

Loose Juice

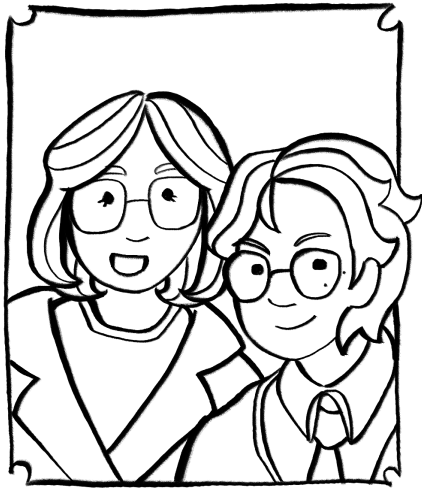
Game Design Document



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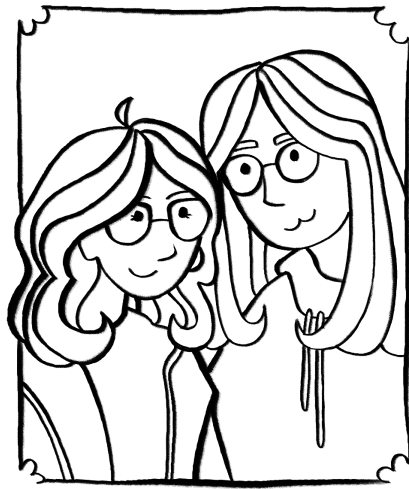


Abertay
University



Becca & Sean

Artists



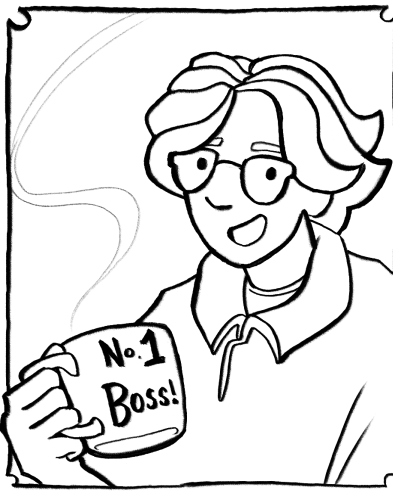
Ava & Tom

Programmers



Andrew

Level Design



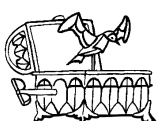
Ellis

Production



Paulo

Audio



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Overview

About This Document

This document details the design of Loose Juice, for Abertay University's third-year module, DES315: Professional Project. Loose Juice is designed for the PC platform.

This document is intended to be delivered and read alongside separate documentation detailing the specifics of technical, visual and audio implementation, techniques, and research.

Gameplay Overview

Work cooperatively to pilot a vehicle with your friend, as you climb to the top of the temple to deliver flasks of juice. Find flasks along the way and try not to smash them as you climb higher.

The vehicle players pilot together creates unique shared movement, and the physics of the juice spilling is challenging and chaotic.

Players alternate between piloting the vehicle and hopping off the vehicle to pull levers and solve puzzles before hopping back on to progress.

Genre

The game is an online multiplayer, platformer and driving game with casual platforming puzzles.

Inspirations

- PEAK (Team PEAK, 2025) - Vertical progress, shared goal
- Journey (That Game Company, 2012) - atmosphere, environmental storytelling, vertical level progression
- Chained Together (Anegar Games, 2024) - Joined together movement system
- RV There Yet? (Nuggets Entertainment, 2025) - Piloting a vehicle together, asynchronous roles
- Overcooked 2 (Ghost Town Games Ltd, 2018) - Chaotic co-op gameplay and miscommunication leading to failure
- Easy Delivery Co. (Sam C, 2025) - Physics cargo movement

Target Demographic

We looked at three genres to determine our target audience:

- Upwards Platformers
- Rage Games
- Co-Op Social Games

Upwards platformers give the player a clear spatial goal and make it easy to create a difficulty escalation. Rage games create high-stakes failure opportunities, which creates tension between the players.

Co-op social games encourage communication, humour and give players a shared sense of failure and success. This combination makes a co-operative experience where the mechanics and social aspects reinforce each other.

The market for these games is clearly shown to be profitable by the large boost in their recent popularity, such as: PEAK (Team PEAK, 2025), R.E.P.O. (semiwork 2025) and It Takes Two (Hazelight Studios, 2021)

The audience for these games would be expecting a new experience that is both fun and challenging to play with friends. This will be created through the shared movement, tension from having to coordinate,

failure through miscommunication and humour from the emergent physics in the game.

The audience is broken down into three groups:

- Casual Co-op Players - Players who enjoy accessible but challenging multiplayer games with friends
- Content Creators / Streamers - These players look for chaotic moments from the emergent gameplay that they can clip for their audience.
- Low-commitment PC Players - These players prefer short experiences and a low price point on accessible platforms like Steam.

Core Gameplay

Player Experience

Movement Tension

Tension and triumph created through shared movement. The fun comes from crossing obstacles without spilling the cargo or falling off platforms together. The tension builds as obstacles become harder and is released creating moments of relief when they successfully coordinate their movement and overcome an obstacle and make it to safer areas.

Key terms:

Player Actions: Co-op Drive / Climb / Run / Scout Ahead

Player Skills: Co-ordinate / Balance / Communicate

Player Emotion: Tension / Vertigo / Chaos / Relief / Triumph

Design Pillars

Co-operation Creating Tension

Players should constantly be considering their impact on the other player with their actions. They should often feel tension in small movements of the vehicle. Every small movement should feel impactful. Poor communication leads to last-minute saves or fails. Players should feel like they are barely holding it together.

Exploration Without Punishment

Players are encouraged to experiment and explore without harsh setbacks. They should be rewarded with finding secrets that are off the path.



Precision Co-op Platforming

Obstacles present challenging scenarios that require precision and coordination from both players to overcome.

