

# Web Accessibility (A11y) and Color Contrast

## Color Contrast

Among the things that a Frontend developer must always check, to ensure web accessibility, is `Color Contrast`.

Most of the times, this means that the background (the `background-color` property in CSS) and foreground color (the `color` property in CSS) combination used on our HTML elements must ideally pass the WCAG AA and/or AAA tests.

WCAG stands for Web Content Accessibility Guidelines and it is developed by the World Wide Web Consortium (W3C) Web Accessibility Initiative (WAI). AA and AAA are defined as the WCAG conformance levels. There are three levels: A, AA and AAA. See [this page](#) for more.

## Examples

In the following example, we examine the background/foreground color of the last two buttons. As the background color gets darker (and thus closer to the foreground color) we must check if the combination of these two passes the WCAG AA/AAA tests. We are going to use the following free online tool [WebAIM Contrast Checker Tool](#) to do the checks by manually inputting the color values.

# Quick start

Create or open a class



Register students



Start a session



Access attendance data



Passes AA and AAA

{ background-color: #43BFB3, color: #000; }

Check individual student data




Fails on AAA on Normal Text Size

{ background-color: #00A393, color: #000; }


The last button fails on the AAA test, when used with `Normal Text Size` as you can see in the tests that follow.

# Contrast Checker

[Home](#) > [Resources](#) > Contrast Checker

**Foreground Color**  
#000000  
Lightness  


↔

**Background Color**  
#00A393  
Lightness  


Contrast Ratio  
**6.66:1**

[permalink](#)

## Normal Text

WCAG AA: **Pass**  
WCAG AAA: **Fail**

The five boxing wizards jump quickly.

## Large Text

WCAG AA: **Pass**  
WCAG AAA: **Pass**

The five boxing wizards jump quickly.

## Graphical Objects and User Interface Components

WCAG AA: **Pass**

✓  
Text Input

Whereas the previous button (second from last), successfully passes all the tests.

# Contrast Checker

[Home](#) > [Resources](#) > Contrast Checker

## Foreground Color

#000000

Lightness

↔

## Background Color

#43BFB3

Lightness

Contrast Ratio

9.34:1

[permalink](#)

### Normal Text

WCAG AA: 

Pass

WCAG AAA: 

Pass

The five boxing wizards jump quickly.

### Large Text

WCAG AA: 

Pass

WCAG AAA: 

Pass

The five boxing wizards jump quickly.

### Graphical Objects and User Interface Components

WCAG AA: 

Pass

✓

Text Input

All the tests were done manually, using the [WebAIM Contrast Checker Tool](#). It is highly recommended that you bookmark this link if you seriously think about becoming a Frontend developer.

# Tools

To get a better understanding of how color contrast might affect users' ability to read text on a screen, check out the following two pictures which depict the same interface as viewed by people affected by various forms of color impairment: **Monochromasy/Achromatopsia** and **Blue Cone Achromasy** among others.

Drag and drop or paste your file in the area below or:  Screenshot ....43.49 AM.jpg

<b>Trichromatic view:</b>	<b>Anomalous Trichromacy:</b>	<b>Dichromatic view:</b>	<b>Monochromatic view:</b>
<input type="radio"/> Normal	<input type="radio"/> Red-Weak/Protanomaly	<input type="radio"/> Red-Blind/Protanopia	<input checked="" type="radio"/> Monochromacy/Achromatopsia
	<input type="radio"/> Green-Weak/Deuteranomaly	<input type="radio"/> Green-Blind/Deuteranopia	<input type="radio"/> Blue Cone Monochromacy
	<input type="radio"/> Blue-Weak/Tritanomaly	<input type="radio"/> Blue-Blind/Tritanopia	

Use lens to compare with normal view: ☒ No Lens ☐ Normal Lens ☐ Inverse Lens

[Reset View](#) [Open simulated image in new window](#)

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Access attendance data

Check individual student data

Drag and drop or paste your file in the area below or:  Screenshot ....43.49 AM.jpg

Trichromatic view: Anomalous Trichromacy:

☐ Normal

☐ Red-Weak/Protanomaly

☐ Green-Weak/Deuteranomaly

☐ Blue-Weak/Tritanomaly

Dichromatic view:

☐ Red-Blind/Protanopia

☐ Green-Blind/Deuteranopia

☐ Blue-Blind/Tritanopia

Monochromatic view:

☐ Monochromacy/Achromatopsia

☒ Blue Cone Monochromacy

Use lens to compare with normal view: ☒ No Lens ☐ Normal Lens ☐ Inverse Lens

[Reset View](#) [Open simulated image in new window](#)

## Quick start

Create or open a class



Register students



Start a session



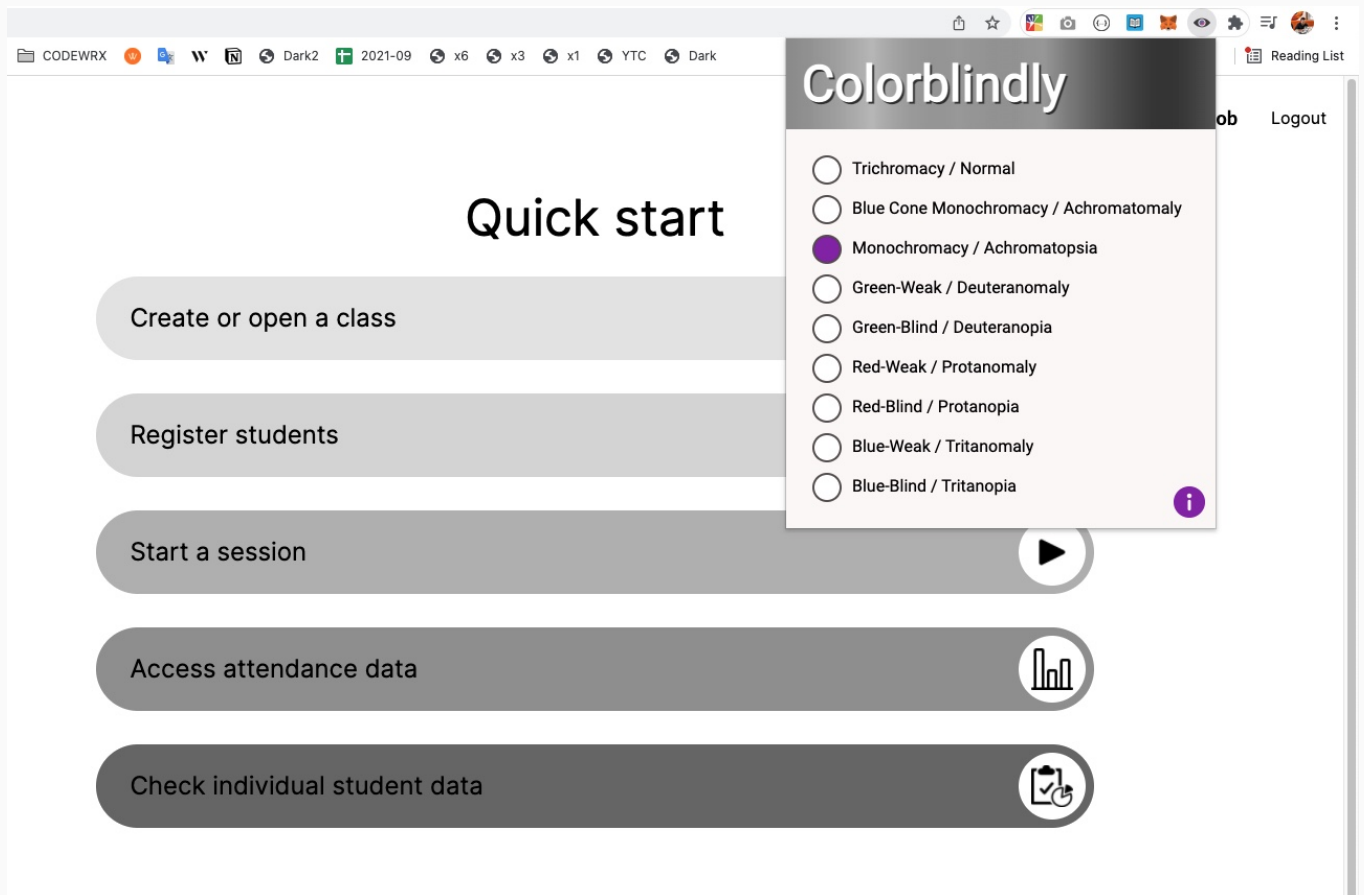
Access attendance data



Check individual student data



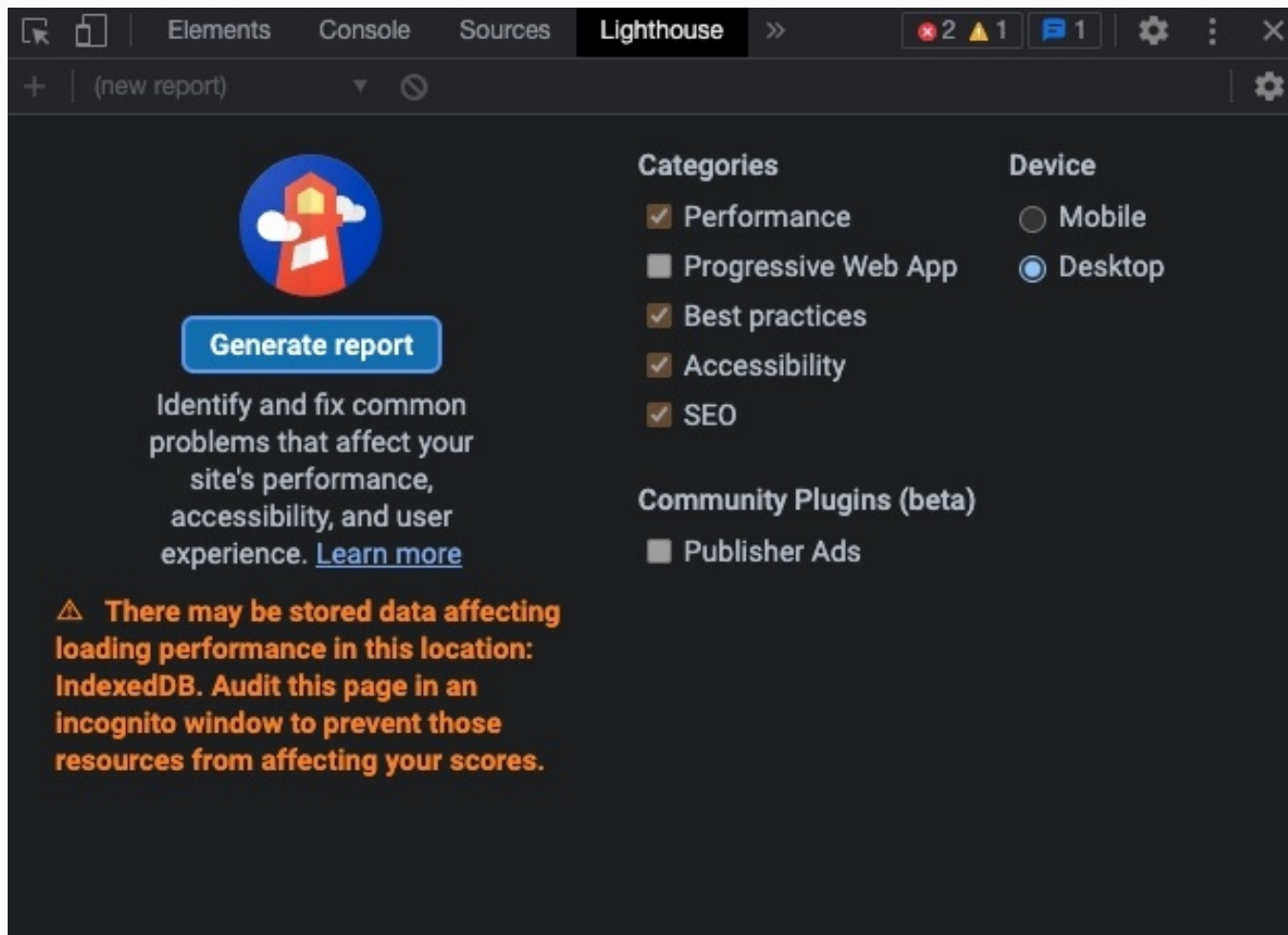
It is easy for a team of developers or testers to check a website for such mistakes by using a Browser Extension like [Colorblindly](#).



