اونيورسيتي تيكنولوكي بروني
UNIVERSITI TEKNOLOGI BRUNEI

SCHOOL OF COMPUTING AND INFORMATICS

MSc By Coursework in Computing and Information Systems

CI5335

Data Analytics and Visualization (2022)

Assignment 1

Data Visualisation Dashboard

Written By:
Mohammad Faiz Bin Haji Sufrikhan
M20210034

Written For:
Dr. Somnuk Phon-Amnuaisuk

Due Date:
18th March 2022

1 Introduction

This assignment involves building a dashboard in javascript that can load a local CSV file and generate five (5) charts from the data. Additionally, loading data from an API and being able to manipulate the loaded data should be implemented if possible.

This dashboard is built using Vue2 which is a progressive javascript framework used for building web user interfaces. A material design UI library called vuetify is also employed to expedite the creation of the front end. Graphs are generated using PlotlyJS via the use of the wrapper library called Vue-Plotly. Website is developed with the mobile first approach, as although the website will most likely only be used on a desktop environment, more than half of website traffic comes from mobile devices as seen in Figure 1 and as such, mobile first is a good approach. (Statistica, 2022)

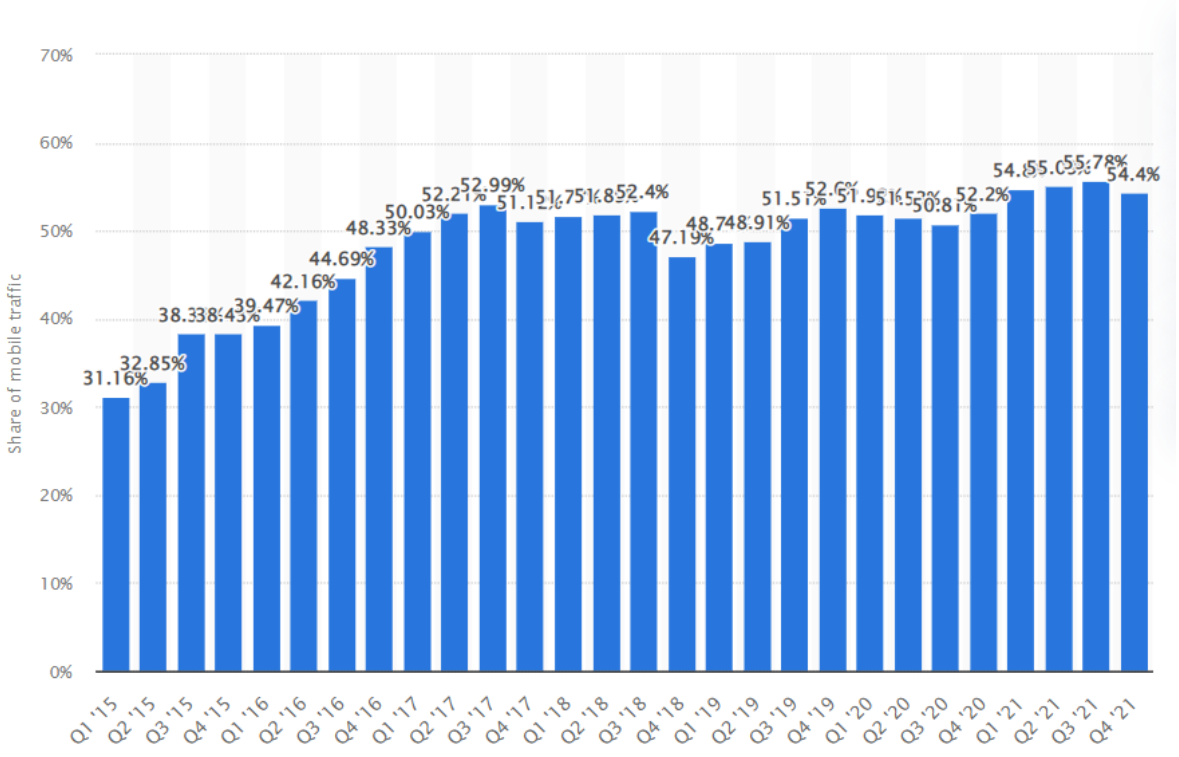


Figure 1: Percentage of mobile device website traffic from 2015 to 2021

1.1 Important Resources

- Code Repository: Github
  - To run:
    - cd Asg1
    - npm run serve
- Site URL: https://izu-davis-asg1.netlify.app

