`tt()`

D3

Interactive

Schedule

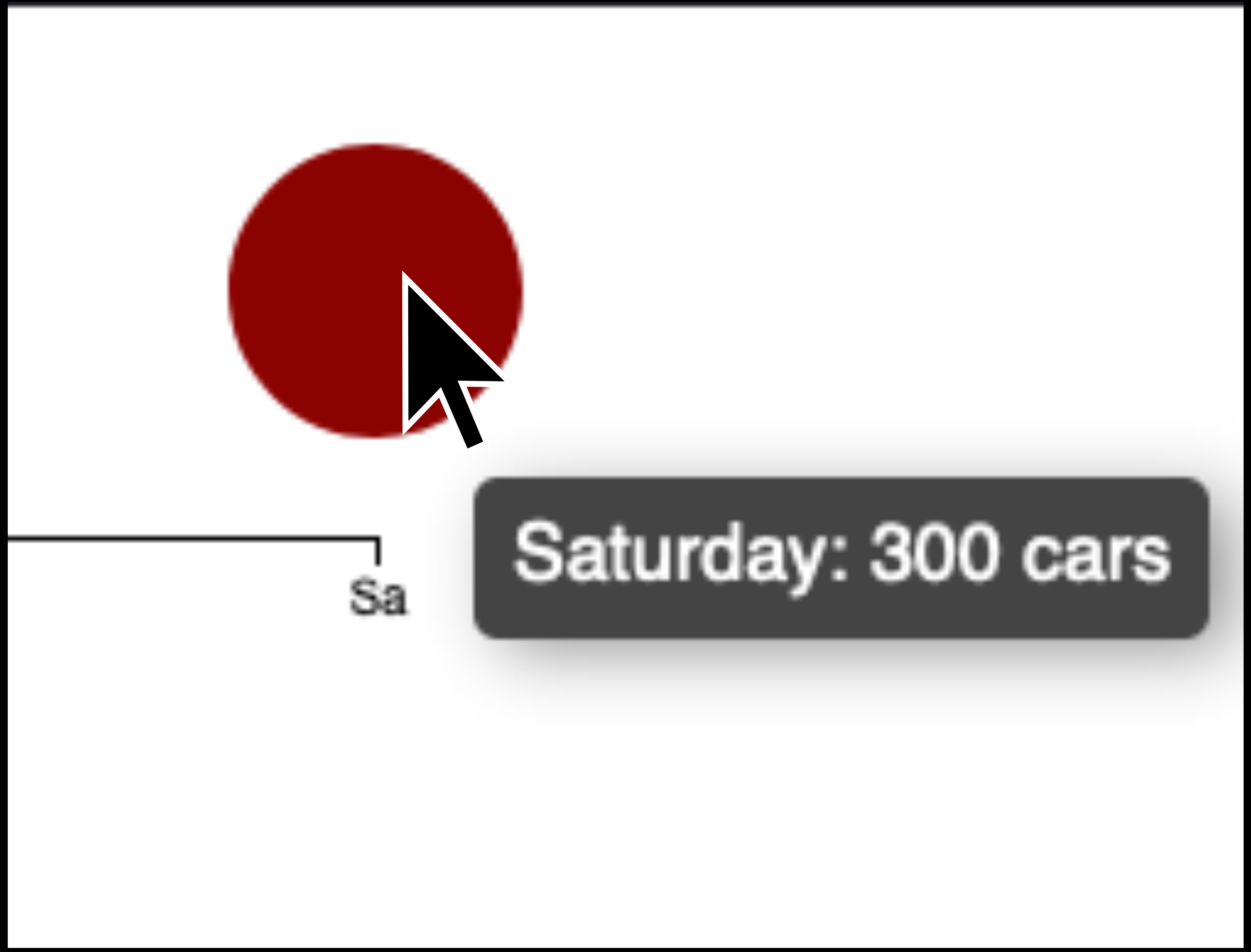
1. Events
2. Filtering
3. Enter / update / exit

