

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

D3 creates elements that are added to a container (div in html) (so the dom).

“select” selects an element which can be changed with d3. This happens one at a time.

“selectAll” selects all elements that match the clause, to manipulate all elements at the once.

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

d is a datapoint: when a function returns d, it returns the result of an operation to the corresponding data point.

i is the current iteration, which represents the order of the element selection.

3. 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").html("graph").attr("class", "barChart1");
```

```
var svg = d3.select("body").append("svg")  
  .attr("class", "barChart2")  
  .attr("width", width)  
  .attr("height", height);
```

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

update: matches elements with data points.

enter: prepares the desired number of elements, which is calculated from the difference between the number of data points and the number of elements already in place. 'preparing' the elements means setting them up for creation (which happens in the next command), not actually creating them now.

exit: also calculates the number of 'unmatched elements', so elements that are created but not linked to a data point. exit selects those, and then you can manipulate them.

The command given above refers to the elements we want to create (we select all of a given element) with our data. They are not created yet, so we have unmatched data/elements, therefore we create (append) those 'missing' (/unmatched according to 'enter') elements.

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

Contrary to HTML charts, an SVG (scalable vector graphic) does not lose any quality if they are zoomed or resized (it is in the name, scalable) Also, elements can be animated, which is cool.

6. 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?

Elements that were appended	Parts of the graph those elements correspond to:
svg	The canvas for the whole graph
g	Appended to svg. g = grouping element where other 'layers' can be attributed to. Think of axes and titles.
text	Appended to g. text forms the axes ticks and titles, the graph title, etc.
rect	Appends to svg. Forms the actual bars.