ICT ENGINEERING

Process Report

Client/Server Banking System

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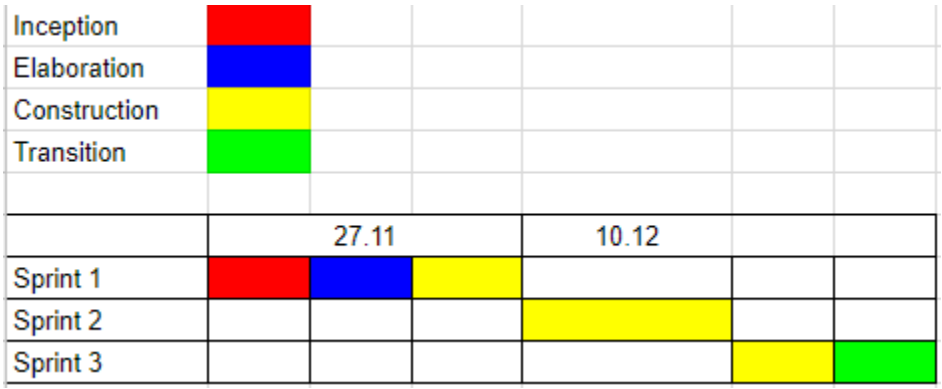
UP Phases description



The UP phases are 4 and they span over the entire project. Developers follow the UP phases in order to have a well-managed system created. The 4 phases are Inception, Elaboration, Construction, and Transition.

The first phase Inception was during our 1st Sprint, in which we had to figure out what will be the functionality of our system and how it will work. We thought of the functional and non-functional requirements and created the product backlog.

The second phase Elaboration started in the 1st Sprint right after the Inception phase and finished during it. In the elaboration phase we designed the architecture of the system such as UML Class diagrams and Use-case descriptions.

The third phase Construction spans over 3 sprints. From the 1st Sprint after we finished the Elaboration phase and continues up to the 3rd Sprint where we finish with this phase. We needed the construction phase through all of our 3 sprints so that we can implement all of the user stories and functionality of the system. At the end of the phase we had testing so that we can confirm that everything is working.

The fourth phase Transition was during our 3rd Sprint. Even though we never deployed our system we had taken this phase into account, because as it should be we finished the documentation during it.

SCRUM

Sprints

We decided to have 3 sprints, each sprint to have a length of 5 days. The reason why we decided to be this way was to have more time to complete the important features of the system, by having more time per sprint to get into things and when we are on the right track to finish off calmly. The sprint plan looks the following way:

1st Sprint: 27th of November – 1st of December

2nd Sprint 4th of December – 8th of December

3rd Sprint 10th of December – 14th of December

Each day of the sprints we had a meeting from 11 to 17 in VIA University College.

Sprint 1:

In the begging of our 1st Sprint we were slightly confused on how we want to start. But after starting with the Inception phase by figuring out the requirements and creating the product backlog, we had a better look on how we want everything to happen. After finishing with the Inception phase we began with the Elaboration phase creating the architecture of the system, right after which we started with the Construction phase on implementing the functionality of the system. Since it was our first sprint we started out with the two most important user stories on the product backlog.

Sprint 2:

Our 2nd Sprint was the most productive and efficient sprint we had. Since in the first sprint we were not able to complete one of the most important user stories, here in the 2nd Sprint we managed to complete it and even completed most of the following after that user stories. In this sprint we also did not manage to complete one of the user stories, but besides that we were able to complete a large part of the system.

Sprint 3:

Our 3rd Sprint was the final one. In this sprint we managed to complete all of the important user stories, which were mandatory to be completed and moved on to the Transition phase where we finished all of the documentation part of the project. We did not implement the last two super-low priority user stories because we didn`t have time and we needed to finish the documentation part.

