

MAXIMIZE APP PERFORMANCE BY OPTIMIZING WEB FONTS

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Agenda

1 | CLS and how fonts cause it

2 | CLS minimization strategies

CLS and how fonts cause it



Layout shifts are bad!



Order confirmation

You have selected **14** items. Is this correct?

Yes, place my order

No, go back

How is CLS calculated?

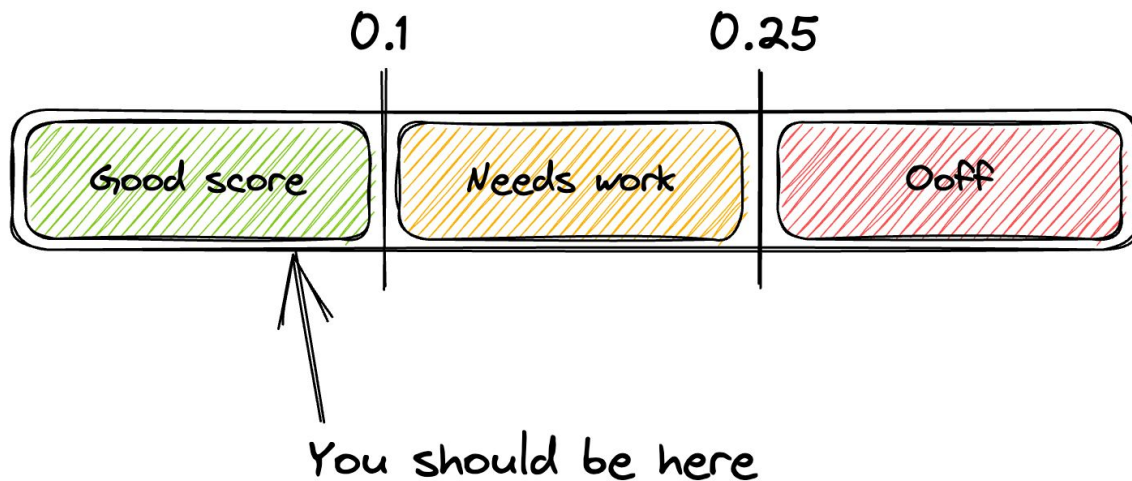
It's the product of the impact fraction and the viewport distance fraction:

$$\text{CLS} = \text{impact fraction} * \text{viewport distance fraction}$$

The values are obtained by measuring how the “unstable” elements move between two animation frames. They're decimal points between 0 and 1, which represent % of changes in the viewport (impact fraction) and how far the element moved relative to the viewport (viewport distance fraction).

What's a good CLS score?

Less is always better, but your goal should be to stay within the 0-0.1 range.



What's a good CLS score?

