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{
  "$schema": "https://vega.github.io/schema/vega-lite/v5.json",
  "usermeta": {
    "embedOptions": {
      "actions": {
        "export": true,
        "source": false,
        "compiled": false,
        "editor": false
      }
    }
  },
  "title": {
    "text": "Sales Dashboard",
    "anchor": "middle",
    "fontSize": 24,
    "font": "Helvetica",
    "color": "#444",
    "subtitle": "A Customized Visualization for Comparison",
    "subtitleFontSize": 13,
    "subtitleColor": "#555"
  },
  "vconcat": [

    // Chart 1: Donut (color tweaks)
    {
      "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": 50, "outerRadius": 100 },
      "encoding": {
        "theta": { "field": "TotalSum", "type": "quantitative" },
        "color": { "field": "Rep", "type": "nominal", "legend": { "title": "Sales Rep" } },

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    "tooltip": [
      { "field": "Rep", "type": "nominal" },
      { "field": "TotalSum", "type": "quantitative", "title": "Total Sales" }
    ]
  },
  "title": "Sales Contribution by Representative"
},

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// 2. Scatter Plot

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{
  "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": "point",
  "encoding": {
    "x": { "field": "UnitsNum", "type": "quantitative", "title": "Units" },
    "y": { "field": "UnitCostNum", "type": "quantitative", "title": "Unit Cost" },
    "color": {
      "condition": {
        "selection": "brush",
        "field": "Item",
        "type": "nominal"
      },
      "value": "lightgray"
    },
  },
  "tooltip": [
    { "field": "Item", "type": "nominal" },
    { "field": "Rep", "type": "nominal" },
    { "field": "UnitsNum", "type": "quantitative" },
    { "field": "UnitCostNum", "type": "quantitative" }
  ]
},
  "selection": {
    "brush": { "type": "interval" }
  },
  "title": "Scatter: Units vs Unit Cost"
},

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// Chart 3: Streamgraph (layout mod)
{
  "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" },
    "y": {
      "field": "Total",
      "type": "quantitative",
      "stack": "center",
      "title": "Sales Value"
    },
    "color": { "field": "Item", "type": "nominal", "legend": { "title": "Product Type" } },
    "tooltip": [
      { "field": "Item", "type": "nominal" },
      { "field": "Date", "type": "temporal" },
      { "field": "Total", "type": "quantitative" }
    ]
  },
  "title": "Sales Stream Over Time by Item"
},
```

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// Chart 4: Histogram (color scheme updated)
{
  "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": [
    {
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"mark": {
  "type": "bar",
  "color": "#FFB74D"
},
"encoding": {
  "x": {
    "field": "UnitsNum",
    "bin": { "maxbins": 10 },
    "type": "quantitative",
    "title": "Binned Units"
  },
  "y": {
    "aggregate": "count",
    "type": "quantitative",
    "title": "Frequency"
  }
}
},
{
  "transform": [
    {
      "aggregate": [{ "op": "mean", "field": "UnitsNum", "as": "meanUnits" }]
    }
  ],
  "mark": {
    "type": "rule",
    "color": "darkred",
    "strokeWidth": 2
  },
  "encoding": {
    "x": { "field": "meanUnits", "type": "quantitative" }
  }
},
{
  "transform": [
    {
      "aggregate": [{ "op": "mean", "field": "UnitsNum", "as": "meanUnits" }]
    }
  ],
  "mark": {
    "type": "text",
    "align": "left",
    "dx": 5,
    "dy": -5,

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    "color": "darkred"
  },
  "encoding": {
    "x": { "field": "meanUnits", "type": "quantitative" },
    "y": { "value": 0 },
    "text": { "value": "Average" }
  }
},
],
"title": "Distribution of Units Sold",
"config": {
  "background": "#f8f8f8",
  "style": {
    "guide-label": { "fill": "#333" },
    "guide-title": { "fill": "#222" },
    "title": { "color": "#111" }
  }
}
},
},
},

```

// Chart 5: Modified (New: Pie of Average Unit Cost by Region)

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{
  "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": 100 },
  "encoding": {
    "theta": { "field": "AvgUnitCost", "type": "quantitative" },
    "color": { "field": "Region", "type": "nominal" },
    "tooltip": [
      { "field": "Region", "type": "nominal" },
      { "field": "AvgUnitCost", "type": "quantitative", "title": "Average Unit Cost" }
    ]
  }
}

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    },
    "title": "Average Unit Cost by Region (Pie View)"
  },

  // Chart 6: Modified (New: Bar of Monthly Sales Totals)
  {
    "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": "bar",
    "encoding": {
      "x": { "field": "Month", "type": "temporal", "title": "Month" },
      "y": { "field": "TotalSales", "type": "quantitative", "title": "Sales" },
      "color": { "value": "#26A69A" },
      "tooltip": [
        { "field": "Month", "type": "temporal" },
        { "field": "TotalSales", "type": "quantitative" }
      ]
    },
    "title": "Monthly Total Sales (Bar View)"
  }
]
}

```