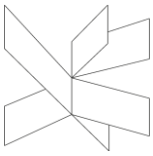

Venue Environment System

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Adriana Leišytė 333678

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Matas Kairys 315188

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Javier Abreu Barreto 315237

Daniel Lopes 315274

Mikkel Bjørn Hansen 315167

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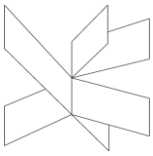

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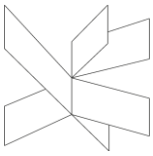


1 Introduction

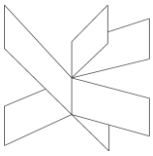
In the 4th semester of our Software Technology Engineering program, our project focuses on creating a cloud hosted IoT system that enables the viewing and retrieval of sensor data. This semester, our project is divided into three teams: IoT, Cloud, and Frontend, each responsible for specific aspects of the system. The IoT team handles the hardware and sensors, transmitting the collected data to the Cloud. The Cloud team retrieves and stores the data in a database, while also creating endpoints for the Frontend team to utilise in developing a web application.

Compared to the previous semester, our group has grown to a total of 9 members, although it is still smaller than the usual group size of 12.

The 4th semester is a culmination of our learning journey, where we bring together various components and technologies to develop a complete software solution before our internship in semester 5. This system has software for all of the teams and additionally, the IoT team has a hardware device as well. As for the programming languages, we developed the system using C for IoT-related tasks, Java for the Cloud infrastructure, and React JS for the Frontend development.

Methodology-wise, this semester we followed the practices of Scrum and AUP as per the requirement. Implementing Continuous Integration and Continuous Development in our system and subsystems allowed us to frequently integrate code changes and ensure system stability. This methodology, along with the accompanying pipelines, enabled us to effectively plan, track progress, and adapt to any changes that arose during the development process.

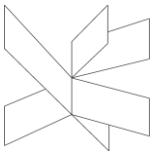
Throughout the semester, we have had several meetings with our supervisors, mostly for mandatory meetings. These interactions have provided us with valuable insights and feedback. Working in a large team setting has been a



valuable yet challenging experience, teaching us the importance of effective communication, collaboration, and managing a system with diverse components.

To ensure proper documentation, we made a conscious effort to closely document all our meetings this semester. Recognizing the importance of meeting minutes has been a journey across previous semesters, but this time, the team was committed to keeping track of our progress effectively.

This semester has been significantly different from the previous ones, but it has also provided us with additional knowledge and skills that we applied both in the project and will be beneficial in our upcoming internship. In the following chapters, we will reflect on our group formation and delve into everything that followed thereafter.



2 Group Description

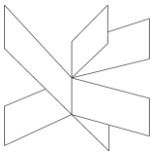
The fourth semester project gives students the possibility of choosing their own team. Because one team is formed of 12 people, our group had to find members from both classes that exist in VIA Software Engineering Semester 4. However, due to the inability to form a team early on, and students dropping out of university, Group 5 found itself to have 9 members only. Most of the members have not worked together previously, so this came to be a new experience for everyone. In terms of nationalities, there are people present from Lithuania, Portugal, Denmark, Moldova, Hungary, and Spain. With various cultures and world views being present, we have created an environment, where these views can collide, hence resulting in a better product, by having the problem inspected and analysed from several perspectives.

1. Selina

Selina comes from the Republic of Moldova and has been a Software Engineering Student for 2 years now and has yet a lot to learn, considering she's been studying arts and literature until her acceptance letter to VIA. However, she enjoys Web Design and so, she finds herself as part of the Front End team for this semester project.

2. Daniel

Daniel is a front-end team member, he came from Portugal two years ago to study software engineering at Via University. His interest in software relies more in web development, as he also had more experience in his past before Denmark.



