Web Frontend Software Engineer: Assignment

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Dear Candidate,

Thank you very much for your interest in joining Isar Aerospace team. As part of our recruiting process, we kindly ask that you complete a technical assessment. Please submit your answers if possible within 1 week as a compressed filed or a repository link. We are very much looking forward to your hand-in and hope you have fun working on it!

Assignment:

Assignment Scenario

“Spectrum”, the launch vehicle built by Isar Aerospace just performed a successful lift-off from the launch pad and is flying towards Earth orbit. A web service provides live insights into Spectrum’s sensor system during its maiden flight. Your task is to visualize these sensor values in a web interface so that the crew in ground control can check if everything is okay.

Assignment A

Please consider the following API endpoint SpectrumStatus in the provided server.

https://webfrontendassignment-isaraerospace.azurewebsites.net/api/SpectrumStatus

Upon Http GET request, this endpoint returns important sensor data, specifically the current velocity, altitude, temperature, a status message, a boolean indicating whether the vehicle is ascending or descending, and a Boolean indicating if the rocket requires any action from the user.

Task: Build a web-based GUI (preferably using React) to appropriately visualize the sensor values retrieved from this endpoint. It is entirely up to you, which specific type(s) of visualization you chose (line charts, bar charts, gauges, text boxes etc.). Just imagine that a crew member at ground control needs to be able to easily understand the data. The UI should be updated with new data upon request from the user, e.g. through a simple click on a button.

Assignment B

Please consider the following API endpoint SpectrumWS in the provided server.

wss://webfrontendassignment-isaraerospace.azurewebsites.net/api/SpectrumWS

Upon the right Http Get request, this endpoint will “upgrade” the communication protocol to web socket (wss) and start live streaming the same type of sensor data.

Task: Use the live data pushed by the server to continuously update the user interface. You may reuse the GUI you developed in assignment A. However, sometimes the launch vehicle randomly requires action from the crew ({“isActionRequired”: true}). Whenever this happens do the following:

- Be sure to inform the user of this critical status change in a way that can’t be overseen.
- Give the user the option to act in Spectrum using the third endpoint below (ActOnSpectrum).

https://webfrontendassignment-isaraerospace.azurewebsites.net/api/ActOnSpectrum

Assignment C

Please comment on potential improvements of the API structure, deviations from common standards or performance enhancements.

General notes:

- The backend provides new data every ~500ms.
- The portrayed launch vehicle trajectory is just a simple mockup and not at all realistic.
- As this is Spectrum’s maiden flight you can expect regular situations where the crew will need to act on it.
- If you experience failing requests in the SpectrumWS endpoint, please reconnect.

We look forward to receiving your results!