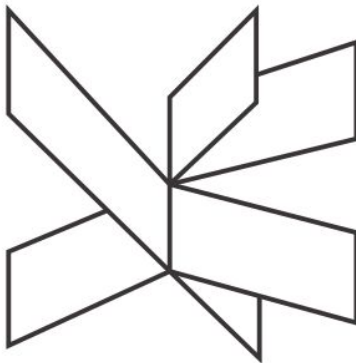


# Kashikoi Restaurant System

Process Report



# VIA University College

3. Semester, August 2018 - January 2019

Software Engineering

31621 characters

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## **1 Introduction**

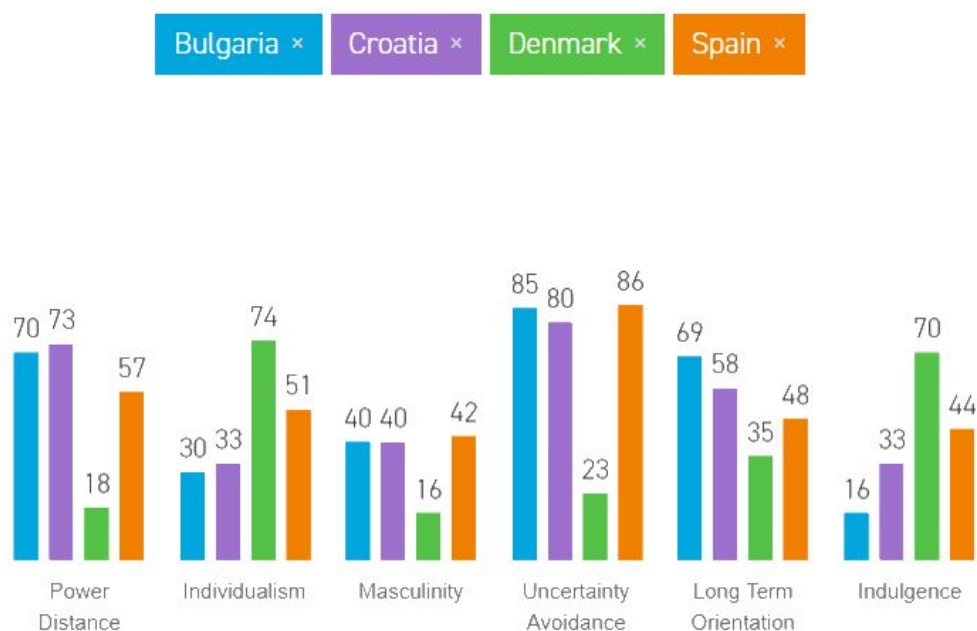
The project period started on the 26th of August, until 20th of September we were in inception phase. We were brainstorming our ideas to figure out on what type of software we want to work. After one and half week, we all agreed to implement a system for the restaurants. We signed the group contract and we started analyzing the core functionalities of the system. The first sprint started on 27th of September and ended on 18th of December. We had six sprints, each sprint had three working days. All in all, we had 18 days to work on the system. The main idea of working on this project was to improve our programming knowledge that we learned this semester.

## 2 Group Description

The group is comprised of four group members: Angel from Bulgaria, Josipa from Croatia, Kenneth from Denmark and finally Remedios from Spain. We are a newly formed group, meaning that group members were in different formations last semester. Angel and Kenneth used to work together in the previous semester. Later in the current semester Remedios and Josipa joined us in formation of the group. Our group used to have a fifth member but very soon after forming the group during the semester start, they were found to not be actively contributing to group progress and prosperity and thus removed from the group. From then on, we continued with four members and learned from this.

### 2.1 Cultural Background

*Figure 1: Hofstede Insights 2018, Compare Countries*



In figure 1, we can see the variety in the cultural aspects that could have an impact on decision making of group members during the project period. (*Hofstede Insights, 2018*)

Starting off with the Power Distance dimension, we see that Bulgaria and Croatia have a very similar index, followed by Spain and Denmark. This field is related to the hierarchy of all group members and where they see themselves in the group and where they see other members as well. The data on the chart from this dimension can be related to our group. For example, group members with higher indexes were awaiting for tasks at some points during the project period instead of finding and assigning tasks to themselves. This can also be seen in the individual with a lower percentage but in a lesser intensity.

