

3D Platformer

Game Design Document

Thamilavan Kapilan

tamkapilan.com

Contents

Game Design Document	1
Overview	4
Theme.....	4
Game loop.....	6
Design pillars.....	7
Character design	7
BRENNA	7
DETAILS	8
Character mechanics.....	9
Enemy design	10
KNIGHT	10
DETAILS	11
SPEAR SKELETON	12
DETAILS	12
GREAT SWORD.....	14
DETAILS	14
ROCK GOLEM	16
DETAILS	17
Enemy AI design.....	18
Damage system.....	23
Game conditions.....	24
Death mechanics.....	26
Environmental Traps.....	Error! Bookmark not defined.
Spikes	Error! Bookmark not defined.
Spike/Axe drop	Error! Bookmark not defined.
Arrow shooter	Error! Bookmark not defined.
Explosion trap	Error! Bookmark not defined.
Progression	27
Camera	28
Score system	29
User Interface	30

Controls	33
----------------	----

Overview

3D platformer with puzzle elements. The platformer revolves around players 2 abilities which are her melee attack and ranged attack that can be used interact with surrounding environments.

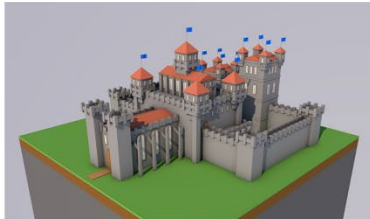
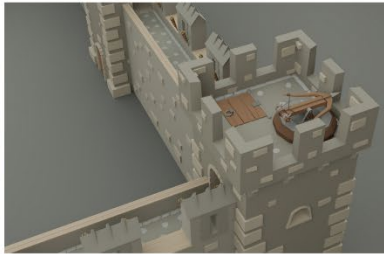
Theme