Schedule

1. **Events**
2. Filtering
3. Enter / update / exit

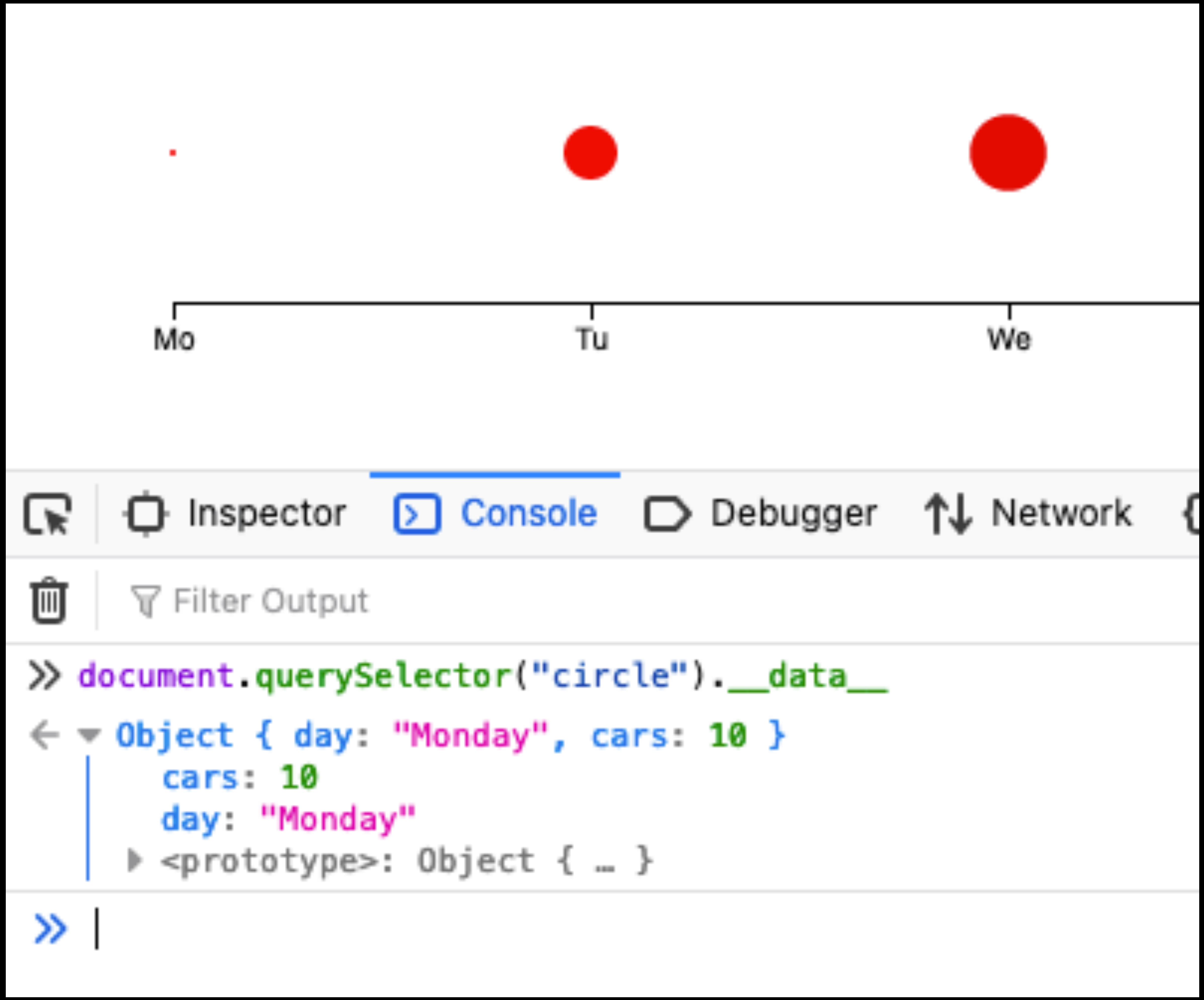
Events

Events help you to add interactivity to your graphs. For example you can add a tooltip or a side panel showing additional details.



