

Chapter 7 - Walking the DOM

DOM tree refers to the HTML page where all the nodes are objects. There can be 3 main types of nodes in the DOM tree:

- 1> text nodes
- 2> element nodes
- 3> comment nodes

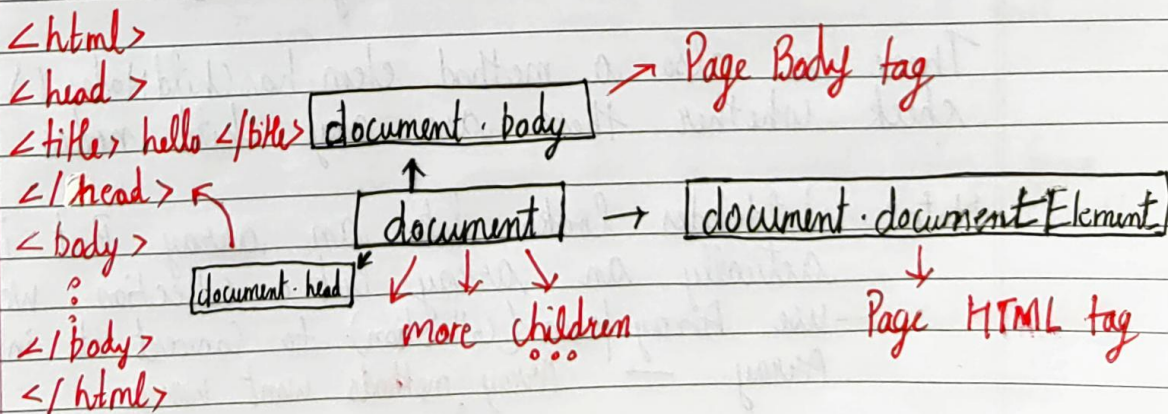
In an HTML page, `<html>` is at the root and `<head>` and `<body>` are its children, etc.

A text node is always a leaf of the tree

Auto Correction

If an erroneous HTML is encountered by the browser, it tends to correct it. For example, if we put something after the body, it is automatically moved inside the body. Another example is `<table>` tag which must contain `<tbody>`.

Walking the DOM



Note: document-body can sometimes be null if the javascript is written before the body tag.

Children of an element

Direct as well as deeply nested elements of an element are called its children

Child nodes \rightarrow Elements that are direct children
For example head & body are children of `<html>`

Descendant nodes \rightarrow All nested elements, children, their children and so on...

firstChild, lastChild & childNodes

element.firstChild \rightarrow first child element

element.lastChild \rightarrow last child element

element.childNodes \rightarrow All child nodes

Following is always true:

$\text{elem.childNodes}[0] === \text{elem.firstChild}$

$\text{elem.childNodes}[\text{elem.childNodes.length} - 1] === \text{elem.lastChild}$

There is also a method `elem.hasChildNodes()` to check whether there are any child nodes.

Note: childNodes looks like an array. But it's not actually an array but a collection. We can use `Array.from(collection)` to convert it into an Array. \rightarrow Array methods won't work

Notes on DOM collections

- They are read-only
- They are live. `elem.childNodes` variable (reference) will automatically update if `childNodes` of `elem` is changed.
- They are iterable using `for...of` loop

Siblings and the parent

Siblings are nodes that are children of the same parent.

- For example: `<head>` and `<body>` are siblings. Siblings have same parent. In the above example its `html`
- `<body>` is said to be the "next" or "right" sibling of `<head>`, `<head>` is said to be the "previous" or "left" sibling of `<body>`
- The next sibling is in `nextSibling` property, and the previous one in `previousSibling`.
The parent is available as `parentNode`.

```
< alert ( document. documentElement. parentNode ); //document  
alert ( document. documentElement. parentElement ); // null
```

Element only Navigation

Sometimes, we don't want text or comment nodes. Some links only take Element nodes into account. For example

`document.previousElementSibling` → Previous sibling which is an Element

document.nextElementSibling → next sibling (Element)

document.firstElementChild → first Element child

document.lastElementChild → last Element child.

Table links

Certain DOM elements may provide additional properties specific to their type for convenience.

Table element supports the following properties :

table.rows → collection of tr elements

table.caption → reference to <caption>

table.tHead → reference to <thead>

table.tFoot → reference to <tfoot>

table.tBodies → collection of <tbody> elements

tbody.rows → collection of <tr> inside

tr.cells → collection of td and th

tr.sectionRowIndex → index of tr inside enclosing element

tr.rowIndex → Row number starting from 0

td.cellIndex → no of cells inside enclosing <tr>

Quick Quiz: Print typeof document and typeof window in the console & see what it prints

Searching the DOM

DOM navigation properties are helpful when the elements are close to each other. If they are not close to each other, we have some more methods to search the DOM.

→ `document.getElementById`

This method is used to get the element with a given "id" attribute.

```
let span = document.getElementById('span')  
span.style.color = "red"
```

→ `document.querySelectorAll`

Returns all elements inside an element matching the given CSS selector.

→ `document.querySelector`

Returns the first element for the given CSS Selector. A efficient version of `elem.querySelectorAll(css)[0]`

→ `document.getElementsByTagName`

Returns elements with the given tag name.

→ `document.getElementsByClassName`

Returns elements that have the given CSS class.

↳ Don't forget the "s" letter

→ `document.getElementsByName`

Searches elements by the name attribute.

matches, closest & contains methods

There are three important methods to search the DOM

- 1> `elem.matches(css)` → To check if element matches the given CSS selector
- 2> `elem.closest(css)` → To look for the nearest ancestor that matches the given CSS-selector. The elem itself is also checked
- 3> `elemA.contains(elemB)` → Returns true if elemB is inside elemA (a descendant of elemA) or when `elemA == elemB`

Chapter 7 - Practice Set

- 1 Create a navbar and change the color of its first element to red.
- 2 Create a table without tbody. Now use "View page source" button to check whether it has a tbody or not.
- 3 Create an element with 3 children. Now change the color of first and last element to green.
- 4 Write a javascript code to change background of all `` tags to cyan.
- 5 Which of the following is used to look for the farthest ancestor that matches a given CSS selector
(a) matches (b) closest (c) contains (d) none of these