Web Element Locator Strategies

Topics

- What’s in a Web Page?
- Programming with the DOM
- Finding Live Elements
- CSS Selectors
- XPaths
- Advanced XPaths
- Picking the right locator
- Using locators for testing

What’s in a Web page

1

Users interact with web pages visually. That's an important facet for web pages. They can scroll to read more text in large pictures and even click links to visit new articles.

2

Users don't need to know any special commands, and websites with good user experience make interactions intuitive and seamless for the users.

Giant panda

From Wikipedia, the free encyclopedia

"Panda" and "Panda bear" redirect here. For the red panda, see red panda. For other uses, see Panda (disambiguation), Giant panda (disambiguation), Panda Bear (musician), PANDAS, pandas (software), and Panda (plant).

The **giant panda** (*Ailuropoda melanoleuca*; Chinese: 大熊猫; pinyin: *dàxióngmāo*),[5] also known as the **panda bear** (or simply the **panda**), is a bear[6] native to South Central China.[1] It is characterised by its bold black-and-white coat and rotund body. The name "giant panda" is sometimes used to distinguish it from the red panda, a neighboring musteloid. Though it belongs to the order Carnivora, the giant panda is a folivore, with bamboo shoots and leaves making up more than 99% of its diet.[7] Giant pandas in the wild will occasionally eat other grasses, wild tubers, or even meat in the form of birds, rodents, or carrion. In captivity, they may receive honey, eggs, fish, yams, shrub leaves, oranges, or bananas along with specially prepared food.[8][9]

The giant panda lives in a few mountain ranges in central China, mainly in Sichuan, but also in neighbouring Shaanxi and Gansu.[10] As a result of farming, deforestation, and other development, the giant panda has been driven out of the lowland areas where it once lived, and it is a conservation-reliant vulnerable species.[11][12] A 2007 report showed 239 pandas living in captivity inside China and another 27 outside the country.[13] As of December 2014, 49 giant pandas lived in captivity outside China, living in 18 zoos in 13 different countries.[14] Wild population estimates vary; one estimate shows that there are about 1,590 individuals living in the wild,[13] while a 2006 study via DNA analysis estimated that this figure could be as high as 2,000 to 3,000.[15] Some reports also show that the number of giant pandas in the wild is on the rise.[16] In March 2015, conservation news site Mongabay stated that the wild giant panda population had increased by 268, or 16.8%, to 1,864.[17] In 2016, the IUCN reclassified the species from "endangered" to "vulnerable",[12] affirming decade-long efforts to save the panda. In July 2021, Chinese authorities also reclassified the giant panda as vulnerable rather than endangered.[18]

While the dragon has often served as China's national symbol, internationally the giant panda has often filled this role. As such, it is becoming widely used within China in international contexts, for example, appearing since 1982 on gold panda bullion coins and as one of the five Fuwa mascots of the Beijing Olympics.

Contents [hide]

Giant panda

Giant panda at the Ocean Park Hong Kong

Conservation status

Extinct | Threatened | Least Concern

EX EW CR EN VU NT LC

Vulnerable (IUCN 3.1)[1]

Extinct | Endangered | Threatened | Delisted

EX E T

Endangered (ESA)[2]

Scientific classification

Kingdom:	Animalia
Phylum:	Chordata
Class:	Mammalia
Order:	Carnivora

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3 Main components

declares what should appear

style and formatting

muscles of the page

The “DOM”

- Document Object Model
- Programming interface for HTML & XML documents
- Used to manipulate the page