Medieval fantasy, Atmospheric, Shattered worlds

Overall area design

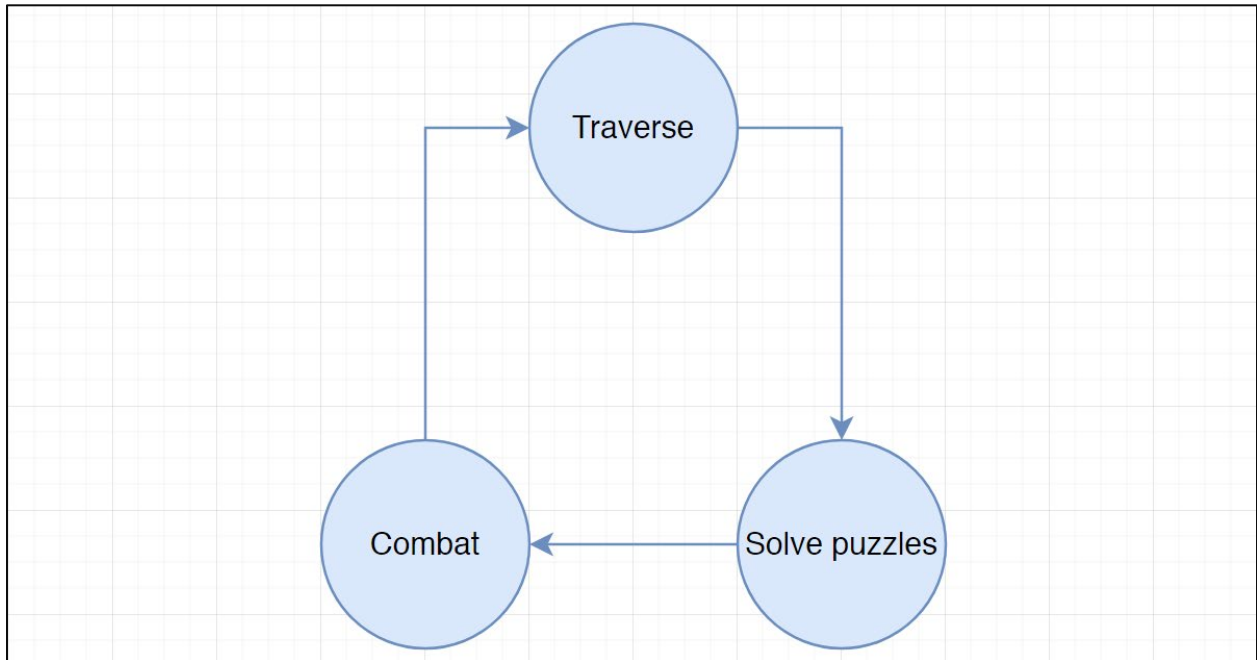


Castle Theme

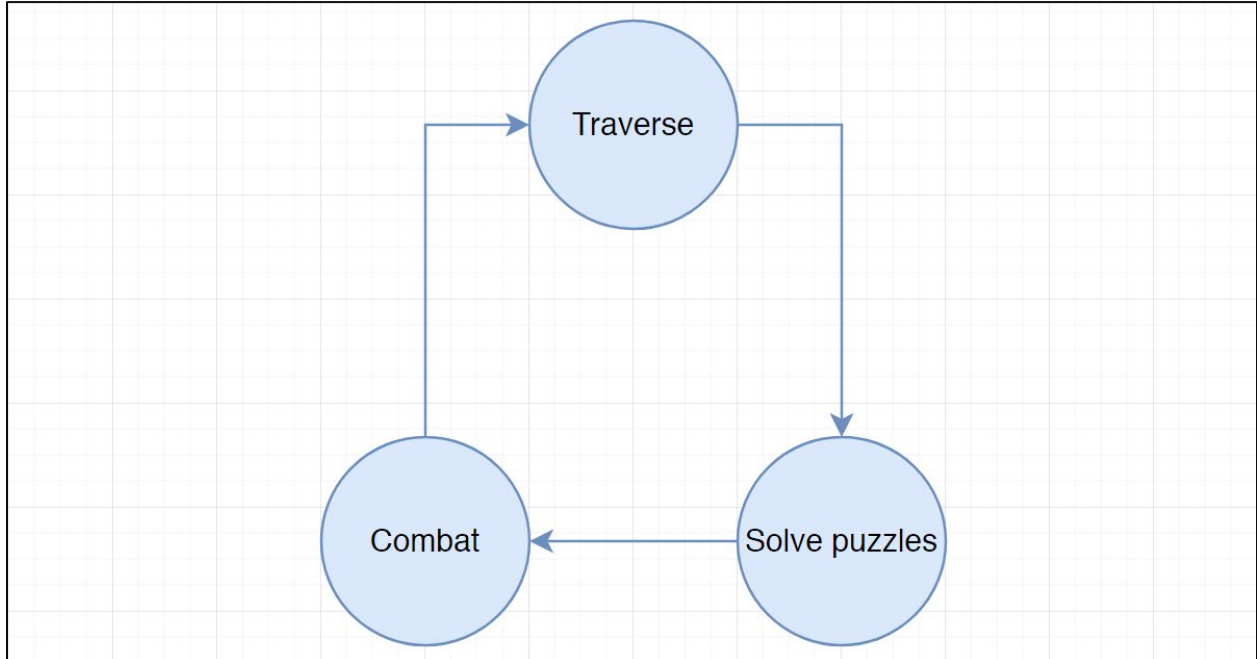


Game loop

Overall



Level



The player will explore and navigate through the level solving puzzles to open more areas to explore and killing enemies. The player will also unlock abilities as they go through the level.

Design pillars

- Solve puzzles
- Combat
- Platforming

Character design

Player Character

BRENNA



OVERVIEW – Player Character

THEME

Medieval, Fantasy, Knight

ROLE

Damage Dealer, Escape, Melee, Swordsman

FEATURES AND MECHANICS

Jump – The player can use it to jump over platforms. The player can double jump by pressing the jump button twice. Pressing the jump key near a wall allows the player to do a wall jump.

Melee attack – Short AOE attack that will damage any enemies in close range. The melee attack can also be used interact with certain world elements

Range attack – Single target attack that will damage any enemy. Ranged attack projectile can be bounced using the surrounding environments. The projectile can be used to interact with certain puzzle elements.

Weapons – Power, Magic

DETAILS

Name	Brenna
Health	100
Run speed	500 cm/s
Attack speed	0.3
Ranged attack speed	0.6

Height	180cm
Width	50cm

Player movement

- Standing stationary
- Running
- Jumping

Player Actions

- Magic attack
- Magic projectile

The character will not take any fall damage

Run speed	500 cm/s
Gravity	2
Ground friction	8
Air control	0.35
Acceleration	1500
Deceleration	2000

Character mechanics

Melee attack

Attack	Magic
Damage	100
Damage radius	110
Damage length	200

Ranged attack

Attack	Magic
Damage	100
Damage radius	15
Damage length	30
Range	600cm
Bounce count	5

Enemy design

Enemies

There will be 4 enemy types, 3 melee enemies and 1 ranged enemy. The enemies have their own unique attacks with different attack speeds. Enemies present a moderate threat to the player and will act as an obstacle that player must traverse past.