Next is the Individualism dimension. Denmark scores a very high percentage - 74 percent whilst on the other end of the spectrum, Bulgaria and Croatia lean more to a collectivistic way of society. Spain remains in a balanced state with 51 percent.

The third dimension is Masculinity. Competition and achievement are what motivated Angel, Josipa and Remedios when progress was made by themselves and other group members. Kenneth's index on this dimension suggests that he is not so driven by competing with others but rather working progressively towards the goal.

The fourth dimension is Uncertainty Avoidance. How much do group members like to stay in their own "water" or "shoes"? Do they like to venture and take risks for the better of the group and themselves? Going by the chart, we see that Bulgaria, Croatia and Spain are extremely high on this dimension and therefore not very good risk takers. Denmark simply does not interest itself in how scary the unknown is but rather, tackles it on accordingly.

The fifth dimension is Long Term Orientation. Here, we see that Bulgaria has the highest score of 69 percent followed by Croatia, Spain and finally Denmark. This field can be related to our group as group members with higher scores motivated others to work in a better way.

The final dimension is Indulgence. Do group members like to give themselves enjoyable leisure time? Do they enjoy the outcome of their work? By the percentages in the chart, we can see two different ends - Bulgaria on the low end and Denmark on the high end where Croatia and Spain fall in-between. Going by these figures, members with a lower percentage did not fully enjoy the moments of leisure while those with a higher percentage tended to be more happy about their work and outcomes.

## **2.2 Belbin Team Roles**

The specialities of every group member come into play when working together. In this case, we undertook the Belbin Team Role Inventory Test (*Studienet, 2017*), afterwards, we took the data and compared it to how we behaved in regards to our self-preparation, studies in class and the way we handled group work and its distribution.

*Table 1: Belbin roles*

Belbin Role > ----- Member ↓	Results from Belbin Team Role Inventory Test (highest to lowest score, for four roles)	Our envision
Angel	Team Worker, Implementor, Coordinator, Shaper	Team Worker, Implementor, Coordinator, Shaper
Josipa	Specialist, Implementor, Monitor Evaluator, Resource Investigator	Plant, Specialist, Implementor, Monitor Evaluator
Kenneth	Specialist, Complete Finisher, Coordinator, Shaper	Implementor, Specialist, Completer Finisher, Shaper
Remedios	Resource Investigator, Implementor, Coordinator, Team Worker	Coordinator, Resource Investigator, Monitor Evaluator, Team Worker

### 2.3 Team building with humanmetrics.com

We undertook a 64 question personality test in which we discovered the strengths in each of our personalities. (*HumanMetrics, 2018*)

*Table 2: Personality test results*

Personality type preference:	Angel	Josipa	Kenneth	Remedios
Introversion versus Extroversion	Marginally prefers Extroversion (6%)	Marginally prefers Introversion (6%)	Marginally prefers Extroversion (1%)	Distinctly prefers Extroversion (59%)
Intuition versus Sensing	Marginally prefers Sensing (3%)	Marginally prefers iNtuition (3%)	Moderately prefers iNtuition (41%)	Slightly prefers iNtuition (12%)
Thinking versus Feeling	Slightly prefers Feeling (16%)	Distinctly prefers Thinking (69%)	Slightly prefers Thinking (22%)	Moderately prefers Feeling (56%)
Judging versus Perceiving	Marginally prefers Judging (1%)	Moderately prefers Judging (28%)	Marginally prefers Judging (1%)	Slightly prefers Perceiving (19%)
Results	ESFJ (see Reference 3A)	INTJ (see Reference 3B)	ENTJ (see Reference 3C)	ENFP (see Reference 3D)

Conclusion: The results of this test seem to match our own personal traits - Angel, having a slight preference for feeling over thinking, Josipa - preferring to rationally put thoughts



into work and not be swayed by emotions, whilst being somewhat judgeful, Kenneth who has a moderate preference of following his intuition and applying thinking to the process and finally Remedios, who has the most pronounced results for extroversion - preferring to be in the “spotlight” for most of the time while, like Angel also, being driven by the emotions around her. These qualities were more or less pronounced by every group member during the project period.

