```
tt()
```

Schedule

1. Review assignments: SVG
2. JavaScript deep dive
    1. Scope and return values
    2. Functional patterns
    3. .map().filter().reduce()
3. Logout

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1. **Review assignments**
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Review

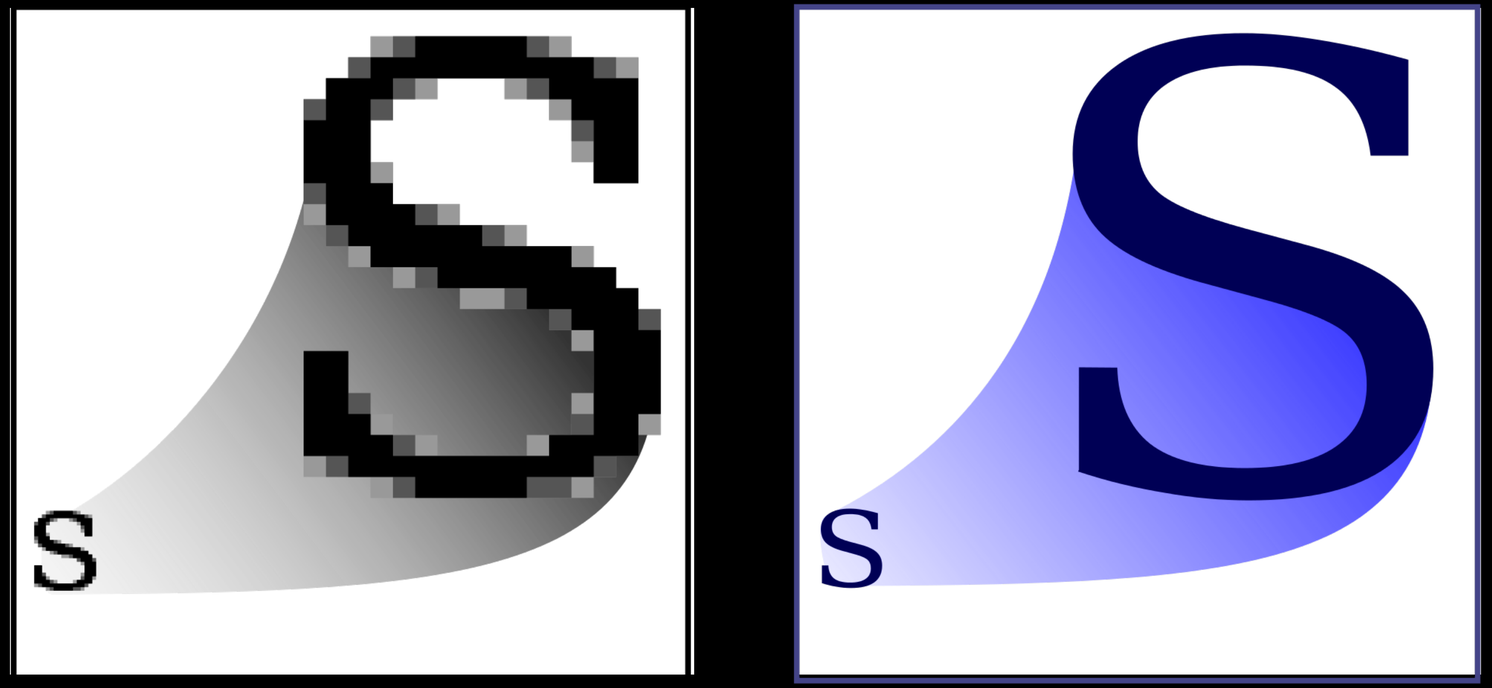
```
residen
work: {
    title: "Project Manag
    employer: "Clarify"
  }
}


* Filter by age, normalize capitals in names, convert ages to numbers, remov

const data = [
    {
        name: "Robert",
        age: 29,
        residence: "Amsterdam",
    },
    {
        name: "Berend",
        age: 32,
        residence: "Rotterdam",
```

