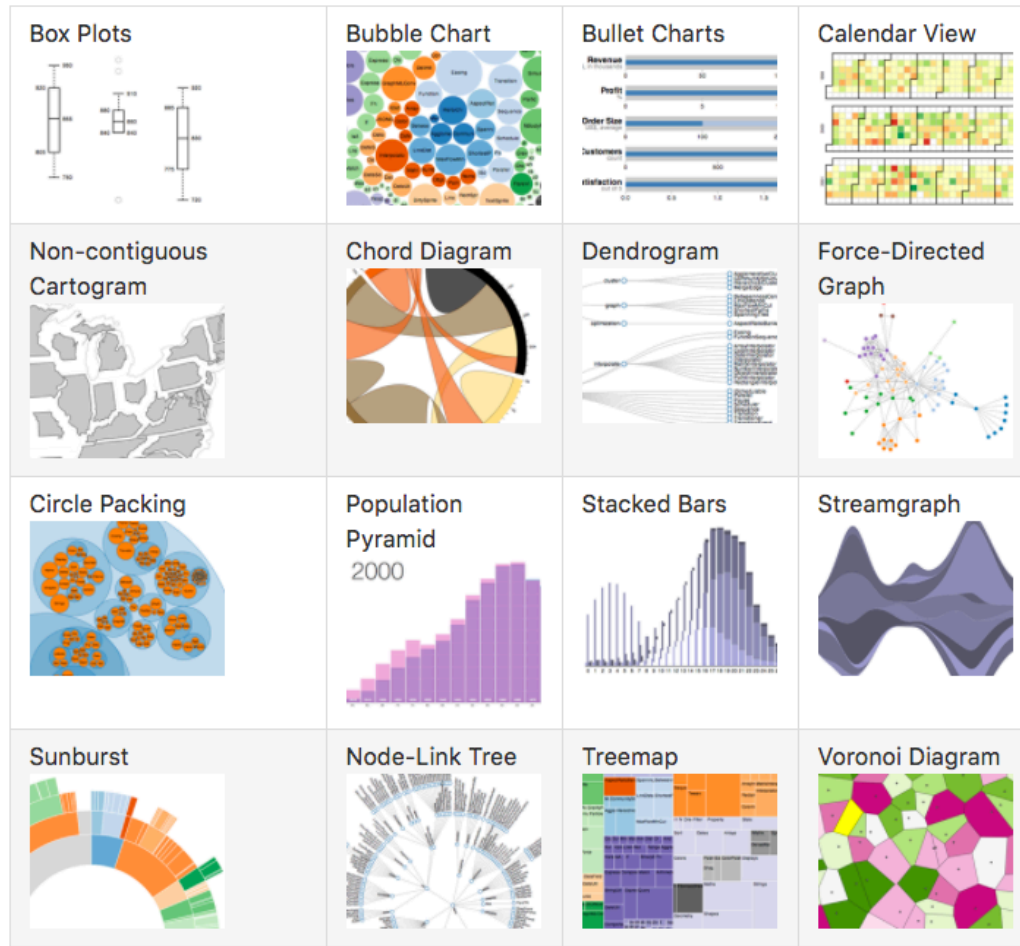


Introduction to D3

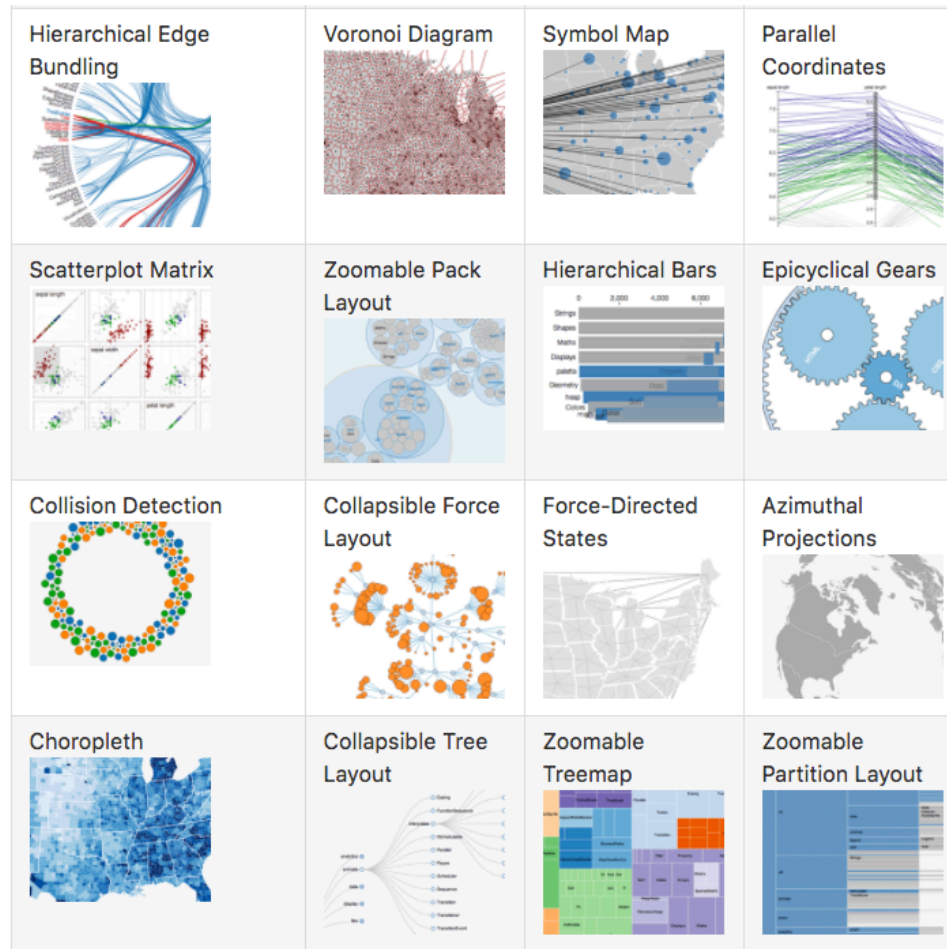
