Web Portfolio Projects: Sortable Tables and Arrays

with Leigh Lawhon

1. What is the reason for wrapping the entire content of a JavaScript file in an IFFE (immediately invoked function)?

This technique creates a closure around the entire contents, which creates a private namespace and thereby helps avoid potential name clashes. So, if two libraries use the same name, the name will be scoped inside the executed function.

2. What are some ES2015 features used in this project?

Fat arrow functions

- Fat arrow functions are handy short hand for anonymous functions. But they do more than that. With fat arrow functions, the meaning of "this" will have the same value as the context of the function.

Spread operators

- Spread syntax allows iterables, such as an array expression or string, to be expanded in places such as arguments in function calls, elements in arrays, and key-value pairs in objects.

Fetch and promises

- Fetch and promises are a new and more flexible way to retrieve and handle HTTP requests.

String templates

- String templates use a new syntax ${NAME} inside of a back-ticked string that allows the insertion of variables.

Block-scoped constructs let and const

- The let statement declares a block scope local variable, optionally initializing it to a value.
- Constants are block-scoped, much like variables defined using the let statement. The value of a constant cannot change through reassignment, and it can't be redeclared.

3. Which array methods are you using?

indexOf

- The indexOf() method returns the first index at which a given element can be found in the array, or –1 if it is not present.

From

- The Array.from() method creates a new, shallow-copied Array instance from an array-like or iterable object.

Reverse

- The reverse() method reverses an array in place. The first array element becomes the last, and the last array element becomes the first.

Sort

- The sort() method sorts the elements of an array in place and returns the array. The default sort order is built upon converting the elements into strings, then comparing their sequences of UTF-16 code units values.

Splice

- The splice() method changes the contents of an array by removing existing elements and/or adding new elements.

Filter

- The filter() method creates a new array with all elements that pass the test implemented by the provided function.

Slice

- The slice() method returns a shallow copy of a portion of an array into a new array object selected from beginning to end (end not included). The original array will not be modified.

4. Which sort algorithm does the JavaScript Array.sort() function use?

The ECMA script standard does not specify which sort algorithm is to be used, and different browsers use different algorithms. For instance, WebKit implements some variation of quick-sort for numeric arrays. For a non-numeric array, it uses merge-sort.

5. Of what JavaScript type is an array? How can you reliably check to see if it is an array?

Arrays return a typeof Object. Because of this, ES2015 introduced the array method isArray.

6. What's the difference between child nodes and children?

Children is a property of an element. Only elements have children, and these children are all of type element.

childNodes is a property of node, and child nodes can contain any node.

For example, in the following code:

- The div element has one child (children), the <p> element.
- The div node has two child nodes, the <p> element and the textContent "Text".

```
<div><p>Text</p></div>

```

7. Given the following line of code, what would be the output of the console?

```
var foo = new Array(3);
console.log(foo);
```

Answer: [undefined, undefined, undefined]

8. What is the value of Math.max([1,3,4,5])?

1. NaN. This is because Math.max expects parameters of type numbers and not an array. You will see in our code we use the spread operator to “flatten” our array.

9. What is the value of parseFloat('12.3.4')?

Answer: 12.3

- ParseFloat parses its argument and returns a floating-point number. If it encounters a character other than a sign (+ or –), numeral (0–9), a decimal point, or an exponent, it returns the value up to that point and ignores that character and all succeeding characters. Leading and trailing spaces are allowed.

10. What is the significance, and what are the benefits, of including “use strict” at the beginning of a JavaScript source file?

Use strict is a way to voluntarily enforce stricter parsing and error handling on your JavaScript code at runtime. Code errors that would otherwise have been ignored or would have failed silently will now generate errors or throw exceptions. In general, it is a good practice.

11. What is NaN? What is its type? How can you reliably test if a value is equal to NaN?

The NaN property represents a value that is “not a number”. This value results from an operation that could not be performed either because one of the operands was non-numeric or because the result of the operation is non-numeric.

Although NaN means “not a number”, its type is Number:

- A semi-reliable way to test whether a number is equal to NaN is with the function isNaN(), but even using isNaN() is an imperfect solution.

- A better solution would either be to use value !== value, which would only produce true if thevalue is equal to NaN. ES6 offers a new Number.isNaN() function, which is different and more reliable than the old global isNaN() function.

12. What are document fragments?

DocumentFragments are DOM nodes. They are never part of the main DOM tree. The usual use case is to create the document fragment, append elements to the document fragment, and then append the document fragment to the DOM tree. In the DOM tree, the document fragment is replaced by all its children.

Since the document fragment is in memory and not part of the main DOM tree, appending children to it does not cause page reflow (computation of element's position and geometry). Historically, using document fragments could result in better performance.

13. What is the difference between a do while loop and a while loop?

In a while loop, a condition is tested at the beginning of the loop and if the condition is true, then only statements inside the loop will be executed. In a do while loop, a condition is tested at the end of the loop, so do while executes the statements in the code block at least once even if the condition fails.

14. What is the DRY principle and where can you use it to improve your code?

DRY (don't repeat yourself) is aimed at reducing repetition of software patterns, replacing it with abstractions or using data normalization to avoid redundancy.

15. Name multiple ways to empty an array.

Let arr = [1, 2, 3]

1. arr = [ ];
2. arr.length = 0
3. arr.splice(0, array.length)
4. While (arr.length > 0){ arr.pop(); }