Show & tell

SVG

Scalable **V**ector **G**raphics

SVG



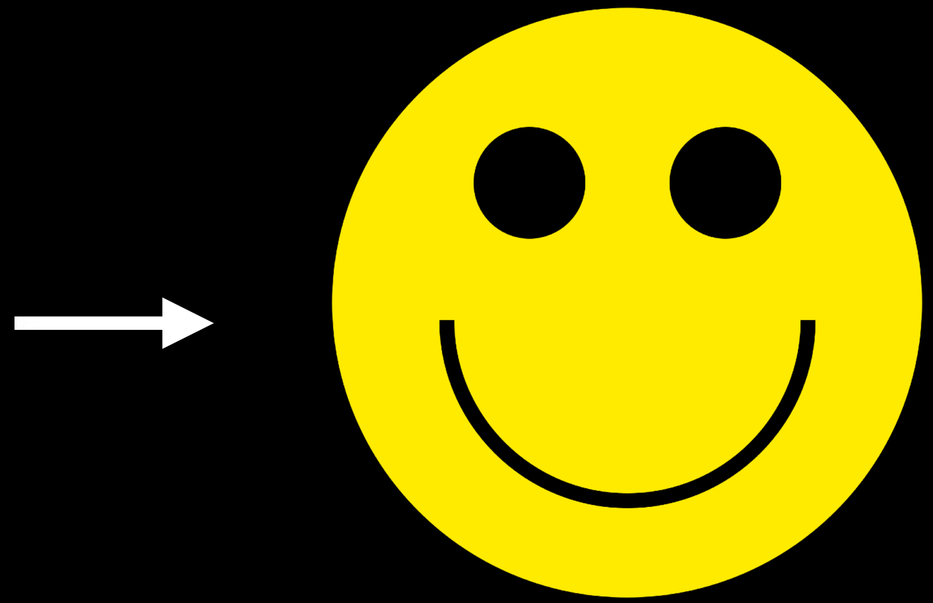
SVG

Smile.svg

Smile.svg

```
1  <?xml version="1.0" encoding="UTF-8"?>
2  <svg width="1080px" height="1080px" viewBox="0 0 1080 1080
   " version="1.1" xmlns="http://www.w3.org/2000/svg" xmlns:
   xlink="http://www.w3.org/1999/xlink">
3      <title>Smile</title>
4      <g id="Smile" stroke="none" stroke-width="1" fill="
       none" fill-rule="evenodd">
5          <circle id="Oval" stroke="#000000" stroke-width="
           20" fill="#FFEB00" cx="540" cy="540" r="406"></
           circle>
6          <circle id="Oval" fill="#000000" cx="409" cy="379"
            r="75"></circle>
7          <circle id="Oval-Copy" fill="#000000" cx="672" cy=
           "379" r="75"></circle>
8          <path d="M298,563.5 C298,697.429052
           406.570948,806 540.5,806 C674.429052,806
           783,697.429052 783,563.5" id="Path" stroke="
           #000000" stroke-width="20"></path>
9      </g>
10 </svg>
11
```

Line 11, Column 1 Spaces: 4 XML



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Scope

- The **scope** of a variable refers to where the variable is accessible
- const and let are **block scoped**:
  The variable is accessible inside the block where it is defined

```
function greet(name) {
    let greeting = “Goedemorgen, ”;
    console.log(greeting + name);
}
```

(A)greeting=NULL (B)greeting == “Goedemorgen, ” (C) greeting bestaat niet meer

Returns

The return statement ends function execution and specifies a value to be returned to the function caller.

https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Statements/return

Return values

- Function calls can produce results, as in:

```
let toevalsgetal = Math.random();


function greet(name) {
   let greeting = “Goedemorgen, ”+ name;
   return greeting
}


console.log(greet(“Laura”);
```

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Functional programming

Functional programming distinguishes between pure and impure functions.

It encourages you to write pure functions.

