

PROCESS REPORT

Client Server Online Banking System

ICT ENGINEERING

Semester Project 2

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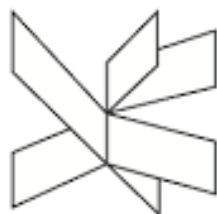
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1 Group Policy

All the conditions of our group policy are stated below

- The group will be using SCRUM to control the development process.
- Every member of the group must work hard and have an equal amount of work.
- The group will meet every weekday during the project period from 8AM to 4PM. If behind schedule the group will stay longer hours and/or meet on weekends.
- One member of the group (Scrum – product owner) will make and keep track of the backlogs and the burndown chart.
- The group will have a daily Scrum meeting, arranged by the Scrum Master, that shouldn't last more than 15 min.
- At least one member will keep a dairy for every day. The diary should contain who has done what that day, who didn't show up, homework and task for the next day.
- For major decision, all group members should agree and all group members should have the chance to speak his mind about the decision. In case the group can't agree, the decision the majority agrees on will be made and/or the supervisor will be asked for advice.
- At least once a week the group will have a meeting (perhaps with the supervisor) to discuss if we are behind or ahead of the schedule, to split new tasks within the group.
- The group will be using OneDrive to share and save important thing related to SEP2.
- If someone shows up 30 min. late, multiple times, without having a valid reason or telling the group beforehand, he must bring a cake or something similar for the group.
- All members should be accessible if not showing, to the rest of the group via phone, email or Facebook.
- A reason for a member to get a warning (yellow card) would be:
 - Not following the rules above.
 - The group can't get in contact with the member for more than one day.
 - The person doesn't show up at all, without telling the group beforehand or not having a valid reason for not showing up.
 - If the member is not doing his part of the project.
- A member can be kicked out of the group, if a second warning is given.
- The supervisor must be informed before giving a warning or kicking someone out of the group.

2 SCRUM and Unified Process

For the development of the project unified process (UP) along with SCRUM was used. UP consist of four different phases: inception, elaboration, construction and transition. The table below will give an overview of when we did each phase.

Phase	Date-Start	Date-End	Days spent
Inception	22.11.	24.11.	2
Elaboration	24.11.	07.12.	10
Construction	08.12.	12.12.	3
Transition	13.12.	14.12	2

For SCRUM, we planned on during a total of six sprints, each with a length of three days. The table below will show when we did each sprint.

Sprint	Start-Date	End-Date	Phase
1	22.11.	24.11.	Inception, Elaboration
2	27.11.	29.11.	Elaboration
3	30.11.	04.12.	Elaboration
4	05.12.	07.12.	Elaboration
5	08.12.	12.12.	Construction
6	13.12.	15.12.	Transition

The next part below will describe what we did in each phase of unified process and what we did in each sprint of SCRUM.

Sprint 1 & Inception

The start of the inception was the day we started on the project (22.11.2017).

The first thing we did was to discuss and decide who should be scrum master and product owner. We then started doing the product backlog (customer Wishlist) for the program. In total 22 user stories was added to the product backlog.

We discussed what we should do in this sprint and decided we will try to construct the admin part of the system, so an admin can create new users.

We then made the sprint backlog, where we took the following four user stories:

UserStory	Weight	Burned
Use system from different computer	7	Done
Admin can create new Customer-User	9	Done

Admin can create new account	7	Done
Admin can add account to Customer-User	4	Done

The user stories have a total weight of 27 points.

The first user story was successfully implemented the same day.

By the start of the second day of our first Sprint (23.11.2017), we had burned 7 points from total of 27 and we had entered the elaboration phase.

We had one of our core architectural part coded, which is the Client/ Server connection and tested. With the small part of our system done, we continued to evolve the requirements furthermore and to define in detail.

Elaboration

Last day:

The last day of the first sprint we continued the work on the remaining user stories. We burnt most of the weight of the user stories only the design implementation and the database connection from java were missing. Meaning we didn't burn any more points in this sprint, which we talked about during the sprint review meeting.

During the sprint retrospective meeting we decided we liked the way we worked, but also decided to stay an extra hour every day because we were behind schedule.

For the second sprint, we decided during the sprint planning meeting that we would continue the unfinished user stories from last sprint, but also two more; "A user can login" and "A user can logout". Some would finish the remaining work on the user stories from last sprint, while some would start on the two new user stories.