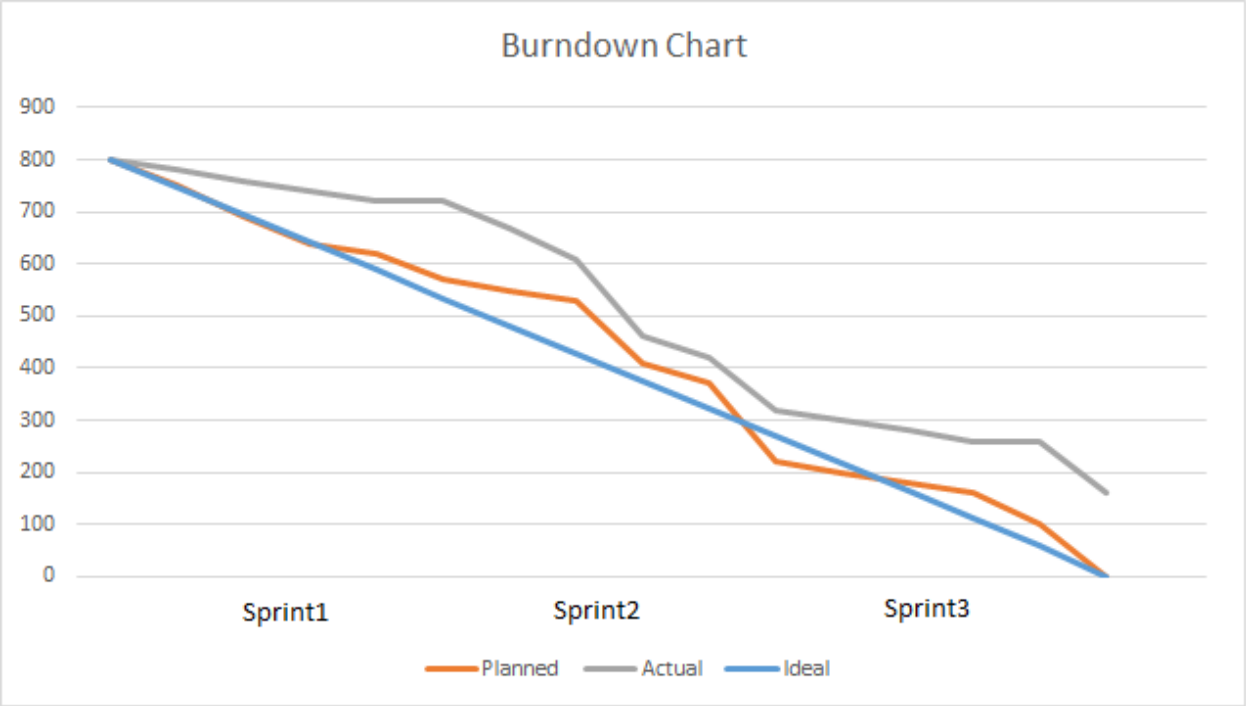
Artefacts

Product Backlog

Priority	User story	Sprint	Weight	Burned
1	Acces from multiple computers	1,2	150	150
2	I want to be able to manipulate data	1	80	80
3	I want to be able to check my balance	2	20	20
4	I want to be able to transfer money between accounts	2	50	50
5	I want to be able to view personal details	2	20	20
6	I want to be able to change my personal details	2	20	20
7	I want to be able to see my transactions	2	40	40
8	I want to be able to log in	3	20	20
9	I want to have a password	3	20	20
10	I want to be able to log out	3	20	20
11	As a user I want to have a simple graphical user interface	2,3	200	200
			640	**640**
12	As an admin I want to have a simple graphical user interface	N/A	**100**	**0**
13	I want to be able to take a loan	N/A	60	0
	TOTAL:		**800**	**640**

The product backlog is a table, such as a wish-list with user stories which should be implemented in order to meet the requirements of the client to have a working system.
The table above is the product backlog created by the product owner after discussing with the client what functionalities they want. The product owner assigns weight points based on how difficult the task is and decides in which sprint each user story should be done. Our product backlog is divided in two parts, the first part consists of 11 user stories, which were mandatory to be completed, and the second part with 2 low-prioritized user stories, which could be completed if time is enough.