A pure function must satisfy both of the following properties:

Functional programming

Referential transparency: The function always gives the same return value for the same arguments. This means that the function cannot depend on any mutable state

Side-effect free: The function cannot cause any side effects.
Side effects may include I/O (e.g., writing to the console or a log file), modifying a mutable object, reassigning a variable, etc.

Impure functions

```
1  const kleuren = ["rood", "geel", "paars", "turquoise"];
2  const dieren = ["hond", "kat", "kip", "schildpad", "paard",
   "parkiet", "cavia"];
3
4
5  function telImpure() {
6    console.log(kleuren.length);
7
8  }
9
10 telImpure();
```

Pure functions

```
const kleuren = ["rood", "geel", "paars", "turquoise"];
const dieren = ["hond", "kat", "kip", "schildpad", "paard",
"parkiet", "cavia"];
let lengteArray;


function telPure(myArray) {
  let aantal = myArray.length;

  return aantal;
}



lengteArray = telPure(kleuren);
console.log(lengteArray);
```

Pure functions

- Have limited responsibility
- Their behavior is predictible
- C**an be reused** in different contexts

Functional programming

- Supports reuse through abstraction
- `console.log();` Only writes text to the console

  `newOutputFunction(console.log(), “Hello, world”)`

  `newOutputFunction(document.write(), “Hello, world”)`

  `newOutputFunction()` Also writes to the Website, maybe to paper?
- Why?
- We offer you a way of **structuring your code** which we think is clean, concise, self-explanatory and **reusable**.

Functional pattern: chaining

```
fetch('https://opensheet.elk.sh/1bOqOXqsuALPR0U26nJu5URFzg2Js54oS7uHoMCBEZHY/respons
es')
        .then(res => res.json())
        .then(data => {↔});
    }
```

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.map().filter().reduce()

Map, filter & reduce are **methods of Array.** We can call them on any array to loop over them and perform actions on their items

.map().filter().reduce() in JavaScript5:

Steven Luscher
@steveluscher

Map/filter/reduce in a tweet:

map([🌽, 🐮, 🐔], cook)
=> [🍿, 🍔, 🍳]

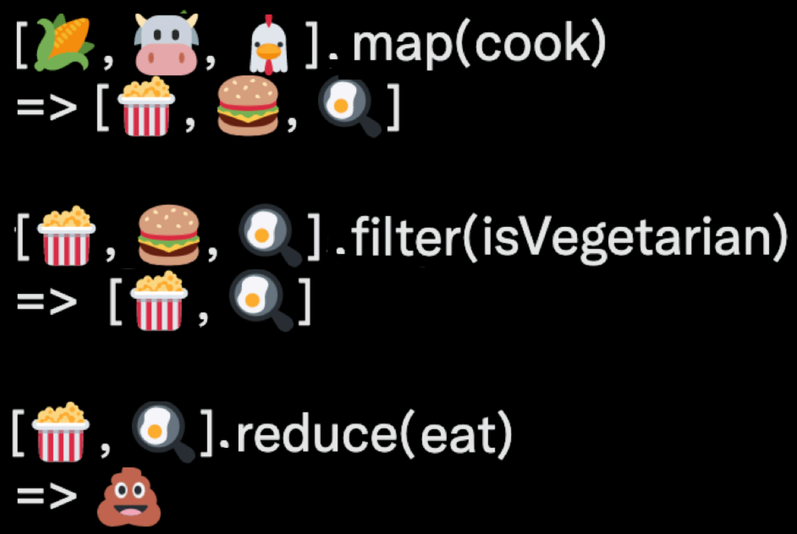
filter([🍿, 🍔, 🍳], isVegetarian)
=> [🍿, 🍳]

reduce([🍿, 🍳], eat)
=> 💩

4:08 AM · Jun 10, 2016 · Twitter for iPhone

8,492 Retweets **224** Quote Tweets **9,764** Likes

Vrij naar Steven Luscher, in ES6:



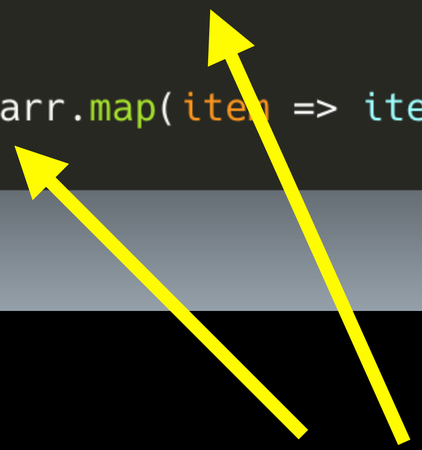
.map().filter().reduce()

Map, filter (and reduce) are methods of **Array**
that **return** something: an **Array or value.**

They help us to write **robust** code through **abstraction**

Implicit vs explicit

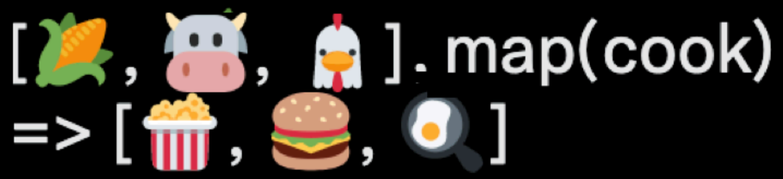
```
const arr = [1,2,3];

const newArray = arr.map(item => {
  return item * 2; // explicit return
})

const newArray2 = arr.map(item => item * 2); // implicit return
```



This code does the same

.map()

.map() is a method of **Array**
applies to **arrays**
requires a **function** as parameter



returns a new **array** where the **function**
is applied to each element of the array

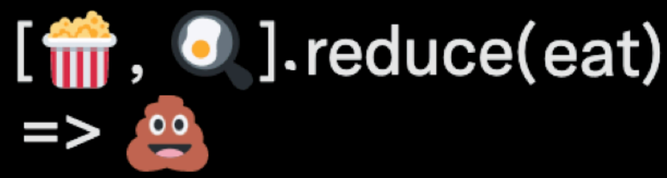
.filter()

.filter() is a method of **Array**
applies to **arrays**
requires a **function** as parameter that
returns a **boolean**

returns the same **array** whit the **elements**
that comply to the test-condition in the function

.reduce()

.reduce() is a method of **Array**
applies to **arrays**
requires (an accumulator value and)
a **function** as parameter
that returns a **value**



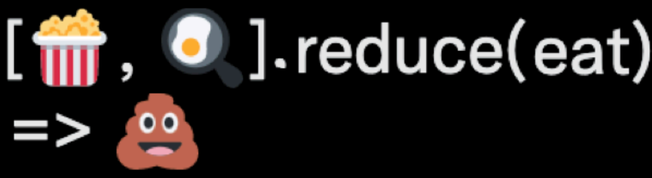
returns a **value**

.map().filter().reduce() The devil in the details

.**map()** does not affect the original Array.
It returns a **new** one

.**filter()** **changes** the original Array.

.**reduce()** returns a **value**, generally a Number



.map().filter().reduce()

Hands-on

ObjectsMapFilter	(practise with Map, Filter)
ObjectsMapFilterReduce	(Add Reducet)
CountriesMapFilterReduce	(practise Map, Filter, reduce with a medium-size dataset)

.map().filter().reduce()

Code lezen

Ok, hij doet het nu. Weet je ook, wat er staat (en wat “hij” doet?)

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Logout

Vrijdag 18: Landelijk actiedag tegen de langstudeerboete. Wie gaat daarheen?

Van FDND

Woensdag de 16e, om 13:30, komt Kevin Lewis van Directus een gastles geven over het maken van keuzes voor een tech-stack in Sprint 15: Choices Choices bij FDND op de 4e etage in het TTH.

Ook geeft hij wat meer insights over Directus (een Headless CMS) en maakt hij ruimte voor een Q&A.

Uncaught SyntaxError
Unexpected end of input