ARCH A4988

Coding for Spatial Practices

💻 <Sort, Filter & Search>

Agenda

1. Review
2. Lecture: Sort, Filter & Search
3. Exercise

Review

Object Basics

Iterating through an object

Like arrays, you can use a loop to iterate through an object.

```
let items = { a: 1, b: 2, c: 3 }

for (let key in items) {
 console.log( items[key] );
}

> 1
> 2
> 3
```

Object Basics

Iterating over an array of objects

Iterator functions apply a function to each element of an array.

forEach() takes a function an an argument and applied the called function to each element of an array.

```
let nums = [
  { a: 1 },
  { b: 2 },
  { c: 3 }
];

function square (num) {
  for (let key in num) {
    console.log(num[key] * num[key])
  }
}

nums.forEach(square)

> 1
> 4
> 9
```

Object Basics

Putting array elements in order, sort,

The sort() function sorts data lexicographically assuming the data elements are strings.

If you need to sort data elements that are numbers, **you'll have to write an ordering function**.

```
let fruits = [‘grapes’, ‘watermelon’, ‘apple’]

fruits.sort();
console.log( fruits );

> apple
> grapes
> watermelon
```

Event Object

The Event Object

Accessing the Event Object

How do we gain access to the event object?

First, we need to pass the event object as a parameter.

It is best practice to use the word event as the parameter name.

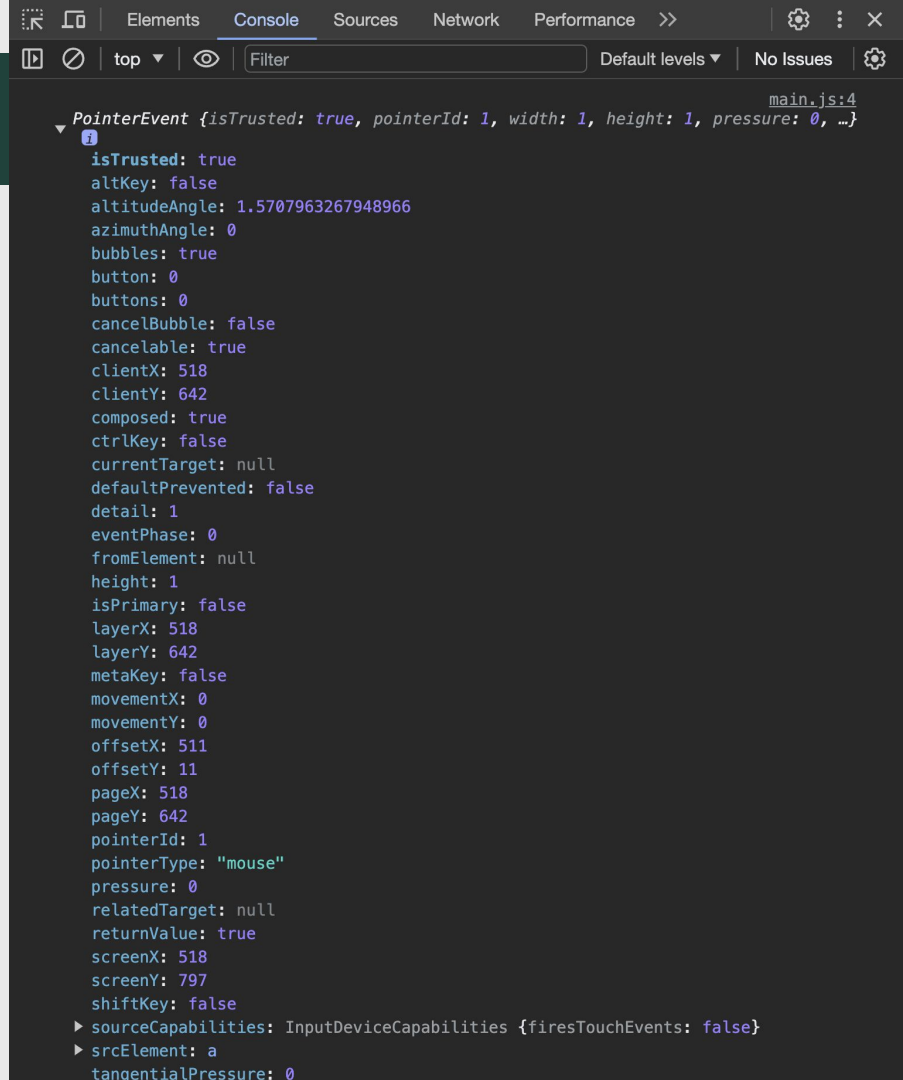

```
const viewComments = (event) => {
  console.log(event)
}

anchor.addEventListener('click',
viewComments);
```

The Event Object

Accessing the Event Object

When you click on the View Comments link, you should see in the Developer Console, the event logged to the console.