3. Matas

A student from Lithuania, who went to a programming school in Kaunas for a few years. There he learned some of C#, C++ and Python. Matas has been a VIA student for 2 years, is 20 years old and has interest and experience in the field of video game development with game engines such as Unity.This semester he was in the Front-End team.

4. Rojus

Nationality - lithuanian. Graduated in Mykolo Birziskos Gymnasium, with his study curriculum focused on IT (programming C++), mathematics and physics. Has been into a big variety of study subjects and hobbies, as such, he's capable of quickly adapting to any needed role. Currently, his interests lie with studying game design in the near future. Serves under the Cloud team.

5. Lorant

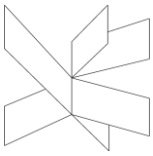
Lolek is a Hungarian individual with an interest in software development. He would like to be a video game creator, with the sole purpose of building a game that people enjoy playing. He has been playing ice hockey for 15 years as well, so being part of a team comes naturally to him. He is a proud member of the Cloud team in SEP 4.

6. Javier

A jolly Spanish student passionate for backend development. Interested in learning for the sake of learning, new tools and concepts excite the curiosity in them. A reliable helping hand who is always ready to help his Cloud teammates.

7. Adriana

Adriana was mostly in Lithuania until October of last year. Yes, she enrolled in VIA and jumped straight to the fourth semester. It happened because she has previously



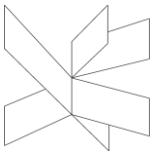
studied computer science in Lithuania, but hasn't finished her studies there, so decided to continue in the similar field in VIA. She has work experience working mostly as a Java developer, but she wanted to explore the world of embedded programming, so she joined an IoT team.

8. Nerijus

Nerijus comes from Lithuania. He graduated from Kaunas Ausra Gymnasium He has some experience in game making using the unity engine. Before enrolling in via he has released some games. He has some experience doing pixel art and voxel art. He was self taught. And has a huge interest in software as a whole. This semester he was part of the IoT group.

9. Mikkel

Mikkel is a danish software engineering student of two years, with an interest in free software as well as linux as a desktop operating system. During this project he has been part of the IoT team, as it would be written in C.



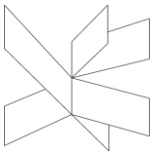
3 Project Initiation

The initiation of the fourth semester project unfolded at a faster pace compared to previous semesters. Given that we were acquainted with most of our classmates after two years, it became relatively easier to anticipate their preferred teammates. As the Semester Project Kickoff approached, which coincided with our first SEP4 lecture, it became evident that many students had already formed their groups. This posed a challenge for us in finding suitable teammates as most of the available individuals had already been chosen.

We embarked on an active search for potential teammates, starting on the 8th of February when Daniel, Rojus, Javier, Selina and Lorant formed the initial core of our group. We still had to find seven more individuals to complete the team. We reached out to various students and asked for recommendations. Eventually, we asked Adriana to join, and Rojus with Lorant asked Mikkel, Nerijus, and Matas from class Y. With three positions left unfilled, we hoped that the supervisors would allocate suitable students to our group at the SEP4 Kick-off. We approached the teachers and they appointed the remaining students to our group. However, after trying to reach out to them, we discovered that those students had dropped out of the program.

Given the absence of any remaining students without groups, the supervisors granted approval for our group of nine members.

Before we knew that would become the final group formation, we had already started generating project ideas that aligned with the scope of the fourth semester. During a meeting held on February 15th, immediately following our class, we engaged in a brainstorming session and compiled an extensive list of potential ideas that can be seen in the meeting for the day. One week later, we submitted our top three suggestions: "Reptile Tank," "Fine Art Museum," and "Club Environment System."



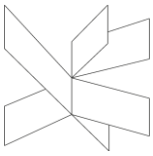
The group contract was also worked on during this time, where the team engaged in a detailed and long discussion about the conditions that would govern the group conduct and cooperation throughout the project period. Aspects such as participation, communication, meetings, conflict resolution, deadlines and other related issues have been covered in the contract.

