

Project Exodus



By: Ryan Amstutz, Karim Ramy Boshra Botros, Abhay Panchoo

Table of contents

1. [Game proposal](#)
2. [Premise](#)
3. [Story](#)
4. [Art Direction](#)
5. [UI](#)
6. [Combat](#)
7. [Movement](#)
8. [Level Design](#)
9. [Saving](#)
10. [Insanity Mechanic](#)
11. [Elements](#)
12. [Criticisms](#)
13. [GCO](#)
14. [Schedule](#)
15. [Sources](#)

Game proposal

Title Exodus

Tag line “A one-way trip to madness”

Your name Ryan Amstutz,
Karim Botros,
Abhay Panchoo,

Genre Dungeon Crawler, Roguelike

Platform PC

Market Suitable for ages 13 and older

Setting Medieval Elementalist dungeon with a progressively darker tone

Plays like Crawl
Popular Game A meets Binding of Isaac
Popular Game B or twist

Mechanics 1. 2D Weapon/Spell Combat and Movement 3. Difficulty Scaling

2. RPG Progression with permadeath 4. Insanity Mechanic

Reference Art 1. Elemental Magic 4. Dungeons
2. Medieval Weapons 5. Doom series
3. Fantasy Monsters (Zombies, Skeletons, Vampires) 6. Lord of the Rings: Moria



Related Games

1.

Darkest Dungeon	Red Hook Studios <i>Publisher or Developer</i>	RPG Dungeon Crawler <i>Genre/Platform</i>	2016 <i>Year</i>
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Darkest dungeon is a roguelike turn-based dungeoning game that has the player creep further into an old mansion to reclaim it. One of Darkest dungeon's captivating mechanics is its punishment of the player when not keeping a constant source of light for their party. The party faces debuffs like increased stress and decreased defense which can ultimately kill a member of the party in the process. We really enjoyed the increased difficulty of the game in this way and thought that we would implement a similar feature in ours for the player, but instead of strictly having debuffs for the player, we also want to have buffs, that way people can choose a different playstyle. In our game this mechanic is called insanity.

2. Binding of Isaac	Edmund McMillen <i>Publisher or Developer</i>	Roguelike PC <i>Genre/Platform</i>	2011 <i>Year</i>
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Binding of Isaac is a story driven roguelike game that takes the player through the shoes of a child about to be sacrificed. A lot of the roguelike elements of our game are inspired from Binding of Isaac such as RPG Progression and difficulty scaling. Our game will share the fast paced gameplay which includes time to kill an enemy, speed of the player.

3. Crawl	Powerhoof <i>Publisher or Developer</i>	RPG Dungeon Crawler <i>Genre/Platform</i>	2017 <i>Year</i>
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Crawler is a brawler game with players advancing through dungeons with one player as the hero and the others as spirits who possess traps and monsters in the environment to kill and thus replace the hero.

The game features obstacles and pickups, similar to what our game will implement. Moreover, our game will have the same killing pace. Finally, our game will have randomly generated rooms quite similar to Crawl.



Supporting Screenshot or Mechanic Analysis Diagram (screenshot from Crawl)

Premise

A war hero gets exiled from his kingdom and goes on a journey, passing through different dungeons.

Main objective of the game:

Escape the dungeons, reach his kingdom and liberate it from monsters.

Setting:

Based in the medieval era, includes fantasy elements like magic and monsters

5 dungeons with elemental themes that get progressively creepier

The hero's mental state heavily deteriorates throughout the journey and he is driven to madness

The main character is an unreliable narrator, the monsters and dungeons he encounters are part of his delusion

It is revealed in the end that the monsters are actually the people of his kingdom and the dungeons are figments of his imagination.

Story

The story is based around a fantasy-like world set around the medieval era. The main character is a war hero who suffers from trauma and hallucinations. Our hero grows more and more violent towards the people of his kingdom due to his illnesses.

The people are not very understanding and shun the hero. As a manifestation of his people's loathing, the King exiles the war hero into the dangerous lands that lie outside the walls of the kingdom.

Meanwhile, the hero's mental state deteriorates and he starts to believe that the kingdom has been invaded by monsters, and swears to liberate it from its captors, and proceeds to enter the kingdom again to try and kill all the monsters there.

This is the story of a fallen war hero, misled by his own delusion, who gets driven into a one-way trip to madness.

The plot twist in the story is that the monsters are actually just something the main character is imagining and these are actually people of his kingdom, who he is slaughtering...

Art Direction:

Visual Inspirations:

Crawl 2014



ADOM



TaleSpire



Forged of blood



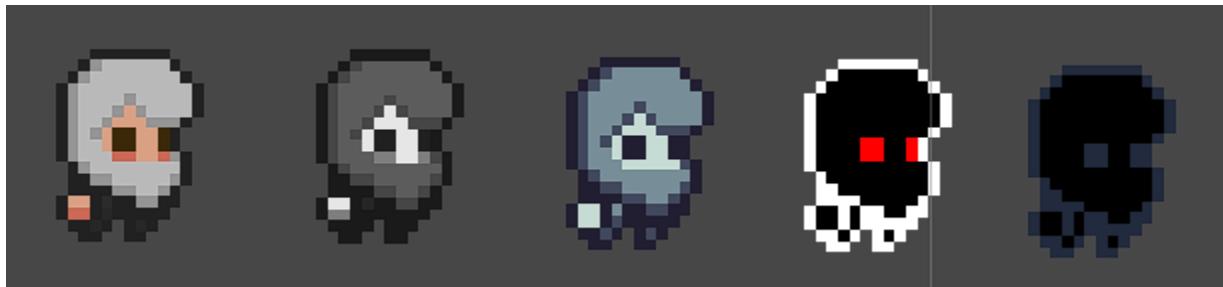
3D Virtual tabletop



Tools

Using PixelDesigner for most of our enemies and player

Player: Will progressively lose color until the last level where he becomes a full silhouette

