SandPerSand

"Survival of the Fittest"

Jasper – **Producer**, Programmer

David – **Co-Producer** (organisatorial), Programmer, Gameplay Designer, Visual Artist, Content Creation

Rik – Programmer, Gameplay Designer

Todor – Programmer, Level Designer

Yuchen – Programmer, Level Designer, Visual Artist, Content Creation

Clemens – Programmer, Level Designer, Visual Artist, Content Creation

# Contents

2

Prototype

2.1 Prototype Setup

We designed a playable paper prototype shown in Figure 2.1 and Figure 2.2.

Our design involves two types of roles:

1. Players: Play the game. Try to win by reaching the top exit first.

2. Game Master: Controls the automated game mechanics (such as the rising sand from the bottom) and makes sure the players abide by its rules. Is responsible for movement and movement checking.

Figure 2.1: *In the middle of a heated race.*
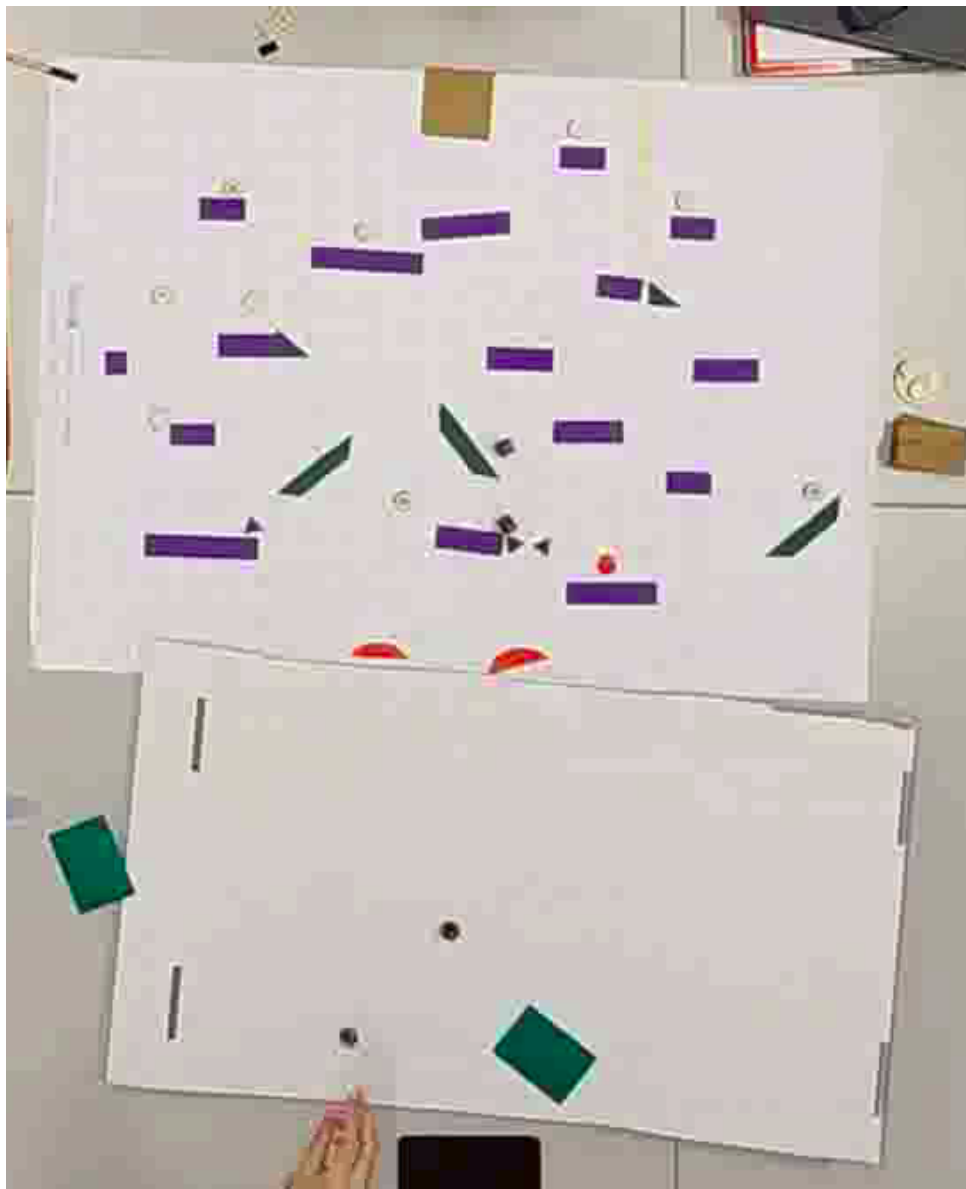
Figure 2.2: *Paper Prototype of the Game.*
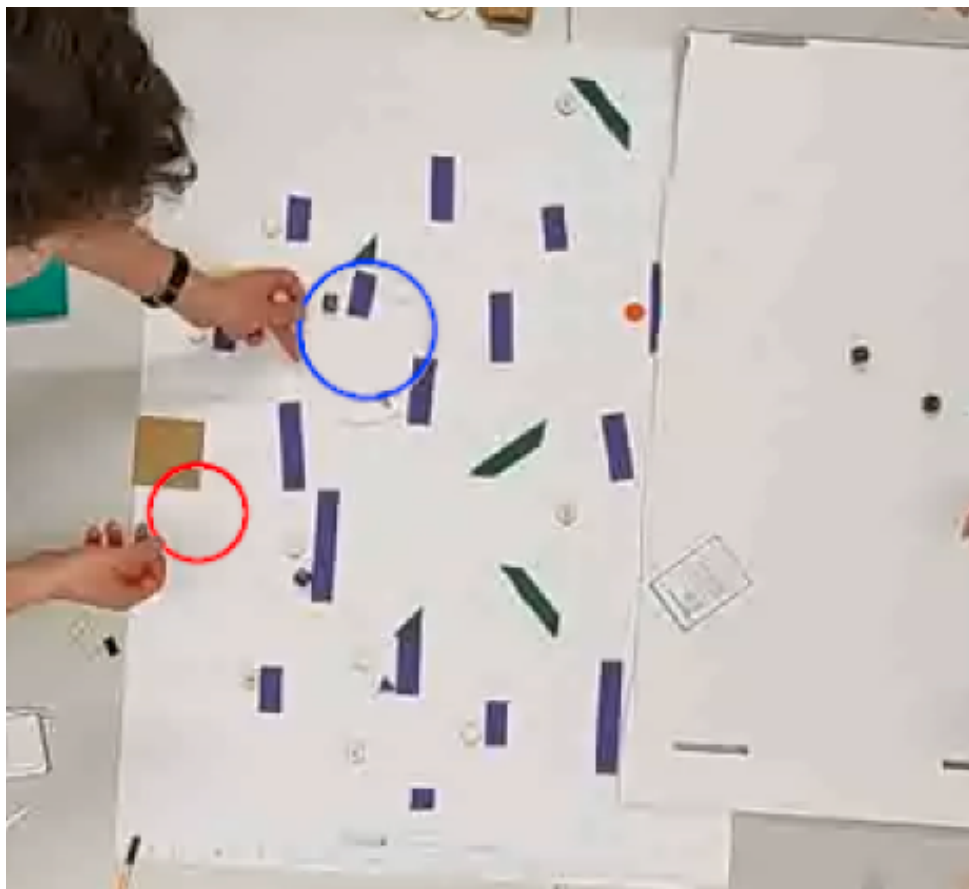
Figure 2.3: *Game Master determining if a move is legal*

