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JavaScript ChartJS

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Chart.js is an open-source JavaScript library available on **GitHub** that enables the creation of various types of charts using the **HTML5 <canvas>** element. Since it relies on the canvas API, a polyfill may be needed to ensure compatibility with older browsers that do not natively support the canvas element.

HTML5 Canvas Element

The HTML5 <canvas> element provides a simple and efficient way to draw graphics using JavaScript. It can be used for a variety of purposes, such as drawing graphs, creating photo compositions, or making both simple and complex animations. One of its key features is its responsiveness, meaning it automatically resizes and redraws the chart when the browser window is resized, ensuring perfect scaling and clarity.

This library supports **8 different types of graphs**:

- Line
- Bar
- Doughnut
- Pie
- Radar
- Polar Area
- Bubble
- Scatter

Installation:

Latest version of Chart.js can be downloaded from the Github or use a Chart.js CDN.

Steps to create a chart:

Step 1: First include the **chart.js** in the HTML.

html



```
</p><pre><code class="language-html"><head>
  <script src=
"https://cdnjs.cloudflare.com/ajax/libs/Chart.js/2.7.2/Chart.bundle.js">
  </script>
  <link rel="stylesheet" type="text/css" href="style.css">
</head></code></pre><p></p><h3><b><strong>Create canvas:</strong></b><span>
</span></h3><p dir="ltr"><span>To create a chart we need to represent the Chart
class. In order to do this, we need to pass jQuery instance or 2d context of
the canvas of where we want the place or draw the chart. For example: </span>
<gfg-tabs data-run-ide="false" data-mode="light"><gfg-tab slot="tab">html

<canvas id = "chart" width="900" height = "900"> </canvas>
```

Type of Chart and Data:

Decide what type of chart is required and prepare the data accordingly. Data requires labels, datasets, data values, backgroundColor, borderColor, borderWidth and various other options. For example:

javascript



```
</p><pre><code class="language-javascript">labels:["CS", "IT" , "ECE" , "EE",
"ME", "BE"],
And datasets:
  Label: '# of students',
  Data : [105,124,78,91,62,56],
  backgroundColor :['rgba(255, 99, 132, 0.2)',
                    'rgba(54, 162, 235, 0.2)',
                    'rgba(255, 206, 86, 0.2)',
                    'rgba(75, 192, 192, 0.2)',
                    'rgba(153, 102, 255, 0.2)',
                    'rgba(255, 159, 64, 0.2)']
],
borderColor: [
                    'rgba(255,99,132,1)',
                    'rgba(54, 162, 235, 1)',
                    'rgba(255, 206, 86, 1)',
                    'rgba(75, 192, 192, 1)',
                    'rgba(153, 102, 255, 1)',
                    'rgba(255, 159, 64, 1)'
```

```

]</code></pre><span>And finally, we should decide the type of chart
from a line, bar, radar, pie, doughnut, polar area, bubble and scatter. </span>
<p></p><h3><b><strong>Create a graph:</strong></b><span> </span></h3><p
dir="ltr"><span>After defining what type of graph is to be drawn, pass the
data to that graph that we want to visualize. Below is an example: </span><gfg-
tabs data-run-ide="false" data-mode="light"><gfg-tab slot="tab">javascript

```

```

let ctx = document.getElementById("chart");
let myChart = new Chart(ctx, {
  type: 'bar',
  data: {
    Labels: ["CS", "IT" , "ECE" , "EE", "ME", "BE"],
    datasets: [
      {
        label: '# of students',
        data : [105,124,78,91,62,56],
        backgroundColor :['rgba(255, 99, 132, 0.2)',
          'rgba(54, 162, 235, 0.2)',
          'rgba(255, 206, 86, 0.2)',
          'rgba(75, 192, 192, 0.2)',
          'rgba(153, 102, 255, 0.2)',
          'rgba(255, 159, 64, 0.2)'
        ],
        borderColor: [
          'rgba(255,99,132,1)',
          'rgba(54, 162, 235, 1)',
          'rgba(255, 206, 86, 1)',
          'rgba(75, 192, 192, 1)',
          'rgba(153, 102, 255, 1)',
          'rgba(255, 159, 64, 1)'
        ],
        borderWidth : 1
      }
    ]
  }
}
]