Don’t be overwhelmed by the number of properties!



The Event Object

Preventing Default Behavior

Some events, such as *clicking on a link* or *submitting a form*, are meant to take you to another page.

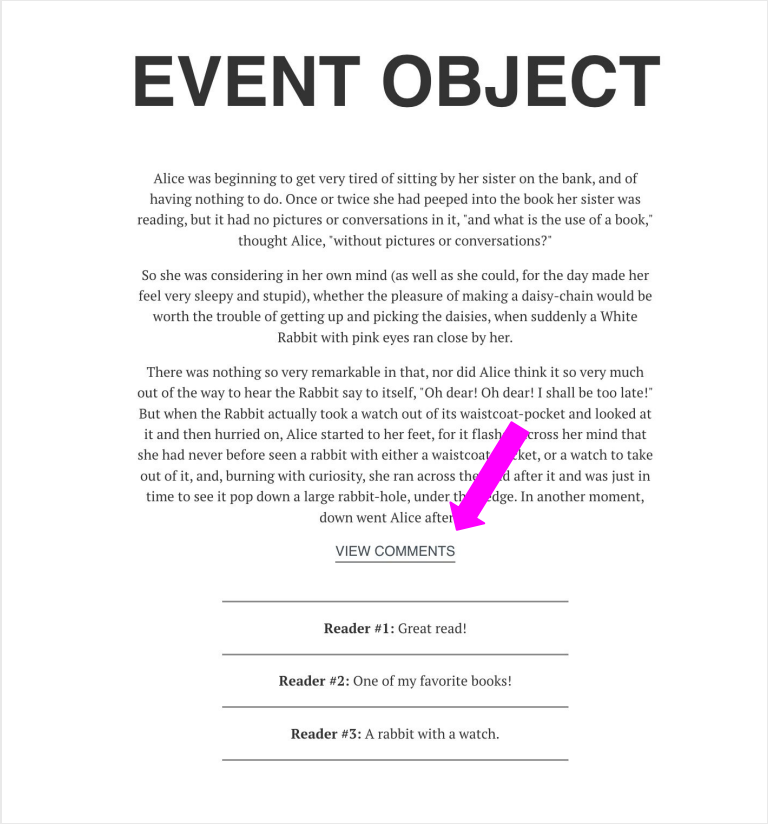
But, maybe you don't want to go to another page. Maybe, you want to fade in some comments.

```
<a href="#">View Comments</a>

let anchor = document.querySelector('a')

const viewComments = (event) => {
 console.log(event)
 event.preventDefault();
 let comments =
document.querySelector('#comments');
 comments.className = 'show-comments';
}

anchor.addEventListener('click',
viewComments);
```

The Event Object

Preventing Default Behavior

You'll often use this method when you have *anchors* or *submit* buttons on a page that you want to provide with some JavaScript functionality, instead of having them take you to another page.



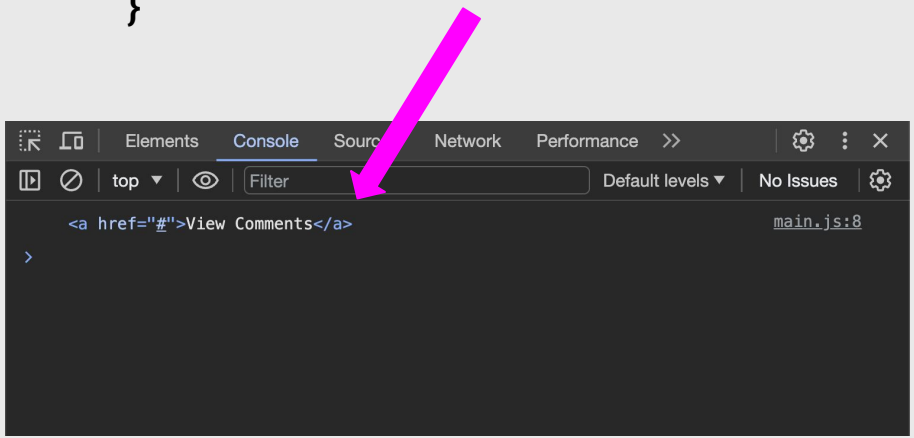
The Event Object

target

Here we access the target of the event by using dot notation event.target. Then we log the target to the console.