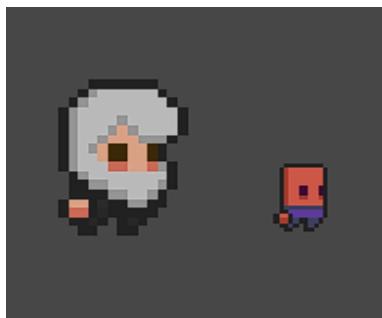


All enemies except bosses will change color with area

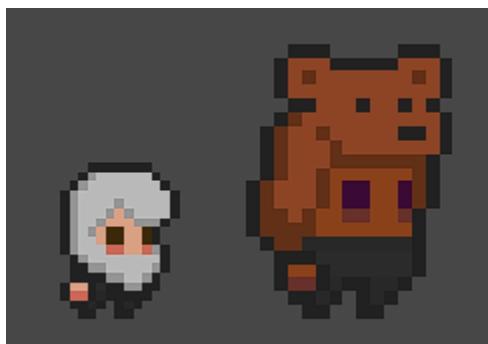
Zombie: 1x Player size



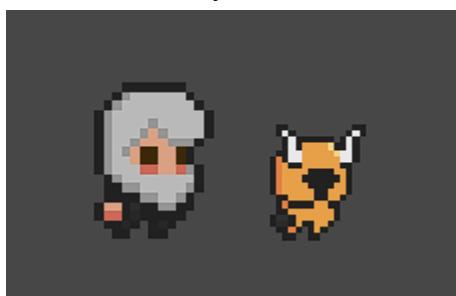
Nimble: 0.5x Player size



Heavy: 1.5x Player size



Archer: 0.7x Player size



Boss: 2-3x Player size



Originally we thought about using ProPixelizer on our environmental assets to match the same pixel art style as our characters.



(ProPixelizer Display)

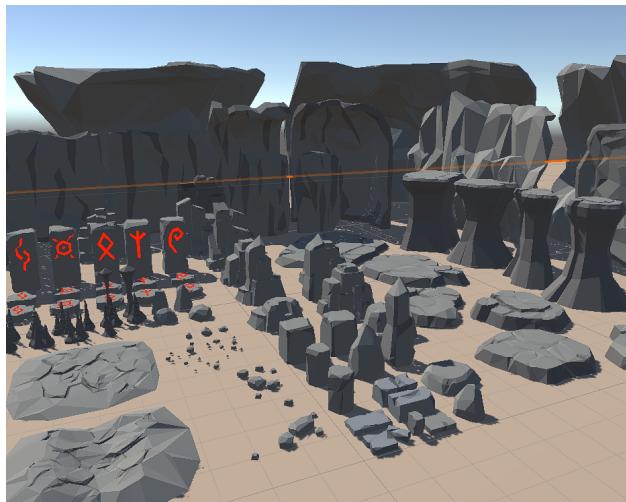
3D environment

For the assets below, we've used POLYGON Dungeons

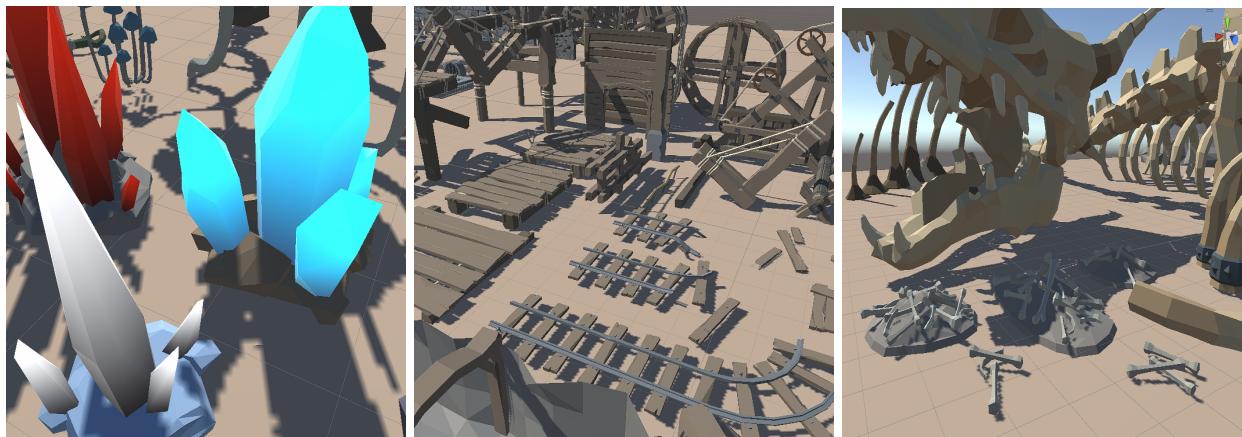
Nature: we'll use these grass and shrubbery assets with the floor being a gradient in green color and surrounded by stone walls or trees



Caves: we'll use the cave assets



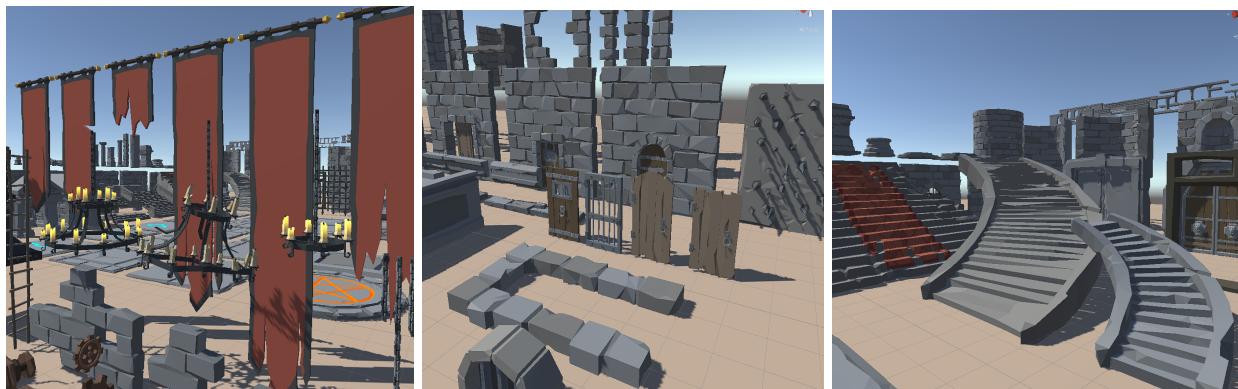
Ice: The ice area will use a combination of elements including the stone area with a more blueish/frosty tint and will include lots of crystal formations like this