Game Components

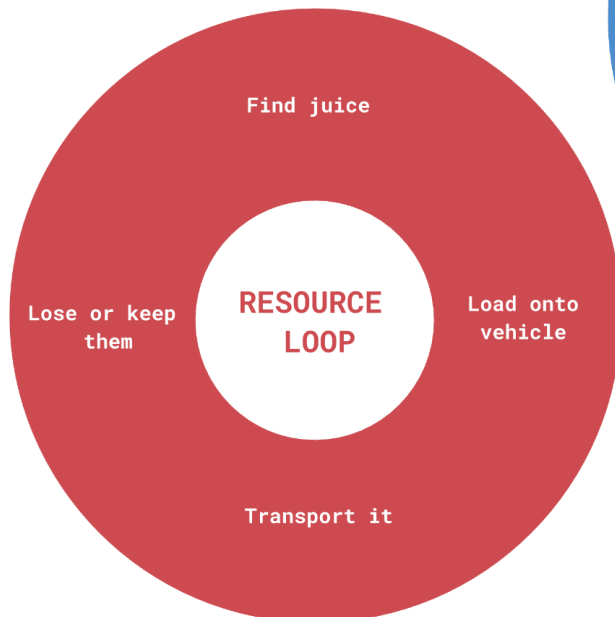
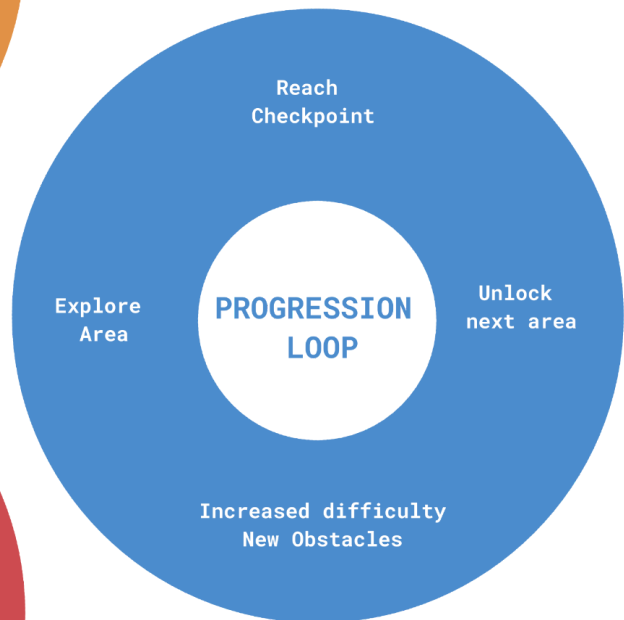
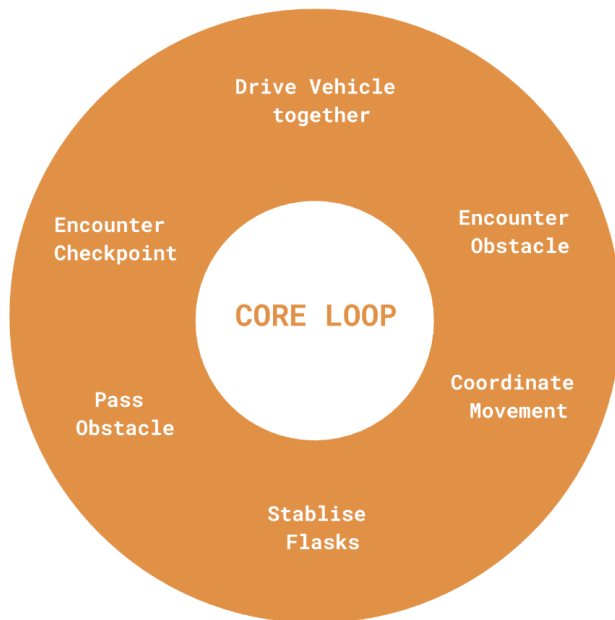
Rules

- The player can move freely on foot and mount/dismount the vehicle
- Each player controls one wheel of the vehicle when mounted
- Off-vehicle players can run, jump and glide
- Players must transport fragile juice collectibles without breaking them
- Checkpoints along the way provide places to respawn on failure
- The goal is to reach the top of the temple

Mechanics Overview

- Two-Player Vehicle Controller - Each player independently controls one wheel of the vehicle, allowing movement through communication from the other player
- Fragile Cargo - Juice collectibles can be picked up and placed atop the vehicle and can fall off and break if the vehicle is driven chaotically.
- Moving Obstacles - Obstacles on the path that rotate or move, that can push the player around and cause the vehicle to become unstable
- Checkpoints - Allow respawning to previous marked points to maintain some of the progress player has made
- Pressure Plates - Players can activate/deactivate obstacles and doors by standing on or placing objects on them

Game Loops



Core Loop:

1. Drive vehicle together
2. Encounter Obstacle
3. Communicate / Coordinate movement
4. Stabilise Cargo
5. Pass Obstacle
6. Encounter checkpoint

Secondary Loop (Resource Tension):

1. Find Juice
2. Load onto vehicle
3. Risk transporting it
4. Lose or keep it

Meta Loop (Progression)

1. Explore Area
2. Reach checkpoint
3. Unlock next area
4. Increased difficulty and new obstacles



Movement

Overview

Players alternate between using on-vehicle and off-vehicle movement. The gameplay while on the vehicle is about keeping your juice from falling out while progressing up obstacles. While the gameplay off-vehicle is focused on scouting ahead, finding secrets and activating pressure plates so the other player on the vehicle can progress.

Vehicle Movement

The vehicle has two wheels. Each player can hop atop a wheel to control it. In between the two wheels the juice carrier sits.

- 2-Wheels each controlled by different player
- Movement is created through rotating the wheels while atop it
- If only one player is mounted the vehicle moves slowly while if two are the vehicle moves quickly
- A juice carrier, with an opening collectibles can fall out, holds the juice collectibles as they rattle about inside it

Off-Vehicle Character Movement

Breaks up the vehicle gameplay with individual platforming challenges. Encourages co-operative problem solving where one player assists while the other drives.

Movement Abilities

- Run - Free movement around the level
- Jump - Standard jump to get over gaps and obstacles
- Glide - Holding jump allows for extended airtime letting you get over wider gaps and reduces your fall speed.
- Carry - Can pickup and carry juice collectibles



Juice Collectibles

Overview

These collectibles act as fragile cargo that players must transport to the top of the level. They create tension through being unstable atop the vehicle and break if they fall and hit the ground. Players must continuously manage their movement to avoid losing them as they can fall out of the vehicle and smash from too much movement from obstacles colliding into the vehicle

Resting State

The juice is placed in the level and has not been picked up yet and can't break.

Carry State

The player has picked up the juice and is now carrying it back to the vehicle.

Physics State

The juice now acts as a physics object and can fall out of the vehicle and smash on impact with the ground causing them to lose a collectible. Because it is a physics object it reacts to vehicle tilt, sudden acceleration or braking and vehicle collisions with obstacles. This means the player can intuitively impact it through their movement.

Input

Can be picked up by the player by pressing "E" while looking at them to carry them. The player can then place them in their vehicle when they reach it by pressing "E".

Interactables

Checkpoints

Activated by reaching them along the journey. Checkpoints can only be activated by the vehicle. They also unlock the next part of the level. This forces the player to take the vehicle along with them and gates the level, as we found players would sometimes abandon the vehicle in playtesting.

Both players holding "R" together returns the players to last checkpoint

Pressure Plates

Pressure Plates - Player must stand on it or place something on it to activate or deactivate any obstacle

Doors

Opened by stepping on nearby pressure plates or by activating checkpoints

Lifts

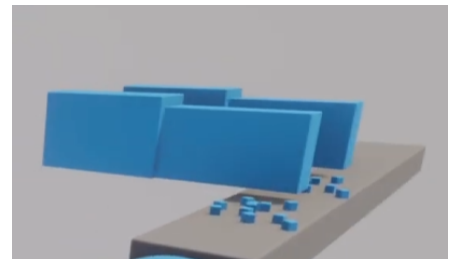
Carry the players between two points, often vertical sections, activated by off-vehicle platforming and pressure plates

Obstacles

Obstacles are designed to disrupt the players movement and test the players timing, balance and coordination with other players. All obstacles can be connected to pressure plates. This allows for interesting puzzles to be built from the components.