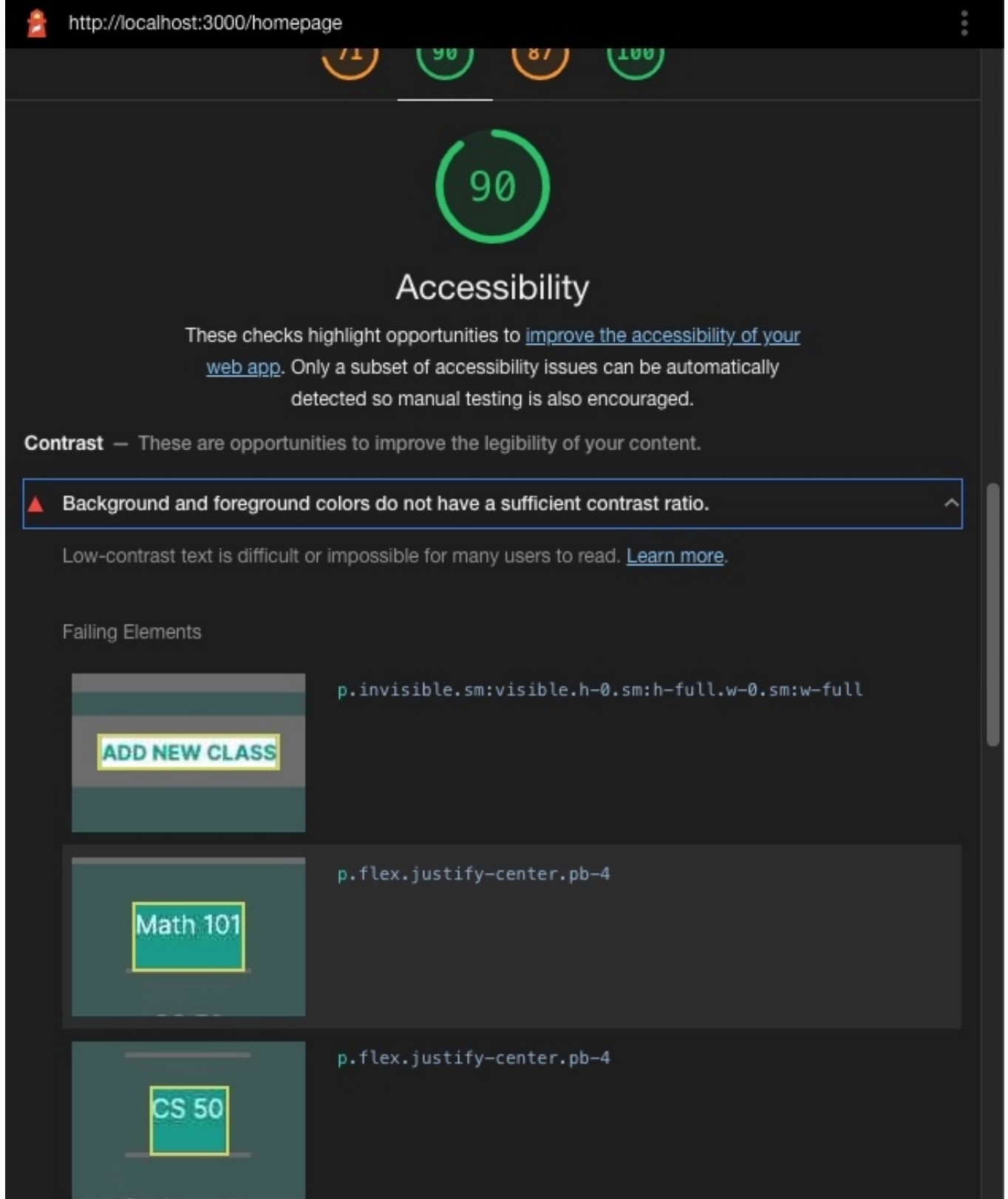


# Chrome Lighthouse

Another Developer Tool that can help you detect Ally (short for A[ccessibilit.length === 11 ]y, ) issues is the [Chrome Lighthouse](#) tool found in the Developer Toolset of Chrome Browser.