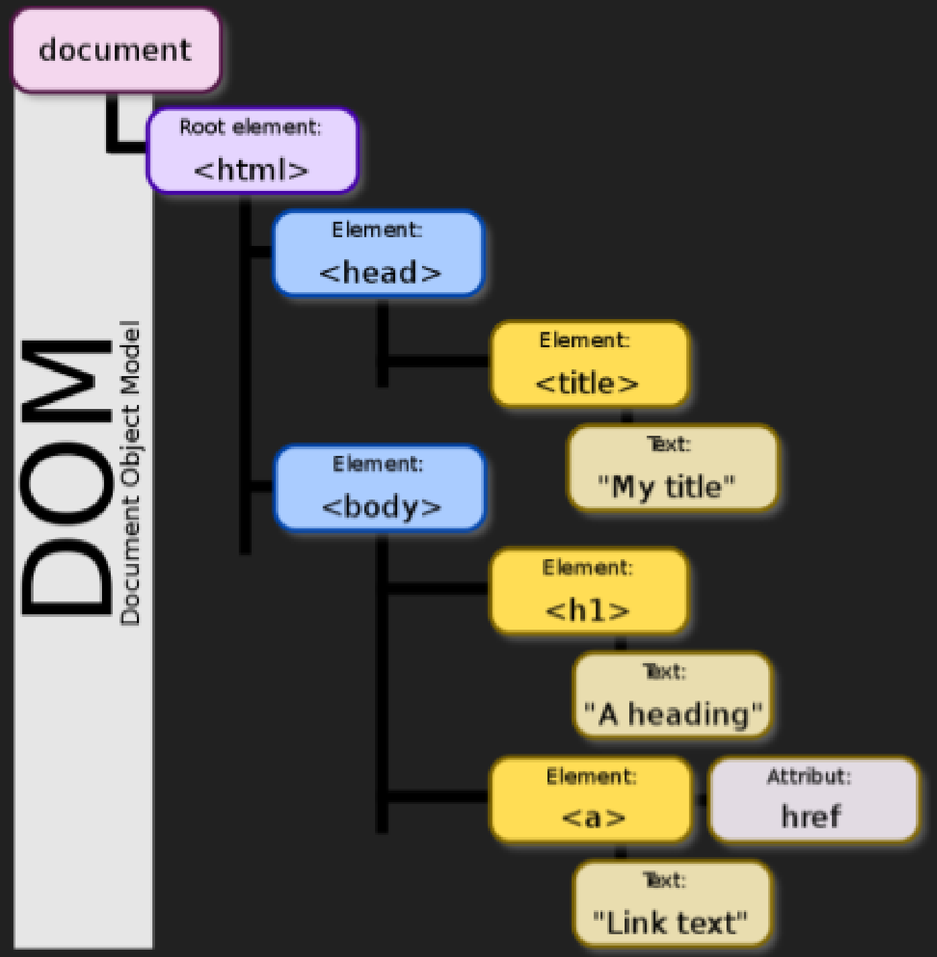


Image Source: Wikipedia
https://en.wikipedia.org/wiki/Document_Object_Model#/media/File:DOM-model.svg

The Document Object Model

programming interface for HTML and XML documents.

It enables programmers to manipulate the page in various ways such as:

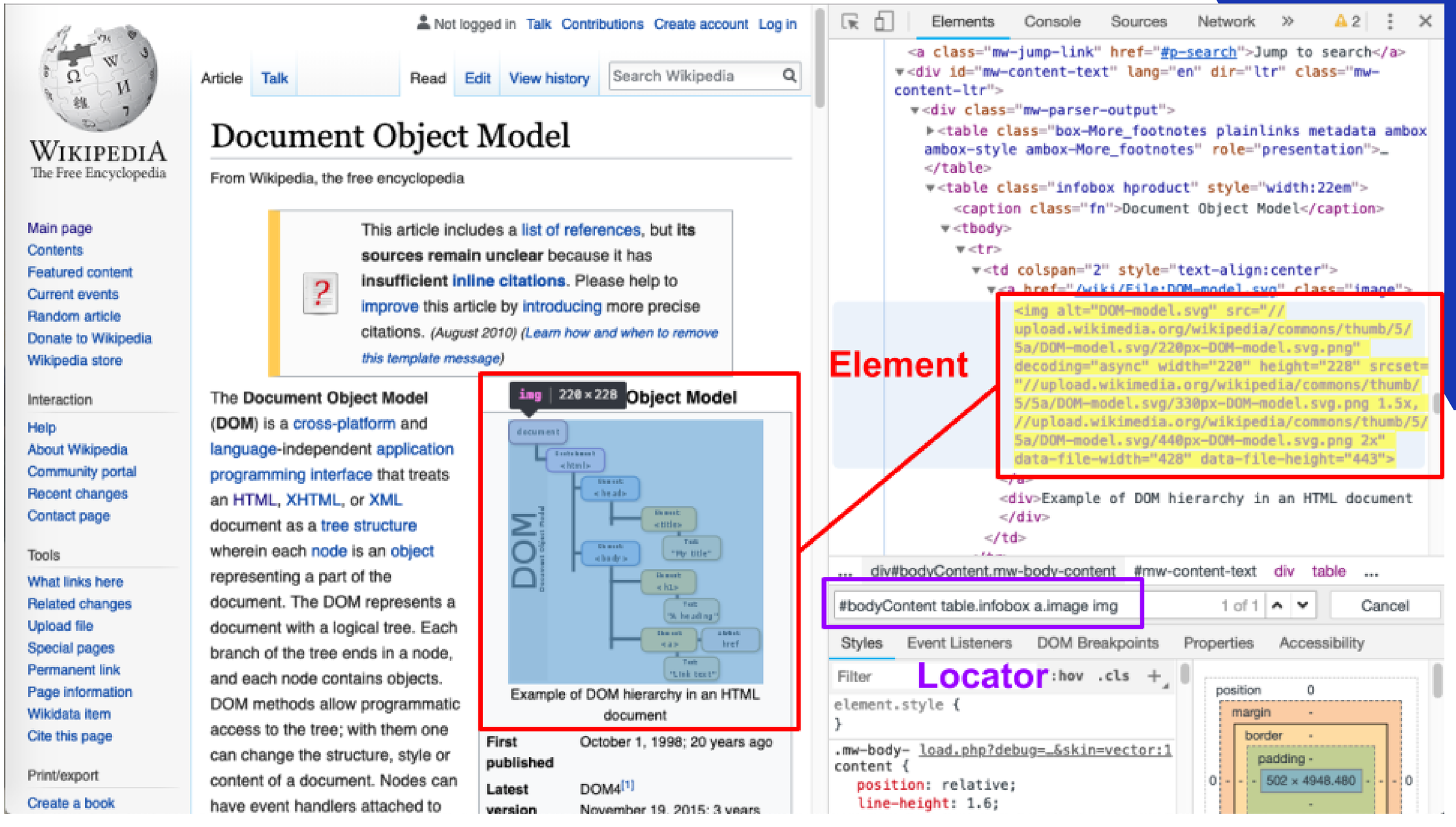
Searching for elements

Changing element content

Changing the HTML structure of the page

Changing the CSS styling of the page

The first step with DOM programming is getting the elements themselves.



Locator types

- ID
- Name
- Class name
- CSS selector
- XPath

Locators

- There are many types of locators such as IDs, names, class names, CSS selectors, and XPaths.
- The locators are the standard way for finding elements in a web page, and that every element can have a unique locator.
- locator can return multiple elements, not just one. It will return all elements found that match its query.

```javascript
// JavaScript Code

// Clicks the element with the "ok-button" ID
document.getElementById("ok-button").click();

// Gets the text from the element with the "main-para" class
var text = document.getElementByClassName("main-para").textContent

// Sets the "class" attribute of the first "div" element
document.getElementsByTagName("div")[0].setAttribute("class", "big-text");
```

