Access Closed Shadow DOM
shadow-root (user-agent)?

In this session, we are going to look at a closed Shadow DOM and answer the question "Are we able to access a closed Shadow DOM?". Straight to the point – No we are not able to access a closed Shadow DOM. However, I'm going to show you why and also explain why we are not able to access a closed Shadow DOM. Rob Dodson wrote an article introducing Shadow DOM. He uses this video player as an example.
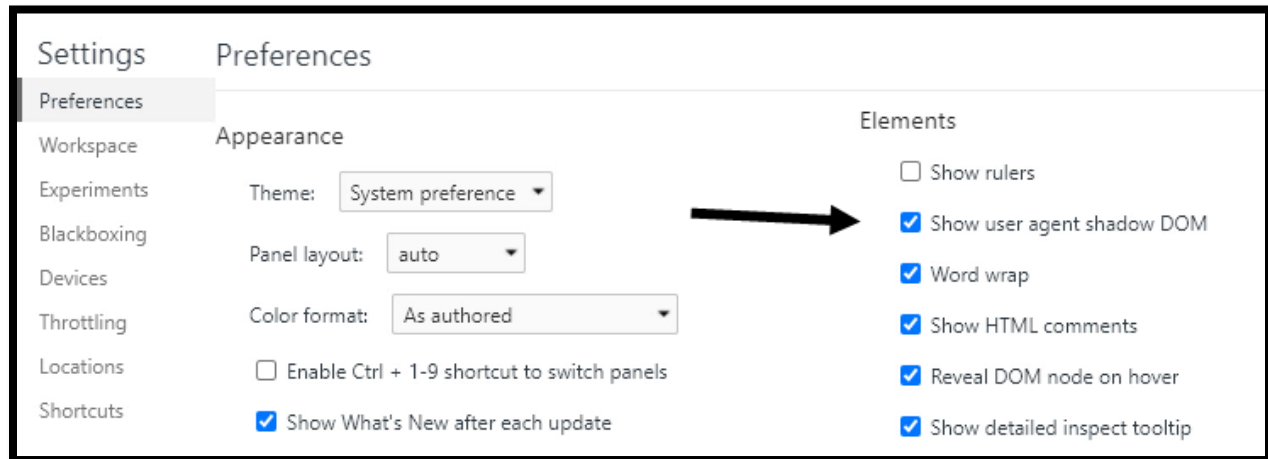

On the video player, we see a play button that turns into a pause button, time tracker, volume control, a way to make it full screen and a way to Download. On the other hand, if I inspect, all we see is the video tag with some nested source tags.

Where are the other tags such as playing the video. Those other tags are hidden using a Shadow DOM. Notice the breadcrumb does not show shadow-root. But, we can see how the browser implements