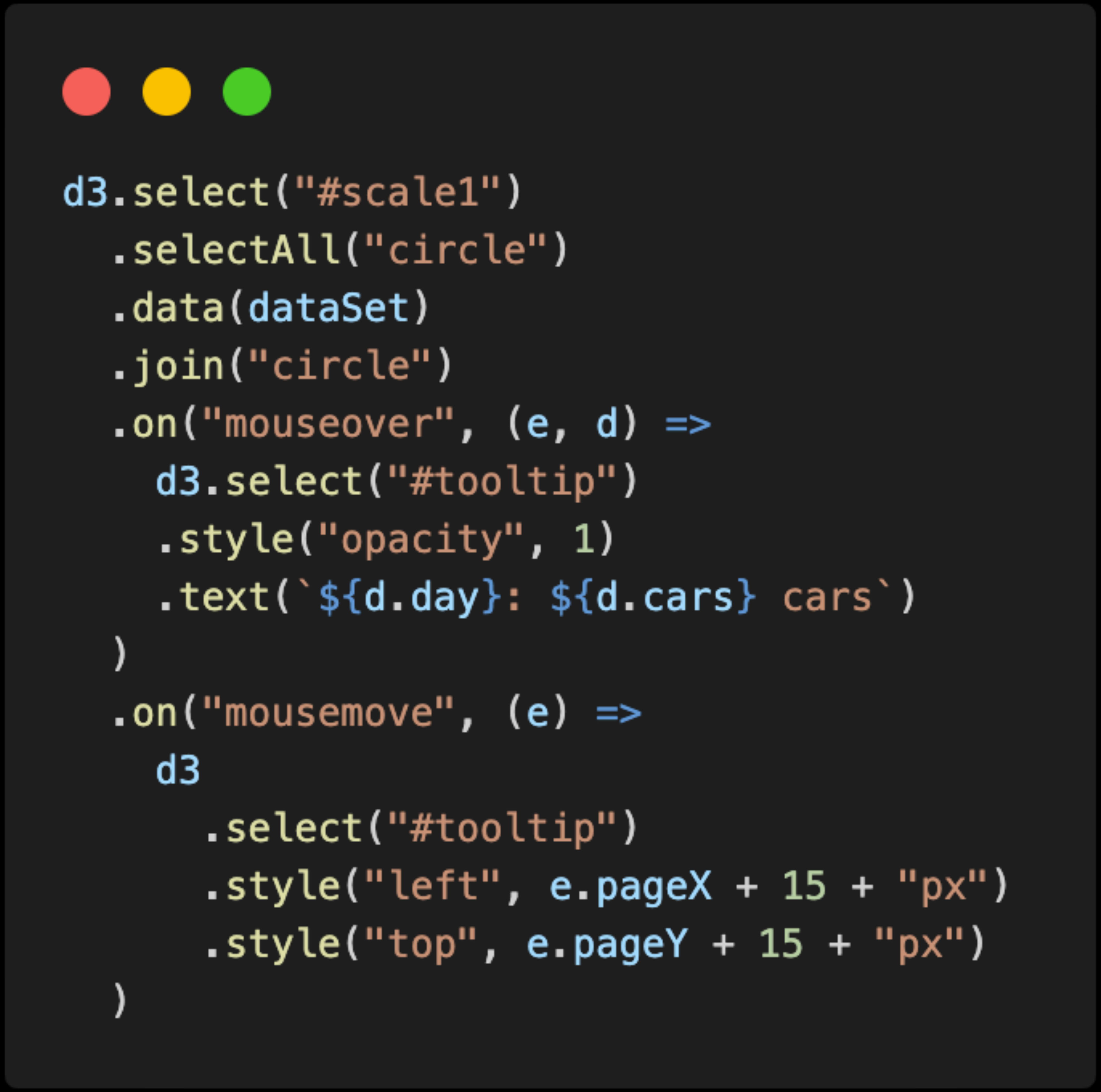
Event data

D3 has a magical feature: it adds a __data__ object to all DOM elements you created so you have access to the original data in your event.



```
>> document.querySelector("circle").__data__
← ▾ Object { day: "Monday", cars: 10 }
      cars: 10
      day: "Monday"
    ▸ <prototype>: Object { … }
>> |
```

Event binding



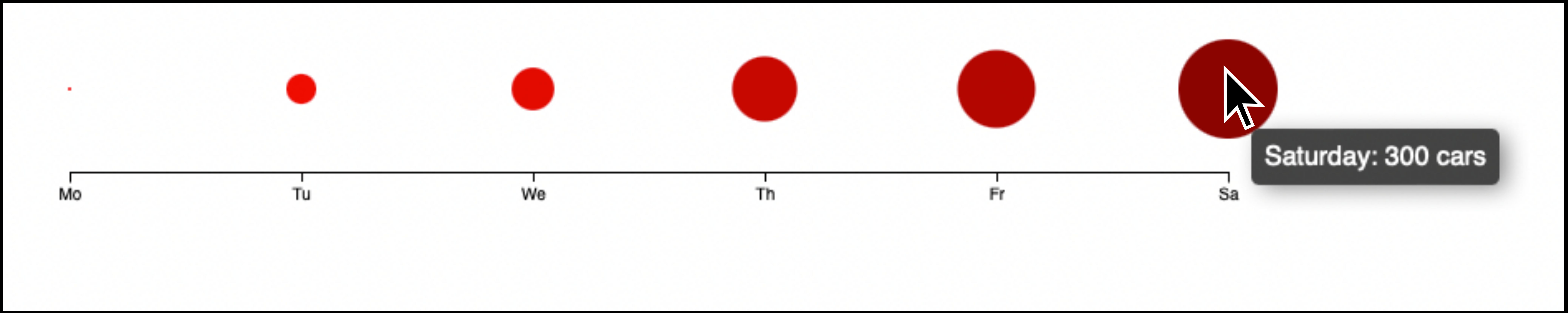
```
d3.select("#scale1")
  .selectAll("circle")
  .data(dataSet)
  .join("circle")
  .on("mouseover", (e, d) =>
    d3.select("#tooltip")
    .style("opacity", 1)
    .text(`${d.day}: ${d.cars} cars`)
  )
  .on("mousemove", (e) =>
    d3
      .select("#tooltip")
      .style("left", e.pageX + 15 + "px")
      .style("top", e.pageY + 15 + "px")
  )
```

You add events by calling d3.on(). D3 will call your event function with two paramenters:

1. Event data
2. Object data used during d3.join()

Tooltip demo

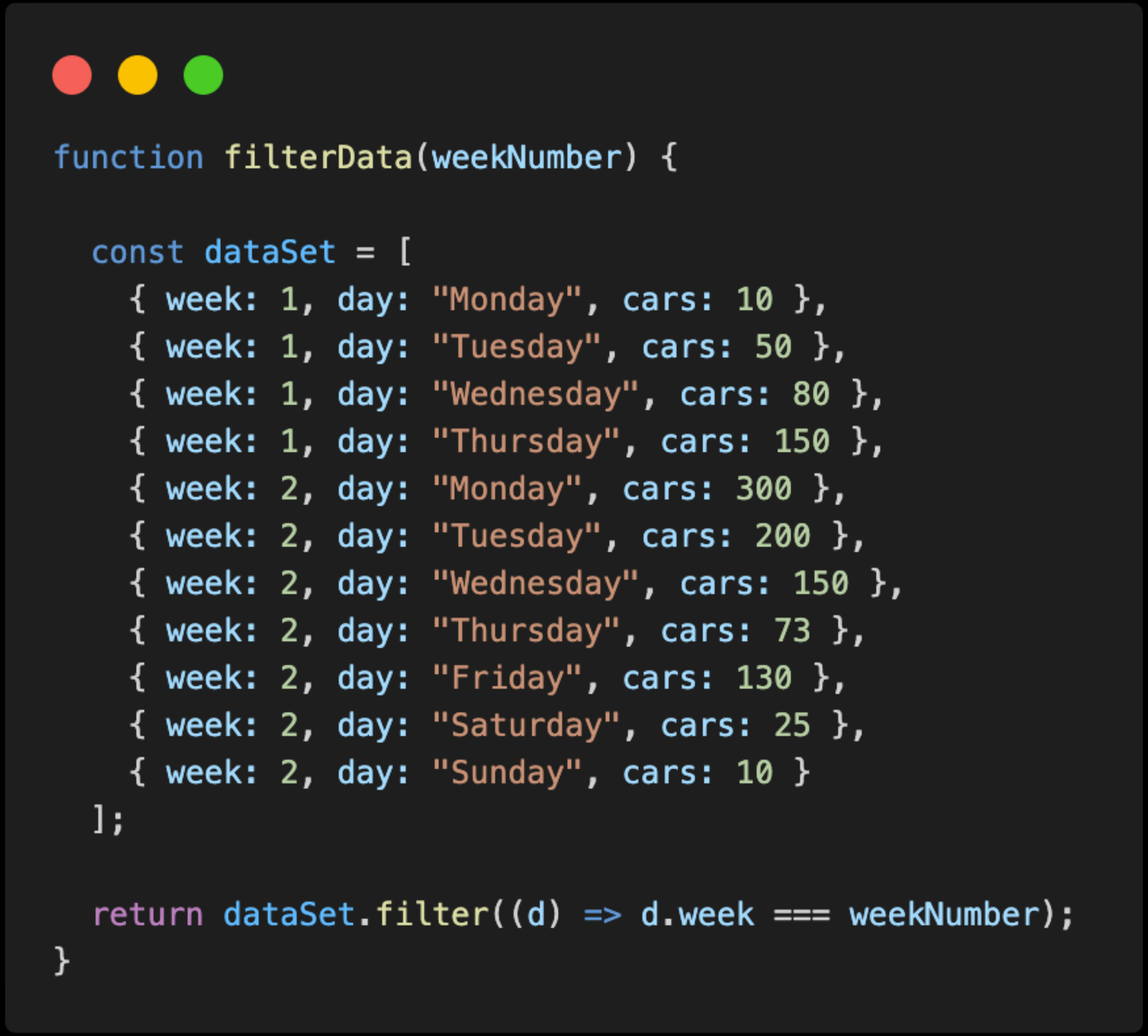
https://codepen.io/vijnv/pen/RwJKBeO



Schedule

1. Events
2. **Filtering**
3. Enter / update / exit + transitions

Filtering

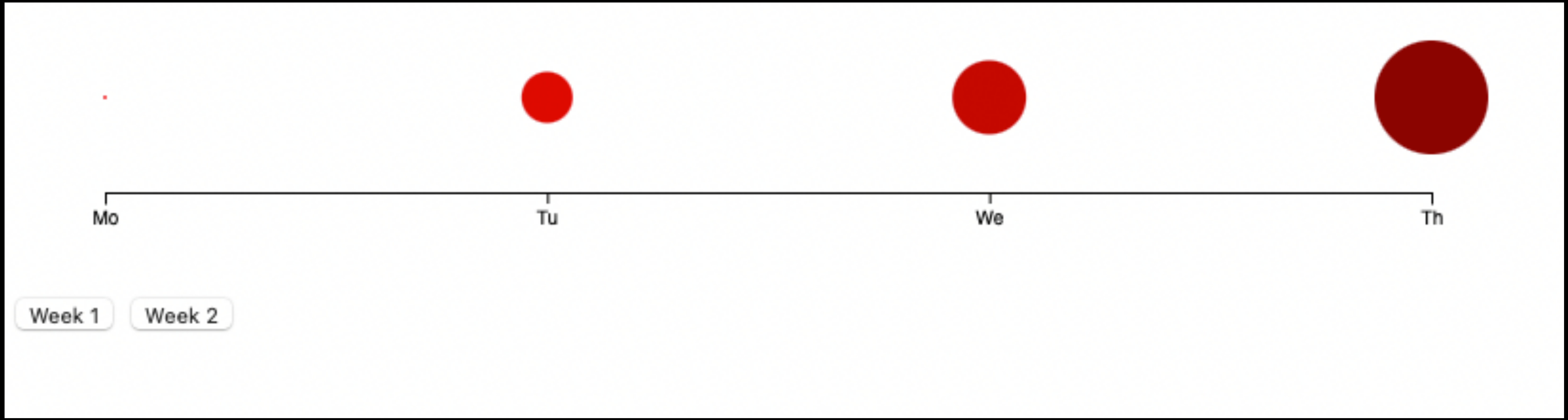


```
function filterData(weekNumber) {

  const dataSet = [
    { week: 1, day: "Monday", cars: 10 },
    { week: 1, day: "Tuesday", cars: 50 },
    { week: 1, day: "Wednesday", cars: 80 },
    { week: 1, day: "Thursday", cars: 150 },
    { week: 2, day: "Monday", cars: 300 },
    { week: 2, day: "Tuesday", cars: 200 },
    { week: 2, day: "Wednesday", cars: 150 },
    { week: 2, day: "Thursday", cars: 73 },
    { week: 2, day: "Friday", cars: 130 },
    { week: 2, day: "Saturday", cars: 25 },
    { week: 2, day: "Sunday", cars: 10 }
  ];

  return dataSet.filter((d) => d.week === weekNumber);
}
```