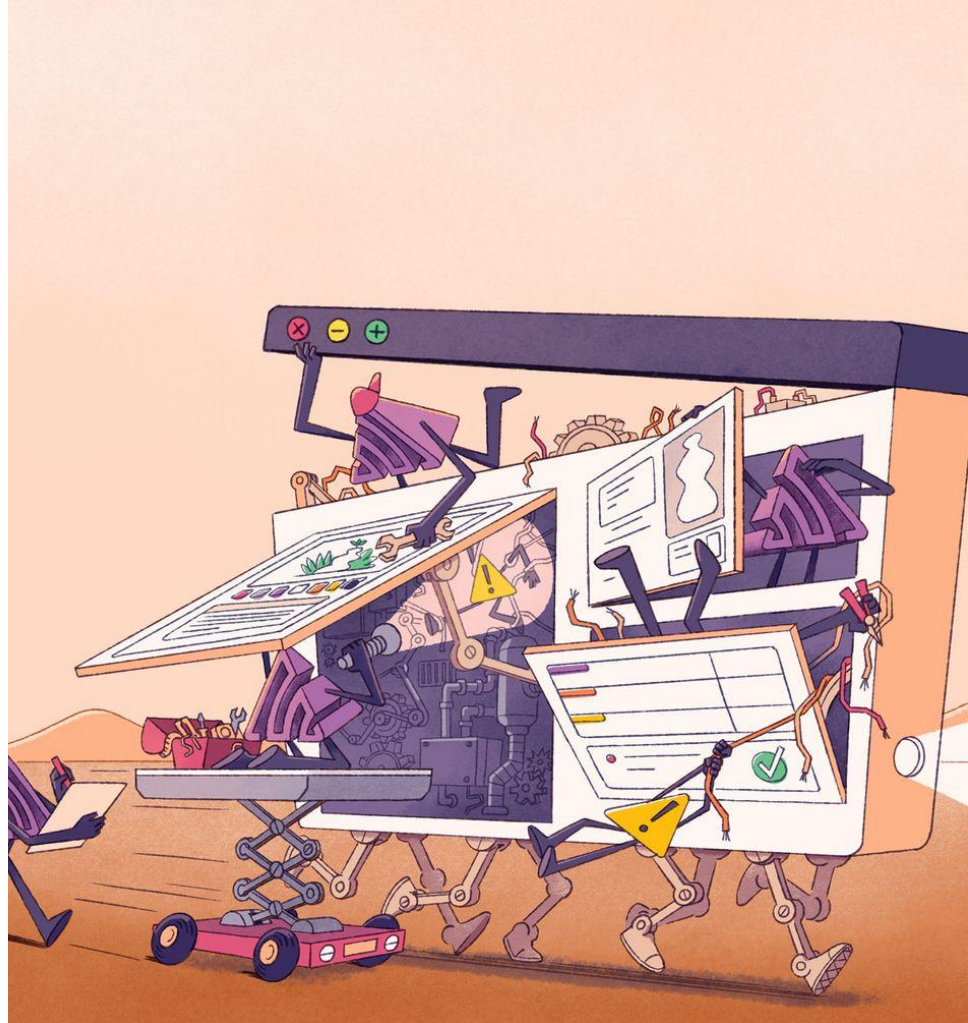
Not every device will give you the same CLS score.

Outside factors like device performance and internet speed affect the CLS score, so the one you see in your dev tools in Chrome won't necessarily be the one your users will experience.

