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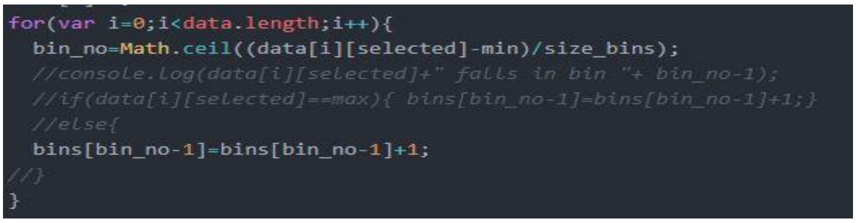
D3: FIFA 19 Visual Statistics of Top 500 Players

Software Features:

1. Bar Chart- On start a default bar chart (with a pre-selected variable and number of bins to show) appears with animation.
2. Pie Chart- On click of a bar from the bar chart Pie chart appears of the selected variable and number of bins.
3. Animations –
   a. On change of variable or number of bins or start up
   b. On hover of bars – Height and Width of the bars change slowly and the value associated to the bar appears over it.
   c. On hover of pie charts – The sector of the pie changes its opacity making it highlighted and a tool-tip shows details about the bin/sector.
   d. On clicking the bars – Change the bar chart to Pie chart and vice versa.
4. Drop down menu to choose variable and update chart.
5. A slider to change the number of bins to be displayed on the UI.

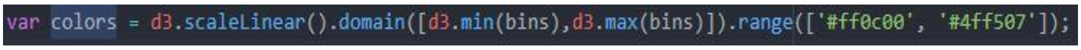
Implementation details and Code snippets:

1. Binning logic-



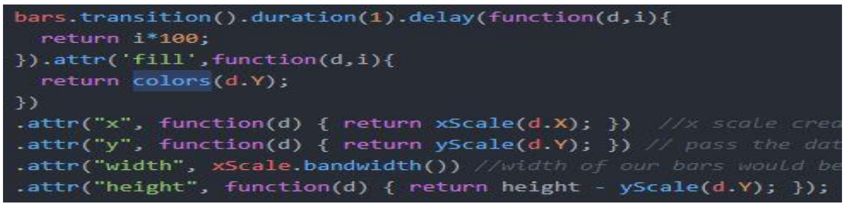
```
for(var i=0;i<data.length;i++){
  bin_no=Math.ceil((data[i][selected]-min)/size_bins);
  //console.log(data[i][selected]+" falls in bin "+ bin_no-1);
  //if(data[i][selected]==max){ bins[bin_no-1]=bins[bin_no-1]+1;}
  //else{
  bins[bin_no-1]=bins[bin_no-1]+1;
//}
}
```

2. Color Coding the bars according to the number of data points falling into that bin-



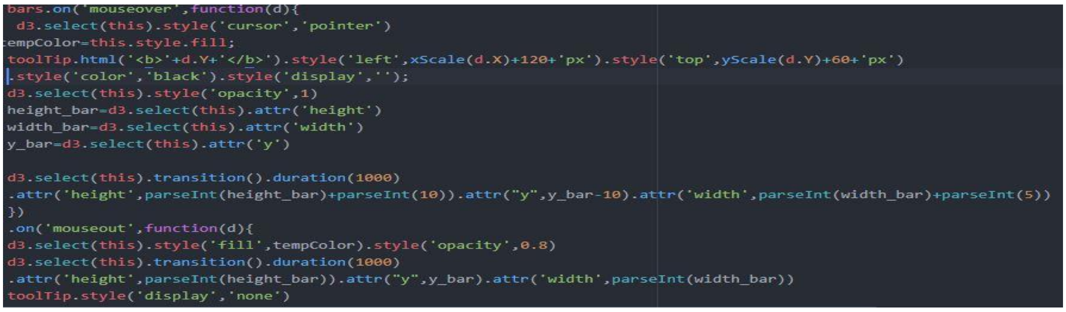
```
var colors = d3.scaleLinear().domain([d3.min(bins),d3.max(bins)]).range(['#ff0c00', '#4ff507']);
```