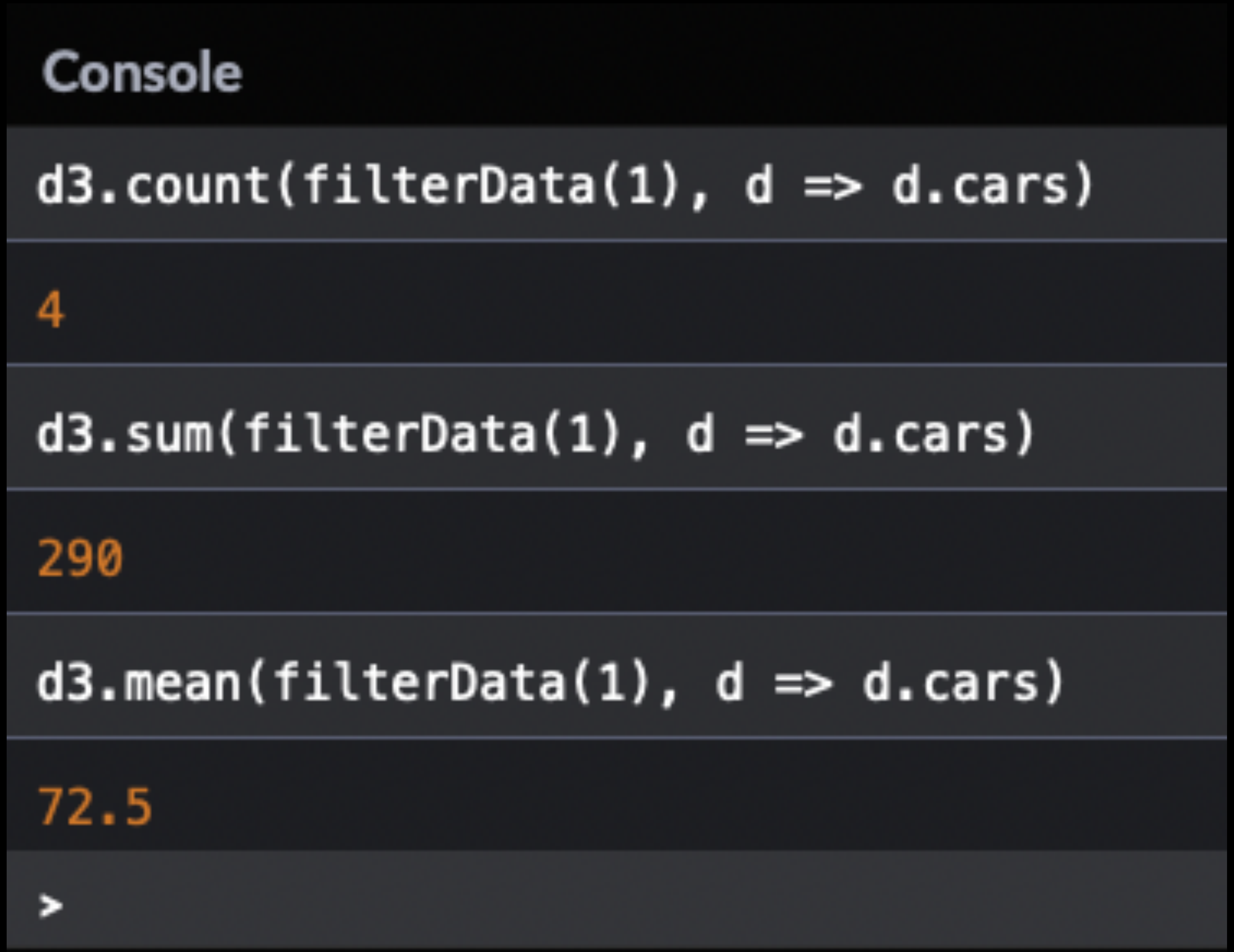
First check if your API supports filtering, but you can also filter client side using the Array.filter() function