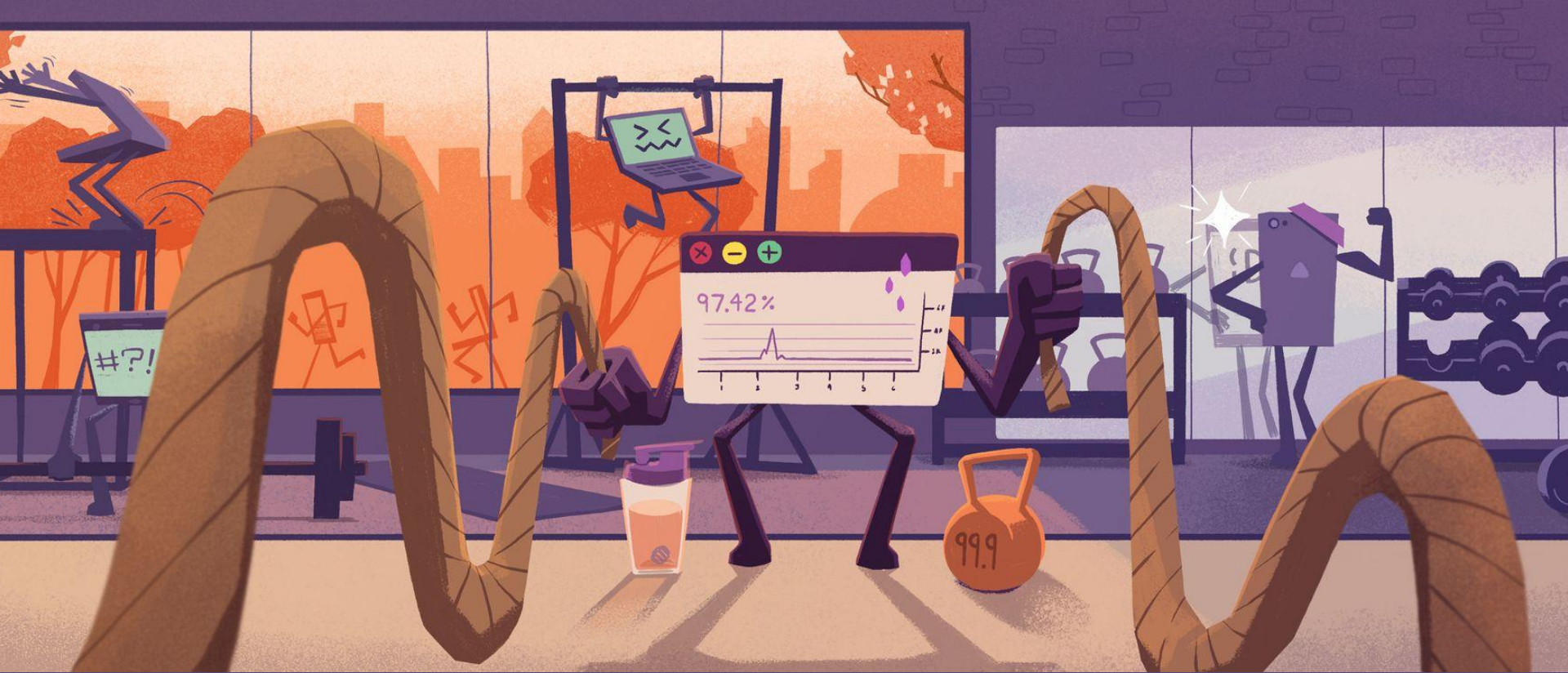
To keep an eye on what the actual CLS score is, you need to implement tools like Sentry in your app. Side benefits: other performance metrics and web vitals, and also crash reporting!

How fonts cause CLS?

- **FOIT**, or Flash of Invisible Text, is when the browser loads the page without the text while the font is being downloaded.
- **FOUT**, or Flash of Unstyled Text, is when the browser uses a system font while the font is being downloaded.



CLS minimization strategies



Don't use a web font

- It's not really a tip, but I had to mention it.
- If you it's not necessary, don't opt-in to use a web font.
- Do yourself a favor and avoid all the upcoming tips.
- ModernFontStacks.com

Host your own fonts

- It might be easier importing a Google Font, but hosting your own fonts has a lot of benefits.
- Also, not as complex as it might seem.
- Avoid another HTTP round trip, because the browser already have a connection to your server.
- Don't depend on the availability of the third-party service.

Use less font files

- Pay attention to the font weights and styles you're importing. Do you need all of them?
- The browser is capable of mimicking the weight and style of the font, but it varies from font to font.
- Make sure to check if the faux-bold and faux-italic look "good enough" before importing the actual font files.

