

Farah Kamleh
 Julian Mackenzie
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CS 426 - Design Document - Death Lives, Life Dies

Introduction

Game Title: Death Lives, Life Dies

Team Members: Farah Kamleh, Julian Mackenzie, Sebastian Ho

Game Idea: A two-player game for the CAVE2 in which both players share all 88 screens but do not see the same image. This is achieved by taking advantage of the stereoscopic shader and giving Player #1, Death, a 2D-R configuration and Player #2, Life, a 2D-L configuration.

Formal Elements: [PowerPoint Slides](#)

Code Repository: <https://github.com/FarahKamleh/Death-Lives-Life-Dies.git>

Bug Tracker: GitHub Issues

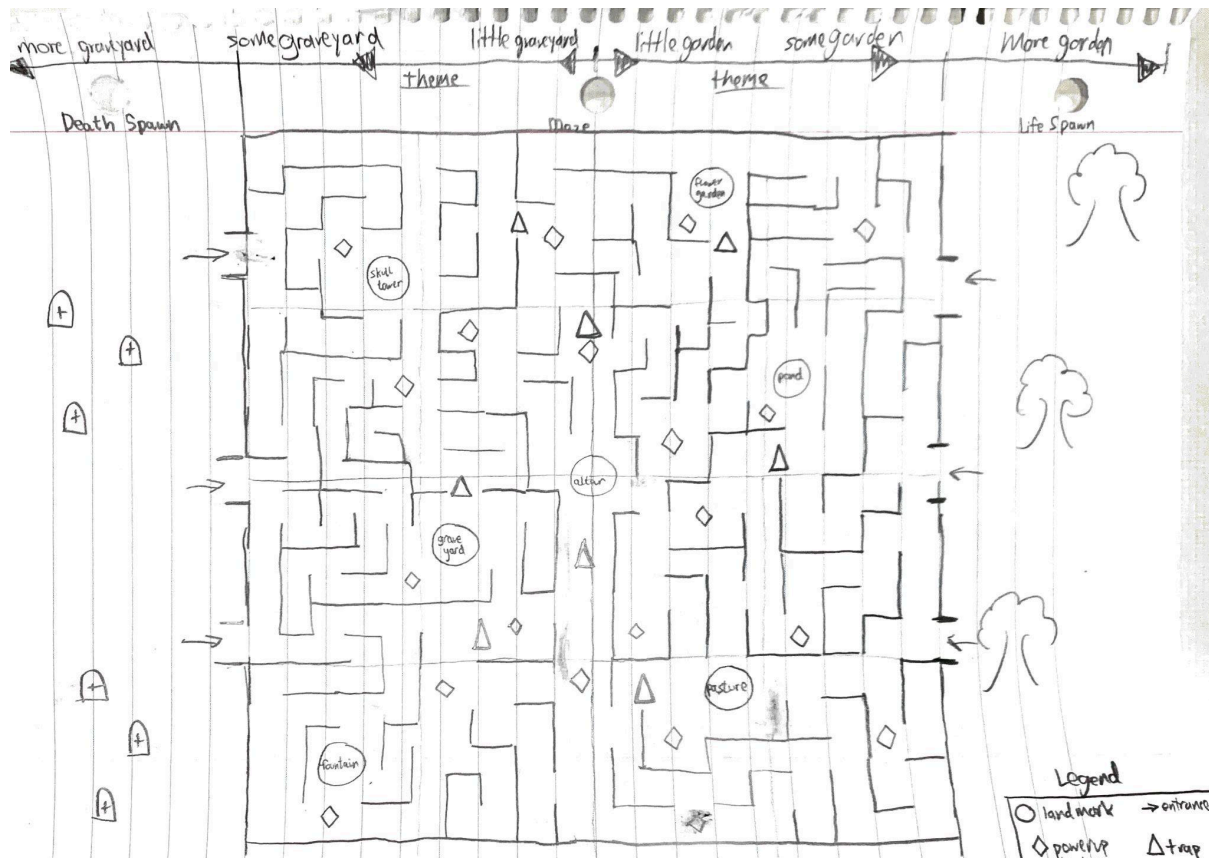
Schedule/Calendar

03/11/24 - 03/17/24	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Task: Add <yourname>OKR.txt to the GitHub repository which is a bulleted list of all the prototype demo-related tasks to be accomplished by that team member including dates and time estimates: <ul style="list-style-type: none"> ○ <u>Team Member(s):</u> Farah, Julian, Sebastian ○ <u>Due Date:</u> Monday, March 11th, 11:59 PM <input checked="" type="checkbox"/> Task: Submit at least one bug ticket to the bug tracker containing a description of the first feature to be implemented by that team member. They will be the owner. <ul style="list-style-type: none"> ○ <u>Team Member(s):</u> Farah, Julian, Sebastian ○ <u>Due Date:</u> Monday, March 11th, 11:59 PM <input checked="" type="checkbox"/> Task: Post a 2-minute video demonstration of your software prototype running in the CAVE2. <ul style="list-style-type: none"> ○ <u>Team Member(s):</u> Farah, Julian, Sebastian ○ <u>Due Date:</u> Wednesday, March 13th 11:59 PM <input checked="" type="checkbox"/> Task: Level Design that includes a paper drawn sketch, a bullet point list showcasing how level design principles have been followed, a list about level components: <ul style="list-style-type: none"> ○ <u>Team Member(s):</u> Farah, Julian, Sebastian ○ <u>Due Date:</u> Wednesday, March 13th, 12:40 PM
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	<input checked="" type="checkbox"/> Task: Update the design document and provide access. <ul style="list-style-type: none"> <input type="checkbox"/> Team Member(s): Farah, Julian, Sebastian <input type="checkbox"/> Due Date: Wednesday, March 13th, 11:59 PM
03/18/24 - 03/24/24	<input checked="" type="checkbox"/> Task: Get innovation working in the CAVE2. <ul style="list-style-type: none"> <input type="checkbox"/> Team Member(s): Farah <input type="checkbox"/> Due Date: Saturday, March 23rd, 11:59 PM