KNIGHT



OVERVIEW – AI

Knight is strong slow-moving enemy that can chain 2 slow attacks that can deal overwhelming damage to the player

THEME

Knight, Medieval, Fantasy

ROLE

Melee, Strong, Slow

FEATURES AND MECHANICS

Attacks – Slow devastating attack

Weapons - Sword, Armour

DETAILS

Name	Knight
Attack	Physical
Health	100
Walk speed	200 cm/s
Attack speed	1

Height	180cm
Width	50cm

	Damage	Damage radius	Damage length
Attack 1	100	22	88

SPEAR SKELETON



OVERVIEW – AI

Spearman is weak fast-moving enemy that spam 2 unique attacks.

THEME

Spearman, Medieval, Fantasy, skeleton

ROLE

Melee, Weak, Fast

FEATURES AND MECHANICS

Attacks – 2 unique fast attacks

Weapons - Spear

DETAILS

Name	Spear skeleton
Attack	Physical
Health	100
Walk speed	250 cm/s
Attack speed	0.3 – 0.5

Height	180cm
Width	50cm

	Damage	Damage radius	Damage length
Attack 1	100	22	104
Attack 2	100	22	104

GREAT SWORD



OVERVIEW – AI

Fast moving agile enemy that can do high damage to the player.

THEME

Knight, Medieval, Fantasy

ROLE

Melee, Strong, Fast

FEATURES AND MECHANICS

Attacks – Fast crushing attack

Weapons - Great sword

DETAILS

Name	Great sword
Attack	Physical
Health	100
Walk speed	250 cm/s
Attack speed	0.2 – 0.4

Height	180cm
--------	-------

Width	50cm
-------	------

	Damage	Damage radius	Damage length
Attack 1	100	33	90
Attack 2	100	33	50

ROCK GOLEM



OVERVIEW – AI

A stationary ranged enemy that can attack the player

THEME

Rock, Medieval, Fantasy

ROLE

Ranged, Melee, Strong

FEATURES AND MECHANICS

Ranged attacks – Rock golem that can throw magic projectiles at the player

Weapons - Magic

DETAILS

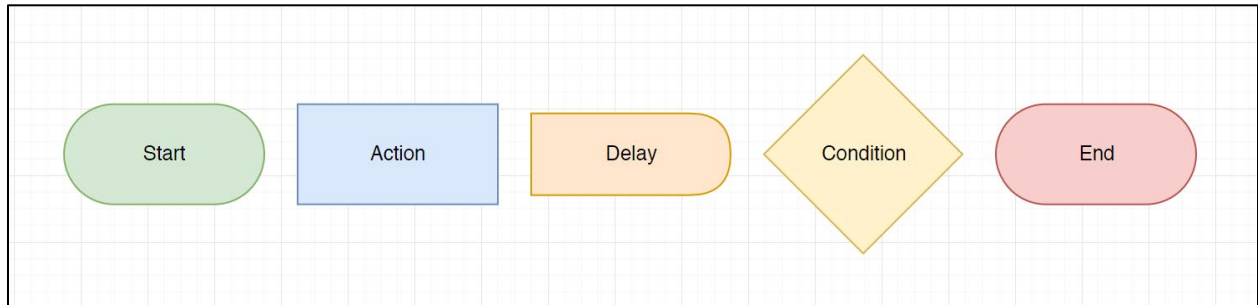
Name	Rock golem
Attack	Magic
Health	100
Walk speed	0 cm/s
Attack speed	0.9