Burndown Chart



The burndown chart represents the velocity and the progress we have through the whole project. That means that we use it to keep track of how much work we have done so far and how much we have left to do. We have updated the burndown chart after each sprint in order to do that and to help the product owner with which task should he pick for the next sprint. Here on this burndown chart you can see that we were behind most of the time even though we planned it in a different way. But regardless of that we managed to create a working system without a few functionalities requested by the client.

Sprint Backlog

Sprint 1

Daily SCRUM Meetings:

Each sprint started off with a daily SCRUM meeting, which lasted no longer than 10 to 15 minutes. During these meetings we discussed what we have done so far, what are we going to do today and if we had any problems.

Sprint Planning:

In this first sprint we had to start with the inception phase to figure out what are the requirements of the client and create a product backlog, right after which we had to move on to the Elaboration phase where we would start with the architectural design of our system and the implementation of the functionality of the system and after finishing with the Elaboration phase continue on with the Construction phase and the implementation of the functionality of the system.

Day	Tasks	Weight	Burned
	Server/Client Sockets	150	0
1	Create Server	30	0
2	Connecting Server with Database	40	0
3	Create Client	30	0
4,5	Connect Client/Multiple clients to Server	50	0
	Database	80	80
1	Base dbs structure	20	20
2	Collecting data from dbs	20	20
3	Saving in dbs	20	20
4	Password storage	20	20
	Total:	230	80

Sprint Review:

In this 1st Sprint we were able to finish with the Inception and Elaboration phases as planned and moved on to the Construction phase where we would implement the first two user stories to have Access from multiple computers by using Sockets to create a Server/Client system and the other user story to be able to manipulate data by creating a Database. Unfortunately, we were not able to create a Server/Client with using Sockets in which case we do not burn any points for this user story in the given sprint. After a meeting with the Supervisor we decided that we would use Remote Method Invocation (RMI) in order to create a Client/Server. The good thing for this sprint is that we were able to finish the other user story (the database) so we can manipulate data and for that we burned 80 out of 230 points for this sprint.

Sprint Retrospective:

After the end of this sprint we were a little bit stressed that we still haven`t established a Client/Server connection and that we are a bit behind. However, we still think we did well, because we were able to go through the Inception and Elaboration phase during the 1st sprint and start with part of the Construction phase.

Sprint 2

Daily SCRUM Meetings:

Each sprint started off with a daily SCRUM meeting, which lasted no longer than 10 to 15 minutes. During these meetings we discussed what we have done so far, what are we going to do today and if we had any problems.

Sprint Planning:

In the 2nd Sprint we would continue with the Construction phase and the implementation of the user stories. Since we were not able to complete the Access from multiple computers user story in the 1st Sprint the Product owner decided we can continue with it in the 2nd Sprint and complete most of the low-weighted user stories like checking the balance, viewing/changing personal details, viewing transactions and transferring money between accounts and also one of the heavy-weighted user stories the graphical user interface so that we can have an idea how it`s functionality will work.

Day		Weight	Burned
	Server/Client RMI	**150**	**150**
1	Create Server	30	30
2	Connecting Server with Database	40	40
3	Create Client	30	30
4,5	Connect Client/Multiple clients to Server	50	50
	User functionalities	**150**	**150**
1	Check balance	20	20
2	View personal details	20	20
3	Change personal details	20	20
4	View transactions	40	40
5	Transfer money between accounts	50	50
	Graphical User Interface	**200**	**100**
1,2,3	Design	100	100
	Implementation	100	0
	Total:	**500**	**400**

Sprint Review:

With the decision to switch from Sockets to Remote Method Invocation (RMI) we had to make an update on our UML Class Diagram. We were able to complete the Server/Client and all of the low-weighted user stories we were planning to do, but in regards to the Graphical User Interface we were able only to complete it`s design so we burnt only half of the points for it in the Sprint Backlog and 0 in the Product Backlog. Overall we have achieved what we have

planned for this sprint apart from the implementation of the functionality of the Graphical User Interface, which will be finished after the implementation of other low-weighted user stories in the following sprint.

