



Game
Programming
Laboratory

SandPerSand

"Survival of the Fittest"

TEASER

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1

Formal Project Proposal

1.1 Game Description

1.1.1 Overview

We are developing a 2D, round-based, local multiplayer, semi-cooperative platformer race game. The main goal of the game is to navigate a maze-like decrepit tower structure and escape the rapidly rising mountain of quicksand piling up at the below. The game is round-based where the rounds are fast-paced bursts of cooperation, betrayal, and action. A player wins after a culmination of rounds by obtaining the highest score via escapes and collectibles overall.

A player who is too slow to climb or stands on the rising sand for a time, gets stuck in it and is engulfed. That player loses the round and joins the game again at the start of the next round.

The players are engaged in a race to the top as escaping first is the main objective of each round and gives the player the bonus of first-choice in an in-between-round item shop. While there are items to collect during the level, these have relatively minor effects/power ups/buffs compared to those which are found in the round-shop.

Each item can be used both cooperatively and/or adversarially. For example, with a “chain-fling” item, a player can prevent another player from reaching the top by pulling them down, or help another player by flinging them up.

Each level has a number of small built-in challenges which require one or more players to complete. They are simple to understand and quick to complete, and have a boon for completing them (e.g., items or currency). The idea being that completing a challenge requires cooperation but can also lead to betrayal by players. For example, one challenge might require a group of players to stand on a specified platform for the platform to activate and quickly move upwards. But if one player jumps off the platform during its ascent, the platform breaks, leaving those

who chose not to jump off to fall and recover.

1.1.2 Background Story

We currently have a few possible directions for the storyline. We plan for it to inspire the aesthetic and lore of the game (i.e., be less explicit). Which one we choose will largely depend on the finer details of the gameplay.

Mixed

This is the fantastic shopping trip you have long been dreaming of. However, your spaceship is crashed when you're entering the earth. All your hard-earned money flew away from the broken window. And, instead of going to a big city, your spaceship landed in the middle of nowhere in a desert. You picked up the only dollar that happened to fall beside you, and you're about to cry.

[Right at this moment, you heard some sound, it's from two archaeologists passing by, they're heading to an underground ruin. From their conversation, you know there is full of treasure! One of the archaeologists is always taking notes and talking to himself, the other one is apparently drunk. You quickly peel off the coat of the drunken archaeologist, and you stack up to fake a tall human. The self-talking archaeologist did not notice at all. Following him, you reached to the bottom of the ruin.] *can be simplified

During the trip, you stopped to stare at the face of a mummy/statuette, they don't look completely lifeless, do they? Finally, you triggered the trap. The archaeologist dies there. Sands are gushing out from all directions. Now, all you want to do is to grab every single treasure in your sight and head to the ground.

Wait, what is that? Shops! It turns out there are shops run by the mummies, they live there, and they don't give a shit about the cracking architectures, after all, they set those traps themselves and had fun watching stupid humans triggering and trying to run away from them. They sell powerful items for entertaining purposes(for a more exciting escaping show). But it is the first time they meet you kind of escapers that are so enthusiastic about shopping itself, so they also prepared some non-functional items for you. You as a top shopaholic, would not stand that your buddy reaches to the mummy's shop before you do and rap your first chance of picking the items, and you would feel more energetic after a great shopping haul(affect speed/luck for lottery ...etc)!

Grave Robbers

The players play as a band of grave robbers, plundering a series of burial towers in the desert. Whenever they enter a tower, it starts sinking into the sand and they have to scramble to the top to get out while grabbing as much treasure on their way. The grave robbers are fiercely competitive and not exactly loyal and work together only when they stand to benefit themselves

and will gladly throw each other under the bus if they think it will help them get their hands on more gold.

A shaman appears to be following them around from tower to tower, selling the robbers magical items to help them brave the traps in the towers as well as betray their companions. The shaman seems uninterested in gold and only accepts strange gems that can be found in the towers and seem worthless to the robbers.