With guidance from the supervisors, we collectively decided on the "Club Environment System" as our chosen project, one of the reasons being its rarity - the teachers have noted that they haven't seen this idea being chosen by students previously. Another reason for this idea being our final choice was the fact that some of the group members have started an extra curricular project - opening a student bar named Valhalla. We thought that the ties between real life and the school project would aid the motivation of the group in executing the project. One group member particularly noted at some point that "If our product can make partying better, safer and more enjoyable, then we have reached our goal, we have contributed to society, we have improved people's lives."

Ethical considerations had to also be taken into account, although we did not stumble upon any dilemmas. This project addresses several ethical concerns related to indoor social gatherings in clubs.

ts primary focus is on ensuring the health and safety of both visitors and employees. By monitoring and regulating factors such as temperature, humidity, CO2 levels, and particle matters, the system aims to create a safe environment that reduces the risks of heat disorders, dehydration, fatigue, and the spread of airborne diseases. This ethical consideration prioritizes the well-being of stakeholders and contributes to their overall experience.

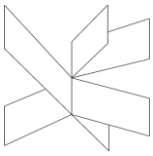
In addition to health and safety, the project also demonstrates a commitment to environmental responsibility. By actively monitoring and improving air quality, the system promotes sustainability within the club industry, acknowledging the



impact of indoor environmental pollution on public health. This ethical approach not only protects the health of individuals but also contributes to a broader effort to reduce the environmental footprint and create a healthier community.

- How can you explain your ethical arguments and decisions?
- Which ethical concepts are relevant for your arguments?
- What are the ethical implications for the stakeholders of your solution?

In the next chapter, we will walk you through the process of executing the Project Description, which later on would serve as the base for the whole project.



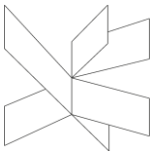
4 Project Description

The deadline for submitting the project description was swiftly approaching, set just two weeks from the project kickoff. However, due to having the project idea decided only on the 22nd of February, we had about 8 days to come up with a project description, which means multiple meetings had to be planned and attended.

During the first couple meetings, the team has already encountered conflicts as some members were not attending properly, but it was solved after several Facebook messages and a couple of meetings. Coming up with requirements and generally getting work done was not a problem for us, but some members could not be included or were just bored during some meetings, as it was expected from a 9 people team. There were quite a few conversations, where the opinions were not aligned, but any problem that came up was solved in a human and peaceful manner.

Fortunately, we had a clear reason for selecting our idea, which helped with the overall process. For the background description, we identified a pertinent issue that is commonly encountered in clubs across the country. It often happens that the club environment fails to provide an enjoying experience when it comes to the air inside the venue, with complaints ranging from uncomfortable temperatures to inadequate air circulation. With this in mind, we saw an opportunity to create a system that could automatically manage the air conditions within such establishments, enhancing the overall enjoyment for everyone present.

Since this semester also requires the use of a specific methodology, we needed to thoroughly document and research the chosen approach, especially since our team setting was very different from the previous semesters. We had to decide how we will use Scrum, whether for the whole team or for each sub-team. In a



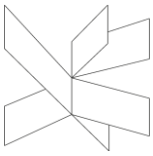
series of meeting minutes, the step-by-step process of creating the project description can be closely followed. We collaboratively worked on various aspects, such as collectively brainstorming and refining the background description. Subsequently, we assigned specific tasks to team members, including describing the chosen methodology after a team discussion and outlining a timeline based on mandatory deadlines, with a final deadline set for June 1st.

The task of conducting a risk assessment was also given out to some of the team members, but we recognized the need to consult with the supervisors regarding the hardware device that we had to use in this project and in which we had limited knowledge of at the time of writing the project description. Following that, we planned to execute the risk assessment once we gained a better understanding of the hardware device, following communication with the supervisors.