Filtering demo

https://codepen.io/vijnv/pen/WNypBQd



Aside: Array statistics

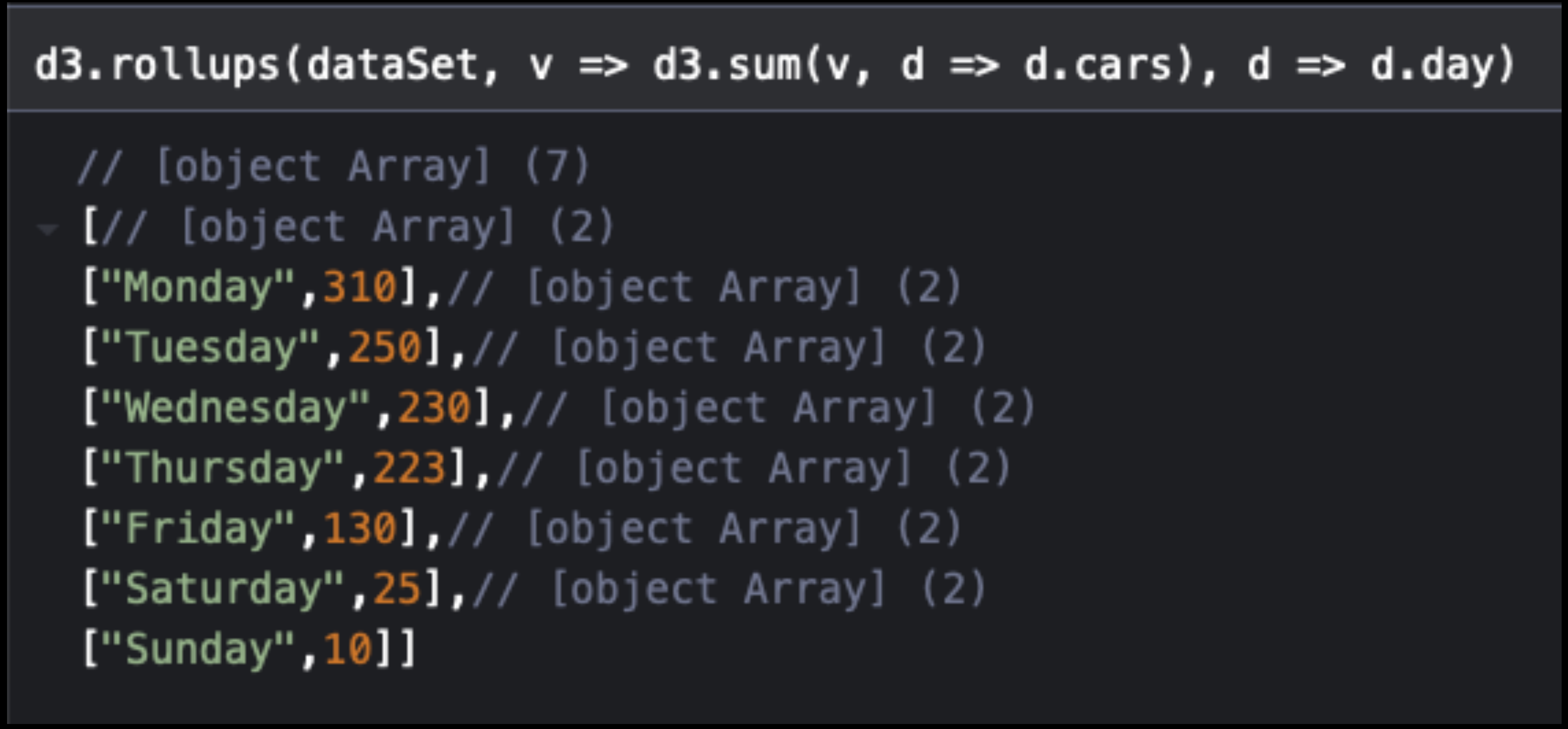


```
d3.count(filterData(1), d => d.cars)
4
d3.sum(filterData(1), d => d.cars)
290
d3.mean(filterData(1), d => d.cars)
72.5
>
```

D3 has a lot of extra array functions that help you calculate things in your dataset or to create pivot tables

https://github.com/d3/d3-array/blob/v3.2.0/README.md

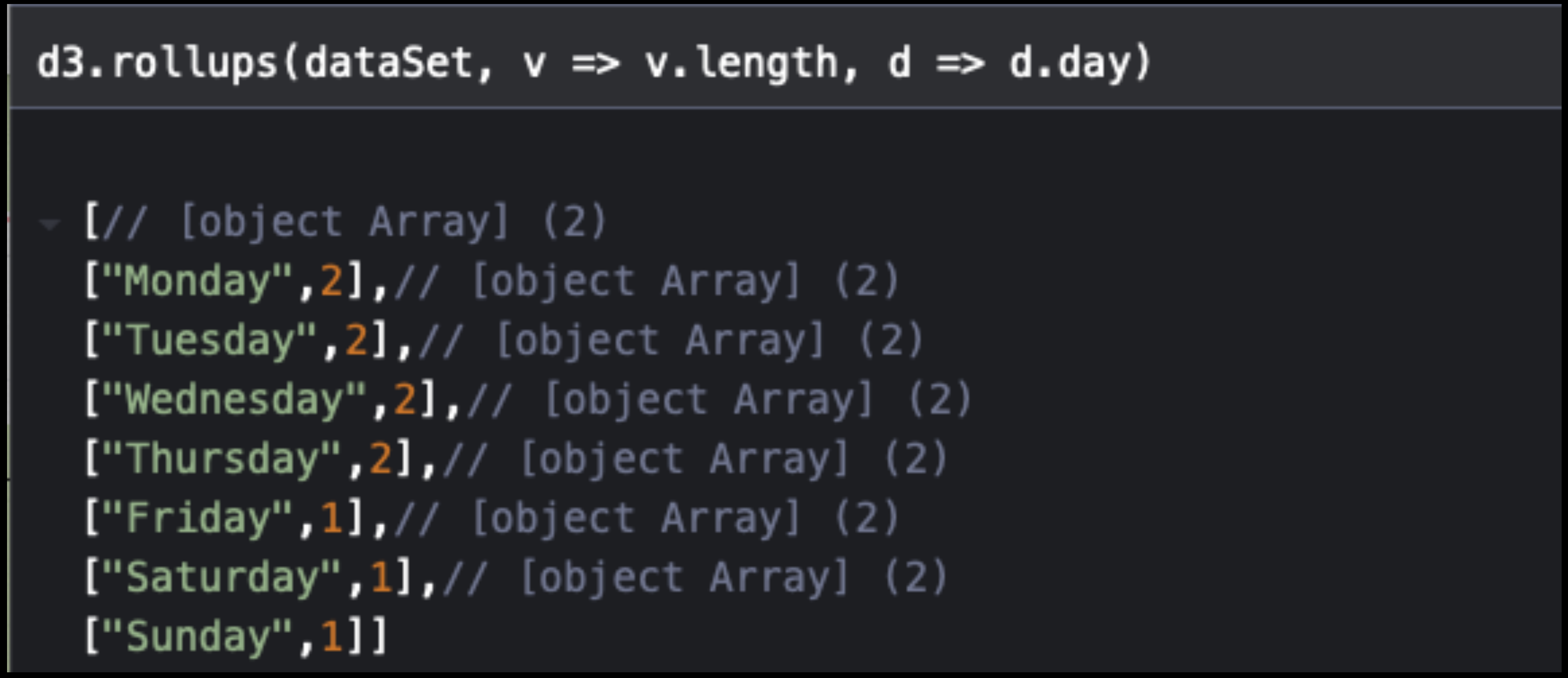
Aside: Pivot tables



```
d3.rollups(dataSet, v => d3.sum(v, d => d.cars), d => d.day)
```

```
// [object Array] (7)
[// [object Array] (2)
["Monday",310],// [object Array] (2)
["Tuesday",250],// [object Array] (2)
["Wednesday",230],// [object Array] (2)
["Thursday",223],// [object Array] (2)
["Friday",130],// [object Array] (2)
["Saturday",25],// [object Array] (2)
["Sunday",10]]
```

