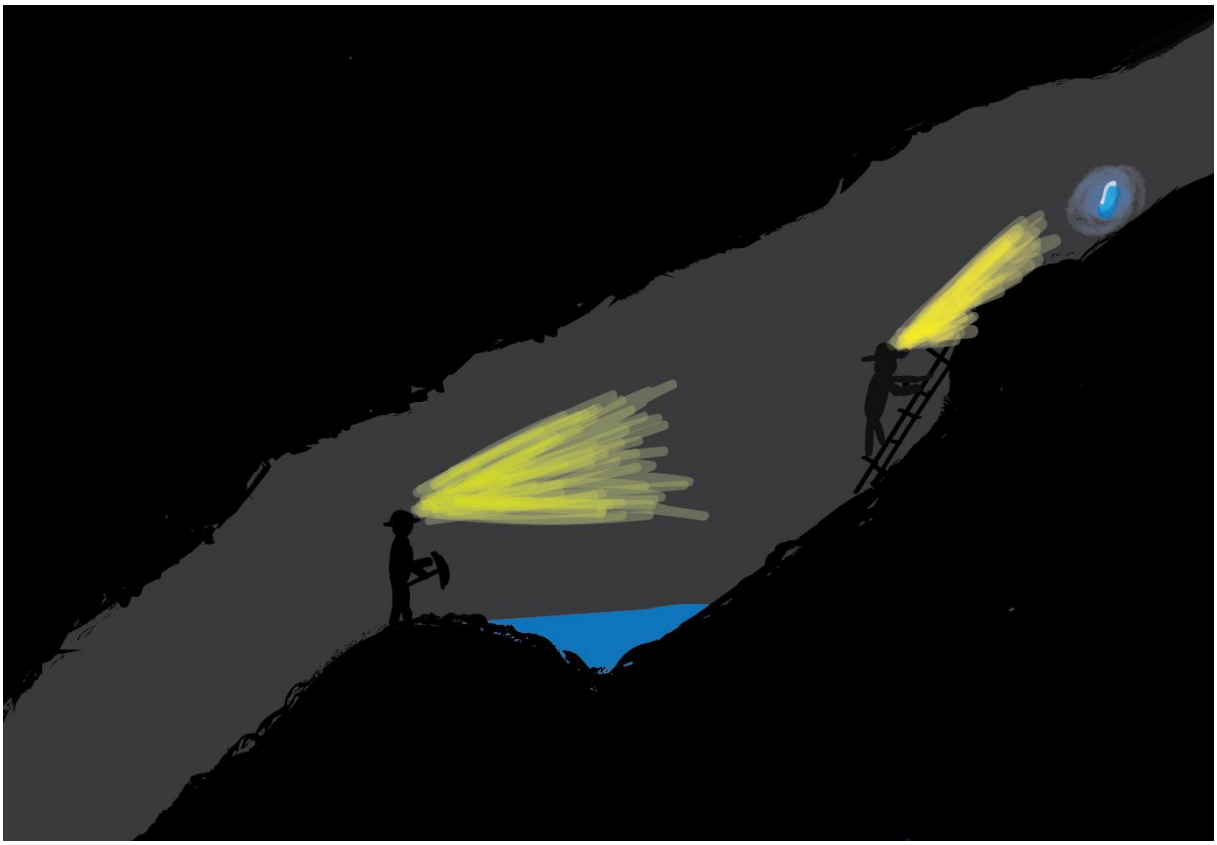
Game Programming Laboratory

TEAM 1

THE GREAT ESCAPE

„The Pursuit of Freedom “



Simon Ringeisen – PRODUCER, PROGRAMMER, DESIGNER
Nicolas Mesot – PROGRAMMER, DESIGNER, VISUAL ARTIST
Andreea Radoescu – PROGRAMMER, DESIGNER, VISUAL ARTIST
Petur Helgi Einarsson – PROGRAMMER, DESIGNER, SOUND EFFECTS
Bjarni Hannesson – PROGRAMMER, DESIGNER, QA ENGINEER

Contents

Chapter 1. Formal Project Proposal

1.1. Game Description

1.1.1. Overview

Our game is a 2D-multiplayer platformer, where the players are supposed to escape from a dark cave within the Gotthard massif. On their way out, the players need to solve puzzles and can collect points. To solve the puzzles, the players must interact with different elements, like levers, buttons, boxes etc.

There are more miners then players. The players can therefore switch between miners. Miners can die and when there aren't any miners left, the game is lost. The game is won, as soon as all players escape the cave.

Another highlight of the game is the level editor, where new obstacles/tracks can be created. This will give freedom to the player to design new challenges that he can play out with his friends.

1.1.2. Background Story

The action takes place in 1878, during the excavation-works for the Gotthard tunnel. It turned out that the project was more complex than expected, and the allocated funds would not suffice for a successful completion. There were a lot of stakes involved in this ambitious project and unfortunately some unexpected complications have appeared. Morale was running low among the miners who stood to lose their jobs. Alfred Escher was battling on many fields, trying to keep this operation alive, but his proposals kept getting rejected.

One day, a group of miners made an astounding discovery. By mistakenly digging into an unplanned area of the tunnel, they came upon a natural cave flush with gold. This unexpected chance would give them the possibility to financially salvage the entire project; however, only hours after the incident, a nearby tunnel and left them trapped inside the mountain.