Let's take a look at what we see in the console:

```
<a href="#">View Comments</a>

const viewComments = (event) => {
  console.log(event.target)
}
```



The Event Object

type

Sometimes, you may need to know what kind of event occurred. Find this using the type property.

You should see *The event type is click* in the developer console.

```
<a href="#">View Comments</a>

document.querySelector('a').addEv
entListener('click',
viewComments);

const viewComments = (event) => {
  let eventType = event.type;
  console.log(The event type is:
' + eventType)
}
```

Sort, Filter & Search

Filter Method

.filter()

The syntax for filter() resembles the following:

Here we have an array of numbers. Then, we apply a filter() to return all numbers that are greater than 7.

```
let numbers = [1, 3, 6, 8, 11];

const greaterThanSeven =
numbers.filter(function(number) {
  return number > 7;
});

console.log(greaterThanSeven);

// output
[8, 11]
```

Filter Method

.filter()

A common use case of filter() is with an array of objects through their properties.

filter() creates a new array with elements that meet the criteria. The original array remains in tact.

```
const words = ['spray', 'limit',
'elite', 'exuberant', 'destruction',
'present'];

const result =
words.filter(function(word) {
  return word.length > 6;
});

console.log(result);

// output
["exuberant", "destruction",
"present"]
```

Filter Method

.filter()

Here we have an array of creature objects. Then, we apply a filter() to return all creatures with a habitat that is equal to Ocean.

```
const creatures = [
  {name: "Shark", habitat: "Ocean"},
  {name: "Whale", habitat: "Ocean"},
  {name: "Lion", habitat: "Savanna"},
  {name: "Monkey", habitat: "Jungle"}
];

const aquaticCreatures =
creatures.filter(function(creature) {
  return creature.habitat == "Ocean";
});

console.log(aquaticCreatures);

// output
[ {name: "Shark", habitat: "Ocean"},
{name: "Whale", habitat: "Ocean"} ]
```

Sort Method

.sort()

To effectively sort an array of objects we will need the sort() method and an accompanying compare function, compareFn().

A compare function helps us to write our logic in the sorting of the array of objects.

```
let names = [
  {name: 'Sara', age:24},
  {name: 'John', age:24},
  {name: 'Jack', age:25}
];

function compareFn(a, b){
    // your logic in here
}

names.sort(compareFn)
```

Sort Method

Sorting Numbers

Here, the sort method is used to sort an array of objects by the age property.

To compare the age property we simply subtract them. If the difference is a *negative value* the order is changed. If it's a *positive value* the order remains the same.

```
let names = [
  {name: 'Sara', age:24},
  {name: 'John', age:22},
  {name: 'Jack', age:27}
];

function compareAgeFn(a, b){
  return a.age - b.age;
}

names.sort(compareAgeFn)

// output
[{name: "John", age: 22},
{name: "Sara", age: 24},
{name: "Jack", age: 27}]
```

Sort Method

Sorting Strings

Here, the sort method is sorting elements according to values returned by a custom compare function, compareNameFn.

If comparing two names results in 1, the order is changed. If comparing names results in -1 or 0, their order remains the same.

```
let names = [
  {name: 'Sara', age:24},
  {name: 'John', age:22},
  {name: 'Jack', age:27}
];

function compareNameFn(a, b){
  let comparison = 0;
  if(a.name > b.name){
     comparison = 1
  } else if (a.name < b.name) {
     comparison = -1
  }
  return comparison;
}

names.sort(compareNameFn)
```

Sort Method

Custom compare function

The custom compare function returns a negative, zero, or positive value, depending on the arguments passed to it.

When the sort() function compares two values, it sends the values to the compare function, and sorts the values according to the returned (negative, zero, positive) value by the compare function.