Sprint Retrospective:

At the end of this sprint we were satisfied with the work we did. We finally completed the connection between Client/Server using RMI and did most of the user stories from the product backlog. Even though we knew we won`t have time for the secondary user stories from the product backlog we moved forward motivated to complete all the mandatory user stories and the documentation of the system.

Sprint 3

Daily SCRUM Meetings:

Each sprint started off with a daily SCRUM meeting, which lasted no longer than 10 to 15 minutes. During these meetings we discussed what we have done so far, what are we going to do today and if we had any problems.

Sprint Planning:

In the 3rd Sprint being almost on the finish line the Product owner decided we finish all of the remaining mandatory user stories so that the client would be able to log in through a password and be able to log out of the system and finish the implementation of the functionality of the graphical user interface and test all of the functionalities of the system and if time left to try and implement the secondary user stories. Finally, after finishing the Construction phase to complete the documentation.

Day	Tasks	Weight	Burned
	User functionalities	**60**	**60**
1	Log in	20	20
2	Log in password	20	20
3	Log out	20	20
	Graphical User Interface	**200**	**200**
	Design	100	100
1,2	Implementation	100	100
	Total:	**260**	**260**

Sprint Review:

The last but not least 3rd Sprint went well even though we were scared if we`d have enough time to finish everything we hoped to. All of the mandatory user stories were completed including the design and the implementation of the functionality of the graphical user interface. We didn`t have time to do the secondary user stories, but happily after testing and finding out all of the functionality of the system we wanted works we finished the documentation part of the project.

Sprint Retrospective:
After the end of the 3rd and last sprint we were again satisfied with our work, because we had a functional Client/Server system, with the mandatory user stories which we planned on completing. After all, we are happy that we were able to hand at least a functional system and complete the documentation.

SCRUM Roles

Bozhidar Nedyalkov – Product Owner

My role in the team was product owner. My job, as such, was to create the product backlog. I also had to make sure the developers understand clearly my view on the system and follow the order of priority for the tasks.

Nikola Vasilev – SCRUM Master

My role in this project is of a SCRUM Master. As a SCRUM Master I had to make sure that everyone in the team understand and follow SCRUM. My responsibility was to enact and initiate daily meetings and find a place to work. Keeping everyday log for the whole project period was another of my duties. I helped the product owner in making clear and consistent backlog items. As for the development team I try to remove impediments, which will slow down or stop the work. I was responsible for the project and process reports which I made with help from all other members.

Daniel Molnar, Patrik Ihnat & Zahari Dzhelepov – Development Team

The development team are the people who develop the system. As developers we had to work on the tasks which were assigned by the Product Owner and decide which task is done by who. Our main responsibility during the sprints was to create the functionality of the system and every time a task is completed to inform the Scrum Master, so that he can make notes and we can keep track of our progress. It was first time we ever use SCRUM and we had some difficulties understanding it and getting into rhythm. But with time and a little help from the Product Owner and the Scrum Master we managed to understand more and started slowly to increase our working speed. However at the end we were still not able to complete the last few tasks due to side work and other commitments.

Daniel Molnar: My main responsibilities as a developer were to build a database, making sure that it is easily reachable from server and also I worked on both controller and view part of the MVC.

Patrik Ihnat: I and Daniel were working on the implementation and design of the database, connection to server, GUI. I enjoyed working with him because I never worked with such a chilled person like him.

Zahari Dzhelepov: My responsibility as part of the development team was to work on the model part of the MVC pattern of the system, to establish the Client/Server RMI connection and connect it to the database.

