

Project Diary

Program Design and Data Structures (1DL201)

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1 Introduction

Along with developing a working game as our project for the course *Program Design and Data Structures*, we were also tasked with writing a project diary for all occasions when we worked together and had meetings. This document states each of those occasions along with the duration as well as what we did.

2 Diary

2.1 Monday 2021-02-08

Duration: 2 hours

We had our very first session together, where we went through some basics for the project. This involved forming the group rules, going through how we will use git, setting up a board on trello and brainstorming ideas.

We also created a new GitHub repository, where we upload all files for the project. For instance, the group rules are available there, and they may be updated if it is required.

Everyone in the group now knows how to use git to push, add, commit, pull and solve conflicts.

We have a trello group and board where we keep track of our ongoing tasks. The board is split into different sections;

- Code
- Report
- Presentation
- Finished

When we were discussing project ideas we came up with two ideas everyone found interesting; an online chat-server and a Battleships game.

2.2 Thursday 2021-02-11

Duration: 1 hour

Firstly, we discussed the two ideas we had and concluded that we wanted to create an online chat-server. Once we had decided we wrote a mail to Ghafour, our supervisor, where we purposed the idea.

Briefly explained, the project idea is a messaging program which to begin with, allows two users to communicate in real time. Other aspects of the project will be decided and implemented as time goes on.

2.3 Monday 2021-02-15

Duration: 3 hours

We did some research regarding servers and networking together. We found different possibilities on making a server with Haskell.

We also had our first meeting with Ghafour for 30, where we talked about our plan and got some tips for the project.

Finally, we started working on our introduction for the report where we specified what we aspire to create with this project. We also created a flowchart on how the communication will work.

2.4 Tuesday 2021-02-16

Duration: 30 minutes

After discussing the difficulties of making a server, we decided to drop chat-server in favor for battleships due to the need of a lot of research in unfamiliar areas. Since we had no prior knowledge within networking, it felt as we would spend more time learning that rather than utilizing things we have learned throughout the course. Battleships is something we haven't constructed, but is much closer to the course scope.

2.5 Wednesday 2021-02-17

Duration: 2 hours

This was our first session working on battleships. We started creating some data structures, like the board and its components.

We also created some functions for manipulating cell values on the board. This would be useful later on and helped everyone understand how 2D-arrays works. We did some research regarding 2D-arrays on how to construct and manipulate them.

We also found a [Project](#) that gave us great inspiration regarding using 2D-arrays and the library *Graphics.Gloss* to construct a game.

2.6 Thursday 2021-02-18

Duration: 1 hour

We added rendering, logic, AI and main as modules in the files in the repository. This way, the code is categorised and easier to find.

We also improved the readability of some functions in the game module.

We did some research on the *Graphics.Gloss* library:

- [Making a glossy game](#)
- [Gloss examples](#)

Finally, we discussed how to add the element of random and the usage of stack to the AI.

2.7 Monday 2021-02-22

Duration: 2 hours

We had to implement the AI to logic instead of it being its own module, since it created a *"import cycle"* where some type of loop was created and caused

an error due to different modules importing each other.

We implemented the new AI functions as well, so it is now possible to play against the AI. We tried it out and found a bug which will be fixed until our next meeting.

2.8 Tuesday 2021-02-23

Duration: 1 hour

We added a winner state to the game, so now it is possible to determine whether the user or the AI have won. Other than that, we made various changes to the functions to improve them and their readability.

2.9 Wednesday 2021-02-24

Duration: 6 hours

For this session we did a lot of cooperation since it was mainly focused around the implementation of what everyone has been working on. We also improved some functions for the AI.

We created a shuffle function which allows the AI to shoot at random cells on the board.

We made the game re-playable, so the user no longer has to restart the program to play another round.

We added a new rule to the game so ships no longer can be placed next to each other. This resulted in our current AI algorithm to be "less smart", and therefore we discussed some ideas on how to make the AI "smarter".

Finally, we went through what everyone should be working on as well as what should be done by the next meeting.

2.10 Thursday 2021-02-25

Duration: 1 hour

We had our second meeting with Ghafour and got some feedback regarding what we should focus on improving.

Once again, we went through what everyone should be working on, and discussed everything we have left to finish.

Besides that, we changed some of the graphics used in the game.

2.11 Monday 2021-03-01

Duration: 1 hour

We had a meeting where we went through everything that needs to be done and what everyone has responsibility over fixing.

2.12 Tuesday 2021-03-02

Duration: 1 hour

We had another meeting where we went through what is left to do and delegated the rest of the tasks. We also wrote specifications for some type synonyms we previously were unsure of.

2.13 Wednesday 2021-03-03

Duration: 8 hours

Firstly, we had our final meeting with Ghafour.

Throughout the day we worked by ourselves, and had regular meetings where we went through what everyone has been doing as well as what needs to be done. We delegated the tasks.

We implemented the new test cases and tried them. We ran into some bugs which we then debugged.

We were also able to finish the entire report. We wrote every missing part together and changed the structure slightly. We also read through everything together to make sure it was of good quality.

We started reading through every function specification but were not able to finish reading through all of them. Will continue tomorrow.

2.14 Wednesday 2021-03-04

Duration: 3 hours

We read through the rest of the function specifications, checked if all examples were working and made some last changes to the code, specifications and examples.

We made minor changes to the report and made sure all images were placed correctly.

Finally, we structured the final files into a folder in the repository, uploaded the diaries and handed in our final version of the project.

3 Total Time

The total time we have worked together is 32.5 hours. Our individual working times can be found in our respective project diaries.