CS 571 - Data Visualization & Exploration

Advanced D3

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Upcoming Dates

Apr 11: Project Milestone

Homework 3 ~~will~~ should be released on Mar 31 (Due Apr 11)

Quiz 4 released today Mar 27 at 3pm Eastern Time (Due Mar 31 at 11:59pm)

D3 Selections

We can select elements from the DOM using

- **d3.select()** to select the first element that matches
- **d3.selectAll()** to select all elements that match

For example:

- d3.select(“p”) selects the first p element
- d3.selectAll(“.hat”) selects all elements with class = “hat”

If you log a selection to the console, you should see that it has two properties:

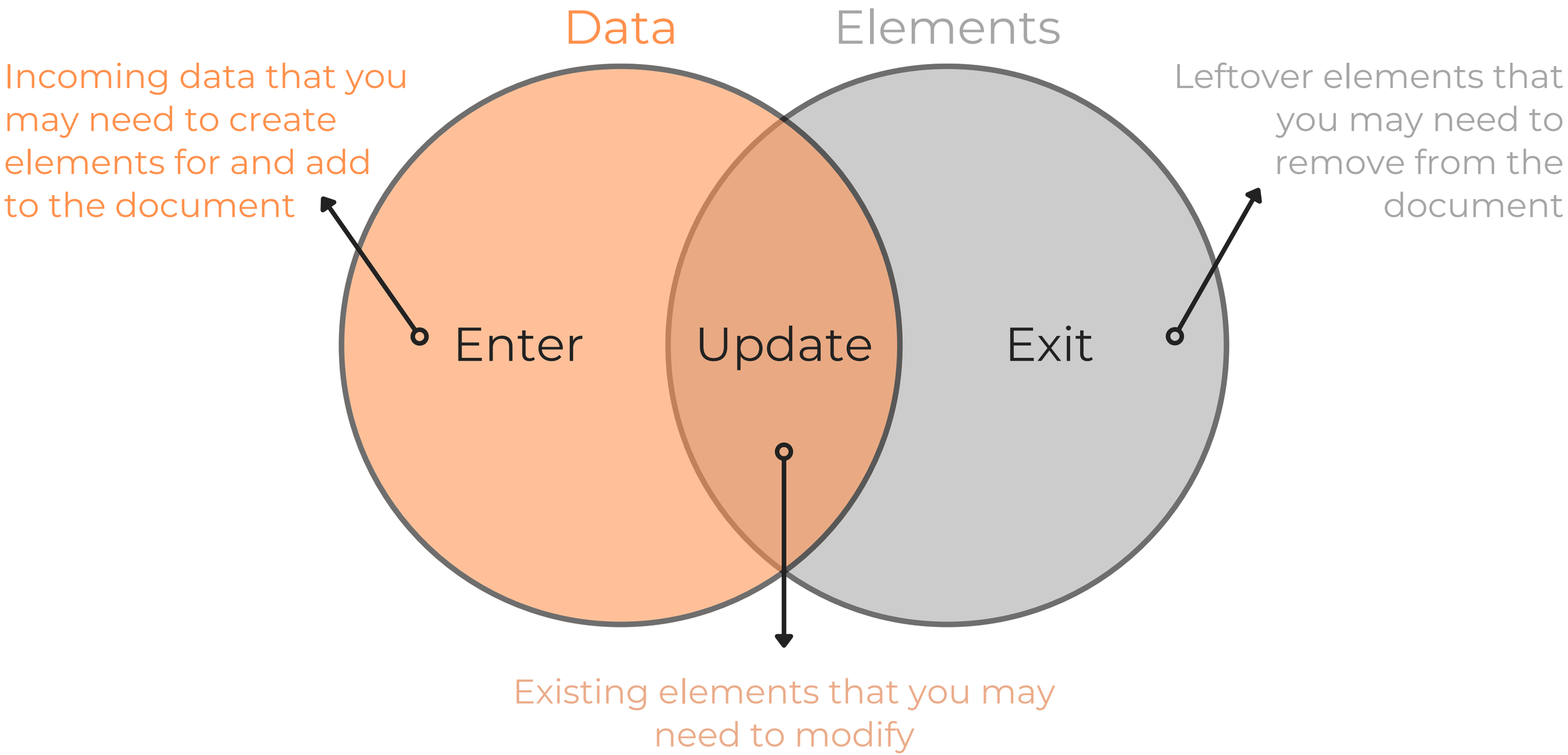
- **_groups** (array containing the elements that were selected)
- **_parents** (array containing the parent elements of the selection)

D3 Selections and Data

We can map data to our selections using the **.data()** function

Logging the selection after mapping will reveal that the selection has additional properties:

- **_enter** (a list of the Data elements that don’t have a corresponding DOM element)
- **_exit** (a list of the leftover DOM elements that don’t have a corresponding Data element)


Data
Elements
Incoming data that you may need to create elements for and add to the document
Leftover elements that you may need to remove from the document
Enter
Update
Exit
Existing elements that you may need to modify

D3 Transitions

Transitions are baked into D3! To specify them, use:

- **selection.transition()**

We can specify:

- .**duration(ms)** - how long to transition for
- .**delay(ms)** - how long to wait before transitioning

Let’s use transitions to **update our simple interactive bar chart**

D3 Groupings

Like in Homework 2, we often want to create groups to apply the same transformations to marks and their text labels

Let’s see how this is done with our interactive bar chart

Scaling

We will often have data with values that don’t map perfectly to coordinates on the svg.

In this case, we might try creating a function that scales our data values to coordinates (e.g., x => x * 20)

But there are a lot of possible ways you might want to scale your data:

- You might want to scale your data linearly, or with a log scale,
- You might want to map categorical data to different colors
- And much more..

D3 Scales

D3 gives us several powerful tools we can use to scale all types of data attributes:

- **d3.scaleLinear()** for simple linear transformations of quantitative data
- **d3.scaleLog()** for log transformations
- **d3.scaleOrdinal()** for categorical and ordinal data
- **d3.scaleBand()** for histograms and bar charts
- **d3.scaleTime()** for time-series data

FIN

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