D3's Data Model

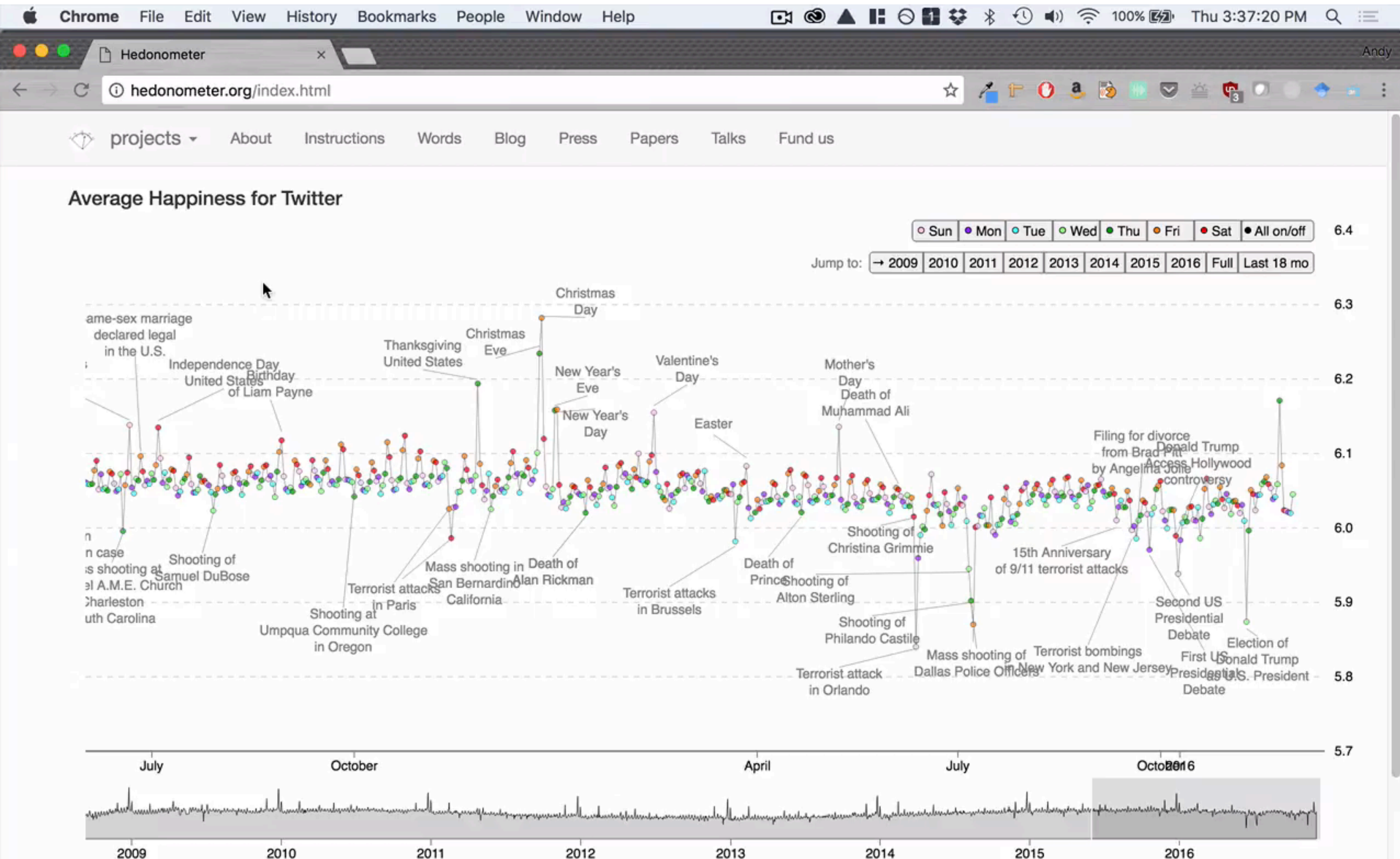


What Can D3 Build?



