Relationship Between HTML, WebElements, & DOM For Selenium Locators

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Introduction

Hello and Welcome To Selenium 4 Beginners. We are going to discuss the Relationship Between HTML, WebElements, and the Document Object Model better known as DOM. The Transcript and Presentation will be available on github at RexJonesII/Selenium4Beginners and https://tinyurl.com/SeleniumLocatorsForWebElements.

The complete Lesson Plan will include the Relationship Between HTML, WebElements, and the DOM then I will show you how we use Selenium Locators To Find WebElements. There are 8 Selenium Locators. One of the locator Types for Selenium is XPath, and another Locator Type is CSS Selectors. I'm going to demo how to create our own customized XPath and CSS Selector Values.

HTML

Let's start with HTML by using W3 Schools. We are going to focus on 3 topics. HTML Introduction, HTML Elements, and HTML Attributes. HTML stands for Hyper Text Markup Language. It is a language designed to create web pages.

Let's try it. We see HTML on the left and Results on the right. The first HTML line shows an exclamation point and DOCTYPE in all capital letters. DOCTYPE is a declaration representing an HTML document type to help all browsers display web pages. HTML documents have elements defined by tags. In this example, the tags are html, head, title, body, h1, and p. html is the root element and head is an element that contains metadata. That's why we see title as 1 of the elements within the head element because it describes the document title. After the head element is body which contains the prime content of the page.

h1 means header and p means paragraph. h1 is the biggest header. The header becomes smaller when the number increases. For example, if I write h2 My Second Heading then click Run. The words are smaller in the Results pane. That's a quick introduction of HTML. Now, let's look at HTML Elements.

An element consists of a start tag and end tag with content inserted between both tags. Here's the syntax for an HTML Element. Do you see the difference between a start tag and end tag? An end tag has a forward slash before the tag name. There are times when we will come across some empty elements which are elements without an end tag like <br>.
 is a line break meaning it will skip a line.

HTML Attributes provide additional information about HTML Elements. Most of the times, they come in name/value pairs. The href Attribute is defined with the <a> tag. <a> stands for anchor and href is an acronym for Hypertext REFerence. This <a> tag and href attribute are used to create links. We see href has a value of www.w3schools.com. W3 Schools web page will show up after clicking the link.

We see href and src attributes but the key attributes for finding WebElements are class, id, and name. class and id are Global Attributes. Global Attributes means an attribute can be used on any HTML element. We see class specifies one or more class names for an element. id specifies a unique id for an element. name is not a Global Attribute but can be used on many HTML elements and it specifies the

name of the element. Other attributes can be used to find WebElements but id, name, and class are the main attributes to find WebElements.

WebElements

What is a WebElement? A WebElement is an element from HTML displayed on a web page. It can be a hyperlink, image, button, anything you see on a web page is considered a WebElement. Sometimes we say element for short although there is a difference between element and WebElement. A question someone might ask is "How are WebElements displayed on the web page? They are displayed on a web page when Chrome reads the HTML document then renders the document. Rendering a document means taking the HTML content and converting that content to what we see on the web page. However, there is an interface for managing the web page and that interface is called

DOM

the Document Object Model.

The DOM is an API – Application Programming Interface that handles HTML documents as a tree structure by identifying 3 things. Number 1: It identifies how to access an HTML Document. Number 2: It identifies how to manipulate an HTML Document and Number 3: It identifies the logical format of an HTML Document.

Here's the tree structure of a DOM using the HTML from W3 Schools. At the top, we see Document then an html root element. Under the root element, are 2 elements head and body. head has title as an element while body have header 1 and paragraph as elements.

We can right click on any browser and inspect elements using Developer Tools. Inside the Elements panel, Chrome has a DOM structure which include all elements of the current web page. This DOM structure defines the page structure. We can click CTRL + F to find an element from the DOM by string, selector, or XPath using this locator.

Next, we are going to Use Selenium Locators To Find WebElements.