3. Adding transition/animation –



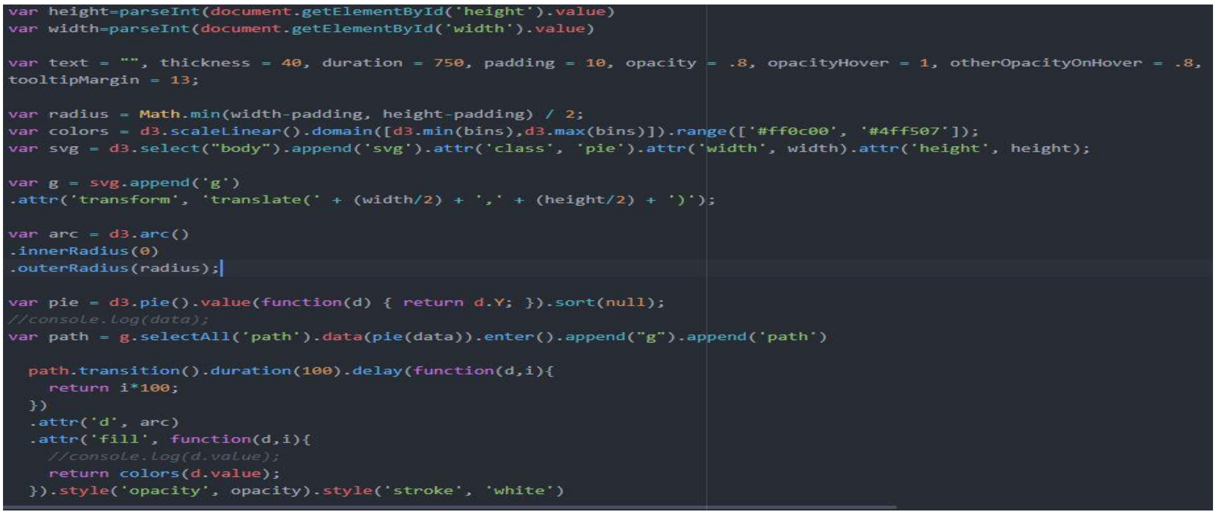
```
 bars.transition().duration(1).delay(function(d,i){
   return i*100;
 }).attr('fill',function(d,i){
   return colors(d.Y);
 })
 .attr("x", function(d) { return xScale(d.X); })  //x scale crea
 .attr("y", function(d) { return yScale(d.Y); }) // pass the dat
 .attr("width", xScale.bandwidth()) //width of our bars would be
 .attr("height", function(d) { return height - yScale(d.Y); });
```