Finding live elements

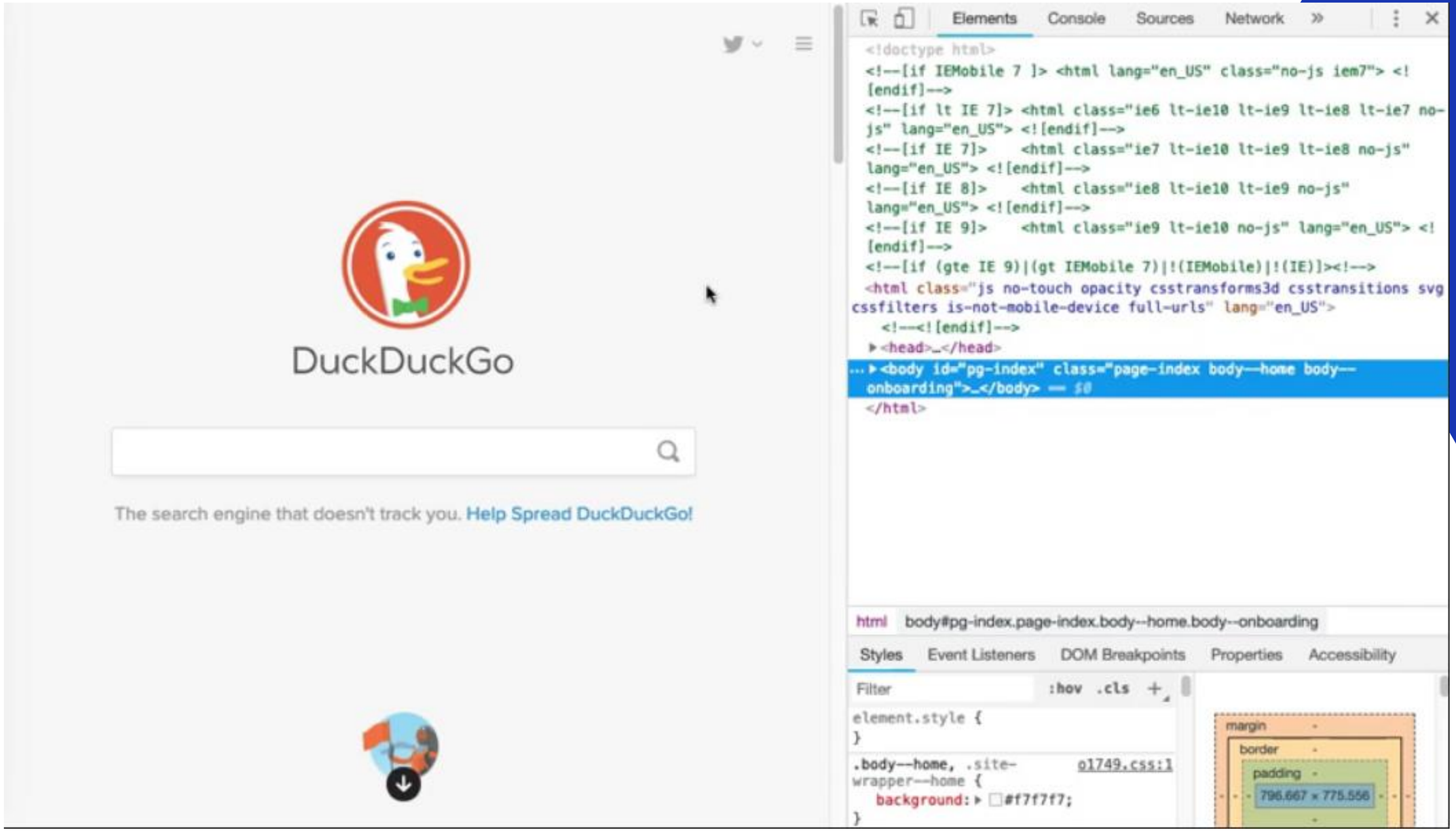
Why use Chrome?