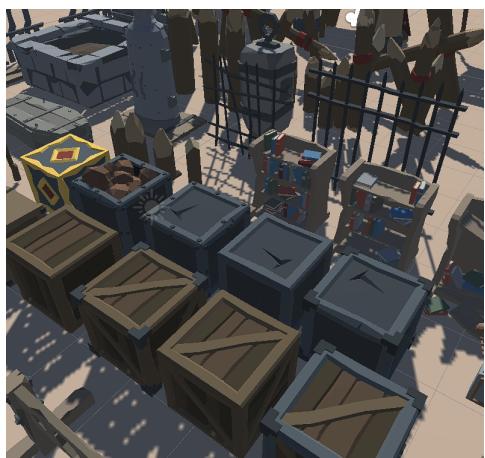
Hell: Hell will include red crystal formations with stone surroundings and pentagrams as well as a yellowish-red tint



Void: will incorporate assets from a kingdom



Interactable/Destructible items:



We've chosen to remove the use of ProPixelizer because we find that with the assets themselves and the right camera angle, It looks perfect how it is. We don't need to use ProPixelizer to adapt our assets into pixel format.

Sample rooms :

Nature:



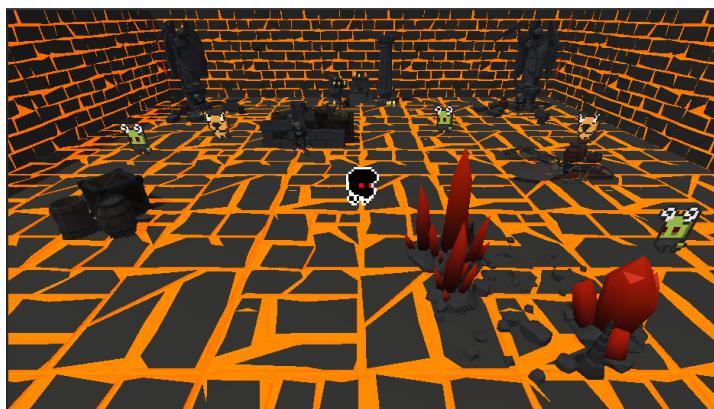
Caves:



Ice:



Hell:

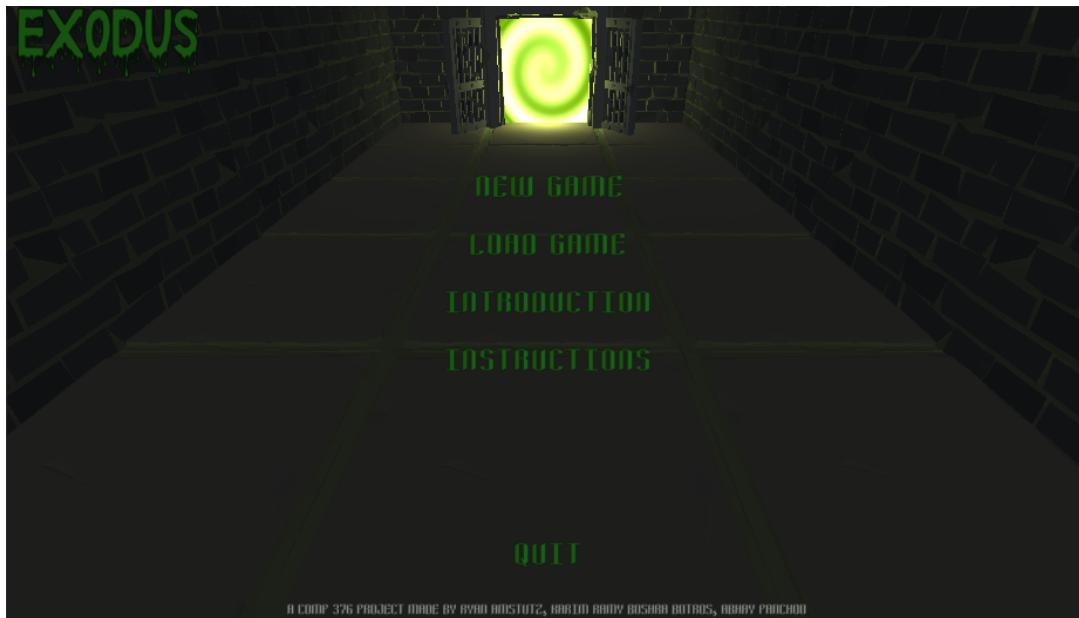


Void:



UI

Main Menu UI



(i) New Game

Pressing New Game plays an animation where the camera enters the portal and loads a new game scene.

(ii) Load Game

Pressing Load Game plays the same animation as New Game but loads an already saved game.

