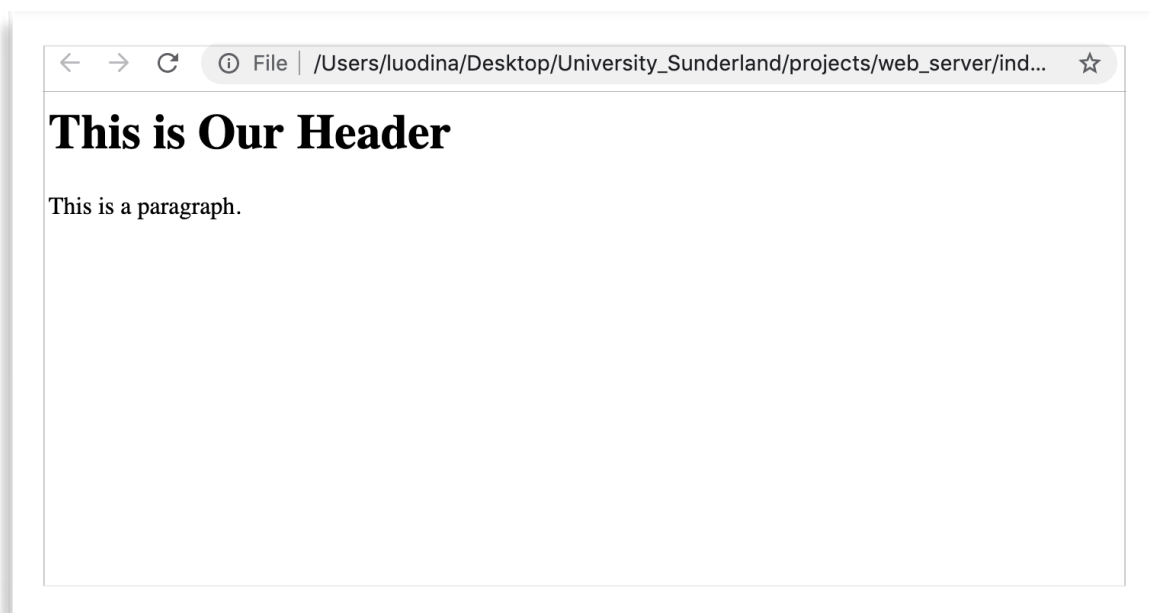


1. Create html file index.html from <https://www.w3schools.com/html/> :

Listing 1:

```
<!DOCTYPE html>
<html>
  <head>
    <title>My First Dashboard</title>
  </head>
  <body>
    <h1>This is Our Header</h1>
    <p>This is a paragraph.</p>
  </body>
</html>
```

Open in Chrome browser to see the result:



Note: More information about HTML&CSS you can find at:

- HTML Crash Course For Absolute Beginners: <https://www.youtube.com/watch?v=UB1O30fR-EE>
- CSS Crash Course For Absolute Beginners: <https://www.youtube.com/watch?v=yfoY53QXEnI>
- or at <https://www.w3schools.com/html/> tutorial

2. Add Bootstrap Library from <https://getbootstrap.com/> use BootstrapCDN for installation from <https://www.bootstrapcdn.com/>:

Listing 2:

```
<!DOCTYPE html>
<html>
  <head>
    <title>My First Dashboard</title>
    <link href="https://stackpath.bootstrapcdn.com/bootstrap/
      4.3.1/css/bootstrap.min.css" rel="stylesheet"
      integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/
      j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
      crossorigin="anonymous">
  </head>
  <body>
    <h1>This is Our Header</h1>
    <p>This is a paragraph.</p>
  </body>
</html>
```

Read and Add nav bar from <https://getbootstrap.com/docs/4.3/components/navbar/>:

- change color by adding: `style="background-color: #e3f2fd;"`
- add title `<h4>Exploratory Data Visualization of Airbnb Dataset in Hong Kong</h4>`;
- add link to AirbnbDataset: `<a>...`
- move to the right corner: `style="float:right"`
- specify another resource in our case html file: `href="http://insideairbnb.com/get-the-data.html"`
- add a logo: ``
- download the pic from internet to the same folder and put the ref: `src="./airbnb.png"`