Height	200cm
Width	70cm

	Damage	Damage radius	Damage length
Attack 1	100	15	30

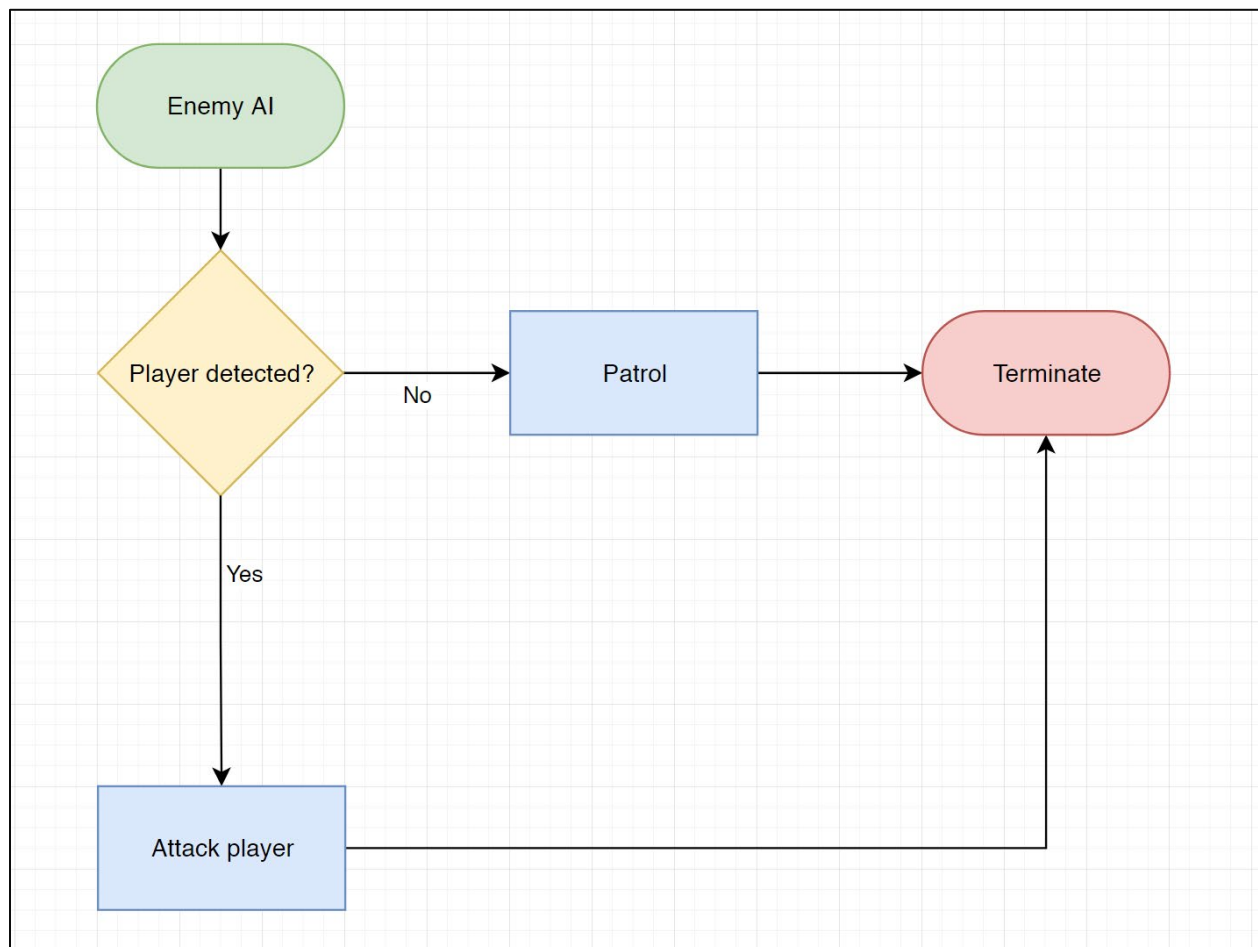
Enemy AI design

Legend



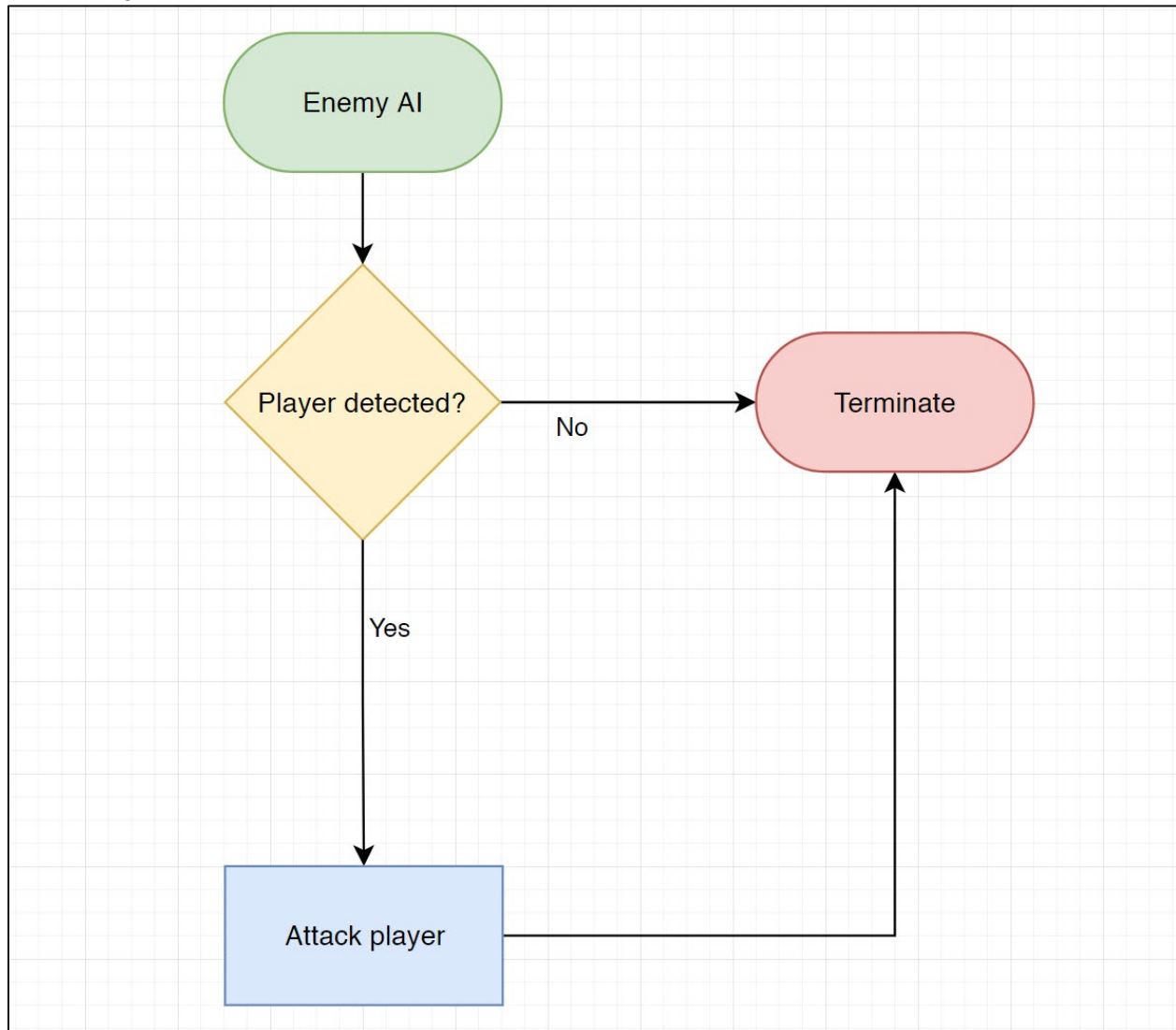