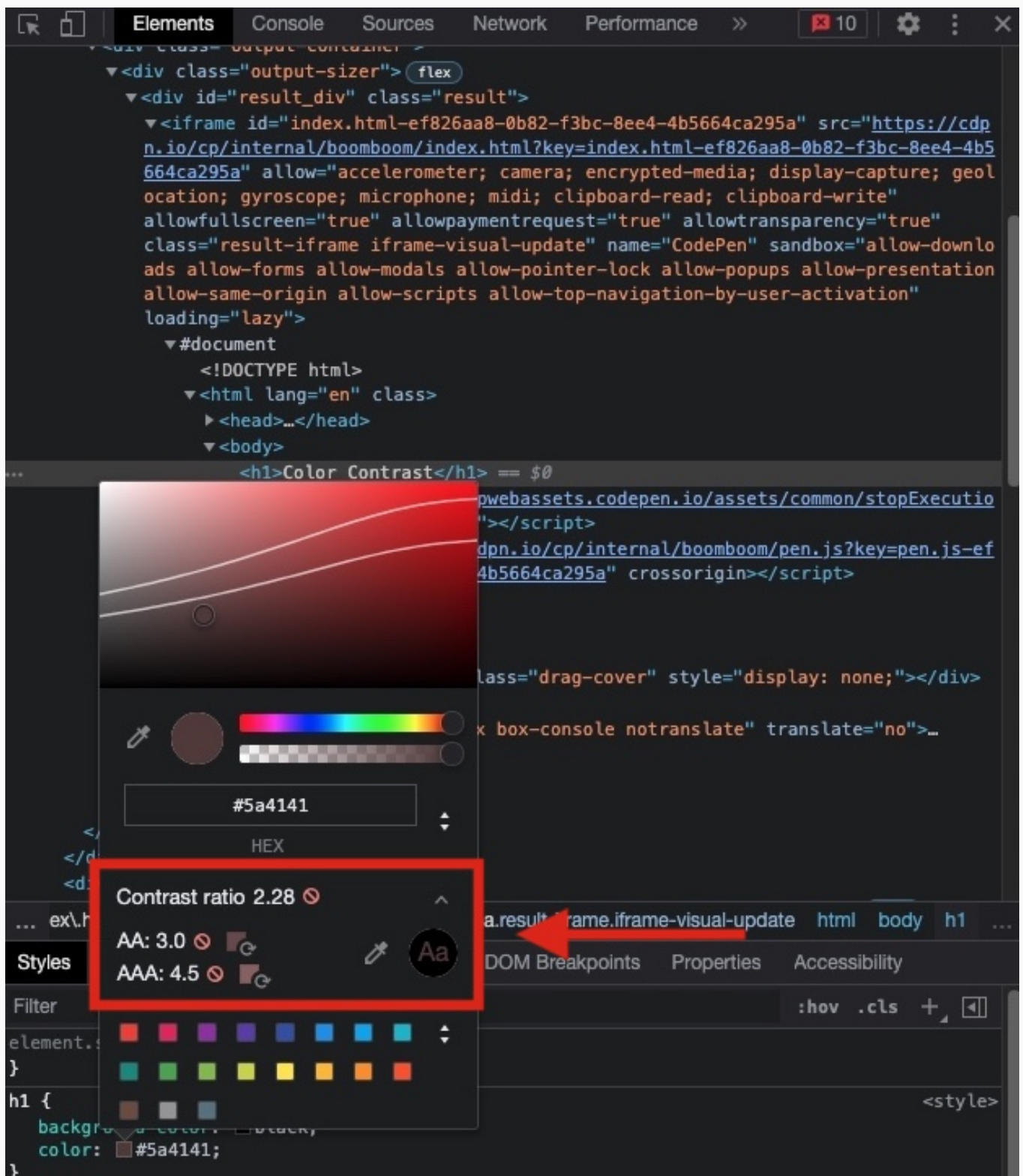




**Keep in mind** that pages that score low on the `Performance`, `SEO` and `Accessibility` scale are given a low priority on the Search Results pages of all major Search Engines! This means that striving for Ally is a also good way to improve the visibility and search ranking of your web pages.

# Color Picker

Another way to quickly check the color contrast and pick a more appropriate color combination is the Chrome color picker which includes a nice indicator of the AA and AAA conformance levels right on the color palette. You can use this tool when you click on the color box of an element. In some cases the contrast check won't be there if the browser cannot detect the background/foreground color successfully.



