Assignment 1: Namita Mhatre (ID: 110929172)

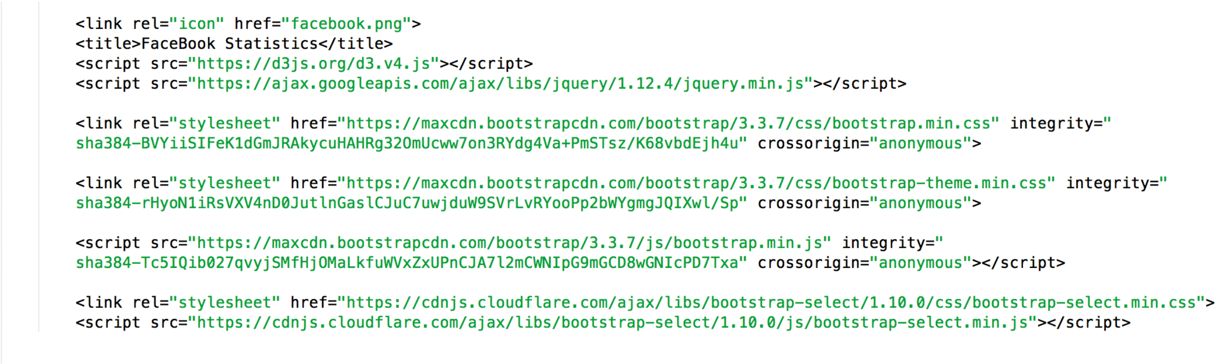
Report

This assignment involves the implementation of varies types of charts (bar-chart, pie chart and force directed graph).

Data Set: The facebook statictics dataset was chosen for this assignment. It has the following attributes: number of likes, number of comments, number of shares, posts according to months, weeks and hours, etc. There are total 10 such variables and 500 entries. We can form charts for all the attributes. (Dropdown list provided). This data is saved in a CSV file named fb_data.csv.

To implement it, an HTML page was made and hosted using XAMPP. For drawing and animating the graphs, the d3 library of JavaScript was used. **D3.js** is a JavaScript library for manipulating documents based on data. **D3** helps bring data to life using HTML, SVG, and CSS.

Following are the different scripts and styles that were linked. (Bootstrap for CSS and D3.js for the SVG)

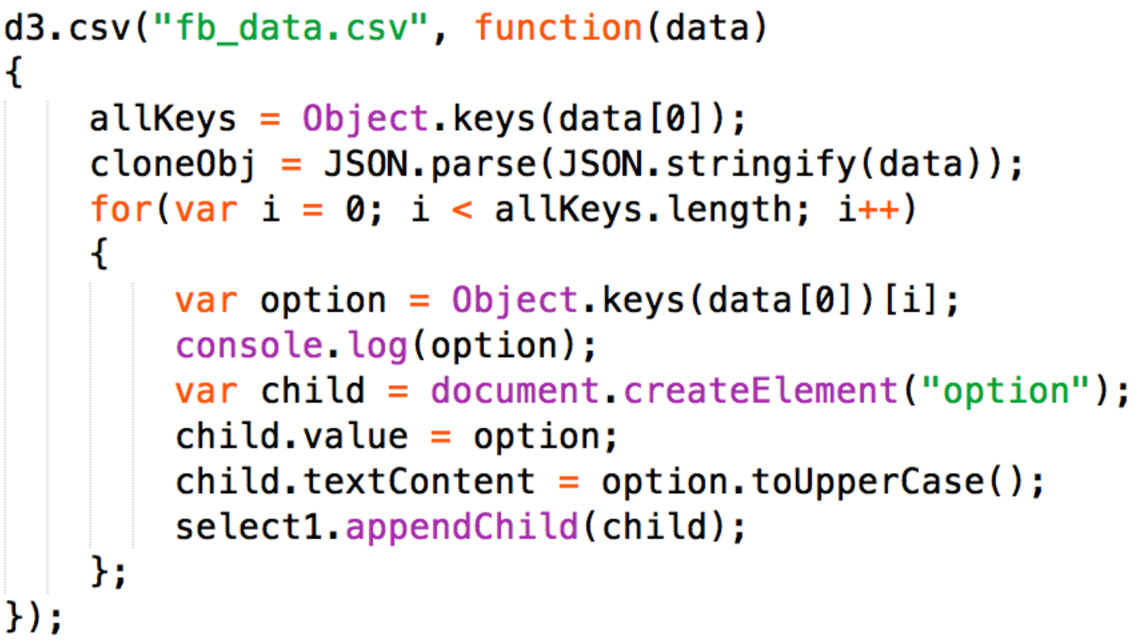


```
<link rel="icon" href="facebook.png">
<title>FaceBook Statistics</title>
<script src="https://d3js.org/d3.v4.js"></script>
<script src="https://ajax.googleapis.com/ajax/libs/jquery/1.12.4/jquery.min.js"></script>

<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.css" integrity="
sha384-BVYiiSIFeK1dGmJRAkycuHAHRg32OmUcww7on3RYdg4Va+PmSTsz/K68vbdEjh4u" crossorigin="anonymous">

<link rel="stylesheet" href="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap-theme.min.css" integrity="
sha384-rHyoN1iRsVXV4nD0JutlnGaslCJuC7uwjduW9SVrLvRYooPp2bWYgmgJQIXwl/Sp" crossorigin="anonymous">

<script src="https://maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.js" integrity="
sha384-Tc5IQib027qvyjSMfHjOMaLkfuWVxZxUPnCJA7l2mCWNIpG9mGCD8wGNIcPD7Txa" crossorigin="anonymous"></script>

<link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/bootstrap-select/1.10.0/css/bootstrap-select.min.css">
<script src="https://cdnjs.cloudflare.com/ajax/libs/bootstrap-select/1.10.0/js/bootstrap-select.min.js"></script>
```

There are 3 main files. Index.html containing the main page. Javascript.js containing the implementation of the charts using the d3 library. Style.css containing the CSS needed to control the layout of our webpage. The bootstrap CSS gives a very nice look to the page and makes it look elegant.

