Frontend Task

Context

Imagine you're a shopowner and you have a number of parking spaces (e.g. 200) available in front of your store for shoppers & employees. Now, because you see more and more EVs parking there every day, you're planning on building some chargepoints.

If you build 20 charging stations with a maximum charging speed of 11kW each, the theoretical maximum of total power demand is 220kW (a very high number that would be expensive to satisfy, e.g. requiring a new, more powerful grid connection). You know this is only a theoretical figure, because its statistically unlikely for all 20 charging stations to be charging at full power at the same time.

By simulating how electric chargers are actually used we can simulate how high the total energy consumption (kWh) is, what peak power loads (kW) occur, and how these figures change with the number of chargepoints installed.

Your task is to build an input form for some of the simulation parameters and display the simulation output (pre-computed) in an appealing way.

Tasks

Task 1: Frontend

Tech: Feel free to use the Frontend stack of your choice. If you know Typescript, React, and Tailwind that's great, but everything else is fine too. The main objective of this task is to create a nice-to-use, good-looking and (slightly) functional mockup of the input and output of this simulation.

You are tasked with visualizing the inputs and the output.

The input parameters could be:

- the number of charge points
- a multiplier for the arrival probability to increase the amount of cars arriving to charge (20-200%, default: 100%)
- the consumption of the cars (default: 18 kWh)
- the charging power per chargepoint (default: 11 kW)

For the output, you could visualize:

- The charging values (in kW) per chargepoint at a useful aggregation level
- An exemplary day
- The total energy charged (in kWh)
- The number of charging events per year/month/week/day
- The amount of charging events/actual max power demand/energy consumed per day/week/month as a bar chart/heatmap

You do not need to implement functions that generate dynamic dummy data. Think of a data format that works for your implementation, and then generate the appropriate static data.

Also consider the following points for your submission:

- Form validation
- Form submission handling
- Responsiveness
- Usability

Please submit your submission either as a compressed file or send us the link to a repository. Include screenshots of the frontend and a short README on how to set up and run the frontend in the root directory of the task.

> **Bonus**
>
> - Create a UI to allow creating different types of chargepoints (e.g. 5 x 11kW, 3 x 22kW, 1 x 50kW).