```

Complete code to create a chart:

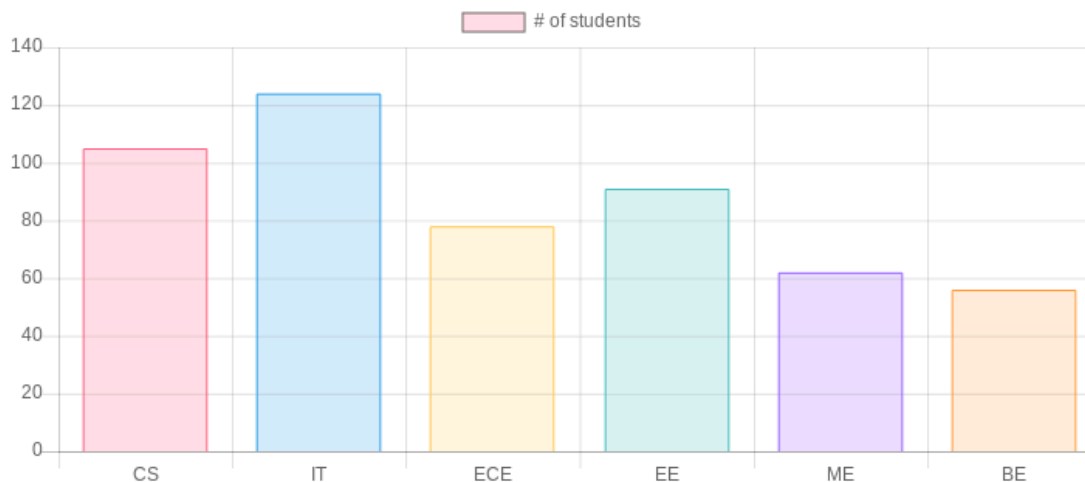
html



```
1 <!DOCTYPE html>
2 <html>
3
4 <head>
5     <script
6         src=
7     "https://cdnjs.cloudflare.com/ajax/libs/Chart.js/2.7.2/Chart
8     .bundle.js">
9     </script>
10
11 </head>
12
13 <body>
14     <canvas id="myChart" width="900" height="400"></canvas>
15     <script type="text/javascript">
16
17         let ctx = document.getElementById("myChart");
18         let myChart = new Chart(ctx, {
19             type: 'bar',
20             data: {
21                 labels: ["CS", "IT", "ECE", "EE", "ME",
22                 "BE"],
23                 datasets: [
24                     {
25                         label: '# of students',
26                         data: [105, 124, 78, 91, 62, 56],
27                         backgroundColor: ['rgba(255, 99,
28                             132, 0.2)',
29                             'rgba(54, 162, 235, 0.2)',
30                             'rgba(255, 206, 86, 0.2)',
31                             'rgba(75, 192, 192, 0.2)',
32                             'rgba(153, 102, 255, 0.2)',
33                             'rgba(255, 159, 64, 0.2)']
34                     },
35                     {
36                         label: '# of teachers',
37                         data: [120, 150, 100, 140, 90, 80],
38                         backgroundColor: ['rgba(255, 99, 132, 1)',
39                             'rgba(54, 162, 235, 1)',
40                             'rgba(255, 206, 86, 1)',
41                             'rgba(75, 192, 192, 1)',
42                             'rgba(153, 102, 255, 1)',
43                             'rgba(255, 159, 64, 1)']
44                     }
45                 ],
46                 borderColor: [
47                     'rgba(255,99,132,1)',
48                     'rgba(54, 162, 235, 1)',
49                     'rgba(255, 206, 86, 1)',
50                     'rgba(75, 192, 192, 1)',
51                     'rgba(153, 102, 255, 1)',
52                     'rgba(255, 159, 64, 1)']
53             },
54             borderWidth: 1
55         }
56     );
57     
```

```
42     }
43   ]
44 },
45   options: {
46     scales: {
47       yAxes: [{
48         ticks: {
49           beginAtZero: true
50         }
51       }]
52     }
53   }
54 });
55
56 </script>
57
58 </body>
59
60 </html>
```

Output:



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