Accessibility Inspection

Website evaluated: Council of Architecture: https://www.coa.gov.in/

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Introduction

Chosen Website

I chose to evaluate the Council of Architecture, India's website- https://www.coa.gov.in/. Having studied architecture during my undergraduate education in India, I have used this website multiple times in the past. During that time, I had noticed that the website was not very easy to use. Now, after studying HCI theories, usability fundamentals and accessibility guidelines, I wanted to conduct a formal accessibility evaluation to understand in detail whether the website is compliant with the WCAG guidelines or not.

Typical Users

The typical primary users of this website are architecture students, faculty, architects, and secondary users are people who might want to register a complaint against an architect. The age group of these users would be 16 and above. Computing experience of users will vary by age; younger students and architects will be more tech savvy than older users. Computing environment – context of use and devices would vary depending on different situations and it is difficult to assume whether users would access the website on their laptops or phones. Though it could be assumed that important actions such as 'registration as an architect' and 'renewal of registration' are tasks that users might conduct through their laptops and in a quiet environment. Job responsibilities of primary users are- students, faculties, architects, and for secondary users (citizens registering complaints)- it will vary. Education level of primary users is- pursuing or completed at least an undergraduate degree; for secondary users- might vary and cannot be assumed.

Part 1: Manual Inspection

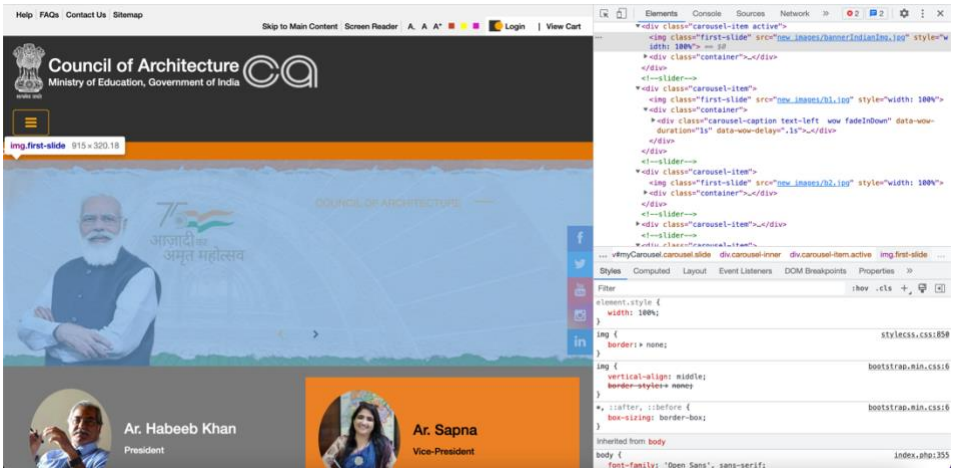
Screen Reader Details

I used the macOS built-in screen reader, VoiceOver (Monterey 12.5) in Chrome (Version 108.0.5359.94) to conduct my accessibility evaluation.