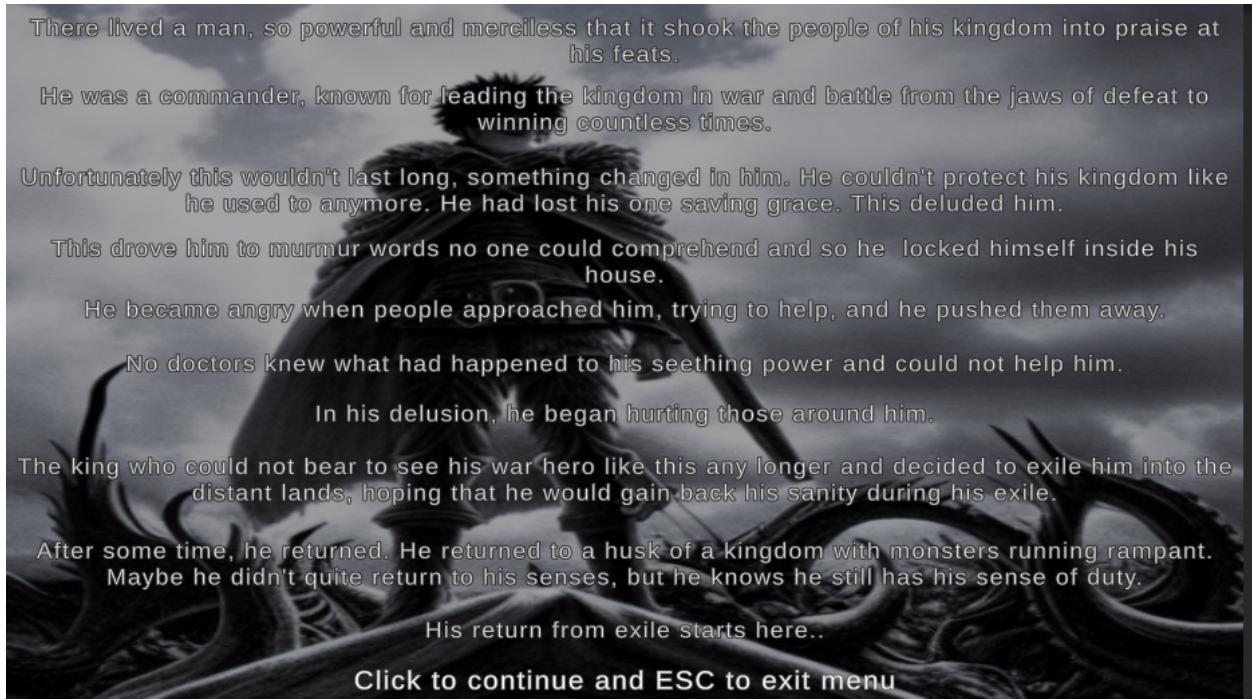
(iii) Introduction

Introduction button hides Main menu UI and enables Introduction UI which looks like this:



Each click loads up a new line with some fading in animations

The final result looks like this:



Pressing ESC disables the Introduction UI and enables the Main menu UI again

(iv) Instructions

Instructions works in a similar way to Introduction -> Enables Instruction UI and disables Main menu UI



The back Button disables Instruction UI and enables Main menu UI

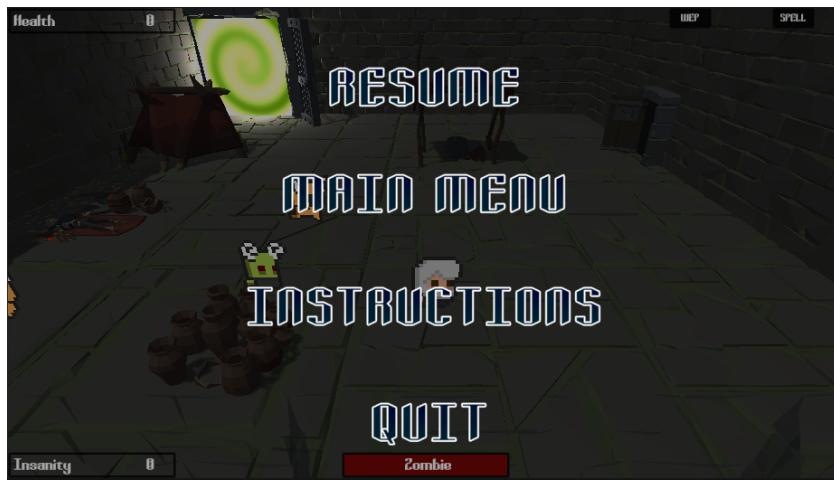
(v)Settings

Similarly, settings enables Settings UI and disables Main menu UI
The back Button also works the same way as Instructions.

(vii)Quit

Quit simply exits the application

Pause Menu UI



Pause Menu can be accessed using the ESC key. When paused, the timescale is set to 0.

(i)Resume

Resumes the game and sets timescale back to 1

(ii)Main Menu

Loads Main menu scene

(iii)Instructions

Disables Pause Menu UI and enables Instructions UI



HUD UI

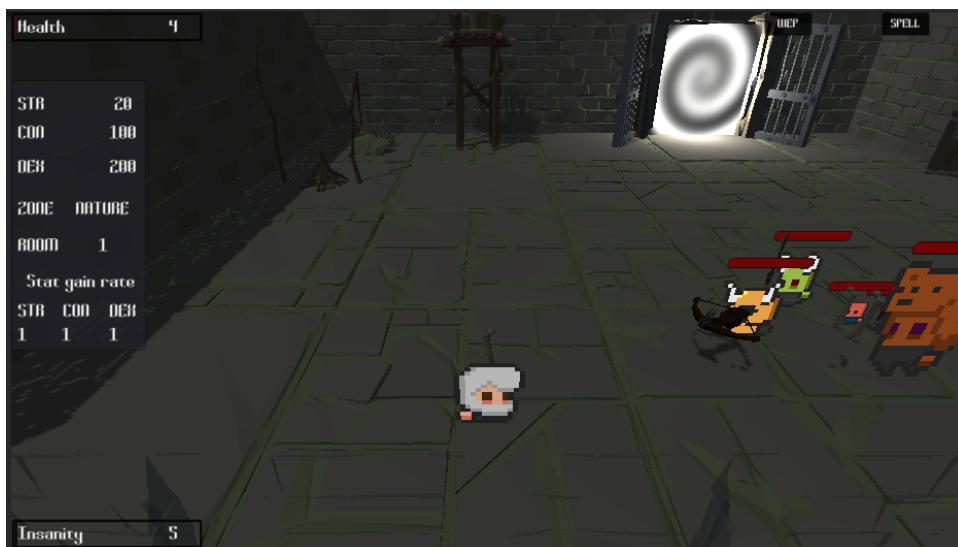
The UI we've added will be simple enough that the player will not be overwhelmed and packed enough to help the player make a full assessment of their circumstances.

The extra stats such as STR, CON, DEX as well as the zone and room number can be accessed using the TAB key

The stat gain rate is also shown (which increases when insanity mode activates)

The UI shows the player health, as well as enemy health, the weapon and spell equipped as well as an insanity meter.