Desert Shopaholics

The spaceship drops you, alien shopaholics, here in the earth's desert where golds and gems are hidden deep in the sand. More importantly, there are many shops! However don't forget that shopping is forbidden in your planet and you have been targeted by the shopping police. They already located you in the tunnel and decided to cause you some trouble. (*Or simply: However, the tunnel is not that firm and because of your brutal exploring, it starts to falling apart.) Sands are gushing out from all direction. Time is limited, all you want to do is to grab each penny in your sight and head to the shops one by one before your life is threaten. Besides, You wouldn't stand that your buddy reach to the shop before you do, because you know you only want the BEST and the RAREST earth goods.

Mummy Escape

The players are mummies awoken by an archaeological activity. When they open their eyes, they see stupid human have triggered the curse mechanism, and the tomb is falling apart. While they're escaping for a second chance at life, they mustn't forget to grab the treasures. According to some prophesy only one of you can be back to the ground.

1.1.3 Design Decisions

The game is designed to be played as a group of 2-6 players using gamepad controllers as the input method.

The core mechanic of our game is the rising sand-mountain which acts as the main antagonistic force of the game, swallowing players as they fall into it. This forces the players to keep moving upwards and makes trying to loot the entire tower impossible, thereby putting pressure on the players when making decisions. The sand is falling from the top of the tower, flowing along platforms and (maybe) interacting with the player.

To add to this, players will have access to items which enable player interaction. It is up to the players to form alliances or rivalries, the items will help you do either.

The main fun-factor of our game is the unpredictability of each round. the forming and breaking of alliances will keep the players on the edge of their seats as they scramble to reach the top. While the platforming action is the main appeal, the game also provides abundant opportunities for planning. "Do I just rush past these coins and get ahead, or spend time collecting then for

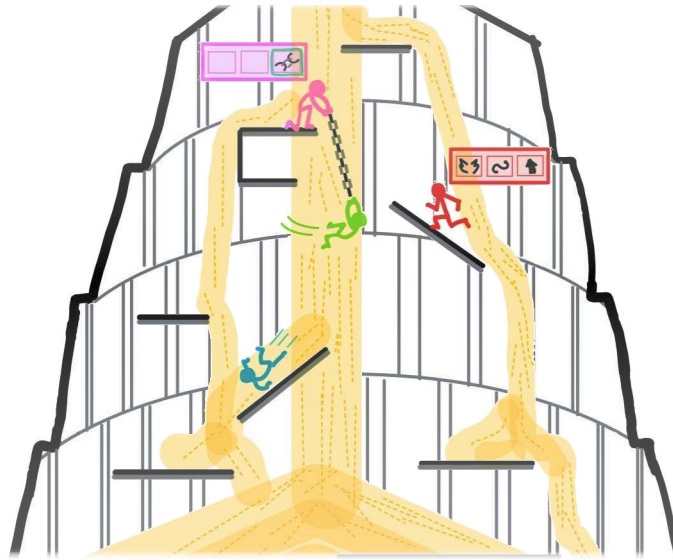


Figure 1.1: Concept of four players racing to the top with one falling due to sand, and others using an item cooperatively.

a better item which will help me later in the game?” Of course, other players can and will put and end to your plans which adds depth to the concept.

The game will have 2D sprite graphics inspired by architectural styles.

1.2 "Big Idea" Bullseye

The bullseye of our game is the social aspect we are trying to achieve. The game will give tools for the player to cooperate and play against one another while ultimately only allowing one winner. Therefore we are expecting alliances of varying durations to form during the game only to be broken at the latest by the end of the game.

The technical components facilitating this will be mini challenges strewn throughout the levels which require multiple players to overcome, but provide ample opportunities for betrayal, as well as the collection of small items and power ups and the input-control design.

1.3 Technical Achievement

We plan on the technical achievement of our game to be one of the following.