Manual Evaluation of Council of Architecture Website

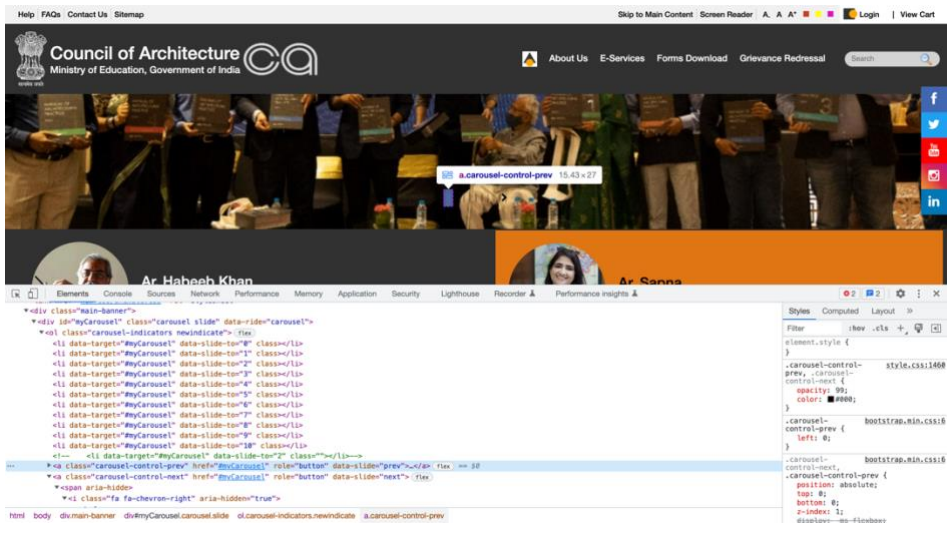
WCAG 2.1 Violations

Perceivable

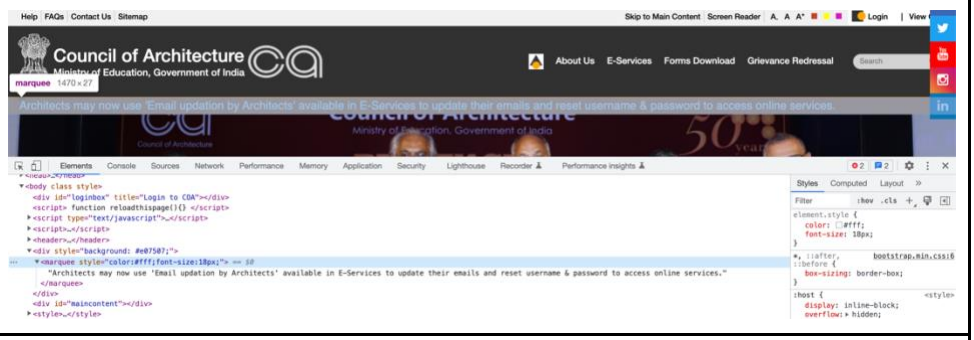
WCAG Guideline: **1.1.1 (Level A)**	**Non-text Content**- All non-text content that is presented to the user has a text alternative that serves the equivalent purpose.
https://www.coa.gov.in/. > Carousel Image Banner	
Description of Violation:	The COA website homepage has a banner image carousel where none of the images have alternative text. Due to this, Voiceover reads it as unlabeled image and while navigating via keyboard, it skips the image completely. There are multiple instances of images not having alternative text on this webpage which is an important WCAG violation.

WCAG Guideline: **1.4.3 (Level AA)**	**Contrast (Minimum)**- The visual presentation of text and images of text has a contrast ratio of at least 4.5:1, except for the following: Large Text: Large-scale text and images of large-scale text have a contrast ratio of at least 3:1;
https://www.coa.gov.in/. > Marquee element below header	
Description of Violation:	The COA website homepage has a marquee element below the header which is used to make latest announcements. The announcement text is in white color and in a small size on a background color of # E07507. The contrast ratio of #FFFFFF on #E07507 is just 3.13 which does not satisfy the WCAG 1.4.3 minimum contrast guideline for small sized text. This will cause accessibility issues for users with low vision.

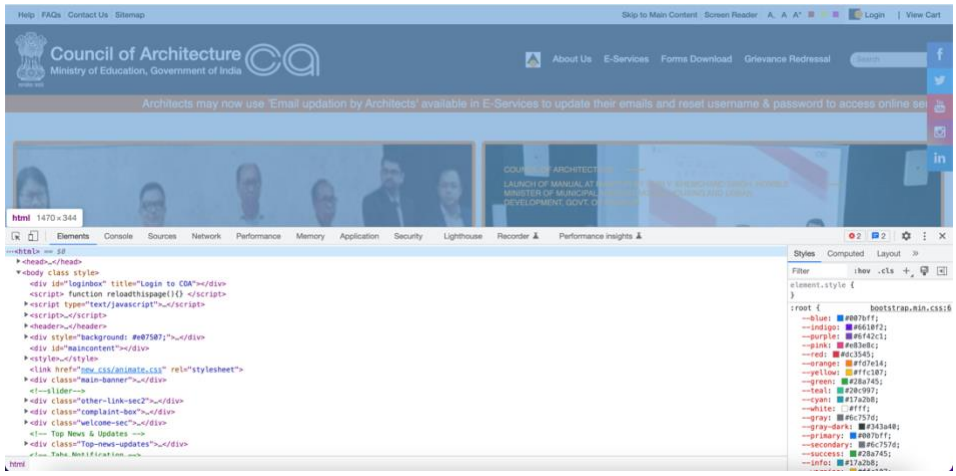
WCAG Guideline: **1.4.11 (Level AA)**	**Non-text Contrast**- The visual presentation of the following have a contrast ratio of at least 3:1 against adjacent color(s): User Interface Components: Visual information required to identify user interface components and states, except for inactive components or where the appearance of the component is determined by the user agent and not modified by the author; Graphical Objects: Parts of graphics required to understand the content, except when a particular presentation of graphics is essential to the information being conveyed.

https://www.coa.gov.in/. > Marquee element below header	
Description of Violation:	The COA website homepage has a banner image carousel. To control the carousel, there are 2 icons that can be used to navigate to the previous and next images. However, these icons do not have sufficient contrast as highlighted in the WCAG 1.4.11 guideline.

Operable

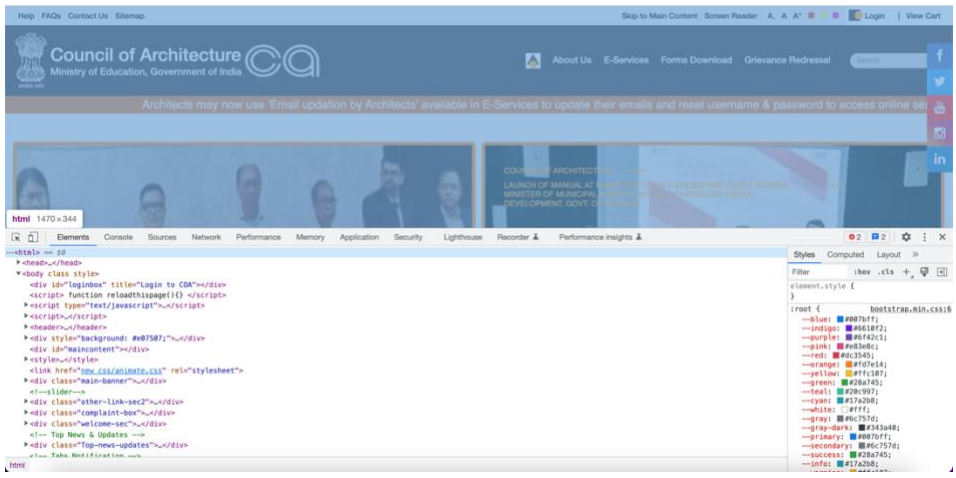
WCAG Guideline: **2.2.2 (Level A)**	**Pause, Stop, Hide**- Moving, blinking, scrolling: For any moving, blinking or scrolling information that (1) starts automatically, (2) lasts more than five seconds, and (3) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is essential.
https://www.coa.gov.in/. > Marquee element below header	
Description of Violation:	The COA website homepage has a marquee element below the header which is used to make latest announcements. This violates the WCAG 2.2.2 guideline as this element is moves and scrolls automatically, lasts more than 5 seconds, and the user has no control to pause, stop or hide

