

```

## multi view code

// 7. MULTIVIEW DASHBOARD WITH ALL VISUALIZATIONS
{
  "$schema": "https://vega.github.io/schema/vega-lite/v5.json",
  "title": {
    "text": "Sales Dashboard - Multiview",
    "anchor": "middle",
    "fontSize": 24,
    "font": "Helvetica",
    "color": "#444",
    "subtitle": "A Comprehensive View of Sales Data",
    "subtitleFontSize": 13,
    "subtitleColor": "#555"
  },
  "background": "#f8f8f8",
  "spacing": 15,
  "vconcat": [
    {
      "hconcat": [
        // Chart 1: Donut Chart
        {
          "width": 250,
          "height": 200,
          "data": {
            "url":
"https://raw.githubusercontent.com/iffyaiyan/vega_assgn/refs/heads/master/HW_III.csv",
            "format": { "type": "csv" }
          },
          "transform": [
            { "calculate": "toNumber(trim(datum['Units']))", "as":
"UnitsNum" },
            { "calculate": "toNumber(trim(datum['Unit Cost']))", "as":
"UnitCostNum" },
            { "calculate": "datum.UnitsNum * datum.UnitCostNum", "as":
"ComputedTotal" },
            {
              "aggregate": [{ "op": "sum", "field": "ComputedTotal", "as":
"TotalSum" }],
              "groupby": ["Rep"]
            }
          ],
          "mark": { "type": "arc", "innerRadius": 40, "outerRadius": 80 },
          "encoding": {
            "theta": { "field": "TotalSum", "type": "quantitative" },
            "color": {

```

```

        "field": "Rep",
        "type": "nominal",
        "legend": {"title": "Sales Rep"},
        "scale": {"scheme": "tableau10"}
    },
    "tooltip": [
        { "field": "Rep", "type": "nominal" },
        { "field": "TotalSum", "type": "quantitative", "title":
"Total Sales", "format": "$.2f" }
    ]
},
"title": "Sales by Representative"
},

// Chart 2: Scatter Plot with Brush
{
    "width": 250,
    "height": 200,
    "data": {
        "url":
"https://raw.githubusercontent.com/iffyaiyan/vega_assgn/refs/heads/master/
HW_III.csv",
        "format": { "type": "csv" }
    },
    "transform": [
        { "calculate": "toNumber(trim(datum['Units']))", "as":
"UnitsNum" },
        { "calculate": "toNumber(trim(datum['Unit Cost']))", "as":
"UnitCostNum" }
    ],
    "mark": {"type": "point", "filled": true},
    "selection": {
        "brush": { "type": "interval" }
    },
    "encoding": {
        "x": {
            "field": "UnitsNum",
            "type": "quantitative",
            "title": "Units",
            "axis": {"grid": false}
        },
        "y": {
            "field": "UnitCostNum",
            "type": "quantitative",
            "title": "Unit Cost",
            "axis": {"grid": false}
        }
    },

```

```

    "color": {
      "condition": {
        "selection": "brush",
        "field": "Item",
        "type": "nominal"
      },
      "value": "lightgray"
    },
    "size": {"value": 60},
    "opacity": {"value": 0.8},
    "tooltip": [
      { "field": "Item", "type": "nominal" },
      { "field": "Rep", "type": "nominal" },
      { "field": "UnitsNum", "type": "quantitative", "title":
"Units" },
      { "field": "UnitCostNum", "type": "quantitative", "title":
"Unit Cost", "format": "$.2f" }
    ],
    "title": "Units vs Unit Cost"
  },

  // Chart 4: Histogram
  {
    "width": 250,
    "height": 200,
    "data": {
      "url":
"https://raw.githubusercontent.com/iffyaiyan/vega_assgn/refs/heads/master/
HW_III.csv",
      "format": { "type": "csv" }
    },
    "transform": [
      { "calculate": "toNumber(trim(datum['Units']))", "as":
"UnitsNum" }
    ],
    "layer": [
      {
        "mark": {
          "type": "bar",
          "color": "#FFB74D"
        },
        "encoding": {
          "x": {
            "field": "UnitsNum",
            "bin": { "maxbins": 10 },
            "type": "quantitative",

