

CS-649 Assignment 4

1a.

The SVG coordinate space is a fundamental concept in creating vector graphics for the web. Understanding this coordinate system is essential for designing and positioning graphical elements accurately. The rectangular drawing area defined by the coordinate system can be customized to suit the specific needs of your project.

The origin point (0,0) is an essential reference point in SVG coordinate space. It is located at the top-left corner of the drawing area and serves as the starting point for all subsequent positioning of graphical elements. Positive x-values increase as you move towards the right of the drawing area, and positive y-values increase as you move towards the bottom.

The units used in SVG coordinate space can be specified in pixels, percentages, or other units of length. Pixels are a common unit of measurement and represent the smallest unit of display on a screen. Percentages are frequently used to ensure that graphical elements scale proportionally with the size of the viewport. Other units of length, such as em and rem, can be used to specify measurements relative to text size.

In summary, SVG coordinate space is a crucial concept in designing vector graphics for the web. Understanding how to position and size graphical elements accurately within this coordinate system is essential for creating visually appealing and functional web-based graphics.

b.

Mathematical or graph coordinate space is a foundational concept in mathematics and is used to represent points and shapes in a Cartesian coordinate system. In this coordinate system, the origin (0,0) is typically located at the center of the coordinate system, with positive x-values increasing towards the right and positive y-values increasing towards the top. This is different from SVG coordinate space, which has its origin in the top-left corner.

The units used in mathematical/graph coordinate space are usually abstract units, such as meters, feet, or degrees, and are not necessarily tied to physical units like pixels or inches. These abstract units allow for mathematical calculations to be performed on the coordinates, such as finding distances between points or determining the slope of a line.

The Cartesian coordinate system is named after the mathematician René Descartes, who invented the concept in the 17th century. It is widely used in many fields, including mathematics, physics, engineering, and computer graphics.

In summary, mathematical/graph coordinate space is a fundamental concept in mathematics and is used to represent points and shapes in a Cartesian coordinate system. It has its origin at the center of the coordinate system and uses abstract units for measurement, allowing for mathematical calculations to be performed on the coordinates.

2. `enter()` function creates the initial join of the data with our DOM elements. Thus selecting only the elements that were not in the DOM yet. `merge()` function will select the DOM elements that did not exist in the DOM before and the ones that did. `exit()` function will select the DOM elements that are left from the join.

3. The first one is a `translate(x, y)` transform that moves the origin of the element's system of coordinates such that it coincides with the fixed point we want to rotate everything around. The second one is the actual rotation. And, finally, the third one is a `translate(-x, -y)` — the reverse of the first translation.

4. Anonymous function in `d3.js` is used to easily manipulate data and data could be applied in DOM. In this case the function returns `[5,6,7,8,9]`

5. The difference between the 2 code snippets are that the first code snippet generates the output “bigData2submission” and the second generates the output as “big Data 2 submission” so there are added space between the second code's output.

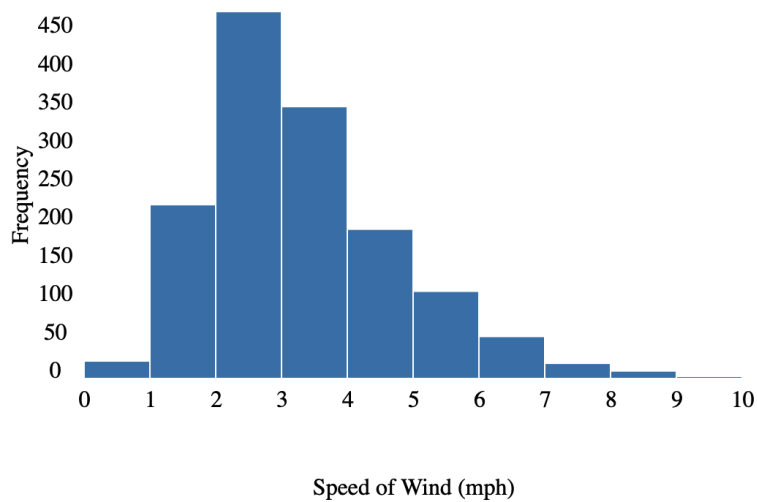
The main difference between the code snippet is the first one only sets the text content of an existing ‘p’ element, while the second one creates new ‘span’ elements as needed and sets their text content. The ‘`enter()`’ method is used to specify which data elements have no corresponding DOM elements yet and need to be created.