Listing 3:

```
<!DOCTYPE html>
<html>
  <head>
    <title>My First Dashboard</title>
    <link href="https://stackpath.bootstrapcdn.com/bootstrap/
      4.3.1/css/bootstrap.min.css" rel="stylesheet"
      integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/
      j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
      crossorigin="anonymous">
  </head>
  <body>
    <nav class="navbar navbar-light"
      style="background-color: #e3f2fd;">
      <h4> Exploratory Data Visualization of Airbnb Dataset
        in Hong Kong </h4>
      <a class="navbar-brand" style="float:right"
        href="http://insideairbnb.com/get-the-data.html">
        
```

```

        AirBnB Dataset
    </a>
</nav>
</body>
</html>

```

Read and Create the page layout - read <https://getbootstrap.com/docs/4.3/layout/grid/> documentation:

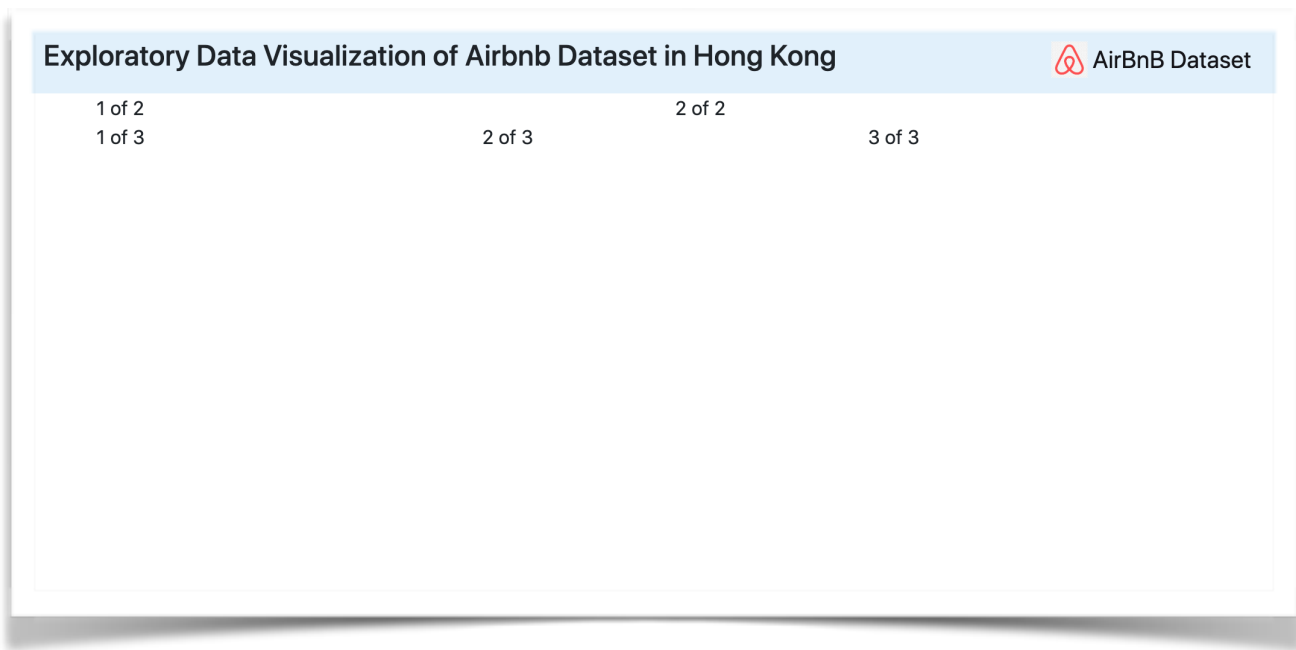
Listing 4:

```

<!DOCTYPE html>
<html>
  <head>
    <title>My First Dashboard</title>
    <link href="https://stackpath.bootstrapcdn.com/bootstrap/
4.3.1/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
  </head>
  <body>
    <nav class="navbar navbar-light"
      style="background-color: #e3f2fd;">
      <h4>Exploratory Data Visualization of Airbnb Dataset in
      Hong Kong</h4>
      <a class="navbar-brand" style="float:right" href="http://
      insideairbnb.com/get-the-data.html">
         AirBnB Dataset
      </a>
    </nav>
    <div class="container">
      <div class="row">
        <div class="col">
          1 of 2
        </div>
        <div class="col">
          2 of 2
        </div>
      </div>
      <div class="row">
        <div class="col">
          1 of 3
        </div>
        <div class="col">
          2 of 3
        </div>
        <div class="col">
          3 of 3
        </div>
      </div>
    </div>
  </body>
</html>

