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ASP.NET Core Charts

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Chart Examples

This ASP.NET Core Web Application demonstrates how to implments Charts in your Web Application.

These examples use Google Charts. [Here you see a Basic Google Chart Example](#)

Examples that gets the Data from a SQL Server Database:

- [Line Chart](#)
- [MultiLine Chart](#)
- [Bar Chart](#)
- [Column Chart](#)

The most common way to use Google Charts is with simple JavaScript that you embed in your web page. You load some Google Chart libraries, list the data to be charted, select options to customize your chart, and finally create a chart object with an id that you choose. Then, later in the web page, you create a <div> tag with that id to display the Google Chart.

[Google Charts](#)

Introduction

- Some basic **Charts** examples using **ASP.NET Core** will be demonstrated.
- The examples use the **Google Charts** framework
- If you have never used ASP.NET Core, I suggest the following Videos:
 - ASP.NET Core - Hello World
<https://youtu.be/lcQsWYgQXK4>
 - ASP.NET Core – Introduction
<https://youtu.be/zkOtiBcwo8s>

Google Charts

- In the examples Google Charts will be used.
- Google Charts is an API (or framework) for creating Charts in your web pages.
- It is free to use
- It is easy to use (when you first know how to use it)
- You can get a detailed overview here:
<https://developers.google.com/chart>

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Google Charts

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Chart Types

Google Charts offers many different types of charts:

- **Line Chart**
- Bar Chart
- Column Chart
- Pie Chart
- etc.

Google Charts Implementation

The most common way to use Google Charts is with simple JavaScript that you embed in your web page.

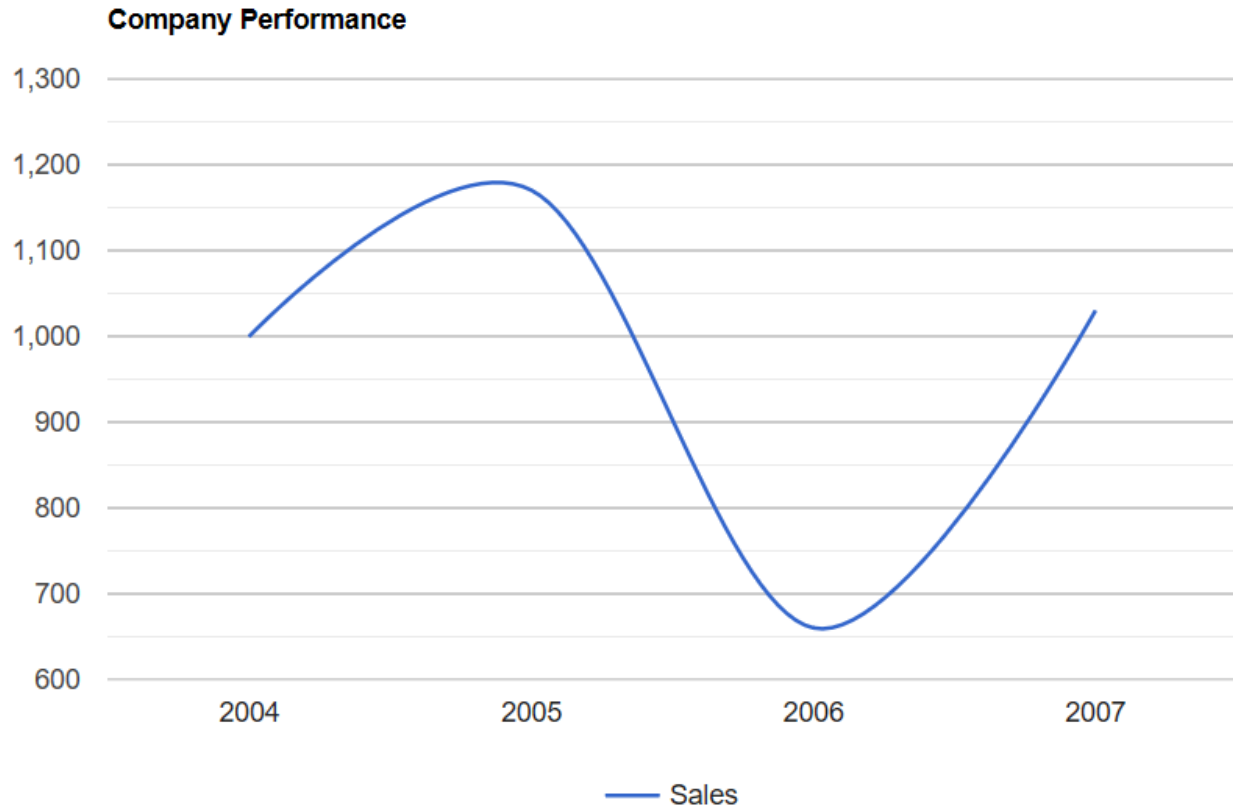
1. You **load** some Google Chart libraries,
2. list the data to be charted,
3. select options to **customize** your chart,
4. and finally **create a chart object** with an id that you choose.
5. Then, later in the web page, you **create a <div>** with that id to display the Google Chart.

