D3.js Lab Assignment – Learning Various Methods

Q1: d3.select() and d3.selectAll()

Task: Use d3.select() to modify a single element and d3.selectAll() to modify multiple elements.

Instructions:
1. Select a <p> element using d3.select() and change its text to "Hello D3!".
2. Select all <p> elements using d3.selectAll() and set their color to red.

Q2: d3.append() and d3.remove()

Task: Dynamically add and remove elements using D3.js.

Instructions:
1. Select a and append a new <h2> element with the text "New Heading".
2. After 3 seconds, remove the <h2> element using d3.remove().

Q3: d3.attr() and d3.style()

Task: Modify attributes and styles of an SVG circle dynamically.

Instructions:
1. Append an <svg> element and add a <circle> inside it.
2. Use .attr() to set cx=50, cy=50, r=40, and fill="blue".
3. Use .style() to set stroke="black" and stroke-width="3px".

Q4: d3.text() and d3.html()

Task: Modify the text and HTML content of elements.

Instructions:
1. Select a <p> element and use .text() to change its content to "This is D3 text".
2. Select a element and use .html() to set its content to "Bold Text".

Q5: d3.data() and d3.enter()

Task: Bind an array of numbers [10, 20, 30, 40] to <p> elements and create new elements for each data point.

Instructions:
1. Select a and use .selectAll("p") to bind data.
2. Use .data([10, 20, 30, 40]) to bind the dataset.
3. Use .enter().append("p") to create new <p> elements for each data point.
4. Set text to display the bound data.

Q6: d3.scaleLinear()

Task: Create a linear scale that maps numbers from [0, 100] to [0, 500] and display a transformed value.

Instructions:
1. Create a scale using d3.scaleLinear() with domain [0,100] and range [0,500].
2. Transform the number 50 and display the scaled value in a <p>.

Q7: d3.axisBottom() and d3.axisLeft()

Task: Create X and Y axes inside an SVG.

Instructions:
1. Create an <svg> with width=400 and height=300.
2. Define xScale (domain [0,100], range [0,300]) and yScale (domain [0,100], range [200,0]).
3. Append axes using d3.axisBottom(xScale) and d3.axisLeft(yScale).

Q8: d3.transition()

Task: Animate a rectangle changing its width over 2 seconds.

Instructions:

1. Append an <svg> and add a <rect> with width=50, height=100.
2. Use .transition().duration(2000).attr("width", 200) to animate width expansion.

Q9: d3.event and d3.on()

Task: Create a button that changes the background color of a when clicked.

Instructions:
1. Select a <button> and set a click event using d3.on("click").
2. Change the background color of a to "lightblue" when clicked.

Q10: d3.line() and d3.path()

Task: Draw a simple line chart with points {x: 10, y: 30}, {x: 20, y: 80}, {x: 30, y: 50}, {x: 40, y: 100}.

Instructions:
1. Define an xScale and yScale to map values to pixels.
2. Use d3.line() to create a line generator.
3. Use .datum(data).attr("d", line) to append the line to an <svg>.
4. Set stroke="red" and fill="none".

Instructions:
1️⃣ Write code in an HTML file and include the D3.js library (<script src="https://d3js.org/d3.v7.min.js"></script>).
2️⃣ Complete each question in a separate <script> block or separate files.
3️⃣ Try modifying attributes and experimenting with different data.
4️⃣ For SVG-based tasks, ensure you create an <svg> container.

Note - Don’t submit a zip file. Follow proper naming conventions.