03/25/24 - 03/31/24	<input checked="" type="checkbox"/> Implement AI and Mecanim for Assignment #6. <ul style="list-style-type: none"> <input type="checkbox"/> Team Member(s): Farah, Julian, Sebastian <input type="checkbox"/> Due Date: Wednesday, April 3rd, 10:00 AM <input checked="" type="checkbox"/> Add the maze to the environment. <ul style="list-style-type: none"> <input type="checkbox"/> Team Member(s): Julian <input type="checkbox"/> Due Date: March 31st, 11:59 PM
04/01/24 - 04/07/24	<input checked="" type="checkbox"/> Present Assignment #6 in class and add alpha, sound, and UI to the project for Assignment #7 and testing (Alpha Release). <ul style="list-style-type: none"> <input type="checkbox"/> Team Member(s): Farah, Julian, Sebastian <input type="checkbox"/> Due Date: April 9th, 11:59 PM <input checked="" type="checkbox"/> Fix CAVE2 syne and perspective issues. <ul style="list-style-type: none"> <input type="checkbox"/> Team Member(s): Farah <input type="checkbox"/> Due Date: April 5th, 11:59 PM
04/08/24 - 04/14/24	<input checked="" type="checkbox"/> Work with shaders and prepare for the Beta release (Assignment #8) taking feedback into account. <ul style="list-style-type: none"> <input type="checkbox"/> Team Member(s): Farah, Julian, Sebastian <input type="checkbox"/> Due Date: April 16th, 11:59 PM <input checked="" type="checkbox"/> Gather data from Alpha user testing. <ul style="list-style-type: none"> <input type="checkbox"/> Team Member(s): Farah, Julian, Sebastian <input type="checkbox"/> Due Date: April 10th, 12:45 PM
04/15/24 - 04/21/24	<input checked="" type="checkbox"/> Prepare for the public demo (Assignment #9). Complete design document and evaluate personal work.
04/22/24 - 04/28/24	<input checked="" type="checkbox"/> Present the public demo in class.

Level Design

Deliverable #1 - Drawn Paper Sketch:



Landmarks (circle) – unique locations with associated global sound effects
 Powerup locations (diamond) – potential locations for a powerup to spawn
 Traps (triangle) – pieces of the environment which can be interacted with to enable their properties (knock down a log, grow a thorn bush, etc.)

Deliverable #2 - Level Design Principles:

- Floorplan:
 - Death begins in a graveyard at the opposing side of Life who begins at a garden.
 - Between them is a maze where the newborn resides.
 - Using landmarks to know where the player is/was.
 - Using sound to help the players find landmarks.
 - Intentional dead ends which corner/trap the player.
- Trap Design:
 - Players can knock over landmarks to block/stall other players.
 - Players use items to trap other players.
 - Sound is a trap as it is telling of the location of the other player.
- Items and Power-Ups:
 - Power-Up Types:
 - Raise a wall to trap the player. Use collisions to knock over.
 - Peek at the other player (transparent maze) for a short amount of time.

