

Chart.js

When trying to make a graphical representation of data using code, it can help to have a library. Chart.js is an open-source JavaScript library used for visualizing data. You can use 8 different chart types: bar, line, area, pie, bubble, radar, polar, and scatter.

1. Go to **000webhost.com** on your Windows laptop, and sign in. Then, go to Tools > File Manager and create a new **index.php** file. Add the following content to the file. We need a canvas to serve as our container for the chart we will create. Also, we must use a chart.js link to be able to use it. **(Note: There are other ways of using chart.js such as downloading it to your computer, however, using a content delivery network (CDN) is more convenient for the purposes of this tutorial.)**



```
<!doctype HTML>
```

```
<html>
```

```
<canvas id="myChart"></canvas>
```

```
<script src="https://cdn.jsdelivr.net/npm/chart.js@2.8.0"></script>
```

```
</html>
```

2. Add the following content to your file. We must define the chart context. In this case, we use `getContext('2d')` to express a 2-dimensional graph. Also, we must initiate the `Chart()` class and assign it to a variable for easy access.

```
<!doctype HTML>
```

```
<html>
```

```
<canvas id="myChart"></canvas>
```

```
<script src="https://cdn.jsdelivr.net/npm/chart.js@2.8.0"></script>
```

```
<script>
```

```
var ctx = document.getElementById('myChart').getContext('2d');
```

```
var chart = new Chart();
```

```
</script>
```

```
</html>
```

3. Add the following code. This is the framework where we define our graph. We define our graph **type** to be *line*, also we added skeleton code for our **data**. This is where our graph **labels** and real data will be defined. We can also add **options** that modify certain aspects of our graph.

```
<!doctype HTML>

<html>


<canvas id="myChart"></canvas>

<script src="https://cdn.jsdelivr.net/npm/chart.js@2.8.0"></script>


<script>

    var ctx = document.getElementById('myChart').getContext('2d');
    var chart = new Chart(
        type: 'line',

        data: {
            labels: [],
            datasets: [{ }]
        },

        options: {}
    );
</script>


</html>
```