4. On Hover functionalities on bars-



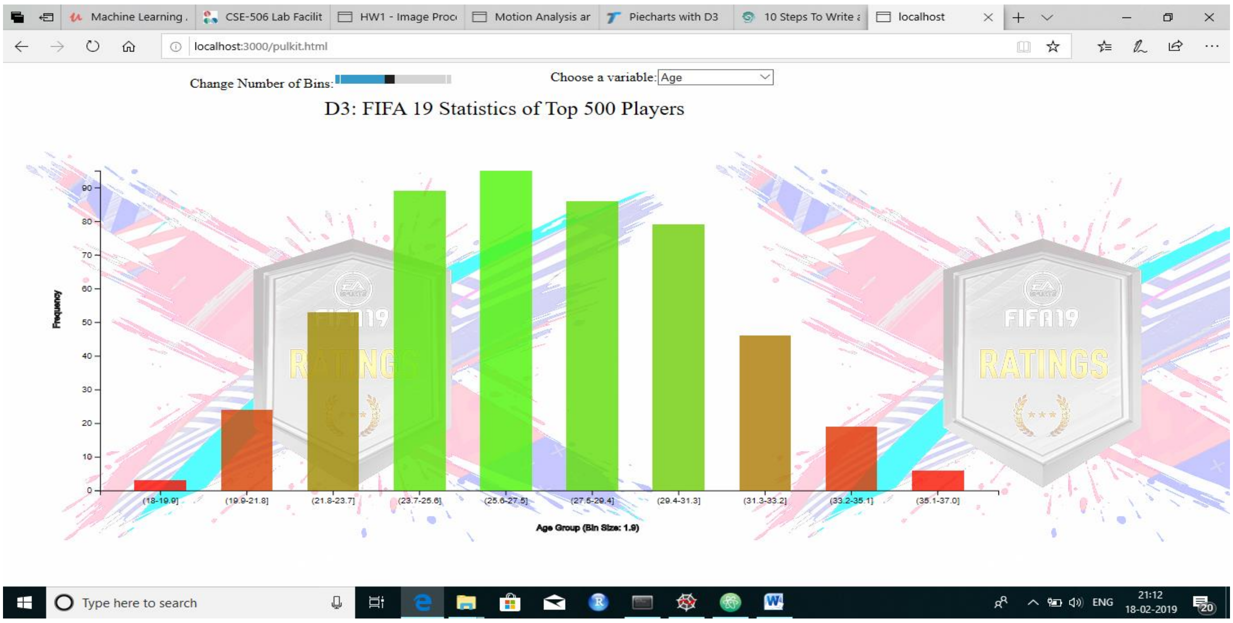
```
bars.on('mouseover',function(d){
 d3.select(this).style('cursor','pointer')
empColor=this.style.fill;
toolTip.html('<b>'+d.Y+'</b>').style('left',xScale(d.X)+120+'px').style('top',yScale(d.Y)+60+'px')
.style('color','black').style('display','');
d3.select(this).style('opacity',1)
height_bar=d3.select(this).attr('height')
width_bar=d3.select(this).attr('width')
y_bar=d3.select(this).attr('y')

d3.select(this).transition().duration(1000)
.attr('height',parseInt(height_bar)+parseInt(10)).attr("y",y_bar-10).attr('width',parseInt(width_bar)+parseInt(5))
})
.on('mouseout',function(d){
d3.select(this).style('fill',tempColor).style('opacity',0.8)
d3.select(this).transition().duration(1000)
.attr('height',parseInt(height_bar)).attr("y",y_bar).attr('width',parseInt(width_bar))
toolTip.style('display','none')
```