1.2 List Of Abbreviation

API - Application Programming Interface
CSV - Comma Separated Values
GUI - Graphical User Interface
JS - Javascript
UI - User Interface
UX - User EXperience
WCAG - Web Content Accessibility Guidelines

2 Goals

There are five (5) main goals:

- Load local files
- Load data over internet
- Allow manipulation of data
- Visualise loaded data
- Responsive UX design

3 Work Breakdown Structure

1. Front End
    a. Wireframes
    b. Coding
2. Back End
    a. Choose API
    b. Code file loading
    c. Code data parsing
    d. Code chart generation
3. Integration
    a. Functionality Testing
    b. Deployment

4 Content Structure

4.1 Site Map

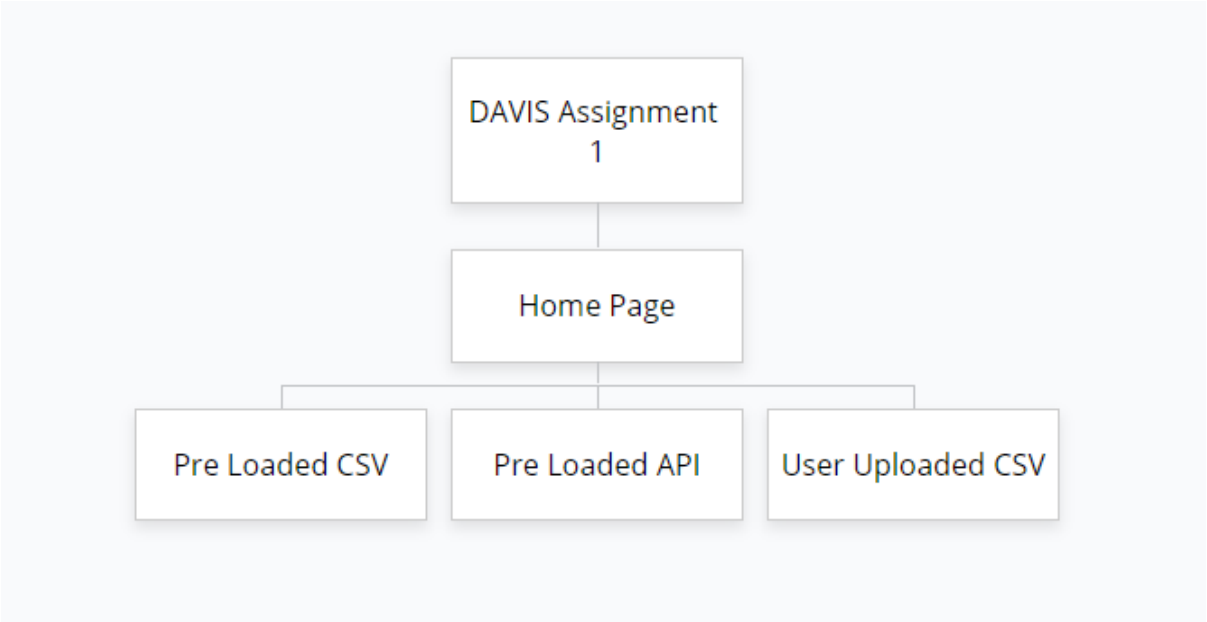


Figure 2: Site Map of Dashboard

