**AXE**

Axe is an open source rules library for accessibility testing.

Axe with java

How to integrate with seleniumframework

In the properties file, enable axe. Set the following value to the property

MENTION THE FRAMEWORK PROPERTY HERE

An event listener is implemented with selenium webdriver, that listens every time a url changes on the browser. When the url changes and if that url was not scanned earlier, axe scans that webpage for accessibility issues based on the standard earlier provided in the properties file.

When tests are completed,

* If there are accessibility issues, an informational message is posted to the extent report with the link to the axe report which contain violations.
* If there are no accessibilities issues, an informational message is posted to the extent report with status “PASSED”

How axe works?

In the seleniumframework, axe-min.js file is saved. This file contains all the rules required for accessibility. When an accessibility check is run in the background by seleniumframework, this js file is automatically executed inside the web browser (webdriver) instance and all accessibility violations are checked.

This file will need to be update as and when axe updates its engine (version).

Requirements

* Chrome must be installed
* Chrome Driver must be installed
* The Java SE Development Kit must be installed
* Maven must be installed

Java dependency

*<dependency>*

*<groupId>com.deque</groupId>*

*<artifactId>axe-selenium</artifactId>*

*<version>2.0</version>*

*<scope>test</scope>*

*</dependency>*

Supported standards

wcag2a, wcag2aa, section508, best-practice (this is the rules suggested by deque labs), etc.

[Details](https://github.com/dequelabs/axe-core/blob/master/doc/API.md#api-name-axegetrules)

ARIA Roles and Attributes unsupported in axe-core.

Roles:

Figure - No

Attributes:

aria-describedat - No

aria-details - No

aria-roledescription - No

[Rule descriptions](https://github.com/dequelabs/axe-core/blob/master/doc/rule-descriptions.md)