Core AI behavior

Patrolling AI



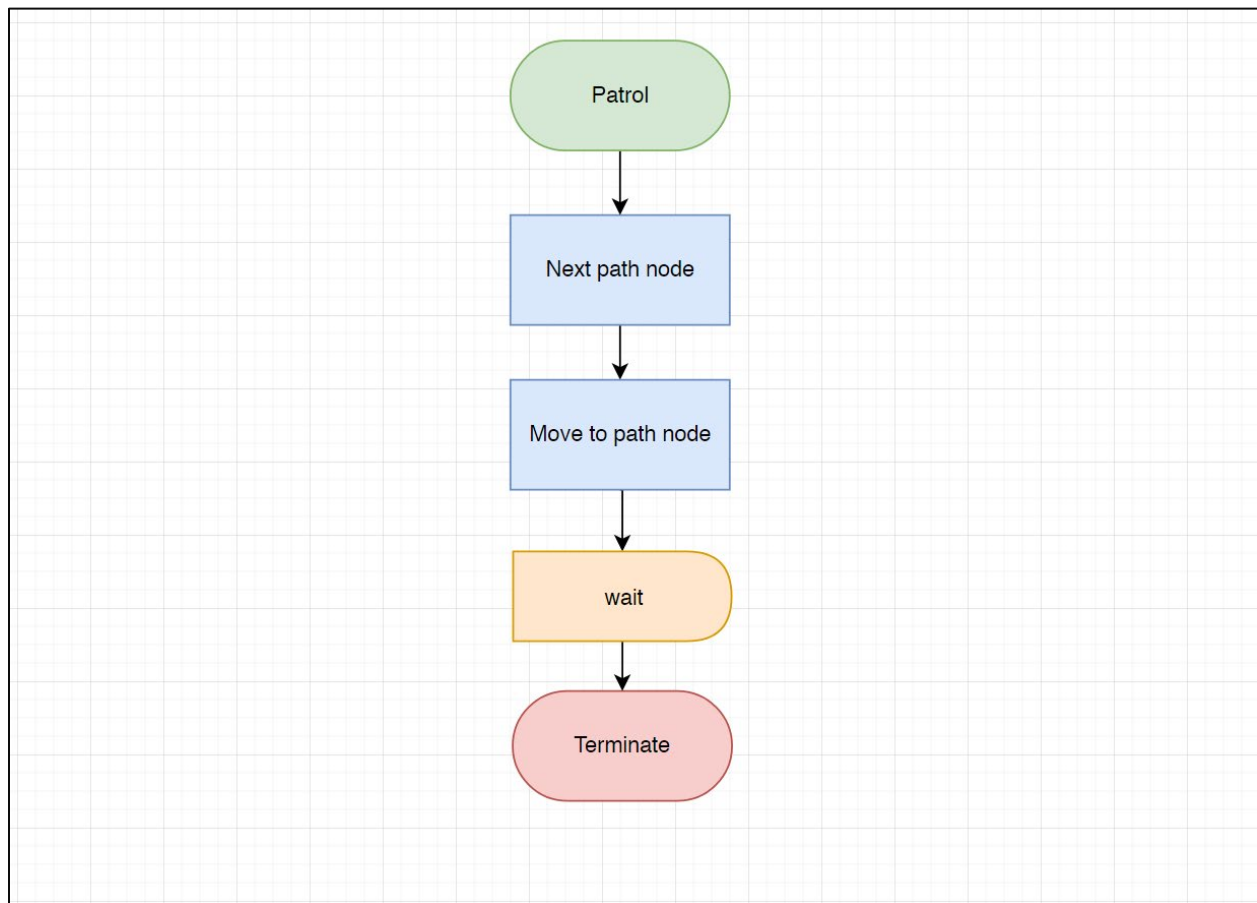
- The AI will walk around in a given path route and if it detects the player they will walk towards them and attack.