What Can D3 Build



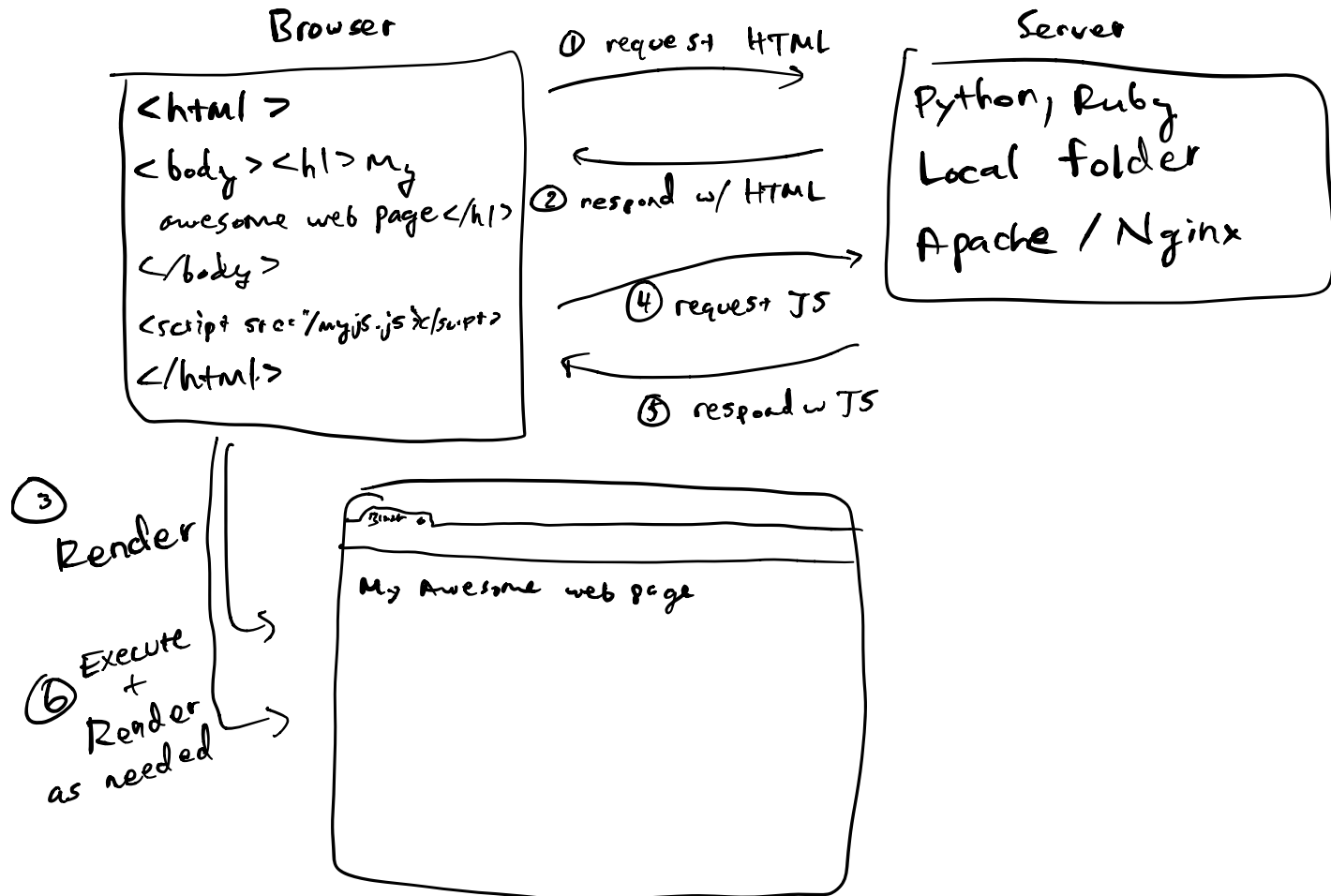


D3 Technologies

- HTML
- CSS
- JS
- SVG
- The DOM

Web Programming 101

We ended up with this:



Getting Started With D3

```
<!doctype html>

<html lang="en">
<head>
  <meta charset="utf-8">

  <title>D3 Template</title>
  <meta name="description" content="">
  <meta name="author" content="">

  <link rel="stylesheet" href="css/style.css">
  <script src="https://d3js.org/d3.v4.min.js"></script>
  <!--[if lt IE 9]>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/html5shiv/3.7.3/html5shiv.js"></script>
  <![endif]-->
</head>

<body>