- Dynamic Sand Simulation. Sand is flowing down the level and interacting with players.
- A power-up which is particularly challenging to implement, like a rope connecting two players with a diverse range of physics-based applications.
- Procedural/Infinite Level generation

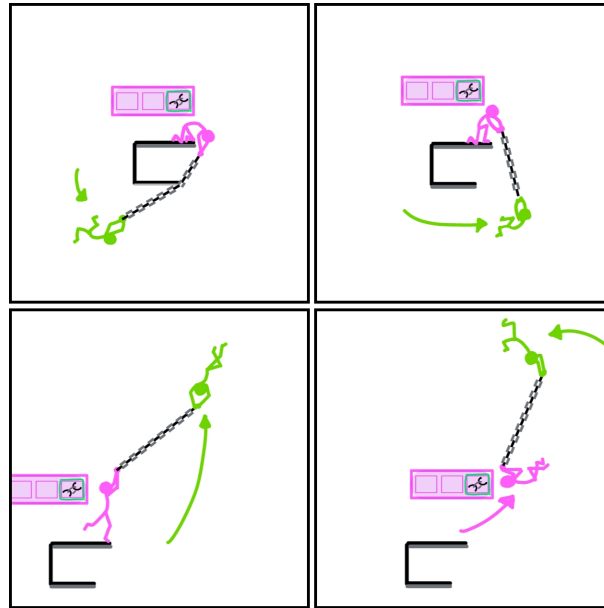


Figure 1.2: Concept of two players using an item cooperatively.

1.4 Development Schedule

1.4.1 Layered Task Breakdown

The following list presents the different targets that our team aims to achieve, and gives a short description of what each of them contains. We are still in the process of breaking some of these down into concrete work packets.

Functional Minimum

The functional minimum is a single-player platforming experience. It includes at least one level where the player jumps from platform to platform. The controls and the collision detection need to be implemented.

Low Target

The low target is a local multiplayer game, which uses gamepads. The game is expected to be played by a group of friends at a party, so the rounds will be kept up to at most 4-5 minutes long.

The aim of the players is to race to the top of the level, while sand is rising from the bottom. Touching the sand kills the players. The first player to reach the top wins the round.

Unlike the functional minimum, the players will be animated. This will improve the visual aesthetic of the game and make it more appealing.

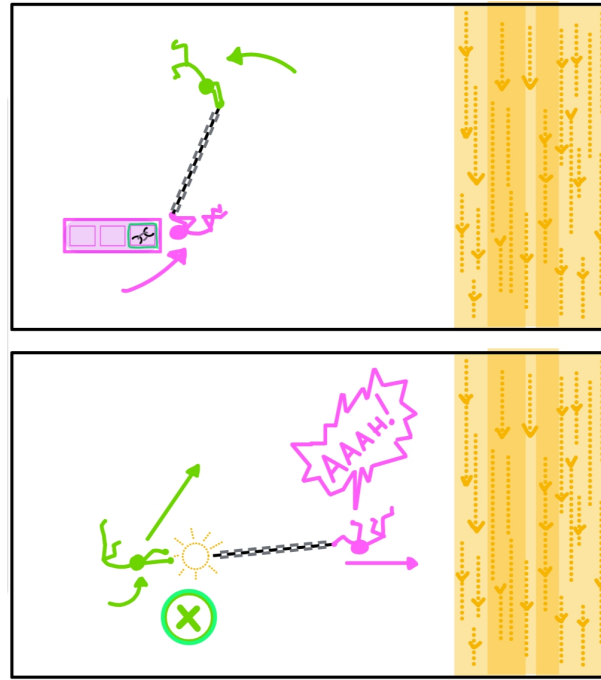


Figure 1.3: Concept of a player using an item adversarially. One player releases the chain to fling the other into a downward sand stream.

Desired Target

In addition to winning the round, the desired target will include conditions to win the game overall. This can be the conclusion of the overarching story of the game, with the winner being clearly shown and congratulated for their achievement by a win screen.

The game will involve buying of items between rounds. Those items will be bought by players with money that will be collected during the level and at the end of each round based on the order in which they finish. Those items can be used to more easily win subsequent rounds, such as speed boosts, power boosts and so on.