- Quiet sounds that reveal where you are for a short amount of time.
- Use the environment to waste the time of the player as they try to receive it.
 - Quicksand, ducking under a fallen tree.
- Challenge to receive by exploring the maze and revealing where the player is.
- Life has limited ammo; can shoot, say, five times then needs to wait five seconds before shooting again.

Deliverable #3 - Level Components List:

- Level Geometry:
 - Flat ground with maze walls made out of billboards with tree textures
 - Landmarks made out of various shapes
 - Altar
 - Pond
 - Rocks
 - Water
 - Flower Garden
 - Flower billboards
 - Pasture
 - Animals
 - Graveyard
 - Gravestones
 - Fountain
 - Evil liquid
 - Skull Tower
 - Skulls
 - Environmental traps
 - Rough terrain
 - Quicksand/Mud
 - Grass
 - Knocked over/fallen/broken trees
- Characters and Topology:
 - Life
 - Mother Nature
 - Death
 - Decay
 - Grim Reaper (?)
 - Carries a scythe
 - Newborn
 - Spirit/Soul
 - Bright light

- Sphere/Ball
- Character Animations:
 - Life
 - Walk/Running
 - Shooting
 - Ducking
 - Stunned
 - Death
 - Walk/Running
 - Ducking
 - Stunned
 - Newborn
 - Running away once damaged by Death
 - Change in color once damaged
 - Walking/Travelling animation (floaty)
- Animations for Room, Puzzle, and Artifact:
 - Falling tree once a player sets the trap
 - Animations for animals in the pasture
 - Moving water animation for pond
 - Death particles for Skull Tower/Fountain
 - Bubbles for Quicksand/Mud
 - Wind blowing on flowers
 - Rising trees and tombstones

Characters, Physics, and Level Design

Low-poly 3D models obtained from the website Sketchfab have been used for Player #1 and Player #2. Player #1, Death, is represented by a grim reaper while Player #2, Life, is a tree-like creature. The latter was imported with a rig, so Mechanim animations have been implemented. When standing still, an idle animation plays. When moving forward or backwards, a running animation is triggered.

Player #1 is a close-range fighter, wielding a scythe attached to the CAVE2 wand. Player #2, on the other hand, is a long-range fighter, using a bow that shoots glowing seeds. Both make use of physics, taking advantage of box colliders and rigidbodies. The special item does the same, raising either pine trees or tombstones from the ground to trap the opposing player.

Foggy “Rough Terrain” wanders throughout the maze. Players that step through the terrain will be slowed down, but only temporarily. This terrain targets either player at random, and the apparition loses interest after some amount of time.

For the floorplan, the starting position of Death is a graveyard while the starting position of Life is a garden. As they enter the maze in front of them, where the newborn floats about using AI to navigate, the textures shift from trees to corn and vice versa depending on where the player starts.

Innovation

In order to ensure that both players can use the full 360 degree view of the CAVE2 without peaking at the other player's screen, a stereoscopic shader has been manipulated to assign the right eye to Player #1 and the left eye to Player #2. This means that, when viewed wearing regular 3D glasses, the right lens reveals Player #1's screen and the left lens reveals Player #2's screen. As shown in the images below, each player is designated specialized 3D glasses labeled 2D-R and 2D-L. These glasses were modified by swapping lenses so that Player #1 has two right lenses and Player #2 has two left lenses. The retro-reflective markers are intentionally non-symmetrical and non-identical to ensure that the optical tracking system can recognize and differentiate the players.



In Layman's terms, there are two cameras of interest in the developmental scene: the "right eye" and the "left eye". When slightly offset from each other, they create depth which results in a 3D effect. The left eye, originally slightly offset from Player #1's right eye, is instead transported to the initial position of Player #2 and anchored to Player #2's tracked head with the proper rotation.