Stationary AI



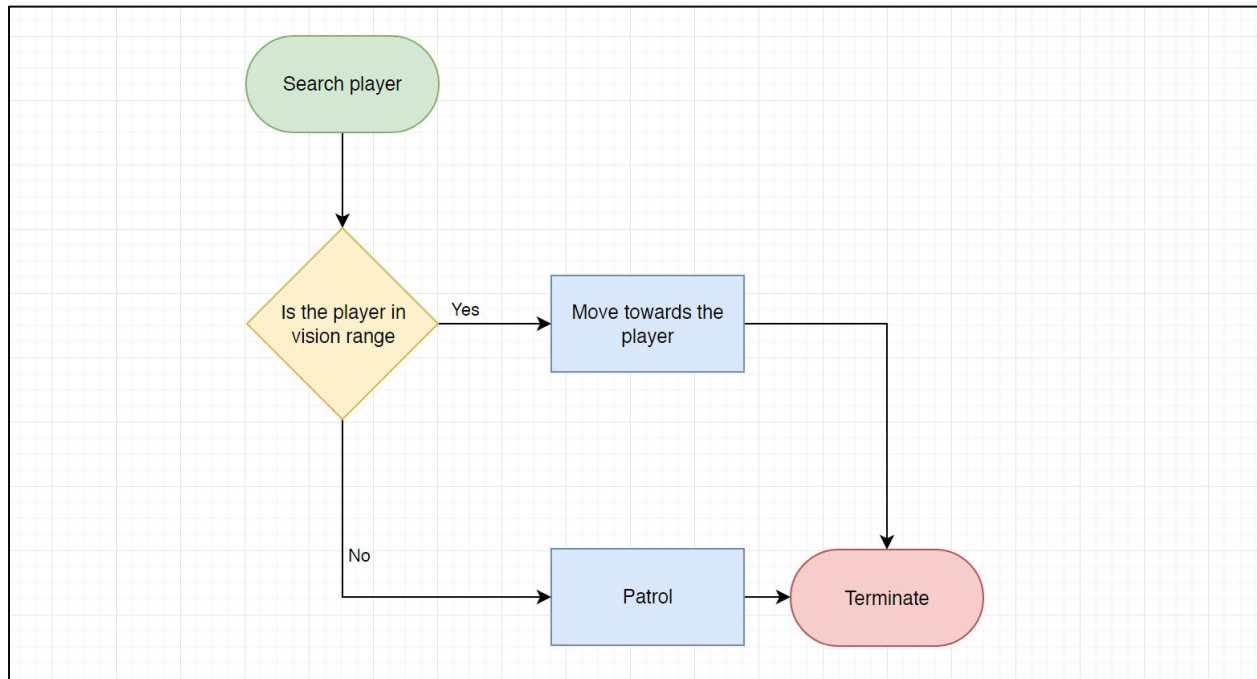
- The AI will stay in place until they see the player, if it detects the player they will walk towards them and attack.