Start using Google Charts

First, you need to load the Google Chart libraries:

```
<script src="https://www.gstatic.com/charts/loader.js"></script>
<script>
  google.charts.load('current', {packages: ['corechart']});
  google.charts.setOnLoadCallback(drawChart);
  ...
</script>
```


Simple Google Chart Example



```
<html>
<head>
  <script type="text/javascript" src="https://www.gstatic.com/charts/loader.js"></script>
  <script type="text/javascript">

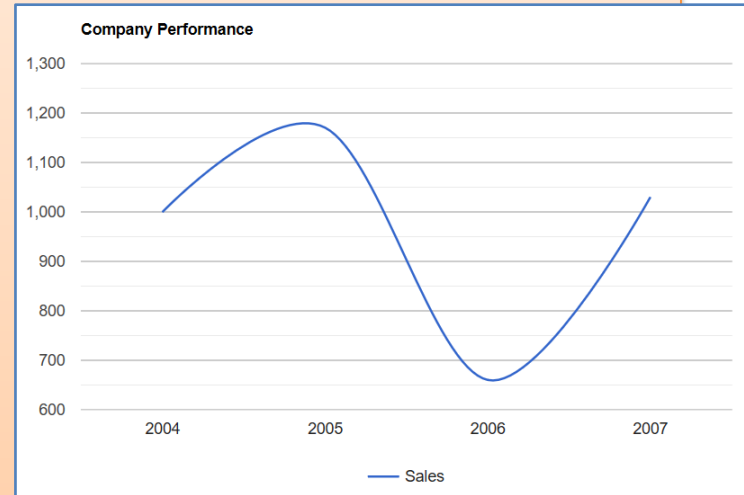
google.charts.load('current', {'packages':['corechart']});
google.charts.setOnLoadCallback(drawChart);

function drawChart() {
  var data = google.visualization.arrayToDataTable([
    ['Year', 'Sales'],
    ['2004', 1000],
    ['2005', 1170],
    ['2006', 660],
    ['2007', 1030]
  ]);

  var options = {
    title: 'Company Performance',
    curveType: 'function',
    legend: { position: 'bottom' }
  };

  var chart = new google.visualization.LineChart(document.getElementById('mychart'));

  chart.draw(data, options);
}
</script>
</head>
<body>
  <div id="mychart" style="width: 900px; height: 500px"></div>
</body>
</html>
```