Sprint 2:

In this sprint we had to complete two user stories – "**User can login using Nem-ID**" and "**User can log out**" with total points to burn 12. The sprint started on 27.11.2017 and end on 29.11.2017.

User Story	Weight	Burned
User can login using Nem-ID	10	Done
User can logout	2	Done

In the beginning of the second sprint we were a little bit behind schedule which lead to the decision to work some extra hours.

First day:

After first day in second sprint we managed to complete all not completed user stories from first sprint and started with user stories from second sprint - created Nem-ID generator.

Second day:

In second day of the sprint we completed the "Adapter Design Pattern", we started and partly completed "**User can login using Nem-ID**", we had also a supervisor meeting, where we received some hints about our database design and design of our system. As final we created functional GUI

for “Create new user”. Unfortunately, we were still little bit behind schedule, but closer to come back on track. We agreed on, if we are still behind in next sprint to work a little bit extra in the weekend.

Last day:

In the last day of the second sprint we almost finished the “Login” and “Log out” functionality and the GUI design for it. We partly implement automatically email sending from the system and, we partly complete the design for “Transfer money”. Again, we were behind schedule, so we decided to work little bit extra in the weekend.

In our sprint retrospective we had no major problems with the way we worked, and we were almost on track. We decided to not add more extra hours than those we had until this moment.

Sprint 3

Third Sprint started on 30.11.2017 and ended on 04.12.2017.

In this sprint we had to complete the **“Customer-User can transfer money to a different account”**, **“Customer-User can receive money from a different account”**, **“A Customer-User can share account with another user”** and **“A Admin-User can create a new Admin-User”** user stories with total points to burn 21.

UserStory	Weight	Burned
A Customer-User can transfer money to a different account	8	Done
A Customer-User can receive money from a different account	3	Done
A Customer-User can share account with another user	8	Done
A Admin-User can create a new Admin-User	2	Done

Unfortunately, we were behind in the end of previous sprint and had to complete those user stories first.

First day:

After the first day, we did not complete the user stories from the previous sprint, but started on user stories from this sprint. The team divided the work, so part of the team focused on the user stories from previous sprint and the other part started working on new user stories. We were even more behind after the first day, so we decided to work extra in the weekend if necessary to get back on track.

Second day:

In second day of the sprint, we managed to complete the user stories from previous sprint and the entire team continued on the user stories from third sprint. We were still behind so we agreed on some extra hours in the weekend.

Last day:

In last day of the third sprint we had completed **“User can Login using Nem-ID”** and **“User can Log out”** user stories from previous sprint, we changed **“Account”** and **“Customer”** to adapt them to new implemented functionalities and we partly completed **“Transfer money”** user story. During the day we had a supervisor meeting where we got feedback on our database and the program until that moment. On this meeting we also got advice on how to improve our database, and all at all the feedback from the meeting was positive. By the end of the day we managed to complete the planned user stories and we were back on track. At the end of this sprint we discovered some bugs in the system, so in the beginning of the fourth sprint we had to fix them before we started with the user stories for the sprint.

During the meeting we made our sprint retrospective, where we decided that we are back on track and with the way we work we don't need to change anything else for now.

Sprint 4:

Customer-User can get interest on money	3	NEXT SPRINT
Customer-User can transfer money automatically	4	NEXT SPRINT
Customer-User can see balance of each account	5	Done
Customer-User can see transfer history on each account	8	Done
A Customer-User can change the personal information	4	Done
A Customer-User can see account information	2	Done
A Customer-User can contact the bank with email	2	Done
A Customer-User can save transaction information	3	Done

Fourth sprint has started on 05.12.2017 and end on 07.12.2017. In this sprint we had to complete six user stories with total points to burn 22.

We had to complete **“Customer-user can see balance of each account”**, **“Customer-user can see transfer history on each account”**, **“Customer-User can get interest on money”**, **“Customer-User can transfer money automatically”** user stories. While we were working on user stories we discovered that we had to consult with supervisors about two of our user stories (**“Customer-User can get interest on money”**, **“Customer-User can transfer money automatically”**). Unfortunately, we could not arrange supervisor meeting before the end of the sprint, so we decided to continue with some of the other user stories. The user stories we chose to do instead were - **“A Customer-User can change personal information”**,

Customer can save transaction information”,” Customer-user can contact the bank with email” and “Customer-user can save transaction information” user stories. In such case the total points to burn were 24.