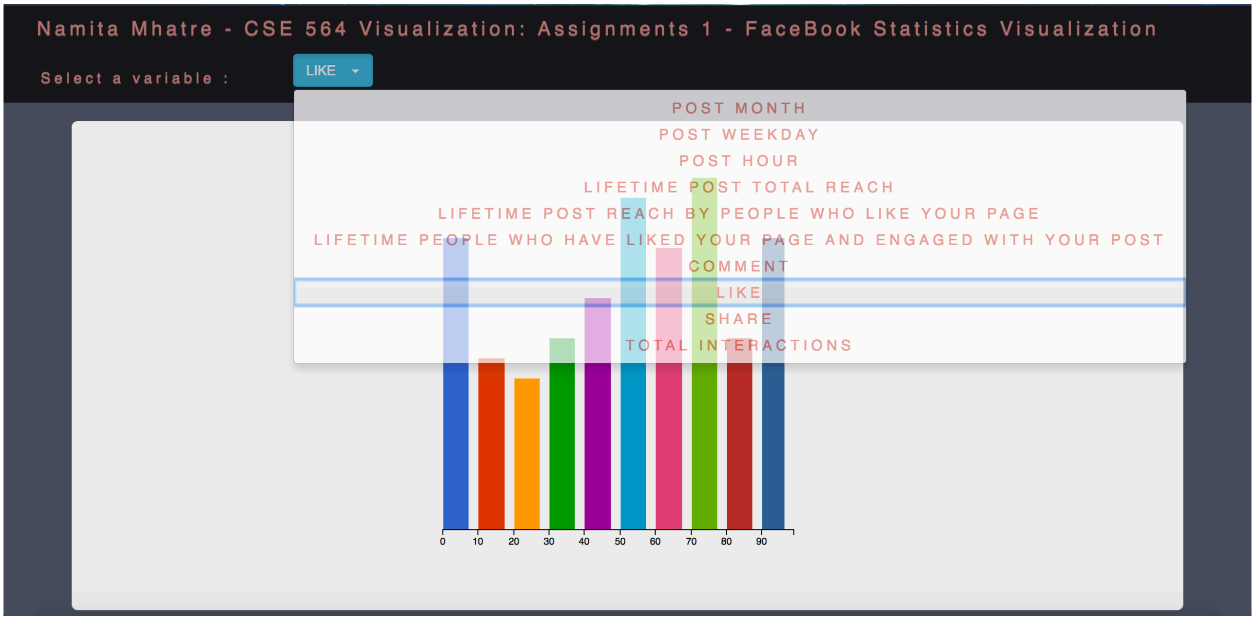
Following are the different features of the software. Each feature is shown with a screenshot from the webpage and a code snippet.

To read the data from the csv file:



```
d3.csv("fb_data.csv", function(data)
{
    allKeys = Object.keys(data[0]);
    cloneObj = JSON.parse(JSON.stringify(data));
    for(var i = 0; i < allKeys.length; i++)
    {
        var option = Object.keys(data[0])[i];
        console.log(option);
        var child = document.createElement("option");
        child.value = option;
        child.textContent = option.toUpperCase();
        select1.appendChild(child);
    };
});
```