UI Design

Farah's Response

1. Broken Principle: Learnability

a. Before Image:



b. Description: Although, when in the CAVE2, it is clear that, for example, Player #1 can swing their arm in order to attack with their scythe, when a special item is collected, it is not communicated that the L2 button should be pressed to activate it. The same can be said for the bow and arrow of Player #2 which requires the repeated usage of the L1 button.

c. Fix: Control instructions have been added to the standard CAVE2 description canvas which informs the user how to perform all available actions, including the L2 button press to activate the collected special item.

d. After Image(s):

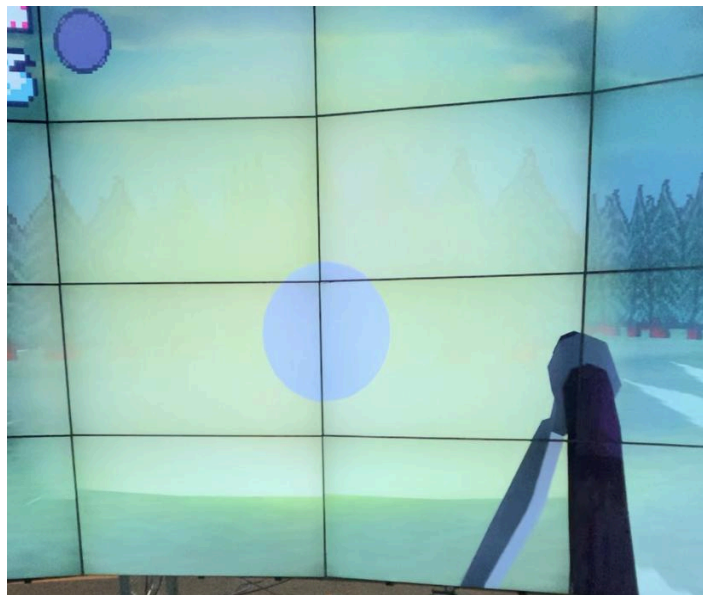


2. Broken Principle: Functionality

- a. Before Image:



- b. Description: Because the CAVE2 is an 8-node computing cluster, it is easy to generate synchronization issues. When tested in the CAVE2 after the completion of Assignment #6, the newborn, wolf, skeleton, and rough terrain models were not synchronized across the panels, resulting in multiple images/instances.
- c. Fix: For each of the game objects above, a script titled, “CAVE2 Transform Script” has been added as a component with position and rotation triggered on.
- d. After Image:



3. Broken Principle: Consistency/Clarity

- a. Before Image:



- b. Description: For Player #1, the health bars were perfectly aligned to the top center of the CAVE2. However, for Player #2, they were misaligned, meaning that the size and positions no longer followed common or good UI practice.
- c. Fix: Surprisingly, the cause was the parallax of Player #1 simultaneously affecting that of Player #2. Commenting out a single line of code resolved this issue, realigning not only the health bars for Player #2, but also all other game objects.
- d. After Image:



Julian's Response

1. Broken Principle: Learnability

a. Before Image:



b. Description: Death and Life Assistants do not indicate their behavior or interactability

c. Fix: Add a dynamic speech bubble icon which contains context for Player approach and Assistant reaction

d. After Image:



2. Broken Principle: Feedback

a. Before Image:



b. Description: Death Special Item did not display properly upon pickup

c. Fix: Add Sprite ordering rule to eliminate z-fighting

d. After Image:



3. Broken Principle: Feedback

a. Before Image:



b. Description: Player win conditions triggered no feedback to denote that someone had won and the game was over.

c. Fix: Add UI components which inform players that one has won.

d. After Image:



Sebastian's Response

1. Broken Principle: Learnability

a. Before Image:



b. Description:

The controls for the special item are only shown at the beginning of the game (and in the build from Assignment 6, there were no instructions for the controls). Players might forget some controls along the way, and there are no indicators to tell the player the controls again after reading them at the start.

c. Fix:

Add a small picture with the L2 Button underneath the special item UI component for both Life and Death's GUI components.

d. After Image:



2. Broken Principle: Learnability

a. Before Image:



b. Description:

Life uses a bow, and like the previous example for the special item, the controls for the bow are only shown at the beginning of the game. The player might forget the controls, and there aren't any features to remind the player about how to shoot the bow.

c. Fix:

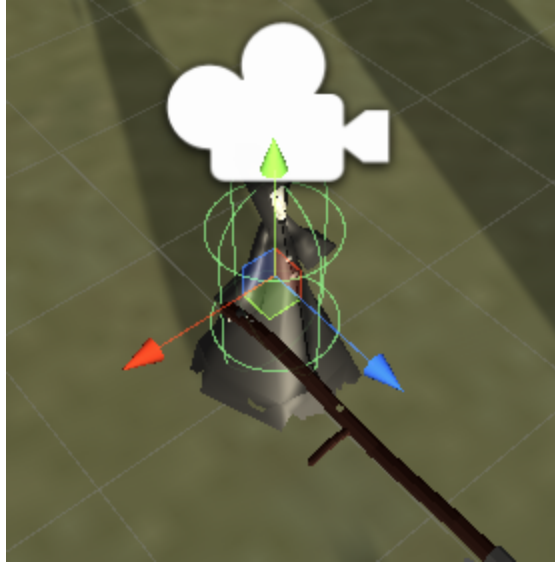
Add an icon for the bow with the L1 button showcased.