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SQL Server

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Database

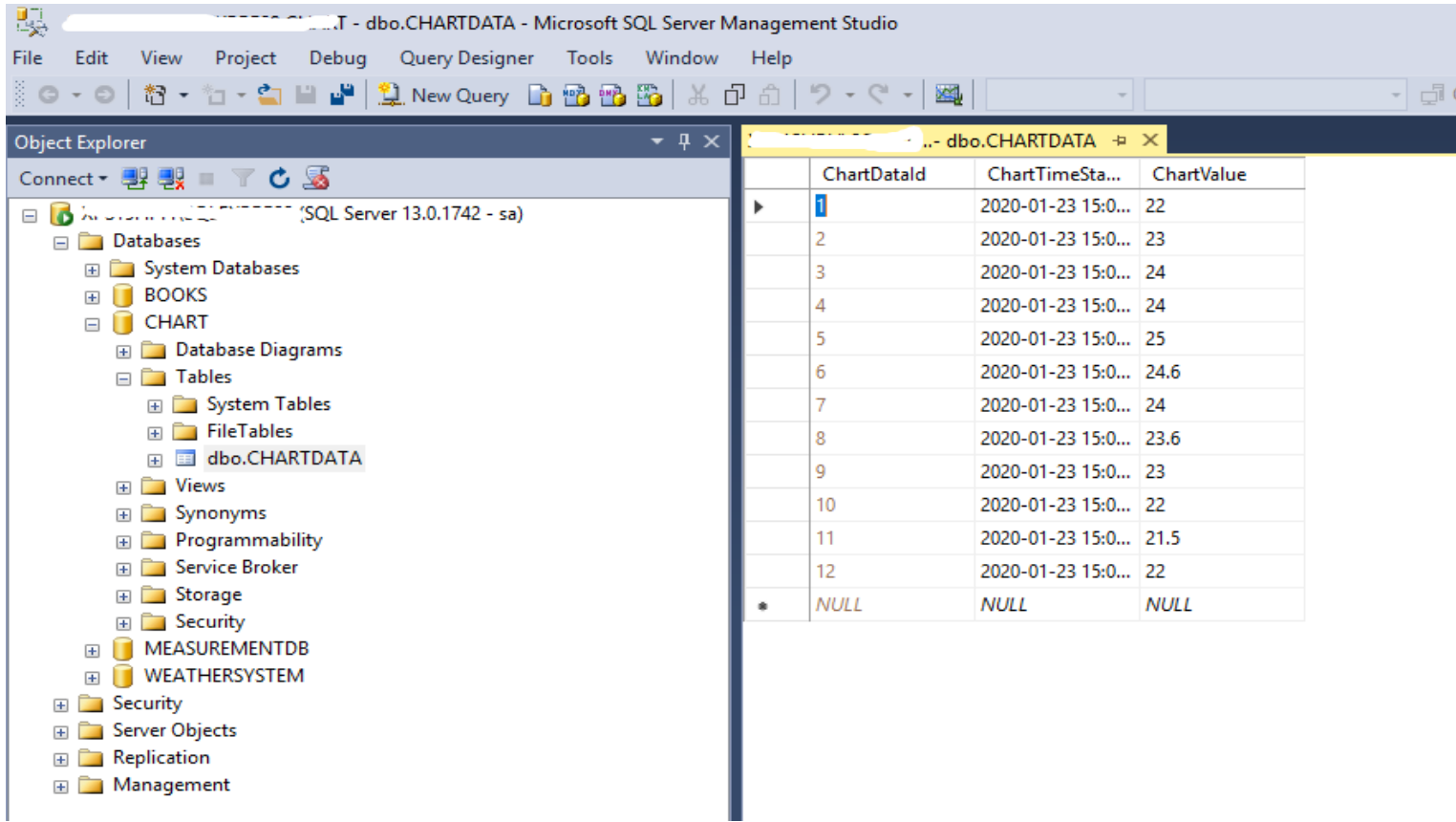
- Most of the time you will need to use data that are stored in a SQL Server
- Typically you want to plot some of the data inside your database
- You should have SQL Server locally installed on your computer (for these examples)
- SQL Server Express is recommended.

Database Table

```
CREATE TABLE [CHARTDATA]  
(  
    [ChartDataId] int NOT NULL IDENTITY ( 1,1 ) Primary Key,  
    [ChartTimeStamp] datetime NOT NULL DEFAULT GETDATE(),  
    [ChartValue] float NOT NULL  
)  
go
```

Data in the Database

You can just enter some data manually in order to have some data for the examples