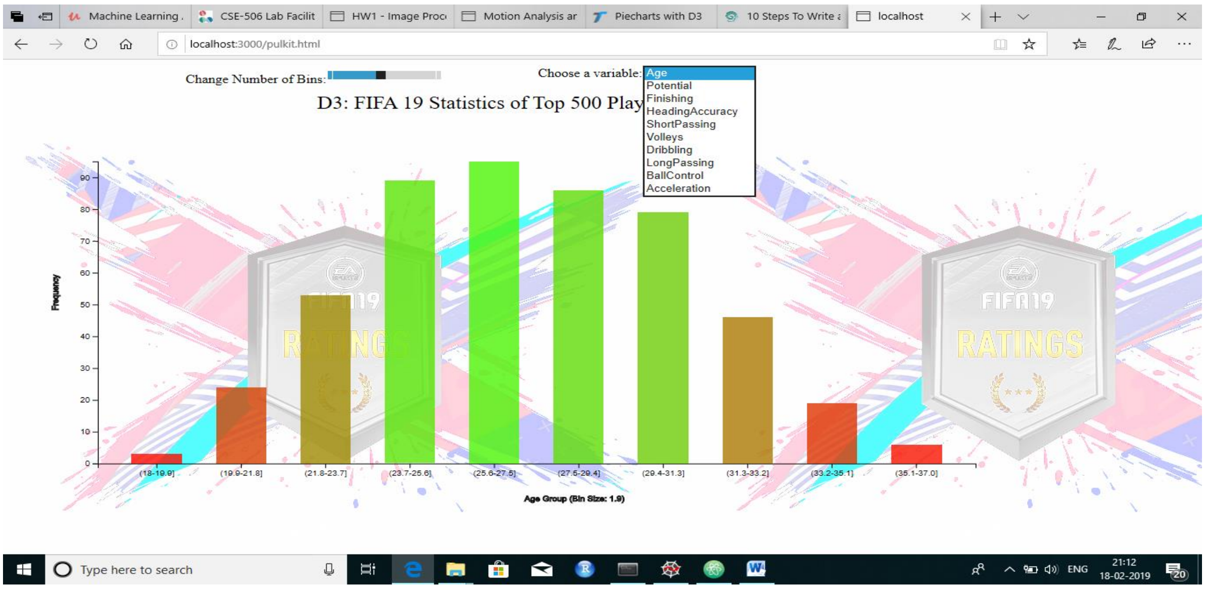
5. On Click bars, change to Pie Chart-

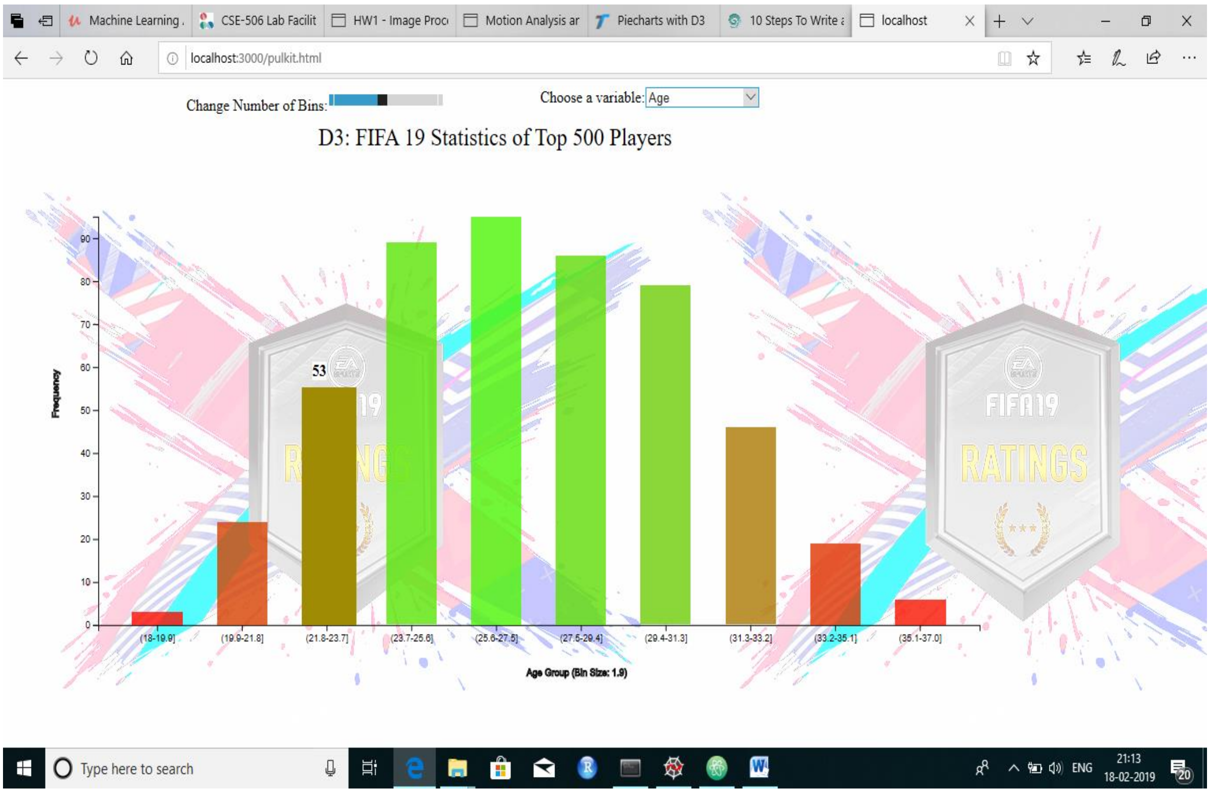


```
var height=parseInt(document.getElementById('height').value)
var width=parseInt(document.getElementById('width').value)

var text = "", thickness = 40, duration = 750, padding = 10, opacity = .8, opacityHover = 1, otherOpacityOnHover = .8,
tooltipMargin = 13;

var radius = Math.min(width-padding, height-padding) / 2;
var colors = d3.scaleLinear().domain([d3.min(bins),d3.max(bins)]).range(['#ff0c00', '#4ff507']);
var svg = d3.select("body").append('svg').attr('class', 'pie').attr('width', width).attr('height', height);

var g = svg.append('g')
.attr('transform', 'translate(' + (width/2) + ',' + (height/2) + ')');

var arc = d3.arc()
.innerRadius(0)
.outerRadius(radius);

var pie = d3.pie().value(function(d) { return d.Y; }).sort(null);
//console.log(data);
var path = g.selectAll('path').data(pie(data)).enter().append("g").append('path')

  path.transition().duration(100).delay(function(d,i){
    return i*100;
  })
  .attr('d', arc)
  .attr('fill', function(d,i){
    //console.log(d.value);
    return colors(d.value);
  }).style('opacity', opacity).style('stroke', 'white')
```

