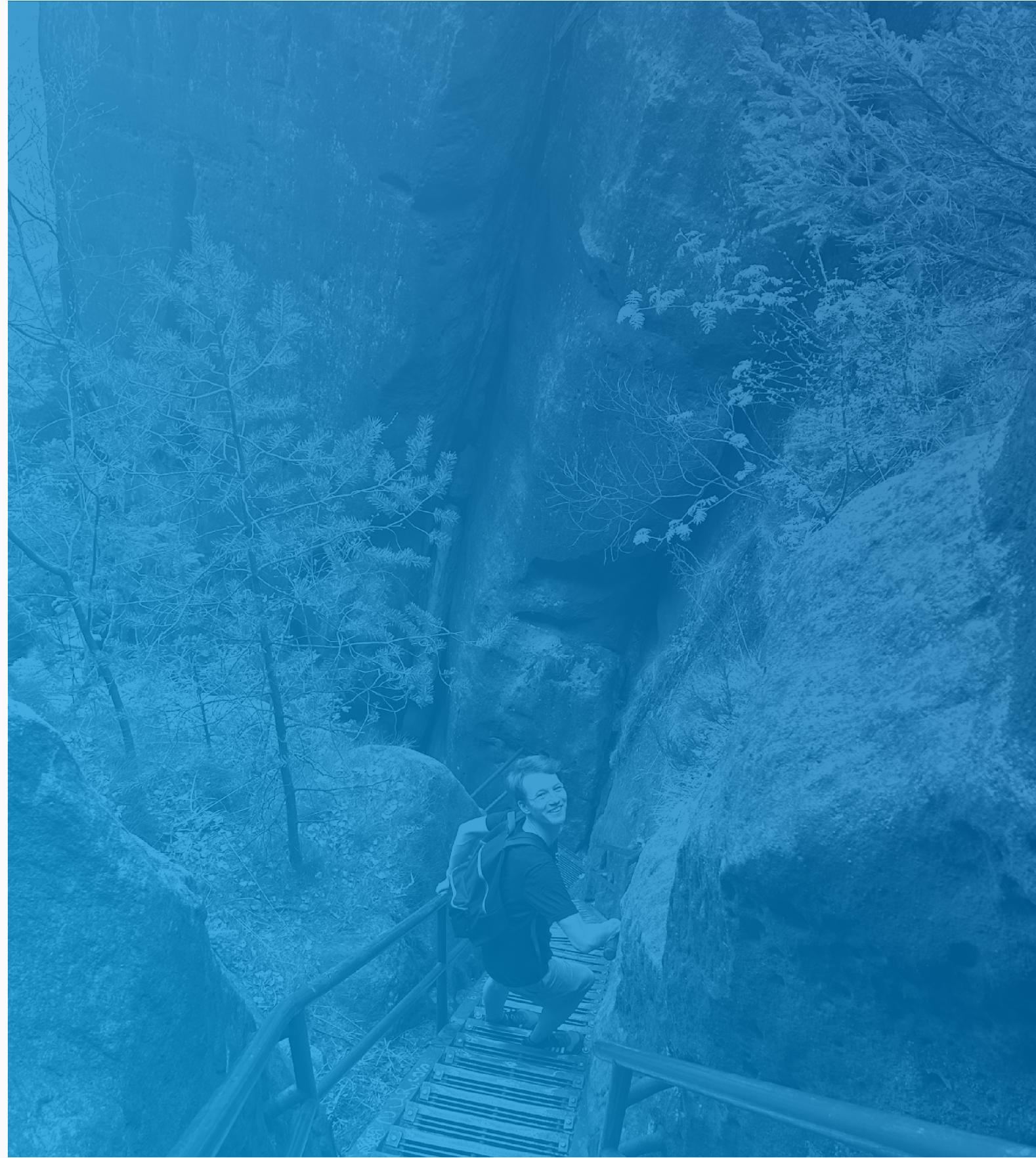


# Forced colors and Windows contrast themes



# Fynn Becker

they/them

- Frontend developer at Factorial
- Accessibility specialist
- Occasional open sourcerer

🌐 [fynn.be](http://fynn.be)

🐘 [@mvsde@mastodon.social](https://@mvsde@mastodon.social)

**Who is familiar with  
Windows contrast themes?**



Docker  
Local Account

Find a setting



Home

System

Bluetooth & devices

Network & internet

Personalization

Apps

Accounts

Time & language

Gaming

Accessibility

Privacy & security

Windows Update

# Accessibility

## Vision

- Text size**  
Text size that appears throughout Windows and your apps [>](#)
- Visual effects**  
Scroll bars, transparency, animations, notification timeout [>](#)
- Mouse pointer and touch**  
Mouse pointer color, size [>](#)
- Text cursor**  
Appearance and thickness, text cursor indicator [>](#)
- Magnifier**  
Magnifier reading, zoom increment [>](#)
- Color filters**  
Colorblindness filters, grayscale, inverted [>](#)
- Contrast themes**  
Color themes for low vision, light sensitivity [>](#)
- Narrator**  
Voice, verbosity, keyboard, braille [>](#)

## Hearing

- Audio**  
Mono audio, audio notifications [>](#)
- Captions**  
Styles, live captions [>](#)

## Interaction

- Speech**  
Voice access, voice typing, Windows Speech Recognition [>](#)

Accessibility > Contrast themes > Edit theme

The screenshot shows a 'Contrast theme' configuration interface. At the top left is a 'Contrast theme' icon (two overlapping squares) and the text 'Edit contrast theme'. Below it is a note 'Select a colored square to customize contrast colors'. On the right side, the name 'Night sky' is displayed above a small preview square. The main area contains seven color swatches, each with a label: 'Background' (light gray), 'Text' (white), 'Hyperlink' (blue), 'Inactive text' (gray), 'Selected text' (purple), 'Button text' (yellow), and 'Save as' (yellow border). At the bottom right are 'Save as' and 'Cancel' buttons.

