INFO 2302 Web Technologies

Filtering, searching, and sorting

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If your pages contain many data,
there are 3 techniques to help your users
find the content they are looking for:-

filtering, searching, and sorting

Filtering

Allows you to reduce to a set of values.

Also allows to create a subset of data that fulfills a certain criteria.

Searching

Search is like filtering but shows only results that match a search term.

Sorting

Sorting lets you reorder a set of items on the page based on criteria (for example, alphabetically).


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The filter() method

The filter() method of Array instances creates a shallow copy of a portion of a given array, filtered down to just the elements from the given array that pass the test implemented by the provided function.

Simple filtering example

```
const cats = ["Leopard", "Serval", "Jaguar", "Tiger", "Caracal", "Lion"];

const filtered = cats.filter((cat) => cat.startsWith("L"));
console.log(filtered);
// [ "Leopard", "Lion" ]


const words = ['spray', 'elite', 'exuberant', 'destruction', 'present'];
const result = words.filter((word) => word.length > 6);

console.log(result);
// ["exuberant", "destruction", "present"]
```

Simple filtering example (continued)

```
const array = [-3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13];

function isPrime(num) {
  for (let i = 2; num > i; i++) {
    if (num % i === 0) {
      return false;
    }
  }
  return num > 1;
}

console.log(array.filter(isPrime));
// [2, 3, 5, 7, 11, 13]
```


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Searching
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The search() method

The search() method of String values executes a search for a match between a regular expression and this string, returning the index of the first match in the string.

*Refer https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_Expressions/Cheatsheet for the MDN Regular expressions cheatsheet

Simple searching example using regular expressions

```
const str = "hey JudE";
const re = /[A-Z]/;
const reDot = /[.]/;

console.log(str.search(re));
// returns 4, which is the index of the first capital letter "J"

console.log(str.search(reDot));
// returns -1 cannot find '.' dot punctuation
```

Simple contact search example

```
<!DOCTYPE html>
<html lang="en-US">
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width">
    <title>Simple contact search example</title>
  </head>
  <body>

  <label for="search">Search by contact name: </label>
  <input id="search" type="text">
  <button>Search</button>

  <p></p>

    <script>
    const contacts = ['Chris:2232322',
                      'Sarah:3453456',
                      'Bill:7654322',
                      'Mary:9998769',
                      'Dianne:9384975'];
 const para = document.querySelector('p');
    const input = document.querySelector('input');
    const btn = document.querySelector('button');

    btn.addEventListener('click', () => {
      const searchName = input.value.toLowerCase();
      input.value = '';
      input.focus();
      para.textContent = '';
      for (let contact of contacts) {
        let splitContact = contact.split(':');
        if (splitContact[0].toLowerCase() === searchName) {
          para.textContent = splitContact[0] + '\'s number is ' +
splitContact[1] + '.';
          break;
        }
      }
      if (para.textContent === '') {
       para.textContent = 'Contact not found.';
     }
    });

    </script>
  </body>
</html>
```


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The sort() method

The sort() method sorts the elements of an array in place and returns the array. The default sort order is according to string Unicode code points.

```
//sorting strings
var fruit = ['cherries', 'apples', 'bananas'];
fruit.sort();
// ['apples', 'bananas', 'cherries']

//sorting numbers
var scores = [1, 10, 21, 2];
scores.sort();
// [1, 10, 2, 21]
// Note that 10 comes before 2,
// because '10' comes before '2' in Unicode code point order.
```

The sort() method (continued)

```
//sorting a combination of number and letters
var things = ['word', 'Word', '1 Word', '2 Words'];
things.sort();
// ['1 Word', '2 Words', 'Word', 'word']
// In Unicode, numbers come before upper case letters,
// which come before lower case letters.
```

Changing order using the compare function

The sort () method only ever compares two values at a time (you will see these referred to as *a* and *b),* and it determines whether value *a* should appear before or after value *b.*

If you want to change the order of the sort, you write a compare function. A compare function should return a number. That number indicates which of the items should come first.

If compare function returns,

- <0, indicates that it should show *a* before *b*
- 0, indicates that the items should remain in the same order
- >0, indicates that it should show *b* before *a*

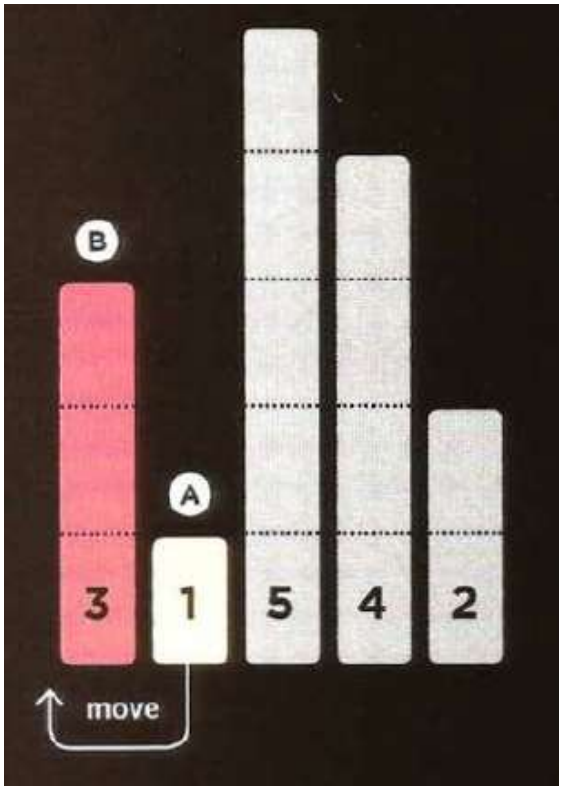
Example, consider an array with the values 3, 1, 5, 4, 2.

a should go before *b*

1 – 3 = -2

a – b = <0

```
var prices = [3, 1, 5, 4, 2]; //numbers stored in an array
prices.sort(function() {      //two values are compared
      return a - b;           //decides which goes first
} ) ;
```



***It is up to the browser to sort in different order. This example shows the order used by Safari. Other browsers sort items in different order.**

```
//Using a compare function to sort in ascending order
var prices = [1, 2, 125, 2, 19, 14];
prices.sort(function(a,b) {
   return a – b;
}

//Using a compare function to sort in descending order
var prices = [1, 2, 125, 2, 19, 14];
prices.sort(function(a,b) {
   return b – a;
}
```

References

MDN Web Docs. Looping codes. https://developer.mozilla.org/en-US/docs/Learn/JavaScript/Building_blocks/Looping_code#exiting_loops_with_break

Duckett. JavaScript and Jquery: interactive front-end web development- Chapter 12: Filtering, searching and sorting https://www.javascriptbook.com/code/c12/