d. After Image:



3. Broken Principle:

a. Before Image:



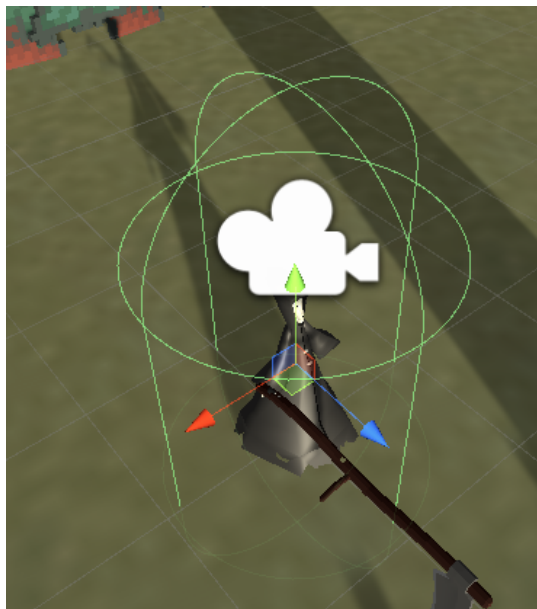
b. Description:

In the CAVE2, shooting, aiming, and hitting Death with the bow is a little difficult due to the loss of depth perception (each player gets the same lens for both eyes). This was difficult even when close up to the player.

c. Fix:

Since smaller targets are harder to click on or hit the bow with, we increased the size of Death's hitbox to make it easier for Life to land shots.

d. After Image:



Selected Sounds for Gameplay

- Death hit sound: Terraria skeleton damage sound effect

- Death needed a silly sound effect for taking damage after getting hit. This sound made the most sense so far since death has a skeleton-like grim reaper model.
- This sound was a sample acquired from Terraria
- Newborn hit sound: Terraria pixie damage sound effect
 - The newborn has a glowing point-light appearance which matches the appearance of the pixie. The newborn also floats around when it tries to escape Death, so a bright sound effect was needed to match this occasion.
 - This sound was a sample acquired from Terraria
- Tree hitting sound:
 - Small rustling sound to match Death's action of slicing through trees.
 - This sound was downloaded from Pixabay:
<https://pixabay.com/sound-effects/bushhitwav-14661/>
- Grave hitting sound:
 - Life's bullet seed is quite large, and it should sound like a baseball or hollow wooden ball hitting against the grave.
 - This sound was downloaded from Pixabay:
<https://pixabay.com/sound-effects/single-rock-hitting-wood-4-103705/>
- Tree Wall Rising:
 - A short and swift bush rustling sound effect has been chosen to match not only the leaves of the trees but also the speed at which the wall rises.
 - Source:
<https://www.fesliyanstudios.com/royalty-free-sound-effects-download/foilage-270>
- Tombstone Wall Rising:
 - Being solid, the tombstone wall rises with a rock-like sound followed by crumbling.
 - Source: <https://pixabay.com/sound-effects/search/rocks/>
- Target Proximity:
 - The intention is to alert the other player of whether Death is near them or near the newborn. What came to mind initially was the alert sound effect from Metal Gear Solid, but, going for a more haunting/intimidating sound, a short violin screech was selected.
 - Source: <https://elements.envato.com/sound-effects/horror+violin>
- Bow Release:
 - When Player #2 attacks, the resulting sound is simply the release of a bow. The ideal sound would have been a glowing bullet, but no free audio that satisfies this description could be located, so the former is the compromise.
 - Source: <https://www.epidemicsound.com/track/zaknqefrxc/>

Alpha Testing Session

Script

Welcome! Thank you for taking the time to test our game! At the beginning, we will give you a single task to perform. We ask that you think aloud throughout. If you are unable to complete the task or experience difficulty, please know that it is a reflection of our product and not of you or your skills. If you have any questions, we will unfortunately be unable to answer them for you during the testing session.