2a.

Results

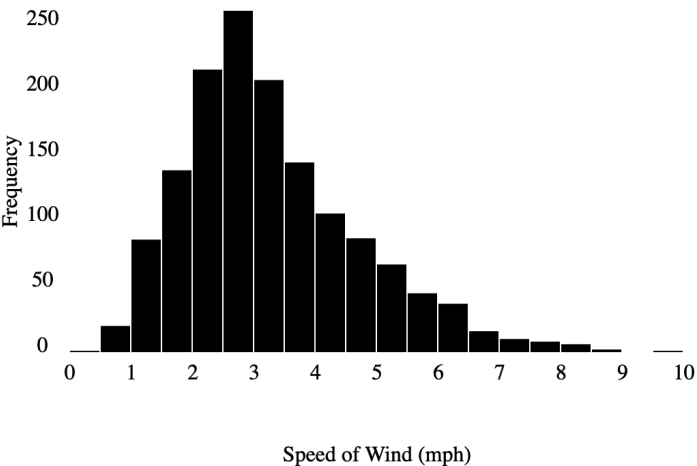
This graph represents the speed of the wind to the frequency. Here we have set the bin number to 12

Seattle Weather - Wind Histogram



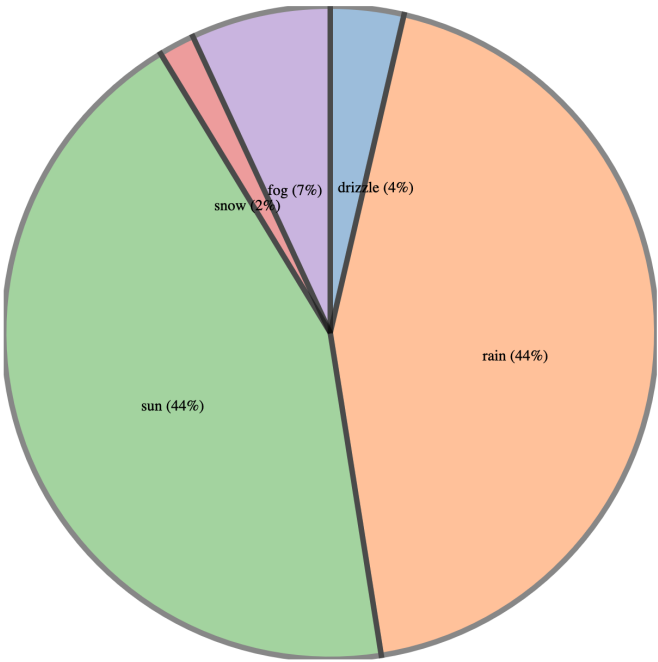
B. This graph represents the speed of the wind to the frequency. Here we have set the bin number to 20

Seattle Weather - Wind Histogram



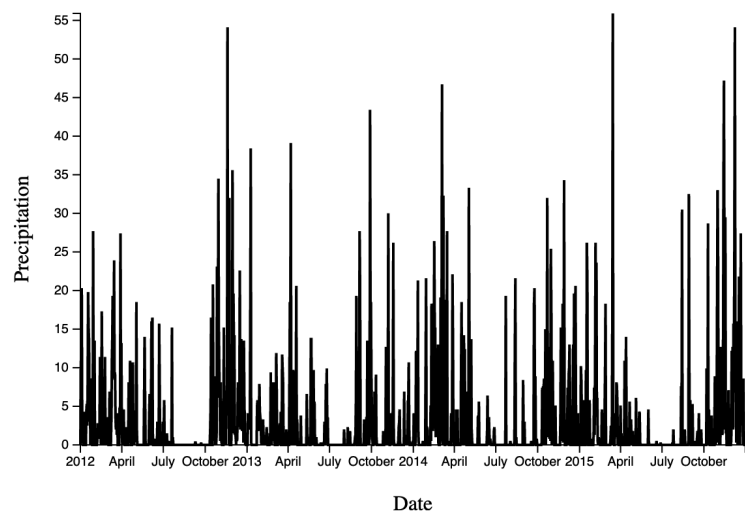
C.
This pie chart shows the distribution of weather which are distributed in rain,sun,snow,fog,drizzle.