4. Now we can add real data to our graph. Modify your **index.php** to the following and refresh your website. We are making a graph to demonstrate spending over the course of 6 months. You can change the values and labels if you wish. :

```
<!doctype HTML>

<html>


<canvas id="myChart"></canvas>

<script src="https://cdn.jsdelivr.net/npm/chart.js@2.8.0"></script>

<script>

var ctx = document.getElementById('myChart').getContext('2d');
var chart = new Chart(ctx, {

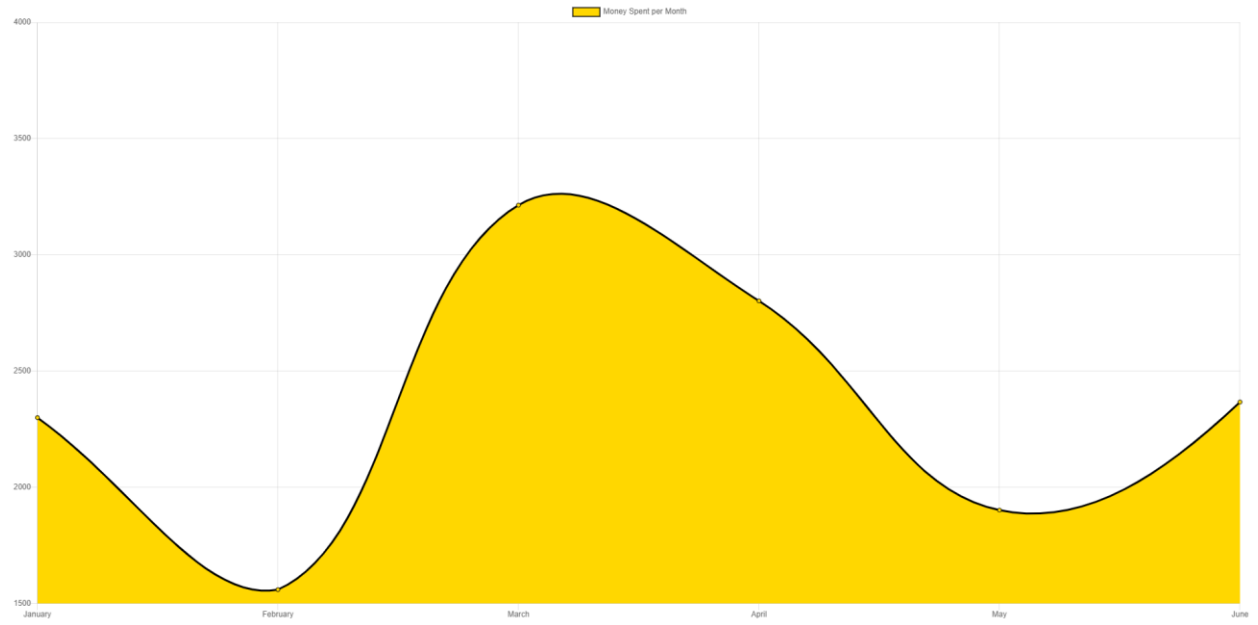
    // The type of chart we want to create
    type: 'line',


    // The data for our dataset
    data: {
        labels: ['January', 'February', 'March', 'April', 'May', 'June'],
        datasets: [{
            label: 'Money Spent per Month',
            backgroundColor: 'rgb(255, 215, 0)', //set the graph color to gold
            borderColor: 'rgb(0, 0, 0)', //set the border color to black
            data: [2300, 1560, 3214, 2802, 1902, 2367]
        }]
    },
    options: {}
});

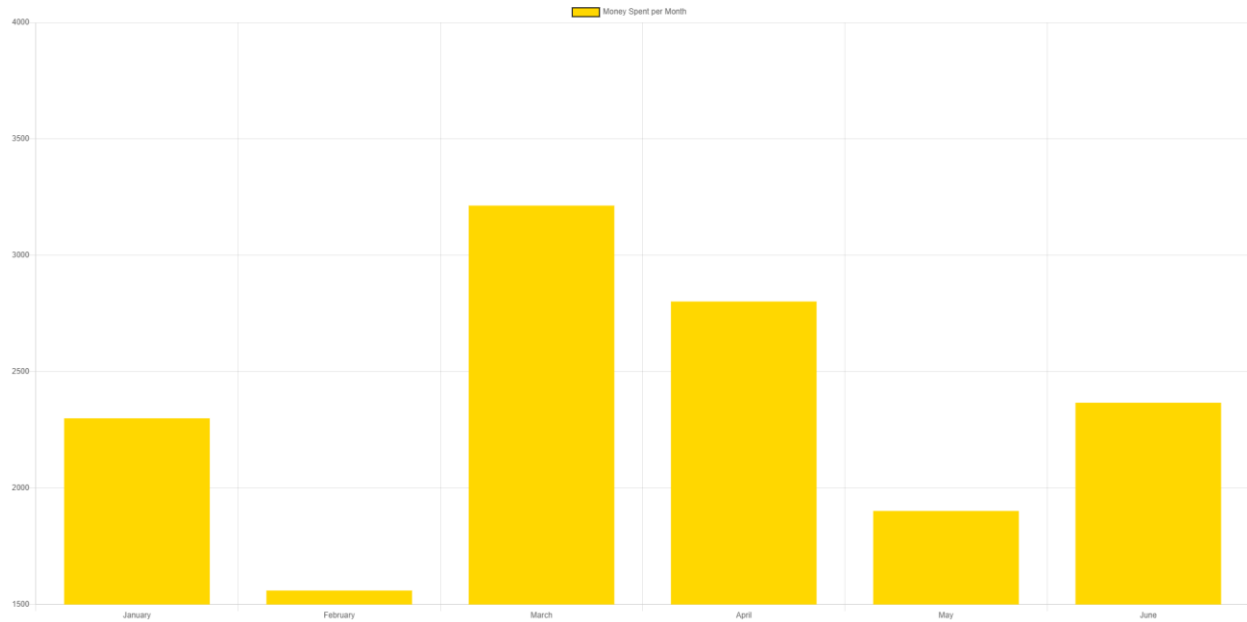
</script>


</html>
```

Expected Output:



5. Let's represent the same graph as a bar graph. Change type: 'line' to type: 'bar'. This is the expected output:



6. We can change the color of each individual bar. Add the following code to your index.php file:

```
<!doctype HTML>
```

```
<html>
```

```
<canvas id="myChart"></canvas>
```

```
<script src="https://cdn.jsdelivr.net/npm/chart.js@2.8.0"></script>
```

```
<script>
```

```
    var ctx = document.getElementById('myChart').getContext('2d');
```

```
    var chart = new Chart(ctx, {
```

