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Web Development Pitfall No.1: Confusing a DOM collection with a JS array

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Summary

Don't confuse a DOM collection with a JS array: Array functions, such as the `forEach` looping method, cannot be applied to a DOM collection!

For instance, when you retrieve all rows of an HTML table element, you get an `HTMLCollection`, which is an array-like object, but not an instance of `Array`, and therefore the following code does not succeed because the `Array` method `forEach` is not defined for an `HTMLCollection` like `myTableEl.rows`:

```
var myTableEl = document.getElementById("myTableEl");
myTableEl.rows.forEach( function (row) {
  ... // process row
})
```

There are two solutions how to loop over a DOM collection like `myTableEl.rows`. Either by using an ordinary for loop, like so:

```
var myTableEl = document.getElementById("myTableEl");
var i=0, row=null;
for (i=0; i < myTableEl.rows.length; i++) {
  row = myTableEl.rows[i];
  ... // process row
}
```

or by invoking the `Array` method `forEach` on the DOM collection with the help of `call` in the following way:

```
var myTableEl = document.getElementById("myTableEl");
Array.prototype.forEach.call( myTableEl.rows, function (row) {
  ... // process row
})
```

More on DOM Collections

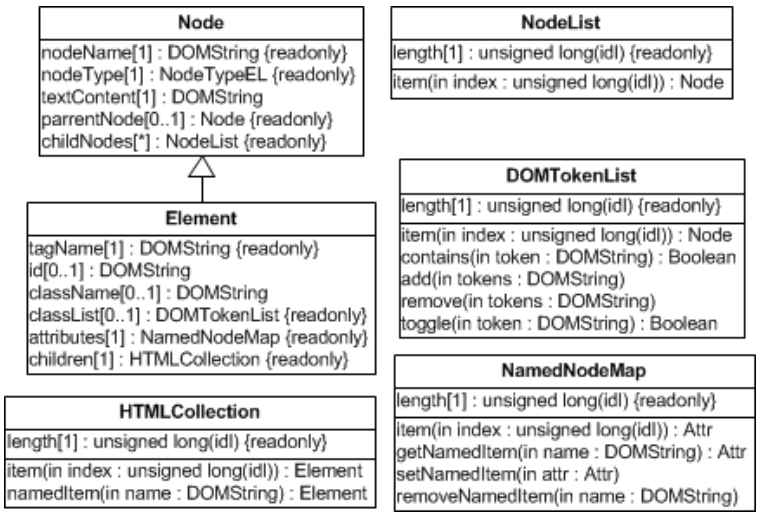
Mozilla provides a pretty good **overview of DOM interfaces**, though not all methods have proper documentation yet. The ultimate reference is, of course, the hard-to-digest DOM4 specification, which comes in two forms: the **W3C DOM4 spec (http://www.w3.org/TR/dom/)** and the WHATWG's **DOM Living Standard**.

A DOM collection is an array-like object `coll`, the items of which can be accessed with the array index notation `coll[i]`, and that has a `length` attribute such that a for loop can be used for iterating over it. There are 4 different types of DOM collections:

1. The most important one, `HTMLCollection`, represents a collection of HTML elements, typically obtained by retrieving HTML elements with one of the methods `getElementsByTagName`, `getElementsByClassName` or `querySelectorAll`.
2. A `DOMTokenList` represents a collection of items of an HTML attribute value list, such as the values of the HTML `class` attribute.
3. A `NamedNodeMap` represents a collection of attributes (notice that, despite the historical name of this DOM collection type, attributes are no longer considered to be nodes in DOM4).
4. A `NodeList` represents a collection of DOM nodes, which may be elements, plain text, comments or processing instructions.

All of these DOM collections have the `item` method in common, which implies that their items can be accessed with the array index notation. Two of them, `HTMLCollection` and `NamedNodeMap`, also have a (get)`namedItem` method, which implies that their items can be accessd with the key-value map notation. In the case of an `HTMLCollection`, the keys are provided by the elements' `id` attribute, while in the case of a `NamedNodeMap`, the keys are provided by the attribute names.

This is summarized in the following UML class diagram.



Notice that a DOM element is a special type of DOM node (as expressed by the UML generalization arrow), so we can also use the attribute `childNodes` for an HTML element or SVG element for collecting all child nodes of it in the form of a `NodeList`, including child elements, but also comments, processing instructions, etc. However, when you only need to retrieve child elements, such as all child elements of a certain `div`, then you better use the method `children`, whcih returns an `HTMLCollection`.

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