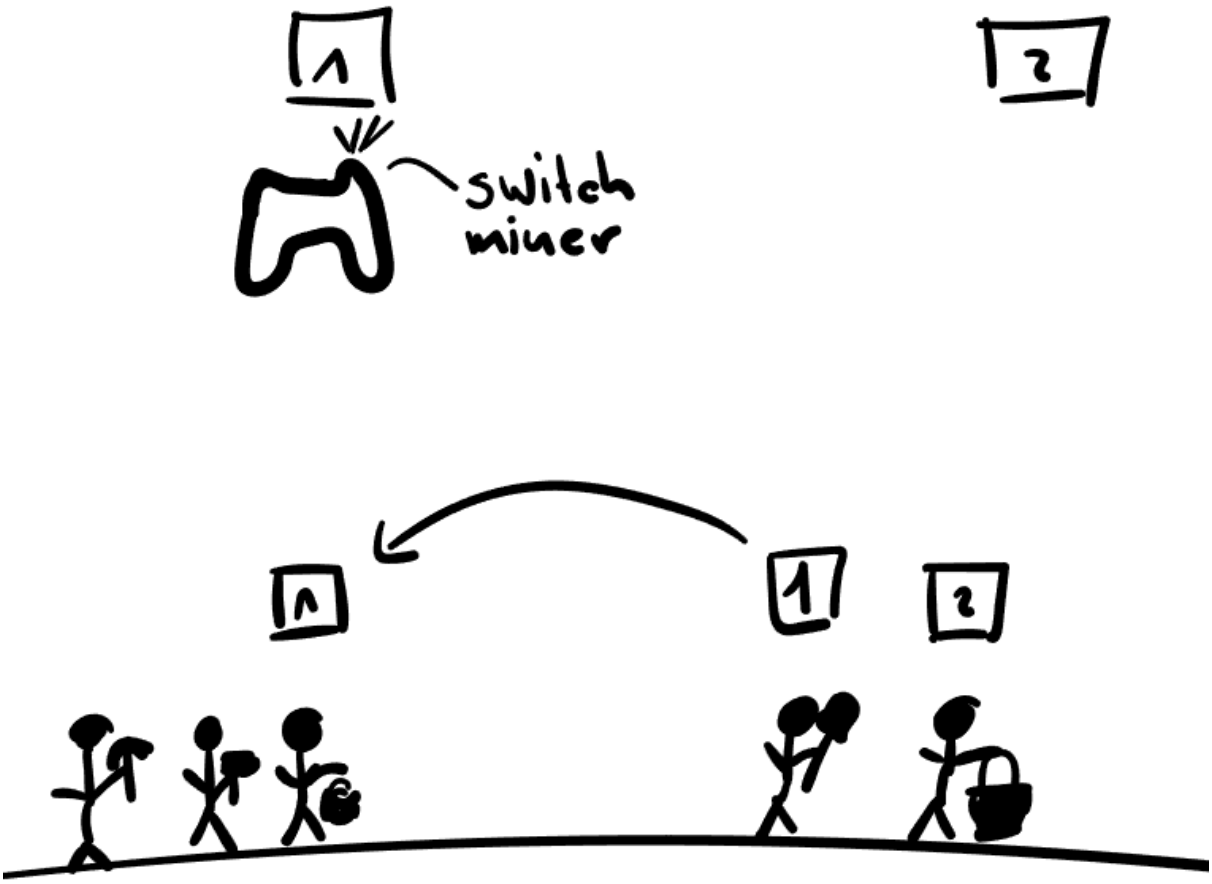
Their mission is to get out of the tunnels to inform everybody else of the stroke of luck, but most importantly to save their lives. This very thing could greatly help Escher regain the favor of other parties and their support in seeing this project to the very end. Or will the miners be greedy and keep the gold?

1.1.3. Design Decisions

There are more miners than players in the cave. When the miners spawn, they get tools (e.g. pick-axes, hammers, buckets, shovels, …). The players can switch between miners with the click of a button.

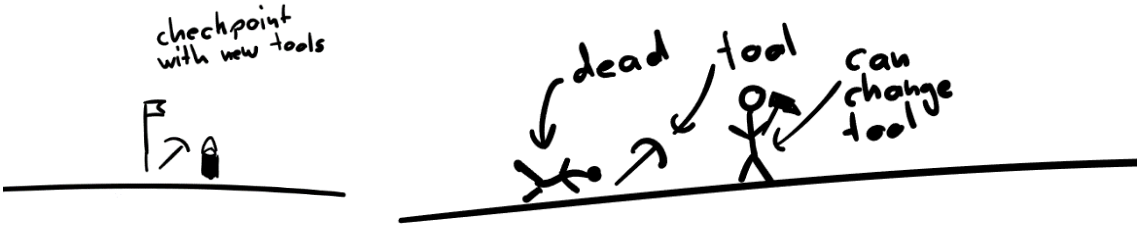
Miners can be killed in different ways (e.g. drown, being hit by a stone, …). When killed, a miner drops his tool, which can be collected by the remaining miners. If a player doesn't swap out his tool for the one of the dead miner, he can always go back later and pick it up

afterwards. The player whose miner has been killed can choose one of the remaining miners. When the last miner has been killed, the game is lost.



The route is a continuous cave, which is divided by checkpoints (e.g. separated by doors), at which the miners can re-equip themselves with tools.

There is a fixed number of two players which need to help each other to unlock the pathway towards freedom and to escape the cave. The players will play on a shared screen, i.e. not split screen. Furthermore, the screen has a fixed view in the sense that players are not able to pan the camera or zoom out to see more of the level.



The style of the game will be very dark, as there is basically no light in the cave. The cave is only lit by the miners' flash lights, lights on walls or on the ceiling, in addition to torches carried by the miners. The graphics are done in 2D and the players can move in any direction their environment allows them to, i.e. there is no forced scrolling.

There can also some doors that will either lead towards the right path or get the player to a dead end. Sometimes more paths can conjoin and become one. This will give the game a labyrinth feeling which can add even more to the suspense of trying to escape from the caves.