Despite having experience from previous semesters, the vast size of the project and the new technologies that we were required to use posed a great challenge for us all. Everyone worked hard, stressed about deadlines, some had personal issues, which caused conflicts in the team, but nothing that could not be resolved with a good sleep or a civilised talk.

Once the project description, along with the product backlog and initial architectural pieces, were finalised, we submitted them for review and awaited feedback. Given the valuable review and guidance of the supervisors, we were able to revisit and refine the project description, ensuring that it was more comprehensible and usable for our upcoming project.

With the completion of the project description, we transitioned into the phase of project elaboration and construction, which will be discussed further in the subsequent chapter.



5 Project Execution

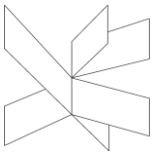
Reflecting on the rest of the project period, we gained valuable experience and encountered various challenges. This semester, we had to use Scrum as our methodology, but at times, it became confusing to follow through with it. Another difference from the previous semester was the need to choose teams between Front End, Cloud, or IoT after submitting the project description.

We had until the 15th of March to think it through and discuss our preferences. Once teams were formed, we awaited the hardware handout, which took place on the 22nd of March. During the period between the team formation and hardware handout, a short break from SEP occurred due to other course assignments and the lack of sufficient knowledge/materials to proceed.

Project Execution officially began on the 24th of April, following the spring vacation and some initial motivation issues. As a team, we reflected on the reasons for the delay and worked on finding solutions to boost motivation and discipline. We acknowledged that a lack of self-confidence in our abilities had also hindered us from starting the project properly. However, we agreed that with discipline and responsibility, the project was still manageable.

From the 24th of April until the 30th of May, we had a total of six sprints, each lasting five days, with an average of seven hours of work per working day. This resulted in the team collectively putting in approximately 210 hours of work on the project per person. The remaining hours were divided between classes (18 hours), meetings before project execution (approximately 30 hours), and exam preparation.

In our project, knowledge sharing played a crucial role in ensuring the success of our group. We actively facilitated knowledge sharing through both formal and informal communication channels. During formal meetings, we encouraged team members to share their expertise, insights, and ideas openly. We allocated time



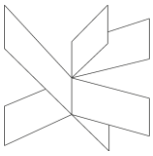
for discussions to create a collaborative environment. Informal communication occurred during planning sessions and team-building activities, where team members could interact on a more personal level, exchange experiences, and build stronger relationships.

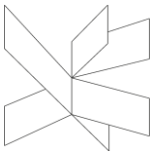
However, we encountered challenges in knowledge sharing and communication due to the diverse cultural backgrounds of our team members. Miscommunications occasionally arose, leading to confusion and misunderstandings. To address this, we recognized the importance of practicing effective communication and actively worked towards improving clarity and understanding. We took the time to clarify any uncertainties, encouraged active listening, and provided clear instructions and documentation. Through persistent efforts, we were able to overcome these challenges and ensure that everyone was on the same page.

In hindsight, we realise that starting earlier would have been beneficial, as we encountered some difficulties with the system before the proof of concept, which took place on the third of May, and even before the project deadline. However, we understand that university is a learning process, and the challenges we face provide us with valuable lessons that will aid us in future semesters and work life. Mistakes made during this project would have had more severe consequences in a paid work environment, which is why we appreciate the opportunity to learn from them.

To conclude, the execution of the project had its ups and downs due to various reasons, but we successfully overcame them. Each team member dedicated long hours of work to the project, striving to be a valuable asset to the entire team.

Next, each team member will present their personal reflections on the fourth-semester project, highlighting their individual experiences and learnings.





6 Personal Reflections

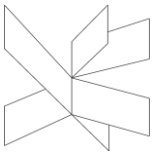
10. Lorant

As someone with a slowly fading social anxiety, working with 5-6 new people turned out to be quite a challenge. I needed some time to get to know my teammates, for several reasons. I had to have a basic level of trust in each and every one of them, that I can consider their opinions. I overcame this challenge quite easily, as I was surrounded by great and talented people. There were some times where I could not grasp a concept or a reason for a choice during the development or planning process, but with some help from the other members I could easily catch back up.