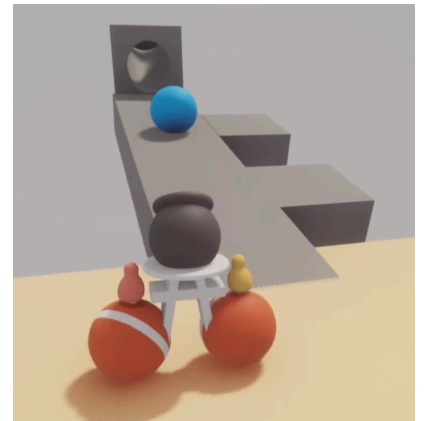
Slammers

Ram into player sideways and knock them off ledges



Boulder

Tumbles down hill and knocks player off ledges



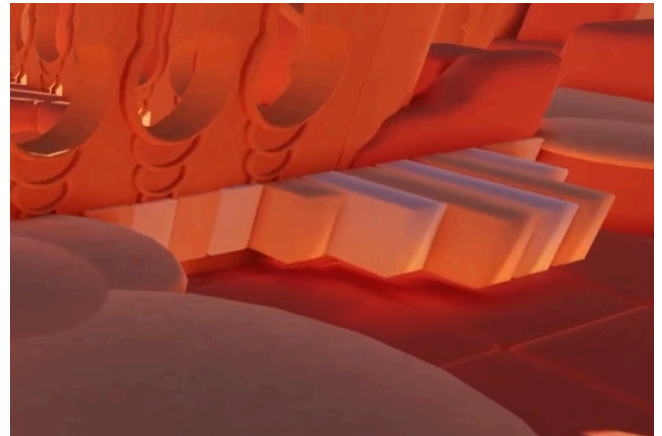
Rotators

Spins players atop platform in circles



Zipper

Slammers that form a repeating wave where player must time things carefully to cross atop them



Risers

Wide blocks that rise up and down at different times to tip the vehicle over



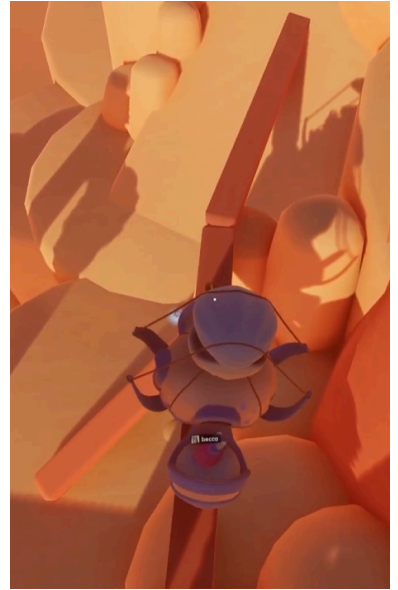
Catapultors

Push players quickly up hills and test their timing and create a rush of speed and instability



Narrow Beam

Players must cross carefully or fall off



Double Beam

Players must go on separate differing beam pathways to cross



Level Design

The Lost Temple

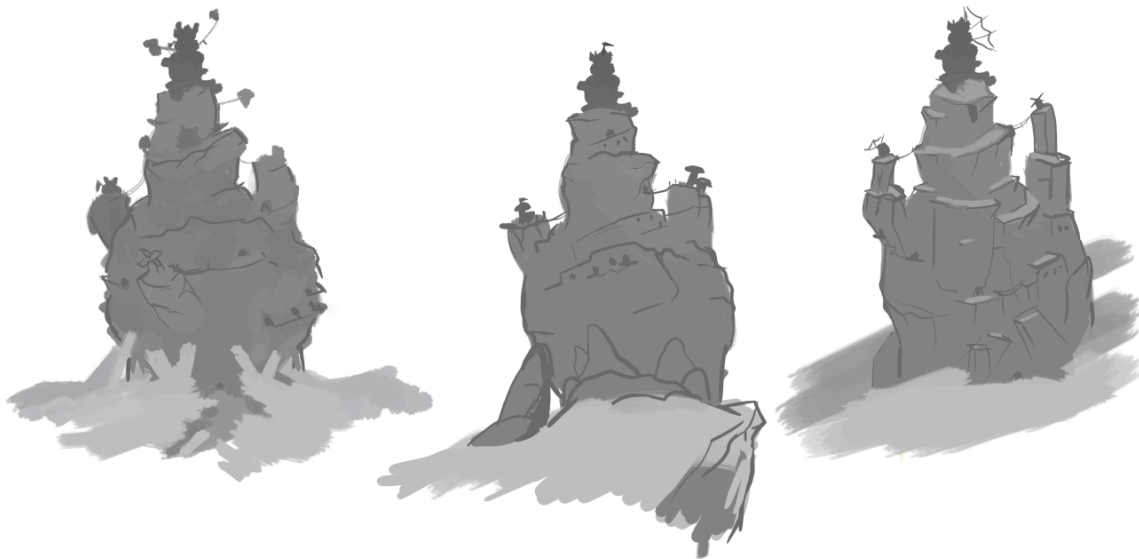
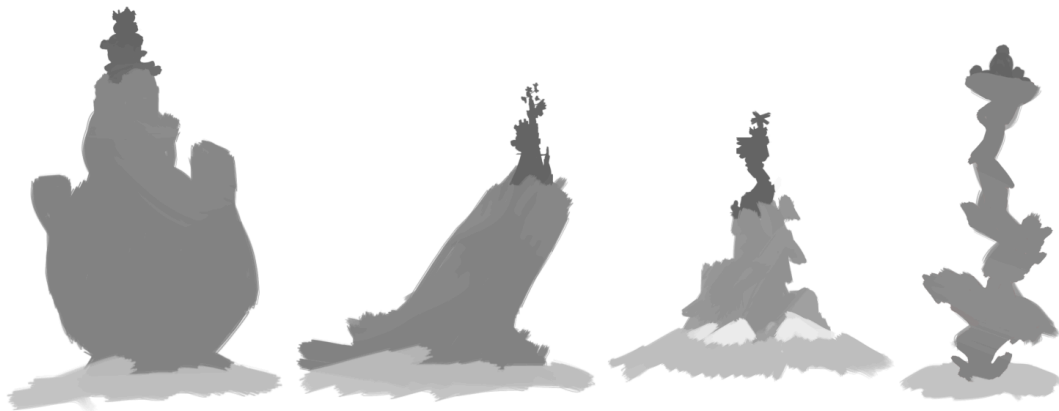


Concept

The main design of the level is focused on climbing a mountain filled with temple structures and machinery. Set in an ancient civilisation inspired by Moroccan architecture and sandy environments. There will be collectibles hidden around the level and parts of the level that allow exploration and have split pathways that provide harder challenges with a collectible as reward for taking the harder route. The demo level area is split into three areas.