The use of the insanity meter is explained in more depth [here](#)



COMBAT

Weapons implemented and can be used in game :

(i)Crossbow

Crossbow 3D Model



Archer holding the crossbow



(ii)Axe

Axe 3D Model



Heavy monster holding axe

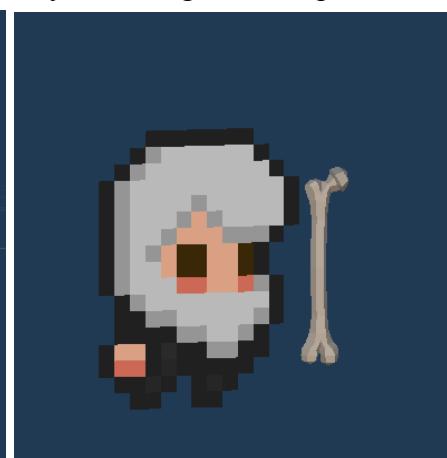


(iii)Fists

Fists 3D Model



Player holding fists weapon



(iv)Knife

Knife 3d Model



Zombie holding a knife

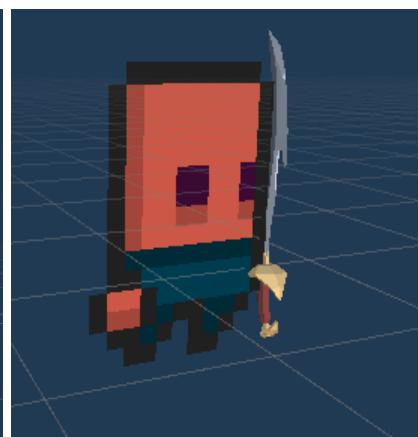


(v)Sword

Sword 3D Model

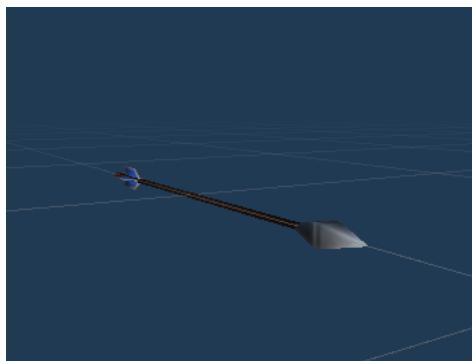


Nimble holding a sword



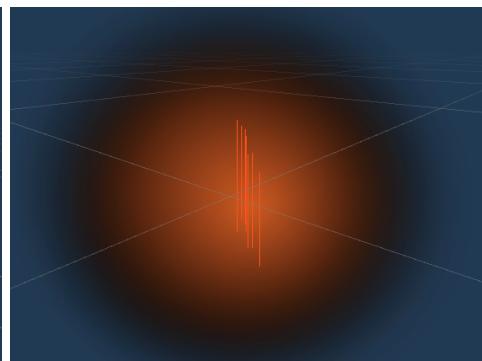
Projectiles:

Arrow



Spells:

Blast



The melee weapons rotate around the player depending on mouse position and have a capsule collider around the blades, responsible for detecting collisions with the enemy, reducing their health.

Collisions can only be detected when the fire button is pressed, when the melee weapon is actually swung and not just by being stationary. This was done by enabling and disabling the collider when needed.

When enemies are hit, they become unable to use their own weapons.

The crossbow (ranged weapon) also rotates around the player in a similar fashion and shoots an arrow projectile when the fire button is pressed.

For the enemies, the archers have crossbows and the rest of the monsters are equipped with melee weapons seen above. The archers start shooting arrows from their crossbow when the player is in their range.

The player is initially equipped with fists when he spawns, but can pick up other weapons along the way.

The player and enemies become red when hit so attacks can be easily identified.

There is also a sound played when the player gets hit by something.

When the player hits an enemy, the health bar above that enemy decreases.

If its health reaches zero, the enemy despawns.

When the enemies hit the player, the health of the player decreases. The health can be seen in the top left of the screen (forms part of the HUD UI)

MOVEMENT

There are 2 different types of enemy movements :

1. Follow
2. Keep Distance

Follow is for melee monsters that start following the player when it enters their range.

Nimble monsters follow the player at a very high speed.

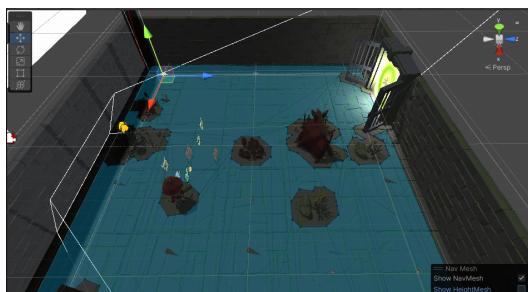
Zombies and heavy monsters have a slower speed than nimble monsters so the player can lose them quite easily if combat is not favourable.

Keep Distance is mainly for archers and ranged monsters, but also slightly implemented in zombies.

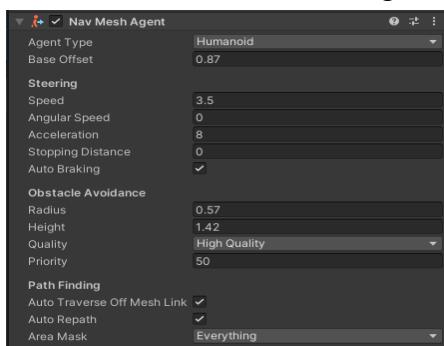
Despite mainly following the player, the nagent zombies have a slight keep distance implemented so that it does not walk over the player.

When too close to the player, Keep Distance makes the enemies back away to maintain a proper distance (distance ideal for shooting - not too close, not too far), and when too far from the player it starts approaching to get within shooting range. If within range, it just remains stationary and shoots.

A nav mesh was used to control enemy AI movement and ensure it does not gets stuck around an obstacle



Each monster is a nav mesh agent with a set speed and target (the player)



Level Design

The rooms are randomly generated, and contain multiple props and enemies.

There are different types of zones implemented as well : **Nature**, **Caves**, **Ice**, **Hell** and **Void**

Each room also has an exit portal and an exit door.

The door leads to another room within the same zone. The room contains more enemies.