4.2 Page Templates

4.2.1 Mobile Wireframes

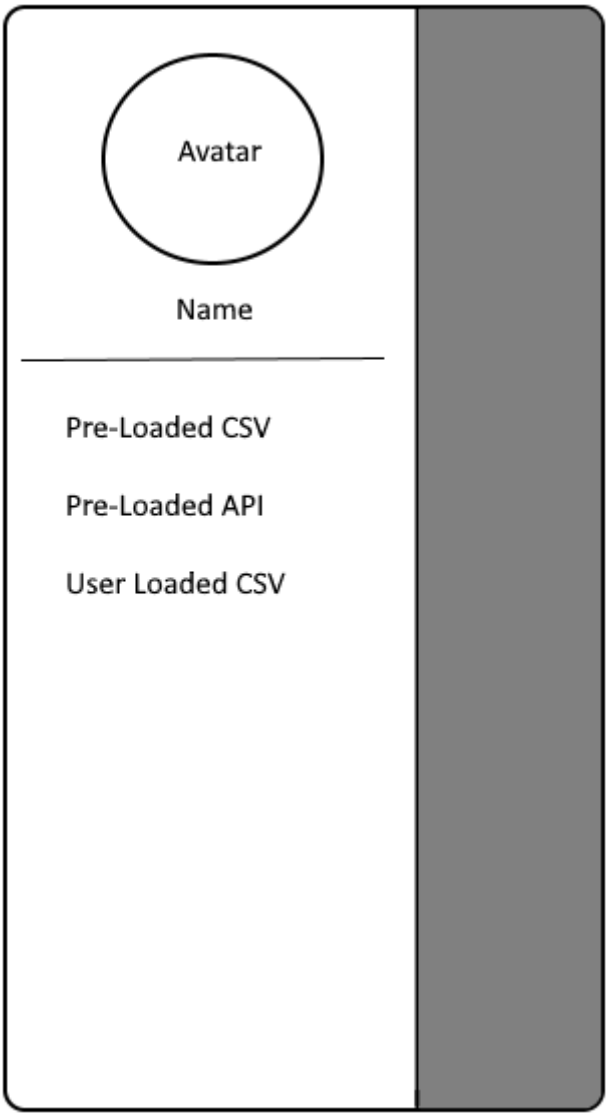


Figure 3: Wireframe of Mobile Menu Opened

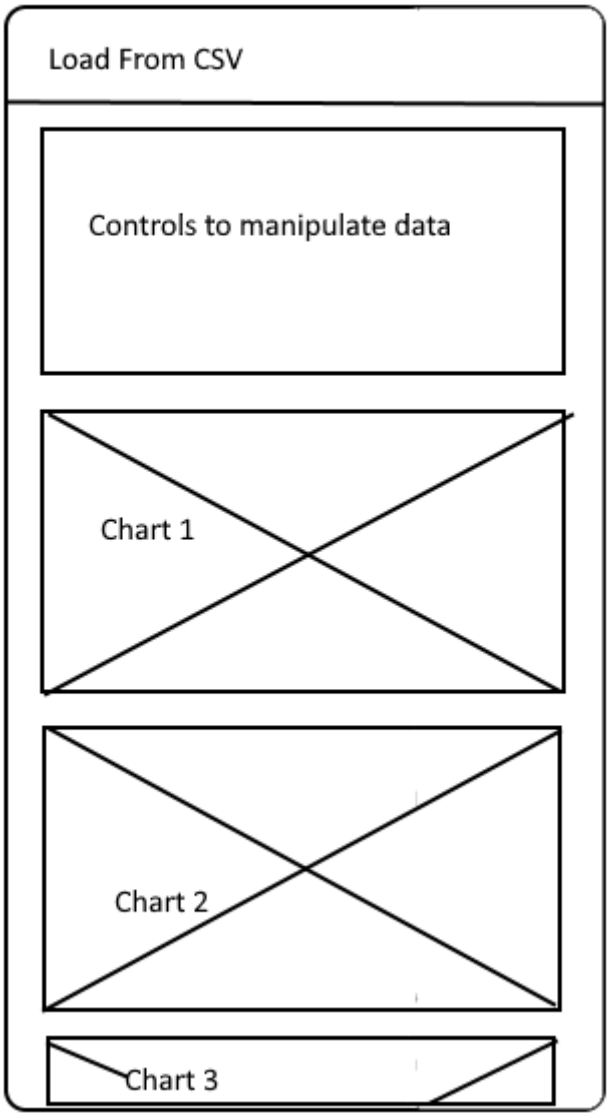


Figure 4: Wireframe of CSV loaded data

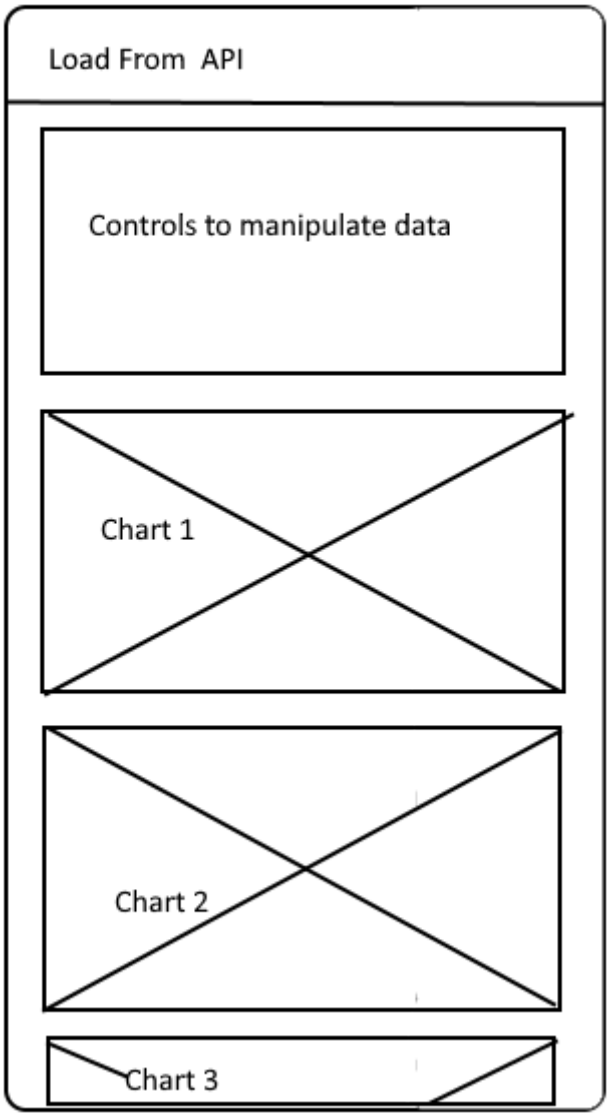


Figure 5: Wireframe of API loaded data

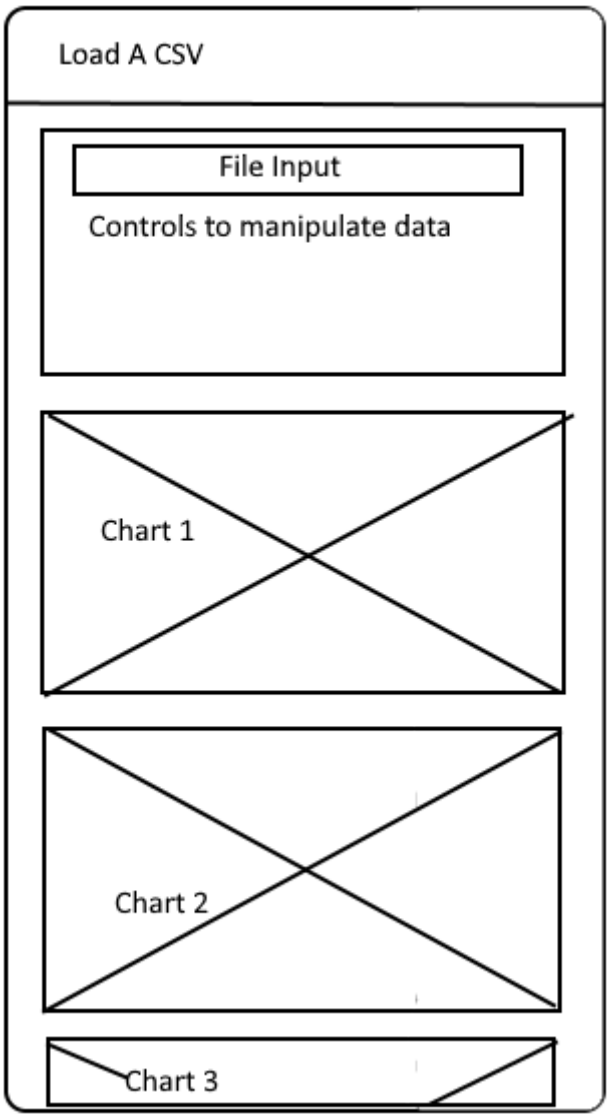


Figure 6: Wireframe of User Uploaded CSV page