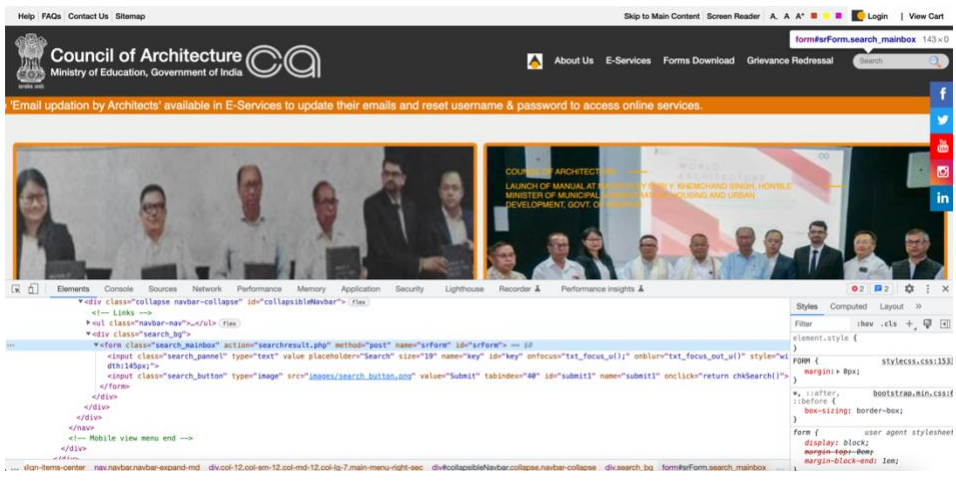
	this element. This would be distracting and confusing to users, particularly for those with certain cognitive disabilities.

WCAG Guideline: **2.4.6 (Level AA)**	**Headings and Labels**- Headings and labels describe topic or purpose.
https://www.coa.gov.in/. > Full webpage	
Description of Violation:	The COA website homepage does not use headings and labels for each section of the page. Due to this, the screen reader cannot read out what each section of the webpage contains or it's purpose and this is a violation of the WCAG guideline 2.4.6.

Understandable

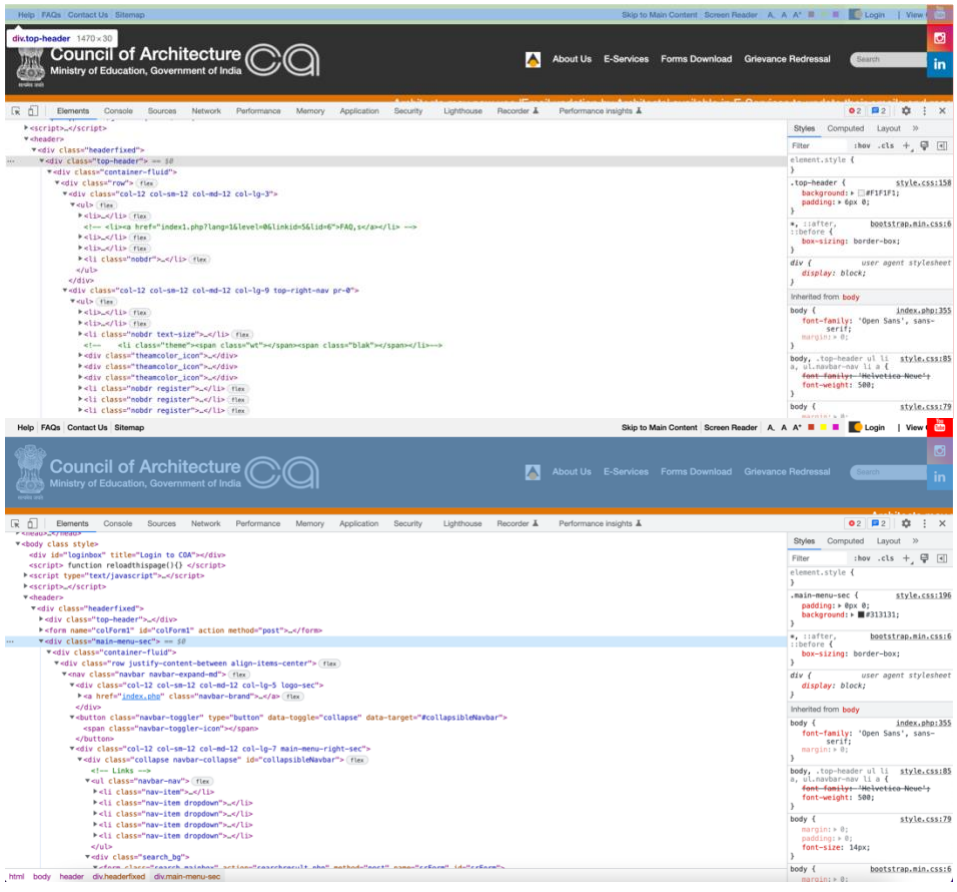
WCAG Guideline: **3.1.1 (Level A)**	**Language of Page**- The default human language of each Web page can be programmatically determined.

https://www.coa.gov.in/. > Full webpage	
Description of Violation:	The COA website does not include the language attribute in the html element of the webpage. This is a WCAG 3.1.1 Level A violation since it does not provide this critical information that assistive technologies and conventional user agents can use to render text more easily and load the correct pronunciations.