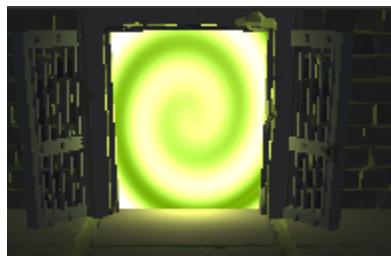
The portal leads to another zone (first to a short hallway then to the zone as you will see below)

Exit door

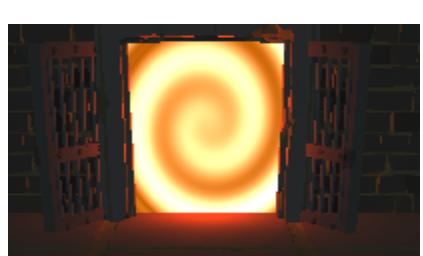


Different types of portals implemented:

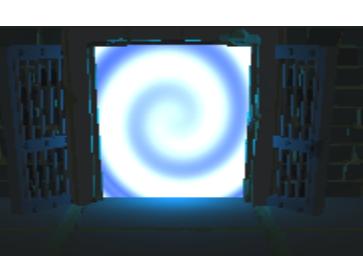
Nature Portal:



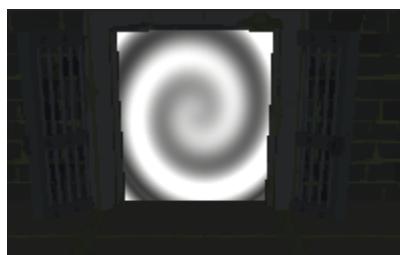
Hell Portal:



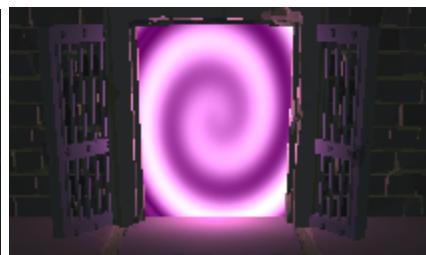
Ice Portal:



Caves Portal:



Void Portal:



Along with the room, a nav mesh is also baked, leaving out the obstacles for better AI enemy movement.

Different props and enemies are spawned depending on the zone the player is in.

Player Sprite was also changed to match zone

[Art Direction](#) contains the exact list of props for each zone.

The spawned player and enemies all have a weapon equipped.

Sample randomly generated **Nature** room: Sample **Caves** room:



Caves hallway leading to **Ice** Zone



Ice hallway leading to **Hell** Zone



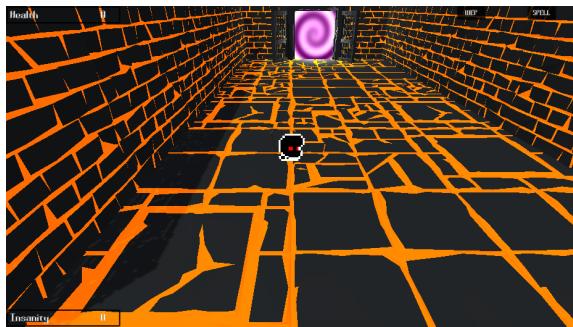
Ice Room with Ice enemies and props.



Hell room which has a portal which leads to hallway containing **Void** portal



Hallway leading to **Void** zone



Void zone:



Saving

The game is saved automatically upon entering a new room.

The player info and stats are saved in a JSON file called player.json and the dungeon info is saved in another JSON file called dungeon.json

The player JSON file contains their health, insanity, dexterity, constitution, strength and the list of weapons and spells they currently have equipped.

The dungeon JSON file contains the room number, the type of zone and the seed of the dungeon.

Load Game in the Main menu continues a previously saved game.

Once a player dies, the saved player and room files are deleted, and they have no other option than to start a new game.

Insanity Mechanic

An Insanity Meter can be seen at the bottom left of the screen



While the meter is not full, HP, Strength and Speed of player increases with each kill
When the meter is full, insanity mode becomes active.

During insanity mode, the strength increase rate and speed increase rate per kill are doubled but player also loses some HP for every kill

Insanity Meter resets every zone, but the stats are kept as is.

Elements

Four elements were implemented in the game for combat : Fire, Ice, Earth and Wind

These four elements have different effects depending on the zone monsters they are used against.
An elemental matrix chart and table were made to clearly show that difference by calculating the damage done when element-infused weapons and spells confront elemental monsters.



Elemental combat

	None	Wind 🌬️	Earth 🏿	Ice ❄️	Fire 🔥
Nature Monsters 🌱🌱	1.0x	1.0x	2.0x	1.5x	0.7x
Cave Monsters 🏿🏔️	1.0x	0.7x	1.0x	2.0x	1.5x
Ice Monsters ❄️❄️	1.0x	1.5x	0.7x	1.0x	2.0x
Hell Monsters 🔥🔥	1.0x	2.0x	1.5x	0.7x	1.0x
Void Monsters 💙💙	1.0x	1.5x	1.5x	1.5x	1.5x

GCO COMPONENTS OF THE GAME

Our game was made while keeping GCO design patterns in mind.

TOP-DOWN AND BOTTOM-UP APPROACHES

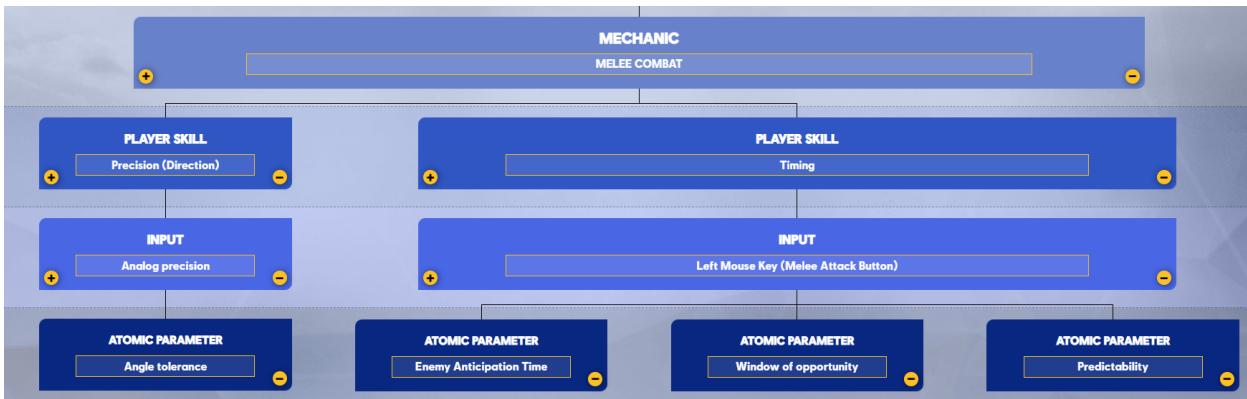
A bottom-up approach was mostly used to make this game.