4.2.2 Tablet and Desktop Wireframes

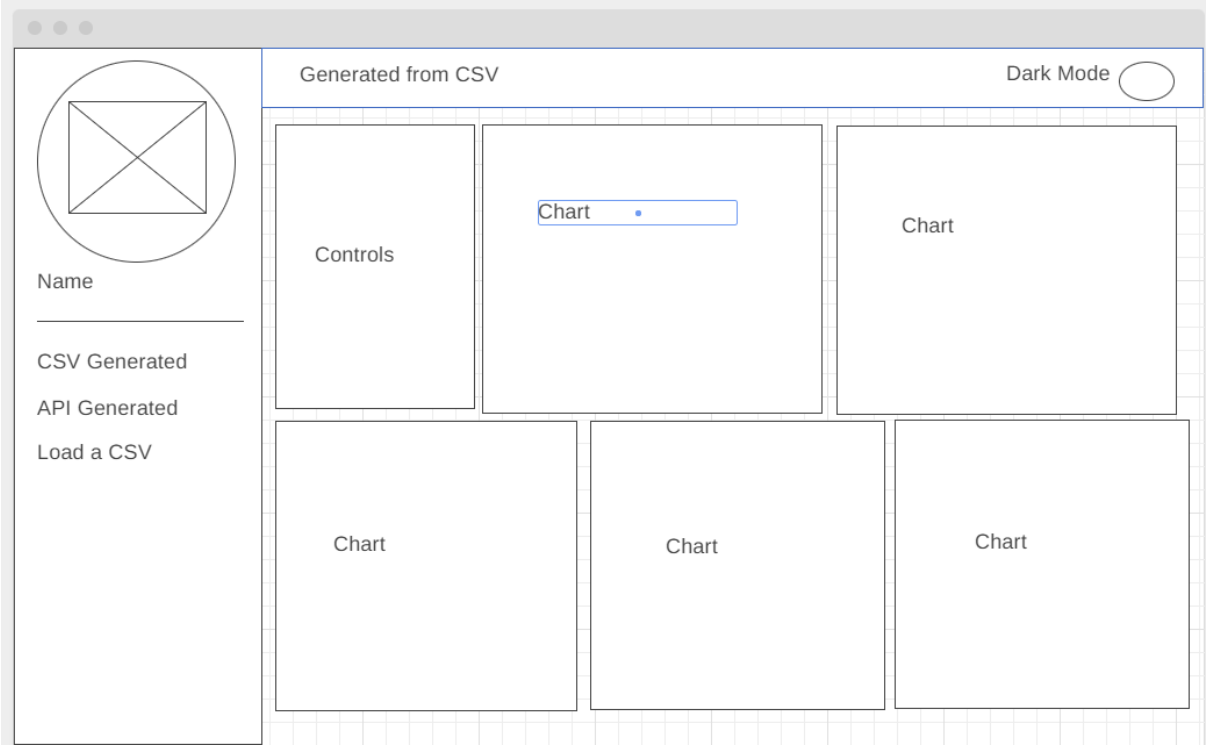


Figure 7: Wireframe for CSV page

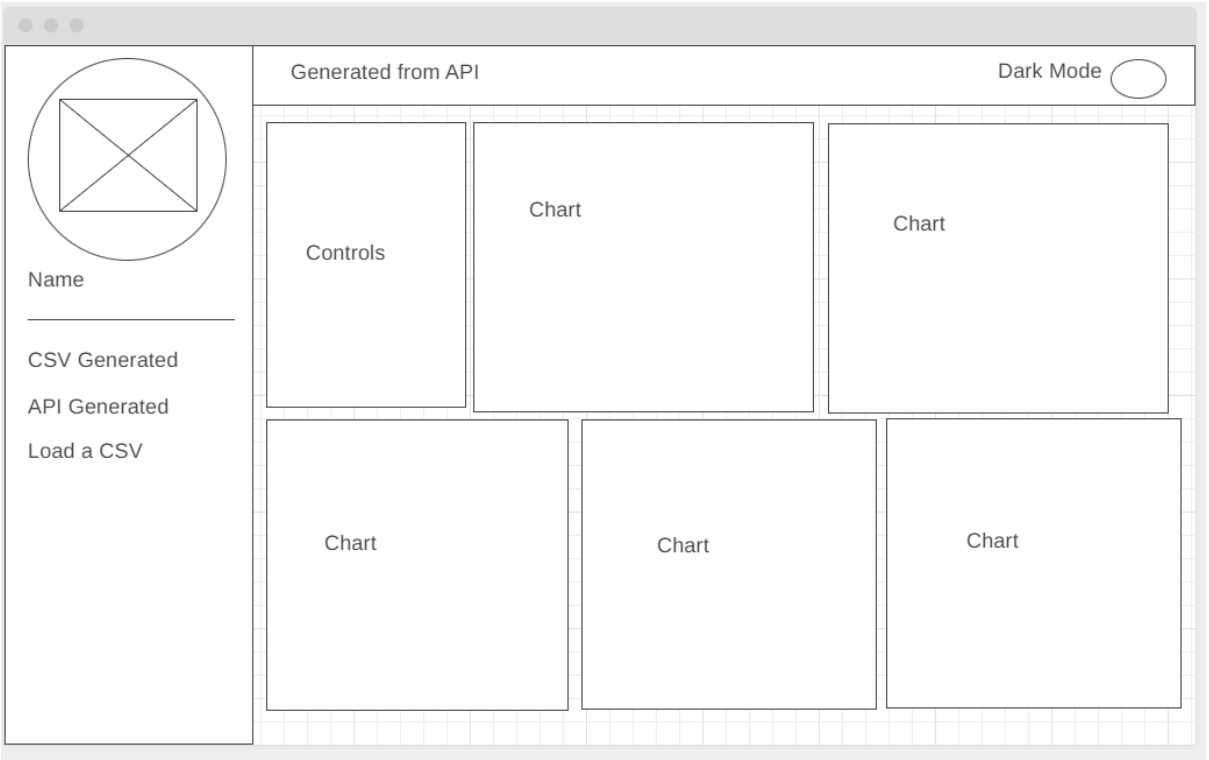


Figure 8: Wireframe of API generated page

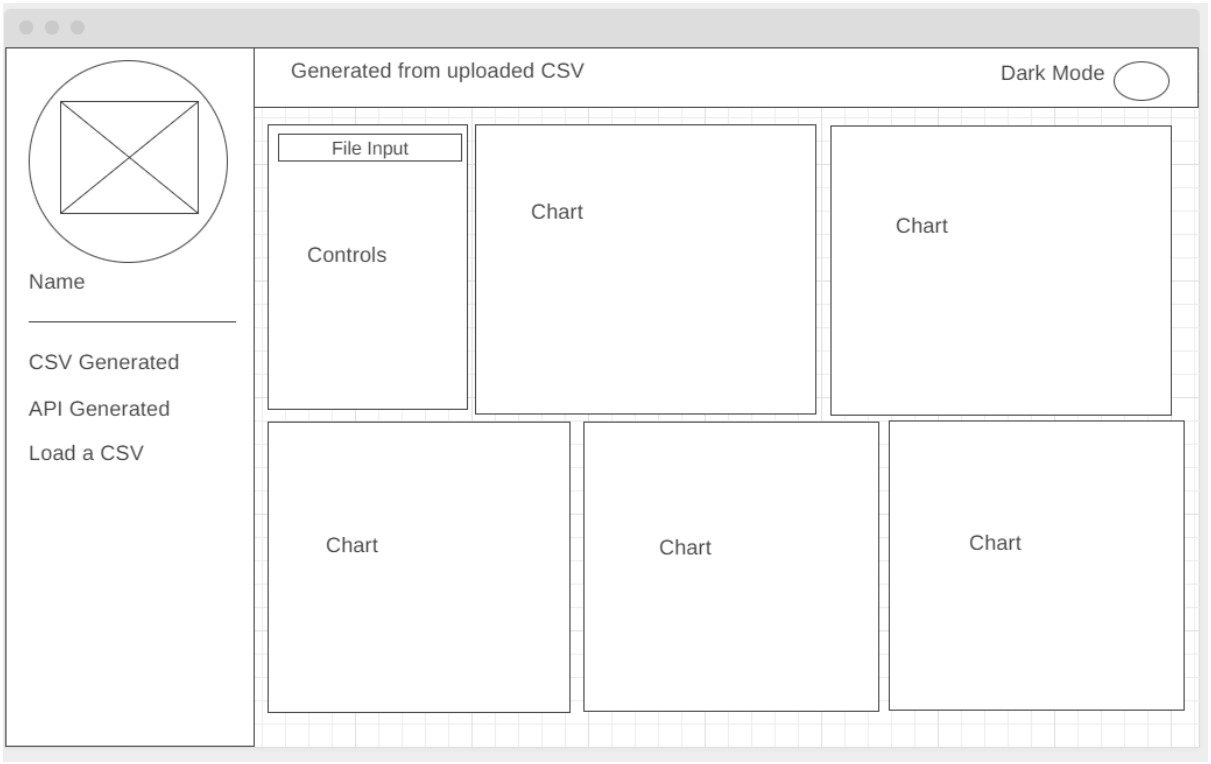


Figure 9: Wireframe for user uploaded CSV page

5 Design

5.1 Colour Swatches

Site defaults to the dark mode theme. Colour swatches can be seen in table 1.

	Light Theme	Dark Theme
Primary Background	White	Black
Secondary Background	White	Charcoal Grey
Text	Black	White
Accent	White	Charcoal Grey

Table 1: Colour Swatches

5.2 Typography

Typography used in this site is based on material design specifications as seen in table 2. The table may include typographies that are not used.