Shadow Root by going to Settings and clicking the checkbox for Show user agent shadow DOM under the Elements section.
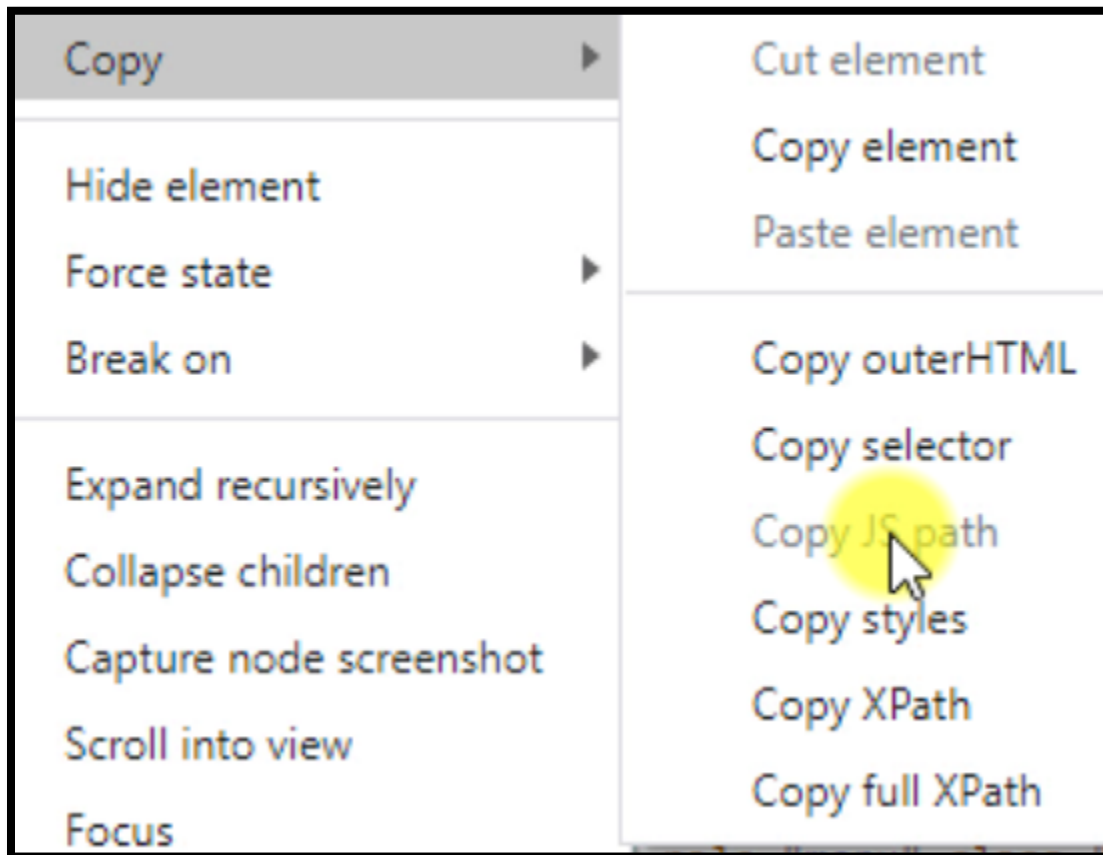

Close the Settings, Reload the page, and inspect the video player again. The video and nested source tags are still here. Now, we also see shadow-root in the DOM and breadcrumb.

You know how we could not find any tags for playing the video. Watch what happens when I expand the last div tag. We see Play and those other media controls. That's encapsulation because they chose to hide the details. The checkbox "Show user agent shadow DOM" allowed us to analyze the encapsulation. There are 2 types of encapsulation modes: open and closed. They have the same purpose, but the difference is an open Shadow DOM mode allows us to access the Shadow Tree. However, a closed Shadow DOM mode does not allow us to access the Shadow Tree even if we use

JavaScript. There is no way around it. This is a closed Shadow DOM because the element shows shadow-root (user-agent).

Recall from the previous session, we can create our own JavaScript Path or copy the JavaScript Path. I'm going to try and copy by right clicking, selecting Copy then Copy JS Path and Copy JS Path is disabled. It does not highlight with a gray background.

Let's go ahead and copy the JS Path for the Shadow Host which is the video tag (Copy – Copy JS Path) and go to the Console. Clear it and Paste. Hit enter. Now we see the video tag. If I maximize, we see the shadow-root. Maximize one more and now we the see div tag that had the media controls.

```
document.querySelector("#video")
▼<video id="video" controls preload="none" poster="http://media.w3.org/2010/05/sintel/poster.png">
  ▼#shadow-root (user-agent)
    ▶<div pseudo="-webkit-media-controls" class="sizing-small phase-pre-ready state-no-metadata">…</div>
    <source id="mp4" src="https://media.w3.org/2010/05/sintel/trailer.mp4" type="video/mp4">
    <source id="webm" src="https://media.w3.org/2010/05/sintel/trailer.webm" type="video/webm">
    <source id="ogv" src="https://media.w3.org/2010/05/sintel/trailer.ogv" type="video/ogg">
  </video>
```

Access the shadowRoot after clicking the up arrow key .shadowRoot. Do you see null?

```
document.querySelector("#video").shadowRoot
null
```

Let's finish and write .querySelector('div'). Now I'm going to hit enter. We have an error "Uncaught TypeError: Cannot read property of null".

```
document.querySelector("#video").shadowRoot.querySelector('div')
▶ Uncaught TypeError: Cannot read property 'querySelector' of null
    at <anonymous>:1:44
```

That means we are trying to access a property of an object that is not defined. Thanks for watching and I will see you in the next session.

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