Lab 5_1.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="description" content="Data Visualization"/>
    <meta name="keywords" content="HTML, CSS, D3"/>
    <meta name="author" content="Dai Vy"/>
    <title>Task 5.1 D3 Updates</title>

    <script src="https://d3js.org/d3.v7.min.js"></script>
    <style>

    </style>
</head>
<body>

    <button id="update">Update Data</button>
    <h1>LAB 5.1 D3 Updates</h1>

    <script>
        var w = 500;
        var h = 100;
        var maxValue = 25;
        var dataset = [24, 10, 29, 19, 8, 15, 20, 12, 9, 6, 21, 28];

        // Use scaleBand() to create an ordinal scaleable x-axis based on the range of the
data set.
        var xScale = d3.scaleBand()
                .domain(d3.range(dataset.length))
                .rangeRound([0, w])
                .paddingInner(0.05);

        // Use scaleLinear() to create a linear scaleable y-axis based on the range of the
data set.
        var yScale = d3.scaleLinear()
                .domain([0, d3.max(dataset)])
                .range([0, h]);

        var svg = d3.select("body")
                .append("svg")
                .attr("width", w)
                .attr("height", h);

        // Draw initial bars
        svg.selectAll("rect")
            .data(dataset)
            .enter()
            .append("rect")
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            .attr("x", function(d, i) {
                return xScale(i);
            })
            .attr("y", function(d) {
                return h - yScale(d);
            })
            .attr("width", xScale.bandwidth())
            .attr("height", function(d) {
                return yScale(d);
            })
            .attr("fill", "steelblue");

        // Draw initial labels
        svg.selectAll("text")
            .data(dataset)
            .enter()
            .append("text")
            .text(function(d) {
                return d; // This displays the number on each bar
            })
            .attr("x", function(d, i) {
                return xScale(i) + xScale.bandwidth() / 2;
            })
            .attr("y", function(d) {
                return h - yScale(d) + 14;
            })
            .attr("text-anchor", "middle")
            .attr("fill", "white")
            .attr("font-size", "12px");

        // Update function for bars and labels
        function updateChart() {
            // Update only the values in the dataset, not the length
            for (var i = 0; i < dataset.length; i++) {
                dataset[i] = Math.floor(Math.random() * maxValue);
            }

            // Update scales
            xScale.domain(d3.range(dataset.length));
            yScale.domain([0, d3.max(dataset)]);

            // DATA JOIN for bars
            var bars = svg.selectAll("rect")
                .data(dataset);

            // UPDATE existing bars
            bars
                .attr("x", function(d, i) { return xScale(i); })
                .attr("y", function(d) { return h - yScale(d); })
                .attr("width", xScale.bandwidth())
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                .attr("height", function(d) { return yScale(d); });

            // DATA JOIN for labels
            var labels = svg.selectAll("text")
                .data(dataset);

            // UPDATE existing labels
            labels
                .text(function(d) { return d; })
                .attr("x", function(d, i) { return xScale(i) + xScale.bandwidth() / 2; })
                .attr("y", function(d) { return h - yScale(d) + 14; });
        }

        // Button event listener
        d3.select("#update")
            .on("click", updateChart);

    </script>

    <br>

    <footer style="color: grey">COS30045 Data Visualization<br>
        Dai Vy
    </footer>
</body>
</html>
```