Pie Chart Distribution of Weather



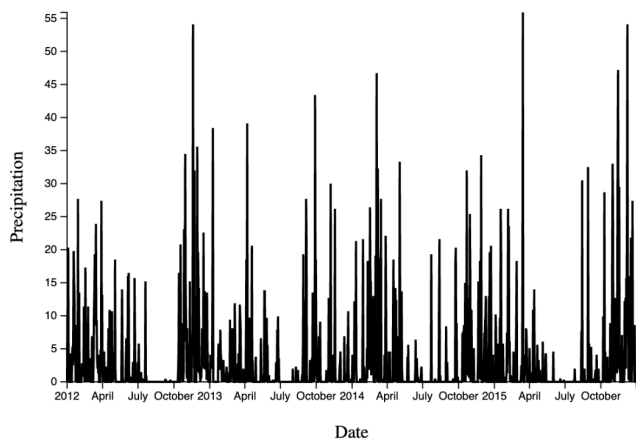
D. This line graph shows the precipitation level on the particular dates.

Precipitation Trend Line Chart



E This line graph shows the precipitation level on the particular dates.with <p> tag below

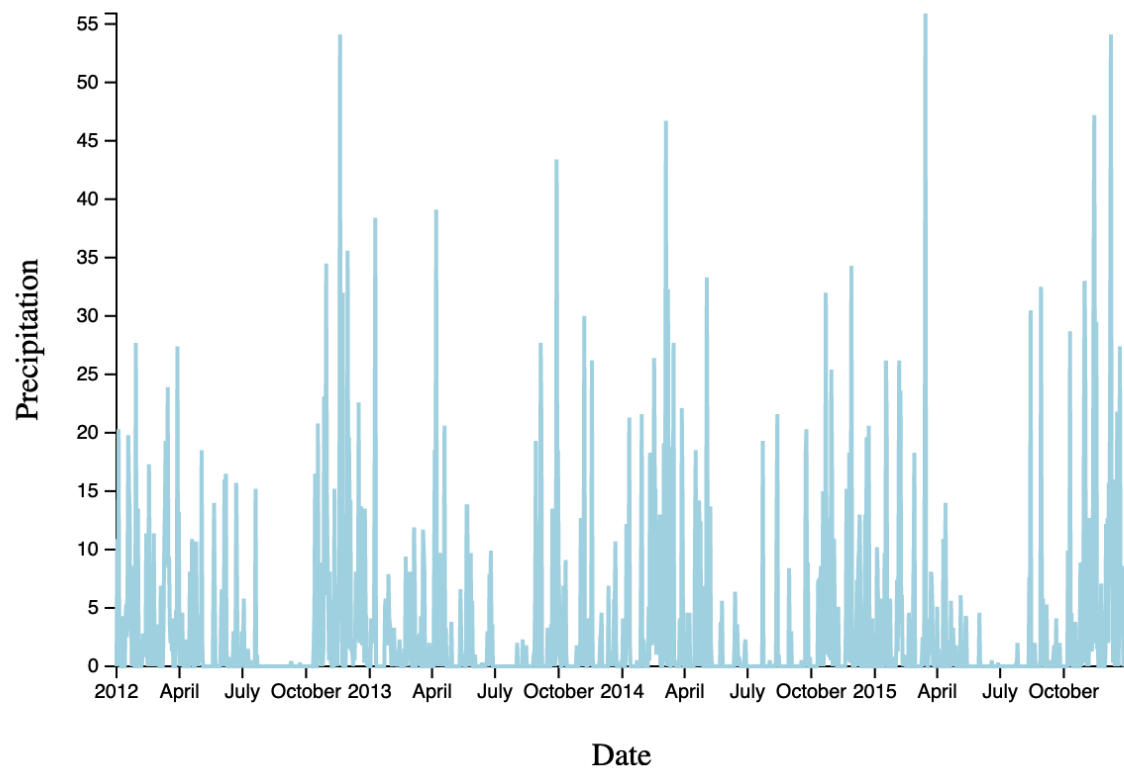
Precipitation Trend Line Chart



Here we can see the distribution of perecipitation with the date and how it varies from a range of 0-55. Therefore we can understand that at this date the precipitation of rain

