

Challenge

Objective

Develop a Single Page App (SPA) that shows a simple dashboard that displays tiles, each displaying a single statistic for a dataset that is retrieved via a REST API call. The user should be able to request new data to be loaded and to see the statistics in the tiles update to reflect the new dataset.

Requirements

1. The app shall be implemented using ReactJS components and developed using either JavaScript or TypeScript, with the latter preferred.
2. The app shall display four statistics tiles: Mean, Median, Standard Deviation and Mode.
3. The app shall present a button which, when clicked, will cause a new dataset to be loaded (replacing the current dataset) and the dashboard display to be updated to reflect the newly loaded data.
4. The app shall present an input field that will accept a number and a submit button which, when clicked, will cause the number to be added to the currently loaded dataset and the dashboard tiles to update to reflect the new dataset state.

Guidance

The appearance of the app and implementation approach are up to you. Don't spend more than 8 hours. Timebox the effort and prioritize your time on what you think are the most important aspects. There is no right or wrong answer.

Dataset

The dataset will consist of an array of numbers delivered in the form of a JSON document with the following structure:

```
{
  "data": [
    123,
    ...,
    987
  ]
}
```

Dashboard Tiles

1. Mean – https://en.wikipedia.org/wiki/Arithmetic_mean
2. Median – <https://en.wikipedia.org/wiki/Median>
3. Standard Deviation – https://en.wikipedia.org/wiki/Standard_deviation
4. Mode – [https://en.wikipedia.org/wiki/Mode_\(statistics\)](https://en.wikipedia.org/wiki/Mode_(statistics))

Expected Results

data-1234.json

Mean	49.457050
Median	49.000000
StdDev	28.810315
Mode	77.000000

After adding 42

Mean	49.451012
Median	49.000000
StdDev	28.799421
Mode	77.000000

data-4321.json

Mean	50.346679
Median	51.000000
StdDev	29.191159
Mode	82.000000

After adding 42

Mean	50.344748
Median	51.000000
StdDev	29.188057
Mode	82.000000