Edit contrast theme  
Select a colored square to customize contrast colors

Night sky

Background

Text

Hyperlink

Inactive text

Selected text

Button text

Save as

Cancel

# Highly reduced color palette

**Why do we need  
contrast themes?**

Contrast themes are important

**81 %**

of all websites have  
low contrast text<sup>1</sup>

**30 %**

of people with low vision  
use contrast themes<sup>2</sup>

**56 million<sup>4</sup>**

**4 %**

of Windows computers have  
active contrast themes<sup>3</sup>

1. [The WebAIM Million](#), WebAIM, 2024

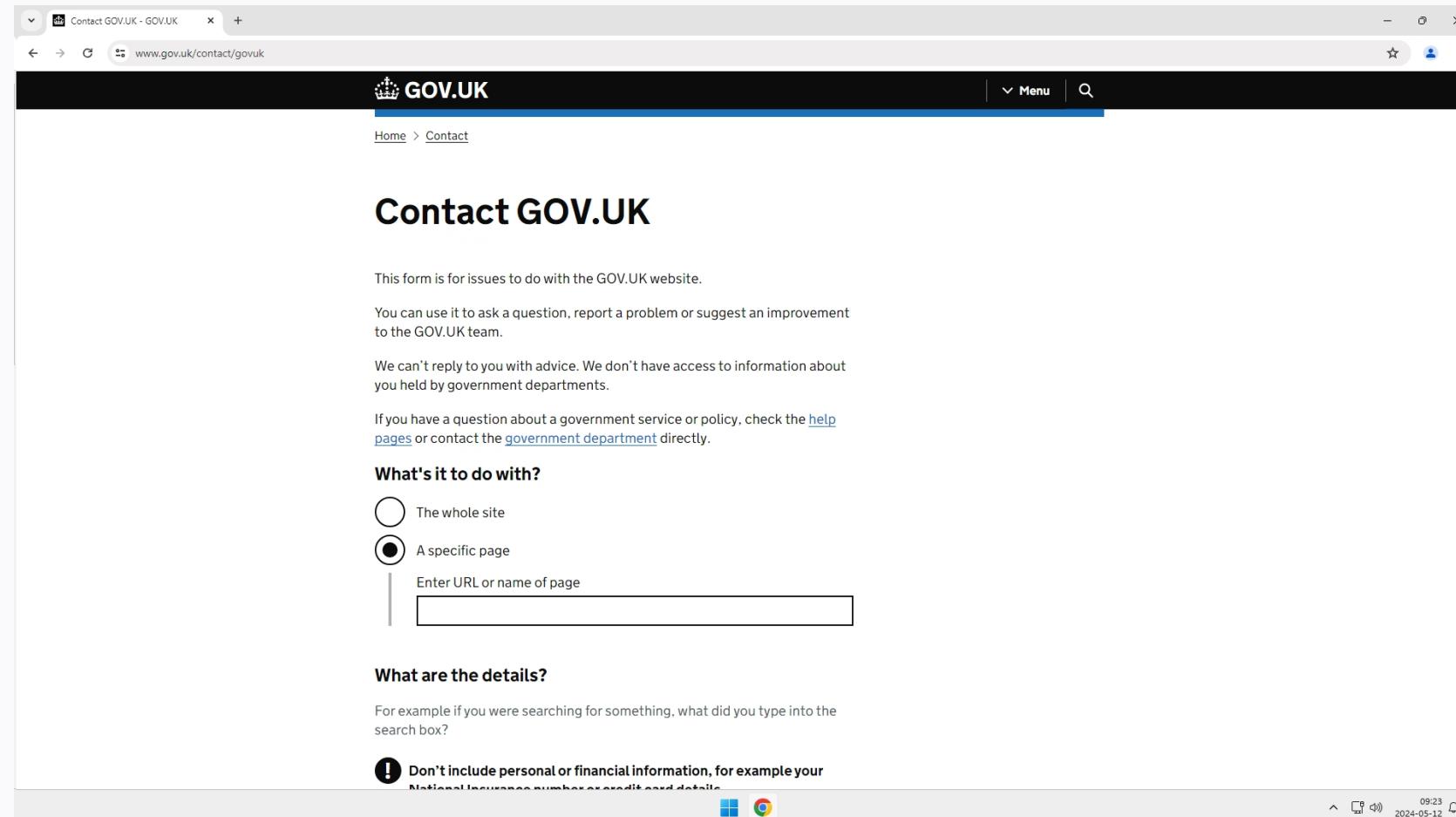
2. [Survey of Users with Low Vision](#), WebAIM, 2018

3. [CSS WG High Contrast](#), Microsoft, 2019

4. [Windows now has 1.4 billion users](#), Tech Advisor, 2022

Let's look at  
**contrast themes** in action...