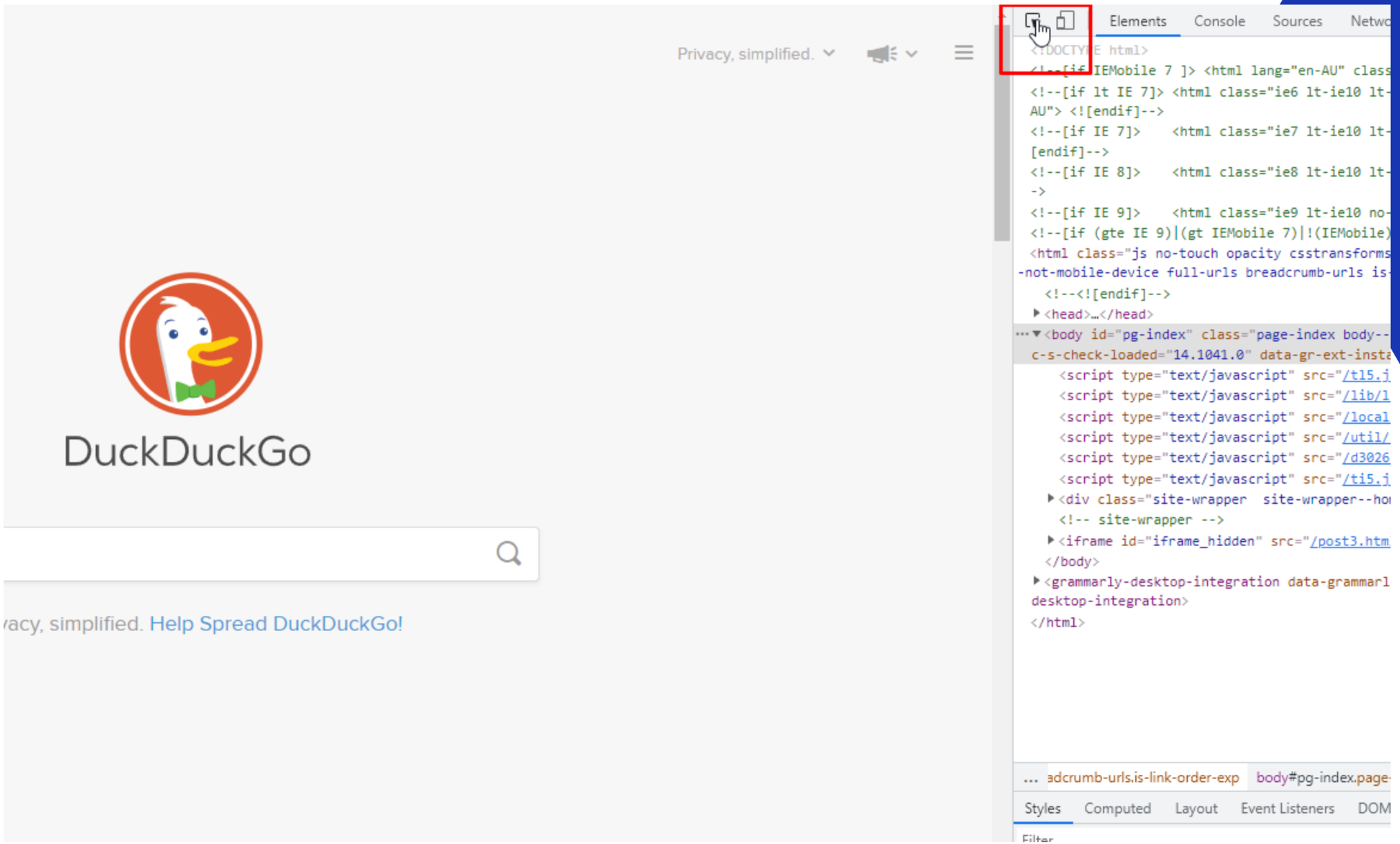
1

Chrome is an excellent, free browser, with high market share.

2

DevTools make it easy for anyone to peek under the hood at the source code, the console, the network activity and more.


DuckDuckGo
The search engine that doesn't track you. Help Spread DuckDuckGo!
Elements
Console
Sources
Network
<!doctype html>
<html lang="en_US" class="no-js iem7">
<head>…</head>
<body id="pg-index" class="page-index body--home body--onboarding">…</body> == $0
</html>
html
body#pg-index.page-index.body--home.body--onboarding
Styles
Event Listeners
DOM Breakpoints
Properties
Accessibility
Filter
:hov .cls
element.style {
}
.body--home, .site-wrapper--home {
background: #f7f7f7;
}
o1749.css:1
margin
border
padding
796.667 × 775.556



To visually pinpoint an element, click the "select" tool in the upper left corner of the DevTools pane.

Locators

Writing good locators can be challenging. Remember, a locator will return all elements that match its query.

- If a locator is too broad, then it could return false positives.
- if a locator is too specific, then it could break whenever the DOM changes and it could also be difficult for others to read.

Locators

- IDs are the best types of locators.
- By HTML standards, the id attribute must have a unique value on a given page. Thus, a locator that uses an id will uniquely identify a single target element.

Locators

- Another good locator is the **name attribute**.
  - Name attributes are used for input related elements like input, button, and text area.

- A third basic locator is **CSS class name**.
  - An element may have one class name, many class names, or none at all.

Exercise 1

How can you look at the source code, network activity, and other information for a live web page in Google Chrome?