Search Using .includes()

.includes()

The includes() method determines whether an array contains a certain value, the value for which you are searching.

```
const pets = ['cat', 'dog', 'bat'];

console.log(pets.includes('cat'));
// output: true

console.log(pets.includes('at'));
// output: false
```

Exercises

Guided Walk-Through:

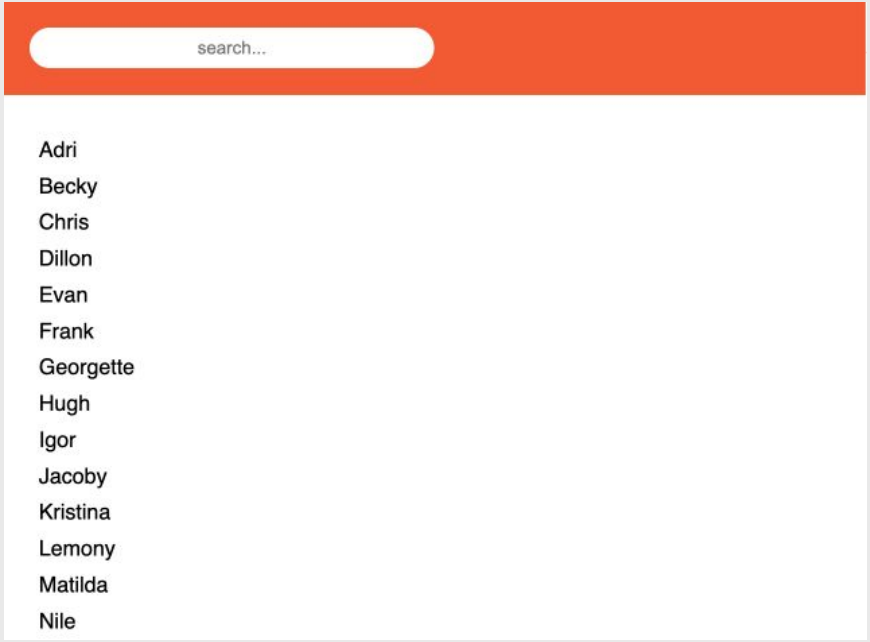
Iterate Over an Array of Objects

8 minutes

1. Iterate over this array of objects and print the name to the console.
2. Talk through the steps to render the name to the web page.
3. Now, render the name to the web page.

Instructions:

Go to the **starter_code_week_13** folder and complete the **search_names** exercise.

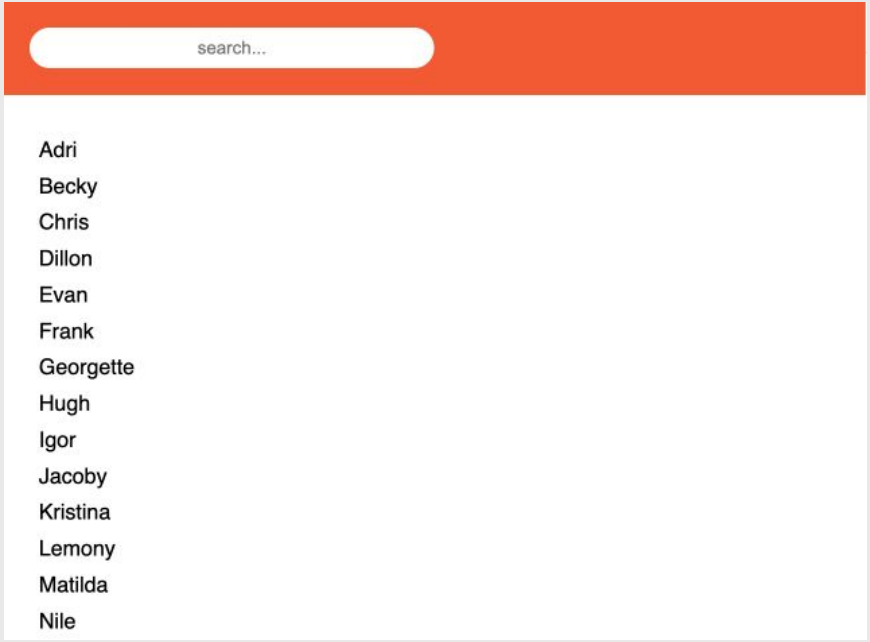


Guided Walk-Through:

Search for a Name

8 minutes

1. Search for a particular name on the page by typing in the name in the input field.
2. Render the searched name to the web page.



Solo Exercise:
Iterating over an array of objects

15 minutes

1. Iterate over this array of artist objects and print the artist name to the console.

2. Talk through the steps to render the artist name to the web page.

3. Now, render the artist name to the web page.

Starter code:

https://codepen.io/celestelayne/pen/vYgBbrp

Exercise

Set Up

1. Iterate over this array of objects (in this case they are flowers)
2. Render the flowers to the web page
3. In the navigation bar, create four buttons: Yellow, Red, Blue and All
4. Filter the flowers by color so that clicking the yellow button only shows the yellow flowers.