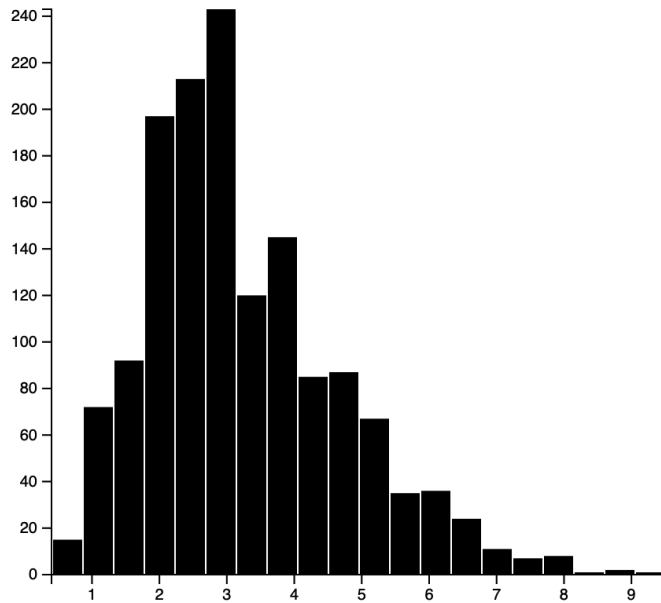
F. This line graph shows the precipitation level on the particular dates.with few modification in the color,style.

Precipitation Trend Line Chart



3a. This graph shows a histogram which changes on the toggle which is below the graph and it changes accordingly.

Added Dropdown to the Histogram

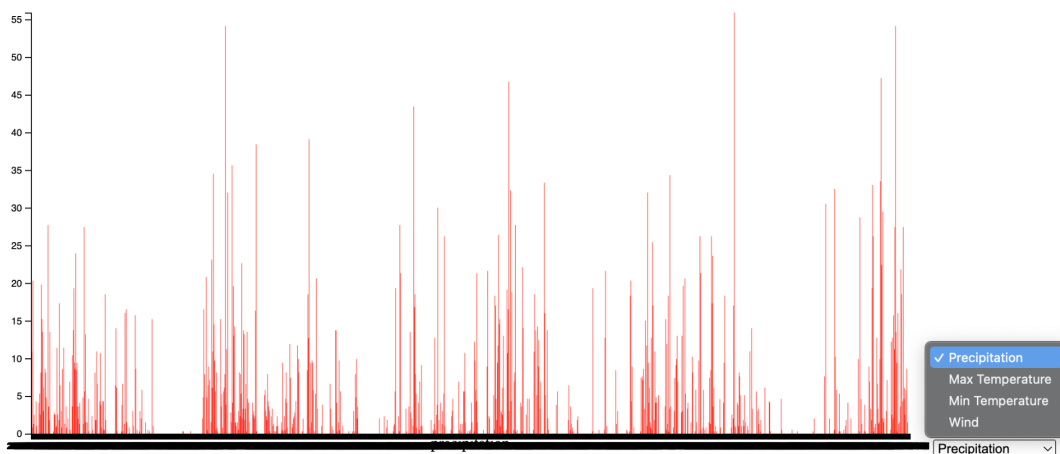


bins 20

B This graph shows a histogram with a dropdown menu of precipitation, maximum and minimum temperatures and wind.