## 2.4 Group member roles

During the inception phase, a decision was made for which roles would go to which member. For Scrum, a Scrum master had to be chosen. The candidates that were appealing for this role were Angel and Remedios since both had prior experience with using Scrum and had the right characteristics based on the Belbin Team Roles such as a Resource Investigator and Team Worker. Based on a unanimous vote by all group members, Remedios was selected as Scrum master and Angel was selected as a Product Owner whilst the others were assigned as being team members without any specific role.

*Table 3: Group member roles*

Member	Role
Angel	Product Owner
Josipa	Team Member
Kenneth	Team Member
Remedios	Scrum Master

### **3 Project Initiation**

All of us are faced with the problem of waiting too long to be served in restaurants. The old fashion way of serving can also cause some misunderstandings while ordering. By making research on the internet, we have found out that a lot of people are complaining about the same problem as we are.

Considering all of this, we came up with the idea of implementing this application. The idea is that every table in a restaurant has a tablet, customers can easily order things from the menu and leave a comment on the order. On the other hand, the orders are immediately presented to the staff of the restaurant. This application helps us avoid wasting time on ordering the food, and also the order of the customer is clearly presented to the staff. No more orders written on paper and guessing someone's handwriting.

#### **3.1 Risk assessment**

We used Scrum framework for implementing the system. Following the Scrum we defined Product owner - Angel and Scrum master - Remedios. Since, we all agree on this we moved step forward we made risk assessment table and sign the group contract.

Table 4: Risk assessment table

<b>Risk</b>	<b>Description</b>	<b>Likelihood Scale: 1-5 5 = high risk</b>	<b>Severity Scale: 1-5 5 = high risk</b>	<b>Risk mitigation e.g. Preventive &amp; Responsive actions</b>	<b>Identifiers</b>	<b>Responsible</b>
Computer crash	One of the computers stops working	3	2	Upload files online	Computer stops working	Affected member
Illness	One of the members gets sick	3	3	Redistribute workflow	Person is not able to work	All affected members
Missing meetings	Tasks are not going to be finished	4	4	Notify supervisors	Tasks are not finished	All members
Not meeting sprint goals	Tasks are not finished in proper time	4	4	Restructure workflow	Tasks are not finished	All members
Lack of knowledge	No solutions from group members	4	4	Research and study more	Struggling with implementation	Affected member

None of this risks had an impact on implementation of the application.

### **3.2 Group Contract**

In the very beginning we signed the group contract. We agreed on the terms that are stated in group contract. During the whole project we followed the terms and conditions of the contract. Moreover, we had some team building events where we met each other better. We tried to help and understand each other as much as we could. Everyone's opinion was valued and respected.

## **4 Project Description**

When we started researching for the project, it was not difficult to find articles or similar sources of information that discussed the subject. The restaurant industry is large and there is a widespread interest in potential profit enhancement within that field. Despite of this, we found it difficult to obtain scientifically sound information from the likes of research papers or other reputable data sources. On top of this, some papers from universities or other research institutes are hidden behind a paywall and without paying it is only possible to get a brief look at the introduction of the paper.

Most of what could be found by searching the internet was either general news articles, from tech or business sections, or on-topic articles from specialized news journals within the industry. These articles contained mostly quotes from interviewed individuals, claims with no statistical or scientific backing posted alongside them, or simply assessments by journalist, business owners or other relevant individuals.

While such sources of information serve their purpose, in establishing an intuitive idea of whether the project has potential, they do not provide a solid and reliable basis for making a project decision with potentially large financial costs. As such the process of researching was made difficult primarily by a lack of quality, rather than a lack of quantity of information.

Eventually we did succeed in finding a publically available paper from a university. The authors had performed field a study and documented statistics that were useful to us. While this sufficed and confirmed the projects relevance, we would have preferred to find a wider array of statistics and information as to avoid basing our project off of a single study.

Since the study showed that the main inhibitor to the prevalence of automation within the restaurant field is reluctance from the users to use them, despite of their great benefit to businesses that deploy them, we agreed that the focus should be to make the system simple and user friendly.