WCAG Guideline: **3.3.2 (Level A)**	**Labels or Instructions-** Labels or instructions are provided when content requires user input.
https://www.coa.gov.in/. > Search field in header	

Description of Violation:	The COA website has a search field in the header of the webpage. However, the search field has a missing form label. Due to this, the form control is not presented through VoiceOver and also does not provide visible descriptions and larger clickable target for form controls.

Robust

WCAG Guideline: **4.1.2 (Level A)**	**Name, Role, Value**- For all user interface components (including but not limited to: form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies.
https://www.coa.gov.in/. > Top primary and secondary headers of the webpage	

Description of Violation:	While going through the website using VoiceOver, I noticed that the screen reader completely skipped reaading the top headers of the webpage and directly went to the main body content. Upon inspecting the 2 header elements, I realized that they did not have any aria-labels or roles written in the code. Since WCAG 4.1.2 mentions that the name and role of all user interface components should be available to user agents, including assistive technologies, that's why this website fails to conform with 4.1.2.

WCAG 2.1 Successes or Not Applicable

Perceivable

WCAG Guideline: 1.2.1 (Level A)	**Audio-only and Video-only (Prerecorded)-** For prerecorded audio-only and prerecorded video-only media, the following are true, except when the audio or video is a media alternative for text and is clearly labeled as such: Prerecorded Audio-only: An alternative for time-based media is provided that presents equivalent information for prerecorded audio-only content. Prerecorded Video-only: Either an alternative for time-based media or an audio track is provided that presents equivalent information for prerecorded video-only content.
Description of Violation:	Website did not have any multimedia content. As a result, this guideline 1.2.1 is not applicable.

WCAG Guideline: 1.2.2 (Level A)	**Captions (Prerecorded)-** Captions are provided for all prerecorded audio content in synchronized media, except when the media is a media alternative for text and is clearly labeled as such.
Description of Violation:	Website did not have any multimedia content. As a result, this guideline 1.2.2 is not applicable.

WCAG Guideline: 1.2.3 (Level A)	**Audio Description or Media Alternative (Pre-recorded)-** An alternative for time-based media or audio description of the prerecorded video content is provided for synchronized media, except

	when the media is a media alternative for text and is clearly labeled as such.
Description of Violation:	Website did not have any multimedia content. As a result, this guideline 1.2.3 is not applicable.

WCAG Guideline: 1.2.4 (Level AA)	**Captions (Live)-** Captions are provided for all live audio content in synchronized media.
Description of Violation:	Website did not have any multimedia content. As a result, this guideline 1.2.4 is not applicable.

WCAG Guideline: 1.2.5 (Level AA)	**Audio Description (Prerecorded)-** Audio description is provided for all prerecorded video content in synchronized media.
Description of Violation:	Website did not have any multimedia content. As a result, this guideline 1.2.5 is not applicable.

WCAG Guideline: 1.3.1 (Level A)	**Info and Relationships-** Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text.
Description of Violation:	Did not evaluate Guideline 1.3.1.

WCAG Guideline: 1.3.2 (Level A)	**Meaningful Sequence-** When the sequence in which content is presented affects its meaning, a correct reading sequence can be programmatically determined.
Description of Violation:	Did not evaluate Guideline 1.3.2.

WCAG Guideline: 1.3.3 (Level A)	**Sensory Characteristics-** Instructions provided for understanding and operating content do not rely solely on sensory characteristics of

	components such as shape, color, size, visual location, orientation, or sound.
Description of Violation:	Did not evaluate Guideline 1.3.3.

WCAG Guideline: 1.4.1 (Level A)	**Use of Color-** Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 1.4.1.

WCAG Guideline: 1.4.2 (Level A)	**Audio Control-** If any audio on a Web page plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level.
Description of Violation:	Website did not have any multimedia content. As a result, this guideline 1.4.2 is not applicable.

WCAG Guideline: 1.4.4 (Level AA)	**Resize Text Level-** Except for captions and images of text, text can be resized without assistive technology up to 200 percent without loss of content or functionality.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 1.4.4.

WCAG Guideline: 1.4.5 (Level AA)	**Images of Text Level-** If the technologies being used can achieve the visual presentation, text is used to convey information rather than images of text except for the following: Customizable: The image of text can be visually customized to the user's requirements; Essential: A particular presentation of text is essential to the information being conveyed.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 1.4.5.

Operable

WCAG Guideline: 1.4.5 (Level AA)	**Images of Text Level-** If the technologies being used can achieve the visual presentation, text is used to convey information rather than images of text except for the following: Customizable: The image of text can be visually customized to the user's requirements; Essential: A particular presentation of text is essential to the information being conveyed.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 1.4.5.

WCAG Guideline: 2.1.1 (Level A)	**Keyboard Level-** All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes, except where the underlying function requires input that depends on the path of the user's movement and not just the endpoints.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 2.1.1.