Histogram with Drop-Down Menu

The dropdown and the graph are below. Please scroll down



4a. A table showing the first 6 rows of auto mpg dataset

Auto MPG Dataset

| MPG | Cylinders | Displacement | Horsepower | Weight | Acceleration | Model Year |
|-----|-----------|--------------|------------|--------|--------------|------------|
| 18 | 8 | 307 | 130 | 3504 | 12 | 70 |
| 15 | 8 | 350 | 165 | 3693 | 11.5 | 70 |
| 18 | 8 | 318 | 150 | 3436 | 11 | 70 |
| 16 | 8 | 304 | 150 | 3433 | 12 | 70 |
| 17 | 8 | 302 | 140 | 3449 | 10.5 | 70 |
| 15 | 8 | 429 | 198 | 4341 | 10 | 70 |

B A table showing the number of cars by their model year

Number of Cars by Model Year

| Model Year | Number of Cars |
|------------|----------------|
| 70 | 29 |
| 71 | 28 |
| 72 | 28 |
| 73 | 40 |
| 74 | 27 |
| 75 | 30 |
| 76 | 34 |
| 77 | 28 |
| 78 | 36 |
| 79 | 29 |
| 80 | 29 |
| 81 | 29 |
| 82 | 31 |

.c A table showing the total number of cylinders by the Model year

Total Cylinders by Model Year

| Model Year | Total Cylinders |
|------------|-----------------|
| 70 | 196 |
| 71 | 156 |
| 72 | 163 |
| 73 | 255 |
| 74 | 142 |
| 75 | 168 |
| 76 | 192 |
| 77 | 153 |
| 78 | 193 |
| 79 | 169 |
| 80 | 120 |
| 81 | 134 |
| 82 | 130 |

D This line graph shows the number of cars by acceleration value

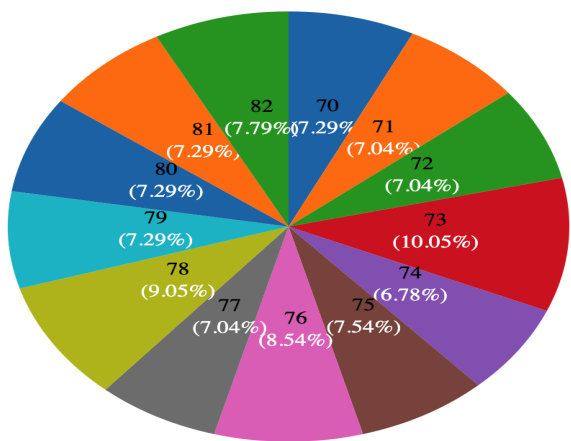
Count of Cars by Acceleration Value

| Acceleration | Count |
|--------------|-------|
| 8 | 1 |
| 8.5 | 2 |
| 9 | 1 |
| 9.5 | 2 |
| 10 | 4 |
| 10.5 | 1 |
| 11 | 7 |
| 11.1 | 1 |
| 11.2 | 1 |
| 11.3 | 1 |
| 11.4 | 2 |
| 11.5 | 7 |
| 11.6 | 1 |
| 12 | 10 |
| 12.1 | 1 |
| 12.2 | 2 |
| 12.5 | 8 |
| 12.6 | 2 |
| 12.8 | 3 |
| 12.9 | 2 |
| 13 | 12 |
| 13.2 | 6 |
| 13.4 | 2 |
| 13.5 | 15 |
| 13.6 | 2 |
| 13.7 | 2 |
| 13.8 | 2 |
| 13.9 | 2 |
| 14 | 16 |
| 14.1 | 1 |
| 14.2 | 3 |
| 14.3 | 2 |
| 14.4 | 5 |
| 14.5 | 23 |
| 14.7 | 5 |
| 14.8 | 3 |
| 14.9 | 7 |
| 15 | 14 |