1. **Picking a variable from the different variables in CSV file**.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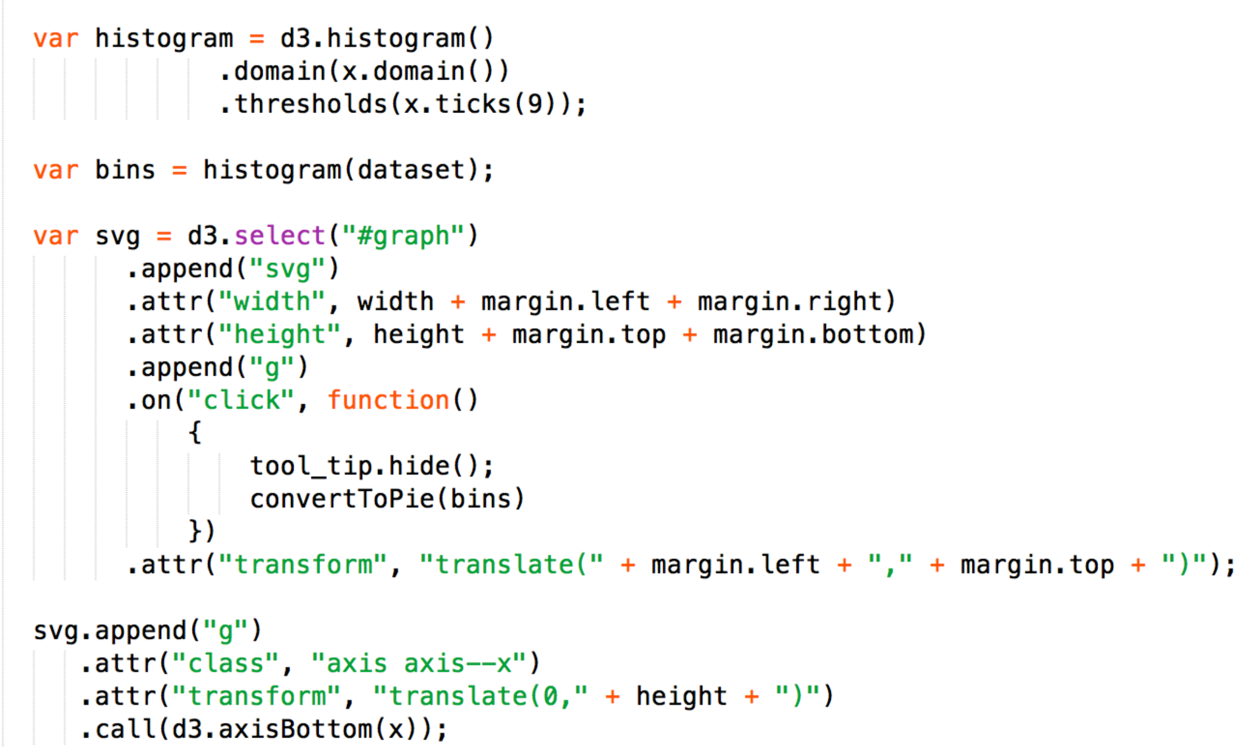
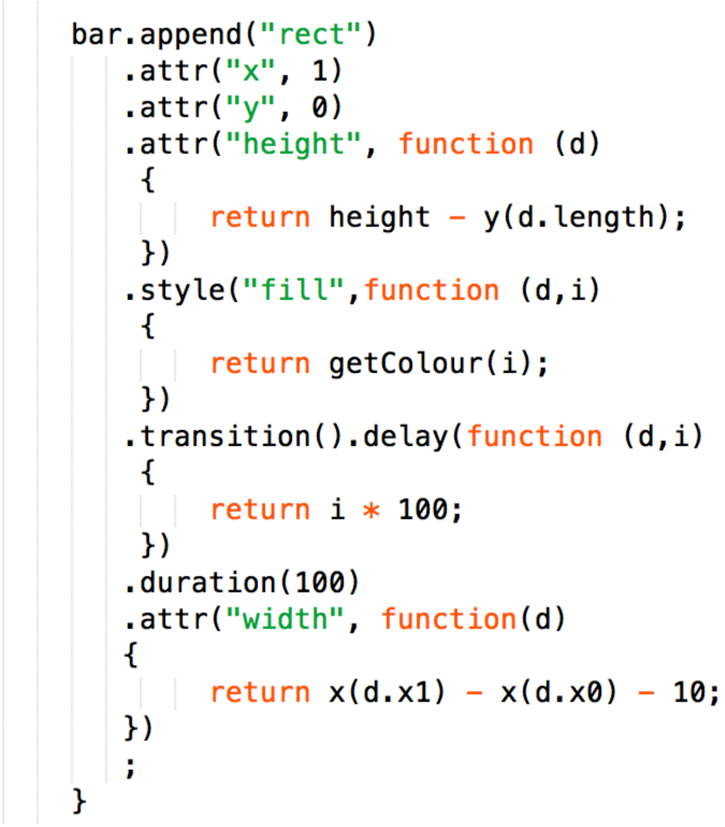
Select a variable :
LIKE
POST MONTH
POST WEEKDAY
POST HOUR
LIFETIME POST TOTAL REACH
LIFETIME POST REACH BY PEOPLE WHO LIKE YOUR PAGE
LIFETIME PEOPLE WHO HAVE LIKED YOUR PAGE AND ENGAGED WITH YOUR POST
COMMENT
LIKE
SHARE
TOTAL INTERACTIONS
0
10
20
30
40
50
60
70
80
90

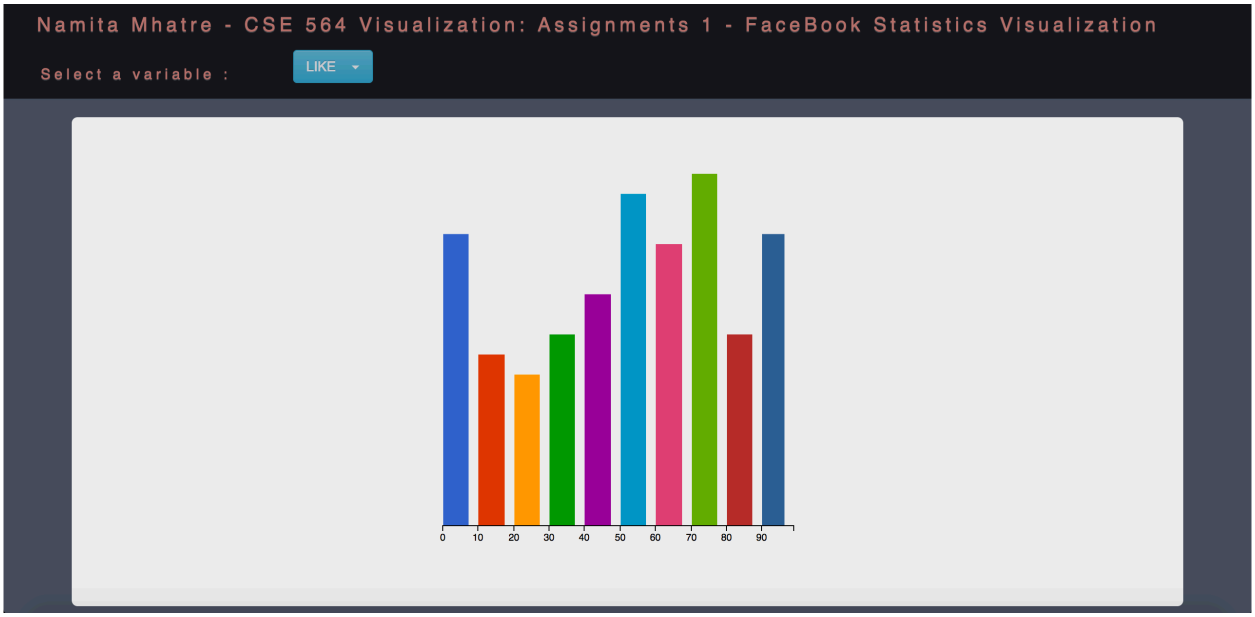
2. Creating a Bar-Chart for this variable



```
var histogram = d3.histogram()
                .domain(x.domain())
                .thresholds(x.ticks(9));

var bins = histogram(dataset);

var svg = d3.select("#graph")
        .append("svg")
        .attr("width", width + margin.left + margin.right)
        .attr("height", height + margin.top + margin.bottom)
        .append("g")
        .on("click", function()
            {
              tool_tip.hide();
              convertToPie(bins)
            })
        .attr("transform", "translate(" + margin.left + "," + margin.top + ")");

svg.append("g")
    .attr("class", "axis axis--x")
    .attr("transform", "translate(0," + height + ")")
    .call(d3.axisBottom(x));
```



```
bar.append("rect")
    .attr("x", 1)
    .attr("y", 0)
    .attr("height", function (d)
     {
        return height - y(d.length);
     })
    .style("fill",function (d,i)
     {
        return getColour(i);
     })
    .transition().delay(function (d,i)
     {
        return i * 100;
     })
    .duration(100)
    .attr("width", function(d)
    {
        return x(d.x1) - x(d.x0) - 10;
    })
    ;
}
```