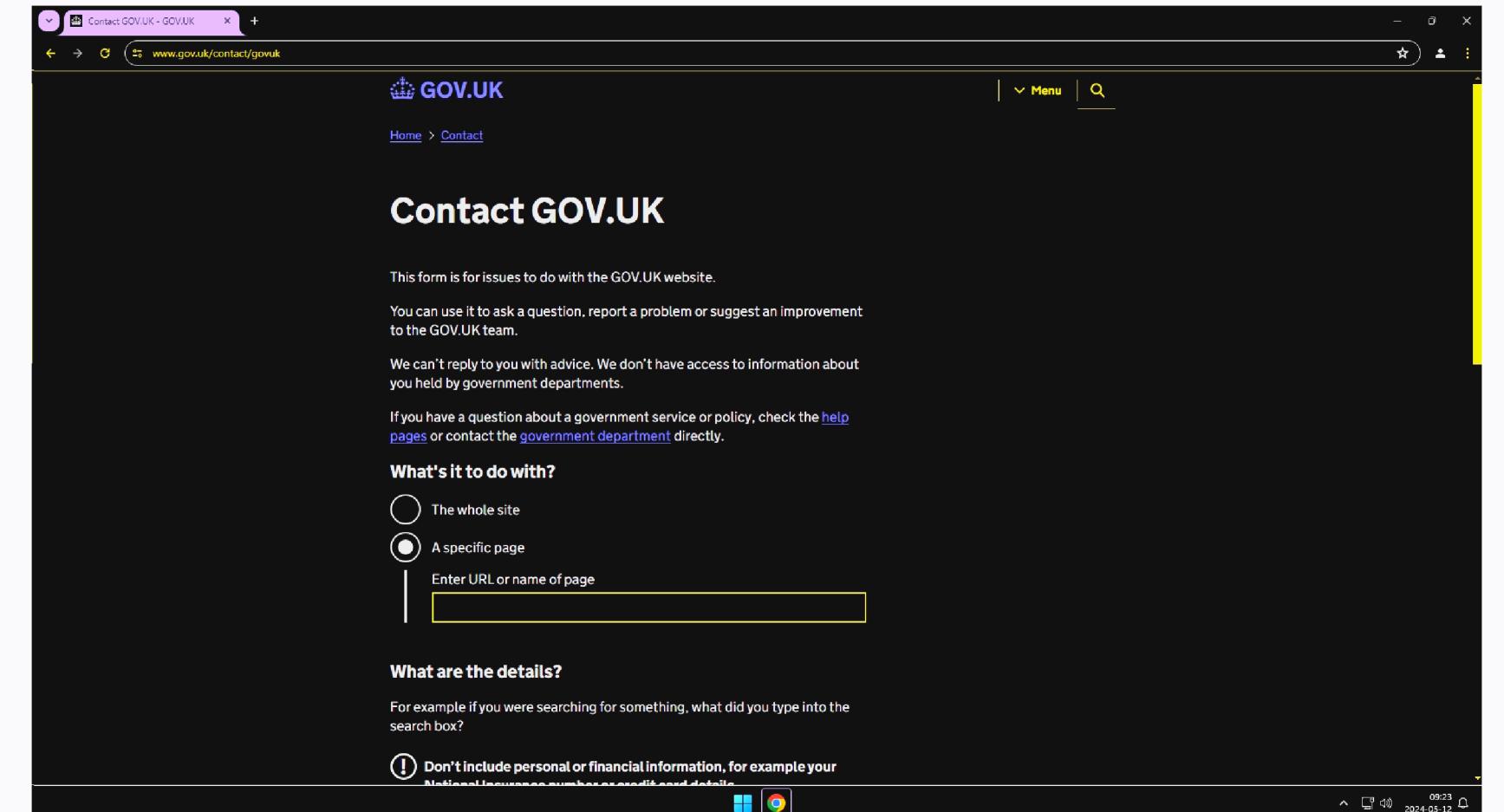
# GOV.UK



The screenshot shows the 'Contact' page of the GOV.UK website in its standard light-colored theme. The page title is 'Contact GOV.UK'. It contains several paragraphs of text explaining what the form is for and how to use it. Below this, there's a section titled 'What's it to do with?' containing two radio button options: 'The whole site' and 'A specific page', with the latter being selected. There's also a text input field labeled 'Enter URL or name of page' with a placeholder URL. A section titled 'What are the details?' follows, with a note about what not to include in the search box. At the bottom, there's a warning message about not including personal or financial information.

## Standard theme

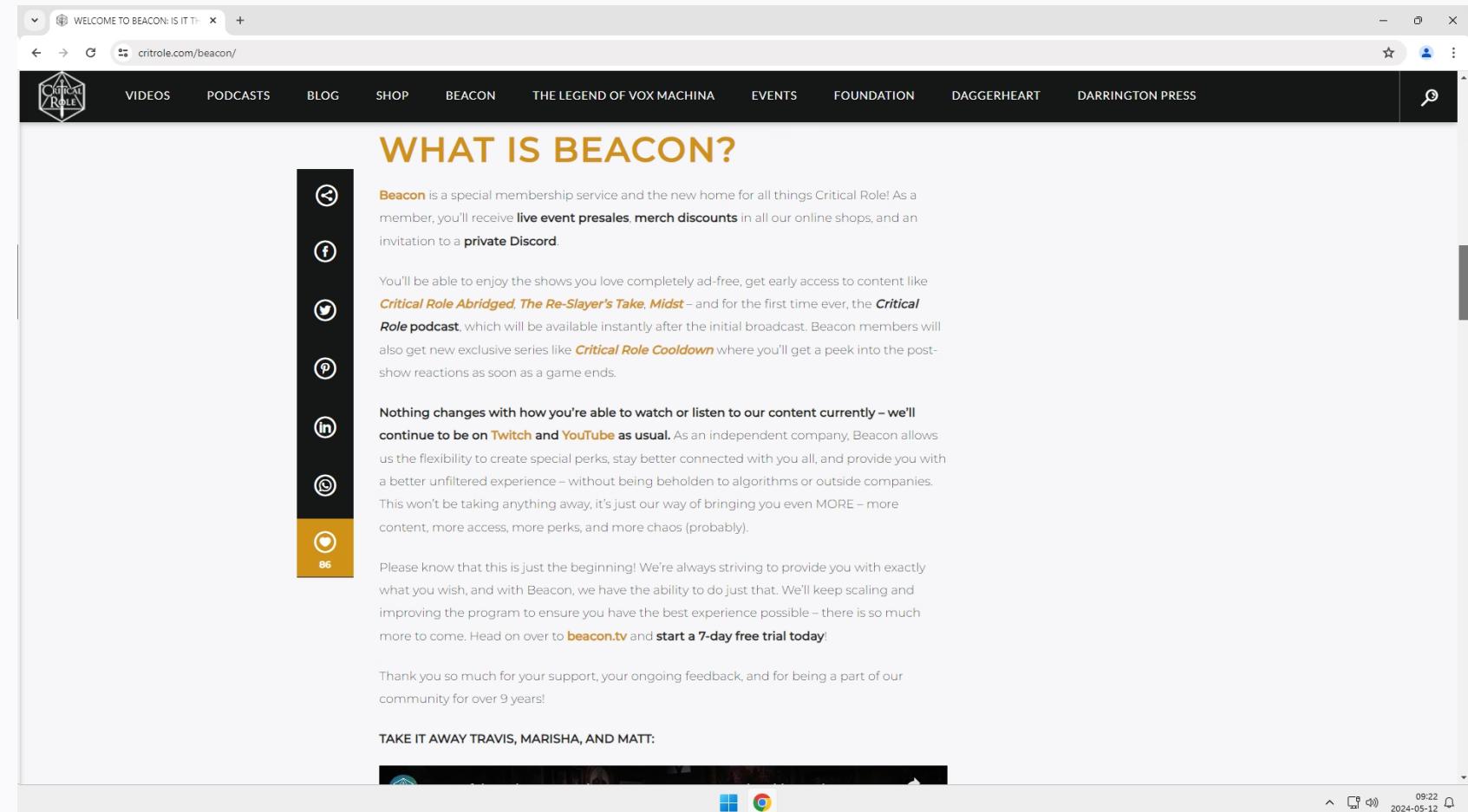
[gov.uk/contact/govuk](http://gov.uk/contact/govuk)



The screenshot shows the same 'Contact' page as above, but in the Contrast theme, which uses a dark background. The text and UI elements are white or light-colored to stand out against the dark background. The layout and content are identical to the Standard theme version.

## Contrast theme

# Critical Role



WELCOME TO BEACON: IS IT TIME? critrole.com/beacon/

VIDEOS PODCASTS BLOG SHOP BEACON THE LEGEND OF VOX MACHINA EVENTS FOUNDATION DAGGERHEART DARRINGTON PRESS

## WHAT IS BEACON?

**Beacon** is a special membership service and the new home for all things Critical Role! As a member, you'll receive **live event presales, merch discounts** in all our online shops, and an invitation to a **private Discord**.

You'll be able to enjoy the shows you love completely ad-free, get early access to content like **Critical Role Abridged, The Re-Slayer's Take, Midst** – and for the first time ever, the **Critical Role podcast**, which will be available instantly after the initial broadcast. Beacon members will also get new exclusive series like **Critical Role Countdown** where you'll get a peek into the post-show reactions as soon as a game ends.

Nothing changes with how you're able to watch or listen to our content currently – we'll continue to be on **Twitch** and **YouTube** as usual. As an independent company, Beacon allows us the flexibility to create special perks, stay better connected with you all, and provide you with a better unfiltered experience – without being beholden to algorithms or outside companies. This won't be taking anything away, it's just our way of bringing you even MORE – more content, more access, more perks, and more chaos (probably).