First day:

On first day of the fourth sprint, we started with **“Customer-user can see balance of each account”** and **“Customer-user can see transfer history on each account”**. We discovered a problem with account (the account data could not be retrieved from database). We focused on fixing this problem and complete the user stories. By the end of day 1 we managed to fix the problem and partly complete the user stories.

Second day:

On second day we found out that we are not going to be able to complete **“Customer-User can get interest on money”** and **“Customer-User can transfer money automatically”** in this sprint, because we needed advice from supervisors and we could not arrange a meeting before the end of the sprint, so we decided to include four more user stories with less points to burn. By the end of the day we completed the user stories from first day and started working on other user stories planned for this sprint.

Last day:

On last day for the sprint we managed to complete all planned user stories for the sprint and fix some bugs in the system we discovered during testing the new features. For fourth sprint we were on track and we didn't have major problems. Even with changing the user stories during the sprint we managed to burn the same amount of points in the end of the sprint as we planned in the beginning.

During last meeting we made our sprint retrospective and we decided that we are still on track with some minor problems which we should discuss them with our supervisors and do not need of any changes.

Sprint 5 & Construction:

Customer-User can get interest on money	3	Done
Customer-User can transfer money automatically	4	Done

A Customer-User can change the personal information	4	Done
A Customer-User gets interest on his money	3	Done
A Customer-User gets interest on his money	4	Done
An Admin-User can change a Customers information	3	Done
An Admin-User can see the balance of a user	2	Done

An Admin-User can see the transfer history of an account	3	Done
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This sprint has started on 08.12.2017 and end it on 12.12.2017.

In this sprint we had to complete six user stories with total points to burn 19.

The user stories we had to implement were “A Customer-User can change the personal information”, “A Customer-User gets interest on his money”, “An Admin-User can change Customers information”, “An Admin-User can see the balance of a user”, “An Admin-User can see the transfer history of an account”.

First day:

In first day of the sprint we had a supervisor meeting where we got advice how to implement “A Customer-User gets interest on his money” and “Customer-User can transfer money automatically” user stories. After supervisor meeting we started with implementing those two user stories. During the test of the system we discovered some bugs (system does not update the data after any changes in customer account).

Second day:

In second day of the fourth sprint we almost completed “**An Admin-User can change Customer-User information**”, “**An Admin-User can see customer’s balance**” and “**An Admin-User can see customer’s transfer history**” user stories. We started with finalizing the Project and Process Report.

Last day:

In last day of the sprint, we started off with supervisor meeting, where we got some advice about our database access class. We decided to separate this class into five small classes and each of the class has connection to the database. We also completed and tested all user stories planned for this sprint.

During last meeting we made the sprint retrospective where we agreed we are going to complete all user stories.

Sprint 6 & Transition

The sixth sprint started on 13.12.2017 and end on 15.12.2017

In this sprint we decided to have two SCRUM meetings on 13.12.2017 (first day) and 14.12.2017 (second day), because on 15.12.2017 at 12:00 (later) we had to hand in our Project.

First day:

After first day we almost completed the test of our system and completed some of the parts from the Project report. We were on track without major problems. We have planned some of the questions for the supervisor meeting tomorrow.

Second day:

In Second day we had a supervisor's meeting where we got some advices how to structure in a correct way our Project and Process Report. By the end of the day we almost finalized the project and made final tests of our system.

SCRUM documentation**SCRUM meetings:**

Duration of the SCRUM meetings was approximately 15 minutes.

