

# JavaScript and DOM In-Class Exercise

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Programming Language Paradigms

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<h1>Heading with a <span>span</span> element.</h1>
<p>A paragraph with <span>one</span>, <span>two</span> spans.</p>

<script>

    function byTagName(node, tagName) {
        let found = [];
        tagName = tagName.toUpperCase();

        function explore(node) {
            for (let i = 0; i < node.childNodes.length; i++) {
                let child = node.childNodes[i]; if
                    (child.nodeType == document.ELEMENT_NODE) { if
                        (child.nodeName == tagName) found.push(child); explore(child); }
                }
            explore(node); return found;
        }

        console.log(byTagName(document.body, "h1").length);
        console.log(byTagName(document.body, "span").length);
        let para = document.querySelector("p");
        console.log(byTagName(para, "span").length);

    }

</script>
```

## 1. Describe what the function byTagName does

The function byTagName takes a node and a tag name as arguments and returns an array of all descendant elements with the given tag name. It does this by calling the explore function, which recursively calls itself on each child node of the node passed to byTagName. If the child node is an element node and has the same tag name as the one passed to byTagName, it is added to the array of found elements.

## 2. Describe what the function explore does:

The function explore takes a node as an argument and pushes all the elements with the given tag name to the found array. It does this by looping through the child nodes of the node passed to explore. If the child node is an element node and has the same tag name as the one passed to

byTagName, it is added to the array of found elements. If the child node is an element node, explore is called on it.

3. What is the output of the following code?

The output of this code will be Heading with a span element. A paragraph with one, two spans.