

Shadow DOM

A shadow DOM is a way to create a "hidden" part of a web page. This "hidden" part can have its own HTML structure and styles that don't affect the rest of the page, and vice versa.

Picture a house...

The décor or style inside of the room doesn't affect the rest of the house, and changes in the rest of the house's décor don't alter the room's appearance. In terms of Shadow DOMs, this is called a **Scoped style**.

Scoped styles allow you to style individual elements in a unique way without worrying that any other elements on the page will be affected by these styles. They also "protect" that element from being affected by styles that you apply to the rest of the page.

Why do websites use Shadow DOMs?

Reusability

Enables creating self-contained, reusable web components

Common uses

- Interactive elements.
- Secure payment widgets and checkout forms.
- Secure login forms and authentication components.
- Complex, interactive financial calculators and tools.
- Video players and media controls.

... and many more

Encapsulation

Isolates component styles and scripts to avoid conflicts with the rest of the page

Security

Limits exposure of internal structure and logic, reducing the risk of tampering.

Maintainability

Simplifies management and debugging of complex components by keeping their internals separate

So, what's the problem?

Shadow DOMs can cause issues for password managers like 1Password by hiding form fields, preventing autofill, and blocking simulated events. Custom elements and security policies within Shadow DOMs further complicate detection and interaction.

How do I find a Shadow DOM?

Form Field Detection

Password managers may not detect for fields within Shadow DOMs due to encapsulation

Autofill Issues

Encapsulation can prevent password managers from correctly auto filling input fields

Event Listeners

Simulated events by password managers may not trigger properly within Shadow DOMs

Custom Elements

Custom elements in Shadow DOMs may not be recognised by password managers

Security Policies

Additional security measures in Shadow DOMs can restrict password manager interactions

1

Browser Developer Tools:

Use the "Inspect" feature in browser developer tools and look for the `#shadow-root` element in the DOM tree.

2

Element Highlighting:

Hover over elements to see if they contain shadow roots, often indicated by a greyed-out shadow boundary.

3

Shadow DOM badges:

Some browsers add badges or icons next to elements in the inspector indicating a shadow root.

Where next?

Deepen Your Understanding of web Components:

Are there any other web components that could cause issues with the function of the browser extension?

Learn about the best way to label fields when creating a web page.