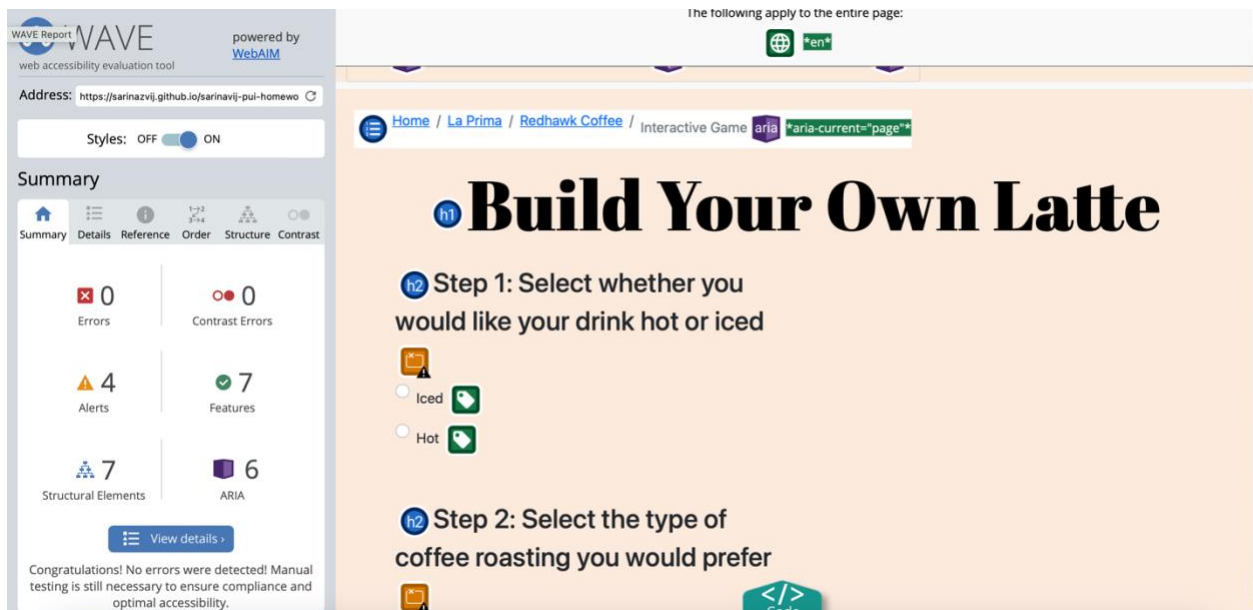
## Redhawk Summary:



## Redhawk Details:



## Game Summary:



## Game Details:

WAVE Report

VAVE

web accessibility evaluation tool

powered by

WebAIM

Address:

https://sarinazvij.github.io/sarinavij-pui-homewo

Styles:

OFF

ON

Details

Summary

Details

Reference

Order

Structure

Contrast

4 Alerts

2 X Fieldset missing legend

2 X JavaScript jump menu

7 Features

1 X Linked image with alternative text

5 X Form label

1 X Language

7 Structural Elements

The following apply to the entire page:

en

# Build Your Own Latte

Step 1: Select whether you would like your drink hot or iced

Iced

Hot

Step 2: Select the type of coffee roasting you would prefer

Light

Medium

Dark