I wanted to avoid being on the IoT team as much as possible, because it seemed difficult, but looking back I would have enjoyed working on that as well. As for working in the cloud team, it was great. I had two amazing teammates, who did not judge me even if I asked stupid questions and were eager to help me and each other with any issue. We were coding in Java, not necessarily the easiest language, but definitely the one we had the most experience with.

Starting late February, a big part of the group started to work on a separate project as well, namely opening a student bar. During the following couple of months, SEP work was kind of neglected, but after some meetings, the priorities were sorted out.

Overall, I have really enjoyed working on the project, getting to know more about software engineering, but most importantly, I am glad that I got to work with the people that I did.



11. Javier

Semester projects have been a struggle for me in previous semesters, always rushed and disorganised. This semester I opted to part from my friends and form a new group. The process was a little chaotic in the beginning since most groups stayed the same into the new semester, merging as groups leaving little options. The resulting group we formed was formed almost in full by people I had never met before. At first it was a little bit awkward but soon we established new relationships amongst our groupmates and we ended up having a great time working together. Not being closed friends with my groupmates from the beginning helped my motivation when I told myself I couldn't fail them.

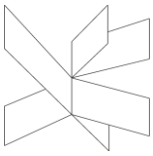
Working with Java on the Cloud team helped us all focus on the more challenging and new concepts such as Docker, Google Cloud and other new technologies and workflows that we had never experienced before. Overall, the project result has been satisfactory and has helped me better understand team infrastructure and more.

Due to my meticulous personality, I scrupulously worked on the code to the best of my ability. In hindsight, perhaps I ought to have relied more on my classmates and more assertively communicated my reservations towards the codebase from the very beginning as doing it later in the project greatly increased everyone's productivity.

In summary, there is always room for improvement but in the end, the project is something I think we can all be proud of

12. Rojus

Compared to my other semester projects this one was completely different. First factor being that I was surrounded by completely different people, considering that the past 3 semesters I was working with the same team. Due to some miscommunication I was left hanging in an unsatisfying situation where I had no team. This generated some cold feelings and conflicts with certain classmates that were later resolved. The group choices I had from my class did not seem satisfactory for me, I had somewhat high standards for people I wanted to work with. As such I contacted Daniel from class X. Him and I barely knew each other, but had common friends. Knowing his professional background and that he's an overall motivated person, I proposed to start forming a



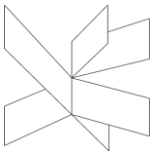
cross-class group that would include students from both of our classes. We sprung into action to choose and recruit people we knew or considered to be motivated. The end result was a group of 9 people, all with rather different personalities and backgrounds. Personally I was rather satisfied and on good terms with all the people from my group. I ended up in the Cloud team with Javier and Lorant, both of which were great companies and helped with my workflow. Cloud team proved to be a good choice on my part. Even though I knew I could adapt to any role needed by the team, it was nice to work on something rather similar code wise and new knowledge wise. As we were having SDJ courses for the past 3 semesters, Java was nothing new for me. However, git strategies, docker images and cloud deployment was something new for me. I did not have much knowledge or confidence in these topics, however Javier's guidance helped me understand and work on them smoothly.

Overall the dynamics between the group was rocky at times due to the misalignment of everyone's interests at times. This was influenced greatly by half of us putting time and effort in a different occupation of opening the Valhalla student bar. However, once the project period started everyone pulled their efforts and interests towards completing the project. Over that time we had 1 or 2 conflicts due to lack of knowledge or motivation. However, they were resolved rather quickly due to fast response from the product owner and scrum master. By the end of the project I can safely consider all of my group mates as close friends, and that really makes me happy.