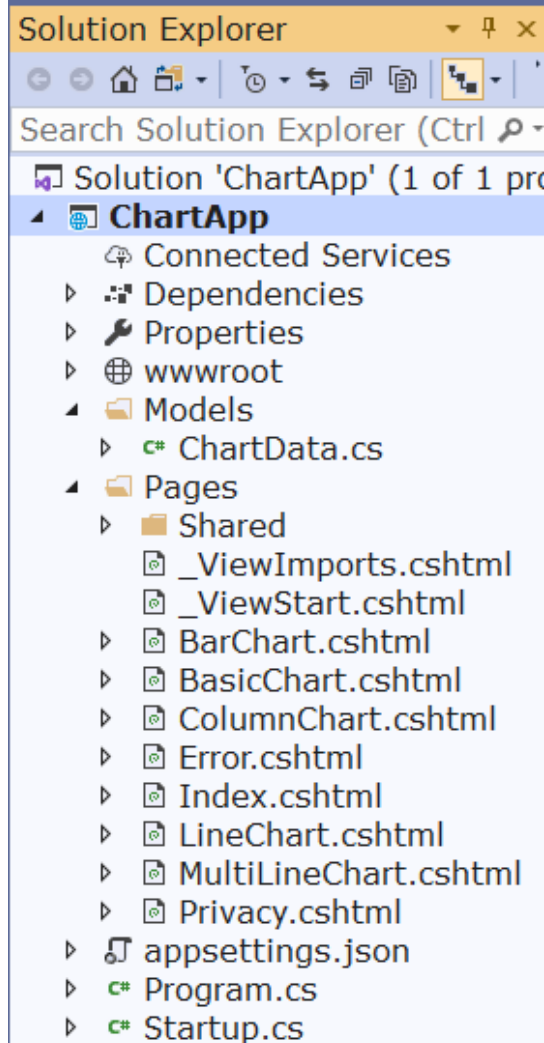
The screenshot shows the Microsoft SQL Server Management Studio interface. The Object Explorer on the left displays the database structure, including the 'CHART' database and the 'dbo.CHARTDATA' table. The main window shows the data in the 'CHARTDATA' table, which has three columns: 'ChartDataId', 'ChartTimeSta...', and 'ChartValue'. The data is as follows:

	ChartDataId	ChartTimeSta...	ChartValue
▶	1	2020-01-23 15:0...	22
	2	2020-01-23 15:0...	23
	3	2020-01-23 15:0...	24
	4	2020-01-23 15:0...	24
	5	2020-01-23 15:0...	25
	6	2020-01-23 15:0...	24.6
	7	2020-01-23 15:0...	24
	8	2020-01-23 15:0...	23.6
	9	2020-01-23 15:0...	23
	10	2020-01-23 15:0...	22
	11	2020-01-23 15:0...	21.5
	12	2020-01-23 15:0...	22
*	NULL	NULL	NULL

Visual Studio

We will create some basic Examples:

- Line Chart
- Bar Chart
- Column Chart
- Multi Line Chart



```
using System.Data.SqlClient;
namespace ChartApp.Models
```

```
{
    public class ChartData
    {
        public int ChartDataId { get; set; }
        public string ChartTimeStamp { get; set; }
        public double ChartValue { get; set; }
        public List<ChartData> GetChartData(string connectionString)
        {
            List<ChartData> chartDataList = new List<ChartData>();
            SqlConnection con = new SqlConnection(connectionString);
            string selectSQL = "SELECT ChartDataId, FORMAT(ChartTimeStamp, 'MM.dd HH:mm') AS ChartTimeStamp, ChartValue FROM CHARTDATA";
            con.Open();
            SqlCommand cmd = new SqlCommand(selectSQL, con);
            SqlDataReader dr = cmd.ExecuteReader();
            if (dr != null)
            {
                while (dr.Read())
                {
                    ChartData chartData = new ChartData();
                    chartData.ChartDataId = Convert.ToInt32(dr["ChartDataId"]);
                    chartData.ChartTimeStamp = dr["ChartTimeStamp"].ToString();
                    chartData.ChartValue = Convert.ToDouble(dr["ChartValue"]);
                    chartDataList.Add(chartData);
                }
            }
            return chartDataList;
        }
    }
}
```

C# Code for “ChartData.cs”