The game will additionally have small challenges in the rounds. Those challenges would involve a simple puzzle that may require the collaboration of more than one player. Those challenges will not be mandatory to complete the round, but will give the player additional coins or items.

High Target

The high target will further include breakable sand platforms, which will break after a given set of seconds upon standing on them.

Each round will begin with a starting challenge, that needs to be completed by all players in collaboration before the sand starts rising and the timed part of the game commences.

Additionally, a ranking for the players and statistics for each round will be shown in the end.

The shop will further include additional items to buy.

Extras

Additional rubber banding for the weakest players, so that they continue playing and having fun.

Additionally, sand will be falling from the top to the bottom throughout the levels, which will interact with the player and slow them down or kill them.

A player can trap another player via the cage item. The player can stay close to the cage they have dropped in order to make it last longer.

A binding mechanic which allows players to attach to each other and help with the completion of the levels. The players can choose to detach themselves from each other after a given period of time has passed.

Mini boss fights inside the rounds, in which the players are forced to collaborate in order to succeed.

Items can hit the players while they race to the top, which slows them down or kill them.

1.4.2 Task List

1.4.3 Timeline

- 12.03.2022
 1. Report chapter 1 - Project proposal (Final formal version)
6 people - All
- 19.03.2022
 1. Report chapter 2 - Prototype
4 People - Todor, Yuchen, Clemens and David
 2. Game Engine
2 People - Jasper and Rik
- 26.03.2022
 1. Game release 1 - First playable demo (Minimum Target)
 2. One level
2 People - Yuchen, Clemens
 3. Controls
2 Person - David, Todor
 4. Improving the Game Engine
2 People - Jasper, Rik

1 Formal Project Proposal

- 02.04.2022
 1. Sand
 - 3 People - Jasper, Todor, David
 2. Local Multiplayer
 - 3 People - Yuchen, Rik, Clemens
- 09.04.2022
 1. Sand
 - 3 People - Jasper, Todor, David
 2. Winning Condition
 - 3 People - Rik, Yuchen, Clemens
- 16.04.2022
 1. Sound
 - 1 Person - David
 2. GUI
 - 2 People - Yuchen, Clemens
 3. Optimising everything and QA testing
 - 3 People - Todor, Jasper, Rik
- 23.04.2022
 1. Report chapter 3 - Interim report.
 - 3 People - David, Clemens, Yuchen
 2. Game release 2 - Interim demos (Low Target)
 - 3 People - Jasper, Todor, Rik
- 30.04.2022
 1. Items on the level to be picked up (Coins)
 - 2 Person - Todor, David
 2. Simple Shop
 - 2 People - Rik, Yuchen
 3. Challenge
 - 2 People - Jasper, Clemens
- 07.05.2022
 1. Report chapter 4 - Alpha release.

3 People - David, Clemens, Yuchen

2. Game release 3 - Alpha demo (Desired Target)

3 People - Jasper, Todor, Rik

- 14.05.2022

1. Report chapter 5 - Playtest.

3 People - David, Clemens, Yuchen

2. Game release 4 - Final version for Gobo

3 People - Jasper, Todor, Rik

- 21.05.2022

1. Feature Freeze / Improvements / QA

- 28.05.2022

1. Game release 5 - Version for final presentation (Things from High Target)

- 04.06.2022

1. Report chapter 6 - Conclusion.

2 People - David, ???

2. Demo Video

4 People - Rik, Todor, ???, ???

1.5 Assessment

2

Prototype

2.1 Prototype Setup

2.2 Playing Experience

2.3 Findings and Conclusion

3

Interim Report

3.1 Progress

3.2 Challenges

3.3 Future Work

4

Alpha Release

4.1 Progress

4.2 Challenges

4.3 Future Work

5

Playtest

5.1 Playtesting Session

5.2 Questions and Comments

5.3 Design Revisions

6

Conclusion

6.1 Final Results

6.2 Experience

6.3 Personal Impressions