```

Open in Chrome browser to see the result:



2. Add ChartJS Library

Installation: use CDN method at <https://www.chartjs.org/docs/latest/getting-started/installation.html>; use link <https://cdnjs.com/libraries/Chart.js> and copy there the path to js and css libraries and include to our html file:

Listing 5:

```
<!DOCTYPE html>
<html>
  <head>
    <title>My First Dashboard</title>
    <link href="https://stackpath.bootstrapcdn.com/bootstrap/
4.3.1/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link href="https://cdnjs.cloudflare.com/ajax/libs/
Chart.js/2.8.0/Chart.min.css" rel="stylesheet">
  </head>
  <body>
    <nav class="navbar navbar-light"
      style="background-color: #e3f2fd;">
      <h4>Exploratory Data Visualization of Airbnb Dataset in
        Hong Kong</h4>
      <a class="navbar-brand" style="float:right" href="http://
        insideairbnb.com/get-the-data.html">
         AirBnB Dataset </a>
```

```

</nav>
  <div class="container">
    <div class="row">
      <div class="col">
        1 of 2
      </div>
      <div class="col">
        2 of 2
      </div>
    </div>
    <div class="row">
      <div class="col">
        1 of 3
      </div>
      <div class="col">
        2 of 3
      </div>
      <div class="col">
        3 of 3
      </div>
    </div>
  </div>
</body>
<script src="https://cdnjs.cloudflare.com/ajax/libs/Chart.js/
2.8.0/Chart.bundle.min.js">
</script>
</html>

```

Use <https://www.chartjs.org/docs/latest/> to create the first chart:

Bar Chart <https://www.chartjs.org/docs/latest/charts/bar.html>

Listing 6:

```

<!DOCTYPE html>
<html>
  <head>
    <title>My First Dashboard</title>
    <link href="https://stackpath.bootstrapcdn.com/bootstrap/
4.3.1/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link href="https://cdnjs.cloudflare.com/ajax/libs/
Chart.js/2.8.0/Chart.min.css" rel="stylesheet">
  </head>
  <body>
    <nav class="navbar navbar-light"
      style="background-color: #e3f2fd;">
      <h4>Exploratory Data Visualization of Airbnb Dataset in
        Hong Kong</h4>
      <a class="navbar-brand" style="float:right" href="http://
        insideairbnb.com/get-the-data.html">
       AirBnB Dataset </a>
    </nav>
  </body>
</html>