<u>Screenshots of the functionalities</u>:







Change Number of Bins:

Choose a variable: Age

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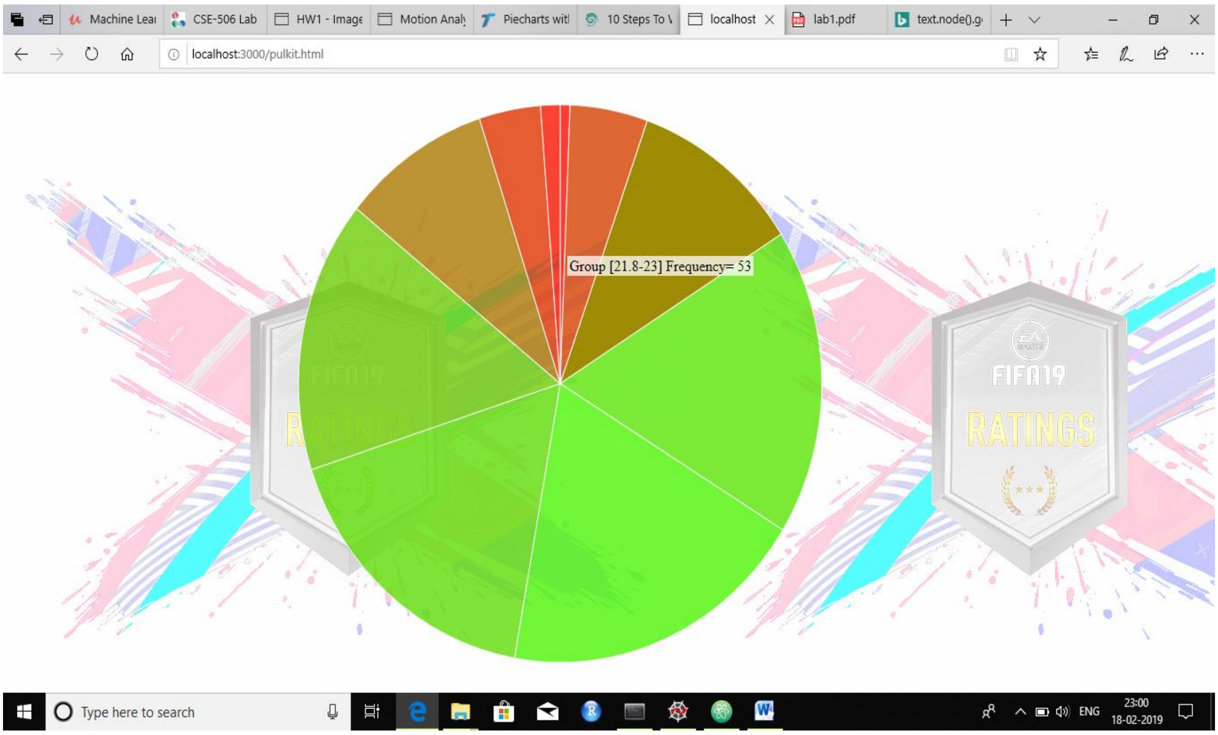

References:

1. https://www.tutorialsteacher.com/d3js/create-pie-chart-using-d3js
2. Sample code shown in the class for bar charts.