lab-3.1\index.html

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

<head>
    <meta charset="UTF-8">
    <meta name="description" content="D3 Scatter Plot Exercise">
    <meta name="keywords" content="HTML, D3, JavaScript, SVG, Scatter Plot">
    <meta name="author" content="Joe Bloggs">
    <title>Drawing with Data - Scatter Plot</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 - Scatter Plot</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 = 100;
        const padding = 30; // Add padding to prevent circles from being cut off

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        // Step 2: Define the new dataset for the scatter plot
        // Each inner array: [x_coordinate, y_coordinate, radius_size (optional)]
        const dataset = [
            [5, 20], [480, 90], [250, 50], [100, 33], [330, 95],
            [410, 12], [475, 44], [25, 67], [85, 21], [220, 88],
            [600, 150] // Outlier
        ];

        // --- D3 Code ---

        //Create scale functions
        const xScale = d3.scaleLinear()
            .domain([0, d3.max(dataset, function (d) { return d[0]; })])
            .range([padding, w - padding]);

        const yScale = d3.scaleLinear()
            .domain([0, d3.max(dataset, function (d) { return d[1]; })])
            .range([h - padding, padding]); // Reversed range for y-axis

        // Create the SVG element
        const svg = d3.select(".chart-container")
            .append("svg")
            .attr("width", w)
            .attr("height", h);

        // Step 3: Create and position the circles
        svg.selectAll("circle")
            .data(dataset)
            .enter()
            .append("circle")
            .attr("cx", function (d) {
                // The first value of the inner array (d[0]) is the x-coordinate.
                return xScale(d[0]);
            })
            .attr("cy", function (d) {
                // The second value (d[1]) is the y-coordinate.
                return yScale(d[1]);
            })
            .attr("r", function (d) {
                // Optional: The third value (d[2]) is used for the radius.
                return 5;
            })
            .attr("fill", function (d) {
                // Style important data points in red (e.g., where y > 80).
                if (d[1] > 80) {
                    return "red";
                }
                return "slategrey"; // Default color
            });

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        // Step 4: Add labels to the scatter plot
        svg.selectAll("text")
            .data(dataset)
            .enter()
            .append("text")
            .text(function (d) {
                // The label text shows the coordinates.
                return d[0] + "," + d[1];
            })
            .attr("x", function (d) {
                // Position the label slightly to the right of the circle.
                return xScale(d[0]) + 10; // Offset by radius + a little extra
            })
            .attr("y", function (d) {
                // Position the label vertically aligned with the circle's center.
                return yScale(d[1]);
            })
            .attr("font-family", "sans-serif")
            .attr("font-size", "11px")
            .attr("fill", "black");

    </script>

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

</body>

</html>
```