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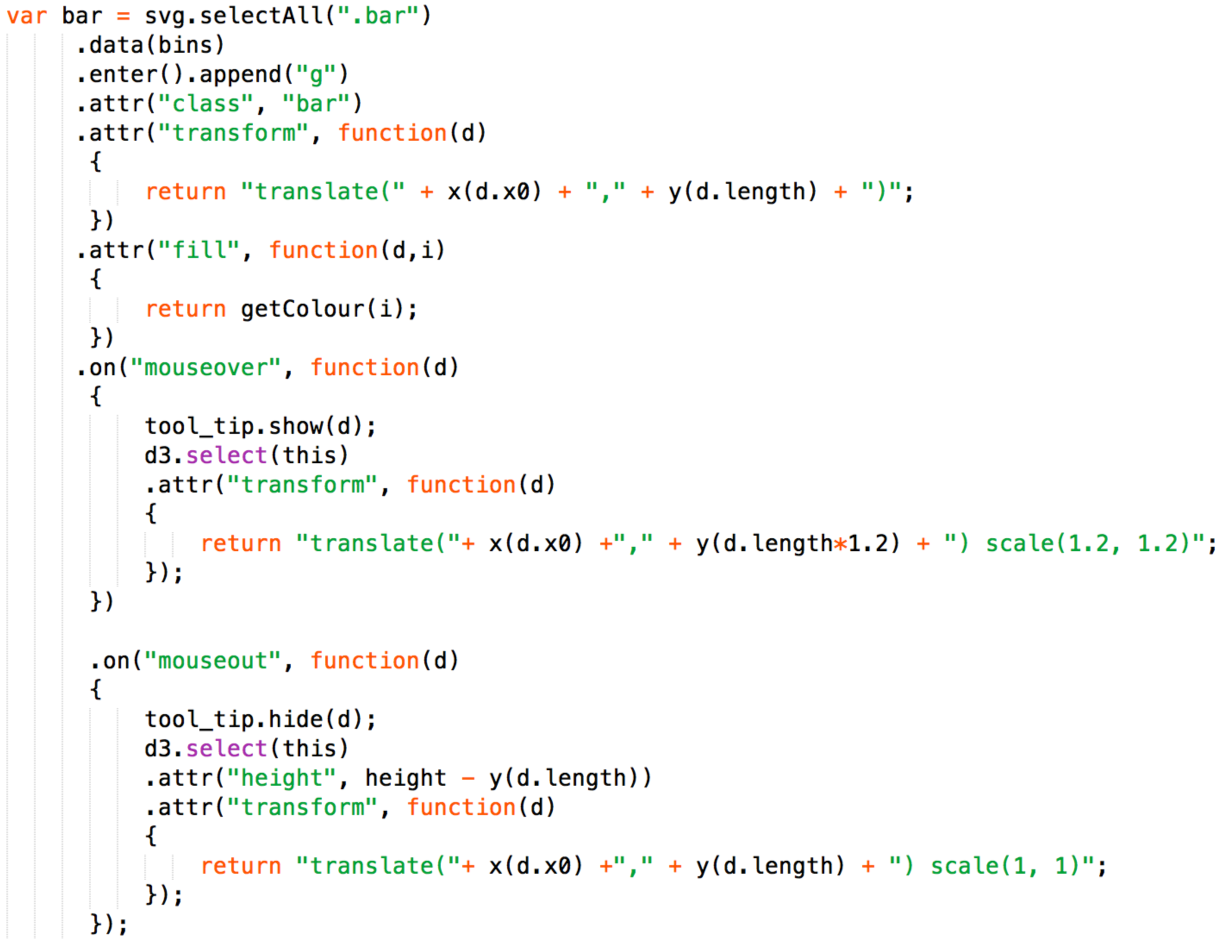
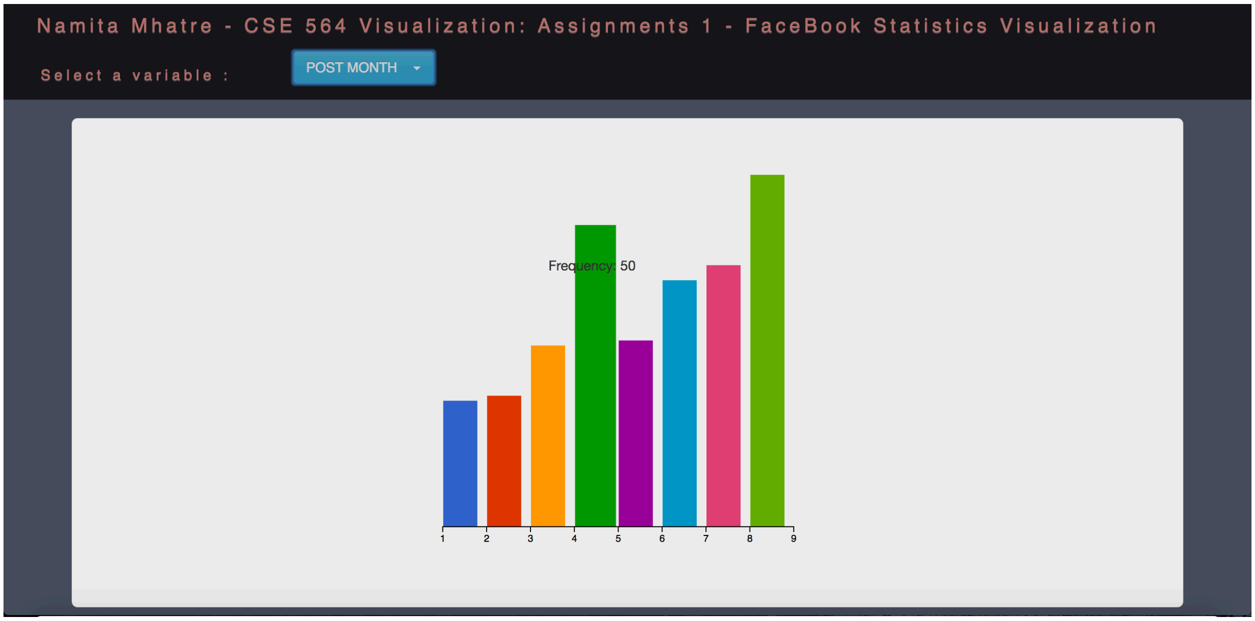
Select a variable :