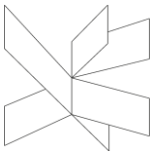
All things considered, I am glad to have worked with this group. We had ups and downs over the whole project construction period, which prepared me greatly for my future career. Everyone's effort on the project is recognizable in code or the documentation, as such, I have high confidence in our resulting solution and the documentation covering it.

13. Nerijus

At the start of the semester when the groups were forming, I was not able to find a group to join being that most of the groups were already formed and full. Even if they were not full, they did not want more people in the groups. Putting me in a bit of a bind. There were some other people who did not have a group,



but it was not enough to form a group. Until one of my friends who was also having problems finding a group to join. Informed me of a group that was still in the making and was a bit unorthodox. The group was formed from people that were from 2 different classes. However, being that it was an unexpected outcome the group forming was not approved by the supervisors and the approval was delayed until the presentation of sep4. After the presentation the group finally got approval. And so, we had our first group meeting that day. We each introduced ourselves, and we discussed our goal for the semester project. It was clear that everyone wanted to do a very good job. Compared to the previous groups this semester's group was way bigger and more diverse. That being the case, a lot of the people had different opinions, characters, and ideas. That brought its own pluses and minuses, on one hand we had a lot of different ideas, and everyone was active on the other it brought conflict because of difference in opinions. While previous groups' relationships were mostly plutonic and business orientated, this time it was different because a big part of the group started hanging out not during the project time. That made the group a bit tighter nit and cozier to be with. During the project period there were some conflicts that happened because of different opinions, to disperse the origin of the conflict we held a meeting dedicated to that specifically, everyone that had dissatisfactions voiced their opinions including me, and after discussing each thing, we were able to disperse any conflict very fast. That was a good experience to have, and it taught me the importance of dispersing conflicts as fast as possible because it impacts the work a lot if the team is in disarray. In general, everyone was very efficient in working on the project. I chose to be part of the IoT team even though at first I was leaning towards the front-end at first. And I am happy I made that decision because that made me become more interested in embedded programming. This semester the courses that were taught felt like they were a lot more versatile and interesting. It felt more geared towards our internships and future careers. All in all, I think that the semester



went very well, the group was very unique and while the semester project is at an end, I feel like we will be hanging out after the project has ended.

Adriana

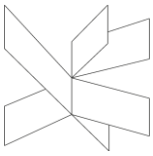
14. Mikkel

During this project, the group dynamics have been quite difficult as the size of the group has increased quite significantly from last semester. Coupled with the, to me, maybe not sufficiently structured scheduling etc. It has been hard to find the necessary focus on occasion. I feel this is also in part the cause of the extended “break” after the actual easter break, as the lack of structure made it a little difficult to gauge anybody’s next action. This was improved as we moved into the project period and meetings became more regular and we were encouraged to meet up at school to work.

15. Daniel

This semester has been an incredible journey filled with new challenges and a lot of opportunities for learning. One of the initial hurdles was forming a group. Since many groups had already been established, I decided to connect with some classmates and extend our “hunting” to other classes. Through this process, our diverse group was formed, comprising with people whom I had not previously known. Initially, it was challenging to communicate effectively with everyone due to our unfamiliarity and different mindsets. Despite my best efforts to get closer with them, it seemed that not everyone reciprocated, leading to a lack of trust and communication barriers. Fortunately, we were able to overcome these obstacles by engaging in open discussions, which ultimately facilitated our collaboration.

As mentioned in my report, I opted to join the web team, leveraging my experience and knowledge in that area. I felt a great responsibility as many group members relied on me to ensure the team's success. Although it was occasionally overwhelming, I managed to navigate through the challenges and achieve significant accomplishments.