Text Type	Font	Weight	Size	Letter Spacing
Heading 1	Roboto	300	6rem	-.015625 em
Heading 2	Roboto	300	3.75rem	-.0083333333em
Heading 3	Roboto	400	3rem	normal
Heading 4	Roboto	400	2.125rem	.0073529412em
Heading 5	Roboto	400	1.5rem	normal
Heading 6	Roboto	500	1.25rem	.0125rem
Subtitle 1	Roboto	400	1rem	.009375em
Subtitle 2	Roboto	500	0.875rem	.0071428571em
Body 1	Roboto	400	1rem	.03125em
Body 2	Roboto	400	0.875rem	.0178571429em
Button	Roboto	500	0.875rem	.0892857143em
Caption	Roboto	400	0.75rem	.0333333333em

Overline	Roboto	500	0.75rem	.1666666667em

Table 2: Typography

5.3 Responsive Design

There is no distinction between tablet, laptop, desktop and widescreen. Therefore there are only two breakpoints:

- Mobile - < 600px
- Others - 600px above

Supported pointer devices are:

- Mouse
- Pen and Touch

Note: Plotly and Vue-plotly behaviour may not support touch and this behaviour cannot be controlled.

6 Functionality

6.1 Toggle Dark Mode

This can be done by clicking on the icon on the top right of the screen.

6.1 Load Local Data

Can be found in the Load CSV page. User uploads file through the file input component

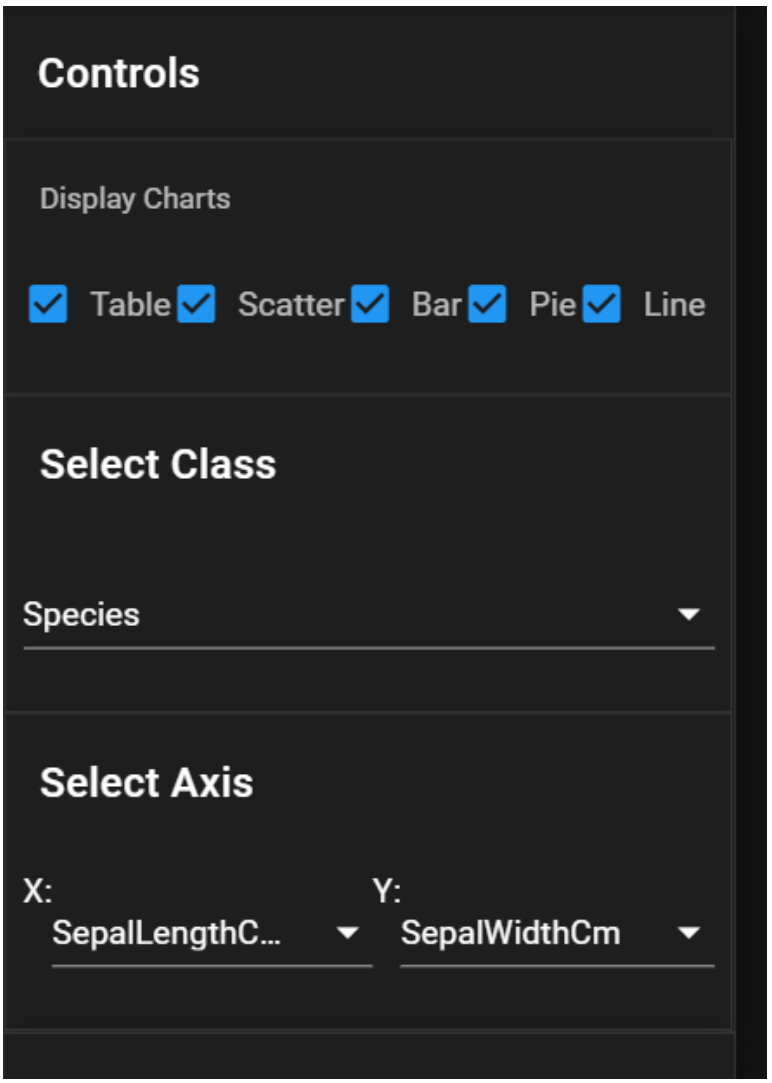
Pre-loaded CSV page already loads the iris csv dataset hosted on
https://raw.githubusercontent.com/Izunyaaan/davis_asg1/main/src/assets/iris.csv

6.2 Load API

Chosen API is for COVID-19 statistics found on:
https://corona.lmao.ninja/v2/historical/Brunei?lastdays=30

6.3 Control over visualisation

A very basic control to hide charts, select class and select axis for 2d plots can be done in each page. These controls are only visible on the Load a CSV page after a file has been loaded.



6.4 Visualise Data as Charts

Using plotly.js, data is manipulated to generate the following charts:

- Table
- Scatter
- Line
- Pie
- Histogram

6.5 Loading Screen

When data is still being parsed, a loading screen is shown to prompt the user to wait.

7 Accessibility

WCAG 2.1 Checklist is followed to AA standards.