## 5 Project Execution

We based the work methodology of our project following Scrum and UP.

Our inception phase lasted from the 26th of August until the 20th of September. After that we started with the sprints which were composed of 3 workdays.

As shown in the following table, this is the final version of how our sprints look like:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
September				27	28	29	30
	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
October	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	1	2
December	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19				

### SPRINT 1:

First Sprint started the 27th September 2018 and finished the 18th October of 2018. The sprint consists of 3 workdays. The workdays are each Thursday of the weeks in which it is placed on.

During this sprint the group made the first steps to get involved with the project. We decided to set the roots of the system by analyzing the relevant data that the system will

use in order to perform. Following this idea, we focused in the model diagram and in the database by designing and implementing it.

The table was modified during the daily Scrum meetings. The final table is the one found in Appendix B, which shows the status of the tasks at the end of the Sprint 1.

Sprint Review (meeting 18th October 2018):

The group is working efficiently, even though one of the group members is not currently in Horsens. Which means that we are missing one member during the meetings and that the tasks have to be re-organised between the other members of the group.

All the tasks from the Sprint backlog have been completed successfully.

SPRINT 2:

Second Sprint started the 25th October 2018 and finished the 8th November of 2018. The sprint consists of 3 workdays. The workdays are each Thursday of the weeks in which it is placed on.

During this sprint the group started working in the user stories. The ones chosen to work with were the first one: As a staff member, I want to be able to view the menu; and the second one: As a staff member, I should be able to change table status. In this way.

For each user story, we worked following the order of these steps: analyse, design, implement, test and document, in order to follow the work methodology.

The table was modified during the daily Scrum meetings. The final table is the one found in Appendix B, which shows the status of the tasks at the end of the Sprint 2.

Sprint Review (meeting 8th November 2018):

All the tasks from the Sprint backlog have been completed successfully. The group has been working together in order to complete the tasks, which means that all the members have been involved into the work. The group has one less member. Despite this fact, the group has worked normally and efficiently.

SPRINT 3:

Third Sprint started the 15th November 2018 and finished the 29th November of 2018. The sprint consists of 3 workdays. The workdays are each Thursday of the weeks in which it is placed on.

For this sprint, the group decided to divide the tasks between two reduced groups: on one hand Angel and Josipa were working in user stories 3 (as a staff member, I should be able to view the orders) and 5 (as a customer, I should be able to order items from the menu); on the other hand Kenneth and Reme were working together in user stories 4 (as a staff member, I should be able to modify the status of the order) and 8 (as a staff member, I should be able to modify the menu).

First, we decided to focus on the user stories 3 and 4 and once they were finished, we added to the Sprint backlog the tasks related to the user stories 5 and 8.

The group worked together in the conversion of the design pattern proxy to adapter, and also by starting the socket communication.

The table was modified during the daily Scrum meetings. The final table is the one found in Appendix B, which shows the status of the tasks at the end of the Sprint 3.

Sprint Review (meeting 29th November 2018):

The group is progressing properly. The tasks has been fulfilled except the Socket communication which will be improved during the next Sprint.

SPRINT 4:

Fourth Sprint started the 6th December 2018 and finished the 10th December of 2018. The sprint consists of 3 workdays. The workdays are the weekdays without counting the weekend days.

The purpose of the group for these sprint was to focus on the user stories 6 (as a customer, I should be able to see the ingredients and description of the menu item) and 7 (as a customer, I should be able to search for dishes). Another objective was to start with the implementation of the view and establish the socket communication.

The table was modified during the daily Scrum meetings. The final table is the one found in Appendix B, which shows the status of the tasks at the end of the Sprint 4.

Sprint Review (meeting 10th December 2018):

The group has struggled with the tasks. The users stories selected has not been fulfilled due to the priority was given to the implementation of the GUI. Even though most of the tasks has not been done, the group is satisfied with the work done and will continue with the tasks during next sprint.

Another important aspect is that the group has decided not to develop the user story 11 (as a customer, I should be able to filter the search results) due to the lack of time.

## SPRINT 5:

Fifth Sprint started the 11th December 2018 and finished the 13th December of 2018. The sprint consists of 3 workdays. The workdays are the weekdays without counting the weekend days.