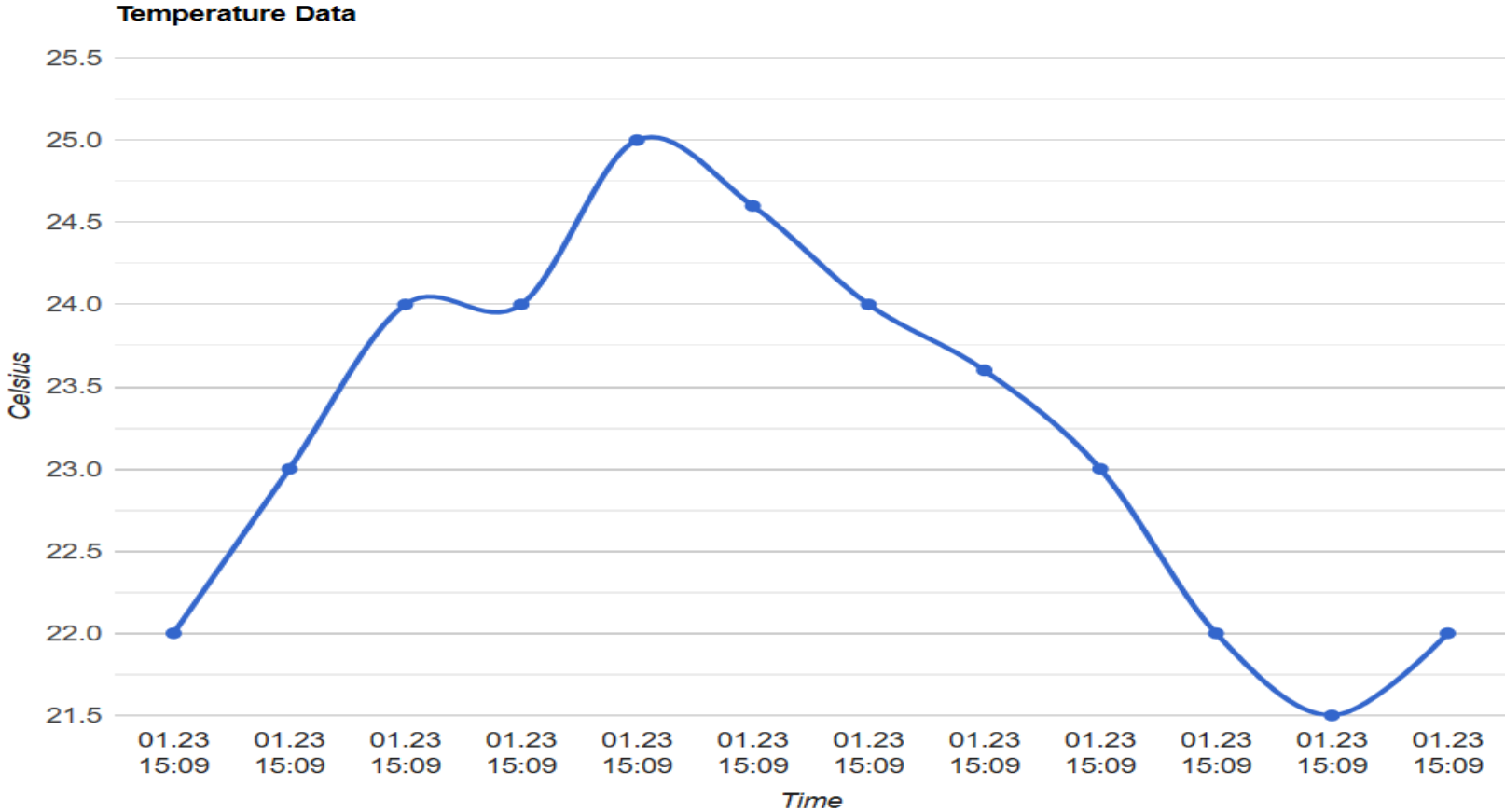
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Line Chart Example

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Line Chart



```
using ChartApp.Models;
```

```
namespace ChartApp.Pages
```

```
{  
    public class LineChartModel : PageModel  
    {  
        public List<ChartData> chartDataList = new List<ChartData>();  
        string connectionString;  
        readonly IConfiguration _configuration;  
  
        public LineChartModel(IConfiguration configuration)  
        {  
            _configuration = configuration;  
        }  
        public void OnGet()  
        {  
            chartDataList = ChartData();  
        }  
  
        private List<ChartData> ChartData()  
        {  
            connectionString = _configuration.GetConnectionString("ConnectionString");  
  
            List<ChartData> chartDataList = new List<ChartData>();  
  
            ChartData chartData = new ChartData();  
  
            chartDataList = chartData.GetChartData(connectionString);  
  
            return chartDataList;  
        }  
    }  
}
```

C# Code (LineChart.cshtml.cs)