WCAG Guideline: 2.1.2 (Level A)	**No Keyboard Trap-** If keyboard focus can be moved to a component of the page using a keyboard interface, then focus can be moved away from that component using only a keyboard interface, and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 2.1.2.

WCAG Guideline: 2.2.1 (Level A)	**Timing Adjustable-** For each time limit that is set by the content, at least one of the following is true: Turn off: The user is allowed to turn off the time limit before encountering it; or

	Adjust: The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or Extend: The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the space bar"), and the user is allowed to extend the time limit at least ten times; or Real-time Exception: The time limit is a required part of a real-time event (for example, an auction), and no alternative to the time limit is possible; or Essential Exception: The time limit is essential and extending it would invalidate the activity; or 20 Hour Exception: The time limit is longer than 20 hours.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 2.2.1.

WCAG Guideline: 2.3.1 (Level A)	**Three Flashes or Below Threshold-** Web pages do not contain anything that flashes more than three times in any one second period, or the flash is below the general flash and red flash thresholds.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 2.3.1.

WCAG Guideline: 2.4.1 (Level A)	**Bypass Blocks-** A mechanism is available to bypass blocks of content that are repeated on multiple Web pages.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 2.4.1.

WCAG Guideline: 2.4.2 (Level A)	**Page Titled-** Web pages have titles that describe topic or purpose.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 2.4.2.

WCAG Guideline: 2.4.3 (Level A)	**Focus Order**- If a Web page can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 2.4.3.

WCAG Guideline: 2.4.4 (Level A)	**Link Purpose (In Context)**- The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general.
Description of Violation:	Did not evaluate Guideline 2.4.4.

WCAG Guideline: 2.4.5 (Level AA)	**Multiple Ways Level**- More than one way is available to locate a Web page within a set of Web pages except where the Web Page is the result of, or a step in, a process.
Description of Violation:	Did not evaluate Guideline 2.4.5.

WCAG Guideline: 2.4.7 (Level AA)	**Focus Visible**- Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 2.4.7.

Understandable

WCAG Guideline: 3.1.2 (Level AA)	**Language of Parts**- The human language of each passage or phrase in the content can be programmatically determined except for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of the immediately surrounding text.

Description of Violation:	Did not evaluate Guideline 3.1.2.

WCAG Guideline: 3.2.1 (Level AA)	**On Focus-** When any user interface component receives focus, it does not initiate a change of context.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 3.2.1.

WCAG Guideline: 3.2.2 (Level AA)	**On Input-** Changing the setting of any user interface component does not automatically cause a change of context unless the user has been advised of the behavior before using the component.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 3.2.2.

WCAG Guideline: 3.2.3 (Level AA)	**Consistent Navigation-** Navigational mechanisms that are repeated on multiple Web pages within a set of Web pages occur in the same relative order each time they are repeated, unless a change is initiated by the user.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 3.2.3.

WCAG Guideline: 3.2.4 (Level AA)	**Consistent Identification-** Components that have the same functionality within a set of Web pages are identified consistently.
Description of Violation:	To the best of my knowledge, the website did not violate WCAG 3.2.4.

WCAG Guideline: 3.3.1 (Level A)	**Error Identification-** If an input error is automatically detected, the item that is in error is identified and the error is described to the user in text.
Description of Violation:	Did not evaluate Guideline 3.3.1.

WCAG Guideline: 3.3.3 (Level AA)	**Error Suggestion-** If an input error is automatically detected and suggestions for correction are known, then the suggestions are provided to the user, unless it would jeopardize the security or purpose of the content.
Description of Violation:	Did not evaluate Guideline 3.3.3.

WCAG Guideline: 3.3.4 (Level AA)	**Error Prevention-** For Web pages that cause legal commitments or financial transactions for the user to occur, that modify or delete user-controllable data in data storage systems, or that submit user test responses, at least one of the following is true: Hide full description Reversible: Submissions are reversible. Checked: Data entered by the user is checked for input errors and the user is provided an opportunity to correct them. Confirmed: A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.
Description of Violation:	Did not evaluate Guideline 3.3.4.

Robust

WCAG Guideline: 3.4.1 (Level A)	**Parsing-** In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features.
Description of Violation:	Did not evaluate Guideline 3.4.1.