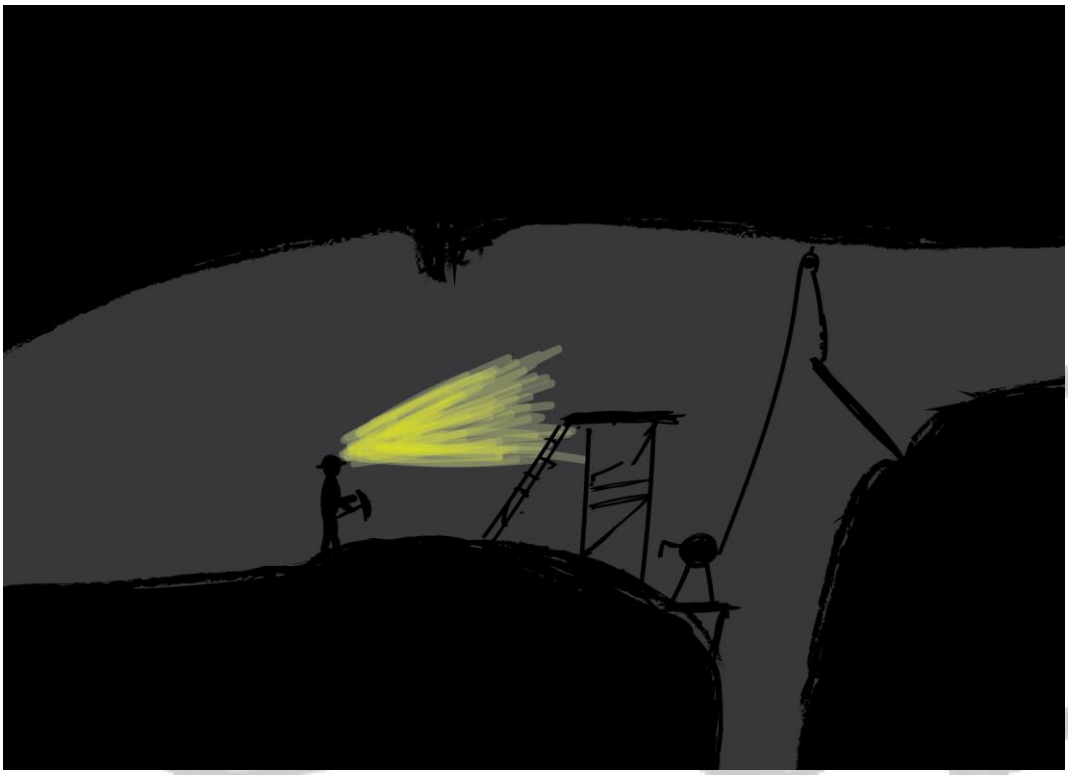
Additional effects:
- Gas leaks which make players dizzy, hallucinate, become weak or powerless
- Add a treasure-hunt, where one has to defeat demonic
- Give names to the tunnel sections
- Create a side-story, possibly including local stories

1.2. ‚BIG IDEA' BULLSEYE

Intense running through a deep, dark cave with soothing water/lightning effects. The technical component is achieved through the implementation of level designer.

1.3. Technical Achievement - Level Editor

We want to build a level editor that can be used on the console. This will not only greatly increase the appeal of our game, it will also streamline the creation of interesting parts of the game and engaging levels.



As stated, the aim is to make the editor usable on the console. This means working with a restricted set of input possibilities. Another challenge will be to include an option to save created levels.

1.4. Development Schedule

1.4.1. Layered Task Breakdown

1.4.1.1. Functional Minimum

Control over one player which has to go through only one checkpoint, get over one simple obstacle and escape the caves. The characters each have one single tool and the challenge reflects that.
The game will be 2D, simplistic drawings and renderings.

1.4.1.2. Low Target

Add a game menu (continue, start new game, simple settings).
Introduce more obstacles (locked doors, getting gravel out of way, etc).
Add shadows and torches.

1.4.1.3. Desired Target

Add voices and/or sound effects.
Implement level editor that can be used on the computer.
Possibility of choosing the tools for the characters in the game menu.
Multiplayer (two-player) mode.
Also add a background story, the introduction of the game and narration.
Add animations and more visual effects.

1.4.1.4. High Target

Add a possibility for the characters to go treasure hunting instead of a direct escape attempt.
Upgrade level editor to be usable on the console.
Implement visualization for hallucinating effects due to gas exposure.
Demonic creatures guarding the treasures.

1.4.1.5. Extras

Fluid simulation based puzzles.
Online mode.
Use higher dimension (2.5D or 3D) assets.

1.4.2. TASK LIST

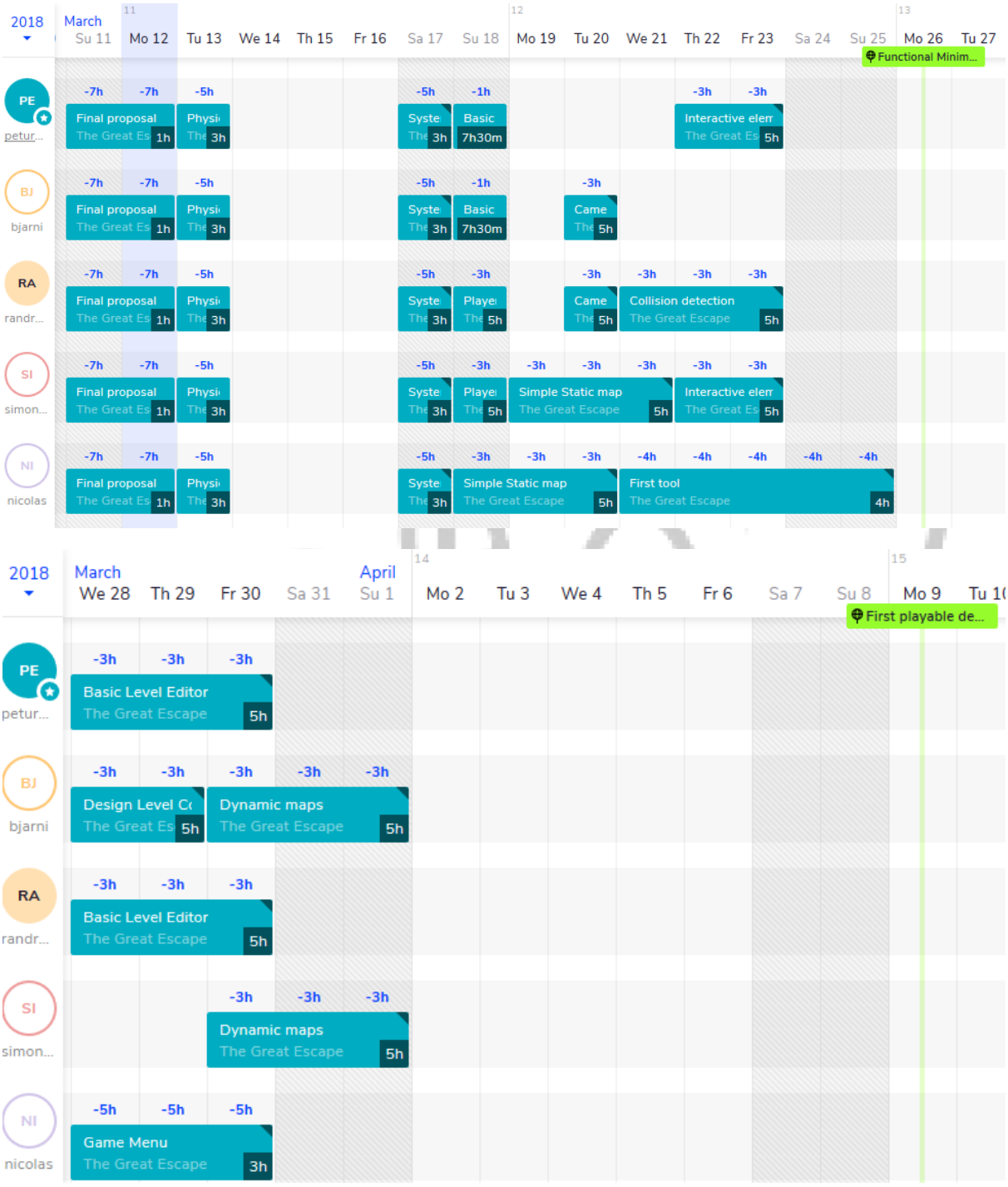
Topic	What?	Who?	How long? [hours]
Game proposal	Rough proposal	Everybody	15
	Final proposal	Everybody	10
	Physical prototype	Everybody	15
Functional minimum			
Setup	Setup Mono-Game project, install tools etc.	Everybody	15
Player	Player entity	Andreea, Simon	10
	Basic Player controlling	Bjarni, Petur	15
	Tool (only one)	Nicolas	20
Map	Simple static map	Simon, Nicolas	30
	Interactive elements (checkpoints, escape, …)	Simon, Petur	20
Technical	Camera	Bjarni, Petur	10
Mechanics	Collision detection	Andreea	15
Low target			
Technical	Game Menu	Nicolas	10
Mechanics	Basic level editor	Petur, Andreea	30
	Design level components	Bjarni	10
Map	Dynamic maps (load game map from file)	Simon, Bjarni	30
Desired Target			
Sound	Music	Petur	15

