lab-2.2\index.html

```html
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="description" content="D3 Bar Chart Exercise">
    <meta name="keywords" content="HTML, D3, JavaScript, SVG, Bar Chart">
    <meta name="author" content="Joe Bloggs">
    <title>Drawing with Data</title>
    <!-- Step 1: Include the D3.js library -->
    <script src="https://d3js.org/d3.v7.min.js"></script>
    <style>
        /* Optional: Add some basic styling for the chart container */
        body {
            font-family: sans-serif;
            text-align: center;
        }

        .chart-container {
            margin: 20px auto;
            border: 1px solid #ccc;
            display: inline-block;
            /* To make the container fit the SVG */
        }

        h1,
        footer {
            color: #333;
        }
    </style>
</head>

<body>

    <h1>Drawing with Data</h1>

    <div class="chart-container">
        <!-- The SVG will be created here by D3 -->
    </div>

    <script>
        // --- Configuration Variables ---

        // Define the dimensions of the SVG canvas
        const w = 500;
        const h = 150;
        const barPadding = 2; // The space between bars
        const heightMultiplier = 4; // Multiplier to make bars taller
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49
50          // Define the dataset
51          const dataset = [5, 10, 13, 19, 21, 25, 22, 18, 15, 13, 11, 12, 15, 20, 18, 17, 16,
    18, 23, 25];
52
53          // --- D3 Code ---
54
55          // Step 2: Create the SVG element
56          // Select the container div and append an SVG element to it
57          const svg = d3.select(".chart-container")
58              .append("svg")
59              .attr("width", w)
60              .attr("height", h);
61
62          // Step 3, 4, 5 & 6: Create, position, and style the bars (rectangles)
63          svg.selectAll("rect")
64              .data(dataset)
65              .enter()
66              .append("rect")
67              .attr("x", function (d, i) {
68                  // Step 4: Calculate the x position for each bar.
69                  // 'i' is the index of the data point.
70                  // We space the bars evenly across the SVG width.
71                  return i * (w / dataset.length);
72              })
73              .attr("y", function (d) {
74                  // Step 6: Adjust the baseline.
75                  // In SVGs, y=0 is the top. To make bars grow from the bottom,
76                  // we set the y-coordinate to the total height minus the bar's height.
77                  return h - (d * heightMultiplier);
78              })
79              .attr("width", w / dataset.length - barPadding)
80              .attr("height", function (d) {
81                  // Step 5: The height of the bar is the data value multiplied by our
    constant.
82                  return d * heightMultiplier;
83              })
84              .attr("fill", "slategrey"); // Add a default color
85
86          // Optional: Add labels on top of the bars
87          svg.selectAll("text")
88              .data(dataset)
89              .enter()
90              .append("text")
91              .text(function (d) {
92                  return d;
93              })
94              .attr("x", function (d, i) {
95                  // Center the text in the middle of the bar.
96                  return i * (w / dataset.length) + (w / dataset.length - barPadding) / 2;
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            })
            .attr("y", function (d) {
                // Position the text just above the bar.
                return h - (d * heightMultiplier) + 14;
            })
            .attr("font-family", "sans-serif")
            .attr("font-size", "11px")
            .attr("fill", "white")
            .attr("text-anchor", "middle"); // This ensures the x-coordinate is the center.

    </script>

    <footer>
        <p style="color:grey; font-style: italic;">
            COS30045 Data Visualisation<br>
            Joe Bloggs
        </p>
    </footer>

</body>

</html>
```