Patrol



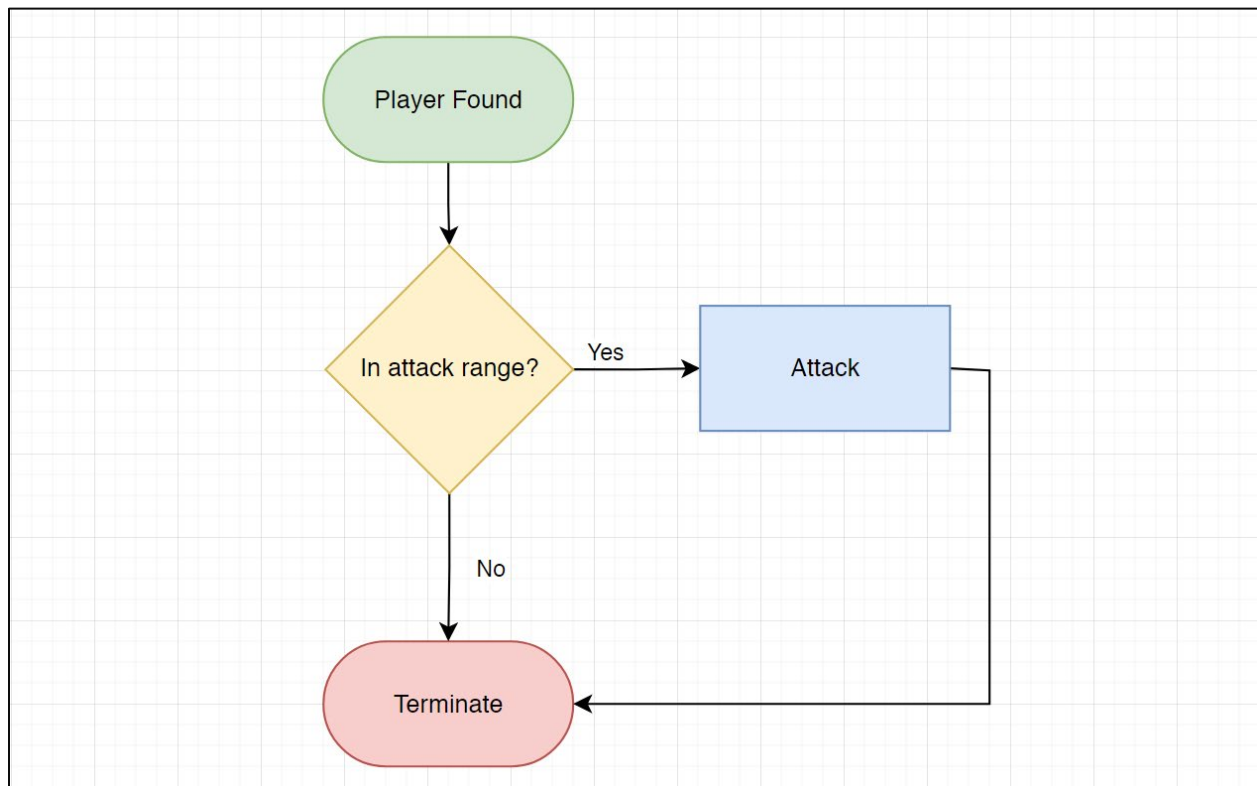
- The patrol routes are predefined, they will move to each one in a given order and wait there for a short duration and move on.

Search Player



- If the player is in the vision AI will move towards the player. Once the player gets out of the AI's detection range the AI will get the last path node and continue with the patrol or stay there if there are no nodes available to move.
- AI has 360 vision