Level Shape

A readable silhouette creates a more memorable level, it also allows us to explore verticality and ways we can escalate difficulty through making the tower get narrower at the top. The bottom right image became the target goal. It creates three distinct areas. The desert, the cliffside and the temple atop.



Areas

The Cliffside

Level starts on a cliffside which creates a sense of vertigo through height and balance beams. A strong sightline and restriction of view sets up the player's goal, then the player is presented with balance beam obstacles that progressively get more difficult to onboard the player and get them used to vehicle movement and working together.

The Cave

A drop leads into the cave to create a transition zone from the onboarding cliff section. The cave section teaches players how to use pressure plates and creates a closed in feeling to contrast against the massive temple in the next area.

The Temple

Feels ancient, massive and full of grandeur. Filled with ancient machinery, obstacles and deadly traps. The temple tests your reflexes and ability to think before you act.

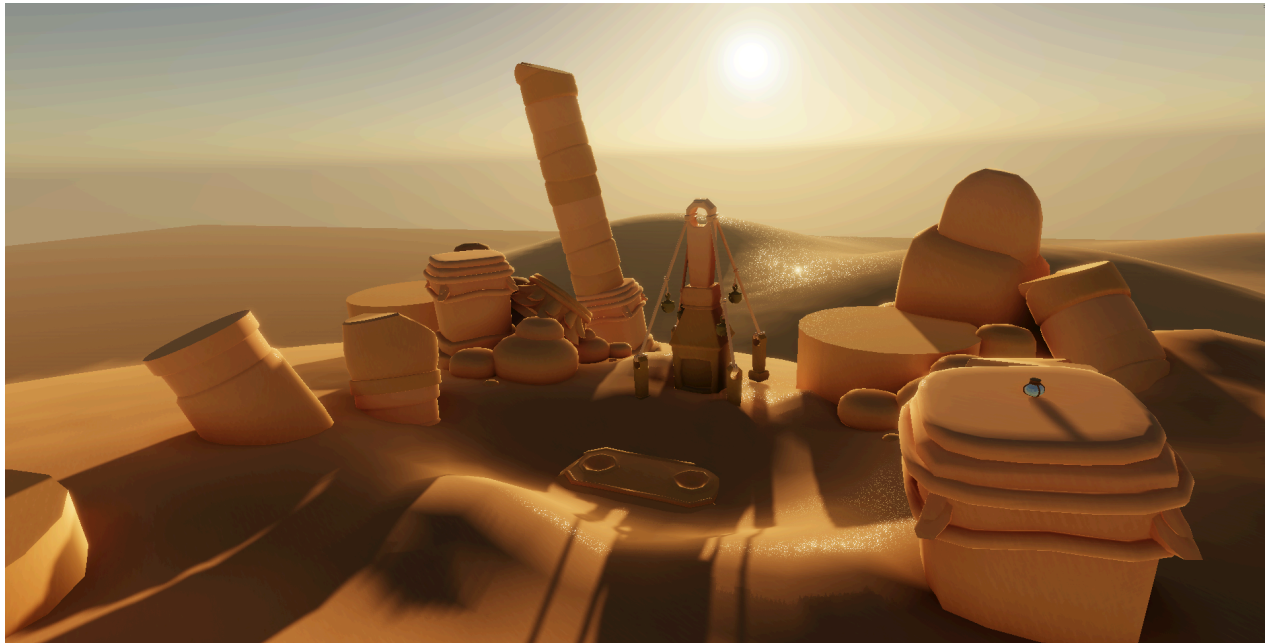
Traps

Because pressure plates can activate any obstacle they are used to create various traps throughout the level. Unless the player pays close attention to their surroundings they risk activating a trap instead of something useful to their progression.

- Boulder Trap - opening the door drops a boulder on the player which they must run away from. Creates a sense of panic and a scramble to get away in time which is a fun memorable experience to share.
- Dropper Platform - player stands on platform and presses a button which drops them down a slope. Teaches players to think before they act or affect both players.
- Pillar Trap - Thin floor pillar stabs out of the ground if a player steps on it. Teaches players to observe their world carefully before moving forwards.
- Column Collapse - Trigger event that drops pillar player is currently on, creates a boost of adrenaline and sets up the player's next target before taking it away from them.
- Crushing Walls - Large walls close in on you and crush you when you enter the area so you must make it through in time. Tests your cooperation under time pressure.

