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.

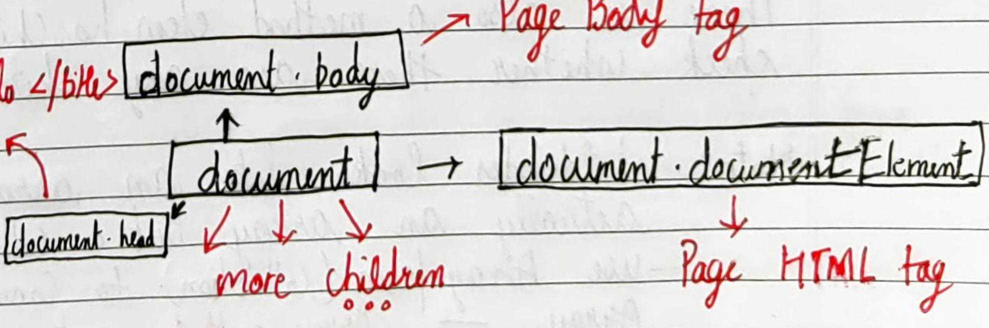
A text node is always a leaf of the tree

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

```
<html>
<head>
<title> hello </title>
</head>
<body>
  :
</body>
</html>
```



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 → Elements that are direct children
For example head & body are children of <html>

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

firstChild, lastChild & childNodes

element.firstChild → first child element
element.lastChild → last child element
element.childNodes → All child nodes

Following is always true :

elem.childNodes[0] === elem.firstChild
elem.childNodes[elem.childNodes.length - 1] === elem.lastChild

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

Note: childNodes looks like an array. But its not actually an array but a collection. We can use Array.from(collection) to convert it into an Array. → Array methods wont 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" ore "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 dont want text or comment nodes. Some links only take Element nodes into account. For example

document.previousElementSibling → Previous sibling which is an Element

classmate
Date
Page

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

↳ Dont 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 <li> 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