**Lab Setup**

Latest versions of:

1. Visual Studio Code

2. Node JS

3. Chrome Browser

\*Direct internet connection without proxy

**TOC**

The Data Visualizations

What is D3.js

When use D3.js

The Data Visualization Process

The Ben Fry Visualizing Data Process

Acquire

Parse

Filter

Mine

Represent

Refine

Interact

Basic Building Blocks

Modern Browsers

HTML

CSS

JavaScript

Document Object Model (DOM)

Scalable Vector Graphics (SVG)

Web Inspector

Get Started with D3.js

HTML Setup

D3.js Setup

Source File Setup Test

JavaScript Console Setup Test

Adding a DOM element

Select Method

Append Operator

Adding an SVG element

Legibility

Style Operator

Chain Syntax

Selections as JavaScript Variables

Binding Data to DOM Elements

SelectAll Method

Data Operator

Virtual Selections (Thinking with Joins)

Enter Method

Append Operator Revisited

Text Operator

Where did the Data go?

Using Data Bound to DOM Elements

Text Operator Revisited

JavaScript Functions in D3.js Operators

Variables Available inside D3.js Operators

Creating SVG Elements Based on Data

Create an SVG Element to Hold SVG Elements

SVG Circle Elements

Bind Data to SVG Circles

Use Bound Data to Alter SVG Circles

Styling SVG Elements Based on Data

Using the SVG Coordinate Space

Mathematical / Graph Coordinate Space

SVG Coordinate Space

.append('svg') as a Coordinate Space

Position SVG Elements in the SVG Coordinate Space

Create an SVG Element to Hold SVG Elements

Bind Data to SVG Circles

Use Bound Data to Alter SVG Circle Coordinates

Styling SVG Elements Based on Data Revisited

Data Structures

What we have seen thus far

Selections are Arrays

Loading External Data Resources

JSON

Array of JSON Objects

Using JSON to Simplify Code

Previous Example of Three Circles

Bind JSON Objects to the \_\_data\_\_ Attribute

Use Bound JSON Objects to Alter SVG Elements

Drawing SVG Shapes

SVG Paths

The Shape to Make All Shapes

SVG Path Example

SVG Path Mini-Language

Path Data Generator Line Example

Path Data Generators

Dynamic SVG Coordinate Space

Three SVG Rectangle Example

Manually Adjusting SVG Container Space

Dynamically Adjusting SVG Container Space

The Finished Product

D3.js Scales

D3.js Scales

D3.js Scale Linear

D3.max

D3.min

Other D3.js Scales

SVG Group Element

SVG Group Element

Grouping SVG Elements Together

Transforming SVG Elements Together

SVG Transform Attribute

SVG Transform as a Coordinate Space Transformation

Grouping SVG Elements

Transforming SVG Elements Together

SVG Text Element

SVG Text Element

Adding an SVG Text Element

SVG Text Element

Axes

Axis Component

Why We Add Axes

Horizontal Axis and Vertical Axis

Scale of Axis

Axis in D3.js

Calling the D3.js Axis Function