First, we ask that you place the 2D-R/2D-L glasses on your head and grab the Batman/Robin wand. Put simply without being too revealing, you are Death; your objective is to locate and eliminate the newborn.

As a reminder, please think aloud as you are playing. Start the timer.

Thank you for taking the time to test our game! Hand over a piece of candy. Do you have any feedback for us?

Timings

Tester #1:

- Death: DNF 6 minutes
- Life: DNF

Tester #2:

- Death: 4:28 minutes

Tester #3:

- Death: DNF 6 minutes

Number of Errors

Tester #1:

- Two errors which are attempting to attack the placeholder for landmarks and the assistants.

Tester #2:

- One error which was attempting to attack the assistants.

Tester #3:

- No errors.

Verbal Feedback/Think Aloud Notes

Tester #1:

- A hard maze
- Tries to wack placeholder
- Sees the trees
- Tries to attack the wolf
- Trees rose
- Wacks trees down
- Not clear if picked up item
- Goes up to skeleton
- Tries to attack skeleton
- Knew how to fire the bow
- Tries to shoot at the wolf
- Recognized death
- Unsure of bow orientation
- Decent shot is finicky
- Combat is like a workout
- Picked up item
- Triggered trees
- Knew what to press
- Understood floating orb is newborn
- Started
- Chat with the assistants
- Kill if death, chat if Life
- Instructions in beginning helpful
- Tombstone confusion with special item; death exclusive
- Did not realize the container is for a special item.
- Movement being weird; rotation is unnatural
- Figure out combat hard

Tester #2:

- What is the cloud?
- Is there a way to turn around? Rotation
- Found the wolf; tried to kill
- Issue with tree walls appearing
- Tries to wack placeholder
- Feels like they're running in circles
- What is that orb? newborn

- Dialog is story thing
- Item understood as item

Tester #3:

- Rotation confusing
- Walking in fog
- Collected powerup
- Triggered special item
- Followed skeleton
- Elden ring
- Not sure what white pillar is
- Does fog tell me where life is?
- Feels like walking in circles
- Spamming buttons
- Top is Death health bar
- Life's health bar?
- Weapon or attack in corner
- Assumed he was leading me somewhere (gamer shorthand)
- Lots of fun
- Personal opinion: better to play in spinny chair

Overall Changes to Be Made

Julian

- ~~Make the maze smaller.~~
- ~~Assistant should enter the radius and trigger the wall.~~
- ~~Resolve the winning text/scene.~~
- ~~Billboard the speech bubbles to P1 main camera.~~
- ~~Special item shader (glow/shine).~~

Sebastian

- ~~Replace placeholders for landmarks.~~
- ~~Add swing instruction for scythe.~~
- Crosshair/laser to indicate where the bullet will land.
- ~~Sound for assistants.~~
- ~~Newborn/seed blending shader.~~

Farah

- Add the layering for Life's view and Death's view.
 - Also layer out player models.
 - Health Bar of the other player.
 - Different special items.

- Final screen.
- Do not allow colliders of Death and scythe to hit each other.
- Positional sound needs fixing.
- Move the UI with the head tracked y position.
- Toon shader.

Other

- Frame rate.
- Shaders for newborn, special item, projectile for bow, toon shader 3d models.

Beta Testing Session

Project Updates

Farah:

- Players experienced difficulty swinging scythe
 - Removed unintended collision between scythe and Death model
- Observing the players' behavior, the UI was not engaged with nor referenced
 - UI is now tracked to player head orientation.
- Audio was only playing through Life's proximity
 - Audio has been adjusted to be responsive to the closest player's interaction
- Toon shader by Zachary Petersen added to Death, Life, Skeleton, and Wolf

Julian:

- The Assistants' roles and states were not clear to players
 - Billboard Assistant's speech bubble to each player for clarity
 - Make Assistant's negative ability activate in a range rather than at the player's precise location, so that they spend little time close to the player and off of the visible screen
- Maze was difficult to navigate and impossible to come across points of interest in any reasonable amount of time
 - Reduced the size of the maze
 - Adjusted paths to traverse the maze
- Win text was not easy to see and the game could still be played upon winning
 - Win scenes added, with separate messages for Death and Life wins.
- Special Item ring shader

Sebastian:

- Replace placeholders for landmarks.