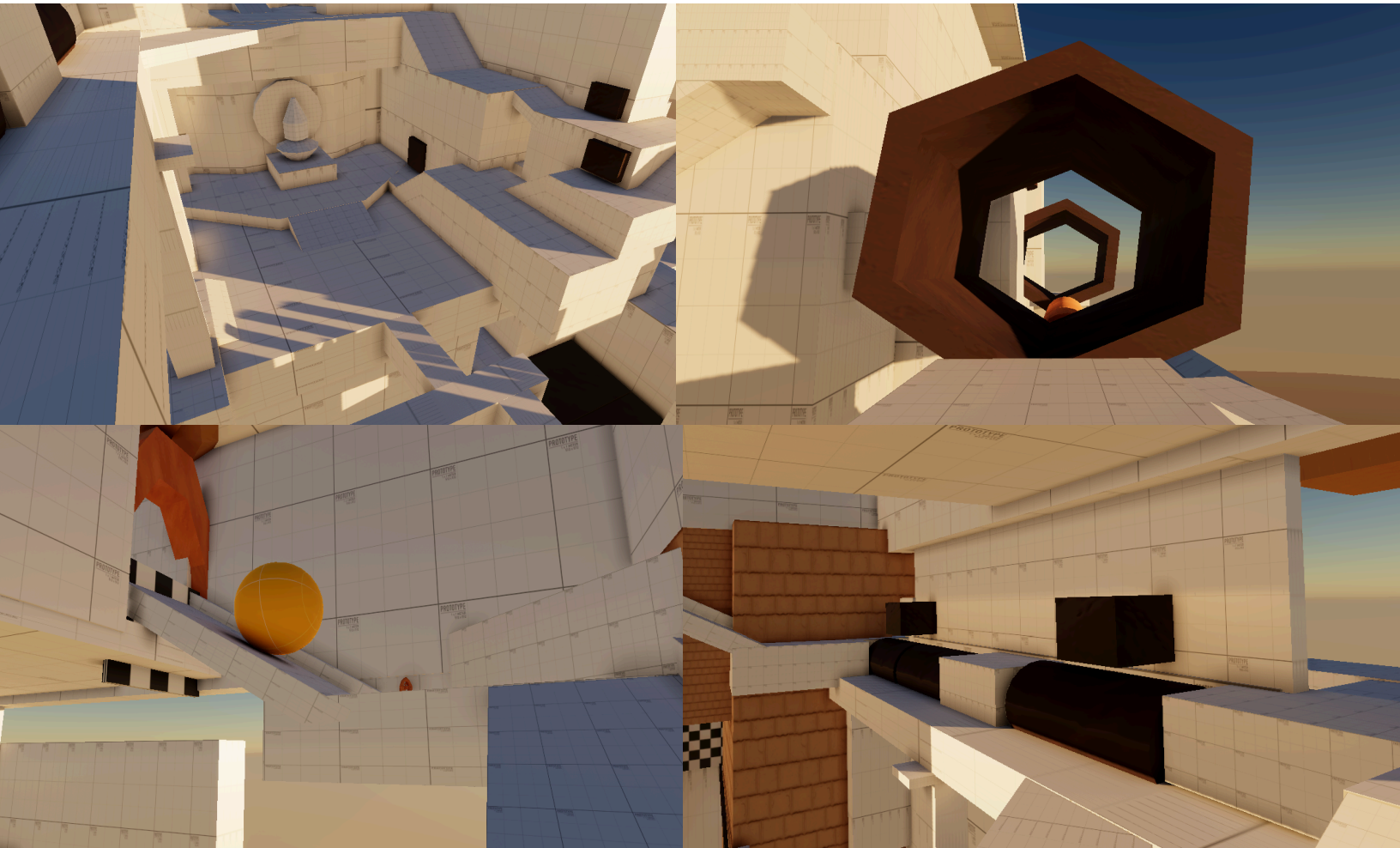
Sanctuaries

Each checkpoint in the level has a decorated area that acts as a rest point for the players. Enclosure is used to create a refuge space (small protected space) against a prospect space (large open space) creating a feeling of safety, this is mixed with using circular architecture as people find circular objects less threatening. Juice is placed around checkpoints to encourage them to stay longer and explore the area on foot.



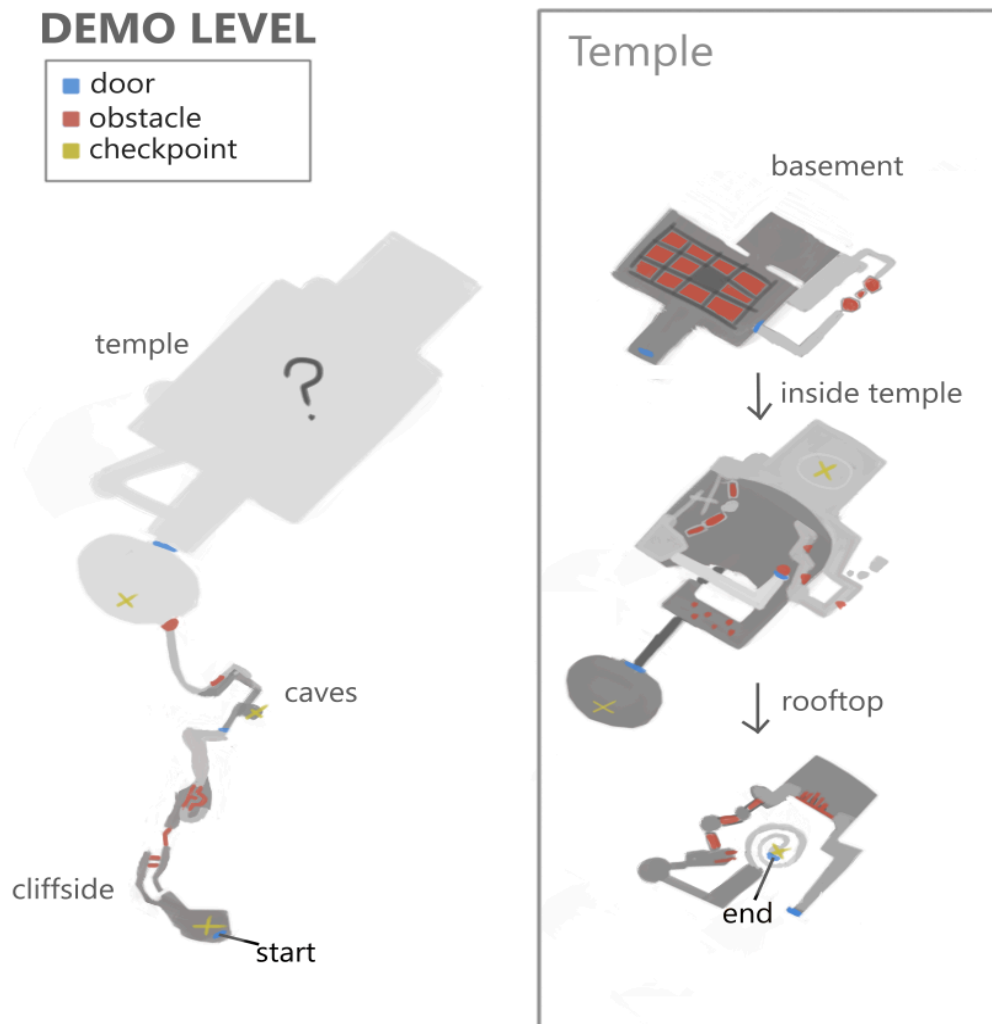
Early Temple Blockout

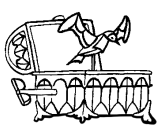
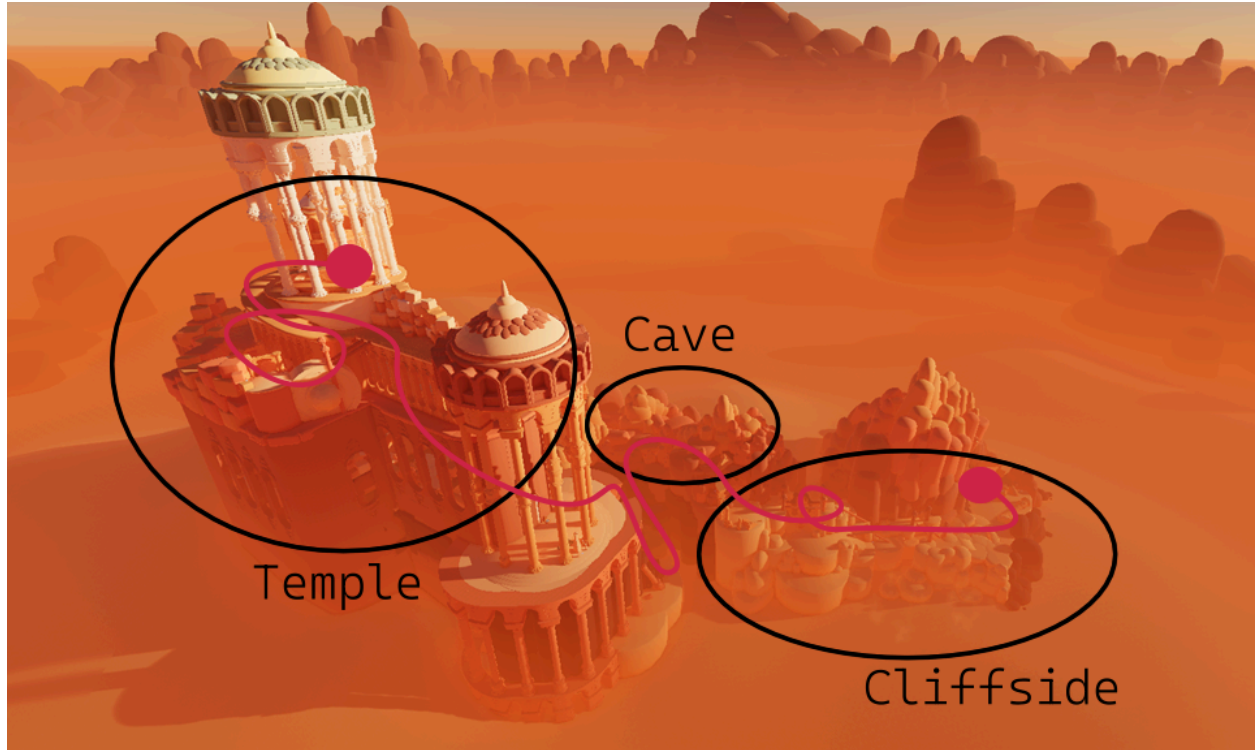
Layout of the temple. Showing the implemented obstacles and traps, focusing on readable geometry to create a clear path through the level.



