

Lab 3: d3

Visualizations are best when shared widely. In this lab we're going to cover the basics of the data-driven-documents (d3) Javascript library, and you'll produce a basic visualization and put it on the web.

You may work together on this project, but your code must be your own and you must submit individually.

If you're new to d3, in this lab you'll be building an "interactive" rectangle. D3 is very different from Processing, so there are a few concepts to learn. In particular, you will become familiar with the differences between SVG and Canvas, as well as Javascript and Java. Interaction is also handled differently in the browser, so you'll add simple mouseover and mouseout events to your "visualization".

If you're already familiar with d3, you'll be identifying a concept or technique that you haven't already used and implementing and analyzing it for your lab. Examples include some of the d3.layouts, or fully exploring d3.scales, geospatial (map) visualization, etcetera.

Requirements

Basic Requirements for This Lab:

- D3 is a library, so there's nothing to install:
 - Create an index.html file and add the d3 library (see [here](#))
 - Open the index.html in both a text editor and in a browser, either locally or (better) through a server.
 - Once that's done, modify the index.html file and refresh the browser to see updates.
- Between `<script>` tags at the bottom, do the following using d3:
 - Setup your visualization (the svg) to be of size 400x300.
 - * Do this by appending an and setting the width and height attributes.
 - Draw a rectangle by appending a `<rect>`. The rectangle needs to be:
 - * Of size $\frac{1}{2}$ svg width x $\frac{1}{2}$ svg height,
 - * Centered around the center of the svg,
 - * Colored (filled) with a color of your choosing (call this color C1).
 - * In addition, draw a text label in the center of the box. The text can say anything of your choosing (call this text label T1)
 - Track the user's mouse click, such that when the user clicks on the rectangle with the mouse, the rectangle's properties need to change to:

- * Size 1/3 svg width x 1/3 svg height
 - * (still Centered around the center of the canvas)
 - * Colored (filled) with a different color than C1 (called this new color C2).
 - * The text label (T2) needs to be changed to something other than T1.
 - * HINT: You can add behavior to the by using `.on('click', functionToChangeRect)` when building the attributes.
- Should the user click on the (smaller) rectangle, the rectangle needs to revert to the properties described in 2.b.

Optional Features

Assuming that you complete the above requirements before the end of the class, or if you'd like to play with this lab further on your own, here are some things to try out:

- Instead of cycling through 2.b and 2.c, add another rectangle into the cycle. For example, for the third rectangle, make it:
 - 1/4 svg width x 1/4 svg height
 - Different color (C3), and different text (T3)
- Add animated transitioning between the three states (see d3 Transitions)
- Make a bar chart: Refer to Mike Bostock's "Let's Make a Bar Chart" tutorials ([link](#)) for step by step instructions.

Resources

- [D3 Introduction](#)
- [D3 Server Options](#)
- [D3 API](#)
- [D3 Examples](#)
- [SVG Element Reference \(rect, circle, etc.\)](#)

Turning in the project

Submit a link to your running code (not the repo) on myWPI.

Grading

This lab is graded on a 100 point scale. Points will be deducted for missing any of the key requirements (e.g. interaction).