Web Page (LineChart.cshtml)

```
@page
@model ChartApp.Pages.LineChartModel
@{
    ViewData["Title"] = "Line Chart";
    string chartTitle = "Temperature Data";
    string chartUnit= "Celsius";
}

<div class="text-center">
    <h1 class="display-4">Line Chart</h1>
</div>

<script type="text/javascript" src="https://www.gstatic.com/charts/loader.js"></script>
<script type="text/javascript">
    google.charts.load('current', { 'packages': ['corechart'] });
    google.charts.setOnLoadCallback(drawChart);

    function drawChart() {
        var data = google.visualization.arrayToDataTable([
            ['Time', 'Data'],

            @foreach (var data in Model.chartDataList) {
                <text>['@data.ChartTimeStamp', @data.ChartValue],</text>
            }
        ]);

        var options = {
            title: '@chartTitle',
            curveType: 'function',
            pointsVisible: true,
            lineWidth: 3,
            legend: 'none',
            hAxis: {title: 'Time'},
            vAxis: {title: '@chartUnit'},
            width: '100%',
            height: '100%',
            chartArea: {width: '85%', height: '75%'}
        };

        var chart = new google.visualization.LineChart(document.getElementById('line_chart'));
        chart.draw(data, options);
    }
</script>
<div class="container-fluid lead">
    <div id="line_chart" style="width: 800px; height: 600px"></div>
</div>
```

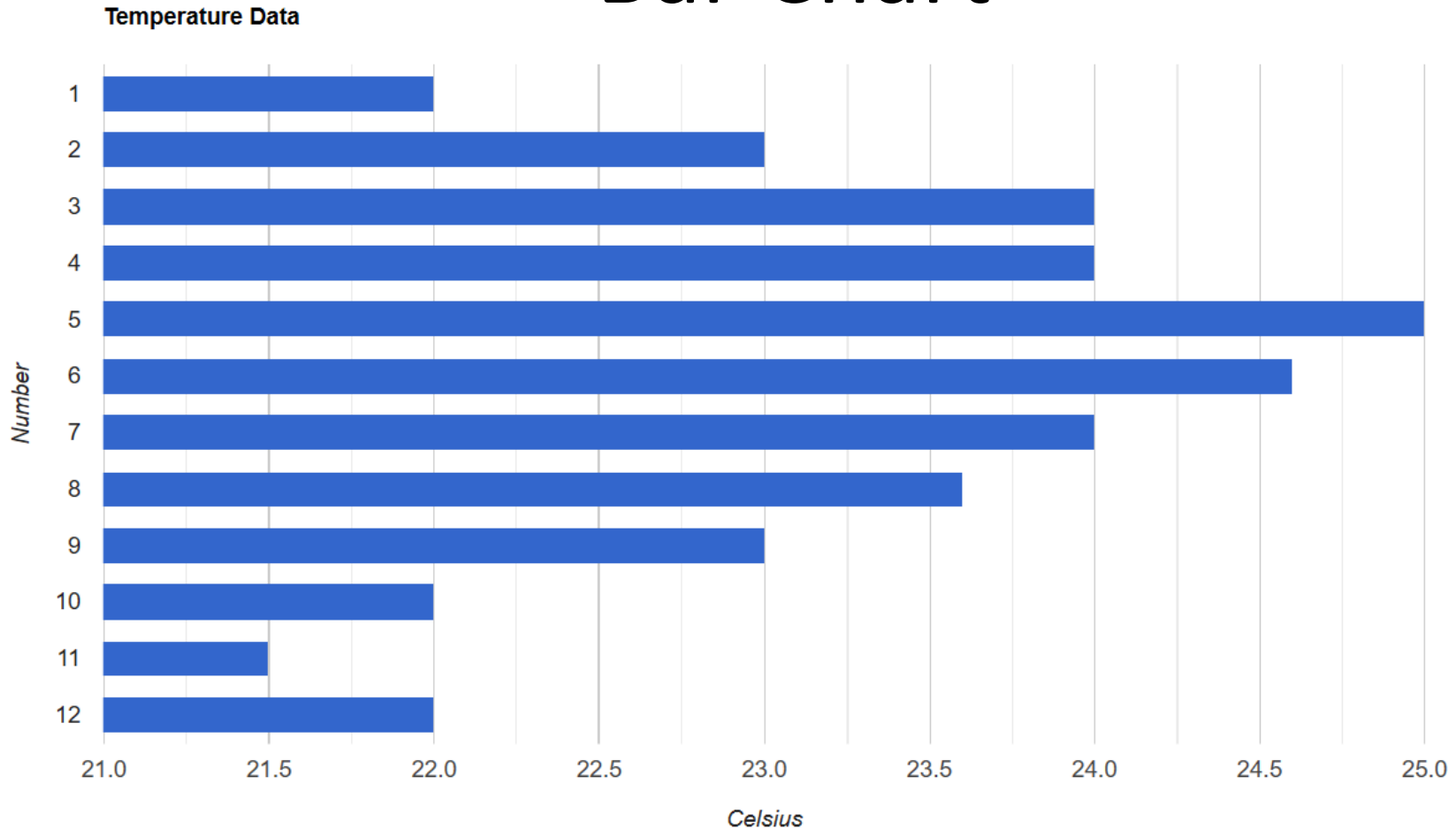
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Bar Chart Example

