CSE 564 Visualization Lab-1

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Dataset: NY Students Data.(Source: US Census at School).
This facility provides random data samples selected from individuals in the U.S. Census at School population that meet your selected characteristics.
This dataset contains over 60 attributes and the rows vary depending upon how much we can random sample from the website.
I have chosen 15 attributes for this lab as mentioned below which includes 5 categorical and 5 numerical attributes:

- Gender
- Age(years)
- Handed
- Height(cm)
- Travel time to School
- Score in memory game
- Birth month
- Sleep Hours School night
- Home Occupants
- Doing Homework Hours
- Outdoor Activities Hours
- Video Games Hours
- Computer Use Hours
- Watching TV Hours
- Favorite School Subject

Code structure:

The project consists of one HTML file (index.html) and three JavaScript files, apart from other CSS files.
Index.html:
This is the first page which loads when launching the project. It starts with showing the Birth Month data. This page contains the basic html code for displaying the dropdown menu, the header and the div for the bar chart.

index.js:
This file contains the code to load the csv data from file into the project. Those data are stored in variables and this file also includes the functions for all the attributes. These functions further call other JavaScript functions which are responsible for drawing charts deciding on whether to call the Bar chart or the Histogram. There are 2 global variables which stores the Active Attribute name and the active attribute data.

histogram.js
This file contains the code for visualizing the numerical continuous data in the form of Histogram. It has an active listener function which controls the Mousedown-then-Mousemove which results in the increase/decrease of number of bins/bin size in the histogram. Left decrease size and right increase bin size.

Bar_categorical.js
This file contains the code for visualizing the categorical/discrete data in the form of Bar Graph. The active listener is disabled for the bar graph by maintaining a global flag containing whether the active attribute is

categorical or numerical. In this function first the frequency count is done for categorical data and then that data is displayed.

```
let mapD = {};
// Mapping the data (String-> count of that Categorical Variable)
for (let i = 0; i < data.length; i++) {
    let city = data[i];
    if (!mapD[city]) {
        mapD[city] = 1;
    } else {
        mapD[city]++;
    }
}
```

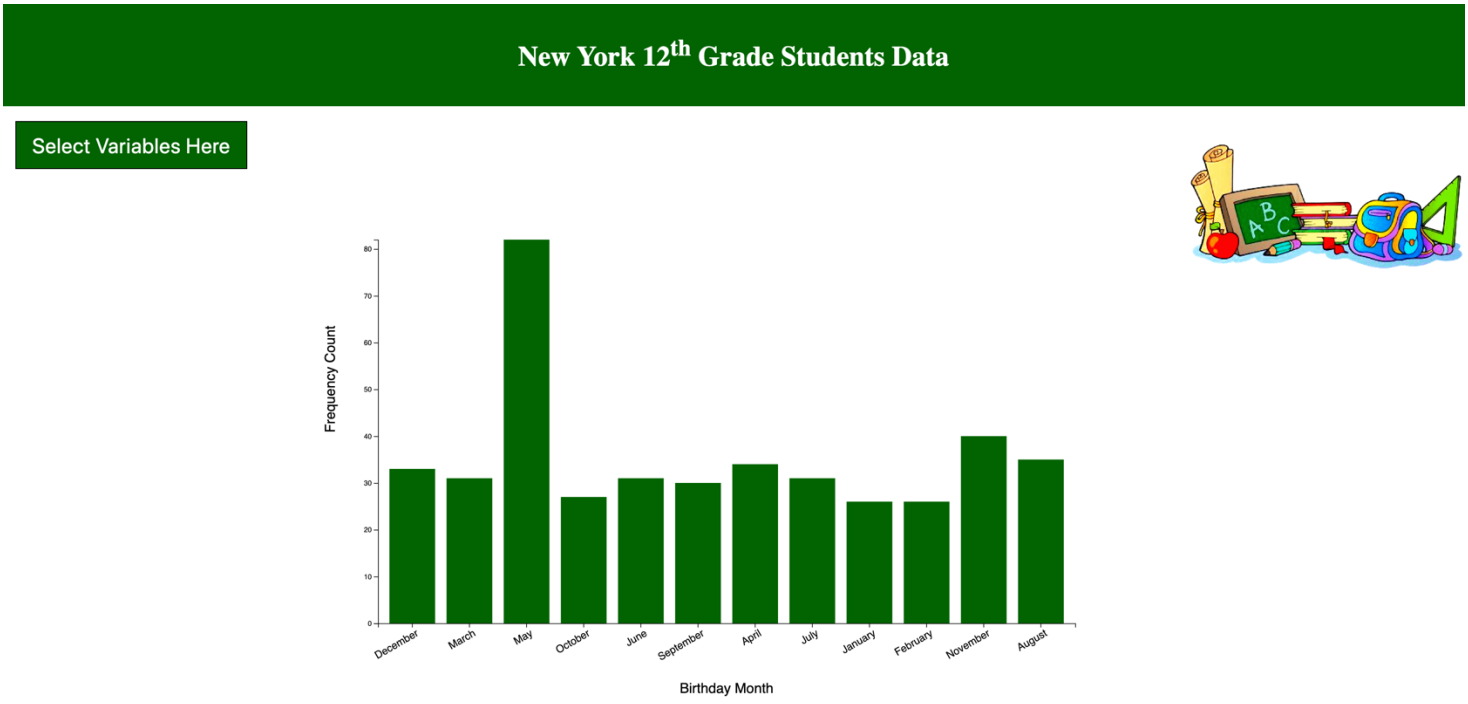
Code for Displaying bars:

```
g.selectAll(".bar")
    .data(d3.keys(mapD))  // load data
    .enter().append("rect")
    .attr("class", "bar")
    .attr("width", x.bandwidth)
    .attr("height", d => height - y(mapD[d]))
    .attr("x", d => x(d))
    .attr("y", d => y(mapD[d]))
    .on("mouseover", onMouseOver)
    .on("mouseout", onMouseOut);
```