8 Browser And Device Support

Figure 10 shows the browser market share according to (Statcounter,2022).

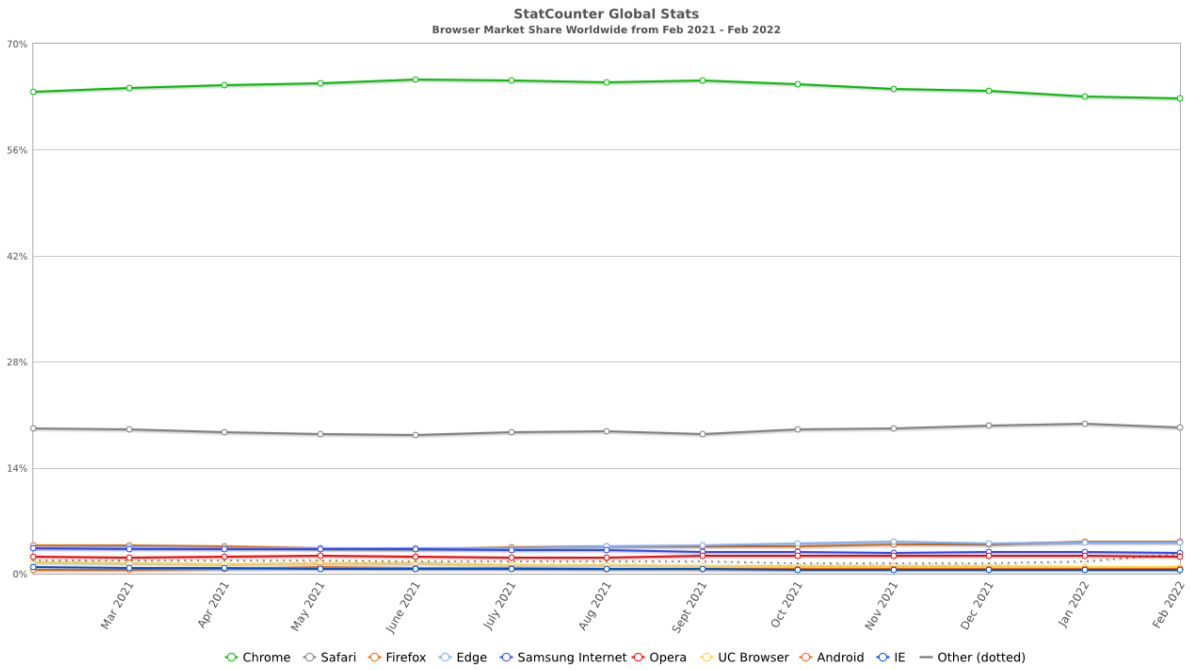


Figure 10: Browser Market Share Feb 2021 - Feb 2022

8.1 Browsers

Browser	Status
Chromium (Chrome, Edge Insider)	Supported
Edge	Supported
Firefox	Supported
Safari 10+	Supported

IE11/Safari 9	Supported with polyfill
IE9 / IE10	Not supported

Table 3: Browser support for Vuetify

8.2 IE11 and Safari 9 support

Vuetify utilises features of ES2015/2017 that require the need to use polyfills for Internet Explorer 11 and Safari 9/10.

9 Hosting

Site is hosted on netlify. Project hosting requirements are:

- 100mb storage
- Supports Vue CLI

Netlify offers:

Bandwidth	100gb/month
Concurrent Builds	1
Build minutes	300 minutes/month
Websites hosted	Unlimited

Table 4: Netlify hosting capabilities

10 Maintenance

This is a one-off project meaning there is no long term support planned for the dashboard and its other dependencies.

11 Milestones

The milestones for this project are:

- Initialise project
- Initialise git
- Basic UI
- Functions coded
    - Loading File
    - Loading API
    - Parsing Data
    - Generate Charts
- Testing
    - Functionality
    - Accessibility
    - UX
- Build
- Deployment

12 Deadlines

Project has a single deadline which is the assignment submission date 18th March 2022.

13 Budget

Project is to be finished pro bono. This may impose restrictions on resources such as limited API selection, low performance of the hosting environment and restriction of media used to free resources.

References

Statistica. 2022. Percentage of mobile device website traffic worldwide from 1st quarter 2015 to 4th quarter 2021. Retrieved from https://www.statista.com/statistics/277125/share-of-website-traffic-coming-from-mobile-devices/

Statcounter. 2022. Browser Market Share Worldwide. Retrieved from https://gs.statcounter.com