ARTG5330 Visualization Technologies

Assignment 2

Due: 5:00PM Wednesday October 15

Description

In this assignment, we will exploring drawing a scatterplot with D3.

From Wikipedia, a scatter plot is a kind of data visualization where "*[t]he data is displayed as a collection of points, each having the value of one variable determining the position on the horizontal axis and the value of the other variable determining the position on the vertical axis.*" Frequently, these are used to explore potential correlation between two variables.

The data set we will use come from the World Bank (databank.worldbank.org), and contains information on various development indicators for over 200 countries and territories of the world.

Objectives

- Get hands-on practice on how a visualization program can be structured along the Ben Fry seven-step pipeline;
- Practice importing and parsing data using d3.csv;
- Practice mining data using d3.max and d3.min, and setting up scales using d3.scale;
- Get more practice on drawing with SVG, and joining data to DOM elements using selection.data;
- [Bonus]: drawing axes.

Task 1: Importing Data

Download assignment boilerplate code, and observe its content. You'll see that the basic skeleton has been set up as follows.

You have everything you need in terms of HTML, CSS, and JavaScript libraries to get started. For now, you can concentrate on the first task, which is importing the data file "world_bank_2010.csv" from the "data" folder.

Hint:

The documentation for d3.csv states that the syntax for the function is (see reference here https://github.com/mbostock/d3/wiki/CSV):

```
d3.csv(url[, accessor][, callback]
```

Where accessor and callback are both functions. The challenging part will be writing these functions. Read the documentation carefully, paying particular attention to the example. The accessor function expects one argument as the unparsed row, and you need to return the parsed row as an object.

Task 2: Mining

Once the data is loaded, the callback function is called. In this function, you need to do some basic data mining for the imported data. You need to find out both the max and min values of the x and y dimensions, and the point of this is so that you can determine how to "map" data from their existing values (the domain) to screen coordinates (the range).

Use the functions d3.max and d3.min to determine maximum and minimum values in an array. The documentation can be found here:

https://github.com/mbostock/d3/wiki/Arrays#d3_max

Once you have these values, you can set up a scaling function that maps data value to screen coordinates. The way to initiate and use a linear scaling function can be found here:

https://github.com/mbostock/d3/wiki/Quantitative-Scales

Task 3: Data Joining and Drawing

Now you have everything you need to draw the scatter plot! In the same way that we have done this class, write a function that takes the data array as an argument, and draw the scatter plot with data join.

Task 4: [Bonus] Drawing Axes

Scatter plots have little informational value unless we provide an axis. We haven't covered this in class, but you can attempt it yourself with the help of this example:

https://github.com/mbostock/d3/wiki/SVG-Axes

We'll take up the example during a work session in the week of October 10.

Task 5: Submission

You can submit this assignment in one of two ways:

- Commit and upload your directory to Github, and send me the url to your repository;
- Send the entire project, as a zipped folder, to me by email.

Either way, the email subject line should be "**ARTG5330 Assignment 2" + your last name**.