```

```

</nav>
<div class="container">
  <div class="row">
    <div class="col">
      <canvas id="myChart" width="400" height="400">
      </canvas>
    </div>
    <div class="col">
      2 of 2
    </div>
  </div>
  <div class="row">
    <div class="col">
      1 of 3
    </div>
    <div class="col">
      2 of 3
    </div>
    <div class="col">
      3 of 3
    </div>
  </div>
</div>
</body>
<script src="https://cdnjs.cloudflare.com/ajax/libs/Chart.js/
2.8.0/Chart.bundle.min.js">
</script>
<script>
var ctx = document.getElementById('myChart').getContext('2d');
var myChart = new Chart(ctx, {
  type: 'bar',
  data: {
    labels: ['Red', 'Blue', 'Yellow', 'Green', 'Purple',
'Orange'],
    datasets: [{
      label: '# of Votes',
      data: [12, 19, 3, 5, 2, 3],
      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
    }
  ]
});

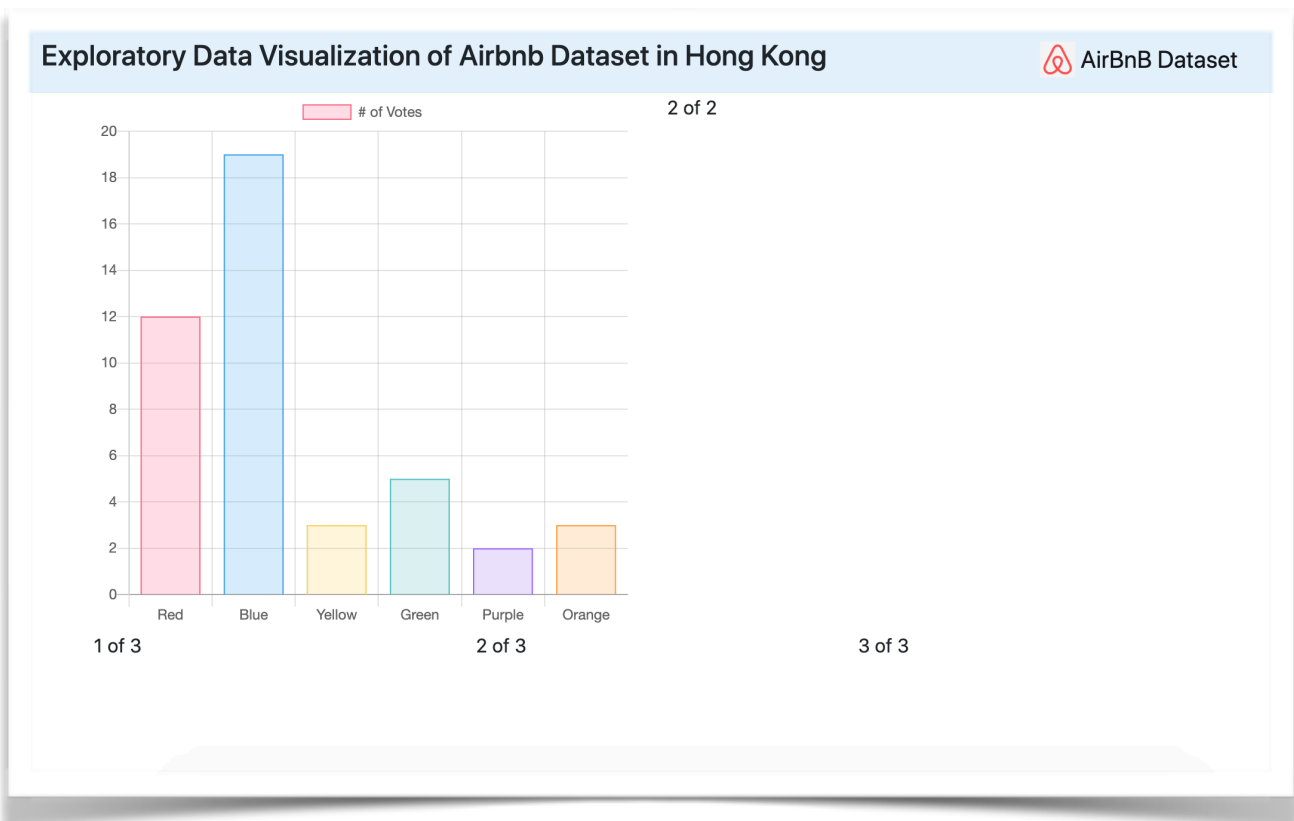
```

```

    ]]
  }
});
</script>
</html>

```

Result in browser:



Create the rest of our charts according to the design:

In section <body>: ID must be unique for all html-elements that's why change the ID to some semantic one:

Old version:

```
<canvas id="myChart" width="400" height="400"></canvas>
```

New version:

```
<canvas id="barChart" width="400" height="400"></canvas>
```

In the section <script>: change the variable name from "ctx" to more meaningful "barChartCtx" and use new ID in "getElementById" function

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

```
var barChartCtx =document.getElementById('barChart').getContext('2d');
```

change the variable name from “myChart” to more meaningful “barChart” and use already changed parameter barChartCtx instead of old ctx in new Chart().

create new variable barChartLabels ,barChartData, barBckGrndColor and barBrdrColor to use in dataset.