| **Rule ID** | **Description** | **Impact** | **Tags** | **Enabled by default** |
| --- | --- | --- | --- | --- |
| accesskeys | Ensures every accesskey attribute value is unique | Serious | best-practice, cat.keyboard | true |
| area-alt | Ensures <area> elements of image maps have alternate text | Critical | cat.text-alternatives, wcag2a, wcag111, section508, section508.22.a | true |
| aria-allowed-attr | Ensures ARIA attributes are allowed for an element's role | Critical | cat.aria, wcag2a, wcag412 | true |
| aria-allowed-role | Ensures role attribute has an appropriate value for the element | Minor | cat.aria, best-practice | true |
| aria-dpub-role-fallback | Ensures unsupported DPUB roles are only used on elements with implicit fallback roles | Moderate | cat.aria, wcag2a, wcag131 | true |
| aria-hidden-body | Ensures aria-hidden='true' is not present on the document body. | Critical | cat.aria, wcag2a, wcag412 | true |
| aria-required-attr | Ensures elements with ARIA roles have all required ARIA attributes | Critical | cat.aria, wcag2a, wcag412 | true |
| aria-required-children | Ensures elements with an ARIA role that require child roles contain them | Critical | cat.aria, wcag2a, wcag131 | true |
| aria-required-parent | Ensures elements with an ARIA role that require parent roles are contained by them | Critical | cat.aria, wcag2a, wcag131 | true |
| aria-roles | Ensures all elements with a role attribute use a valid value | Serious, Critical | cat.aria, wcag2a, wcag412 | true |
| aria-valid-attr-value | Ensures all ARIA attributes have valid values | Critical | cat.aria, wcag2a, wcag412 | true |
| aria-valid-attr | Ensures attributes that begin with aria- are valid ARIA attributes | Critical | cat.aria, wcag2a, wcag412 | true |
| audio-caption | Ensures <audio> elements have captions | Critical | cat.time-and-media, wcag2a, wcag121, section508, section508.22.a | false |
| autocomplete-valid | Ensure the autocomplete attribute is correct and suitable for the form field | Serious | cat.forms, wcag21aa, wcag135 | true |
| blink | Ensures <blink> elements are not used | Serious | cat.time-and-media, wcag2a, wcag222, section508, section508.22.j | true |
| button-name | Ensures buttons have discernible text | Serious, Critical | cat.name-role-value, wcag2a, wcag412, section508, section508.22.a | true |
| bypass | Ensures each page has at least one mechanism for a user to bypass navigation and jump straight to the content | Serious | cat.keyboard, wcag2a, wcag241, section508, section508.22.o | true |
| checkboxgroup | Ensures related <input type="checkbox"> elements have a group and that the group designation is consistent | Critical | cat.forms, best-practice | true |
| color-contrast | Ensures the contrast between foreground and background colors meets WCAG 2 AA contrast ratio thresholds | Serious | cat.color, wcag2aa, wcag143 | true |
| css-orientation-lock | Ensures content is not locked to any specific display orientation, and the content is operable in all display orientations | Serious | cat.structure, wcag262, wcag21aa, experimental | true |
| definition-list | Ensures <dl> elements are structured correctly | Serious | cat.structure, wcag2a, wcag131 | true |
| dlitem | Ensures <dt> and <dd> elements are contained by a <dl> | Serious | cat.structure, wcag2a, wcag131 | true |
| document-title | Ensures each HTML document contains a non-empty <title> element | Serious | cat.text-alternatives, wcag2a, wcag242 | true |
| duplicate-id-active | Ensures every id attribute value of active elements is unique | Serious | cat.parsing, wcag2a, wcag411 | true |
| duplicate-id-aria | Ensures every id attribute value used in ARIA and in labels is unique | Critical | cat.parsing, wcag2a, wcag411 | true |
| duplicate-id | Ensures every id attribute value is unique | Minor | cat.parsing, wcag2a, wcag411 | true |
| empty-heading | Ensures headings have discernible text | Minor | cat.name-role-value, best-practice | true |
| focus-order-semantics | Ensures elements in the focus order have an appropriate role | Minor | cat.keyboard, best-practice, experimental | true |
| frame-tested | Ensures <iframe> and <frame> elements contain the axe-core script | Critical | cat.structure, review-item | true |
| frame-title-unique | Ensures <iframe> and <frame> elements contain a unique title attribute | Serious | cat.text-alternatives, best-practice | true |
| frame-title | Ensures <iframe> and <frame> elements contain a non-empty title attribute | Serious | cat.text-alternatives, wcag2a, wcag241, wcag412, section508, section508.22.i | true |
| heading-order | Ensures the order of headings is semantically correct | Moderate | cat.semantics, best-practice | true |
| hidden-content | Informs users about hidden content. | Minor | cat.structure, experimental, review-item | true |
| html-has-lang | Ensures every HTML document has a lang attribute | Serious | cat.language, wcag2a, wcag311 | true |
| html-lang-valid | Ensures the lang attribute of the <html> element has a valid value | Serious | cat.language, wcag2a, wcag311 | true |
| html-xml-lang-mismatch | Ensure that HTML elements with both valid lang and xml:lang attributes agree on the base language of the page | Moderate | cat.language, wcag2a, wcag311 | true |