Floor Plan

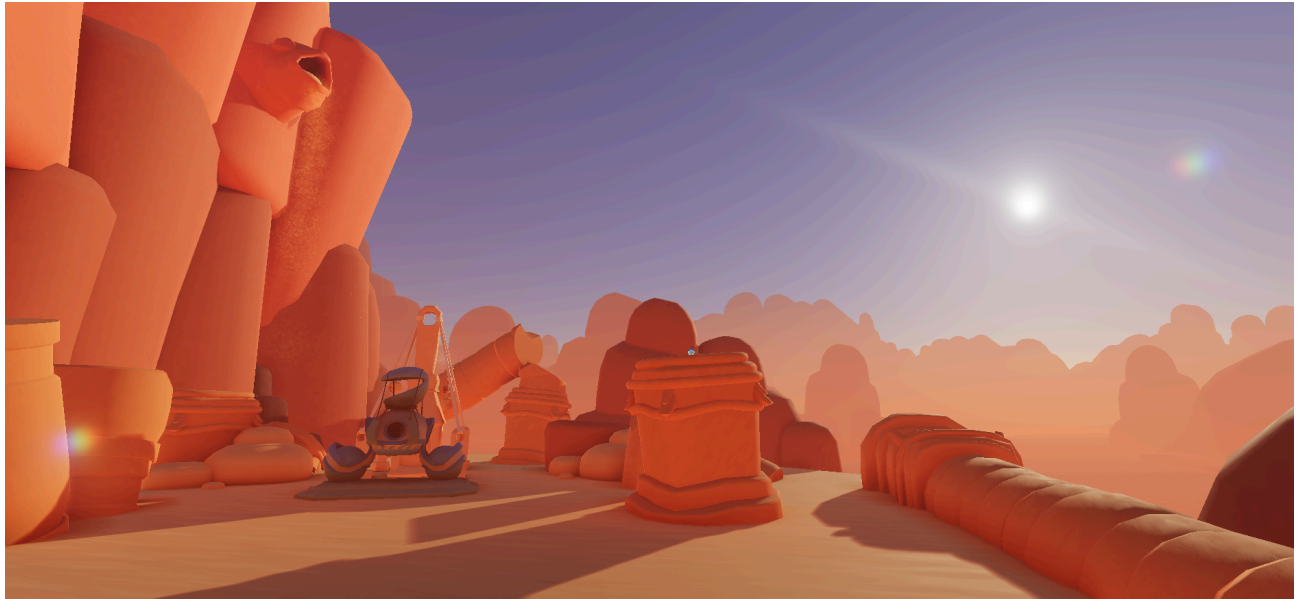
The level starts at the cliffside below the temple at a sanctuary, allowing players to familiarise themselves with movement and picking up juice flasks. They are set up with a sightline of the temple establishing the goal. A narrow area with easy beam obstacles onboards the player. Then the player is plunged into a tight cave which temporarily removes the goal. A lift carries them up to the temple entrance. The temple is wide and open and split into three sections. They must make their way up through the layers of the temple, with the obstacles getting more difficult as they climb. Finally the rooftop presents them with a vista view as a reward for finishing.