Old version:

```
var myChart = new Chart(ctx, {
  type: 'bar',
  data: {
    labels: ['Red', 'Blue', 'Yellow', 'Green', 'Purple',
            'Orange'],
    datasets: [{
      label: '# of Votes',
      data: [12, 19, 3, 5, 2, 3],
      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
    }]
  }
});
```

New version:

```
var barChartLabels =['Red', 'Blue', 'Yellow', 'Green', 'Purple',
'Orange'];
var barChartLabel = '# of Votes'
var barChartData= [12, 19, 3, 5, 2, 3]
var barBckGrndColor =[
  '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)'
]
var barBrdrColor=[
  '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)'
    ]

    var barChart = new Chart(barChartCtx, {
        type: 'bar',
        data: {
            labels: barChartLabels,
            datasets: [{
                label: barChartLabel,
                data: barChartData,
                backgroundColor: barBckGrndColor,
                borderColor: barBrdrColor,
                borderWidth: 1
            }]
        }
    });

```

Create new file in the same directory: bar.js
 copy all code from the last <script> tag to the file
 add ref to that file in html: <script src="./bar.js"></script>

Listing 6:

```

<!DOCTYPE html>
<html>
    <head>
        <title>My First Dashboard</title>
        <link href="https://stackpath.bootstrapcdn.com/bootstrap/
4.3.1/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
        <link href="https://cdnjs.cloudflare.com/ajax/libs/
Chart.js/2.8.0/Chart.min.css" rel="stylesheet">
    </head>
    <body>
        <nav class="navbar navbar-light"
            style="background-color: #e3f2fd;">
            <h4>Exploratory Data Visualization of Airbnb Dataset in
            Hong Kong</h4>
            <a class="navbar-brand" style="float:right" href="http://
insideairbnb.com/get-the-data.html">
             AirBnB Dataset </a>
        </nav>
        <div class="container">
            <div class="row">
                <div class="col">
                    <canvas id="barChart" width="400" height="400"></
canvas>

```

```

        </div>
        <div class="col">
            2 of 2
        </div>
    </div>
    <div class="row">
        <div class="col">
            1 of 3
        </div>
        <div class="col">
            2 of 3
        </div>
        <div class="col">
            3 of 3
        </div>
    </div>
</div>
</body>
<script src="https://cdnjs.cloudflare.com/ajax/libs/Chart.js/
2.8.0/Chart.bundle.min.js">
</script>
<script src="./bar.js"></script>
</html>