Elements Console Sources Network Performance » 10

```
<div class="output-container">
  <div class="output-size"> flex
  <div id="result_div" class="result">
    <iframe id="index.html-ef826aa8-0b82-f3bc-8ee4-4b5664ca295a" src="https://cdpn.io/cp/internal/boomboom/index.html?key=index.html-ef826aa8-0b82-f3bc-8ee4-4b5664ca295a" allow="accelerometer; camera; encrypted-media; display-capture; geolocation; gyroscope; microphone; midi; clipboard-read; clipboard-write" allowfullscreen="true" allowpaymentrequest="true" allowtransparency="true" class="result-iframe iframe-visual-update" name="CodePen" sandbox="allow-downloads allow-forms allow-modals allow-pointer-lock allow-popups allow-presentation allow-same-origin allow-scripts allow-top-navigation-by-user-activation" loading="lazy">
      #document
        <!DOCTYPE html>
        <html lang="en" class>
          <head>...</head>
          <body>
            <h1>Color Contrast</h1> == $0
            <script src="https://codepen.io/assets/common/stopExecution...></script>
            <script src="https://codepen.io/cp/internal/boomboom/pen.js?key=pen.js-ef826aa8-0b82-f3bc-8ee4-4b5664ca295a" crossorigin></script>
            <div class="drag-cover" style="display: none;">
            <div class="box-console notranslate" translate="no">...
          </body>
        </html>
      </iframe>
  </div>
</div>
```

Color Contrast

Contrast ratio 3.83 ✓

AA: 3.0 ✓

AAA: 4.5 ✗

#875f5f

HEX

Styles

Filter

element...

h1 {

background-color: #875f5f;

color: #875f5f;

DOM Breakpoints Properties Accessibility

:hov .cls +

<style>



Elements Console Sources Network Performance » 10

```
<div class="output-container">
  <div class="output-sizer"> flex
    <div id="result_div" class="result">
      <iframe id="index.html-ef826aa8-0b82-f3bc-8ee4-4b5664ca295a" src="https://cdpn.io/cp/internal/boomboom/index.html?key=index.html-ef826aa8-0b82-f3bc-8ee4-4b5664ca295a" allow="accelerometer; camera; encrypted-media; display-capture; geolocation; gyroscope; microphone; midi; clipboard-read; clipboard-write" allowfullscreen="true" allowpaymentrequest="true" allowtransparency="true" class="result-iframe iframe-visual-update" name="CodePen" sandbox="allow-downloads allow-forms allow-modals allow-pointer-lock allow-popups allow-presentation allow-same-origin allow-scripts allow-top-navigation-by-user-activation" loading="lazy">
        #document
          <!DOCTYPE html>
          <html lang="en" class>
            <head>...</head>
            <body>
              ...
              <h1>Color Contrast</h1> == $0
              ...
              <script src="https://codepen.io/assets/common/stopExecution...></script>
              ...
              <script src="https://codepen.io/cp/internal/boomboom/pen.js?key=pen.js-ef826aa8-0b82-f3bc-8ee4-4b5664ca295a" crossorigin></script>
              ...
              <div class="drag-cover" style="display: none;"></div>
              ...
              <div class="box-console notranslate" translate="no">...
            </body>
          </html>
        </iframe>
    </div>
  </div>
</div>
```

Color Contrast

Contrast ratio 5.8 ✓

AA: 3.0 ✓

AAA: 4.5 ✓

#af7979

HEX

Styles

Filter

element...

h1 {

background-color: #af7979;

color: #af7979;

DOM Breakpoints Properties Accessibility

:hov .cls +

<style>

# CSS: color-contrast()

In the future, browsers will start supporting the [color-contrast](#) CSS property which automatically selects the color with the highest contrast automatically.

You can regularly check for its support using the [caniuse.com website](#) or the MDN [Browser Compatibility](#) table found at the bottom of the page.

## Closing Remarks

If you serious about Web Development, then Web Accessibility must be priority number 1 for you. You can start by going through the [Web Accessibility](#) free course at [Coursera](#) (see Resources section below).

# Resources

- [Web Accessibility \*\*Free course\*\* at Coursera](#)
- [Web Accessibility Perspectives - Compilation of 10 Topics/Videos \(YouTube video / 8 minutes\)](#)
- [Web Content Accessibility Guidelines \(WCAG\) 2 Level AA Conformance](#)
- [CSS Tips for Better Color and Contrast Accessibility](#)
- [WebAIM Contrast Checker](#)
- [Coblis — Color Blindness Simulator](#)
- [Monochromacy](#)
- [Blue Cone Monochromacy](#)