3. Mouse-over actions



```
var bar = svg.selectAll(".bar")
     .data(bins)
     .enter().append("g")
     .attr("class", "bar")
     .attr("transform", function(d)
      {
          return "translate(" + x(d.x0) + "," + y(d.length) + ")";
      })
     .attr("fill", function(d,i)
      {
          return getColour(i);
      })
     .on("mouseover", function(d)
      {
          tool_tip.show(d);
          d3.select(this)
          .attr("transform", function(d)
          {
              return "translate("+ x(d.x0) +"," + y(d.length*1.2) + ") scale(1.2, 1.2)";
          });
      })

      .on("mouseout", function(d)
      {
          tool_tip.hide(d);
          d3.select(this)
          .attr("height", height - y(d.length))
          .attr("transform", function(d)
          {
              return "translate("+ x(d.x0) +"," + y(d.length) + ") scale(1, 1)";
          });
      });
```



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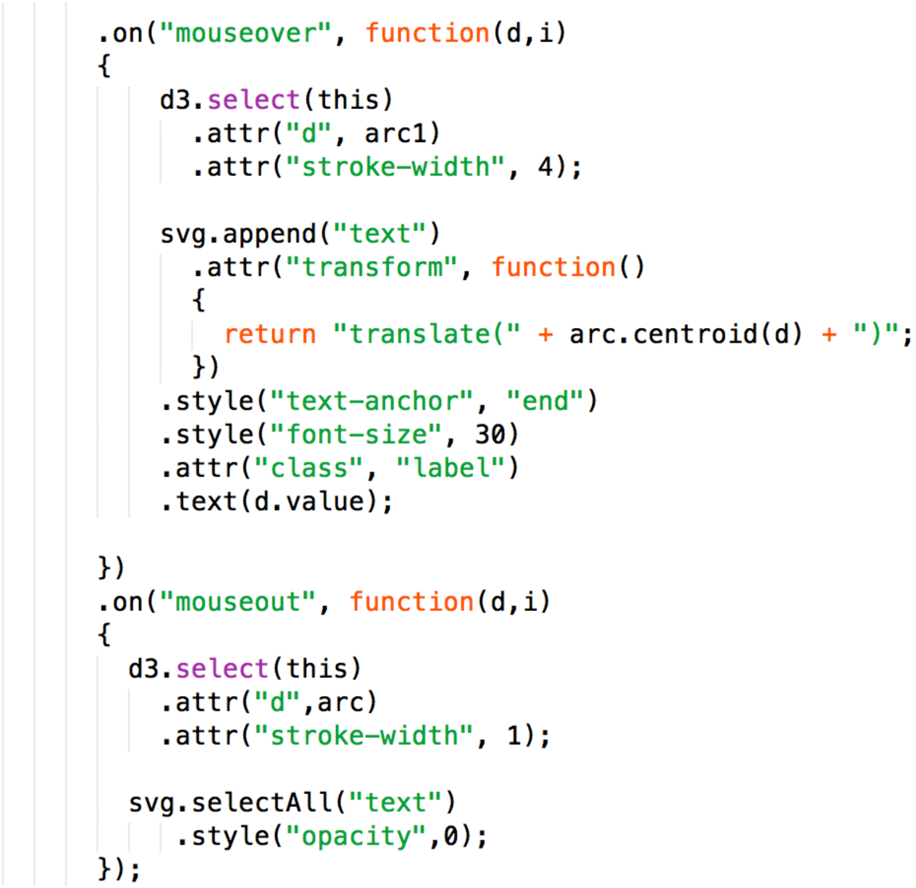
4. **On mouse-click transform the bar chart into a pie chart.**