- Players got confused about where they were on the map since each placeholder was represented using the same white cube.
- This change will help players find their way around the map by giving good reference points to move from.
- Add swing instruction for scythe.
 - Players weren't able to figure out how to attack the Newborn/cut down the tree trap, or forgot how to do so.
 - This UI change will help remind players about how to use their weapon. This weapon UI is now consistent between the UI for both Life and Death.
- Sound for assistants.
 - Players found it hard to determine if an assistant was a friend or foe.
 - New sounds will help players identify each behavior of the assistants. There is a unique sound for chasing to trap (aggressive sound), and tracking down the other player (neutral/happy sound).
- Newborn/seed blending shader.
 - No complaints were made about the Newborn or Bullet seed from Life's bow, however we did find that our model could use a little improvement.
 - The new shader highlights the hitbox while blending in with the point light that surrounds the object. The center transparency is a lot more clear between the player's viewpoint and through the material as well.

Timings

Tester #1:

- Death: Lost to Life in 2:38

Tester #2:

- Life: Lost to Death in 3:46

Tester #3:

- Death: Lost to Life 4:25

Number of Errors

Tester #1:

- Only one which was attempting to swing at Life. Not really an error, as they quickly realized they should run away from Life.

Tester #2:

- No errors.

Tester #3:

- Two errors. Like Tester #1, attempted to attack Life at first. Also tried cutting down the maze with the scythe, as they associate scythes with farming.

Verbal Feedback/Think-Aloud Notes

Tester #1:

- Moving with analog stick
- Can use L2; took a while to notice the UI
- Whacked down the trees without difficulty or instruction
- Glowing ball, should follow; is it Sebastian???
- Recognized tree as Sebastian
- Realized they're being hurt
- Tries swinging at Life, runs away
- Sound for hit should be louder
- Lives for the players and weapons; can hold inventory
- Tutorial to provide instructions
- Playstation knowledge transferred over
- Breaks down tombstone wall

Tester #2:

- UI now moving, only works if in center
- Knocks down tombstone wall
- Instructions aided in figuring out L1
- Grim reaper understood as Death
- The bow shot where expected
- Cooldown too long
- Smoothing on UI add more; increase delay using rotation

Tester #3:

- Tries to cut down walls
- Other player trying to avoid
- Can cut down trees
- Dog skeleton is guiding you
- Tries to avoid Life
- Understood different domains
- Harder to move with fog
- Life is there
- Tries to kill Life

- Runs away
- Skulls are my lives
- Infant's lives
- Wishes could be faster
- Lack of instructions
- Visual indicators of where to go
- Do I have to be in the tree area?
- Skeleton guides to the infant
- Interact signal above assistant head; could have triggered something if got closer
- A little hard to see when running around/changing directions.
- Keep the UI on a set part of the screen rather than having the UI follow
- Associates scythe with farming

Beta Feedback and Public Demo

What we learned

Developing *Death Lives, Life Dies*, the team learned several valuable lessons. A lot of the major development roadblocks faced were the result of the team pushing the CAVE2 further than ever before. We learned many of its quirks and developed innovative workarounds for them. We also learned many tenets of game design, each dabbling in the numerous subtasks of making a game (art, sound design, level design, etc.).

What we are proud of

A major selling point of the game is the innovative component—multiple player views across the same array of screens, a miraculous development on the CAVE2 system! Between this, the AI, and the cohesive art components of the game, there is a lot for us to be proud of.

Technical changes to original design

The addition of Assistants was a large technical change, as before their introduction, the nuance of the game was heavily focused on special items and traps, the latter of which did not reach implementation in the final product. Additionally, sound cues were going to be a larger part of gameplay in the original plan. While a few of these audio cues have made it to release, the Landmark Audio concept was never implemented due to time constraints and CAVE2 constraints regarding positional audio.

Playability changes to original design

The maze was made far smaller to limit the downtime between events. The goal, initially, was to ensure that no more than 45 seconds of downtime could ever occur. This was not a feasible goal with the player speeds, the newborn speed, access to special items, and the maze size. Each of these things changed constantly to maintain playability and balance. Additionally, the concept of

multiple entrances (as well as escape routes) for each player did not make it into the final game as gameplay lasted long enough without the concept of respawns or evasive downtime.

What did playtesters teach us?

It became clear after playtests that we had spent enough time with the project to take things for granted—specifically, design decisions that are not immediately obvious to a newcomer (especially considering how overwhelming the CAVE2 can be!). Things such as how to interact with each character's weapons (Button to swing scythe? No, swing your arm!) and how to actually turn your character (You don't—you turn yourself!) confused players at first, but these were understandable as they were partially products of the CAVE2 environment itself! Many additional lessons were learned from the playtesters, but these were two of the more universal and entertaining ones.