Supervisor Meetings

1st Supervisor Meeting

Our 1st Supervisor meeting was a day after the official project period start. On this meeting 4 of our group members went to it. The subject of the meeting mostly covered questions over the Inception and Elaboration phase, if we have figured out most of the requirements and if the design of the architecture of our system is going well. The outcome of this meeting was that we need to add a little bit more to the architecture of the system.

2nd Supervisor Meeting

After the 1st Supervisor meeting we decided that only one person will go to the meeting and report everything to the other group members afterwards. After this meeting we made the crucial decision to switch from Sockets Client/Server system to using the Remote Method Invocation (RMI) after a discussion with the supervisor. In this meeting also questions about how to create the passwords for the login were discussed.

3rd Supervisor Meeting

In this meeting we discussed with the supervisor that we planned to remove Remote Observer Pattern from our system as we intended to use it, cause of the reason that none of the clients would actually need a notification if another client changes his details. Few questions covering Graphical User Interface (GUI) and Model-View-Controller pattern asked. After the meeting our final decision was to remove the Remote Observer Pattern from our system.

4th Supervisor Meeting

On our 4th meeting this time we decided that because it is close to the deadline of the project we will go more members of our group, so we can ask individual questions on different parts of the project. We had a question over the code of our Graphical User Interface (GUI) and a few question regarding the documentation of the project. Problems of the GUI solved and guidelines for the documentation part taken.

5th Supervisor Meeting

The 5th meeting was our final. It was a day before the hand-in and we had to make sure we have done everything as it should be done. Questions over the whole documentation were asked and if we have to put the reference libraries.

Team Reflections and Self-assessments

Team Reflections

Bozhidar Nedyalkov

In order to create the system, the group decided to split the work fairly between all members. Then each person was working on his part, usually on their own. For this way of work to succeed, the team needed to spend a good amount of effort in planning the project ahead.

This is not my personal preferred practice, since I work best in a group environment- constantly exchanging information and ideas. However, not everyone on the team feeling the same way about organized assignments and the essence of the task, lead us to making that decision and dividing the work in such way, where each person has individual responsibility for a specific part of the project.

This plan was very successful, for it improved the efficiency in our performance and allowed us to finish most tasks in the intended time frame. One thing we could have done better is spend slightly more time on the elaboration phase, because on a few occasions the work of multiple members did not match perfectly in the sense of the system. The same amount of time we "saved" on not planning properly, was then spent on reworking the product.

In conclusion, the success of our team was due to the individual effort of each member, contributing his share in the big plan.

Daniel Molnar

During my studies, I have never worked with the group members in my team. Since we were all knew to SCRUM it was a little bit hard in the beginning. After that I think we started to cope better with it and did a suitable job.

Working with Patrik on the database and the functionality of the GUI was great. I think we both did a great job.

From the other three members of the group. Zahari did well on establishing the RMI connection between Client/Server and together we connect it to the database. Bozhidar did well as the Product owner, assigning which tasks to be done in the sprints and Nikola took well the job of being the SCRUM Master and keep us updated and on track during our work.

Nikola Vasilev

It is my first time working with this team and despite this discomfort I think that all members did a very good job and we manage to fulfill our goal for this project. SCRUM was new technic to everyone in the team so we weren't very confident about it.

Zahari did a very job as part of developing team. He was a valuable member and did excellent implementation of RMI. He also works on the connection to the data base.

Daniel was part of the development team. He was responsible for the data base. He manage to create a working data base. He also works on the GUI and controller.

Patrik is another member of the development team. He and Daniel worked together on the data base and GUI. He finishes his tasks and did a great job.

Bozhidar is the product owner. He manages to prioritize the requirements, keep track on the process, burn down chart and filling and updating the backlog and on top of that he worked on the client part, too.

Patrik Ihnat

During this project period I experienced working in different team with new members. At the beginning it was really funny we were discussing our project, what we want to do how do we want to design it. Everything was happening in friendly mood we had so much fun working together. But after we started the coding part we find out that we need to change the structure of our team.