The feature of increasing/decreasing number of bins is achieved when you do Mousedown and then mousemove in the histogram area.

Link to Project Demo: https://youtu.be/gvNZgsTs5bE

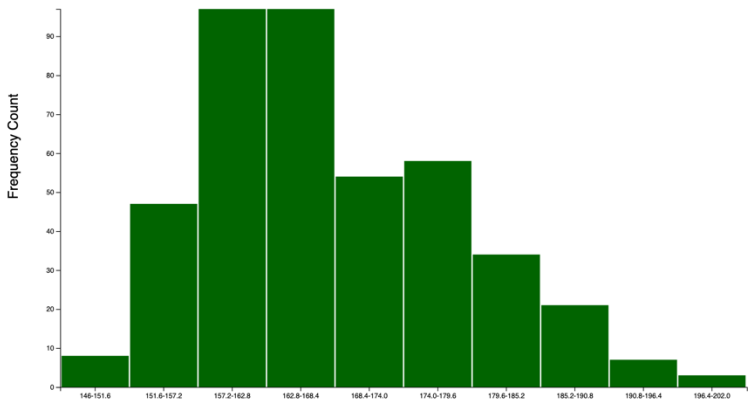
Some snippets from the project outputs:



New York 12th Grade Students Data

Select Variables Here

Drag left/right on the Histogram to increase/decrease bins

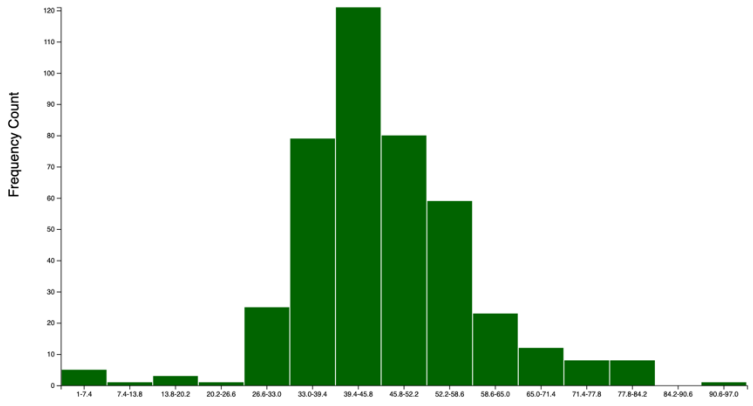


Height in centimeter(cm)

New York 12th Grade Students Data

Select Variables Here

Drag left/right on the Histogram to increase/decrease bins



Score In Memory Game