  <script src="js/myviz.js"></script>
</body>
</html>|
```


Getting Started

```
<!doctype html>

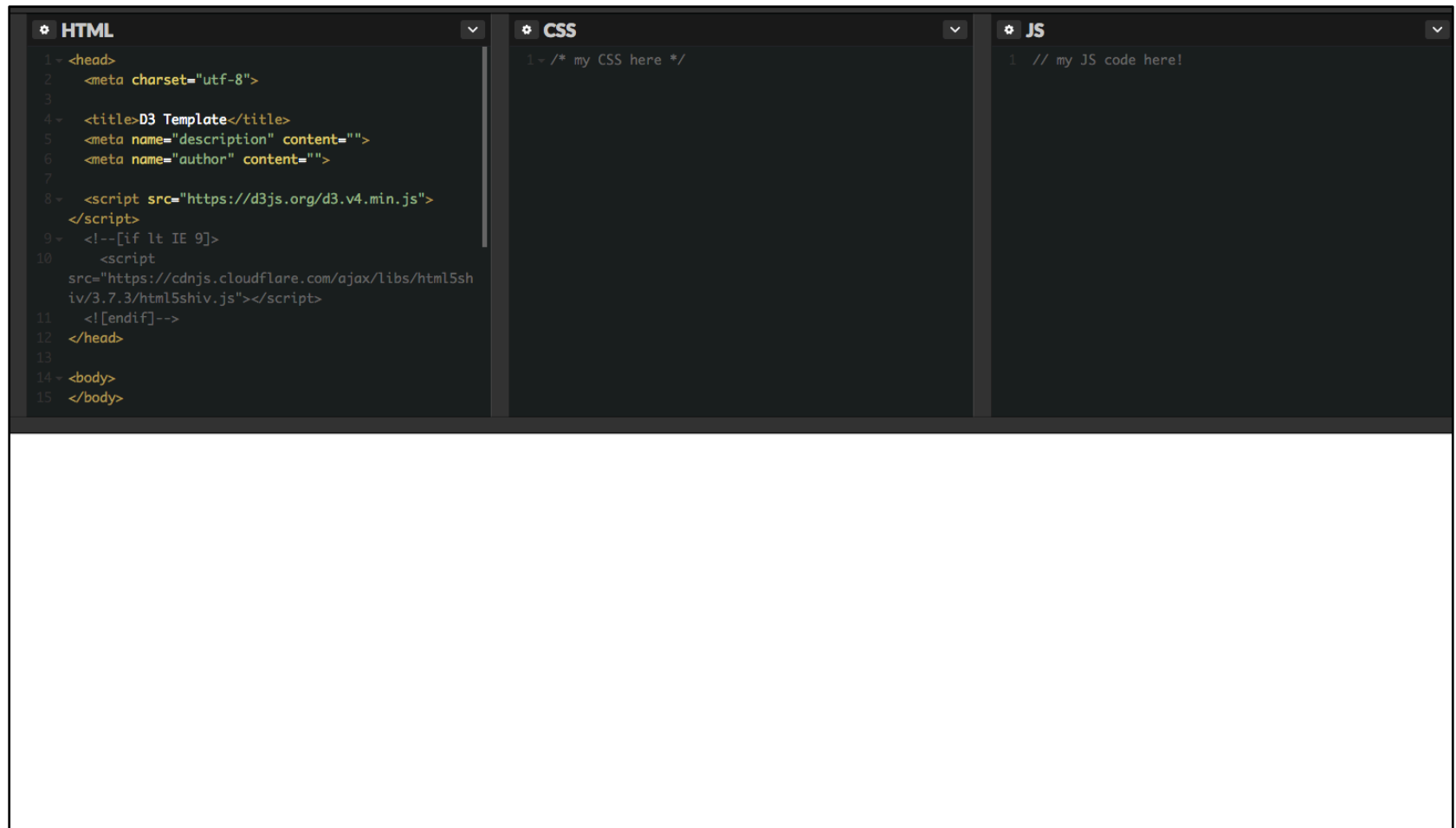
<html lang="en">
<head>
  <meta charset="utf-8">

  <title>D3 Template</title>
  <meta name="description" content="">
  <meta name="author" content="">

  <style>
    /* my CSS here */
  </style>
  <script src="https://d3js.org/d3.v4.min.js"></script>
  <!--[if lt IE 9]>
    <script src="https://cdnjs.cloudflare.com/ajax/libs/html5shiv/3.7.3/html5shiv.js"></script>
  <![endif]-->
</head>

<body>
  <script type="text/javascript">
    // my JS code here!
  </script>
</body>
</html>
```