Please know that this is just the beginning! We're always striving to provide you with exactly what you wish, and with Beacon, we have the ability to do just that. We'll keep scaling and improving the program to ensure you have the best experience possible – there is so much more to come. Head on over to [beacon.tv](#) and start a **7-day free trial today!**

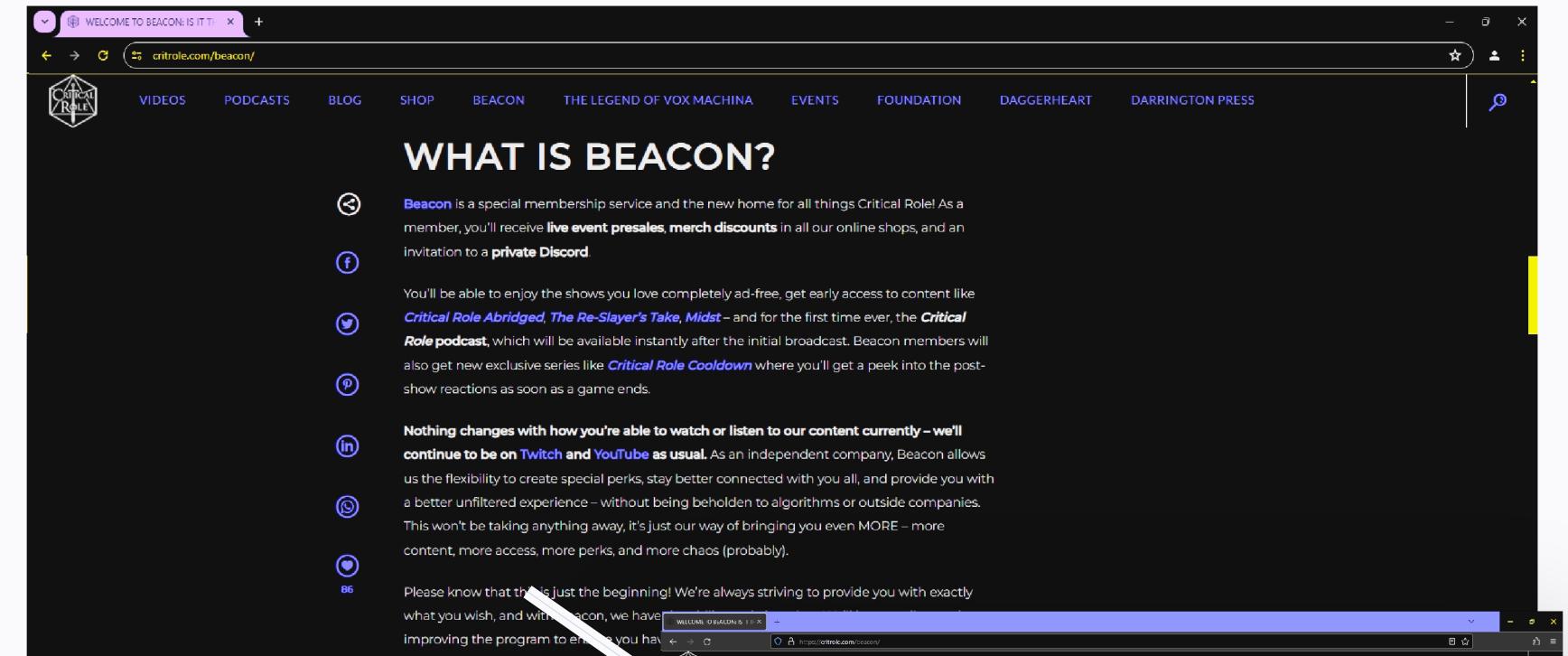
Thank you so much for your support, your ongoing feedback, and for being a part of our community for over 9 years!

TAKE IT AWAY TRAVIS, MARISHA, AND MATT:

86

Standard theme

[critrole.com/beacon/](http://critrole.com/beacon/)



WELCOME TO BEACON: IS IT TIME? critrole.com/beacon/

VIDEOS PODCASTS BLOG SHOP BEACON THE LEGEND OF VOX MACHINA EVENTS FOUNDATION DAGGERHEART DARRINGTON PRESS

## WHAT IS BEACON?

**Beacon** is a special membership service and the new home for all things Critical Role! As a member, you'll receive **live event presales, merch discounts** in all our online shops, and an invitation to a **private Discord**.

You'll be able to enjoy the shows you love completely ad-free, get early access to content like **Critical Role Abridged, The Re-Slayer's Take, Midst** – and for the first time ever, the **Critical Role podcast**, which will be available instantly after the initial broadcast. Beacon members will also get new exclusive series like **Critical Role Countdown** where you'll get a peek into the post-show reactions as soon as a game ends.

Nothing changes with how you're able to watch or listen to our content currently – we'll continue to be on **Twitch** and **YouTube** as usual. As an independent company, Beacon allows us the flexibility to create special perks, stay better connected with you all, and provide you with a better unfiltered experience – without being beholden to algorithms or outside companies. This won't be taking anything away, it's just our way of bringing you even MORE – more content, more access, more perks, and more chaos (probably).

Please know that this is just the beginning! We're always striving to provide you with exactly what you wish, and with Beacon, we have the ability to do just that. We'll keep scaling and improving the program to ensure you have the best experience possible – there is so much more to come. Head on over to [beacon.tv](#) and start a **7-day free trial today!**

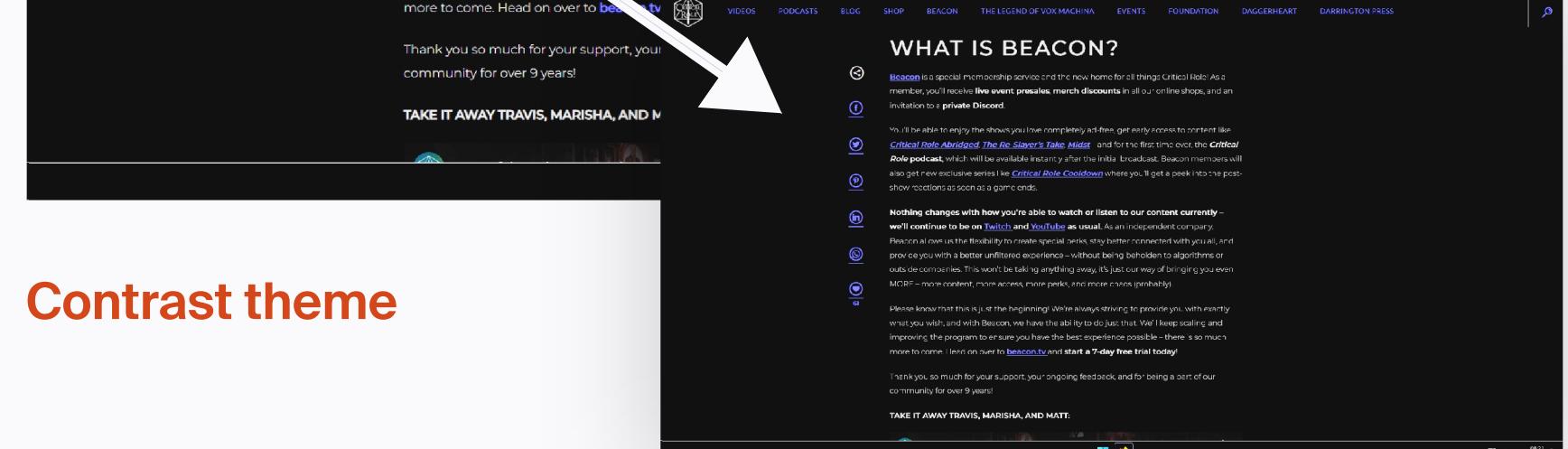
Thank you so much for your support, your ongoing feedback, and for being a part of our community for over 9 years!