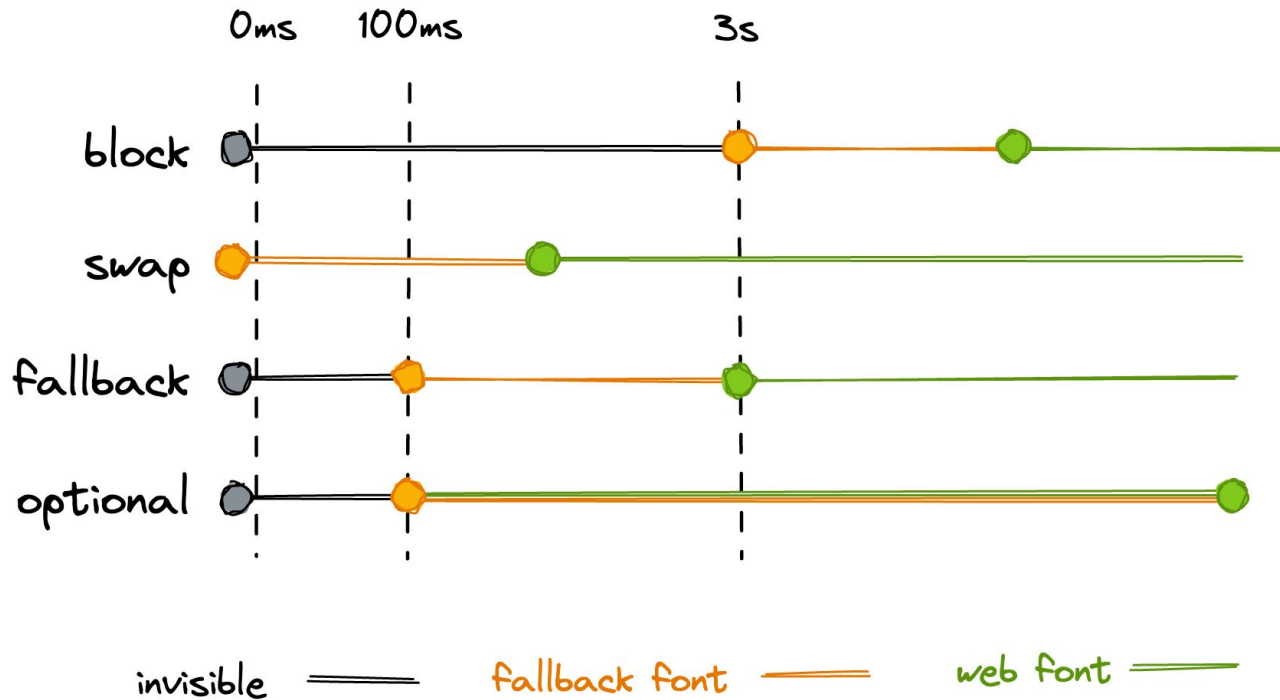
Use a **woff2** font format

- Woff2 supports subsetting (removing unused glyphs to reduce file size)
- It also uses brotli compression, which produces the smallest file size and it's supported by all modern browsers

Use the font-display property

- **auto**: the font display strategy is up to the browser
- **block**: short block and infinite swap
- **swap**: no block and infinite swap
- **fallback**: extremely small block and short swap
- **optional**: extremely small block and no swap

Font loading strategies



Define a fallback font with descriptors

- If you decided to go with the **swap** strategy, you should spend some time fine tuning the fallback font.
- Use **size-adjust**, **ascent-override**, **descent-override**, **line-gap-override** to minimize the difference between the fallback font and the OG one.
- Check out [this codepen](#), and [Malte Ubl's tool](#) if you need help with the fine tuning.

```
/* Loading the web font */
@font-face {
  font-family: "IBM Plex Serif Regular";
  src: url("/fonts/IBMPlexSerif-Regular.woff2") format("woff2");
  font-weight: normal;
  font-style: normal;
  font-display: swap;
}
/* Defining the fallback */
@font-face {
  font-family: "IBM Plex Serif-fallback";
  size-adjust: 117.1%;
  ascent-override: 86%;
  src: local("Times New Roman");
}

/*
  Defining a css variable that combines the web font
  with the fallback and an alternative from modernfontstacks.com
*/
:root {
  --font-regular: "IBM Plex Serif Regular", "IBM Plex Serif-fallback",
    Rockwell, "Rockwell Nova", "Roboto Slab", "DejaVu Serif", "Sitka Small",
    serif;
}

/* Setting the font to the paragraph element */
p {
  font-family: var(--font-regular);
}
```

Thank you

Demo project (GitHub):

[nikolovlazar/webfonts-cls-workshop](https://github.com/nikolovlazar/webfonts-cls-workshop)

API Performance Meetup:

2 August, 129 Spadina Ave 7 floor, 5:30pm

bit.ly/3DAnDsh

Check out our Sandbox:

sentry.io/demo/sandbox

Sign up for a Sentry account:

sentry.io/signup