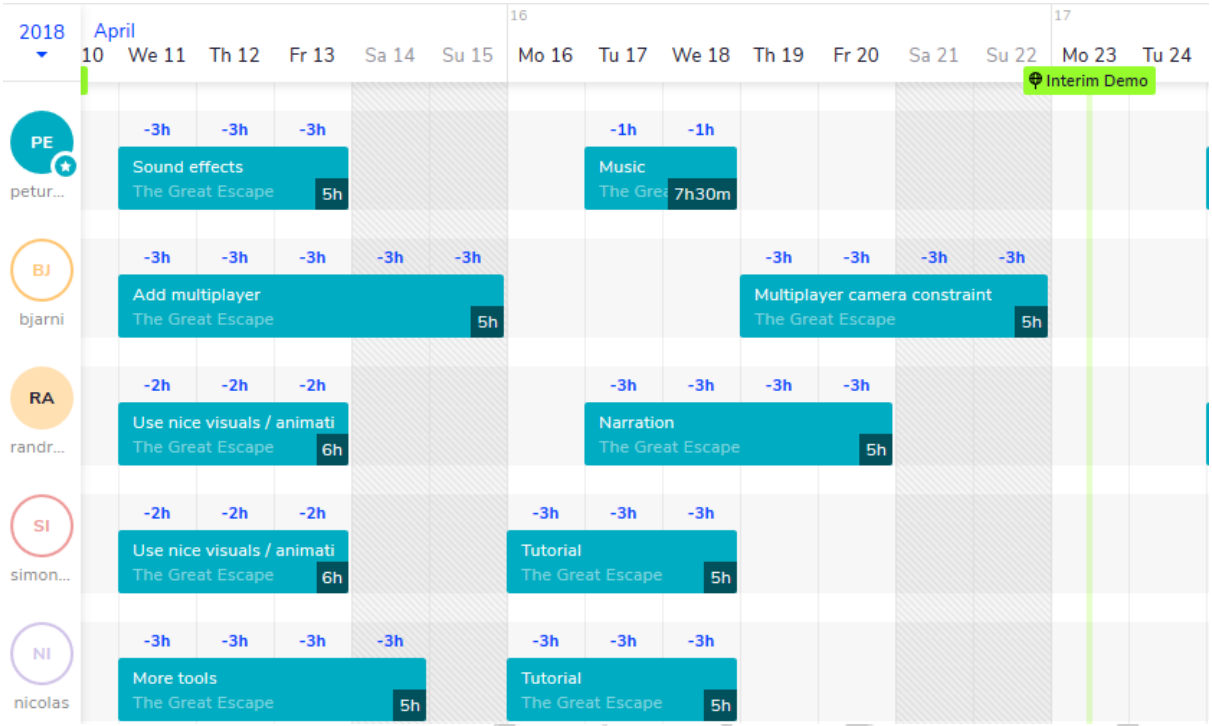
	Sound effects	Petur	15
Player	Add multiplayer (incl. Controlling, swapping players, …)	Bjarni	25
Tools	More tools	Nicolas	20
Technical	Multiplayer camera constraint	Bjarni	20
Visuals	Use nice visuals / animations	Andreea, Simon	35
Storytelling	Narration	Andreea	20
	Tutorial	Nicolas, Simon	30
High Target			
Mechanical	Fancier level editor.	Petur, Andreea	40
	Gas (hallucination, distortion…)	Simon, Bjarni	40
Fun	Treasure hunting	Nicolas, Petur	30
	Demonic Creatures	Nicolas, Andreea, Bjarni, Simon	40
Extras			
Mechanics	Fluid Mechanics	Simon	40
Fun	Online mode	Nicolas	1000
Visuals	2.5D / 3D assets	Andreea	25

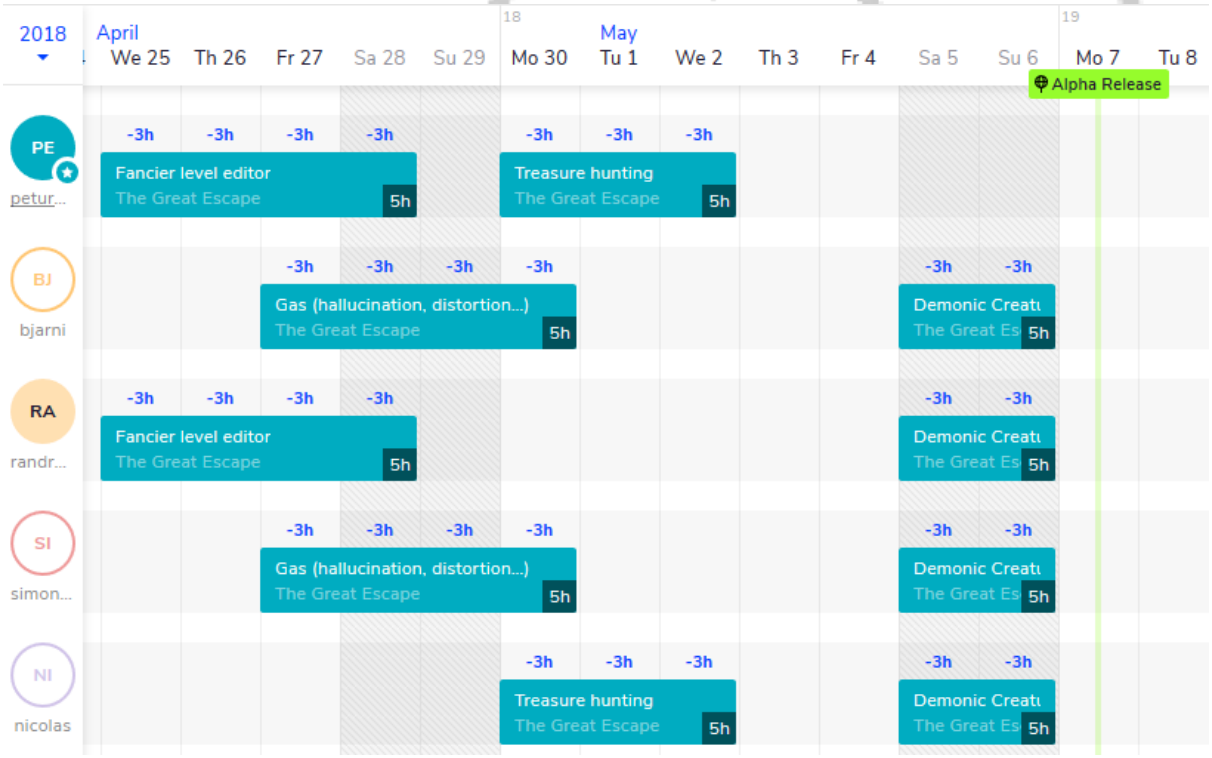
1.4.3. TIMELINE

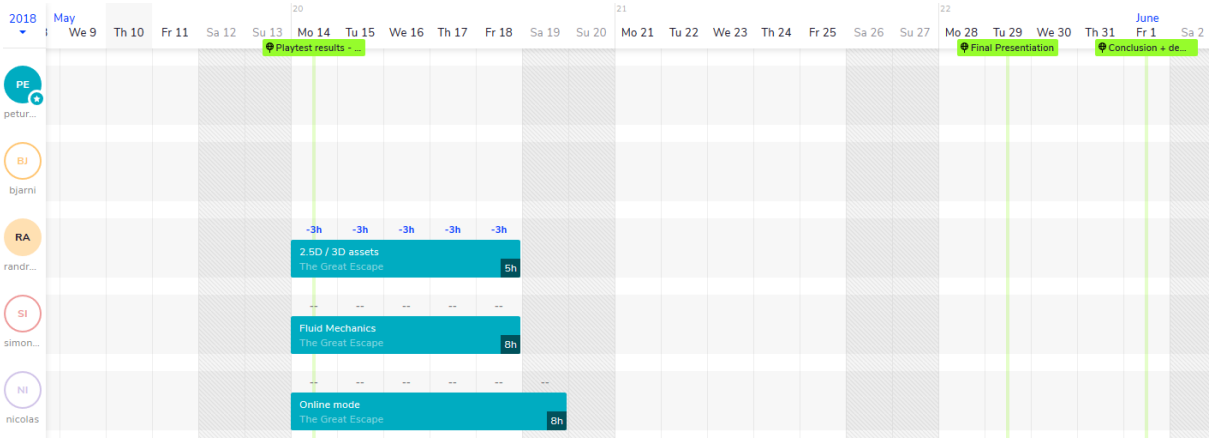
The public link to the gantt chart is

https://app.teamweek.com/#pg/rXDJbrPWGcHY6nWfog2FrtfkeUBUvSNF




2018
April
10 We 11 Th 12 Fr 13 Sa 14 Su 15 16 Mo 16 Tu 17 We 18 Th 19 Fr 20 Sa 21 Su 22 17 Mo 23 Tu 24
Interim Demo
PE
petur...
-3h -3h -3h
Sound effects
The Great Escape
5h
-1h -1h
Music
The Grea
7h30m
BJ
bjarni
-3h -3h -3h -3h -3h
Add multiplayer
The Great Escape
5h
-3h -3h -3h -3h
Multiplayer camera constraint
The Great Escape
5h
RA
randr...
-2h -2h -2h
Use nice visuals / animati
The Great Escape
6h
-3h -3h -3h -3h
Narration
The Great Escape
5h
SI
simon...
-2h -2h -2h
Use nice visuals / animati
The Great Escape
6h
-3h -3h -3h
Tutorial
The Great Escape
5h
NI
nicolas
-3h -3h -3h -3h
More tools
The Great Escape
5h
-3h -3h -3h
Tutorial
The Great Escape
5h


2018
April
We 25 Th 26 Fr 27 Sa 28 Su 29 18 Mo 30 May Tu 1 We 2 Th 3 Fr 4 Sa 5 Su 6 19 Mo 7 Tu 8
Alpha Release
PE
petur...
-3h -3h -3h -3h
Fancier level editor
The Great Escape
5h
-3h -3h -3h
Treasure hunting
The Great Escape
5h
BJ
bjarni
-3h -3h -3h -3h
Gas (hallucination, distortion...)
The Great Escape
5h
-3h -3h
Demonic Creatı
The Great Es
5h
RA
randr...
-3h -3h -3h -3h
Fancier level editor
The Great Escape
5h
-3h -3h
Demonic Creatı
The Great Es
5h
SI
simon...
-3h -3h -3h -3h
Gas (hallucination, distortion...)
The Great Escape
5h
-3h -3h
Demonic Creatı
The Great Es
5h
NI
nicolas
-3h -3h -3h
Treasure hunting
The Great Escape
5h
-3h -3h
Demonic Creatı
The Great Es
5h



1.5. ASSESSMENT

The most fun part playing the game will be getting over the obstacles together. Some competitive elements (like collecting treasures) could lead to interesting combinations, where the players want to ‘kill’ each other, while still escaping the cave.

The game might be played at parties or when meeting up with friends for a gaming session.

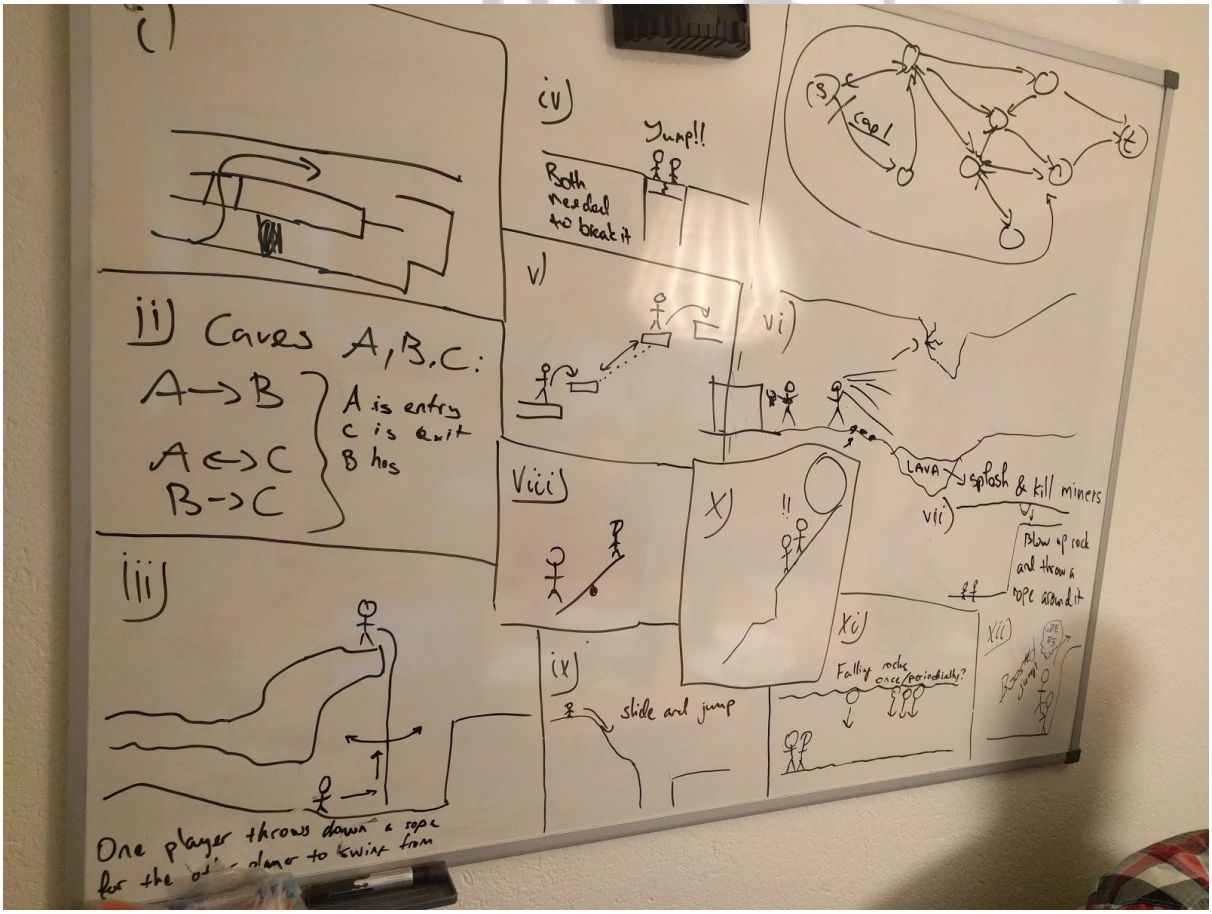
CHAPTER 2. PROTOTYPE

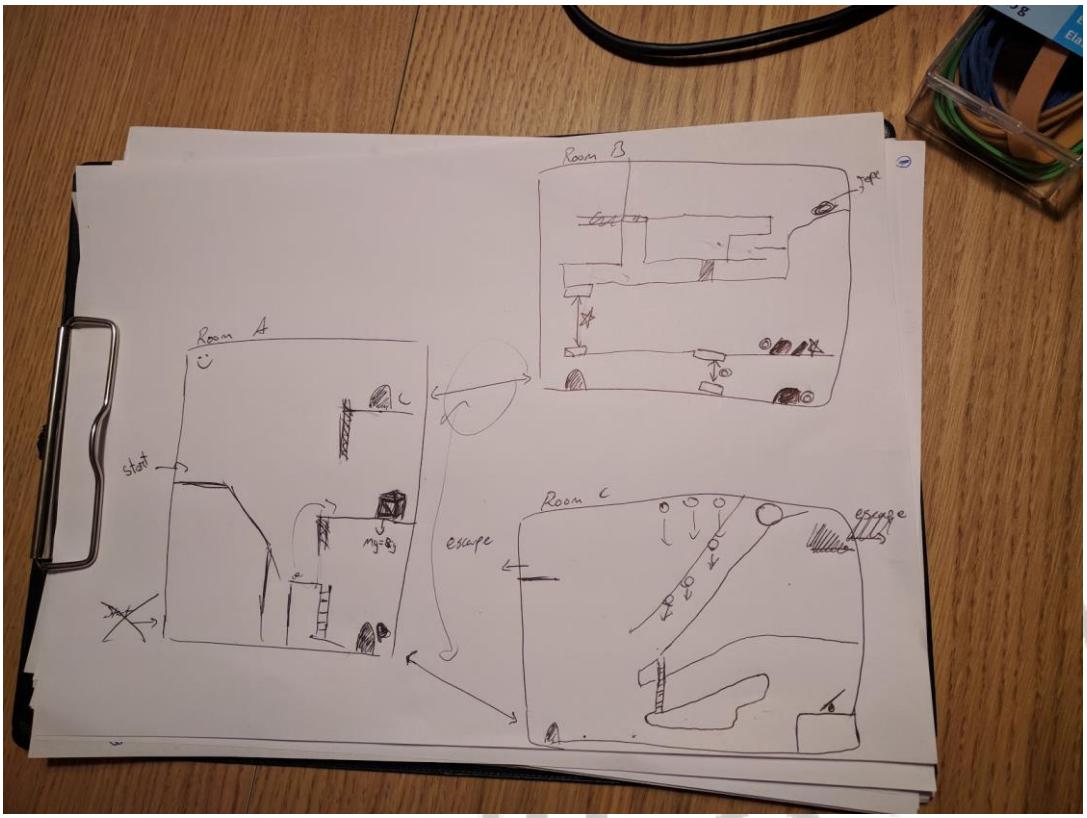
2.1. PROTOTYPE SETUP

For our prototype we created three scenes of gameplay. Our game will be structured in such a way that the whole world is comprised of levels and a level consists of one or more scenes. The level designer then needs to connect the scenes in a graph like structure, such that each scene is a vertex and a directed edge (A, B), meaning that the players can go from scene A to scene B. Solving the level means to traverse the scene graph from the source vertex to the target vertex. The players do not see the graph structure explicitly.

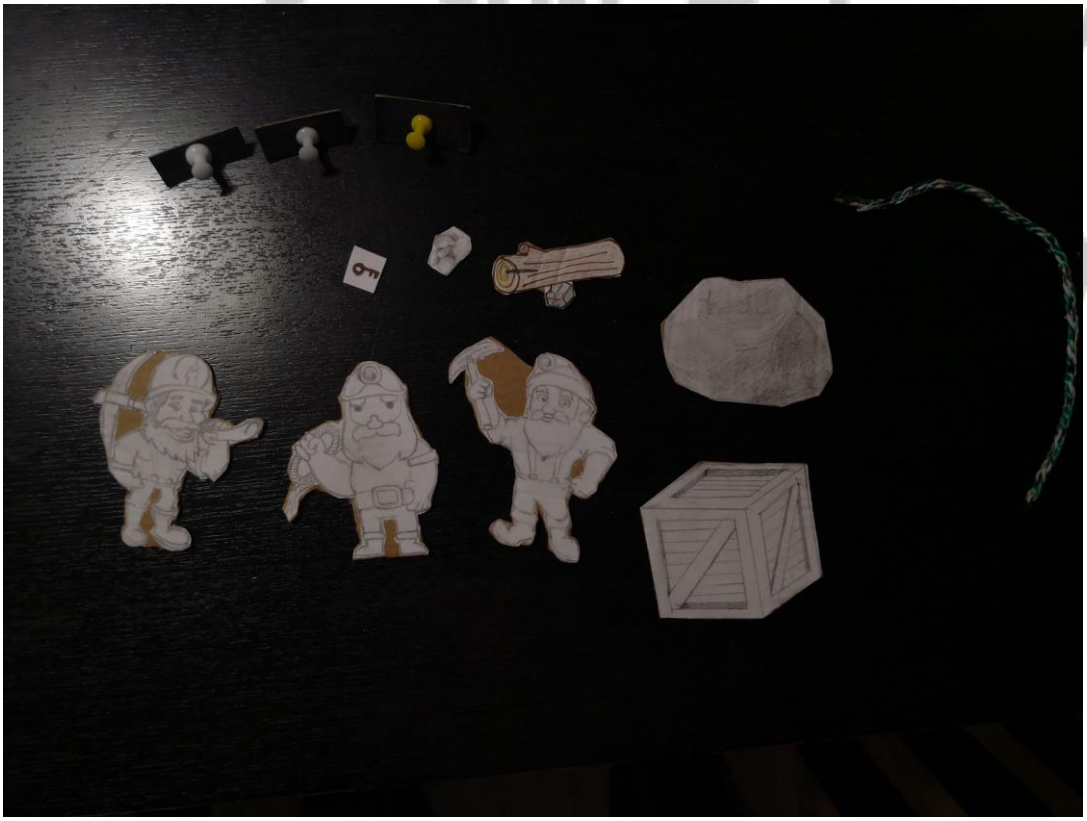
As mentioned before, there will be two controllable characters in the game, with the possibility of switching between the character that is controlled and other inactive ones who have special tools needed in a specific scenario.

We started from rough sketches of various situations in which our characters can find themselves and we combined those in order to create the scenes for our prototype.





These are the initial ideas for the scenes in our prototype and how the passageways connect between themselves.



Separate assets from our scenes can be seen in this image.

Working on the cardboard scenes

2.2. Playing Experience

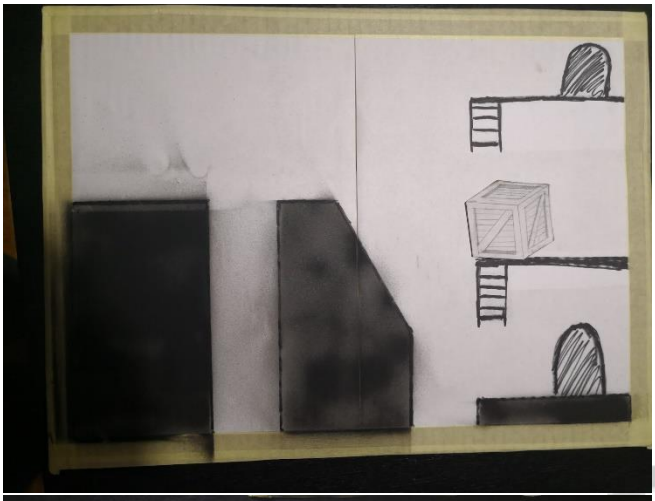
We have play-tested our game, first on a rough sketch before finalizing the drawn scenes. We cannot exactly reproduce the dark atmosphere in the caves with the prototype, but we have found a workaround.

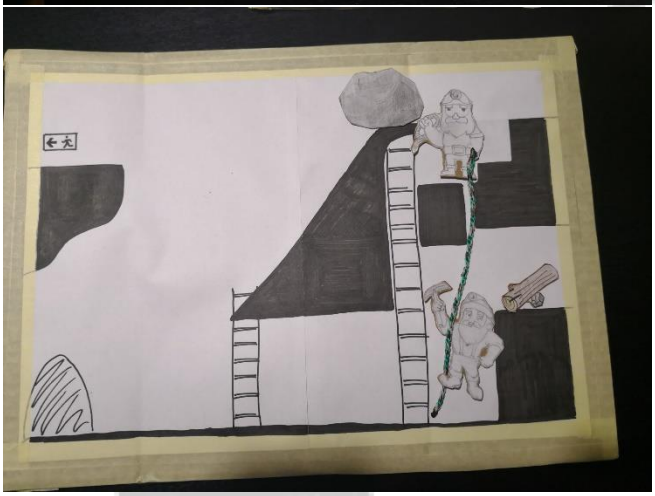
To play the prototype, there are two players that are controlling the characters and looking through a tube to limit their vision. The view should always be focused on the character. Another person will play the role of the computer, managing the events that are triggered by the players' actions.

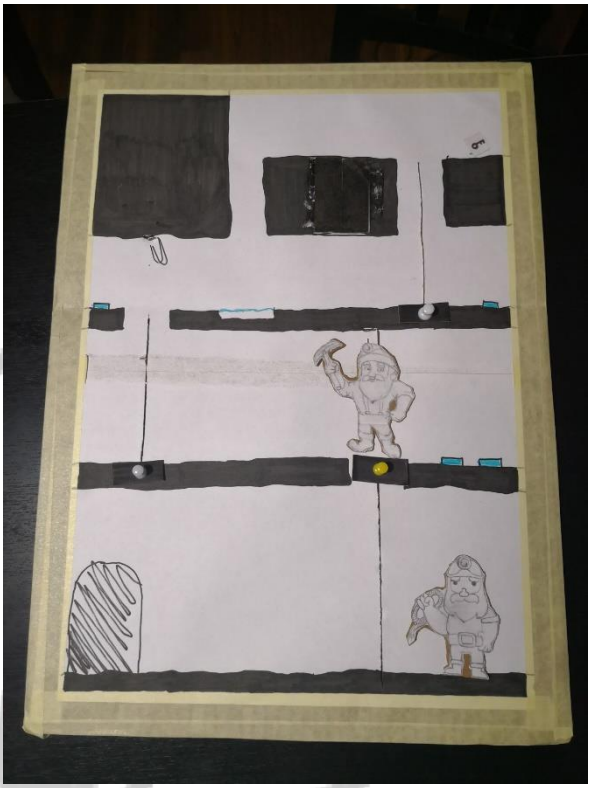
Playing the prototype with the improvised "goggles" for simulating the darkness in the caves and what is actually visible during the gameplay

This is an actual "view" while playing our prototype. The players have a limited vision. In the actual game we also want to implement directional light which will make more of the scene visible.

The three scenes of our prototype, first one is the source scene A, next one is scene B, and the bottom one is the target scene C.







2.3. Findings and Conclusion

We put to practice the gameplay that we had in mind and it proved more fun than we imagined. Adding the limited vision greatly improved the prototype and completely changed the experience. We found that the miners should all start the game with their own specific tool, the miners then discover caves and they need to inspect their surroundings in order to find an escape path. No help is given to the players although there is a special exit sign that will mark the exit.

We have made the game more agility-based than we proposed in the beginning, but it still has some minor puzzles which are harder to solve due to the darkness in the tunnels. However, the players must be agile in order to complete the levels and avoid traps. It has proved to be harder to design obstacles and levels than we first thought, but given some initial ideas we can combine them to create new levels. But the level editor will of course allow the player to create either more agility-based or puzzle-based levels.

Chapter 3. Interim Report

(Max 5 pages)

3.1. Progress

@Note: Describe how many layers you have finished. You can include screen shots to help explain your game so far, and text to describe how a user would interact with it. Our hope is that you have completely finished layer 2 and are well into layer 3.

3.2. Challenges

@Note: Explain what has proved to be harder (or easier) than expected. What design revisions have you made to your game as a result of what you've learned with the implementation? Discuss the implementation challenges you faced. Were there aspects that you wanted to build but were unable to do so?

3.3. Future Work

@Note: What are the planned tasks that will be implement next? Shortly explain.

Chapter 4. Alpha Release

(Max 5 pages)

@Note: Follows the same guidelines as the interim report chapter.

4.1. Progress

@Note: Comment on how far you have progressed and show us what is exciting about your game. Ideally, you will have met the goals outlined in layer 3 (your desired target) and possibly part or all of layer 4 (your high target). You can include screen shots.

4.2. Challenges

@Note: Explain what has proved to be harder (or easier) than expected. What design revisions have you made to your game as a result of what you've learned with the implementation? Discuss the implementation challenges you faced. Were there aspects that you wanted to build but were unable to do so?

4.3. Future Work

@Note: What are the planned tasks that will be implement next? Shortly explain.

Chapter 5. Playtest

(Max 5 pages)

5.1. Playtesting Session

@Note: Describe who you recruited for playtesting and how you organized the playtesting sessions. If possible, include some photos.

5.2. Questions and Comments

@Note: List the questions you chose to ask the testers. Summarize their answers. Comment on overall trends you learned from the exercise, as well as any specific suggestions that were particularly useful.

5.3. Design Revisions

@Note: Finally, describe any changes you made to your game based on the playtesting.

Chapter 6. Conclusion

(Max 5 pages)

6.1. Final Results

@Note: In this chapter, first provide a summary of your final results including screenshots from your final game. Comment on any significant changes from the alpha release.

6.2. Experience

@Note: Here you should provide commentary about your experience during the class. How well did your initial design ideas materialize into the final game. Were you able to follow your development

schedule, or did you deviate significantly from it? How did the different elements of the project structure (development schedule, prototype, playtesting, etc.) contribute to or hinder your progress?

6.2. Personal Impressions

@Note: Did it meet your expectations? Are you happy and proud of your game? Do you feel there wasn't enough time or that the schedule was too compressed?

@Note: You might also consider these questions:

- *What was the biggest technical difficulty during the project?*
- *What was your impression of working with the theme?*
- *Do you think the theme enhanced your game, or would you have been happier with total freedom?*
- *What would you do differently in your next game project?*
- *What was your greatest success during the project?*
- *Are you happy with the final result of your project?*
- *Do you consider the project a success?*
- *To what extend did you meet your project plan and milestones (not at all, partly, mostly, and always)?*
- *What improvements would you suggest for the course organization? (Perhaps in D1 evaluation)?*
- *Did you like using MonoGame?*