TAKE IT AWAY TRAVIS, MARISHA, AND MATT:

86

Contrast theme

Firefox forced link underline



WELCOME TO BEACON: IS IT TIME? critrole.com/beacon/

VIDEOS PODCASTS BLOG SHOP BEACON THE LEGEND OF VOX MACHINA EVENTS FOUNDATION DAGGERHEART DARRINGTON PRESS

## WHAT IS BEACON?

**Beacon** is a special membership service and the new home for all things Critical Role! As a member, you'll receive **live event presales, merch discounts** in all our online shops, and an invitation to a **private Discord**.

You'll be able to enjoy the shows you love completely ad-free, get early access to content like **Critical Role Abridged, The Re-Slayer's Take, Midst** – and for the first time ever, the **Critical Role podcast**, which will be available instantly after the initial broadcast. Beacon members will also get new exclusive series like **Critical Role Countdown** where you'll get a peek into the post-show reactions as soon as a game ends.

Nothing changes with how you're able to watch or listen to our content currently – we'll continue to be on **Twitch** and **YouTube** as usual. As an independent company, Beacon allows us the flexibility to create special perks, stay better connected with you all, and provide you with a better unfiltered experience – without being beholden to algorithms or outside companies. This won't be taking anything away, it's just our way of bringing you even MORE – more content, more access, more perks, and more chaos (probably).

Please know that this is just the beginning! We're always striving to provide you with exactly what you wish, and with Beacon, we have the ability to do just that. We'll keep scaling and improving the program to ensure you have the best experience possible – there is so much more to come. Head on over to [beacon.tv](#) and start a **7-day free trial today!**

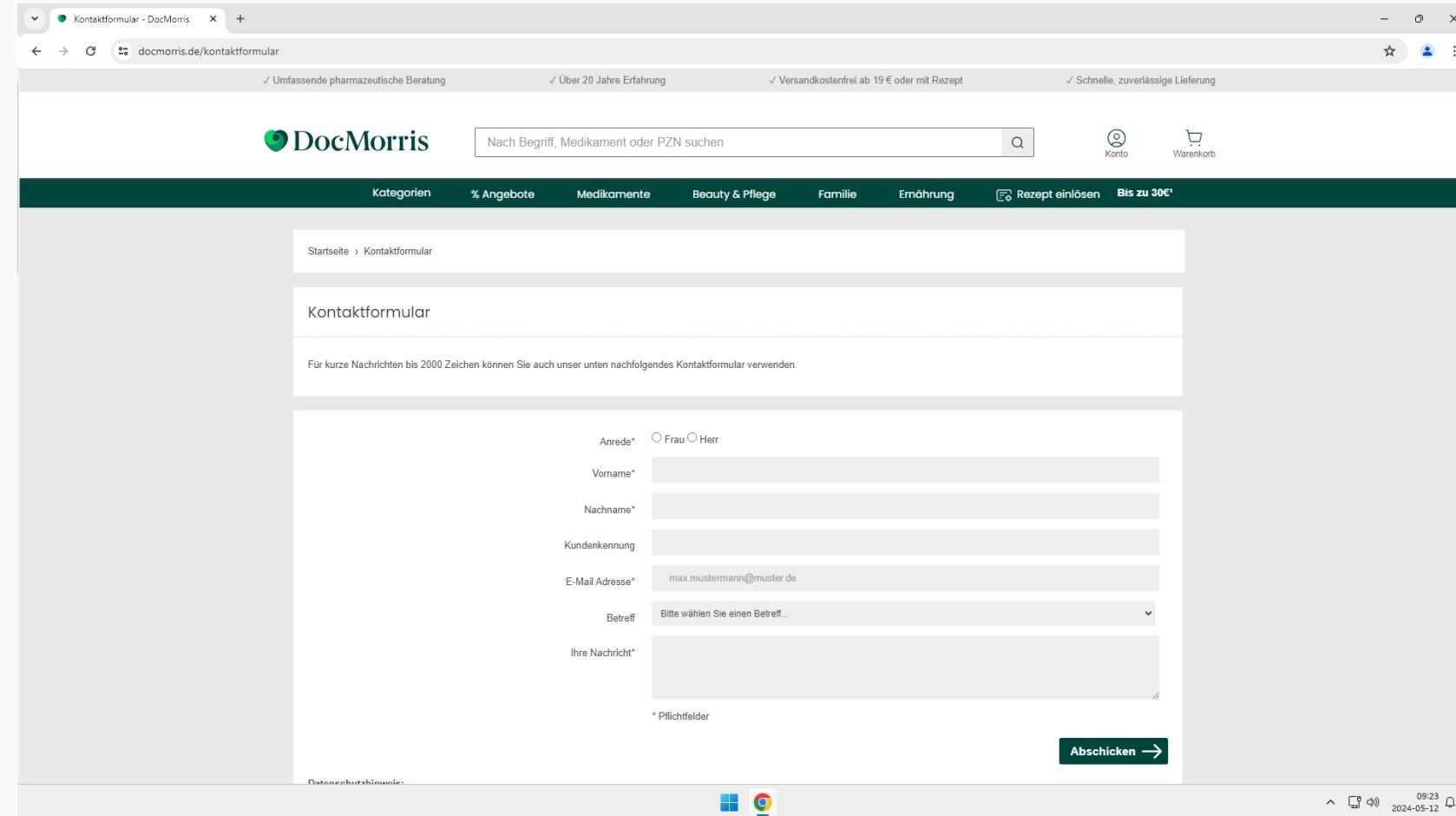
Thank you so much for your support, your ongoing feedback, and for being a part of our community for over 9 years!

TAKE IT AWAY TRAVIS, MARISHA, AND MATT:

86

Factorial

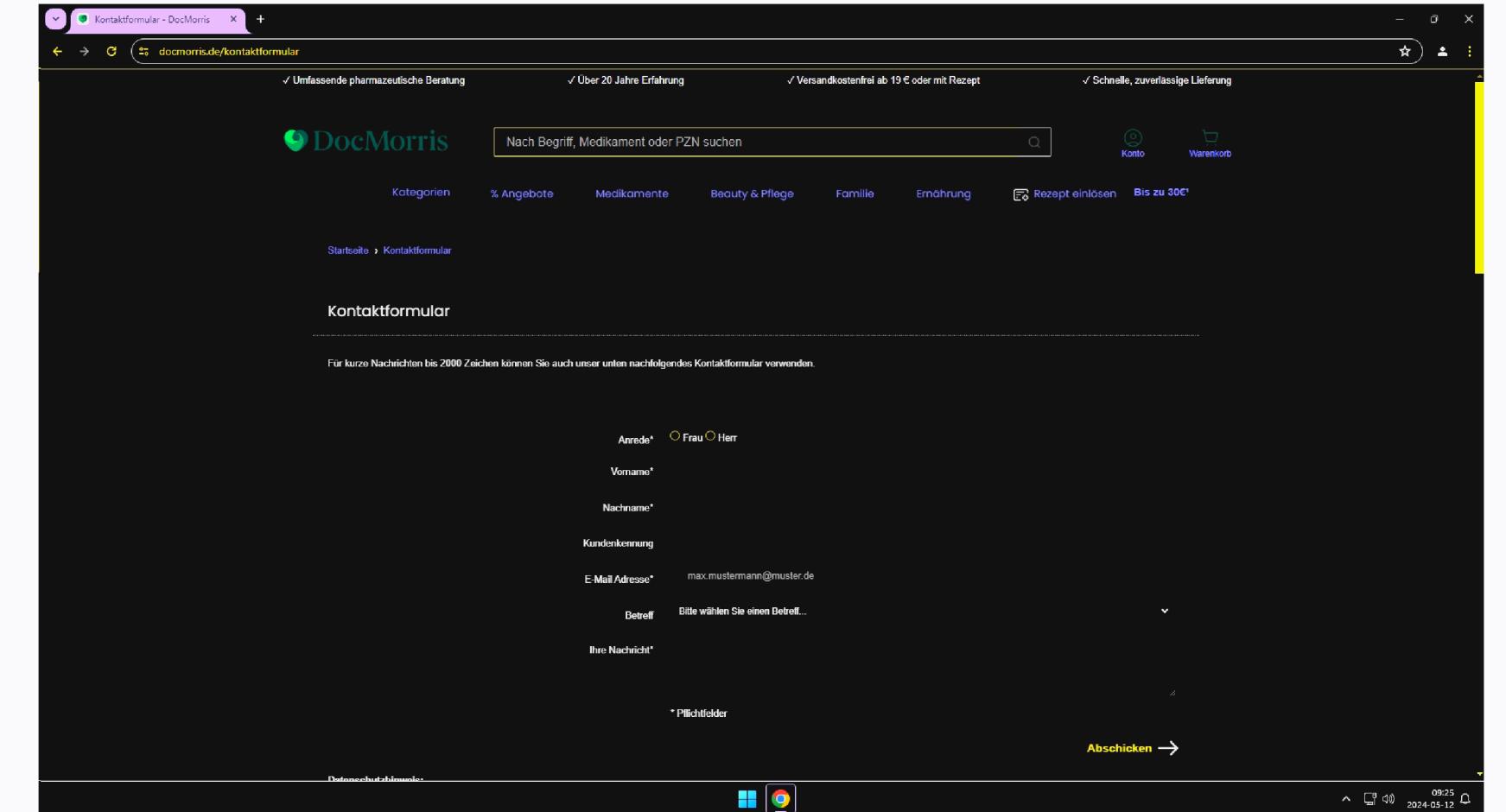
# DocMorris



The screenshot shows the DocMorris website in its standard light-colored theme. The header features the DocMorris logo and navigation links for categories like Kategorien, % Angebote, Medikamente, Beauty & Pflege, Familie, Ernährung, Rezept einlösen, and Bis zu 30€. A search bar and user account icons are also present. The main content area displays a contact form with fields for Anrede\*, Vorname\*, Nachname\*, Kundenkennung, E-Mail Adresse\*, Betreff, and Ihre Nachricht\*. A note at the bottom states: "Für kurze Nachrichten bis 2000 Zeichen können Sie auch unser unten nachfolgendes Kontaktformular verwenden." A "Abschicken" button is at the bottom right.

Standard theme

[docmorris.de/kontaktformular](https://docmorris.de/kontaktformular)



The screenshot shows the same contact form from the previous image, but in the Contrast theme. The background is dark, and the text and form fields are white or light gray. The overall aesthetic is more minimalist and high-contrast.

Contrast theme

# Form inputs

A screenshot of a web browser window displaying a form titled "CSS forced colors: Inputs". The browser has a light gray header bar with standard UI elements. The main content area shows several input fields and their error states under different sections:

- No border:** An input field with no visible border.
- Transparent border:** An input field with a thin, semi-transparent orange border.
- Error state:** An input field with a thick, solid red border.
- Error state with message:** An input field with a red border and a small yellow warning icon with the text "Please enter your address" below it.
- Checkboxes:** A checkbox labeled "Default browser checkbox" with a standard gray checked state.

The browser's status bar at the bottom shows the URL "codepen.io/mvsde/pen/YzMyBjP" and the date "2024-05-12".

Standard theme

[codepen.io/mvsde/pen/YzMyBjP](https://codepen.io/mvsde/pen/YzMyBjP)

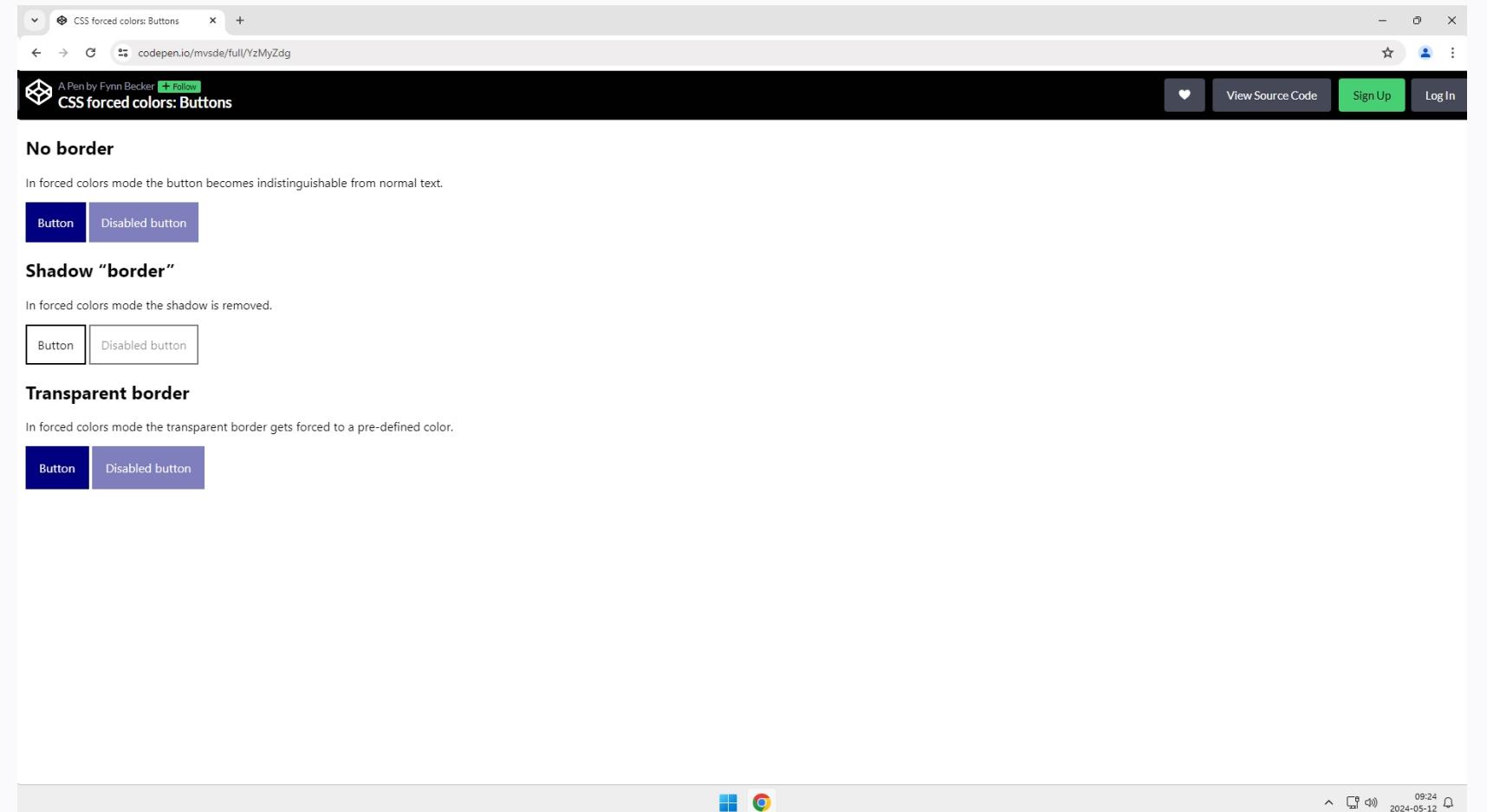
A screenshot of a web browser window displaying the same "CSS forced colors: Inputs" form, but in a Contrast theme. The browser has a dark header bar with white UI elements. The main content area shows the same input fields and their error states, but they appear differently due to the color scheme:

- No border:** An input field with no visible border.
- Transparent border:** An input field with a thin, semi-transparent orange border.
- Error state:** An input field with a thick, solid red border.
- Error state with message:** An input field with a red border and a small yellow warning icon with the text "Please enter your address" below it.
- Checkboxes:** A checkbox labeled "Default browser checkbox" with a standard gray checked state.

The browser's status bar at the bottom shows the URL "codepen.io/mvsde/pen/YzMyBjP" and the date "2024-05-12".

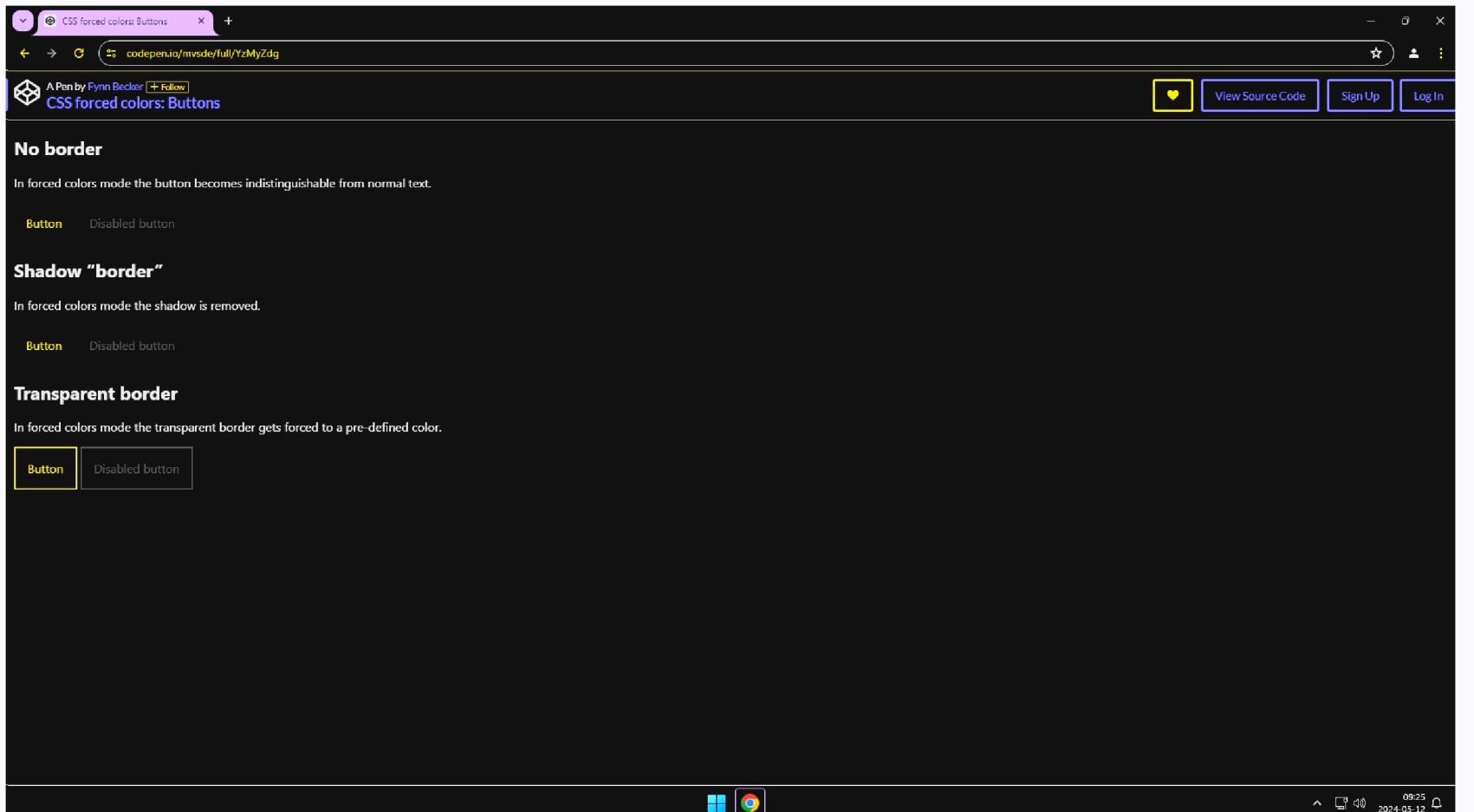
Contrast theme

# Buttons



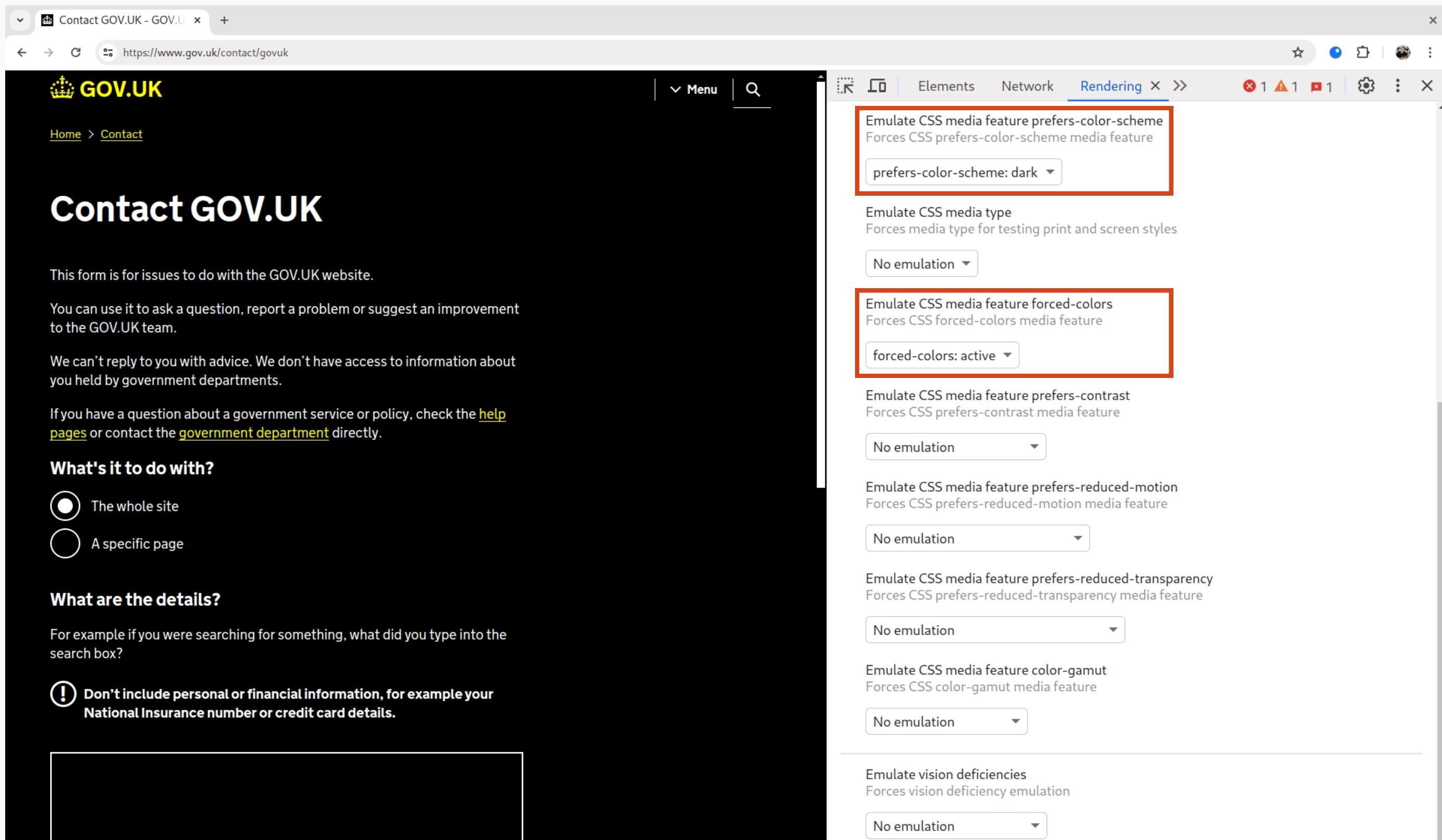
Standard theme

[codepen.io/mvsde/pen/YzMyZdg](https://codepen.io/mvsde/pen/YzMyZdg)



Contrast theme

# Testing contrast themes without Windows



Emulated contrast theme in Chrome DevTools

The screenshot shows the Microsoft Edge Settings page with the URL `edge://settings/accessibility`. The left sidebar lists various settings categories, and the main area is titled "Make Microsoft Edge easier to see". A red box highlights the "Page colors" section, which includes a dropdown menu with options: Black (selected), Off, Dusk, Desert, Black (highlighted in blue), and White. Below this section is "Make Microsoft Edge easier to use" with several toggle switches. At the bottom is the "Keyboard" section with a single toggle switch.

**Settings**

Search settings

- Profiles
- Privacy, search, and services
- Appearance
- Sidebar
- Start, home, and new tabs
- Cookies and site permissions
- Default browser
- Downloads
- Family safety
- Languages
- Printers
- System and performance
- Reset settings
- Phone and other devices
- Accessibility**
- About Microsoft Edge

Show a high visibility outline around the area of focus on the page

Page zoom: 100% ▾

**Page colors**  
Make sites easier to read by modifying the colors you see on pages

Only apply page colors when high contrast is on

Specify sites  
List of sites that are excluded from page colors

**Make Microsoft Edge easier to use**

Get image descriptions from Microsoft for screen readers

Ask before closing a window with multiple tabs

Show mini menu when selecting text

Show downloads menu when a download starts  