That is, we first thought of the core game mechanics and tried to implement them, and then built the game world and story around those mechanics.

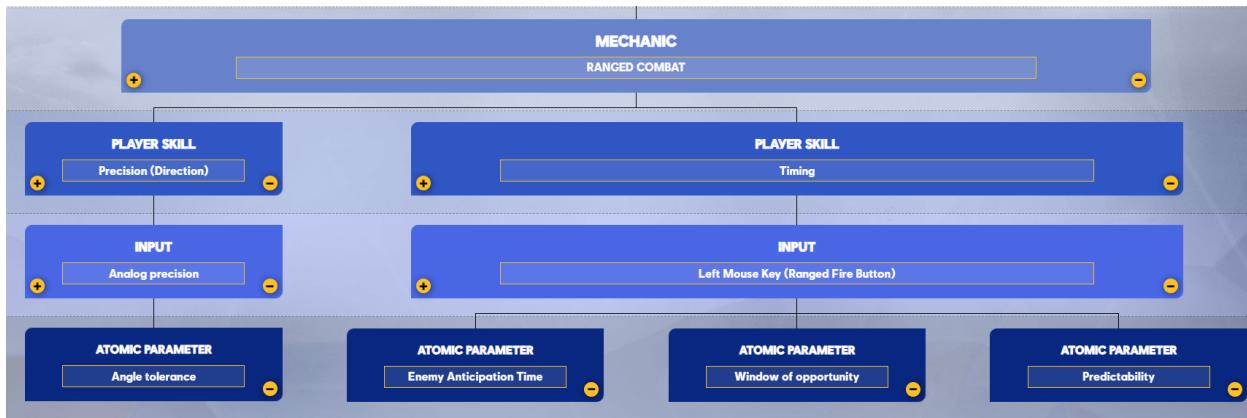
Game System

Gameplay : Enemy combat

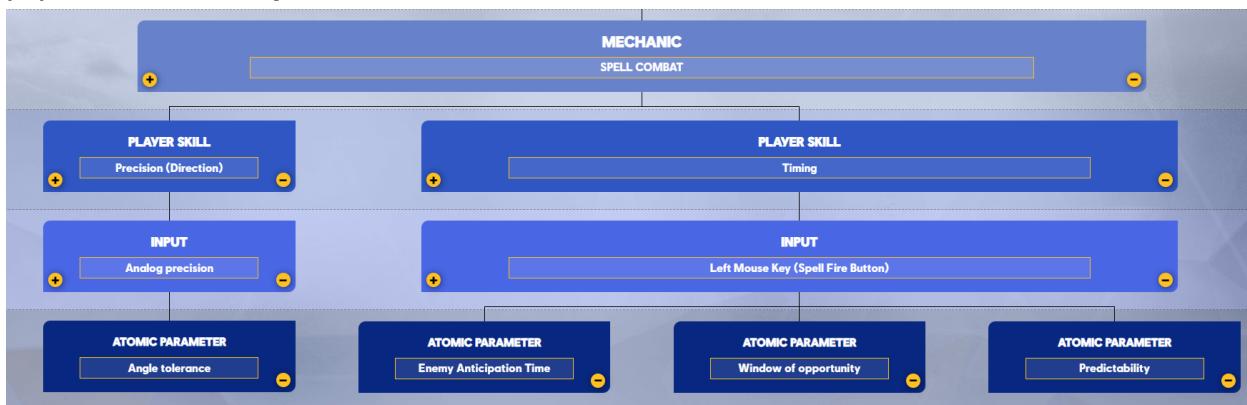
(i) Mechanic 1 : Melee combat



(ii) Mechanic 2 : Ranged combat



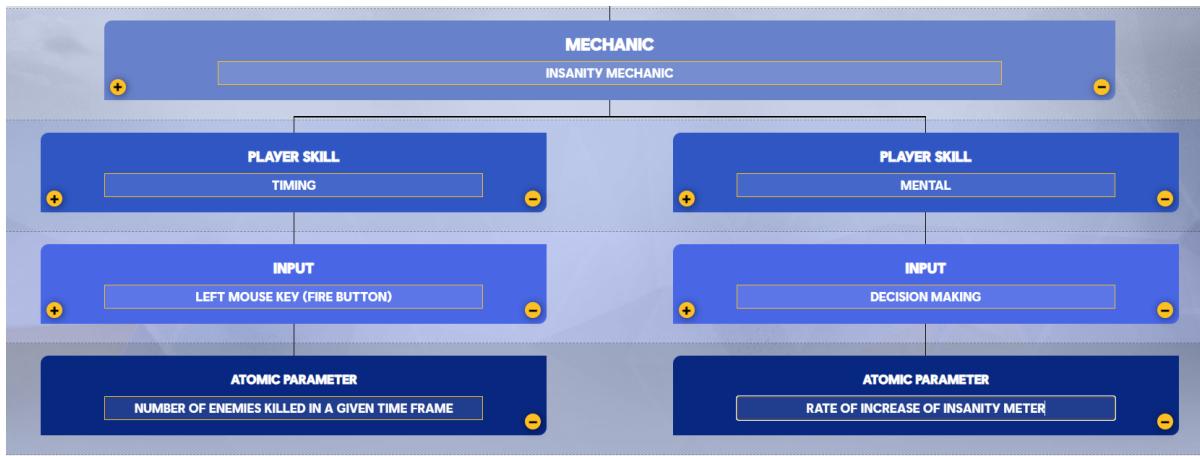
(iii) Mechanic 3 : Spell combat



(iv) Mechanic 4 : Avoiding enemies



(v)Insanity mechanic



Atomic Parameters

	NULL	EASY	MEDIUM	HARD
PRECISION	NUMBER OF ENEMIES IN A ROOM 0	EASY 5	MEDIUM 10	HARD 15
	MOVEMENT SPEED OF ENEMIES NOT MOVING	5% of screen per second	10% of screen per second	20% of screen per second
	TARGET PREDICTABILITY STATIONARY TARGET	Linear motion (Just follows player)	Dashes towards player when close enough	-----
TIMING	TIME TO REACT (RELATED TO ENEMY SPEED AND ATTACK POWER) NO ENEMIES ATTACKING	5 seconds (zombies move slowly)	2 seconds	1 second
	WINDOW OF OPPORTUNITY NO ENEMIES ATTACKING	5m range until enemy starts or stops detecting you	10m range until enemy starts or stops detecting you	15m range until enemy starts or stops detecting you
	ANTICIPATION TIME -----	Enemy takes 3 seconds to finish attack	Enemy takes 2 seconds to finish attack	Enemy takes 1 second to finish attack

DETERITY	INPUT FREQUENCY NEEDED TO STAY ALIVE (NOT BE KILLED BY ENEMIES AROUND)	0 input per second	1 input per second	3 input per second	5 input per second
	INPUT CHANGE FREQUENCY	only 1 input	1 time per second	2 times per second	3 times per second
	SEQUENCE COMPLEXITY	ONLY ONE FIRE BUTTON			

Ingredients

(i)Player

INGREDIENT:PLAYER

INGREDIENT CHARACTERISTICS		INGREDIENT FORM
HEIGHT	1.7m - 2.0m	
SPEED	1.2 m/s	
HEALTH POINTS	100	
+ PREDICTABILITY	very predictable	Remove File

(ii)Zombie

INGREDIENT:ZOMBIE

INGREDIENT CHARACTERISTICS		INGREDIENT FORM
HEIGHT	1.7m - 2.0m	
SPEED	0.5 m/s	
NUMBER OF HITS NEEDED TO BE KILLED	3	
+ PREDICTABILITY	very predictable	Remove File

(iii)Nimble

INGREDIENT:NIMBLE

INGREDIENT CHARACTERISTICS		INGREDIENT FORM
HEIGHT	0.5 - 0.75m	
NUMBER OF HITS NEEDED TO KILL	2	
SPEED	1.0 m/s	
PREDICTABILITY	quite predictable	Remove File

(iv)Heavy

INGREDIENT:HEAVY

INGREDIENT CHARACTERISTICS		INGREDIENT FORM
HEIGHT	2.0-2.5m	
NUMBER OF HITS NEEDED TO KILL	4	
SPEED	0.4 m/s	
PREDICTABILITY	very predictable	Remove File

(v)Archer

INGREDIENT:ARCHER

INGREDIENT CHARACTERISTICS		INGREDIENT FORM
HEIGHT	1.7-2.0m	
NUMBER OF HITS NEEDED TO KILL	3	
SPEED	1.2m/s	
PREDICTABILITY	quite predictable	Remove File

Level design


Remove File