5a. A pie chart shows the distribution of model years and number of cars

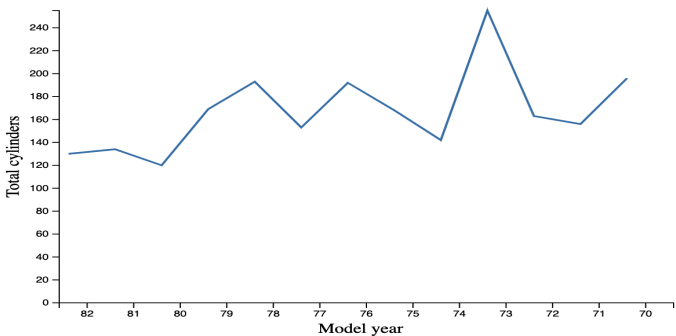
Distribution of the model years amongst the cars

| Model Year | Count |
|------------|-------|
| 70 | 29 |
| 71 | 28 |
| 72 | 28 |
| 73 | 40 |
| 74 | 27 |
| 75 | 30 |
| 76 | 34 |
| 77 | 28 |
| 78 | 36 |
| 79 | 29 |
| 80 | 29 |
| 81 | 29 |
| 82 | 31 |



B This line graph shows the number of cylinders with the model year

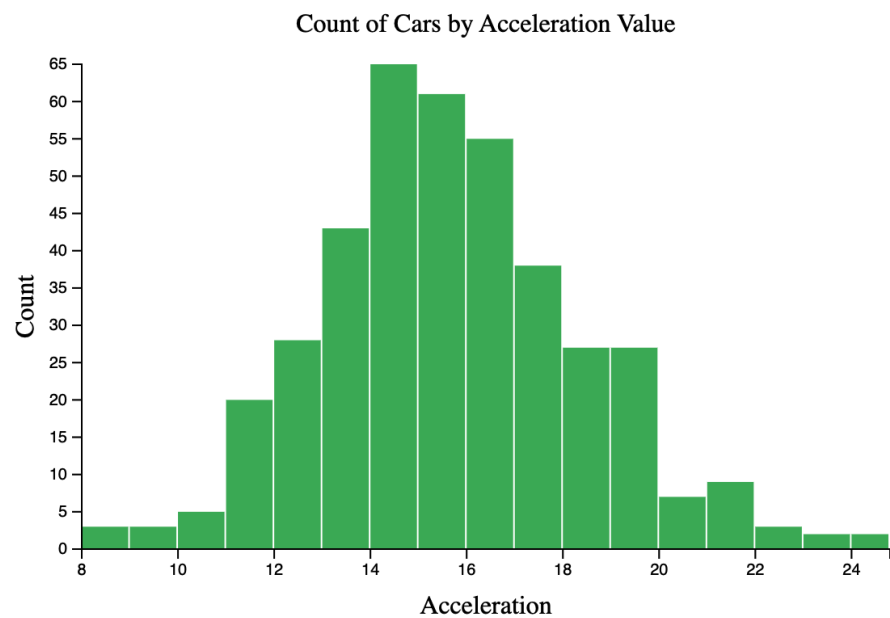
Line Graph with D3



| Model Year | Total Cylinders |
|------------|-----------------|
| 82 | 130 |
| 81 | 134 |
| 80 | 120 |
| 79 | 169 |
| 78 | 193 |
| 77 | 153 |
| 76 | 192 |
| 75 | 168 |
| 74 | 142 |
| 73 | 255 |
| 72 | 163 |
| 71 | 156 |
| 70 | 196 |