During the penultimate Sprint, the group wanted to focus on ending the user stories and the GUI part. Basically, we wanted to have the project ready to focus later on the execution of the reports.

The table was modified during the daily Scrum meetings. The final table is the one found in Appendix B, which shows the status of the tasks at the end of the Sprint 5.

### Sprint Review (meeting 13th December 2018):

After this Sprint, the group has realized that some of the user stories were only related to the UI part. In this way, the tasks from last sprint have been finished as the ones that belonged to the Sprint 5.

The group is very satisfied with the results and have left the last task for the next Sprint.

## SPRINT 6:

Sixth Sprint started the 14th December 2018 and finished the 18th December of 2018. The sprint consists of 3 workdays. The workdays are the weekdays without counting the weekend days.

This was the last Sprint. The group decided to write the project report by combining the different sections, done during the semester, in one document. Another aspect to cover was the Network and Security documentation as well as the project report.

The table was modified during the daily Scrum meetings. The final table is the one found in Appendix B, which shows the status of the tasks at the end of the Sprint 6.

### Sprint Review:

The group has fulfilled almost all of the requirements. We have decided not to implement the user stories related to payment methods due to the lack of time and knowledge respected to the bank connections. We have not implemented either the user story related to the filtration of the search due to, again, the lack of time.

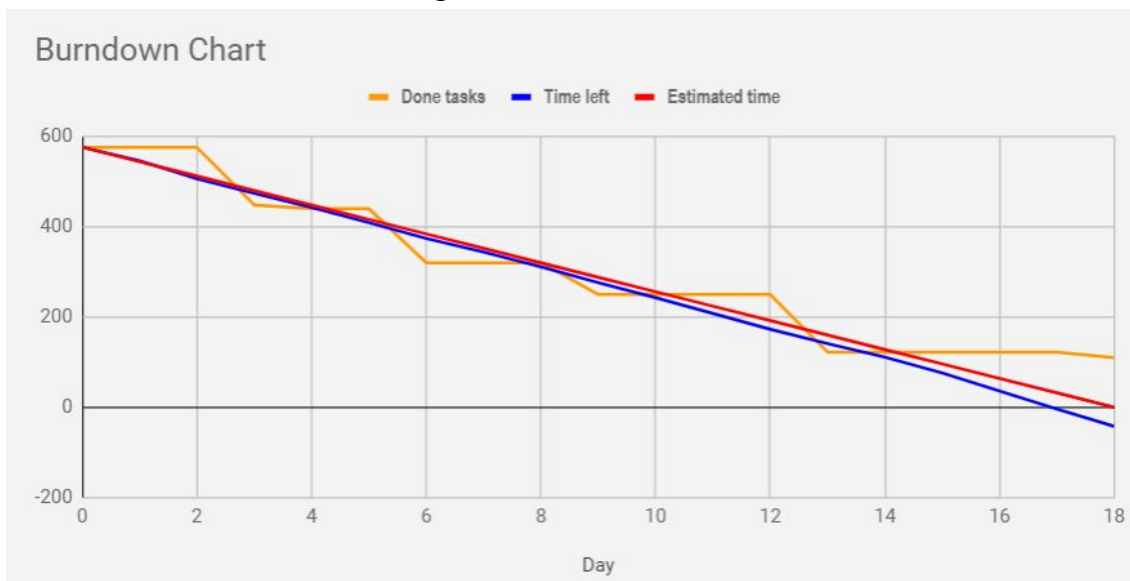


The group has finished the documentation and has reviewed it.

With the end of this Sprint, the project period is over.

The following burndown chart shows the work execution performed during the sprints:

*Figure 2: Burndown chart*



As it is represented, the group started following the ideal amount of hours performed. During the second sprint, we were spending more hours working but the group was not ending all of the tasks.

At the end, we decided not to fulfill some of the requirements, as is shows the orange line, due to the lack of time and knowledge.