Player spawns in a randomly generated room, with props and monsters randomly placed around. The player can defeat the monsters to get experience and can go through a portal to go to another room where he will come across different types of monsters as well as monsters and rooms of different elements : fire, ice, wind and earth

-	PROBLEM SOLVING	PATH TAKEN TO BE ATTACKED BY LEAST NUMBER OF ENEMIES	EASY	only 3 enemies in room
-	PROBLEM SOLVING	PATH TAKEN TO BE ATTACKED BY LEAST NUMBER OF ENEMIES	MEDIUM	6 enemies in room
-	PROBLEM SOLVING	PATH TAKEN TO BE ATTACKED BY LEAST NUMBER OF ENEMIES	HARD	10 enemies in room
-	TIMING	FIGHT DURATION	MEDIUM	Each enemy can be taken in 1 to 3 seconds, 6 enemies can be killed in around 20 seconds Adding time to walk around the room, a room can be cleared in around one minute
-	MEASUREMENT	HOW MANY ENEMIES YOU CAN AGGRO AND KILL/AVOID AT THE SAME TIME	MEDIUM	very difficult to kill the 6 or more enemies together, considering some will be ranged and back away if too close

SIGNS AND FEEDBACK

MECHANIC: COMBAT					
	SIGNS	FEEDBACK DURING ACTION	FEEDBACK SUCCESSFUL	FEEDBACK UNSUCCESSFUL	
-	VISUAL FX	The enemy starts walking towards you and attacking when in range if melee or starts shooting if archer.	Melee strikes push enemy back a hit If you get hit, you can see your health points decreasing	Enemy despawns, you see the rewards you get (for example experience points)	Player dies, health point reduced to zero and player can see a game over screen
-	AUDIO FX	Zombie makes noises when approaching enemy	Melee striking sound effects and spell sound effects	Zombie or monster stops making noise	Game over music starts playing + Player character makes dying sound
-	ANIMATION	Monster movement animation can be seen	Fighting animations playing -> Melee weapon swinging	Monster death animation plays	Player death animation plays

Schedule

Meetings were held on average two times a week for 2 hours.

The meeting minutes contain a more detailed description of our meetings

The meetings became more frequent as the deadlines approached and less depending on the projecting needs.

We were originally a team of 4, but someone dropped out in the middle of the semester, so most (if not all) of the work was done by the 3 people left.

Sources

Polygon Dungeon by Synty Studios:

<https://assetstore.unity.com/packages/3d/environments/dungeons/polygon-dungeons-low-poly-3d-art-by-synty-102677>

ProPixelizer:

<https://assetstore.unity.com/packages/3d/environments/dungeons/polygon-dungeons-low-poly-3d-art-by-synty-102677>