C. This graph shows the number of cars by acceleration value

Count of Cars by Acceleration Value

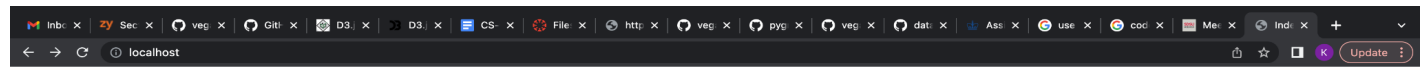


6a and 8 are together

Setting up the APACHE WEB SERVER to host the webpages

```
find: /Users/kahitiijari/Library/Containers/com.apple.Safari: Operation not permitted
find: /Users/kahitiijari/Library/Containers/com.apple.CloudDocs.MobileDocumentFileProvider: Operation not permitted
find: /Users/kahitiijari/Library/Containers/com.apple.mail: Operation not permitted
find: /Users/kahitiijari/Library/Containers/com.apple.Notes: Operation not permitted
find: /Users/kahitiijari/Library/Containers/com.apple.news: Operation not permitted
find: /Users/kahitiijari/Library/Containers/com.apple.coretexts.recentdata/Library/Recents: Operation not permitted
find: /Users/kahitiijari/Library/Containers/com.apple.stocks: Operation not permitted
find: /Users/kahitiijari/Library/PersonalizationPortraits: Operation not permitted
find: /Users/kahitiijari/Library/Photos/Library/Syncdication.photoslibrary: Operation not permitted
find: /Users/kahitiijari/Library/Metadata/ComSpotlight: Operation not permitted
find: /Users/kahitiijari/Library/Metadata/com.apple.intelligentSuggestions: Operation not permitted
find: /Users/kahitiijari/Library/Handovers: Operation not permitted
find: /Users/kahitiijari/Library/Cookies: Operation not permitted
find: /Users/kahitiijari/Library/com.apple.bluetooth.service.cloud/CacheRecords/SoundProfileAsset: Operation not permitted
find: /Users/kahitiijari/Library/CoreFollowUp: Operation not permitted
find: /Users/kahitiijari/Library/Assets: Operation not permitted
find: /Users/kahitiijari/Library/DoNotDisturb: Operation not permitted
find: /Users/kahitiijari/Library/Caches/com.apple.HomeKit: Operation not permitted
find: /Users/kahitiijari/Library/Caches/CloudKit: Operation not permitted
find: /Users/kahitiijari/Library/Caches/com.apple.Safari: Operation not permitted
find: /Users/kahitiijari/Library/Caches/com.apple.finity.imagescache: Operation not permitted
find: /Users/kahitiijari/Library/Caches/com.apple.finity.fwcore: Operation not permitted
find: /Users/kahitiijari/Library/Caches/com.apple.finity.fwcore: Operation not permitted
find: /Users/kahitiijari/Library/Caches/com.apple.homed: Operation not permitted
find: /Users/kahitiijari/Library/Caches/com.apple.finity.fwcore: Operation not permitted
find: /Users/kahitiijari/Library/Caches/com.apple.adprivacyd: Operation not permitted
find: /Users/kahitiijari/.Trash: Operation not permitted
/opt/homebrew/etc/httpd/httpd.conf
/opt/homebrew/etc/httpd/original/httpd.conf
/opt/homebrew/Cellar/httpd/2.4.57/_botle/etc/httpd/httpd.conf
find: /usr/fd/3: Not a directory
find: /usr/fd/4: Not a directory
find: /usr/fd/5: Not a directory
kahitiijari@Kahitiij-MacBook-Pro ~ %
kahitiijari@Kahitiij-MacBook-Pro ~ %
kahitiijari@Kahitiij-MacBook-Pro ~ %
kahitiijari@Kahitiij-MacBook-Pro ~ %
kahitiijari@Kahitiij-MacBook-Pro ~ %
kahitiijari@Kahitiij-MacBook-Pro ~ %
kahitiijari@Kahitiij-MacBook-Pro ~ % ls
Applications  Downloads  Music  assignm7.py  cs649.pub
Desktop      Library   Pictures  assignment7  cs649.pub
Documents    Movies    Public    assignment7.rpg  cs6
kahitiijari@Kahitiij-MacBook-Pro ~ % echo '# Set PATH, MANPATH, etc., for Homebrew.' >> /Users/kahitiijari/.profile
kahitiijari@Kahitiij-MacBook-Pro ~ % echo 'eval "$(opt/homebrew/bin/brew shellenv)"' >> /Users/kahitiijari/.profile
kahitiijari@Kahitiij-MacBook-Pro ~ % eval '$(opt/homebrew/bin/brew shellenv)'
kahitiijari@Kahitiij-MacBook-Pro ~ % brew install apache2
  Downloading https://formulae.brew.sh/api/formula.le.json
##### 100.0%
  Downloading https://formulae.brew.sh/api/cask.json
##### 100.0%
Warning: https://formulae.brew.sh/api/cask.json is already installed and up-to-date.
To reinstall 2.4.57, run:
  brew reinstall httpd
kahitiijari@Kahitiij-MacBook-Pro ~ % sudo apachectl start
Password:
sudo apachectl: command not found
kahitiijari@Kahitiij-MacBook-Pro ~ % $ sudo /usr/sbin/apache2ctl restart
can: command not found: $
kahitiijari@Kahitiij-MacBook-Pro ~ % sudo /usr/sbin/apache2ctl restart
sudo: /usr/sbin/apache2ctl: command not found
kahitiijari@Kahitiij-MacBook-Pro ~ % which apache2ctl
apache2ctl not found
kahitiijari@Kahitiij-MacBook-Pro ~ % which apachectl
apachectl not found
kahitiijari@Kahitiij-MacBook-Pro ~ % sudo apachectl start
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using Kahitiij-MacBook-Pro.local. Set the 'ServerName' directive globally to suppress this message
httpd [pid 8694] already running
kahitiijari@Kahitiij-MacBook-Pro ~ % vim /opt/homebrew/etc/httpd/httpd.conf
kahitiijari@Kahitiij-MacBook-Pro ~ % sudo $
kahitiijari@Kahitiij-MacBook-Pro ~ % cd Sites
kahitiijari@Kahitiij-MacBook-Pro ~ %
```

```
Password:
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using Kshitijs-MacBook-Pro.local. Set the 'ServerName' directive globally to suppress this message
kshitiijari@Kshitijs-MacBook-Pro Sites % sudo apachectl start
AH00558: httpd: Could not reliably determine the server's fully qualified domain name, using Kshitijs-MacBook-Pro.local. Set the 'ServerName' directive globally to suppress this message
kshitiijari@Kshitijs-MacBook-Pro Sites %
```