```

```

        "title": "Binned Units"
    },
    "y": {
        "aggregate": "count",
        "type": "quantitative",
        "title": "Frequency"
    },
    "tooltip": [
        {"bin": true, "field": "UnitsNum", "type":
"quantitative", "title": "Units Range"},
        {"aggregate": "count", "type": "quantitative", "title":
"Count"}
    ]
    },
    {
        "transform": [
            {
                "aggregate": [{ "op": "mean", "field": "UnitsNum", "as":
"meanUnits" }]
            }
        ],
        "mark": {
            "type": "rule",
            "color": "darkred",
            "strokeWidth": 2
        },
        "encoding": {
            "x": { "field": "meanUnits", "type": "quantitative" },
            "tooltip": [
                {"field": "meanUnits", "type": "quantitative", "title":
"Mean Units", "format": ".2f"}
            ]
        }
    }
],
    "title": "Distribution of Units"
}
]
},
{
    "hconcat": [
        // Chart 3: Streamgraph
        {
            "width": 500,
            "height": 200,
            "data": {

```

```

        "url":
"https://raw.githubusercontent.com/iffyaiyan/vega_assgn/refs/heads/master/
HW_III.csv",
        "format": { "type": "csv" }
    },
    "transform": [
        { "calculate": "toDate(datum['OrderDate'])", "as": "Date" },
        { "calculate": "toNumber(trim(datum['Units']))", "as":
"UnitsNum" },
        { "calculate": "toNumber(trim(datum['Unit Cost']))", "as":
"UnitCostNum" },
        { "calculate": "datum.UnitsNum * datum.UnitCostNum", "as":
"Total" }
    ],
    "mark": { "type": "area", "interpolate": "monotone" },
    "encoding": {
        "x": {
            "field": "Date",
            "type": "temporal",
            "title": "Order Date",
            "axis": {"format": "%b %Y", "labelAngle": -45}
        },
        "y": {
            "field": "Total",
            "type": "quantitative",
            "stack": "center",
            "title": "Sales Value"
        },
        "color": {
            "field": "Item",
            "type": "nominal",
            "legend": {"title": "Product Type"},
            "scale": {"scheme": "category10"}
        },
        "tooltip": [
            { "field": "Item", "type": "nominal" },
            { "field": "Date", "type": "temporal", "format": "%b %d, %Y"
},
            { "field": "Total", "type": "quantitative", "format": "$.2f"
}
        ]
    },
    "title": "Sales Stream Over Time by Item"
},

// Chart 5: Pie Chart by Region
{

```

```

        "width": 250,
        "height": 200,
        "data": {
            "url":
"https://raw.githubusercontent.com/iffyaiyan/vega_assgn/refs/heads/master/
HW_III.csv",
            "format": { "type": "csv" }
        },
        "transform": [
            { "calculate": "toNumber(trim(datum['Unit Cost']))", "as":
"UnitCostNum" },
            {
                "aggregate": [
                    { "op": "mean", "field": "UnitCostNum", "as":
"AvgUnitCost" }
                ],
                "groupby": ["Region"]
            }
        ],
        "mark": { "type": "arc", "outerRadius": 80 },
        "encoding": {
            "theta": { "field": "AvgUnitCost", "type": "quantitative" },
            "color": {
                "field": "Region",
                "type": "nominal",
                "scale": {"scheme": "set2"}
            },
            "tooltip": [
                { "field": "Region", "type": "nominal" },
                { "field": "AvgUnitCost", "type": "quantitative", "title":
"Average Unit Cost", "format": "$.2f" }
            ]
        },
        "title": "Average Unit Cost by Region"
    }
]
},
// Chart 6: Bar Chart of Monthly Sales
{
    "width": 750,
    "height": 200,
    "data": {
        "url":
"https://raw.githubusercontent.com/iffyaiyan/vega_assgn/refs/heads/master/
HW_III.csv",
        "format": { "type": "csv" }
    },

```

```

    "transform": [
      { "calculate": "toDate(datum['OrderDate'])", "as": "Date" },
      { "calculate": "toNumber(trim(datum['Units']))", "as": "UnitsNum"
    },
      { "calculate": "toNumber(trim(datum['Unit Cost']))", "as":
"UnitCostNum" },
      { "calculate": "datum.UnitsNum * datum.UnitCostNum", "as": "Total"
    },
      { "timeUnit": "yearmonth", "field": "Date", "as": "Month" },
      {
        "aggregate": [
          { "op": "sum", "field": "Total", "as": "TotalSales" }
        ],
        "groupby": ["Month"]
      }
    ],
    "mark": {"type": "bar", "cornerRadius": 2},
    "encoding": {
      "x": {
        "field": "Month",
        "type": "temporal",
        "title": "Month",
        "axis": {"format": "%b %Y", "labelAngle": -45}
      },
      "y": {
        "field": "TotalSales",
        "type": "quantitative",
        "title": "Sales"
      },
      "color": { "value": "#26A69A" },
      "tooltip": [
        { "field": "Month", "type": "temporal", "format": "%B %Y" },
        { "field": "TotalSales", "type": "quantitative", "format":
"$$.2f" }
      ]
    },
    "title": "Monthly Total Sales"
  }
]
}

```