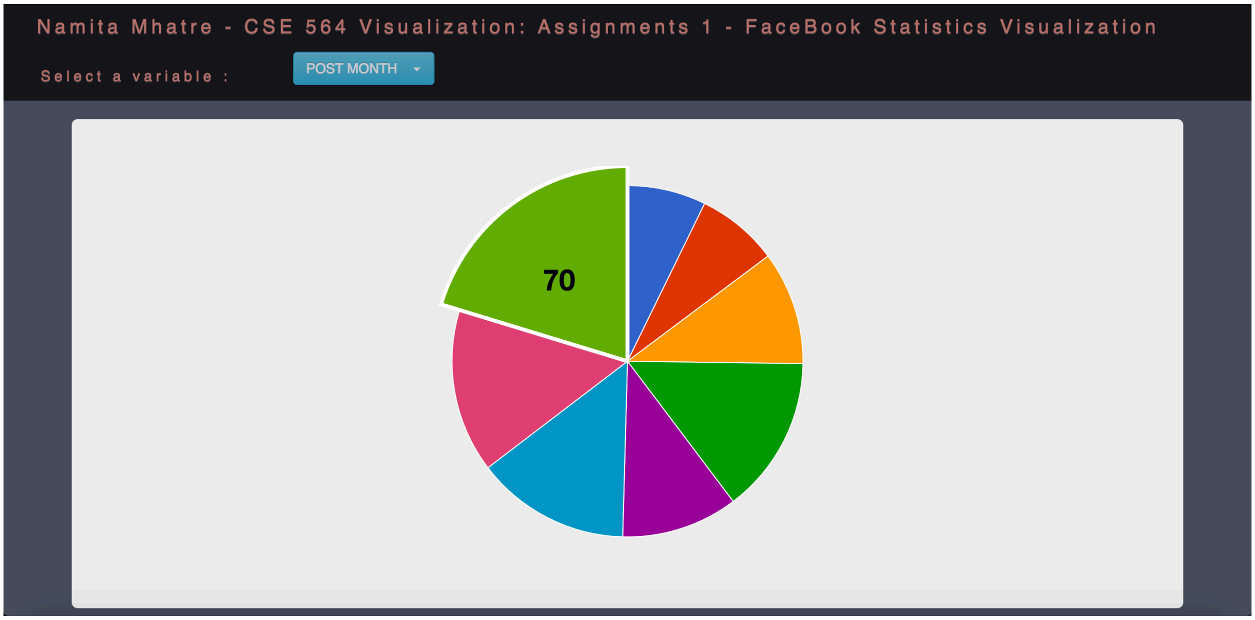


```
.on("mouseover", function(d,i)
{
    d3.select(this)
      .attr("d", arc1)
      .attr("stroke-width", 4);

    svg.append("text")
      .attr("transform", function()
      {
        return "translate(" + arc.centroid(d) + ")";
      })
    .style("text-anchor", "end")
    .style("font-size", 30)
    .attr("class", "label")
    .text(d.value);

})
.on("mouseout", function(d,i)
{
  d3.select(this)
    .attr("d",arc)
    .attr("stroke-width", 1);

  svg.selectAll("text")
    .style("opacity",0);
});
```



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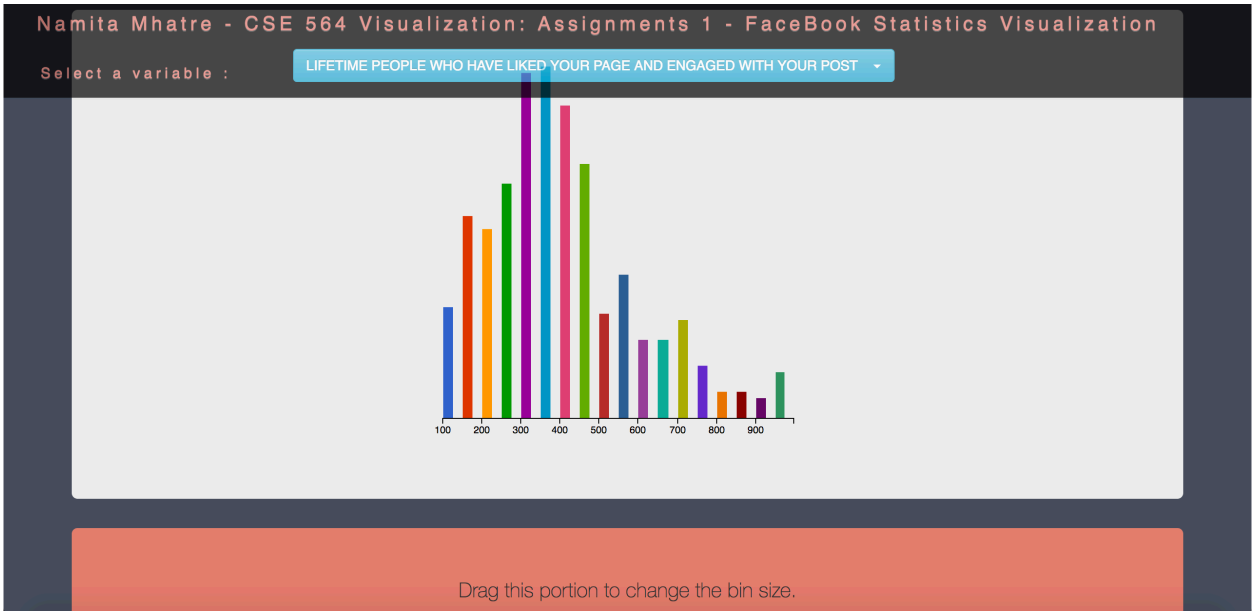
Select a variable : POST MONTH

5. Mouse moves left (right) should decrease (increase) bin width/size

Decreasing the bin size when mouse is moved left on the drag bar.