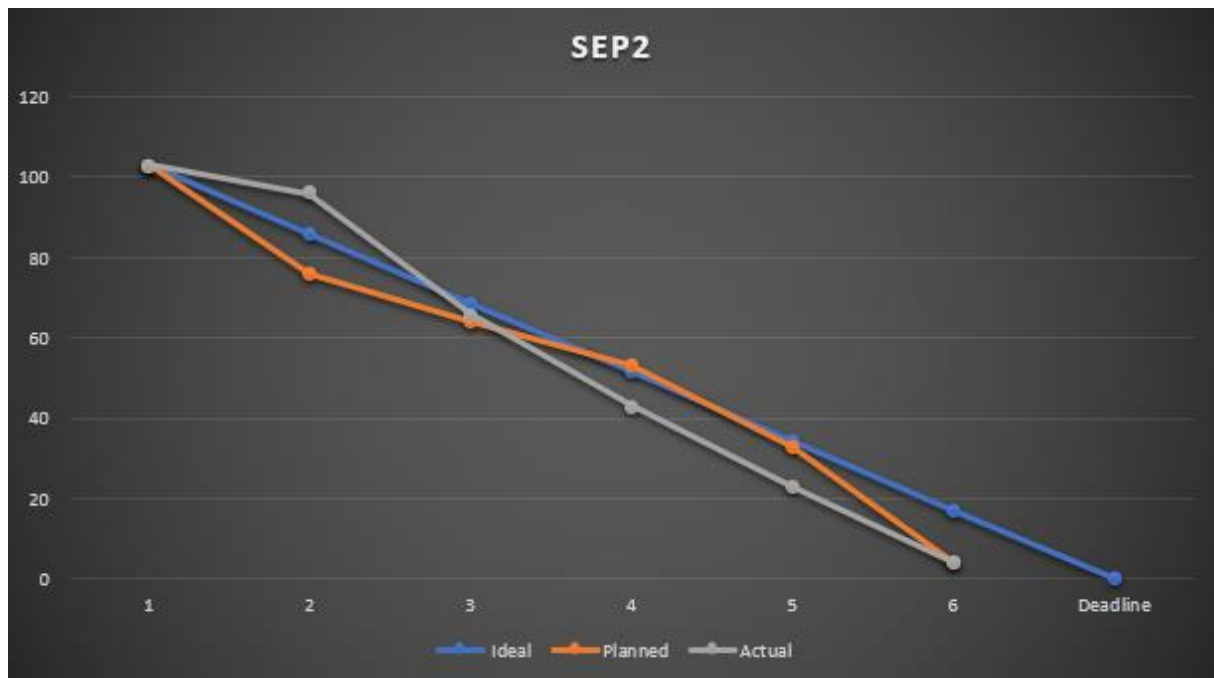
On 06.12.2017, 13.12.2017 we held our daily meetings later, because we have started working days later. For 06.12.2017 we started 13:00 and for 13.12.2017 we started from 10:30.

Date	Start	End
23.11.2017	09:30	09:45
24.11.2017	09:30	09:45
27.11.2017	09:30	09:45
28.11.2017	09:30	09:45
29.11.2017	09:30	09:45
30.11.2017	09:30	09:45
01.12.2017	09:45	10:00
04.12.2017	10:00	10:15
05.12.2017	09:30	09:45
06.12.2017	13:35	13:45
07.12.2017	10:30	10:45
08.12.2017	09:30	09:45
11.12.2017	10:16	10:30
12.12.2017	09:55	10:05
13.12.2017	11:00	11:15
14.12.2017	09:30	09:40

Product Backlog:

No.	User Story	Weight	Burned
1	A User can use the system from different computers	7	7
2	An Admin-User can create a new Customer-User	9	9
3	An Admin-User can create an account	7	7
4	An Admin-User can add account to Customer-User	4	4
5	A User can log in	10	10
6	A User can log out	2	2
7	A Customer-User can transfer money to a different account	8	8
8	A Customer-User can receive money from a different account	3	3
9	A Customer-User can see balance on each account	5	5
10	A Customer-User can see transfer history on every acc.	8	8
11	A Customer-User gets interest on his money	3	3
12	A Customer-User can share a account with another user	8	8
13	A Customer-User can transfer money automatically	4	4
14	A Customer-User can change his/her personal information	4	4
15	A Customer-User can save transaction information	3	3
16	A Customer-User can see his account information	2	2
17	A Customer-User can contact the bank with email	2	2
18	A Customer-User can print his history (pdf)	4	
20	An Admin-User can see the transfer history of an account	3	3
21	An Admin-User can see the balance of a user	2	2
22	An Admin-User can change a Users information	3	3
23	An Admin-User can create new admin-user	2	2

Burndown Chart:



3 Summaries of meeting with supervisors

First meeting

The groups first supervisor meeting was on the 28.11.2017 at the meeting we talked about the following:

- That we had changed the length of our sprints from 2 to 3 days.
- We got some feedback on what to write about consideration about academic writing in the process report.
- Asked what to put in the process more specific.
- How to handle threads and update observers (clients) using remote observer delegate design pattern.
- Consideration of using XML file for storing the value and key for the NEM-ID in the database.
- Discussed if a customer is also an admin, it will create two rows with same data in the person relation.
- Where to put the customer-account relation in the database.