How This Works in CodePen



The image shows a screenshot of the CodePen editor interface. It features three main panels at the top: HTML, CSS, and JS. The HTML panel contains the following code:

```
1 <head>
2   <meta charset="utf-8">
3
4   <title>D3 Template</title>
5   <meta name="description" content="">
6   <meta name="author" content="">
7
8   <script src="https://d3js.org/d3.v4.min.js">
9   </script>
10  <!--[if lt IE 9]>
11    <script
12      src="https://cdnjs.cloudflare.com/ajax/libs/html5shiv/3.7.3/html5shiv.js"></script>
13    <![endif]>
14  </head>
15  <body>
16  </body>
```

The CSS panel contains the following code:

```
1 /* my CSS here */
```

The JS panel contains the following code:

```
1 // my JS code here!
```

Below the code panels is a large white area representing the preview of the code. The interface has a dark theme with a light gray border around the code panels.

D3 Arrives at Version 4

D3 is made up of many, small modules

From the D3 API Ref:

<https://github.com/d3/d3/blob/master/API.md>

- Arrays (Statistics, Search, Transformations, Histograms)
- Axes
- Brushes
- Chords
- Collections (Objects, Maps, Sets, Nests)
- Colors
- Dispatches
- Dragging
- Delimiter-Separated Values
- Easings
- Forces
- Number Formats
- Geographies (Paths, Projections, Spherical Math, Spherical Shapes, Streams, Transforms)
- Hierarchies
- Interpolators
- Paths
- Polygons
- Quadrees
- Queues
- Random Numbers
- Requests
- Scales (Continuous, Sequential, Quantize, Ordinal)
- Selections (Selecting, Modifying, Data, Events, Control, Local Variables, Namespaces)
- Shapes (Arcs, Pies, Lines, Areas, Curves, Symbols, Stacks)
- Time Formats
- Time Intervals
- Timers
- Transitions
- Voronoi Diagrams
- Zooming

History: From Protovis to D3

Described in *D3: Data-Driven Documents*

<http://idl.cs.washington.edu/papers/d3>

Elaboration on the design of D3 API in *What Makes Software Good*

<https://medium.com/@mbostock/what-makes-software-good-943557f8a488>

How Not to Learn D3

Use only existing templates.

Let's Get Started

The most important module in D3 is the selection: `d3.selection()`.

