VISUALIZATION ON THE WEB

Reusable modules

FROM JAVASCRIPT CODE TO MODULES

- D3.js provides a vast library of examples
- In many projects, an example is modified and adapted for a specific use
- However, the code is difficult to maintain and adapt to different scenarios
- Solution: encapsulate all the code within a module that is bound to data and a container

JAVASCRIPT AND OBJECTS

- We want to organize our visualization into components for
  - Modularity: separate the different parts of a complicated visualization
  - Composability and reusability: reuse smaller pieces in different visualization
  - Simplification: concentrate on smaller part of the main problem first
- To implement this approach we use objects, i.e. entities with properties and functions
- Objects are not fully supported in Javascript (prior to ES2016)
  - We exploit function closures

AN EXAMPLE FOR BARCHART

```
// Creates bar chart component and configures its margins
barChart = chart()
    .margin({top: 5, left: 10});

container = d3.select('.chart-container');

// Calls bar chart with the data-fed selector
container.datum(dataset).call(barChart);
```

GENERAL SCHEMA FOR A CHART

```
function chart() {
  var width = 720, // default width
      height = 80; // default height
  function my(selection) {
    // generate chart here, using `width` and `height`
  }
  my.width = function(value) {
    if (!arguments.length) return width;
    width = value;
    return my;
  };
  my.height = function(value) {
    if (!arguments.length) return height;
    height = value;
    return my;
  };
  return my;
}
```

Internal properties of the object: width and height

Constructor and preparation for the chart attached to the selection

Getter and setter for width

Getter and setter for height

Export the internal function outside this scope

BAR CHART AS A REUSABLE COMPONENT

- Specification
  - Input: the component takes in input an array of numbers
  - Visualization: each number is rendered as a bar whose length is proportional to its value; an axis provide reference for the values

EXAMPLE - LINES

- Repository on GitHub: https://github.com/va602aa-2021/d3_vue