

Project Documentation

Lappeenrannan teknillinen yliopisto

Introduction to Web Programming

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Description

The project was about creating a statistic portal by only using HTML, JavaScript, and CSS. It would use open data fetched from Tilastokeskus and present this data using Leaflet JS Library for maps and Frappe framework for charts. VS Code was chosen as the code editor.

The project takes three datasets using three API calls which I distributed to two web pages so that the home page would show election data from Finnish municipalities, and the other page would contain population data as well as employment data for all municipalities. Both pages would use very simple CSS styling.

The home page shows the election data by coloring the municipalities with the color of the party that got the most votes, defaulted at the year 2021. The user has the ability to change the year by using a slider. Municipalities with white coloring are the ones that I didn't choose to be fetched, so mostly areas in Åland (Ahvenanmaa). Under the map a chart displays the vote-% for each party from 1980 to 2021. Under the chart the user can either estimate new data, export the current chart, or navigate to the visualization of population and employment data.

The second page uses employment and unemployment data to create the ratio of these two, and color the map based on the ratio. The user can also switch to another layer, that uses the population data to color the municipalities based on the density of the area. Under the map, a chart displays the Finnish population from 2000 to 2022, and the user also has the chance to display employment chart and unemployment chart from the same timeline. The user can also add markers (as images) to the map showcasing the draggable and droppable objects.

In both pages, the user gets additional info by clicking any municipality on the map. Do note, that neither the election data nor the employment + unemployment data adds up to 100% of the whole population. This is because for the elections only nine parties were chosen, and for employment it does not take into account for example students, senior citizens, or children under 14 years old.

Overall, it was a great project to practice handling large datasets. Especially for the election data where all the key values (municipality codes, parties and their names, and the election values) were separated and I had to map the data using for loops to not only match the area names but also the correct vote-% values to their corresponding party.

Here's a YouTube video showcasing the project :

<https://youtu.be/iejHbbeBkkY>

AI Usage

ChatGPT 4 was used to generate ideas for displaying the data and how it would be the most efficient to separate the three API calls. Additionally, it was used for finding errors / problem-solving when for example one of the Leaflet maps would be colored black and I didn't know whether my calculations were wrong, or the displaying of the data was done wrong since the console showed no errors.

Grading

Feature	Points
Well written PDF report	3
Application is responsive and can be used on both desktop and mobile environment	4
Application works on Firefox, Safari, Edge, and Chrome	3
The application has clear directory structure, and everything is organized well	2
Drag'n'drop new data to charts/map (<i>markers</i>)	4
The application shows relevant data on a map and user has a chance to change the data	3
The application show relevant data on a chart and user has a chance to change the data	3
User is able to switch between different layers of data on a map (<i>ratio / density</i>)	2
By clicking the map user has an option to get additional charts covering that area	4
There are more than two items of data available – three API calls made (<i>election, population, employment</i>)	5
Data is combined and merged to generate new data, which is then visualized (<i>employment-unemployment ratio</i>)	3
Users can define what should be done to different data items	2
User is able to download the visualization as a PNG or SVG image	2
Total Points	40