Turning off this setting can make it harder to know when a file starts downloading

Learn about accessibility features in Microsoft Edge

**Keyboard**

Navigate pages with a text cursor  
To turn on or off caret browsing, press F7. [Learn more](#)

Windows contrast theme in Edge (Dev)

# Why?

## Enable people with low vision

Contrast themes “fix” websites with low contrast text

---

## Combination with other assistive technology

Contrast themes plus screen readers or page zoom make a powerful combination

---

## Reduced cognitive load

Contrast themes clearly identify text, links, and buttons

---

## Last resort

Contrast themes may be the only way for certain users to consume digital content

# How?

## It's all about borders

Borders are the only UI pattern that can be used as a “divider”

---

## Avoid images for UI elements

Images (usually) don't change colors in contrast themes and may become invisible

---

## Use semantic elements

Contrast themes need correctly marked up interactive elements (links, buttons, inputs)

---

## Don't fight contrast themes

People who rely on contrast themes want a working site, not brand accuracy

# Resources

## Color contrast themes in Windows

[support.microsoft.com/windows/change-color-contrast-in-windows-fedc744c-90ac-69df-aed5-c8a90125e696](https://support.microsoft.com/windows/change-color-contrast-in-windows-fedc744c-90ac-69df-aed5-c8a90125e696)

---

## Emulation in Chrome DevTools

[developer.chrome.com/docs/devtools/rendering/emulate-css/#emulate\\_css\\_media\\_feature\\_forced-colors](https://developer.chrome.com/docs/devtools/rendering/emulate-css/#emulate_css_media_feature_forced-colors)

---

## CSS forced colors

[developer.mozilla.org/docs/Web/CSS/@media/forced-colors](https://developer.mozilla.org/docs/Web/CSS/@media/forced-colors)

---

## Code demo collection

[codepen.io/collection/BNbpee](https://codepen.io/collection/BNbpee)

# Thank you!

## Fynn

🌐 [fynn.be](http://fynn.be)

🐘 [@mvsde@mastodon.social](https://@mvsde@mastodon.social)

## Factorial

🌐 [factorial.io](http://factorial.io)

🐘 [@factorial\\_io@social.factorial.io](https://@factorial_io@social.factorial.io)

⌚ [factorial.io](https://factorial.io)

## Slides

[fynn.be/talks/forced-colors-windows-contrast-themes](http://fynn.be/talks/forced-colors-windows-contrast-themes)