How many cars do we have in total on a weekday for both weeks?



```
d3.rollups(dataSet, v => v.length, d => d.day)
```

```
[// [object Array] (2)
["Monday",2],// [object Array] (2)
["Tuesday",2],// [object Array] (2)
["Wednesday",2],// [object Array] (2)
["Thursday",2],// [object Array] (2)
["Friday",1],// [object Array] (2)
["Saturday",1],// [object Array] (2)
["Sunday",1]]
```

How often does a weekday appear in our dataset?

https://codepen.io/vijnv/pen/qBKreyv?editors=0012

https://observablehq.com/@d3/d3-group

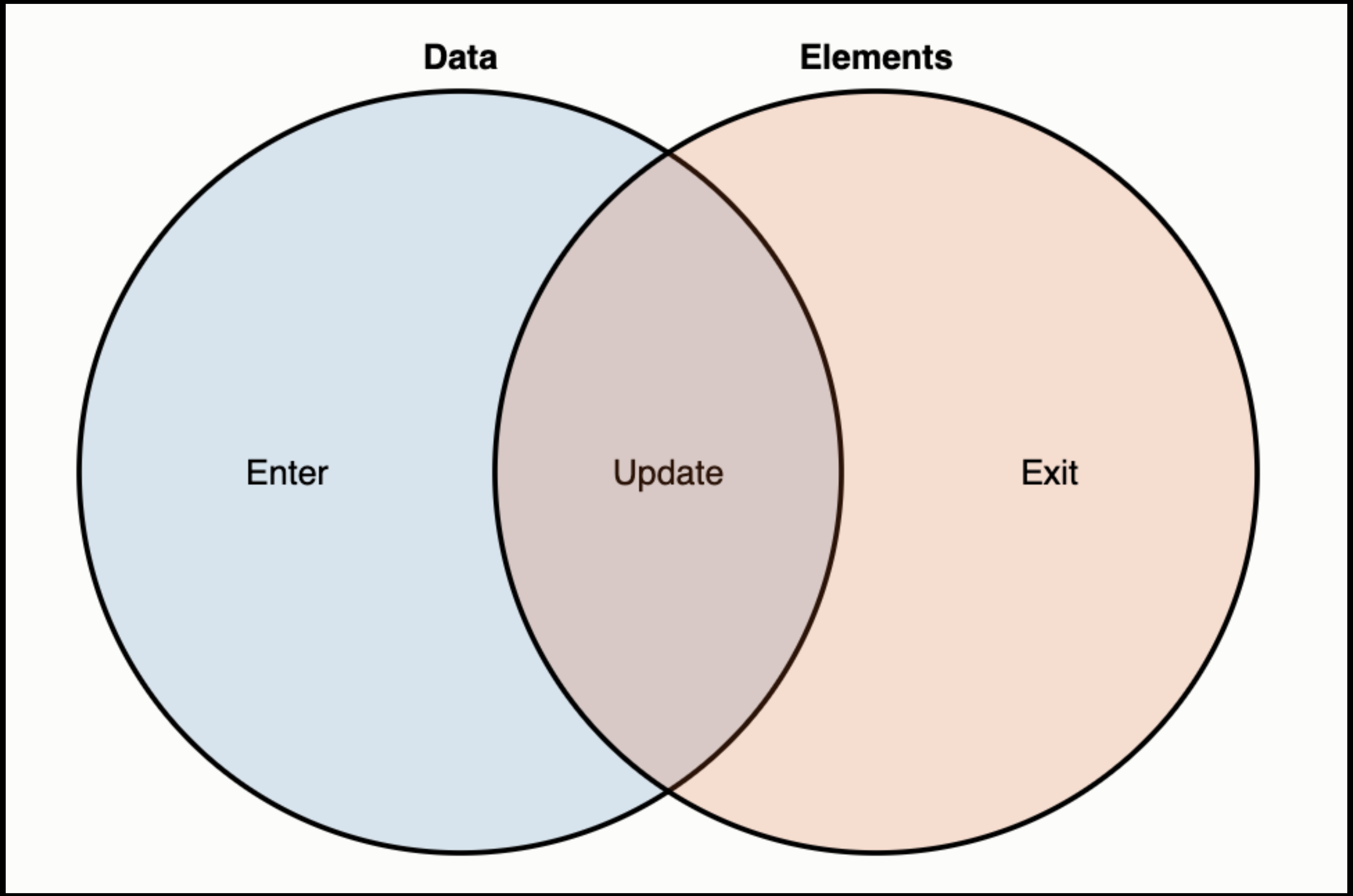
Schedule

1. Events

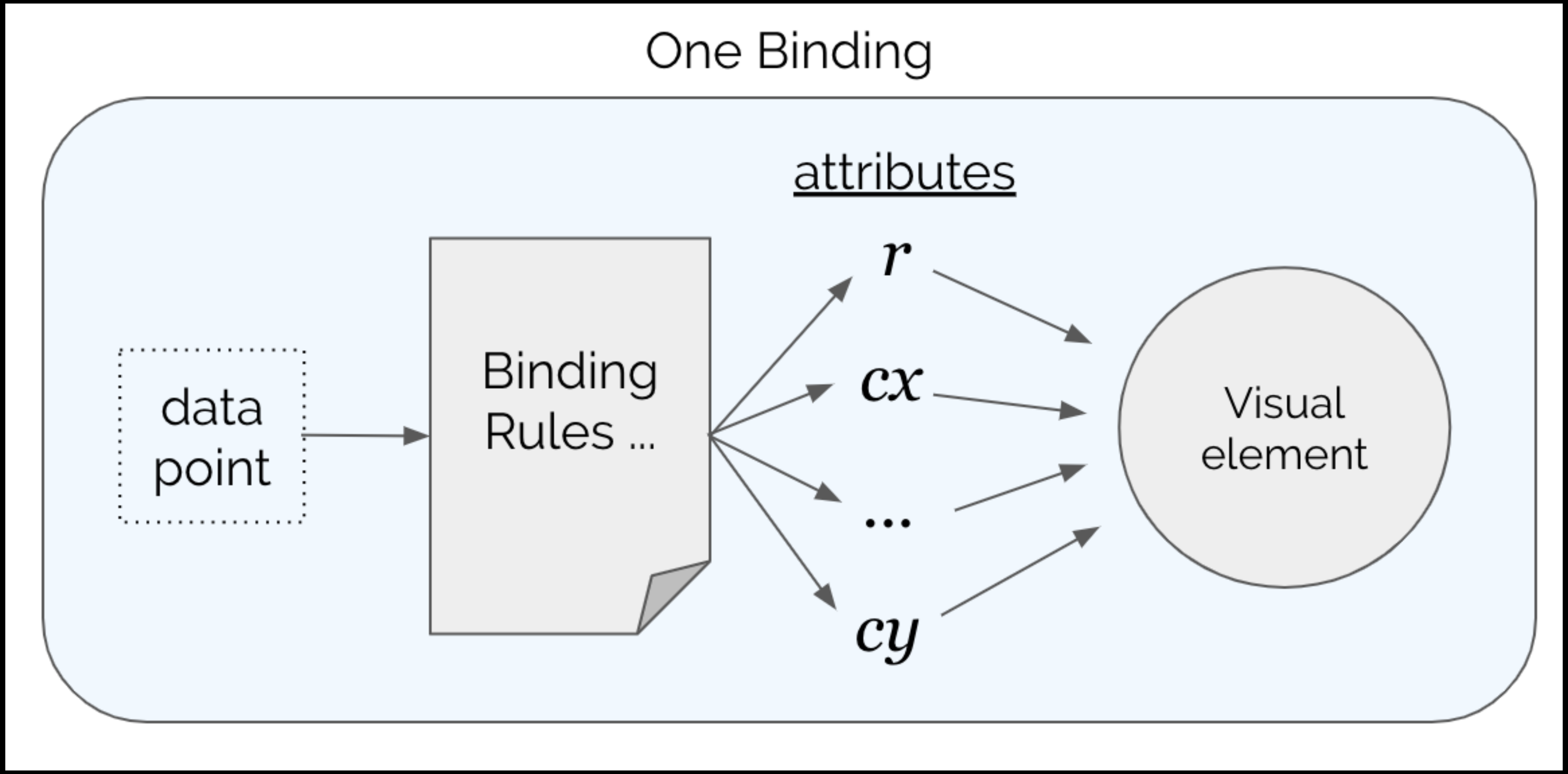
2. Filtering

3. **Enter / update / exit**

`enter() update() exit()`



`enter() update() exit()`



enter() update() exit()

1. The enter function parameter is the enter selection which represents the elements that need to be created

2. The update function parameter is the selection containing the elements that are already in existence (and aren’t exiting).

3. The exit function is the exit selection and contains elements that need to be removed

enter() update() exit()

Livedemo in codepen

https://codepen.io/robertspier/pen/Poamowa

https://codepen.io/robertspier/pen/RwJpmBg

https://codepen.io/robertspier/pen/XWYMdPb

```
Uncaught SyntaxError
Unexpected end of input
```