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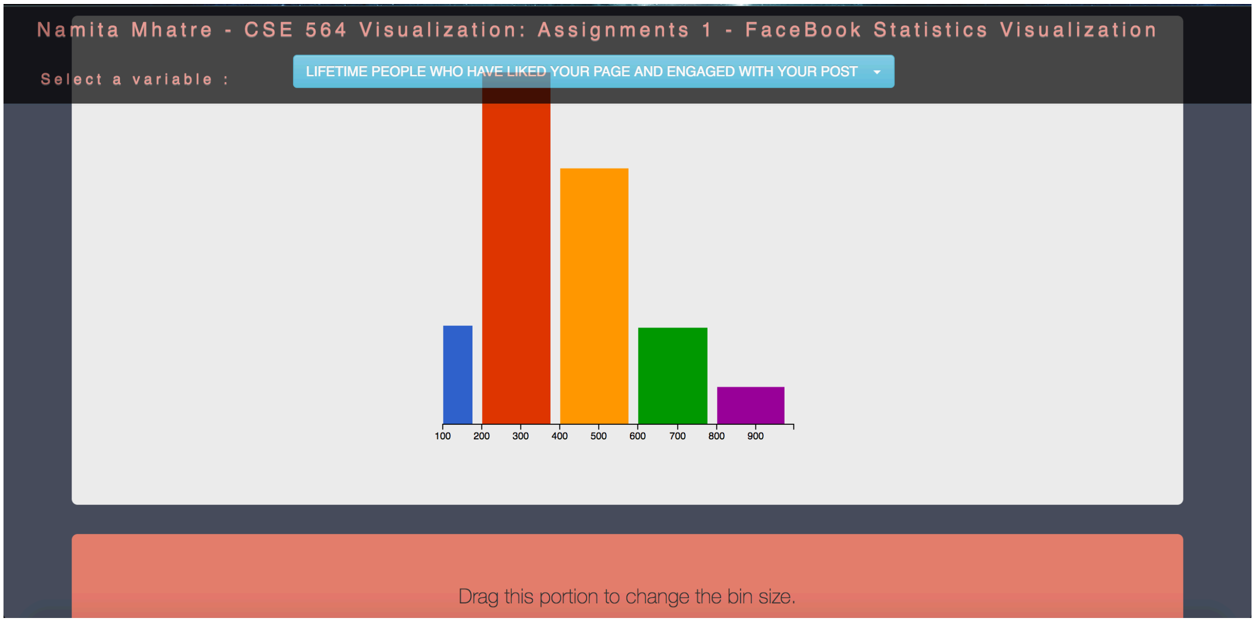
Select a variable : LIFETIME PEOPLE WHO HAVE LIKED YOUR PAGE AND ENGAGED WITH YOUR POST

Drag this portion to change the bin size.

Increasing the bin size when mouse is moved right on the drag bar.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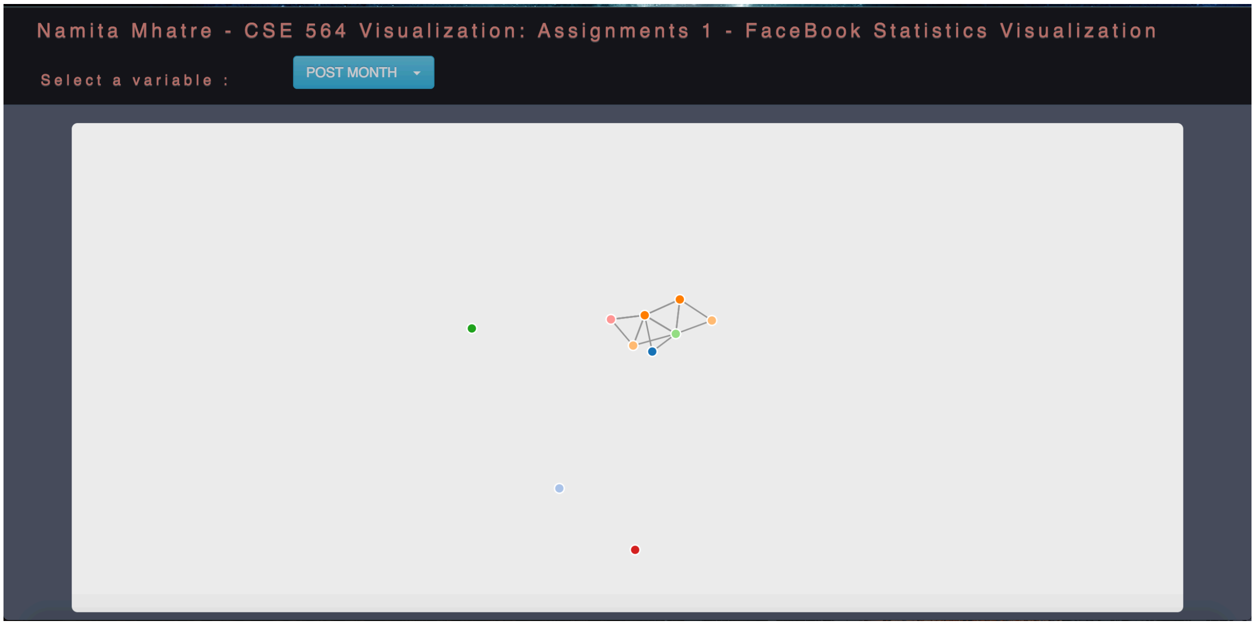
Select a variable :
LIFETIME PEOPLE WHO HAVE LIKED YOUR PAGE AND ENGAGED WITH YOUR POST
100
200
300
400
500
600
700
800
900
Drag this portion to change the bin size.