What changes did playtesting cause?

A number of responses from users prompted change, such as not understanding or even *noticing* the HUD, not having the time to process what the Assistant speech bubbles were for, and having a tough time navigating the maze. Each of these (and more) were remedied, with a head-tracked HUD, a larger Assistant trigger radius, and a smaller maze!

Given more time, what would come next?

Random spawns for Assistants and Special Items would be the logical next step—for testers' single gameplay sessions fixed positions sufficed and allowed us to predictably collect data on player reactions to the mentioned items, but for extended or repeated gameplay, item spawns would go a long way.

What would we do differently next time?

Focusing on a single project is the key to making meaningful progress; with each member's attention split numerous ways with our course schedules, we struggled to strike a work balance for this undertaking. In the future, working only when we can reasonably take on such a project would vastly benefit our workflow!

To Be Done

Sebastian:

- Make the bow cooldown shorter.
- Make duplicates of assistants.

Farah:

- Make sounds 2D
- Maybe increase rotational delay
- Change the presentation of the special item.

Julian

- ~~Make ending within existing scene (maybe add sound when transition occurs)~~
- ~~Credits on the back wall either in beginning or ending~~

Video Presentation

team, design, physics, AI, sounds, shaders.

- Team
 - Go through our names in the starting slide
 - Slide starts with our names and “this is coursework done in CS426, the Dept of CS, University of Illinois Chicago”
- Design
 - Premise of the game (innovation)
 - Lead to design of map, items, weapons (physics)
- Physics/AI/Sounds/Shaders
 - Show gameplay
 - Show newborn, special item, toon shader

Assets Credit Tracking

3D Models:

- <https://sketchfab.com/3d-models/low-poly-scythe-d974ba13f64f4c11a9850f6c5e33642a>
- <https://sketchfab.com/3d-models/stylized-tombstone-590df1bf54c849dc9a05c4acb413249c>
- <https://sketchfab.com/3d-models/handpainted-pine-tree-f4f462de2c864c9a9cf3e5ad645be17c>
- <https://sketchfab.com/3d-models/stylized-bow-2c1c2d60cc4b42759400891f80414411>
- <https://sketchfab.com/3d-models/stylized-tombstones-44b8e3ce8d0842b395d80c5b76bd5d7e>
- <https://sketchfab.com/3d-models/leif-arborat-game-character-8c0be069b92b48b08bd7d017fb001b55>
- <https://sketchfab.com/3d-models/medieval-asset-17-death-563f2855e5534816b72b442576f0429b>
- <https://sketchfab.com/3d-models/free-animated-low-poly-cartoon-skeleton-9550b93d28354568adceb360981caa1b>
- <https://sketchfab.com/3d-models/low-poly-dire-wolf-canis-dirus-c8c896a1c0c44daeab7387a5f3e64922>
- <https://sketchfab.com/3d-models/low-poly-flowers-b74c6eee48844ac395de267d373d73c1#download>
- <https://sketchfab.com/3d-models/ancient-altar-3b244d77ceee443ab5c052490176b3a0>
- <https://sketchfab.com/3d-models/fountain-9812aa1535454df886fea502373edf08#download>

- <https://sketchfab.com/3d-models/low-poly-tombstones-0a10c5245d504e098de3a6d88c926274>
- <https://sketchfab.com/3d-models/skull-and-bones-07593d9460394a35bb78881edb87a48c#download>
- <https://sketchfab.com/3d-models/low-poly-farm-a4e01e15d0e8494e8b9055fc3809c1c5#download>
-

Sound Effects:

- <https://pixabay.com/sound-effects/search/rocks/>
- <https://www.fesliyanstudios.com/royalty-free-sound-effects-download/foilage-270>
- <https://www.epidemicsound.com/track/zaknqefrxc/>
- <https://elements.envato.com/sound-effects/horror+violin>
- <https://freesound.org/people/EminYILDIRIM/sounds/576069/>
- <https://freesound.org/people/Scrampunk/sounds/345297/>
- <https://freesound.org/people/dlgebert/sounds/527281/>
- <https://freesound.org/people/insanity54/sounds/325462/>
- <https://freesound.org/people/kanyonwyvern/sounds/713755/>
- <https://freesound.org/people/newagesoup/sounds/338674/>
- <https://freesound.org/people/GB01/sounds/142642/>