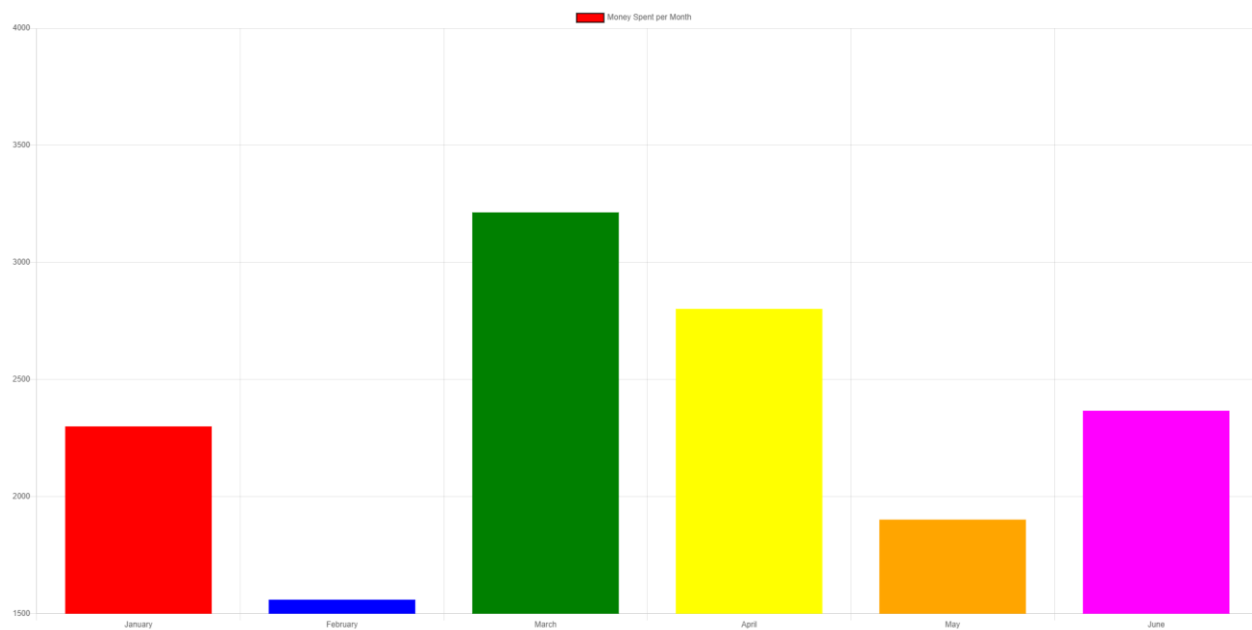
```
        // The type of chart we want to create
```

```
        type: 'bar',
```

```
// The data for our dataset
data: {
  labels: ['January', 'February', 'March', 'April', 'May', 'June'],
  datasets: [{
    label: 'Money Spent per Month',
    backgroundColor: ['red', 'blue', 'green', 'yellow', 'orange', 'magenta'],
    borderColor: 'rgb(0, 0, 0)', //set the border color to black
    data: [2300, 1560, 3214, 2802, 1902, 2367]
  }]
},

options: {}
});
</script>

</html>
```



7. Additionally, we can also modify the bars to have additional characteristics when hovered:

```
<!doctype HTML>
<html>
```

```
<canvas id="myChart"></canvas>
<script src="https://cdn.jsdelivr.net/npm/chart.js@2.8.0"></script>
```

```
<script>
  var ctx = document.getElementById('myChart').getContext('2d');
  var chart = new Chart(ctx, {
    // The type of chart we want to create
    type: 'bar',

    // The data for our dataset
    data: {
      labels: ['January', 'February', 'March', 'April', 'May', 'June'],
      datasets: [{
        label: 'Money Spent per Month',
        backgroundColor: ['red', 'blue', 'green', 'yellow', 'orange', 'magenta'],
        borderColor: 'rgb(0, 0, 0)', //set the border color to black
        data: [2300, 1560, 3214, 2802, 1902, 2367],

        borderWidth: 1,
        borderColor: 'black',
        hoverBorderWidth: 3,
        hoverBorderColor: 'black'
      }]
    },

    options: {}
  });
</script>

</html>
```


8. There are also **global chart options** which allow you to customize font, font size, font color, etc...:

```
<!doctype HTML>
```

```
<html>
```

```
<canvas id="myChart"></canvas>
```

```
<script src="https://cdn.jsdelivr.net/npm/chart.js@2.8.0"></script>
```

```
<script>
```

```
var ctx = document.getElementById('myChart').getContext('2d');
```

```
//global options
```

```
Chart.defaults.global.defaultFontFamily = 'Lato';
```

```
Chart.defaults.global.defaultFontSize = 18;
```

```
Chart.defaults.global.defaultFontColor = '#777'; //set font color to grey
```

```
var chart = new Chart(ctx, {
```

```
    // The type of chart we want to create
```

```
    type: 'bar',
```

```
    // The data for our dataset
```

```
    data: {
```

```
        labels: ['January', 'February', 'March', 'April', 'May', 'June'],
```

```
        datasets: [{
```

```
            label: 'Money Spent per Month',
```

```
            backgroundColor: ['red', 'blue', 'green', 'yellow', 'orange', 'magenta'],
```

```
            borderColor: 'rgb(0, 0, 0)', //set the border color to black
```

```
            data: [2300, 1560, 3214, 2802, 1902, 2367],
```

```
        borderWidth: 1,
        borderColor: 'black',
        hoverBorderWidth: 3,
        hoverBorderColor:'black'
    }}
},

    options: {}
});
</script>

</html>
```

9. Under the options attribute, we can add and customize a title. Add the following content to options:

```
options: {
    title: {
        display:true,
        text: 'Money Spent per Month'
    },

    legend: {
        display: false
    }
}
```

10. Change the legend **display** to **true** and add **position: 'right'** under legend. Also change the bar type to **'pie'**. (Note: Don't forget to add a comma after display: false)

Expected output:

