
Group Reflection - Group 5

Advanced Software and Systems Engineering - HS 2023

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In this submission, we reflect on our mutual experience working together on the TAPAS project as part of the course "Advanced Software and Systems Engineering".

Group Composition

At the beginning of the semester, our team consisted of five members: Michael, Daniel, Kaan, Stephan, and Niklas. However, we faced an early setback when Niklas decided to leave the MCS and move to another university.

With only 4 team members, we embarked together on the TAPAS journey. Compared to other groups, our experiences with Java, Spring Boot, and other tools were somewhat limited. Only Michael had some initial experience with Java due to his undergraduate background in Computer Science. The remaining team members studied Business before the MCS but had already proficient knowledge in Python.

We realized early on that (i) our small team size and (ii) and limited knowledge of software engineering were going to be big hurdles throughout this project. However, all of us were strongly motivated to make this project a success and deliver the extra mile, while also benefiting from the

steep learning curve.

What Went Well?

Despite our challenges, our commitment to effective teamwork and communication was a cornerstone of our success. Utilizing tools like WhatsApp for quick communication and Trello for task management proved invaluable in streamlining our workflow and addressing issues promptly.

To ensure dedicated focus and collaboration, we scheduled two weekly time blocks specifically for project work. This structured approach allowed us to allocate uninterrupted time solely for the TAPAS project, fostering a disciplined and consistent work ethic. Additionally, we utilized the collaborative tool "Code With Me" to facilitate pair programming. The simultaneous coding sessions, made possible by this tool, were pivotal in allowing us to progress without hindering each other's work. This method not only improved our coding efficiency but also fostered a deeper understanding of the project among all team members, as we could immediately discuss and resolve issues in real time.

Given the often tight deadlines, it was necessary for us to prioritize certain tasks over others. For instance, we first focused on the WebSub implementation (vs. MQTT implementation) considering its higher importance for later stages of the project.

As we all had other courses to deal with throughout the project, there were sometimes conflicting priorities. However, through transparent communication, we adjusted the individual work distribution accordingly which helped to cover bottlenecks. Despite some stressful moments, we maintained a positive team atmosphere, fostering mutual support and understanding.

Problems & Improvements

Overall, the project was very tough due to the required workload the need to bridge our knowledge in Java, but also the new methods introduced in this course. We consistently found that most tasks required more time than anticipated, primarily due to unforeseen obstacles and the extensive debugging they necessitated. To mitigate this, we proactively scheduled our weekly work sessions early in the week, allowing sufficient time for research and consultation with the teaching team.

Early in the project, we encountered several compilation issues where the code failed to run as expected and caused some delays in our timeline. To overcome these challenges, we adopted a collaborative troubleshooting approach, incorporating regular code review and debugging sessions, which significantly improved our efficiency.

Initially, we faced difficulties in efficiently debugging our code on the VM, which was hindering our progress. To mitigate this issue, we decided to use SSH for accessing the virtual machine. This strategy streamlined our debugging process, leading to quicker problem resolution and a deeper understanding of the system's architecture.

The plugfest was a great event, which as a team we really enjoyed. Despite its challenges, we learned the importance of interoperability standards. We learned that early developers play a crucial role in shaping these standards. Early consensus on such standards can significantly reduce the need for later modifications. Should we embark on a similar project in the future, we plan to engage early on with the development of interoperability standards, aiming for a balance between detail and practicality.

Conclusion

Despite facing several hurdles, we are proud to say that we successfully managed the complexities of the TAPAS project. Our journey involved a steep learning curve, in which we were able to advance our knowledge and skill set, in areas like hexagonal and microservice architectures, as well as decentralized communication and decoupling. One of the most exhilarating parts of this journey was witnessing our software solution spring to life. We deeply appreciate the guidance from the teaching team throughout this course, and we look forward with great enthusiasm to the chance to put our newly acquired skills to the test in practical situations, be it in a business setting or through entrepreneurial endeavors