A. You cannot - Chrome hides it from the user.

B. Right-click anywhere on the page and select “Inspect”.

C. Navigate from the three-dot menu to “More Tools” > “Developer Tools”.

D. Both (2) and (3).

Exercise 2

```
<html>
<body>
    <div class="article opinion" id="main-article">
        <div class="section">
            <h2 class="topic-header">Main Argument</h2>
            <p>...</p>
        </div>
        <div class="section">
            <h2 class="topic-header">Rebuttal</h2>
            <p>...</p>
        </div>
        <div class="section">
            <button class="response-button" name="agree">Agree with Argument</button>
            <button class="response-button" name="disagree">Agree with Rebuttal</button>
        </div>
    </div>
</body>
</html>
```

"Name" locators only work for <input> tag elements.

A. True

B. False

Exercise 3

```
<html>
<body>
    <div class="article opinion" id="main-article">
        <div class="section">
            <h2 class="topic-header">Main Argument</h2>
            <p>...</p>
        </div>
        <div class="section">
            <h2 class="topic-header">Rebuttal</h2>
            <p>...</p>
        </div>
        <div class="section">
            <button class="response-button" name="agree">Agree with Argument</button>
            <button class="response-button" name="disagree">Agree with Rebuttal</button>
        </div>
    </div>
</body>
</html>
```

"Class name" locators can return multiple elements.

A. True

B. False

Exercise 4

```
<html>
<body>
    <div class="article opinion" id="main-article">
        <div class="section">
            <h2 class="topic-header">Main Argument</h2>
            <p>...</p>
        </div>
        <div class="section">
            <h2 class="topic-header">Rebuttal</h2>
            <p>...</p>
        </div>
        <div class="section">
            <button class="response-button" name="agree">Agree with Argument</button>
            <button class="response-button" name="disagree">Agree with Rebuttal</button>
        </div>
    </div>
</body>
</html>
```

Which would be the best locator for locating this element uniquely (assuming unique attribute values)? <input id="first-name-input" name="first-name" class="important-field big-field">

A. By.id("first-name-input")

B. By.name("first-name")

C. By.className("important-field")

D. By.className("big-field")

Exercise 5

```
<html>
<body>
    <div class="article opinion" id="main-article">
        <div class="section">
            <h2 class="topic-header">Main Argument</h2>
            <p>...</p>
        </div>
        <div class="section">
            <h2 class="topic-header">Rebuttal</h2>
            <p>...</p>
        </div>
        <div class="section">
            <button class="response-button" name="agree">Agree with Argument</button>
            <button class="response-button" name="disagree">Agree with Rebuttal</button>
        </div>
    </div>
</body>
</html>
```

Review the HTML document above. What locator would uniquely target the parent element fo the article?

A. By.id("main-article")

B. By.className("article")

C. By.className("opinion")

D. All the above

Exercise 6

```
<html>
<body>
    <div class="article opinion" id="main-article">
        <div class="section">
            <h2 class="topic-header">Main Argument</h2>
            <p>...</p>
        </div>
        <div class="section">
            <h2 class="topic-header">Rebuttal</h2>
            <p>...</p>
        </div>
        <div class="section">
            <button class="response-button" name="agree">Agree with Argument</button>
            <button class="response-button" name="disagree">Agree with Rebuttal</button>
        </div>
    </div>
</body>
</html>
```

Review the HTML document above. What locator would return the <p> paragraph element in the rebuttal section?

A. By.className("section")

B. By.name("p")

C. By.name("section[2] p")

D. None of the above.

Exercise 7

```
<html>
<body>
    <div class="article opinion" id="main-article">
        <div class="section">
            <h2 class="topic-header">Main Argument</h2>
            <p>...</p>
        </div>
        <div class="section">
            <h2 class="topic-header">Rebuttal</h2>
            <p>...</p>
        </div>
        <div class="section">
            <button class="response-button" name="agree">Agree with Argument</button>
            <button class="response-button" name="disagree">Agree with Rebuttal</button>
        </div>
    </div>
</body>
</html>
```

Review the HTML document above. What locator would uniquely target the “Agree with Argument” button?

A. By.className(“section”)

B. By.name(“p”)

C. By.name(“section[2] p”)

D. None of the above.

Next session

- CSS Selectors
- XPaths
- Advanced Xpaths
- Picking the right locator
- Using locators for testing