Rick van Bork
Std. nr: 11990503

Questions

How can D3 access and change the DOM? What do select and selectAll do?

The D3 library has an append() method. The tag type and some basic attributes can be described with other methods. However, everything must be added to a container before it can be appended to the DOM. Here we must describe the node ('head', or 'body') where the tag should be added.

select(), selects the first element that matches the D3 query. selectAll(), selects ALL elements that match the D3 query.

What are the d and i in function(d) {} and function(d, i) {}?

These are variables coupled to a dataset that can be used in D3 code to dynamically create or alter tags. Usually, d is a dataset describing values for the attributes of the tag, such as an array of font sizes or text colors. tags are tied to a dataset by the select('tag').data('varName'). Then the function runs for each element, returning some value. E.g. function(d){return d;}, may return a value from a list Object, iterating for each single element.

The way this value is used is by returning it after an attribute description, e.g. x.style('font-size', function (d) {return d + 'px';}). If d is an integer, the pixel size is altered for the selection of x elements.

Write sample lines of JavaScript to add a div element with class "barChart1" and to add an svg element with class "barChart2" with square dimensions.

```
> d3.select('body').append('div')
        .attr('class','barChart1')

> d3.select('body').append('svg')
    .attr('class','barChart2')
    .attr('width',100)
    .attr('height',100)
```

Describe append, update, enter, and exit at a high level. What does "selectAll + data + enter + append" refer to?

append(), *adds a tag* to the DOM *after* the tag previously selected. Thus the appended tag is turned into a child of the previously selected tag, the '*container*'.

update(), var barUpdate = bar.data(data);
This makes it easy to update the bar chart to fit new data. bar is the entire chart area, and all elements within it. So if the dataset grows, the amount of elements can more easily be changed.

enter(), takes the difference between a select() method and the amount of items in a data set. This can be used to create new tags for unmatched data with the append() and insert() methods.

exit(), when given more tags that items in a data set, selects the unmatched items. Often coupled to remove() to remove the unmatched tags.

“selectAll + data + enter + append”, refers to the creation of new tags. The amount of new tags created, when given a dataset, depends on the amount of selected tags in the beginning by selectAll, and the amount of items in the dataset.

What are the main differences between drawing a bar chart with HTML and SVG?

Using div’s in HTML to encode the bars is not a great way to tackle things, SVG’s are more dynamic, and are also scalable without resolution loss.

In drawing the simple bar chart with D3 and SVG, what elements were appended, and what parts of the graph did these elements correspond to?

In the blogpost, the author adds several elements:

1. He starts from a hardcoded *svg element* with the class, “chart”.
    - This refers to the area the bar chart can occupy.
2. Then a *g element* with a transform and translate attribute is appended to the first element
    - This tag offsets the entire bar chart to the right and down.
3. Next *two g elements* are appended to the first g element
    - These are for the axes, drawn by a method within d3
4. Then *multiple rect elements* are appended
    - These are represent the bars with corresponding heights, widths, and position along the x-axis.