

Automated Web Accessibility Testing

with playwright.js and axe-core



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About Me

- I am a full-stack software engineer from Jamaica.
- I primarily develop web applications
- Node and JavaScript enthusiast

Agenda

- What is accessibility(A11y)?
- Why is accessibility important
- The Web Content Accessibility Guidelines(WCAG)
- The WCAG principles of accessibility
- Common accessibility issues
- Accessibility testing
- Automating accessibility testing

What Is Accessibility(A11Y)

Software accessibility refers to the design and development practices that make digital applications, websites, and software interfaces usable and navigable for individuals with diverse abilities and disabilities. It involves ensuring that all users, including those with visual, auditory, motor, or cognitive impairments, can interact with software comfortably and effectively, providing equal access to information and functionality.

What Is Accessibility(A11Y)

Accessibility also deals with how websites are structured. Are they using proper semantic HTML? Are they easily navigable with assistive technology?

Why Is Accessibility Important

- Inclusivity and Equal Opportunity
- Good accessibility makes it easier to use assistive technologies such as screen readers
- Expanding User Base
- Improved User Experience
- Search Engine Optimization (SEO)
- Accessibility is legally required in some countries

Web Content Accessibility Guidelines

The Web Content Accessibility Guidelines (WCAG) are technical standards on web accessibility developed by the World Wide Web Consortium (W3C).

The guidelines aim to make websites, apps, electronic documents, and other digital assets accessible to people with a broad range of disabilities, including sensory, intellectual, learning and physical disabilities.

WCAG's Principles Of Accessibility

Perceivable

- Make it simple for users to see and hear content.
- Present text alternatives for non-text content.
- Give captions & other alternatives for multimedia.
- Create content that can be presented without losing meaning when using assistive technologies.

Operable

- Make all functionality accessible straight from a keyboard.
- Give users sufficient time to read & use the content.
- Don't use content that might trigger seizures.
- Facilitate users to navigate and find content.

WCAG's Principles Of Accessibility

Understandable

- Build text that is understandable and readable.
- Create content that appear and operates in predictable a manner.
- Help users avoid & correct errors.

Robust

- Maximize compatibility with present and future user tools.
- Elements have complete start and end tags and are nested according to their specifications.
- Provide a name, role, and value for non-standard user interface components,

Common Accessibility Issues

Missing Alternative Text on Images

Missing alternative text for images is one of the most common accessibility issues in web design. According to WebAIM, 31.3 percent of home page banners were missing alternative texts.

Poor Color Contrast

This is one of the most common A11y issues noticed on many websites. Poor contrast makes it difficult to read content on a website.

Common Accessibility Issues

Poor HTML heading structure

Improper usage of HTML headings (**h1 to h6**) can make reading your website content unorganized and very confusing to navigate. Additionally, assistive technologies such as screen readers use headers to navigate websites. Therefore, improper heading hierarchy makes navigating websites difficult for people who rely on such technology.

Common Accessibility Issues

Missing ARIA attributes

WAI-ARIA (Web Accessibility Initiative - Accessible Rich Internet Applications) attributes are a set of attributes that can be added to HTML elements to enhance the accessibility of web content.

These attributes provide additional information to assistive technologies, such as screen readers, in understanding and interacting with web content. WAI-ARIA attributes help make dynamic and interactive web applications more accessible.

Common Accessibility Issues

Missing form labels

When form input fields do not have labels, it can make it difficult for users using assistive technologies to understand the purpose of the input field. Screen reader users can't comprehend what information you are trying to collect. It may be difficult for them to understand what form of content should be entered into a specific form field.

Common Accessibility Issues

Keyboard Inaccessibility

Some websites and applications are not navigable or usable via keyboard input.

Non mobile responsive design

Not having a mobile responsive design will make using your website an unpleasant experience for mobile users.

What Is Web A11y Testing

Accessibility testing deals with testing the features of a web application in a way that ensures all users, irrespective of most disabilities, will be able to interact with the software to its full potential. This includes allowing disabled users to perform all key actions without external assistance and making the application inclusive for ALL users.

Automated A11y Testing

Automated A11y testing scans a website's underlying code and existing content, and flag errors based on the Web Content Accessibility Guidelines (WCAG).

It is important to note that automated A11y testing is not a replacement for manual test but, should be used in conjunction with it for a more holistic testing experience.

Automated A11y Testing

A11y test automation tools can potentially identify common issues such as:

- Missing ARIA attributes
- Missing Alternative Text on Images
- Poor Color Contrast
- Missing landmark labels
- Missing page title

Axe Ally Engine

Axe (axe-core) is an accessibility testing engine for web applications. It enforces a number of rules and best practices to help you easily catch and fix common accessibility issues.

It's fast, secure, lightweight, and was built to seamlessly integrate with any existing test environment so you can automate accessibility testing alongside your regular functional testing.

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Playwright

Playwright is a framework for Web Testing and Automation. We can integrate playwright with axe-core to perform automated A11y testing.

Demo Time!

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