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Bar Chart

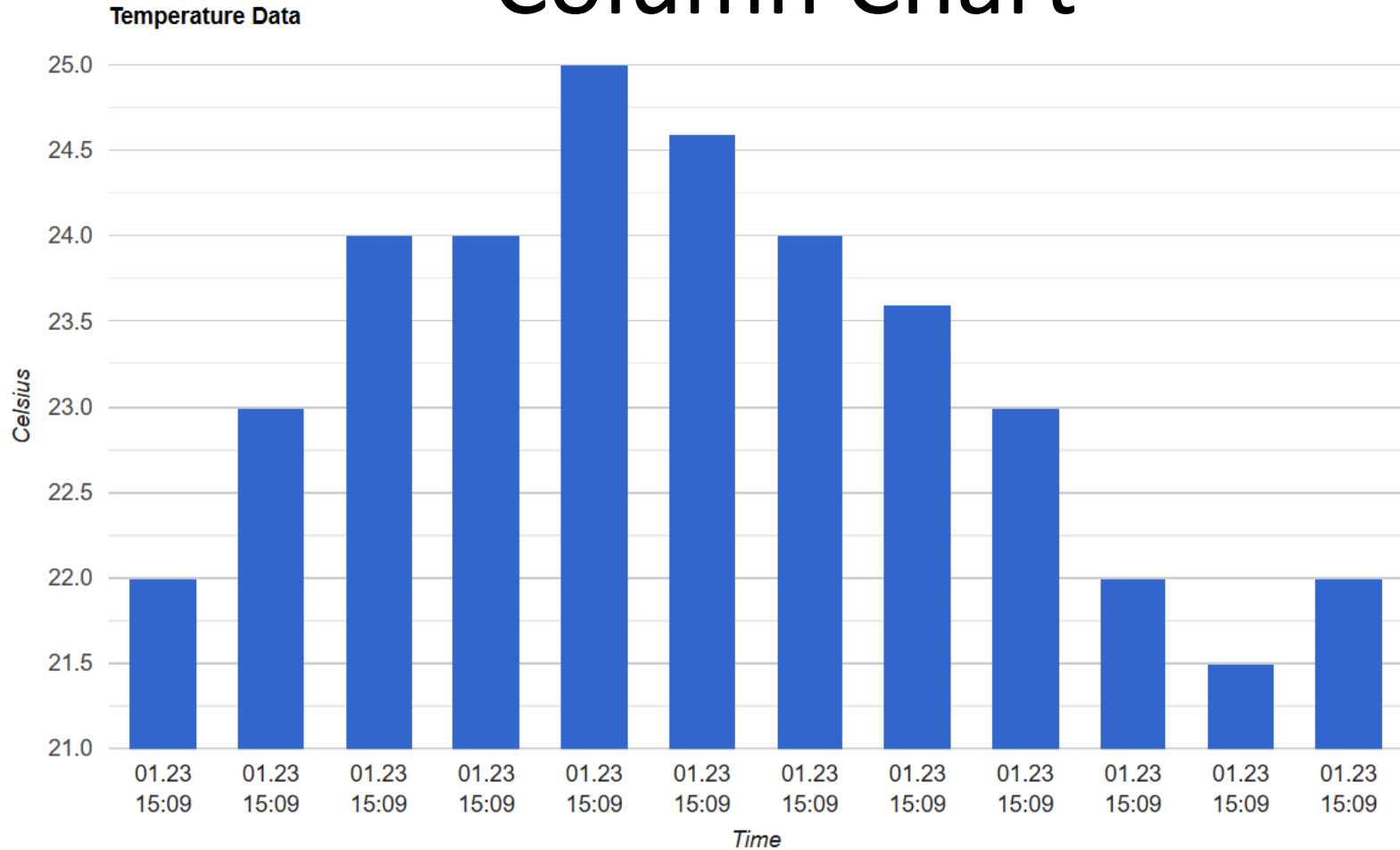




Column Chart Example

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Column Chart

