

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

D3 allows us to manipulate DOM elements in the HTML document, D3 is a JavaScript code so you can write all your D3 code within <script> tag.

The d3.select() method returns the first element in the HTML document based on specified css-selector. Whereas, the d3.selectAll() method returns all the matching elements in the HTML document based on specified CSS selector.

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

The associated data values.

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.

```
var newDiv = document.createElement("barChart1");  
and  
d3.selection.attr("width", "50").attr("height", "50");  
d3.select(".svg_by_d3").append("barChart2");
```

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

**Append:** Adds an element inside the selected element but just before the end of the selected element.

**Update:** For data items that are already represented by a bar in the bar chart (the update selection), this bar’s height is updated according to the linked datum’s value.

**Enter:** When our dataset contains more items than there are available DOM elements, the surplus data items are stored in a sub set of this selection called the *enter* selection. For data items that don’t have a bar yet (the enter selection), the bar element is created and attached to the chart, and the height updated accordingly.

**Exit:** By the same token, we can remove items from the data set and let D3 deal with the corresponding DOM elements or, following our room/chair metaphor, take away those chairs that aren’t needed anymore because some guests decided to leave.

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

Whereas HTML is largely limited to rectangular shapes, SVG supports powerful drawing primitives like Bezier curves, gradients, clipping and masks.

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?

Since there is exactly one rect and one text element per g element, we can append these elements directly to the g, without needing additional data joins.