Index of /

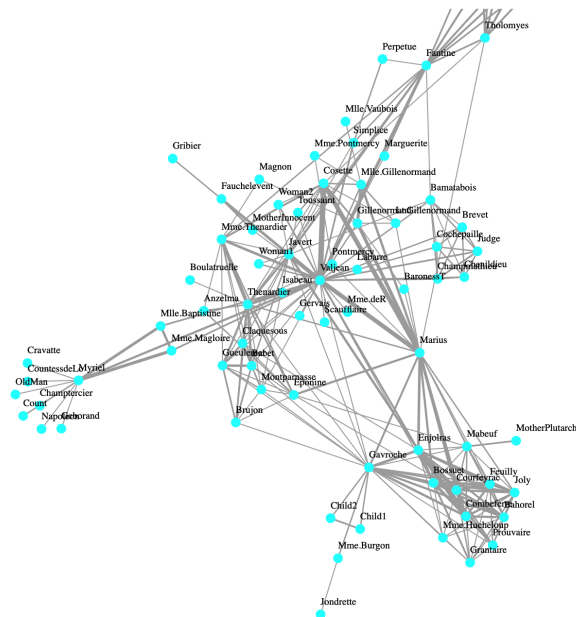
- [Hw5q1.html](#)
- [Hw5q2.html](#)
- [Hw5q3.html](#)
- [Hw7q.html](#)

7a,b,c together

This is a network graph which uses nodes and links to connect the source and target with certain value. I have added <p> tag with inference and for visibility we have fisheye plugin to zoom in the nodes.

Les Miserables Network Graph

Inference: I can see the nodes with the names and the links between the nodes from source to target with particular values provided



Reference:

<https://www.freecodecamp.org/news/d3js-tutorial-data-visualization-for-beginners/>

<https://d3js.org/>

<https://observablehq.com/@d3/gallery>