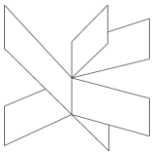


However, like any project, there were imperfections. During the implementation phase, I observed a lack of proactivity among certain group members, which caused me to doubt their commitment. Consequently, I took a significant portion of the workload alone. Fortunately, Selina, with her enthusiastic and proactive nature, recognized this issue and began working closely with me. Her involvement significantly boosted both of our productivity levels, reigniting motivation within the entire group to work harder and aim for excellence. I firmly believe that this collective effort resulted in a successful end product.

In retrospect, the positive aspects of our journey far outweighed the negatives. Together, we delivered an exceptional and functional project. I am grateful for this experience as it taught me very valuable lessons on conflict management and collaborating with individuals who possess different backgrounds. It demonstrated that we can work together effectively, even when our personal connections extend solely to the project itself.

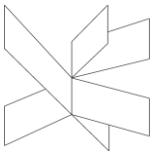
16. Matas

I started the semester hyped because of this semester's curriculum. After the introduction of the SEP4, the number of people per team surprised me and left me wondering how much different this semester will be. Finding a team was interesting too, as I and Nerijus decided to join a SEP group from a different class, which led the group to be mixed members of different classes. While I wasn't familiar with most of the group at the start, I believe we hit it off. Everyone was friendly and we didn't have much trouble setting up our rules for meetings and making the group contract. There were a few conflicts inside the team, but nothing that wasn't solved with a meeting or two. When we were deciding the teams, we needed to have exactly 3 members per sub-team, as we had a minimum number of people in our group. I wanted to join the Front-End sub-team because it is the most interesting for me, as it not only needs to work,



but to look good too. With the teams decided, I ended up in Front-End. This team was interesting as usually I prefer to work alone, while my teammates were the opposite. This led to me most of the time working separately and updating my teammates and keeping up with the progress through the meetings or messenger. While there were some hiccups, especially on my end as I believe I'm still not familiar with React well enough to have a seamless implementation phase, I did manage to complete most, if not all of my tasks. It was definitely interesting to work in a team consisting of 9 members, as we wanted the same result, yet worked on very different parts of the system. Compared to the last semester, I believe the progress went a bit smoother, but I am a lot happier with the result. The team held meetings more frequently, and when the lecture period ended and the project period started, a typical day consisted of most if not all of the group members going to VIA to work either on their own or with the group. When these meetings were held, I might not have stayed the longest, but I did attend all of them. This made it possible to easily communicate between the teams and keep up with the progress. In the end, we managed to finish a project with quite successful results. I feel satisfied with the front-end part, even though it could have been better. All in all, a quite positive semester for me.

17.



19. Selina

The fourth semester's SEP course took place at a much more different rate and pace compared to the previous ones. And although I say this every semester, I feel like it is especially relevant in this current one. Teams doubled the size for us, and suddenly there were a lot more things to do at a time.

The group formed with a few troubles, given that almost everyone else in the semester had either joined multiple groups into one or formed groups already. I have been invited to form a group with some other classmates at first, but then, due to accidentally inviting 13 people in total, i have decided to step down from my place as a member of their group and find another one. Luckily, a few days later Daniel has asked me to form a group with him. It took us a while to form the whole group, and even the 'whole' group only had 9 people but we managed to work together just as we were.

Shortly after forming our group and discussing some details, we were ready to proceed

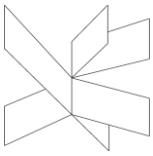
to the Project Description. In my opinion, the project description gave a good start to our project, even though our execution might have happened differently in a better setting.

To reflect on our Project Execution, there are a lot of things I would have liked to do

differently, at least on my part. Show a bit more initiative as the Scrum Master, or encourage everyone to start early. I am not fit for a leader ship role, but I am a green person in a work setting: it is very important to me that everyone has a good time and feels safe and comfortable.

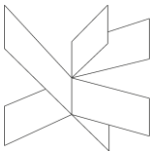
Reflecting back, there was a period of time where motivation was at an all time low both for me personally and for the team as a whole. That set us back a lot, and the consequences of that were felt even in the last week before the hand in. However, we took it as a challenge to work on everything as much as we could and hand in knowing we did our best.