Position Swap!
Major Item

Price: 4 coins
Target: Random (Roll d4)
Time: After Movement
Duration: Instant

Use this item to swap position with another player.

Roll a four sided die to determine which player you swap positions with. Each player's number is determined clockwise, starting with you. You have the number 1. If you roll a 1, the item has no effect.

Spring Rope
Major Item

Price: 2 coins
Target: Other
Time: Before Movement
Duration: At least 2 rounds

Use this item to spring yourself in front of another player via a rope.

You move to a position collinear with the targeted player, using the *larger circle*.

The targeted played does the same in the opposite direction using the *smaller circle.*

Global Slow-down
Major Item

Price: 2 coins
Target: All (Others)
Time: Before Movement
Duration: 2 Turns

Use this item to slow down all other players.

The targeted players use the *smaller circle* for their movement.

All *hard jumps* become easier for targeted players. Targeted players have two *fall recoveries*.

Slow-down
Minor Item

Price: --
Target: Self/Other
Time: Before Movement
Duration: 2 Turns

Use this item to slow down one other player or yourself.

The targeted player uses the *smaller circle* for their movement.

All *hard jumps* become easier for targeted players. Targeted players have two *fall recoveries*.

Figure 2.4: *Major Item Cards (collectible in the level). Note: "Slow-down" is falsely included in this figure.*

Speed-Up
Minor Item

Price: --
Target: Self/Other
Time: After Movement
Duration: 2 Turns

Use this item to speeds-up one other player or yourself.

The targeted player uses the *larger circle* for their movement.

All *easy jumps* become *harder* for targeted player.

Freeze!
Minor Item

Price: --
Target: Other
Time: Before Movement
Duration: 1 Turn

Use this item to freeze one other player in place.

The targeted player cannot change their position, but it affected by other effects.

Double Jump
Minor Item

Price: --
Target: Self/Other
Time: Before Movement
Duration: 3 turns

Item enables you or another player to do a single double jump for the Duration.

The targeted player can either use the *larger circle* for one jump or use a jump duing *fall recovery.*

Figure 2.5: *Major Item Cards (Dealt to players who finished a level).*

The players move on a grid plane. The game is round-based where in each round the players can each can make a move and/or use an item they have. The raising sand from the bottom is modelled by a big piece of cardboard which is moved up the grid level 4 squares up every 2 rounds. If a player touches the rising sand, she dies.

During each round, the players can move/jump to a new position.

There are two types of jump:

- Easy Jump: A jump that does not go through falling sand and which finishes on a platform wider than 2 grid cells.

- Hard Jump: A jump that goes through falling sand or which finishes on a platform narrower than 3 squares. Or which uses the jump curve too steeply (up to GM's digression), e.g., jumping onto a platform from directly below it.

The players begin at the bottom of the level. Each player is represented by a differently coloured tetrahedron die (d4).

The players roll their die (d4) to decide their placement at the start of the level.

Before every round, the players have 5 seconds to choose where they want to move/jump. The GM counts the time down and calls for the movements to be made. The players state their intended destination of movement by placing a six-sided die (d6) on their desired location. They can also state if they intend on using an item card. The list of item cards is shown in Figures 2.4 and 2.5.

After the players finish making their choice, the Game Master checks if all of the movements could be performed. This is done by picking up a circle maker, and checking if origin and destination are on the marker's circumference, and the arc of the circle do not go through any platforms. If this is the case, then the jump is possible. If the player performs a hard jump, he must choose "even" or "odd" and then roll a die (d12). If they correctly call the result, they successfully complete the jump. If they fail, however, then the player misses the platform and starts falling. For every platform they pass within two squares of their fall while falling, they have a chance to call for a *fall recovery*. In order for them to recover, them must correctly call "odd" or "even" on another die roll. If they call correctly, then they make a successful recovery and lands on the closest cell on platform. Otherwise, they continue falling to the nearest solid surface below them. If the player lands on a sloped platform with flowing sand, they continue on the path of the sand until a solid, level surface is reached.

The game concludes when at least two of the players reach the top (represented by a brown square at the top of the level). To make the final jump the player must roll a 4 or lower on a d12 (1/3 chance), if the roll is successful, the player exits the level.

After the level concludes, the players which have finished are dealt a single *major item card* each to keep for the next round.

2.2 Playing Experience

We played the game for more than two hours and found it to be quite fun. We found that it is very dependent on the rolling of dice, and therefore on luck. This is a problem that will be less of an issue with the final game, as there this "luck" aspect will be replaced by the players' skill and ability to do good jumps. The game went smoothly and the movement checking did not take up as long of a time to break the game flow.

2.3 Findings and Conclusion

- We confirmed that this unbounded cooperation-competition gameplay works well and is fun.

- Most of our designed items work well and do add uncertainties to the race, making the game more unpredictable.

- Current cooperative challenges didn't reach high usage in the prototype, but were used nonetheless. We plan to refine on this part in the game and to include more of a variety of challenges.

- We came to the conclusion that having a normal rope item with which to tie two players is unnecessary. This is because it gives the players no clear advantage. This is the reason why the rope was modified to a "Spring Rope". Instead of tying two players together for a given set of rounds, the "Spring Rope" can be used by a player to quickly move in a given direction, similar to long jump. This makes the mechanics simpler and the item is more usable.