Part 2: Automated Inspection

Automated Tool Details

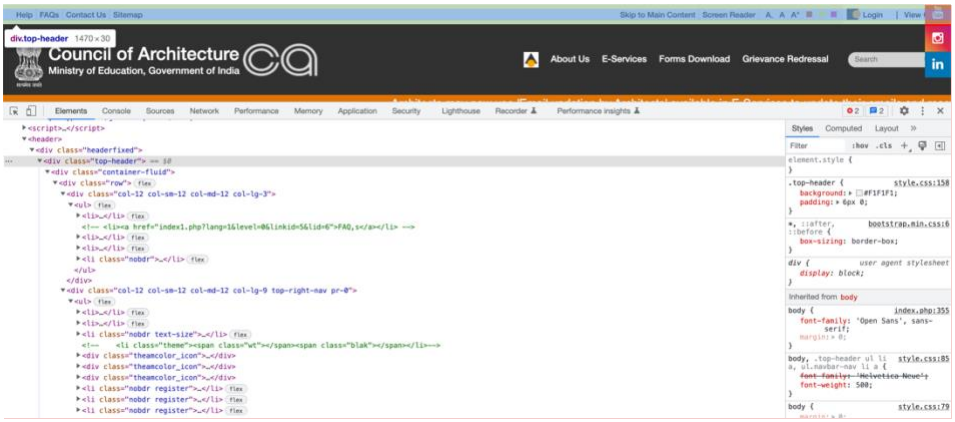
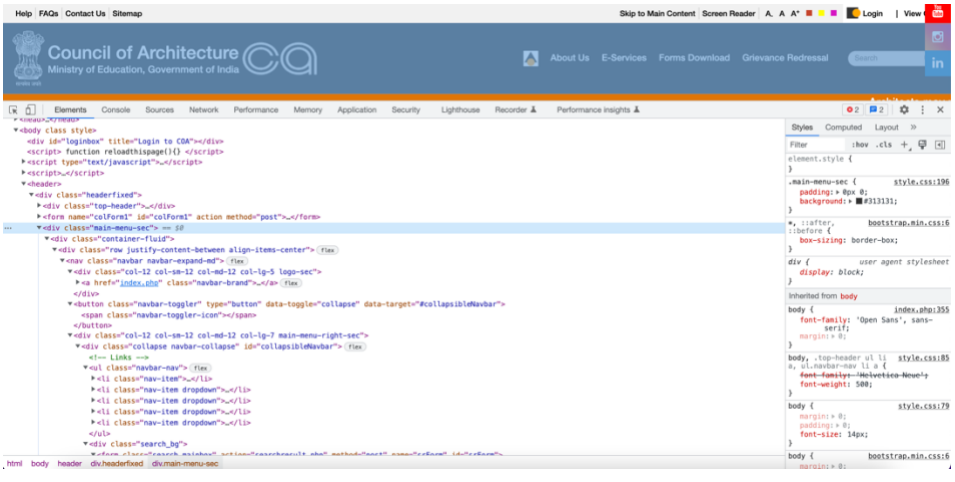
I used the Wave Evaluation Tool's browser extension (Version 3.2.2.0), in Chrome (Version 108.0.5359.94) to conduct my automated accessibility evaluation.

Automated Evaluation of Council of Architecture Website

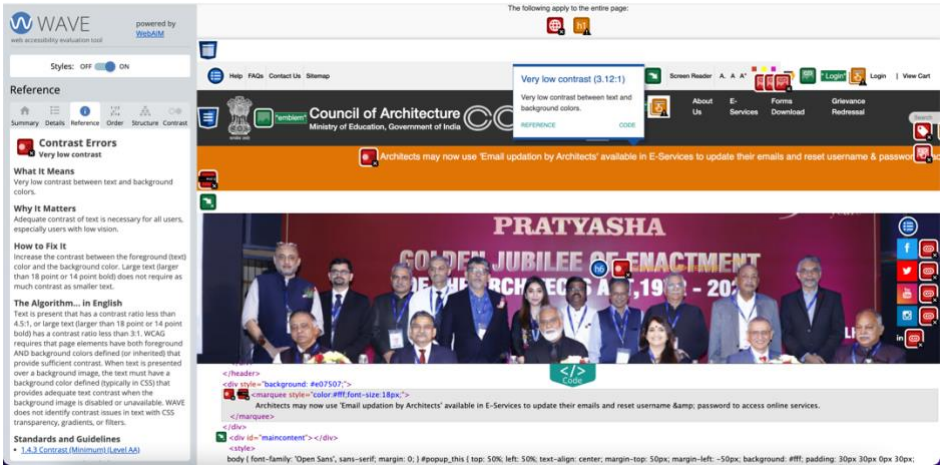
WCAG 2.1 Violations

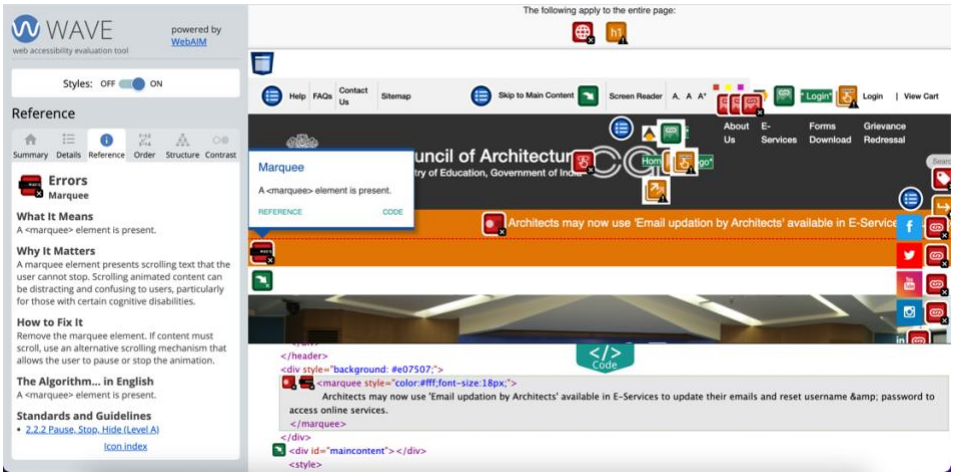
WCAG Guideline: **1.1.1 (Level A)**	**Non-text Content**- All non-text content that is presented to the user has a text alternative that serves the equivalent purpose. • Images, form image buttons, and image map hot spots have appropriate, equivalent alternative text. • Images that do not convey content, are decorative, or contain content that is already conveyed in text are given empty alternative text (alt="") or implemented as CSS backgrounds. All linked images have descriptive alternative text.
Type of Violation	Error
https://www.coa.gov.in/. > Carousel Image Banner	
Description of Violation:	The COA website homepage has a banner image carousel where none of the images have alternative text as highlighted by the Wave tool. Due to this, Voiceover reads it as unlabeled image. If this banner text was meant only for decoration and intended to be skipped by screen

	readers, the code should have included empty alt text (alt="") according to the WCAG guidelines.