6. **On mouse-click create a force-directed layout using a chosen distance**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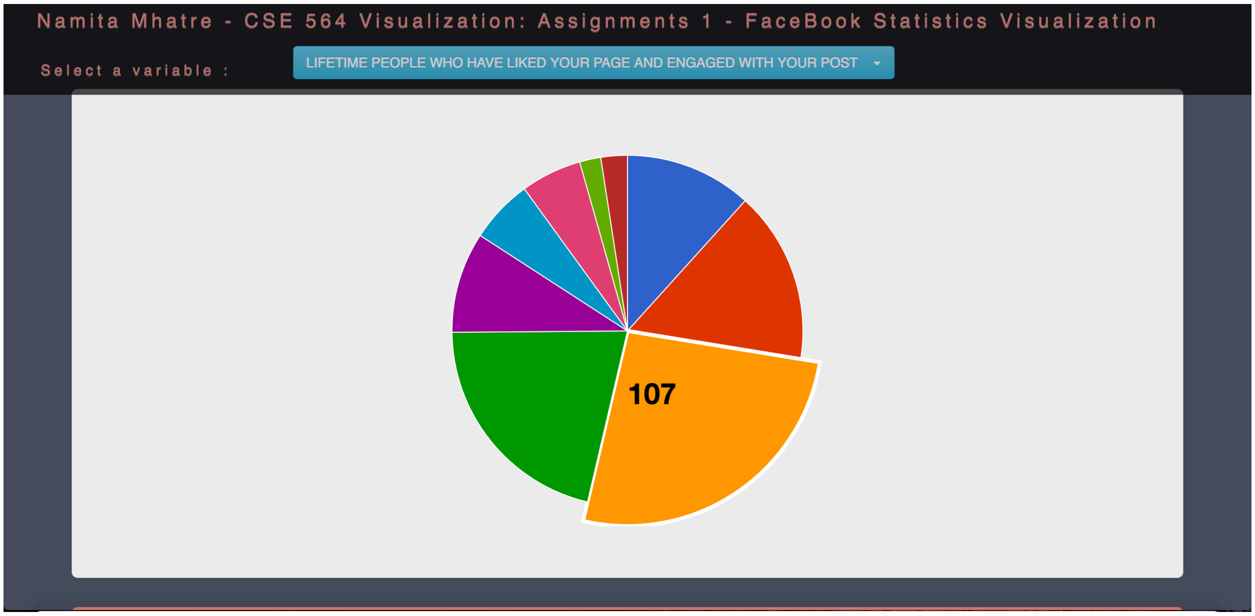
Select a variable :
POST MONTH

The frequency of one item of the pie chart has the same frequency as the second item which can be verified due to the same colour for same variables.



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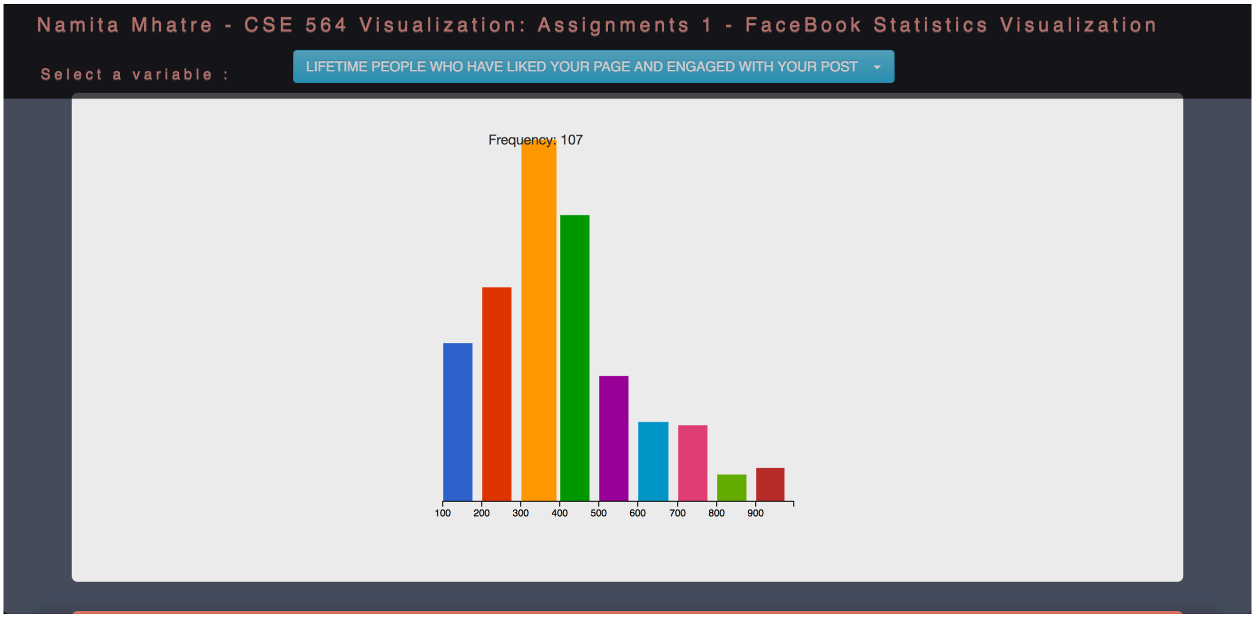
Select a variable : LIFETIME PEOPLE WHO HAVE LIKED YOUR PAGE AND ENGAGED WITH YOUR POST



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Select a variable : LIFETIME PEOPLE WHO HAVE LIKED YOUR PAGE AND ENGAGED WITH YOUR POST