If I were to reflect on our group work, I am thankful to every single other member. Everyone tried their best to be a valuable asset to the team in their own way. We come



from different backgrounds and settings, even though we have been studying together for two years now, and of course people are on different levels. But what is so beautiful about working in such a big team is the possibility to ask so many people with help.

Reflecting forward, next semester we would not have the possibility to work together unless we end up at the same internship, but I truly hope we can see each other again with a smile on our faces.



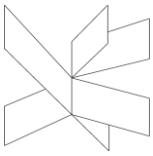
7 Supervision

Supervision in SEP4 followed a similar pattern to the previous semesters, but this time we didn't fully utilise the opportunity as much as we should have. We had a few mandatory meetings with our supervisors, including the project description review and the proof of concept review. These meetings served as checkpoints to assess our progress throughout the semester.

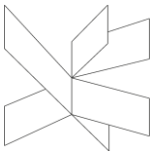
During the project proposal stage, we presented our ideas to our supervisor, who played a significant role in helping us choose. Their guidance and opinion influenced our decision-making process. However, apart from the mandatory meetings and deadlines, we didn't actively reach out to our supervisors as often as we could have.

Due to the project being so fast-paced sometimes and the way of executing it so different from the previous semesters, there were times when we tackled problems on our own instead of seeking guidance from our supervisors. In hindsight, this approach had its disadvantages, as there were instances where their input and expertise could have been of great help. Reflecting on the project, we realised that it would have been beneficial to reach out to our supervisors more frequently to seek their advice.

While supervision was important and could have been utilised more effectively, we understand that semester works are about learning through trial and error. Sometimes, it is necessary to face and solve problems independently to gain valuable lessons and experiences. However, this realisation also serves as a reminder that seeking guidance when needed can lead to better outcomes and smoother project execution.



Overall, supervision in SEP4 played a significant role in guiding our project. Reflecting back, we acknowledge that there were missed opportunities to make better use of our supervisors' expertise. Nevertheless, the experience taught us the importance of seeking help when necessary and relying on a combination of independent problem-solving and guidance from supervisors for successful project execution.



8 Conclusions

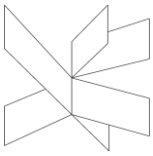
To conclude SEP4, being Software Engineering students for 4 semesters in a row helped us find out even more about the profession we want to pursue as a career. We gained a lot of knowledge and skills right before it is time to go for an internship. It is more of a familiar territory by now, as we have come to learn a lot of programming languages, a lot of theories, and subjects to aid software engineering.

There are a few important lessons to learn from the experience we went through in 4th semester when it comes to the project: to try using all the resources that are available to you: from the internet, to the teachers, friends, tutorials, books. We live in an era where we are oversaturated with information, but it is important to reach out for it as well.

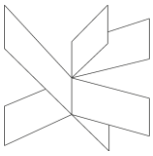
Asking for help is also something that should be practised. Although we have stated this in the group contract, sometimes we would get too self conscious to ask for help. It is important to know you are not alone when you are working in a team.

Working in such a big group has definitely posted its challenges: It is hard to get a hold of everyone and schedule meetings, especially when you are from different classes and your schedules are the opposite. Oftentimes you have to meet during lunch time or after school hours.

It is hard to include everyone in a productive discussion when the team is so big, but it is also rewarding when all 9 are working together in the same class, taking breaks when needed and sharing a laugh when the atmosphere is stressful before a deadline. Also, because the team is so big compared to the previous semesters, the workload is also shared when it comes to general project information and products.



Reflecting back, time has passed by faster than expected, and now there will not be another semester project for the next semester. Reflecting forward, we hope that this common experience and product we shared will turn out to be useful in the future.



Appendices

Appendix A - Group Contract

Appendix B - Meeting Minutes

Appendix C - Sprint Meetings

Appendix D - Interface Contract