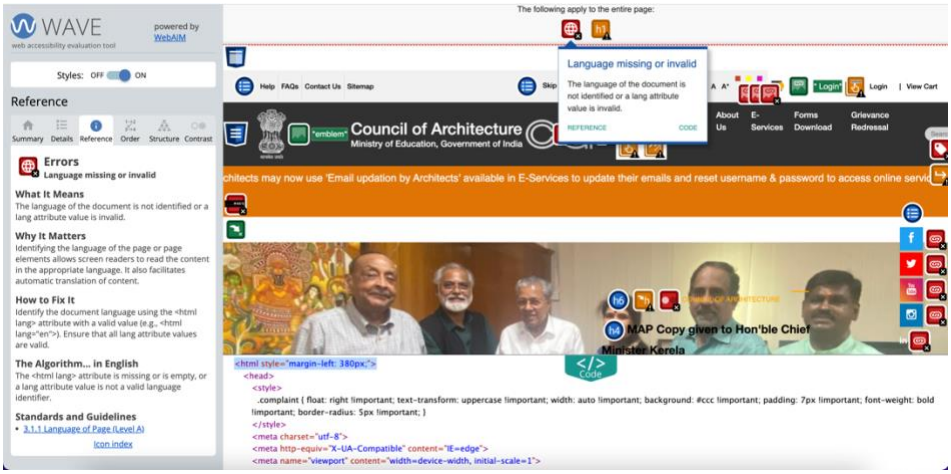
WCAG Guideline: **1.3.1 (Level A)**	**Info and Relationships**- Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text.
Type of Violation	False Pass
https://www.coa.gov.in/. > Top primary and secondary headers of the webpage	 

Description of Violation:	While going through the website using VoiceOver, I noticed that the screen reader completely skipped reading the top headers of the webpage and directly went to the main body content. Upon inspecting the 2 header elements, I realized that they did not have any aria-labels or roles written in the code. However, the Wave Accessibility Evaluation tool does not show an error for a missing role & aria-labels for these elements. Since WCAG 1.3.1 mentions that the information, structure and relationships conveyed through presentation should be understandable by assistive technologies, that's why the website fails this guideline.

WCAG Guideline: **1.4.3 (Level AA)**	**Contrast (Minimum)**- The visual presentation of text and images of text has a contrast ratio of at least 4.5:1, except for the following: Large Text: Large-scale text and images of large-scale text have a contrast ratio of at least 3:1;
Type of Violation	Error
https://www.coa.gov.in/. > Marquee element below header	
Description of Violation:	The COA website homepage has a marquee element below the header which is used to make latest announcements. The announcement text is in white color and in a small size on an orange background color. According to the error shown by Wave, the contrast ratio of this white text on orange does not satisfy the WCAG 1.4.3 minimum contrast guideline for small sized text. This will cause accessibility issues for users with low vision.

WCAG Guideline: **2.2.2 (Level A)**	**Pause, Stop, Hide**- Moving, blinking, scrolling: For any moving, blinking or scrolling information that (1) starts automatically, (2) lasts more than five seconds, and (3) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is essential.
Type of Violation	Error
https://www.coa.gov.in/. > Marquee element below header	
Description of Violation:	The COA website homepage has a marquee element below the header which is used to make latest announcements. Wave flags this as a violation of the WCAG 2.2.2 guideline as this element moves and scrolls automatically, lasts more than 5 seconds, and the user has no control to pause, stop or hide this element. This would be distracting and confusing to users, particularly for those with certain cognitive disabilities.

WCAG Guideline: **3.1.1 (Level A)**	**Language of Page**- The default human language of each Web page can be programmatically determined.
Type of Violation	Error

https://www.coa.gov.in/. > Full webpage	
Description of Violation:	The Wave tool highlights that the COA website has a missing or invalid language. Upon checking the code, it is clear that the webpage does not include the language attribute in the html element. This is a WCAG 3.1.1 Level A violation since it does not provide this critical information that assistive technologies and conventional user agents can use to render text more easily and load the correct pronunciations.

WCAG Guideline: **3.3.2 (Level A)**	**Labels or Instructions**- Sufficient labels, cues, and instructions for required interactive elements are provided via instructions, examples, properly positioned form labels, and/or fieldsets/legends.
Type of Violation	Error
https://www.coa.gov.in/. > Search field in header	

Description of Violation:	The COA website has a search field in the header of the webpage. Wave flags the missing form label of this search field, which is confirmed after reviewing the code. Due to this, the form control is not presented through VoiceOver and also does not provide visible descriptions and larger clickable target for form controls.

