Scalability Engineering (Summer Semester 25)

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Prototyping Assignment (25 Points)

In the prototyping assignment, you will design and implement an application that has to be able to scale. You are free to design the application according to your wishes as long as you follow the general requirements defined below. You will work in groups of two to three people.

You will have to prove in a demo that your application works as intended and that it fulfills all requirements. The format in which you submit your commentated demo is up to you (slides, video, report, or similar format).

Please also provide us with a link to the public git repository (with license and readme), where you manage your source code. Your repository needs to be documented as well.

Due until **July 13, 2025 (Sun), 23:59h**; submission via ISIS.

Requirements

1. Your application must manage some kind of state.
2. Your application needs to be able to scale vertically and horizontally.
3. When your application is scaled up/out, it should not be possible to overload another component (i.e., there needs to be some mitigation strategy for very high load).
4. Implement two more strategies, which were covered either in the lecture content or during the presentations, in addition to the strategies you already implemented for requirements 1 to 3.

Additional Information

- You can build your application using any standard programming language and tooling, but you are not allowed to use libraries to directly solve the challenges presented by requirements 1 to 4.
- Don’t plagiarize, i.e., don’t copy from other students!
- This semester, we sadly cannot offer access to cloud offerings. To show that your application scales horizontally, you can run all components multiple times on your local machine using Docker or MicroVMs, and set up networking between them, so that each instance is treated as though it runs on a different machine.