| image-alt | Ensures <img> elements have alternate text or a role of none or presentation | Critical | cat.text-alternatives, wcag2a, wcag111, section508, section508.22.a | true |
| image-redundant-alt | Ensure button and link text is not repeated as image alternative | Minor | cat.text-alternatives, best-practice | true |
| input-image-alt | Ensures <input type="image"> elements have alternate text | Critical | cat.text-alternatives, wcag2a, wcag111, section508, section508.22.a | true |
| label-title-only | Ensures that every form element is not solely labeled using the title or aria-describedby attributes | Serious | cat.forms, best-practice | true |
| label | Ensures every form element has a label | Minor, Serious, Critical | cat.forms, wcag2a, wcag332, wcag131, section508, section508.22.n | true |
| landmark-banner-is-top-level | Ensures the banner landmark is at top level | Moderate | cat.semantics, best-practice | true |
| landmark-contentinfo-is-top-level | Ensures the contentinfo landmark is at top level | Moderate | cat.semantics, best-practice | true |
| landmark-main-is-top-level | Ensures the main landmark is at top level | Moderate | cat.semantics, best-practice | true |
| landmark-no-duplicate-banner | Ensures the page has at most one banner landmark | Moderate | cat.semantics, best-practice | true |
| landmark-no-duplicate-contentinfo | Ensures the page has at most one contentinfo landmark | Moderate | cat.semantics, best-practice | true |
| landmark-one-main | Ensures the page has only one main landmark and each iframe in the page has at most one main landmark | Moderate | cat.semantics, best-practice | true |
| layout-table | Ensures presentational <table> elements do not use <th>, <caption> elements or the summary attribute | Serious | cat.semantics, wcag2a, wcag131 | true |
| link-in-text-block | Links can be distinguished without relying on color | Serious | cat.color, experimental, wcag2a, wcag141 | true |
| link-name | Ensures links have discernible text | Serious | cat.name-role-value, wcag2a, wcag412, wcag244, section508, section508.22.a | true |
| list | Ensures that lists are structured correctly | Serious | cat.structure, wcag2a, wcag131 | true |
| listitem | Ensures <li> elements are used semantically | Serious | cat.structure, wcag2a, wcag131 | true |
| marquee | Ensures <marquee> elements are not used | Serious | cat.parsing, wcag2a, wcag222 | true |
| meta-refresh | Ensures <meta http-equiv="refresh"> is not used | Critical | cat.time, wcag2a, wcag2aaa, wcag221, wcag224, wcag325 | true |
| meta-viewport-large | Ensures <meta name="viewport"> can scale a significant amount | Minor | cat.sensory-and-visual-cues, best-practice | true |
| meta-viewport | Ensures <meta name="viewport"> does not disable text scaling and zooming | Critical | cat.sensory-and-visual-cues, wcag2aa, wcag144 | true |
| object-alt | Ensures <object> elements have alternate text | Serious | cat.text-alternatives, wcag2a, wcag111, section508, section508.22.a | true |
| p-as-heading | Ensure p elements are not used to style headings | Serious | cat.semantics, wcag2a, wcag131, experimental | true |
| page-has-heading-one | Ensure that the page, or at least one of its frames contains a level-one heading | Moderate | cat.semantics, best-practice | true |
| radiogroup | Ensures related <input type="radio"> elements have a group and that the group designation is consistent | Critical | cat.forms, best-practice | true |
| region | Ensures all page content is contained by landmarks | Moderate | cat.keyboard, best-practice | true |
| scope-attr-valid | Ensures the scope attribute is used correctly on tables | Moderate, Critical | cat.tables, best-practice | true |
| server-side-image-map | Ensures that server-side image maps are not used | Minor | cat.text-alternatives, wcag2a, wcag211, section508, section508.22.f | true |
| skip-link | Ensure all skip links have a focusable target | Moderate | cat.keyboard, best-practice | true |
| tabindex | Ensures tabindex attribute values are not greater than 0 | Serious | cat.keyboard, best-practice | true |
| table-duplicate-name | Ensure that tables do not have the same summary and caption | Minor | cat.tables, best-practice | true |
| table-fake-caption | Ensure that tables with a caption use the <caption> element. | Serious | cat.tables, experimental, wcag2a, wcag131, section508, section508.22.g | true |
| td-has-header | Ensure that each non-empty data cell in a large table has one or more table headers | Critical | cat.tables, experimental, wcag2a, wcag131, section508, section508.22.g | true |
| td-headers-attr | Ensure that each cell in a table using the headers refers to another cell in that table | Serious | cat.tables, wcag2a, wcag131, section508, section508.22.g | true |
| th-has-data-cells | Ensure that each table header in a data table refers to data cells | Serious | cat.tables, wcag2a, wcag131, section508, section508.22.g | true |
| valid-lang | Ensures lang attributes have valid values | Serious | cat.language, wcag2aa, wcag312 | true |
| video-caption | Ensures <video> elements have captions | Critical | cat.text-alternatives, wcag2a, wcag122, section508, section508.22.a | true |
| video-description | Ensures <video> elements have audio descriptions | Critical | cat.text-alternatives, wcag2aa, wcag125, section508, section508.22.b | true |