## 6 Personal Reflections

➤ Angel:

My experience with the current group formation is that I am satisfied with how we fit one-another's personalities and roles. We are a newly formed group, I and Kenneth used to work together and I knew Remedios from my class. Josipa was somebody new to me but we quickly got the hang of one-another and coped with working together. We have had lots of leisure time spent together asides from working which is key for overcoming obstacles together and putting trust in one-another. Hygge, indeed I say – sarcasm reigned supreme which I liked. Overall, times to remember for when you grow older. All group members have reached their maximum potential during work on the semester project. I have learnt a valuable skill that is to not overly think about work and how to just be in the moment and have friendly and cheerful conversations that manifest into work related fields. In terms of experience, I was somewhere in the middle as I have to apply new assets to the system that have been just taught in class. C# was fun to learn, a branch for me from Java but in the end, I prefer Java over C# and I'd like VIA to keep Java as the priority programming language. Meetings were fine with my group, I have not had any problem with them. For my role as a Product Owner, I let Remedios take over the role as a Scrum master as I wanted to try something new and helpful. Culture-wise, I saw two sides of the coin – one culture that is a little cold and hardworking, a warm cultured Spanish person who is always cheerful and a fellow Balkan person of similar culture with a touch of discipline to them. As the project period end was nearing, we worked hard on SEP for it to match our expectations and possibilities. We have had times in December where we met more than 5 times in a week one after the other, one meeting lasting

at most 12 hours. We could improve on the many aspects that are part of the project in my opinion and the only way for that to happen is with time, effort and motivation. The web service functionalities would be a spot that I'd like to improve on for next semester albeit, we had them working in this project. Looking back on my previous projects and my level of start, I would dare say I have done the absolute max for myself and for the people who wished to be around me and with me during these one and a half years of being in VIA. Cliché, call it if you will, but to travel to another country and look at time fly so fast is something intriguing to me. I have always looked for inspiration in those who have had experience and have gained their knowledge through hard work and sweat. Without them, we would not be living in the world we are in today. Kartoffel ftw.

➤ **Josipa**

This semester I had the chance to work with people I never worked before. We were group of five members at the begging, at the end we ended as a group of four members. All of us are coming from different countries which means we all have different cultural backgrounds.

Firstly, I would like to mention that I gain a lot of experience working with my group members. We signed the contract and we were following the rules that we set at the begging of the semester. We worked as a real team, all the things were discussed before anything was implemented. Everyone had chance to say their opinion or propose something that was making more sense to work on. We had meetings on Thursdays following the schedule of university, also we were meeting during the weekends when it was needed. Members weren't missing meetings and from my point of view that was pretty important.

Secondly, as always working in a team has some disadvantages. We spend some time discussing the things that were irrelevant from my point of view. By the time, we realize that we should change that, if not we will not be able to successfully finish the project. We worked in pairs most of the time, which I found useful and helpful. Working in a pair saves a lot of time, if someone had problem, we all focus to find mistake and to get over it together.

Moreover, we worked in Scrum framework. Our project contained six sprints, each sprint has sprint backlog. We knew what we are supposed to work on during the whole project. We had sprint meetings after each sprint to sum up how it was and what we should improve in the next one. Meeting were very motivational and supportive.

All things considered, the system is functional and documented. I improved my programming skills as well as personal. I learned a lot working with this people and enjoyed it. We had a lot of fun combined with hard work.

➤ **Kenneth:**

Our group was formed somewhat randomly as a result of previous groups from last semester being split up, either voluntarily or involuntarily. In the beginning we didn't have any knowledge of each other or experience working together. This could easily have lead to problems over different opinions, levels of motivation or wishes for group work. Despite of these circumstances I think the group eventually became very well functioning.

There was only one major problem with the group formation, which is what caused us to remove a member from the group. Boris, the original 5th member, was very unmotivated and indifferent to the project compared to the remaining members. After several weeks, during which Boris had only participated once, we eventually removed him from the group. We were very reluctant to do so, because it seemed like an extreme measure to us all. However, the group contract set requirements for active participation in the group meetings and the contract was

already broken by Boris after a couple of weeks. In hindsight I wish that we had been quicker to eject him, as waiting and giving him extra chances to improve only proved redundant and a waste of time and energy.

We planned our work using scrum and we attempted to delegate different tasks to individual members. Though scrum functioned well enough as a planning tool, the delegation part was not as successful as desired. Despite of having delegated tasks, we often ended up working too much all together. While this of course offered some advantages in terms of being able to assist each other on various problems, it lead, too frequently, to inefficiency and time waste. At times we were looking at one screen, or projected screen, and one person was typing while the others were looking on. This was particularly a problem during documentation tasks.

We could have progressed faster in these fields, if we had delegated the work and partially completed it in between meetings. In the future I will try to vocalize such problems more.

In the early stages of the project, the greatest risk was for the complexity of the system to blow up and the scope of implementing it exceeding the time we had available for the project. Due to the nature of the system requirements, it had the potential to be very complex, without actually being more functional.

In the later stages of the project we faced some challenge due to the CAO project taking up a lot of time for us. Our planning in SEP started to fail and slide during this period.

Overall I have been satisfied with the group work and the project. The simulation of real project work structure and workflow seemed beneficial. The project description in the beginning helped us narrow down the focus of our project, however, considering the short timespan of the project, the time that was spent doing these inception tasks at times seemed wasteful to me.

The supervision on the project was satisfactory. There were always teachers available at the office, that could help us resolve problems very quickly. Compared to waiting several hours for a reply to an email or similar, this was very efficient.

➤ **Remedios:**

This semester project has been different to any of the previous ones. At the beginning I barely knew some of the group members. I had already worked before with Boris during SEP2, I knew Kenneth because of some assignments and I have been in the same class as Angel since the first semester.

After the group formation, Josipa joined the group and I knew her better than the others.

As time went by, I got really close to the members. We were spending a lot of time together working in the project but thanks to them the time was flying during the meetings.

In October we decided to remove Boris from the group. It was a hard decision for me. We use to spend social time together and I considered him my friend. But due to the fact that he was not attending any of the meetings and he was not doing any tasks of the sprint backlog, I agreed with my mates in the final decision.

I am happy with the group, we became a small family and we helped each other a lot. My role during this project has been different to the one that I had last semester, I had the chance to learn and improve my programming skills whilst in the previous one my main task was the documentation.

The work methodology used has been balanced, we all were working together in most of the tasks. Each decision was discussed and planned by all the members.

The hierarchy was pretty flat, even though Kenneth was the most experienced one, there was not any leader or “boss”.

Each of us had different skills and personalities. We used this differences to make a stronger group and to learn remote cultures.

To sum up, I am really satisfied not only with the great job that we have performed, but also with the new friendships that I have gained this semester. The Kartoffil group REPRESENTS.

## **7 Supervision**

During the project we had many supervisors that were available to answer our questions, either in class or on Thursdays when we were supposed to work on our semester project. Teachers were very useful and helpful with their answers. They saved our time of Googling and struggling on the internet to find answers on the problems that we face during the project.

## **8 Conclusions**

Every member had experience working in Scrum framework, since previous semester all of us worked in SCRUM. We decided to use it again because we found it very useful and helpful.

Starting from the scratches is stressful and it is really hard to see bigger picture. Organisation in this case is really important. Per each sprint we set small goals that we are supposed to achieve. Step by step we feel motivated to work hard to achieve our main goal. Group motivation were on high level too, if someone had some troubles we were helping each other as much as possible. However, at some point we realise that we would not be able to implement all the requirements that we stated in our product backlog. We focused to implement the requirements that were ranked as high and medium priority. We succeeded in implementation of our system and it is functional. We had some hard times, it was not always easy to find the problem and then provide the solution.

In conclusion, system is successfully implemented, designed and documented. This would not be possible without great team cooperation. We discuss everything together, everyone's opinion was considered. At the end we were choosing the best and most compatible solution that will suit the system.

We put a lot of effort working on the system, everyone gave the best and we all learn from this. All of us gain new experiences that will help us working on the project in the future.



## Sources of Information

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## **Appendices:**

**Appendix A: Group contract (file: Group\_5\_Group\_Contract.pdf)**

**Appendix B: Sprint Backlogs (file: Group\_5\_Sprint\_Backlogs.pdf)**

**Appendix C: Product Backlog (file: Group\_5\_Product\_Backlog.pdf)**

**Appendix D: Burndown chart (file: Group\_5\_Burndown\_Chart.xlsx)**