Module 2 – D3.js Student Guide

Welcome to Module 2! In this module you'll build six core D3 visualizations. Use the starter HTML for each section, follow the steps, and consult the links for help. No solutions are included here—try the tasks first, then compare to your instructor's demo.

2A – Bar Chart Basics

I DO (Instructor demo)

- Select an container and bind a simple array of values.
- Append elements and set basic attributes.

YOU DO

- Bind the data array to elements. See Selection & Data Join ■ https://github.com/d3/d3-selection
- Create a linear scale mapping values → pixel heights. See Linear Scales ■ https://github.com/d3/d3-scale#linear-scales
- Position each bar by setting x, y, width, and height attributes.

WE DO

- Add axes: use d3.axisBottom() and d3.axisLeft(). Reference ■ https://github.com/d3/d3-axis
- Style bars: set a fill color via .attr("fill", "steelblue")

BONUS

- Implement a hover tooltip showing the raw value. Learn about event listeners ■ https://github.com/d3/d3-selection#selection_on

2B – Line Chart Essentials

I DO (Instructor demo)

- Use a path generator (d3.line()) to draw a line from an array of points.
- Demonstrate curve tension and styling.

YOU DO

- Bind your data to a element using the line generator. See Line Generator ■ https://github.com/d3/d3-shape#line
- Apply curveMonotoneX or another curve function. Curve docs ■ https://github.com/d3/d3-shape#curves
- Adjust stroke width, color, and remove fill.

WE DO

- Add circles at each data point using .selectAll("circle"). Reference ■ https://github.com/d3/d3-selection
- Attach axes as in 2A for context.

BONUS

- Read data from a CSV file via d3.csv(). CSV loader ■ https://github.com/d3/d3-dsv#csv

2C – Area Chart Setup

I DO (Instructor demo)

- Show how to switch from d3.line() to d3.area().

YOU DO

- Use d3.area() to fill under the line. Area docs ■ https://github.com/d3/d3-shape#area
- Configure .y0() and .y1() to map baseline and data values.
- Apply a semi-transparent fill color.

WE DO

- Overlay the line on top for contrast.
- Add axes from previous modules.

BONUS

- Animate the area growing from height 0 to full shape. See Transitions ■ https://github.com/d3/d3-transition

2D – Scatter Plot Fundamentals

I DO (Instructor demo)

- Append circles for each [x, y] pair.
- Demonstrate scale mapping for both axes.

YOU DO

- Bind a 2D array to . Data join guide ■ https://github.com/d3/d3-selection
- Create an xScale and yScale with d3.scaleLinear(). Scale docs ■ https://github.com/d3/d3-scale
- Set cx, cy, and r for each circle.

WE DO

- Add both X and Y axes.

- Color-code points based on a threshold value. Learn about conditional styling ■ https://github.com/d3/d3-selection

BONUS

- Add a legend explaining your color scheme.

2E – Transitions & Animations

I DO (Instructor demo)

- Show how to import d3-transition and chain .transition().
- Animate bar height or circle radius.

YOU DO

- Trigger a transition on your chart elements. Transition docs ■ https://github.com/d3/d3-transition#transition
- Modify attributes (e.g., height → new data, radius → scaled value) inside the transition.

WE DO

- Add easing (e.g., .ease(d3.easeBounce)). Easing guide ■ https://github.com/d3/d3-ease

BONUS

- Chain multiple transitions for a staggered effect.

2F – Axes & Grouping

I DO (Instructor demo)

- Group chart elements inside a and translate for margins.

YOU DO

- Wrap your shapes in a and apply transform="translate(margin.left, margin.top)". Group docs ■ https://github.com/d3/d3-selection
- Create and position X and Y axes with proper scales.

WE DO

- Add axis labels using elements. See Text Guide ■ https://github.com/d3/d3-selection

BONUS

- Add gridlines by cloning axis ticks. See Tick Values ■ https://github.com/d3/d3-axis#axis_tickValues

Helpful General Links

- D3 Official Homepage: https://d3js.org
- API Reference: https://github.com/d3/d3/blob/main/API.md
- Tutorials & Examples: https://observablehq.com/@d3/gallery