Part 3: Top Three Accessibility Improvements

Type of Improvement (#1)	WCAG Guideline **3.1.1 (Level A): Language of Page**- The default human language of each Web page can be programmatically determined.
Improvement (#1)	The way to fix this accessibility violation would be to include the language attribute in the html element of the webpage. For example- <!doctype html> <html lang="en"> </html>
Justification (#1)	• It will allow braille translation software to run properly. • Screen readers that support multiple languages will be able to orient and adapt to the pronunciation and syntax that are specific to the language of the page, speaking the text in the appropriate accent with proper pronunciation. • It can also assist user agents in providing definitions using a dictionary. For a blind user, using a screen reader to navigate through a content-heavy website could be very cumbersome and can increase cognitive loads. By using braille translation software, they can either use refreshable braille displays or braille embossers to better understand the content on the webpage. This will also help them feel more in control and improve their overall user experience. For a blind-deaf user, since braille is the only way to consume information, the site will not be accessible to them unless a language attribute is provided.

Type of Improvement (#2)	WCAG Guideline **1.3.1 (Level A): Info and Relationships**- Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text.
Improvement (#2)	The way to fix this accessibility violation would be to include a "role" and "aria-label" attributes in the header elements of the webpage. For example- ...a list of links here ... ...a list of links here ...
Justification (#2)	• It will allow user agents to adapt content according to the needs of individual users. • It will allow screen readers to access these elements and further clearly convey the distinction between two sections of the webpage. For blind/blind-deaf users using screen readers/braille displays, the current website does not provide them with access to navigation and menu options that can lead them to all the different pages of the website. Thus, it is restricting the information that such users can consume, which is unfair. By implementing this fix, the website can show more inclusiveness and improve the user experience for users with different disabilities.

Type of Improvement (#3)	WCAG Guideline **1.1.1 (Level A): Non-text Content**- All non-text content that is presented to the user has a text alternative that serves the equivalent purpose. • Images, form image buttons, and image map hot spots have appropriate, equivalent alternative text. • Images that do not convey content, are decorative, or contain content that is already conveyed in text are given empty alternative text (alt="") or implemented as CSS backgrounds. All linked images have descriptive alternative text.
Improvement (#3)	The way to fix this violation would be to include either an empty alt-text attribute OR alt-text describing the image for all the banner image elements of the webpage. For example- <img src="images/loremipsum.png" alt=""> OR <img src="images/loremipsum.png" alt="Council members A, B & C at the XYZ event at Delhi, India">

Justification (#3)	• It will allow assistive technologies to read text aloud, present it visually, or convert it to braille. • It may help some people who have difficulty understanding the meaning of photographs, drawings, and other images. • It will support the ability to search for non-text content and to repurpose content in a variety of ways. Users using screen readers already face challenges in navigating through websites in order to find the information that is relevant and important to them. When websites contain carousels with more than 3 images that do not necessarily convey any meaning, it is frustrating and time-consuming for users to listen to the screen-reader going through all of these images. It could also cause users to completely abandon the website in such scenarios and hence, to avoid that it is important that all decorative images are provided with empty or null alt text so that the screen-reader can skip announcing it to the user.

Part 4: Methodological Reflection

Reflection upon Automated Accessibility Evaluation

My most important learning from this assignment was that understanding of the WCAG guidelines is extremely important. There are multiple reasons for that- firstly, tools such as Wave help in highlighting errors but may show more than one relevant guideline for that error. It is the evaluators job to see which one correctly applies to that specific error. Secondly, automated tools can sometimes identify issues that do not really exist, miss some errors completely or also give false passes if the algorithm shows that a specific attribute such as alt-text for an image is present in the code. However, in the end it requires a human evaluator to actually see if the alt-text provided makes sense to the user.

Another takeaway for me was that each testing method - manual and automated has certain pros and cons. Similarly, different automated evaluation tools have its own advantages and disadvantages. Hence, an ideal accessibility inspection should combine multiple testing methods to achieve more comprehensive and accurate results.

Lastly, although using screen-readers and tools for this evaluation is not comparable to users who use these tools on a daily basis, this assignment gave me a chance to put myself in the user's shoes and understand the accessibility issues surrounding current websites. I am now more aware about the necessity and importance of accessible digital experiences and will consciously make it a point to use the WCAG guidelines in my further design/coding projects.

Comparison: Manual & Automated Accessibility Evaluations

Most of the violations that I found through the manual inspection using a screen reader and the automated evaluation using the Wave tool were similar. During the manual inspection, one of the first things I noticed was the missing language attribute in the html element, and this was also highlighted by the Wave tool. Secondly, while using the screen reader I noticed that the banner images were being announced as "unlabeled image". Upon checking the code, I saw that the image element did not have any alt-text, and again, this was also flagged as an error by the Wave tool. In the manual inspection, I used a contrast checker to check the color contrast of the text in the announcement section which showed that the contrast ratio was not in line with WCAG 2.1. The Wave tool showed the same error, although it did not specify the exact contrast ratio whereas the contrast checker provided that as well. While using the screen reader for the same announcement section I realized that a marquee element is being used for the section and that it could not be paused, stopped or hidden. This violated the 2.2.2 WCAG guideline and during the automated inspection, the Wave tool confirmed the same.

Contrast: Manual vs. Automated Accessibility Evaluations

While conducting the manual inspection, I noticed that the screen reader completely skipped the two header elements of the webpage and directly started reading out the main body content. Upon inspecting the code, I figured that the possible reasons for that could be the missing "role" and "aria-label" attributes. However, during the automated evaluation, the Wave tool did not flag this which was extremely surprising since this is an important error that needs to be fixed to allow disabled users to navigate through the website.

Another difference was that I was able to identify more accessibility issues during the automated evaluation as compared to the manual inspection. For example, the Wave tool helped in providing alerts that highlighted suspicious alt texts that I had overlooked while inspecting the code manually.