```

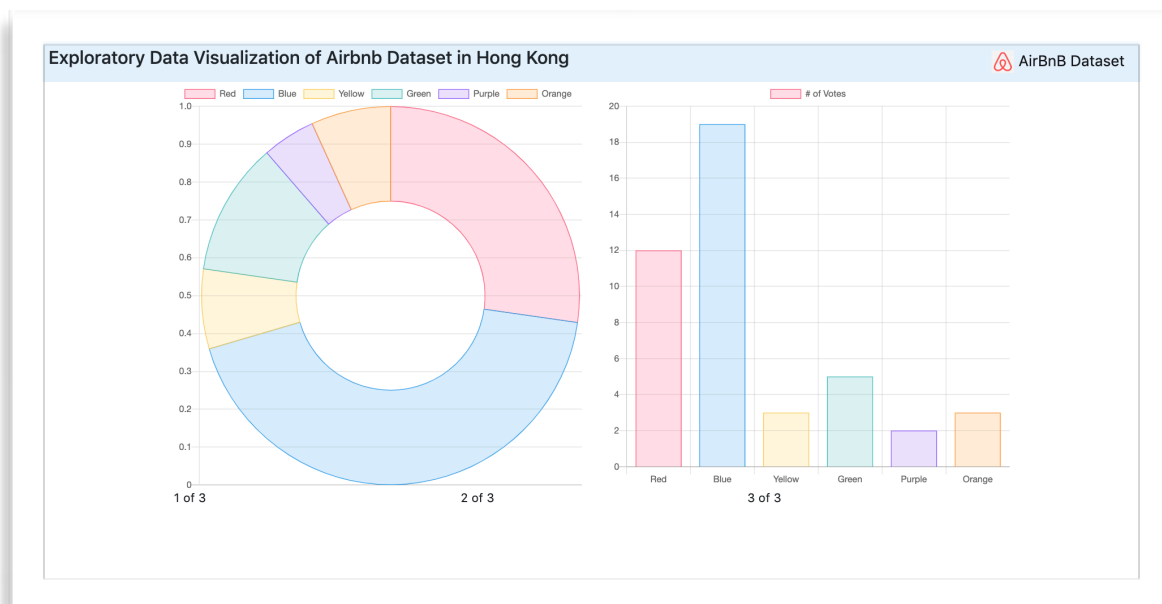
check in browser that everything works as expected.

In <body> section move barChart from the first column to “2 of 2”

Create doughnutChart <https://www.chartjs.org/docs/latest/charts/doughnut.html> add to html file at the place of barChart:

```
<canvas id="doughnutChart Chart" width="400" height="400"></canvas>
```

and create file doughnut.js and add ref to it in html file.



Listing 7:

```
<!DOCTYPE html>
<html>
  <head>
    <title>My First Dashboard</title>
    <link href="https://stackpath.bootstrapcdn.com/bootstrap/
4.3.1/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-
ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/iJTQUOhcWr7x9JvoRxT2MZw1T"
crossorigin="anonymous">
    <link href="https://cdnjs.cloudflare.com/ajax/libs/
Chart.js/2.8.0/Chart.min.css" rel="stylesheet">
  </head>
  <body>
    <nav class="navbar navbar-light"
      style="background-color: #e3f2fd;">
      <h4>Exploratory Data Visualization of Airbnb Dataset in
        Hong Kong</h4>
      <a class="navbar-brand" style="float:right" href="http://
        insideairbnb.com/get-the-data.html">
       AirBnB Dataset </a>
    </nav>
    <div class="container">
      <div class="row">
        <div class="col">
          <canvas id="doughnutChart Chart" width="400"
height="400"></canvas>
        </div>
        <div class="col">
          <canvas id="barChart Chart" width="400"
height="400"></canvas>
        </div>
      </div>
      <div class="row">
        <div class="col">
          1 of 3
        </div>
        <div class="col">
          2 of 3
        </div>
        <div class="col">
          3 of 3
        </div>
      </div>
    </div>
  </body>
  <script src="https://cdnjs.cloudflare.com/ajax/libs/Chart.js/
2.8.0/Chart.bundle.min.js">
</script>
  <script src="./bar.js"></script>
  <script src="./doughnut.js"></script>
</html>
```

Add `<canvas id="barChart Chart" width="400" height="400"></canvas>` and `radar.js`:

change the size `width="400" & height="400"` to `width="300" & height="300"` for all charts.
add a labels with titles for all charts: `<label><h5>Accommodation Price, HKD</h5></label>`