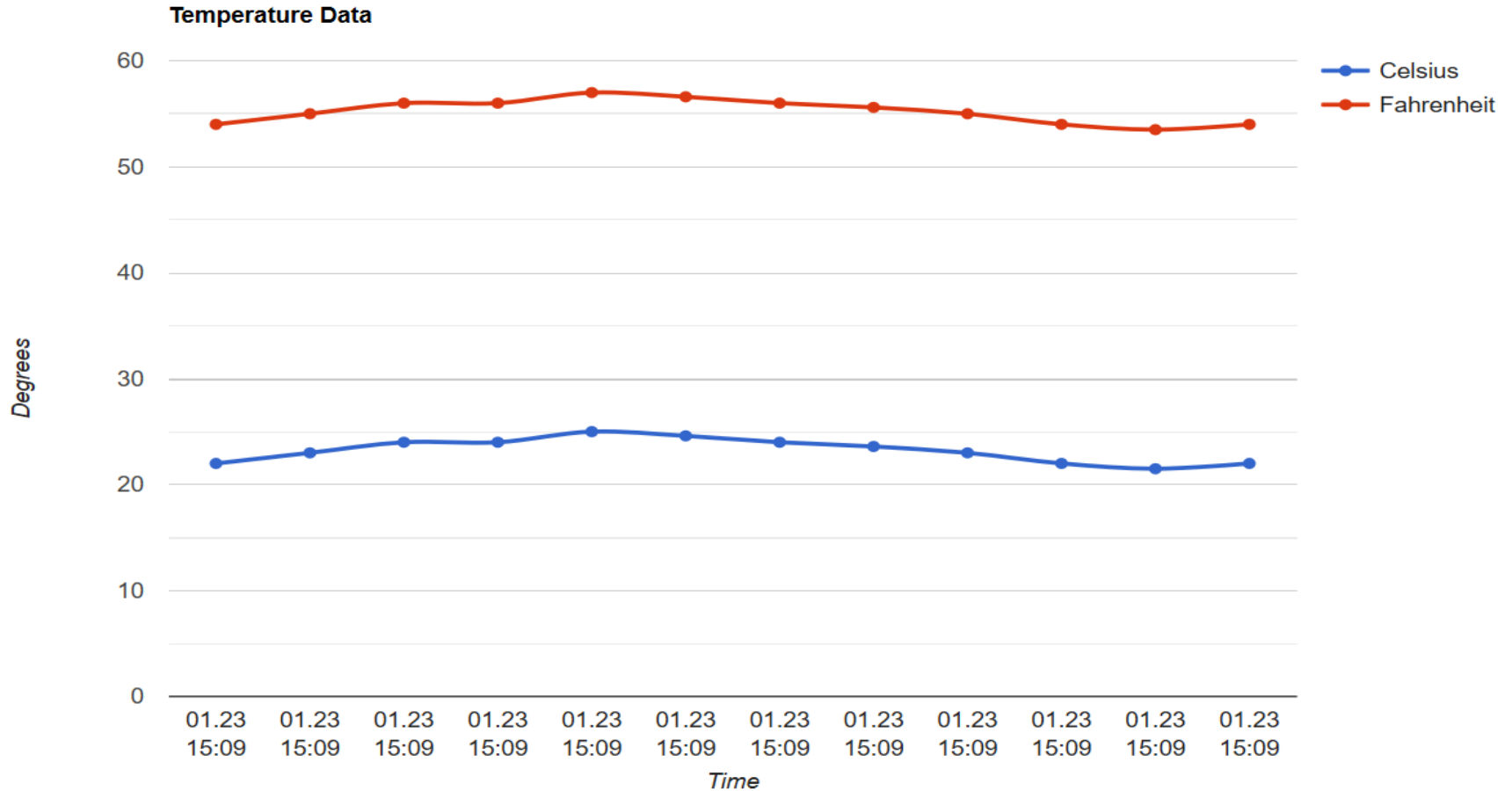




Multiple Line Chart Example

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Multi Line Chart



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