Outcome from the meeting:

Based on the meeting we decided to not use XML file for storing the value and the key for the NEM-ID in the database, because it is going to take a long time to find out how to do it and it's also not a recommendation towards the project.

Second Supervisor Meeting

Second supervisor meeting was on 04.12.2017 and was related to our database. We talked on the meeting about:

- We showed our EER diagram and got positive feedback.
- We discussed our Customer- Account relation in our diagram.
- The supervisor advised us to put SQL statement in our project report
- We demonstrate our current program to the supervisor and received positive feedback
- We discussed also the problem with Person table, where we have duplicate rows if for example we have a Person as a Customer and Admin.

Outcome from the meeting:

Based on the supervisor meeting we decided to keep inheritance between Person-Admin and Person-Customer tables.

We also have been advised how to structure database part in our Project Report.

Third Supervisor Meeting

Third supervisor meeting was on 05.12.2017 and we discussed the following problems:

- We discussed the issue we had discovered – The system return birthday as null
- We discussed notifying customers and that is not possible to use remote observer delegate
- We also discussed using threads for automatic transfers
- We discussed how to implement “Customer can get interest” – if we should use function or trigger in database.

Outcome from the meeting:

Based on supervisor’s meeting we discovered that “Remote Observer Delegate” can’t be used, because is notify all observers in same time. In our case we need to notify only one client (Customer) about transaction. So, we decided to implement an “Update” button in transaction history.

We also solve the problem with “System return a birthday as null”. There was a mismatch between “birthday” format in Java and the one in database (SQL).

We decided to talk with our supervisor (Jens) about using triggers for “Customer can get interest”

Fourth Supervisor Meeting

Fourth supervisor meeting was on 08.12.2017 – we discussed the following problems:

- We talked about relationship between Person-Admin and Person-Customer tables
- We talked about schedule procedures and if we can use them for “Customer-User can transfer money on a chosen date” and “Customer-User get interest”

Outcome from the meeting:

Firstly, we have used inheritance in Person-Customer tables and in Person-Admin tables in our database. We discovered issues during the tests of the system. The problems which we discovered were with “Admin can create an Admin-User”. To be able to create an Admin-User first we had to make Customer-User and then make it Admin-User. Based on supervisor’s meeting we decide that instead use the primary key from Person table (CPR_No) as a foreign key and primary key in Customer and Admin table. Initially Customer and Admin inherited all attributes from Person, but after we discovered a problem with creating an Admin user and consulting with our supervisor we changed this relationship and created a reference of the (CPR_No) in superclass(Person) to subclasses (Customer, Admin). In this case when Customer or Admin object is created it forces to create this object as a Person.

Also based on the outcome from the supervisor meeting we took the decision to use “Threads” for “Customer-User can transfer money on a chosen date” and “Customer-User get interest” user stories.

Fifth Supervisor Meeting

- We talked about divide Data Access Object on five smaller classes which have connection to Database
- We received a feedback on our class diagram
- We received an advice how to structure our Process Report
- We talked about what should we change in Use Case diagram
- We received advice how to document a Junit test

Outcome from the meeting:

Based on the supervisor meeting we decided to divide our Data Access Object on smaller classes and make connection of each class to database. This decision was taken to reduce the size of the Data Access Object class.

We also received advice on what was not necessary to include in our Process Report and how to structure it.

Sixth (Last) Supervisor Meeting

Sixth supervisor's meeting was on 14.12.2017 and we discussed the following:

- What do we have to include into "Design", "Analyses", "Implementation" part in project report
- We showed our class diagram to our supervisor and had some corrections
- We received an advice for our Process Report

Outcome from the meeting:

Based on the supervisors meeting we corrected our Class diagram, finalize and prepare for sending "Design", "Analyses", "Implementation" and "Project Future" parts in project report. We also made some corrections of our Process Report.

4 Consideration and academic writing

We considered writing our project report using academic writing, because project report is intended to be read from someone who has good ICT/IT knowledge, that includes expert and semi-expert audiences. On the other hand, we considered using reflecting writing for process report, since the reflecting writing is about the developer reflecting on the work, how and what was done, process report can be read by someone without the full technical knowledge acquired.

5 Group Reflection

Most important part of working in a group is team work and we believe that we did it well. During the project period, tasks were divided between all members as fairly as possible. During the process we had difficulties, but managed to help each other. If we couldn't or we had problem finding a solution, we asked for help from our supervisors.

SCRUM made everything more organized compared to last project period. Using different roles in our group helped boost our work and decreased the amount of pointless discussions. Using daily SCRUM meetings was very helpful for the group to keep track how far we are and that everybody is doing their part. Following SCRUM also helped us to structure the documentation and made the preparation of our documentation easier, since we didn't do most of it in the end, like last semester, but did a little after each sprint.

For the next time we could even be more organized to achieve better results. We should work less on GUI and focus more on functionalities.

6 Personal Reflection

Tor Frøstrup Jacobsen:

For me the project went well. I already worked with Mohamed and Faizan in the previous SEP and I peered with Hristo in the SDJ2 Assignment. Therefore, it was easy to work together from the beginning. Compared to the first semester project, this was also less stressful, since we were more familiar in the group and also Scrum helped a lot towards keeping track of the development.

During the project, I learnt a lot of new things, like JavaFX and how to make a server-client program with database access.

The team atmosphere and ethic, was very good. The first few days, there where some discussions about who should do what, but after a while, it felt like we each found our role inside the group and from then on, for the most part, everybody knew what to do and we managed to finish the project on time without having any major discussions or any problems with each other.

Faizan Yousaf:

Most of my group members of this project are the same from semester 1 project. Only this time we had an additional member Hristo, who turned out to be a great help. Tor and Mohamed made it easy to work with, since we worked together before.

During the project most of us worked hard which is important for team-work and to achieve positive results at the end of project period. I think, use of SCRUM and Unified Process helped devel op the project better. Using them we could deliver a consistent amount of functional product with every sprint, which at the end combined made the whole working system.

I don't feel totally satisfied with the results. External factors affected our project development. That is, me getting a bad cold and getting sick when there was one week of work left. It was really bad, I could hardly concentrate or do the tasks as I was supposed to. And at the End of the project even two more members found themselves fighting the cold. I certainly could have done more.

Hristo Rumenov Getov:

In the beginning of the project period we were little bit confused, because we never used SCRUM before and there were so many rules we had to follow. But with the time goes by we started to feel more and more confident and what was more important we were not that stressed in the end of the project period. By following SCRUM, we create our documentation in each step (Sprint) so in the end we just had to combine this documentation.

In my opinion the team work went well, everybody from the team did his job. If somebody had problem (could not find solution on something) the others were always ready to help. Even when we were behind the schedule, we knew it is just for a moment and soon we will be back on track.

Mohamed Guudow Sheikh Ismaili Ali:

We are a good team because we knew each other from the previews semester. We made semester one project together. In this semester two project we were confident, and we had same common goal to make a better team project. Everyone have his own particular role and takes on different responsibilities which combined together and can make our team function well and achieve our common goal. We didn't have any conflict since we knew each other and we try to minimize our arguments for not wasting our time. Through teamwork, I clearly recognize my role characteristics and learnt to develop my strong points.

My role was important to our teamwork and guaranteeing task finished as scheduled and improved team performance to high quality. I'm not saying, I'm complete finisher but I'm always perfectionists with conscientious and disciplined characteristics.

Throughout the SCRUM meetings, our SCRUM meetings ask questions and how fare are we with spring or the task. The SCRUM master illustrated the team task and general agenda and regulations for task completion every time we have meeting. We were divided the tasks and give to each person different tasks to the right person.

The SCRUM made it easy us for the project, and specially we had small project with the SCRUM, and we already knew the way we gone do it. It's perfect to use the SCRUM every time we have project.

In the period of the project time, it was good and we worked hard to achieve our goal. If we had time enough we could work on the project and build many functionalities. We will work on it until the project is fully functionality.

From this period teamwork experience, I strongly feel the importance of the teamwork and the amazement which may bring for quality task completion and goal achievement.