In-Engine Renders

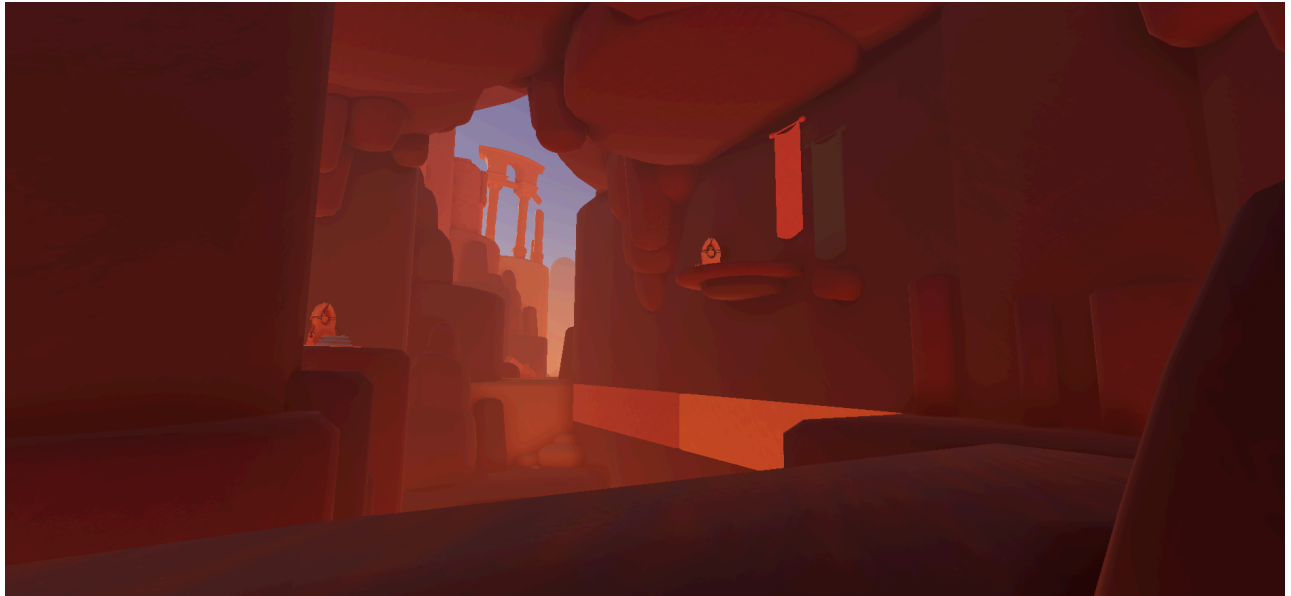
Starting Area



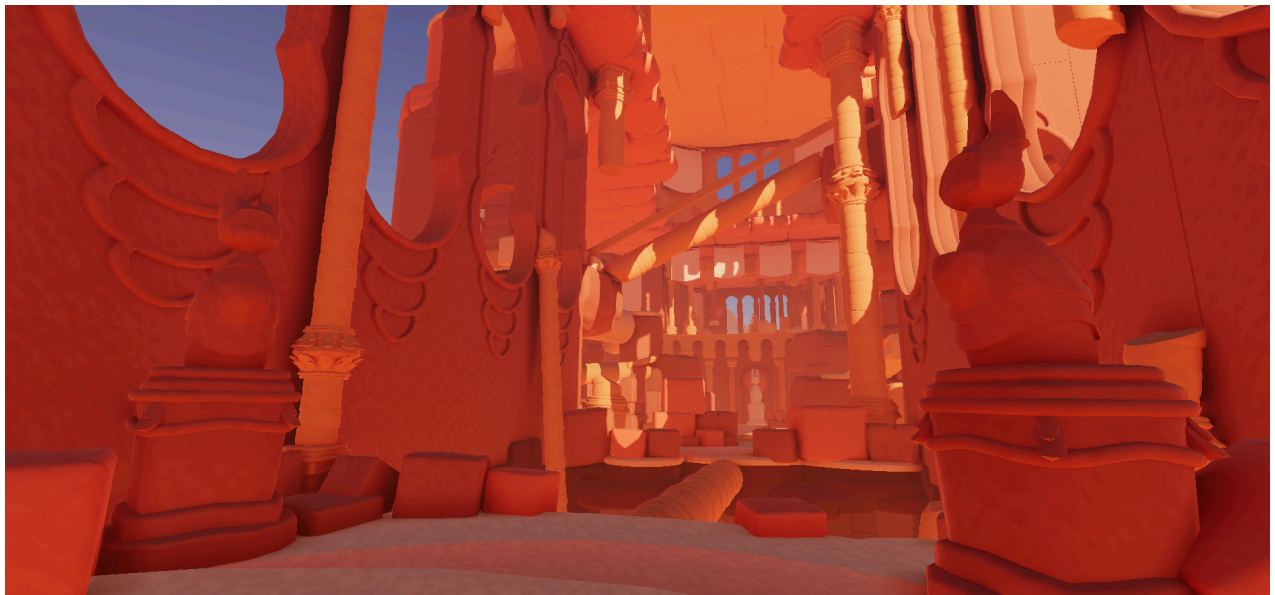
Cave Entrance



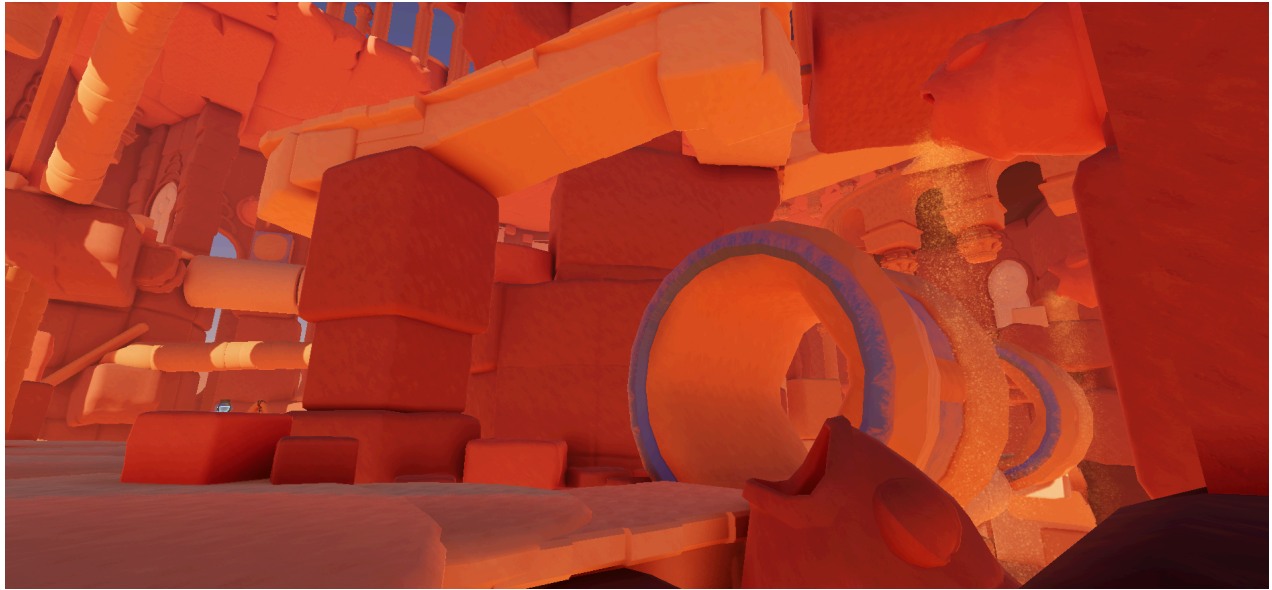
Cave Puzzle



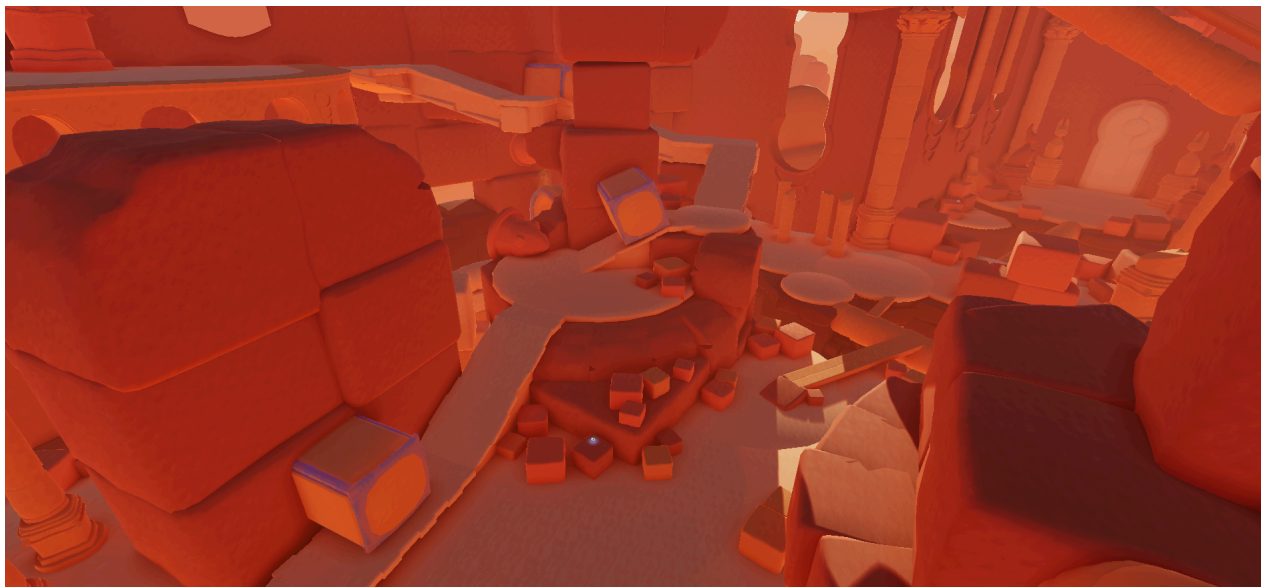
Temple Entrance



Temple Spinners



Temple Main Area



Temple Rooftop



Level Ending



Narrative

Overview

In a vast desert, an ancient civilization of cats have cared for their sacred flower over many generations.

Their beloved flower is kept safe at the summit of an ancient temple, protected from the harsh desert environment.

Pairs of cats are chosen to undergo the rite of passage. Using their caravan to transport flasks, collecting them throughout their journey, they must carefully bring them to the top and offer up the juice to their treasured flower.

Gameplay Considerations

The narrative of Loose Juice is deliberately light, intended to provide context for where the players are and why they care about the juice flasks.

The introductory story establishes the history of the world, building up the significance of the juice and the flower, to the players.

The story teaches the player that the caravan acts as their main mode of transportation, with the flasks that they must collect and store on the caravan. As they navigate through the challenging terrain, the cats will need to learn to work together to keep their fragile flasks unbroken until the end.

Thematic Pillars

The thematic pillars help to establish context within the world and the gameplay loop.

Discovery

More of the level is uncovered as the players progress, such as the scale of the temple, the flasks being hidden around the temple, and the obstacles that stand in their way. Players are encouraged to discover their sense of wonder and exploration within the carefully crafted landscape.

Perseverance

The players are on a dangerous pilgrimage to water their sacred flower, where their patience is challenged. The path before them is hostile, and they must work together to push through increasingly difficult trials.

Transportation

The players use a caravan, acting as their home away from home and carrier of the flasks. They must figure out how to navigate the archaic temple ruins with the caravan and traverse up to the temple's summit, where the "grand flower" resides.

Introductory Story



For generations, litters of cats have worshipped the grand flower of the desert, the last of its kind.



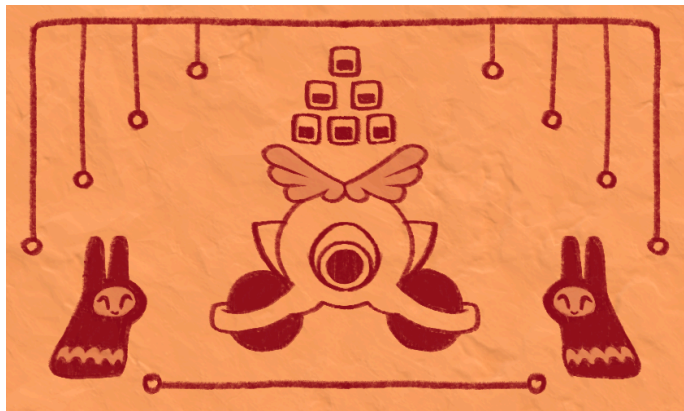
The ancient tribe elders feared the flower could not withstand the shifting tides of the desert.



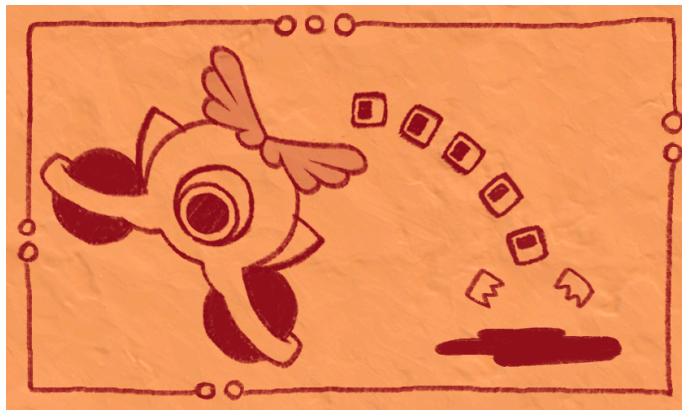
To protect the flower, the elders locked it away at the summit of their sacred temple, hiding caches of flasks nearby.



When the time is right, cats in the tribe undergo a rite of passage: a symbolic pilgrimage to water their beloved flower.



Sent with a caravan passed down through generations, two brave explorers embark on their perilous journey to the top.



In a tragic turn, their caravan is thrown off course! With their flasks destroyed, they have no choice but to hunt for more on the final stretch of their journey.



Recovering by a landmark,
they prepare to
re-embark...

Controls

We provide support for both controller and mouse and keyboard

Controller

There is no text chat functionality on the controller.

Left Stick - For standard player movement

Right Stick - For rotating the camera

R3 - To switch between first/third-person view

South - To jump (hold to glide)

North - To vote to respawn at the last activated checkpoint

West - To interact (pick up or put down)

Start - To adjust your settings, navigate menus, return to your caravan, or skip splash screens and cutscenes

D-Pad Up and Down - For adjusting the camera distance in third-person

D-Pad Left - To ping a location, based on where your crosshair is

D-Pad Right - To use push-to-talk, if enabled



Keyboard and Mouse

WASD Keys - For standard player movement

Spacebar Key - To jump (hold to glide)

Mouse - For rotating the camera

Scroll Wheel - For adjusting the camera distance in third-person

Middle-mouse Button or P Key - To ping a location, based on where your crosshair is

E Key - To interact (pick up or put down)

F Key - To switch between first/third-person view
(The first-person FOV can be adjusted in the settings menu)

R Key (Hold) - To vote to respawn at the last activated checkpoint

V Key (Hold) - To use push-to-talk, if enabled

Enter Key or T Key - To use text chat

ESC Key - To adjust your settings, navigate menus, return to your caravan, or skip splash screens and cutscenes



Design Questions Log

Q. How do we make spilling juice feel predictable and give the players enough time to react to it?

- A. A ball physics sim might be more understandable than angle based sim. Since it's hard to understand exactly what angle means you failed but easy to understand why a bump made a ball fly out of the container.
- B. Reconsidered the ball physics. Decided on using multiple flask containers. This allows us to keep the ball like physics without having to run a water simulation.

Q. Is it okay to let one player move the vehicle or does that create a broken strategy where it's best for one player to move?

- A. From playtesting it is okay. Because it's very difficult to not fall with only one player on obstacles.

Q. Do we really need to hop off the vehicle? It feels like we chose it without a design reason for it, does it add anything to core experience?

- A. We can use it to improve the collaboration between the players. We can also make puzzles and collectibles around the level only the off vehicle character can grab.

Q. Does the player have a clear goal? We removed the tower setup.

- A. In a later blockout the tower was set up again using sightlines to create a clear goal and the narrative also explains the goal.

Q. How are fail states handled?

- A. Reset needs to have a hold "R" to reset not tap.

Q. Able to get stuck if one player falls off a ledge.

- A. The player needs to be able to go up ledges slightly better after one player falls off.

Q. Players had problems understanding controls



- A. Need to add tutorial for game and in game UI
- Q. Player felt the weight balance was unrealistic
 - A. Not really a gameplay problem (more immersion problem that needs values balanced)
- Q. Off-Vehicle players can go all way to top
 - A. Checkpoints should act as gates activated only by vehicle
- Q. Can players make it over small bumps
 - B. Programmers have made the wheel physics let them move over bumps easily

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