Listing 8:

```
<html>
  <head>
    <title>My First Dashboard</title>
    <link href="https://stackpath.bootstrapcdn.com/
bootstrap/4.3.1/css/bootstrap.min.css" rel="stylesheet"
integrity="sha384-ggOyR0iXCbMQv3Xipma34MD+dH/1fQ784/j6cY/
iJTQUOhcWr7x9JvoRxT2MZw1T"
    crossorigin="anonymous">
    <link href="https://cdnjs.cloudflare.com/ajax/libs/
Chart.js/2.8.0/Chart.min.css" rel="stylesheet">
  </head>
  <body>
    <nav class="navbar navbar-light" style="background-color:
#e3f2fd;">
      <h4>Exploratory Data Visualization of Airbnb Dataset in
Hong Kong</h4>
      <a class="navbar-brand" style="float:right" href="http://
insideairbnb.com/get-the-data.html">
        
        AirBnB Dataset
      </a>
    </nav>
    <div class="container">
      <div class="row">
        <div class="col">
          <label>
            <h5>Accommodation Price, HKD</h5>
          </label>
          <canvas id="doughnutChart" width="300" height="300"></
canvas>
        </div>
        <div class="col">
          <label>
            <h5>Type of Accommodation</h5>
          </label>
          <canvas id="barChart" width="300" height="300"></
canvas>
        </div>
        <div class="col">
          <label>
            <h5>Average Price per Night</h5>
          </label>
```

```

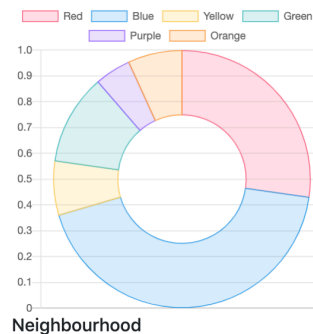
        <canvas id="radarChart" width="300" height="300"></
canvas>
    </div>
</div>
<div class="row">
    <div class="col-sm-7">
        <div>
            <label>
                <h5>Neighbourhood</h5>
            </label>
        </div>
    </div>
    <div class="col-sm-1"></div>
    <div class="col-sm-4">
        <div>
            <label>
                <h5>Type of the Most Expensive Accommodation</h5>
            </label>
        </div>
    </div>
</div>
</body>
<script src="https://cdnjs.cloudflare.com/ajax/libs/Chart.js/
2.5.0/Chart.min.js" ></script>
<script type="text/javascript" src="./bar.js"></script>
<script type="text/javascript" src="./doughnut.js"></script>
<script type="text/javascript" src="./radar.js"></script>
</html>

```

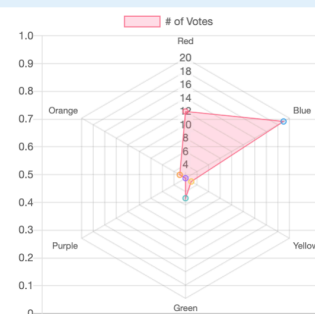
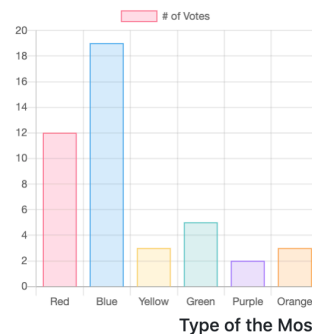
Exploratory Data Visualization of Airbnb Dataset in Hong Kong