Working with Dan was a great pleasure for me. Working side by side with him creating the dabatase and the functionality of the GUI was excellent.

Rest of our team did good job as well they divided work between 3 of them and did really great job with keeping track what we need to do and what we have done.

Zahari Dzhelepov

In my opinion, even though all of us on this team were for the first time together we managed to do a good job. In previous projects I were in a team with one of the current team members, but we had completely different roles. Having difficulties while being a newly formed team and using SCRUM for the first team is normal in my opinion and overall I think we did a good job, regardless of the fact we didn`t complete the secondary user stories.

Bozhidar in my opinion did well with being the Product owner. He prioritized the tasks well prior to what the client needs and for us to be able to finish the core of the system. Even though he had to work as a Product owner, he helped me with fragments of the code.

Nikola also did well with being the Scrum Master. He was keeping eye on the time we had and the progress of the product. He was the one who was preventing distractions and was making sure we were working. As a Scrum Master he also had the responsibility to document the project report and create diagrams.

Daniel did a great job being a developer. Together with Patrik they created a very good database for our system. He also worked on the Controller part of the system and functionality of the GUI and did a great job.

Patrik again a member of the development team did great. As I mentioned together with Dan they created a stable database and he also did most of the design and functionality of the GUI.

Team Reflection on SCRUM

SCRUM is one of the most popular frameworks that cuts through complexity to focus on building products that meet business needs. At first, we were really confused on using it. With time we managed to get the idea and to have better progress with it. Now we know that SCRUM is very important in building a good and reliable working system. Cutting everything into small parts and tasks to be completed is much easier and efficient. That is why we think SCRUM is a good way of practice to build a project.

Self-assessments

Bozhidar Nedyalkov

The way our team structured the work was not the most beneficial for my style of working, therefore it was a good opportunity for me to go out of my comfort zone and highlight my strengths and weaknesses.

Since the work was split relatively evenly, I felt more obligation to perform on part with my group mates, since I do not want to hold back the execution of the project. I found it difficult at times, for I possess a tendency to procrastinate and often underestimate the complexity of tasks.

In the end there were times when I needed other members' help, but on a few occasions I was able to return the favor, so I was not a burden for the group. This made me realize I need to work on my time management and increasing my productivity when working alone.

Daniel Molnar

Having some setbacks with planning and trying to document the progress of the project based on SCRUM was somewhat difficult at first, but in the end having it put all together and also considering that we were all still new to building a system based on what we think needs to be done from our own experiences, I think we did a suitable job.

Nikola Vasilev

My role in this current project was a SCRUM Master. This is the second time I am assigned to this role. First time was during the java course assignment, but the scope of the project was a lot smaller than this one. My responsibilities were to make sure everyone is up to the schedule and everyone is working. I was trying to prevent and remove obstacles when it was possible. During these three weeks I needed to do a lot of research on SCRUM so I can understand its purpose and put it in use for the team. I would like to say that I did as best as I can. SEP2 project is a lot bigger than SEP1 in a way that a lot more matters must be connected and take under consideration.

Patrik Ihnat

This is the end of my 2nd semester here in Denmark and It's also second project which I was working on. I experienced developing client server-system in team with good programmers. Time to time it was hard to get with some of them but we managed to do it and finish our work. Using SCRUM helped me/us a lot we improved in different ways. To sum up everything what happened in this period I can only say that even we didn't finished all of the user stories we created our own working program.

Zahari Dzhelepov

This is my second semester as an ICT student in VIA and my second big project. This project I was working as a part of the development team. This was in great importance in creating a working system and I tried my best to complete parts of it, which was of help to the other members of the development team. Because of this and learning how to use SCRUM I improved a lot and learned a lot of valuable things. Having the chance to establish the connection between a client and a server with the Remote Method Invocation and a connection to the database was the most valuable part for me. To conclude, for me even though we didn`t complete all of the user stories we did a great job and I was able to have valuable experience and chance to polish and enhance my knowledge.