D3 works by creating, updating, modifying, and removing selections.

Always reference the API docs when it's unclear: <https://github.com/d3/d3-selection>

Selecting an Element

```
var div = document.createElement("div");  
div.innerHTML = "Hello, world!";  
document.body.appendChild(div);
```

Selecting an Element

```
var body = d3.select("body");  
var div = body.append("div");  
div.html("Hello, world!");
```


Selecting (Many) Elements

```
var section = d3.selectAll("section");  
var div = section.append("div");  
div.html("Hello, world!");
```

Chaining Methods

```
var body = d3.select("body");  
body.style("color", "black");  
body.style("background-color", "white");
```

Chaining Methods

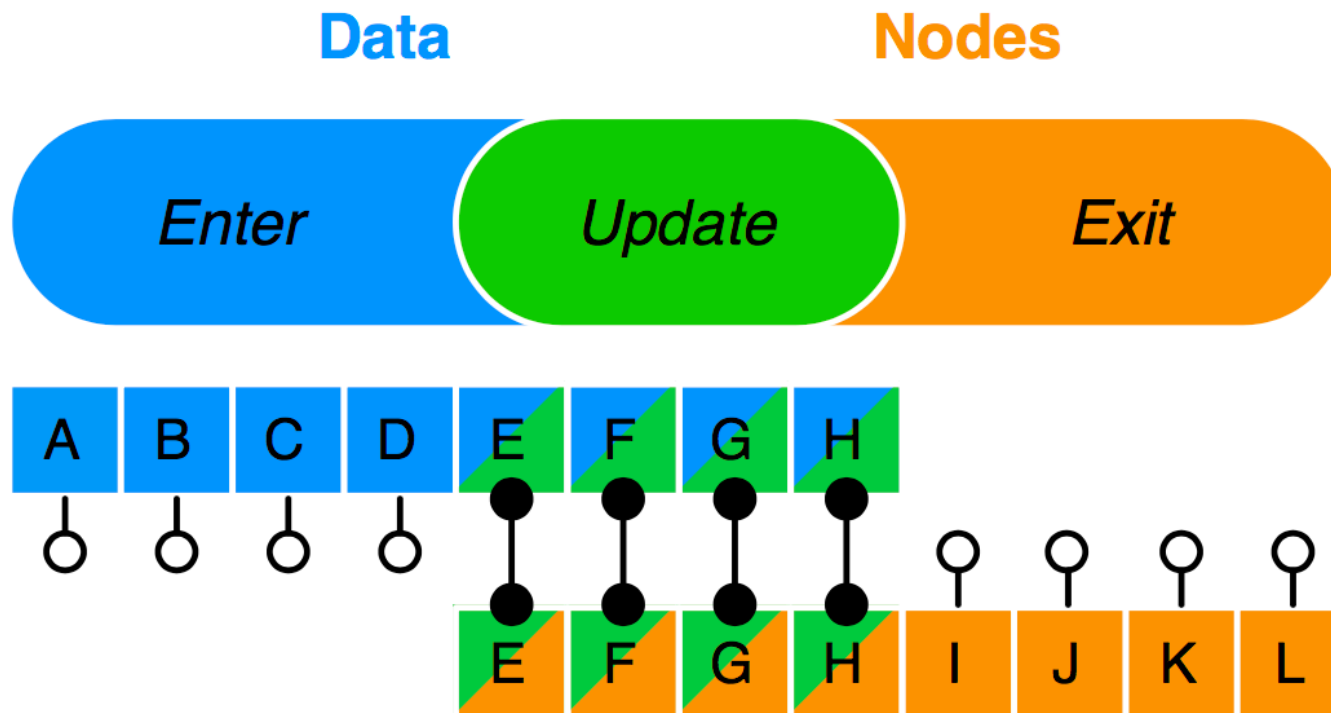
```
d3.select("body")  
  .style("color", "black")  
  .style("background-color", "white");
```

Chaining Methods

```
d3.selectAll("section")  
  .attr("class", "special")  
  .append("div")  
    .html("Hello, world!");
```

Store Selection in Variables

```
var section = d3.selectAll("section");  
  
section.append("div")  
  .html("First!");  
  
section.append("div")  
  .html("Second.");
```



Berkeley SCHOOL OF
INFORMATION