

MINI PROJECT #1

Get some CSV-based data from [here](#) or [here](#) or elsewhere

- at least 500 data points and with at least 10 dimensions
- it will be best if the values are numerical and that there is good diversity

Your D3-based visual interface should be able to (all 10 pts):

1. pick a variable and bin it into a fixed range (equi-width) of your choice
2. create a bar chart of the variable you picked in 1.
3. using a menu, allow users to select a new variable and update chart
4. only on mouse-over display the value of the bar on top of the bar
5. on mouse-over make the bar wider and higher to focus on it
6. on mouse-click transform the bar chart into a pie chart (and back)
7. mouse moves left (right) should decrease (increase) bin width/size

An additional 10 pts for elegant implementation/function

Submission on Blackboard

Extra credit (10 pts):

Due Tuesday, Feb. 19, 2019

- on mouse-click create a force-directed layout using a chosen distance

DELIVERABLES

You need to upload the following by the due date

- 2-3 page report with illustrated description of your program's capabilities and implementation detail
- add code snippets to show how you did things
- mpeg or avi video file that shows all features of your software in action
- zip file with source code

Grading

- TA will pick students at random for thorough code review sessions
- you better know your code !!!
- so, please do not just copy code beyond the D3 templates
- or even worse, videotape someone else's program

SEEKING OUTSIDE HELP

Aka, cheating

Discussion with your class mates (but not others) is OK

Cut and paste from any source is not OK

- any suspected activity of this kind will result in zero points
- also for the person providing the original
- two-strikes and out rule is in effect (including an academic misconduct report)
- this includes any feeble attempt to cover the tracks somehow

Stay honest and resist the temptation!

BAR CHART CALCULATIONS – BINNING

Determine bin size

- $\min(\text{data})$ is optional, can also use 0 or some reasonable value
- $\max(\text{data})$ is optional, can also use some reasonable value

$$\text{bin size} = \frac{\max(\text{data}) - \min(\text{data})}{\text{number of bins}}$$

Given a data value val increment (++) the bin value

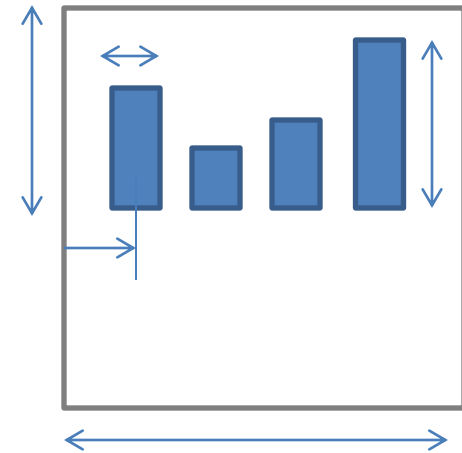
- but first initialize bin val array to 0

$$\text{bin val array} \left[\left[\frac{val - \min(\text{data})}{\text{bin size}} \right] \right] ++$$

BAR CHART CALCULATIONS – PLOTTING

Determine bin size on the screen

$$\text{bin size on screen} = \frac{\text{chart width}}{\text{number of bins}}$$



Center of a bar for bin with index *bin index*

$$\text{bar center on screen} = (\text{bin index} \cdot \text{bin size on screen}) + 0.5$$

Height of the bar for a bin with index *bin index*

$$\text{bar height}(\text{bin index}) = \text{bin val array}(\text{bin index}) \cdot \frac{\text{chart height}}{\max(\text{bin val array})}$$

Do not forget that the origin of a web page is the top left corner