AirBnB Dataset

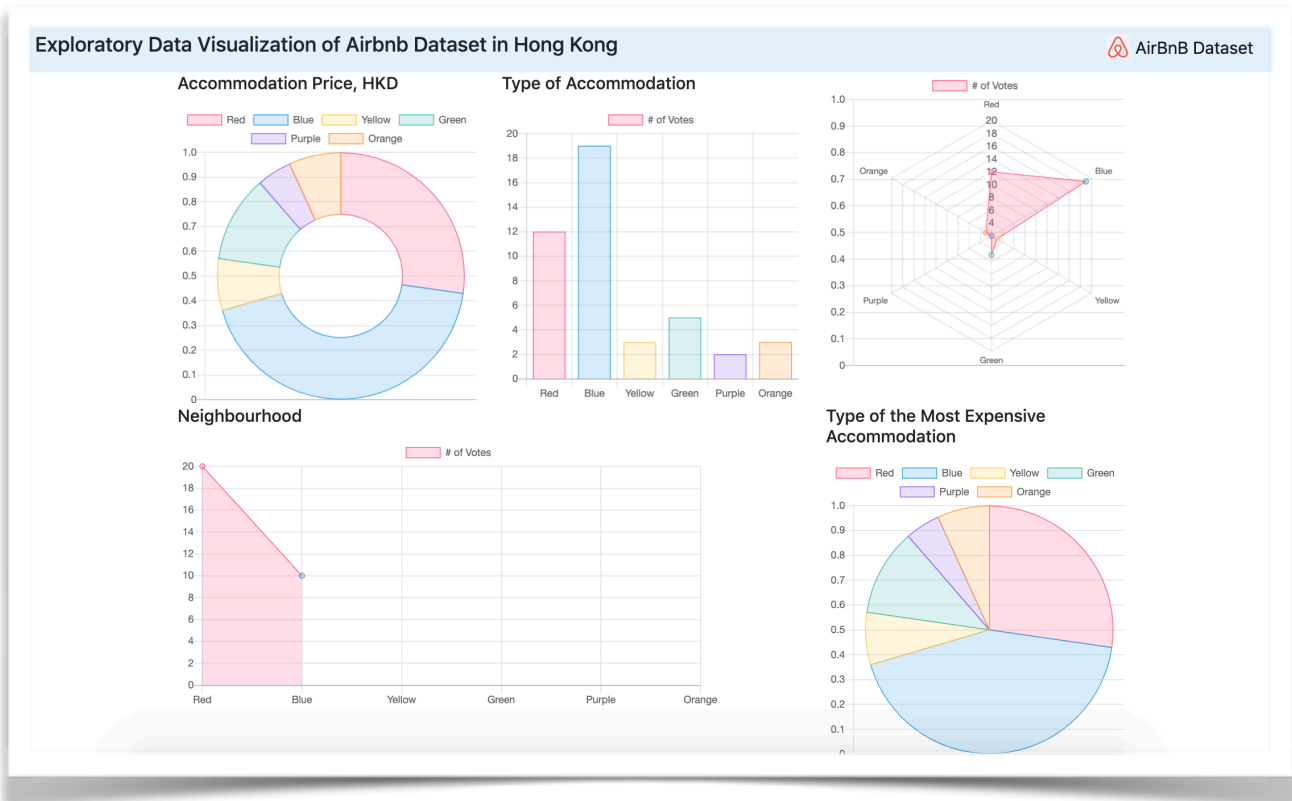
Accommodation Price, HKD



Type of Accommodation



analogically add two bottom charts:



Add DATA:

- Data Source - <http://insideairbnb.com/get-the-data.html> listings.csv for HK.
- Convert from csv to json <https://www.csvjson.com/csv2json>.
- Add file listings.json to the same directory with the rest of files.
- Save all content of listing.json to variable "listings": Add "listings = [" at the beginning of the file and "]" at the end.
- Add listings.json file to html file before the rest of js-files `<script type="text/javascript" src="./listings.json"></script>`

Inside bar.js:

Add real values:

```
old: var radarChartLabels = ['Red', 'Blue', 'Yellow', 'Green', 'Purple', 'Orange'];
new: var radarChartLabels = ["Private room", "Entire home/apt", "Shared room"];
```

Create three variables for data: let bar_private = 0, bar_entire = 0, bar_shared = 0;

Make the loop for all listings.json items (variable "listings") save values in variables bar_private, bar_entire, bar_shared.

```

for (i = 0; i < listings.length; i++) {
  let item = listings[i];
  if (item["room_type"] === "Private room") {
    bar_private++;
  } else if (item["room_type"] === "Entire home/apt") {
    bar_entire++;
  } else if (item["room_type"] === "Shared room") {
    bar_shared++;
  }
}

```

Save values in variable barChartData: let barChartData= [bar_private, bar_entire, bar_shared]

Use variables in chart:

```

let barChart = new Chart(barChartCtx, {
  type: 'bar',
  data: {
    labels: barChartLabels,
    datasets: [{
      label: [barChartLabel],
      data: barChartData,
      backgroundColor: barBckGrndColor,
      borderColor: barBrdrColor,
      borderWidth: 1
    }]
  }
});

```

Apply diff conditions to other charts in js-files. Use function console.log("My variable", any_variable_want_to_check) to check variable values or for debug.
Check results in Chrome browser:

