

**Unity Final Project Report (32829-01)**

Submitted to the Department of Game and Mobile Contents

at Keimyung University, Korea

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# Introduction

This chapter will give a brief introduction to this report and what this project concerns.

## Background

This paper serves as the documentation for the final exam in the course 3D Game Basics, fall semester, 2016. It is meant to be used in conjunction with the submitted executable created with Unity3D for the final exam.

## The task

The given task for the final exam was to create a simple and enjoyable game which uses the physics engine. A list of minimal requirements was provided:

* Main Menu, Pause Menu & Control Explanation (requires research)
* Use Prefabs and Game Objects
* Use of imported meshes to create details in your level
* Use of Particle Systems and Animation
* Use of Physics in the level
* Use of Audio
* The game should develop a demonstrable skill and the game design to scaffold such a skill (i.e. the second time you play it, you will get better. The third time, even faster and so on)

A list of advanced requirements was also provided:

* Demonstrate your ability to research and implement different aspects of game mechanics and incorporate it into your game
* A sense of good Game Design. Your game should be able to teach the user how to play the game without any outside help. A thorough use of Playtesters will be able to show you if your game is well designed or not

# Timeplan

This chapter contains an overview of the timeplan followed to complete this project.

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Person | Task | time (h) |
| 24/11 | Team | First meeting to speak about an idea of project | 1 |
| 25/11 | Team | Second meeting where we went deeper in a single idea | 1 |
| 26/11 | Victorien | Creation of the rough document | 1 |
| 27/11 | Anatole | Document : Level design & Minimal requirements | 1,5 |
| 27/11 | Anatole | Document : Design & graphic sketches | 3 |
| 27/11 | Anatole | Document : Tasks definition & estimation + timeplan creation | 2 |
| 28/11 | Anatole, Victorien | Document : Deadlines & Task repartition | 0,5 |
| 29/11 | Victorien | Creation of the project on git with scene game and home. | 0,5 |
| 31/11 | Anatole | Assets research + custom assets sketches | 3 |
| 01/12 | Anatole | Assets research + level design sketches | 3 |
| 02/12 | Anatole | Assets research + level design sketches | 3 |
| 03/12 | Victorien | Creation of the menu to have a first game logic | 2 |
| 04/12 | Anatole | Assets research + cinematic sketch | 2 |
| 04/12 | Victorien | Reflexion on the level design  Creation of vortex | 4 |
| 04/12 | David | First grappling hook version | 2 |
| 05/12 | Anatole | Modelling platforms + character and items | 4 |
| 05/12 | Victorien | Create collider for the prefabs | 4 |
| 06/12 | Anatole | Assets collider + create terrain level | 6 |
| 06/12 | Victorien | Vortex mesh and particle system | 3 |
| 07/12 | Victorien | Add score with little collectibles, script to pick up object, minimap, place platform for the first part of the level, fix tree collider | 5 |
| 07/12 | David | Fixing grappling hook | 0,5 |
| 07/12 | Anatole | Work on the terrain level – global surface | 8 |
| 08/12 | David | Playtest, second version of the grappling hook | 1 |
| 08/12 | Anatole | Work on the terrain level – zone 1 global | 5 |
| 09/12 | David | Prefab grappling hook and particle system | 1 |
| 09/12 | Victorien | Test change the colour of the terrain at runtime. Find that it would bug unity  Level design | 8 |
| 09/12 | Anatole | Work on the terrain level zone 1.1 detailed | 8 |
| 10/12 | Victorien  Anatole | Change the backstory and some goals of the game : we don’t use the colours anymore but the mushrooms. | 2 |
| 10/12 | Anatole | Work on the terrain level – zone 1 refund detailed | 15 |
| 10/12 | Victorien | Creating low poly mesh for the rocks to have mesh collider | 2 |
| 11/12 | David | work on new features with platform and grappling hook and add moving platform | 4 |
| 11/12 | Victorien | Modification of the player controller  Creation script for the mushroom logic (pick up that make the mushroom grows)  Creation of the script for the bounce  Micro level design of the zone until the big hole (Zone 1-4) | 10 |
| 1212 | Anatole | Work on the terrain level – zone 1.2 detailed | 15 |
| 12/12 | David | work for new playtesting fixed some bug, new version of grappling hook and new platform | 12 |
| 12/12 | Victorien | Death fading screen  Golden mushroom  Playtest a lot the first parts of the level to fix it for the playtest at the lounge (Zone 1) | 10 |
| 12/12 | William | Sounds | 2 |
| 13/12 | David | add viewfinder | 1 |
| 13/12 | Victorien | Work a little on the sound, fixing the level | 2 |
| 14/12 | David | add sprint and fixed grappling hook with lower FPS | 2 |
| 15/12 | Victorien | Think about bonus zone, fixing elements | 1,5 |
| 15/12 | Anatole | Work on the terrain level – zone 1 & 2 detailed et refund after playtests | 15 |
| 15/12 | David | Playtesting and try to find some bug | 1,5 |
| 16/12 | Victorien | Document, last fixing | 5 |
| 16/12 | Anatole | Last fixing | 5 |
| 16/12 | David | UI for golden mushroom, last fixing | 5 |

Table 1: The timeplan for this project

# Game

This chapter covers the general concept of the game and the mechanics implied by it. After reading the following parts you should have a nice understanding of the game. We recommend you to not read this part if you plan to play the game after, it will ruin the joy of discovering things by yourself.

## Story

You are a little red gum who lives in a world of floating island. But one day while you were taking a nap on a plank on the river you fall of your home island.

You arrive in a strange island with a lot of mushrooms which have different particularities. Far away you see a big red mushroom, maybe this is the way to go home…

## Game overview

This game is an adventure game without enemies. It’s based on exploration and jump on platforms. It’s a cartoon world with strange things like trees with weird colours and big mushrooms. There is no distinct level, we don’t want to break the immersion of the player with loading screen. The playable world is a floating island with different zones with each have a specificity.

The player has no power, he must use the mushrooms to help him through the level. He can also find a grappling hook to grab the white mushrooms.

Our goals as developers of this project are to allow the player to be part of the world : we attempted to create an enjoyable and immersive experience.

The player must appreciate the view and want to discover more parts of our universe.

There is some secrets features that most people won’t be able to find but some players who really master the skills can enjoy. Such as our pictures as Game Developer and landscapes.

## Level Design

This part will explain specific points of our game. These points are the core of our project and will be useful to achieve the objectives we said in the part 3.2.

The level will consist of different zones with complicated paths (incorporating platforms or obstacles) and traps.

### Platform types

There is several platform types that the player must learn how it works :

* Falling platforms : These platforms move down when the player is on it.
* Upping platforms : These platforms move up when the players is on it.
* Normal platforms : These platforms are just platforms.
* Jumping mushrooms : These mushrooms make you bounce on it, you can’t control your jump but it is higher.
* Movable mushrooms : These mushrooms can be moved so you can use it as platforms.
* Air blower mushrooms : These mushrooms acts like they throw air, allowing you to reach points by flying.
* Normal mushrooms : These mushrooms are just platforms.

### Obstacle

The paths in the level will contain many obstacles such as:

* Vortexes: these are the main traps of the levels. When the player touch one, he is absorbed and transported to his checkpoint vortex.
* Golden mushrooms: The golden mushrooms can block the way of the player, he must collect 3 golden mushrooms to grow it down and be able to pass.

### Collectible

To go through the level the player need to collect little mushroom that activate the platforms. These collectibles take the colours of the platform they will unlock.

## Playthough Script

The game start with a skippable cinematic that play the story of the game.

There is another short cinematic which is not skippable that show you the final goal and where you are.

Zone1-1: At beginning, the player won’t understand how to go through the level. He will follow the path and try to go into a vortex, he will respawn and understand that it’s a bad thing. After he will have the option to try a red mushroom which is the bouncy mushroom or go directly to the next.

The path isn’t large, so he will look forward while he collects little mushroom and can see that platforms are growing. He should jump on these platforms to avoid the vortex.

In the next zone he will find another easy mushroom to be sure he understood that collecting the mushroom acts on the platforms. He must find 2 more mushrooms which are hidden to go to the next zone.

In this zone the player discovers the bounce mushrooms. There is only 4 jumps to enchain and this is not lethal.

Zone 1-2: In this zone the training is over. The player got a checkpoint and he must go through a hole with the help of mushrooms.

Zone 1-3 : In this zone it’s calm, because the player just pass the hole which is very dynamic and the zone after is kind of hard. He must only find mushroom to go to the last platforms. On these platforms there is golden mushroom. He is forced to get them, so it allows him to understand that three of them unlock a way previously blocked by a giant golden mushroom.

Zone 1-4 : This is the last zone of only jumping. So it’s more difficult than the previous ones. The player must collect the three golden mushroom of the zone to unlock the way and be able to find a new power.

Zone 2 : The second zone introduces new gameplay features. First, the player discover a new mushroom: the grab mushroom. When he picks up the first of those mushrooms, a target is displayed at the middle of the screen and a grab mushroom grows on a platform behind the hole the player is facing. Affected by the crosshair newly displayed on the HUD, the player should then try to click on this new mushroom and he will be pulled onto it. He will then need to repeat same operation one time before trying to escape from a vortex by using this mechanism. After those three trainings, he will be tested on a more complicated path constituted of grab mushrooms on flying or unstable platforms. If he succeeds, he will face the last training of grab mushrooms which is the combination of the grab with the bounce mushrooms. During this stage, he will be able to discover a new secret zone if using well enough the grab tool. After that, he will be facing a huge new type of mushroom that he will need to push to get through it. To help the player understand this mechanism, we had to use a particle system on the first mushrooms of this type. Once we will have get through the first of those mushrooms, he will need to push two more of those to climb a mountain. After that, we can assume he understood the mechanism so we put the player face to a problematic where he will need to push some mushrooms in the right way to create a stair letting him get into the last zone of the level. The last zone introduces the air blower mushroom. The player will need to jump into some of those mushrooms to be able to fly to the next mushrooms.

Ending zone: after succeeded the whole level, the player will find a bouncing mushrooms stair which will let him join the mega bouncing mushroom to get back on his island.

# Minimal requirements

This section completes the section “1.2 Task” by linking each requirement with the emplacement in the project where we implemented it.

We assume that our game will be simple and enjoyable and meet the requirements as described below:

* Main Menu, Pause Menu & Control Explanation (requires research): we provided a main menu allowing the player to launch a new game, get control explanations and quit the game. The pause menu would allow the player to get control explanation, resume game, go back to main menu and quit the game.
* Use Prefabs and Game Objects: our level contain many game objects which are prefabs instance. It helps us a lot for building the level without create them one by one.
* Use of imported meshes to create details in your level: we use rocks and trees that are imported meshes find on the Internet. We did some meshes ourselves, as the platforms.
* Use of Particle Systems and Animation: we use particle systems to better illustrate the items collectible, to provide feedbacks for the player for the hook and for some the vortexes (Checkpoint and bad ones).  
  Animations are used in the cinematic and in the title screen to have a movement on the title of our game.
* Use of Physics in the level: our movable platforms (up and down) use spring joint to work.
* Use of Audio: There is ambient music and action sounds.
* The game should develop a demonstrable skill and the game design to scaffold such a skill: our main skill is the jump, you can learn to master it better and combine it with the run.

# Conclusion

We really enjoyed working on this project. Even if we encounter numerous problems with the organisation and the lack of time. The lack of time is in part due to the lack of organisation, indeed at the beginning we search and prepare a lot of assets that we finally don’t use.

We really think that we have created a simple enjoying game while respecting the requirements.

This was the last project of the class Unity 3D Game Basics, this course helps us a lot to create this final project and we are glad to have participated in it. This project shows us that we lack of organisation so it was difficult to work with team mates, but we improved our workflow during this project.

We think about continuing this project during winter vacation because we are disappointed of our result. We would like to implement more island and more mechanics so we will wait your remarks on the actual project to know which part we should focus on.

# Sources

To achieve this project we used some resources find on the Internet. They are referenced here.

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