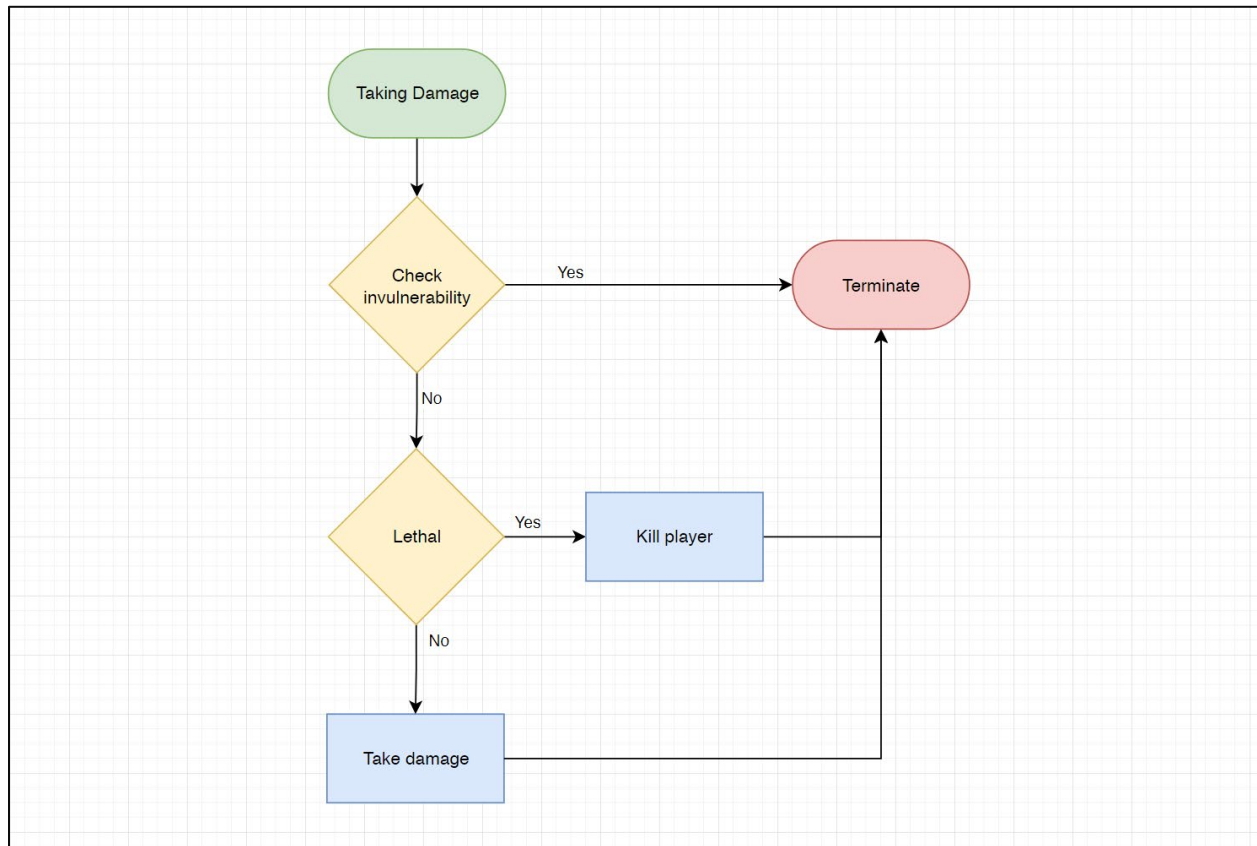
Player Found



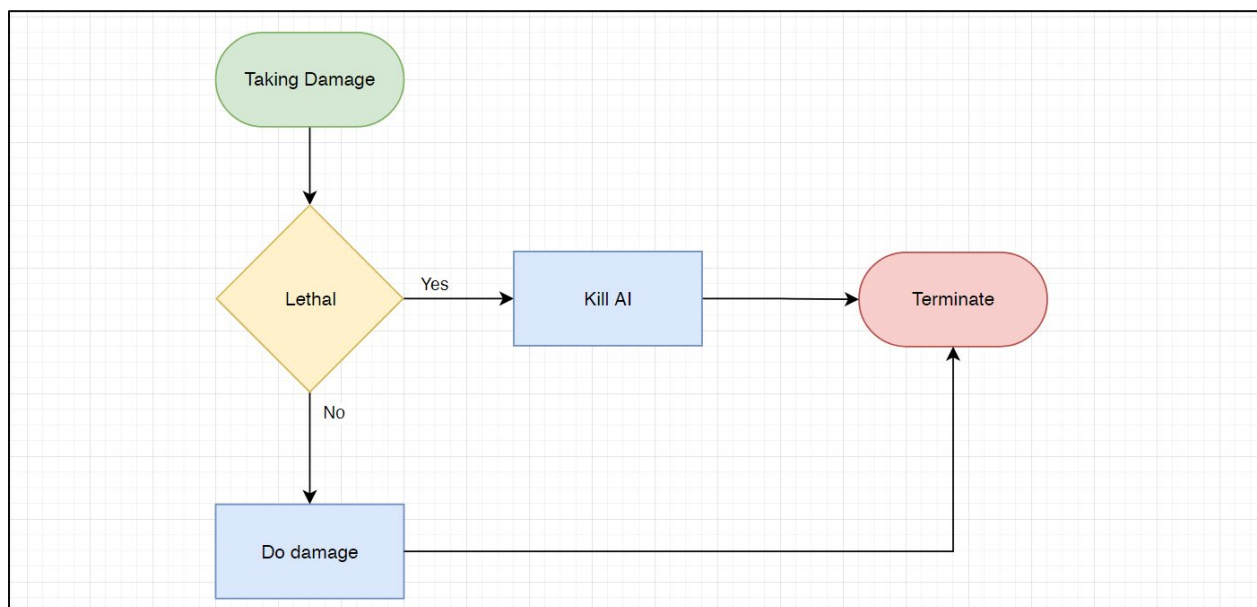
- If the player is found, the AI will walk towards the player then the AI will execute the attack.

Damage system

Taking damage

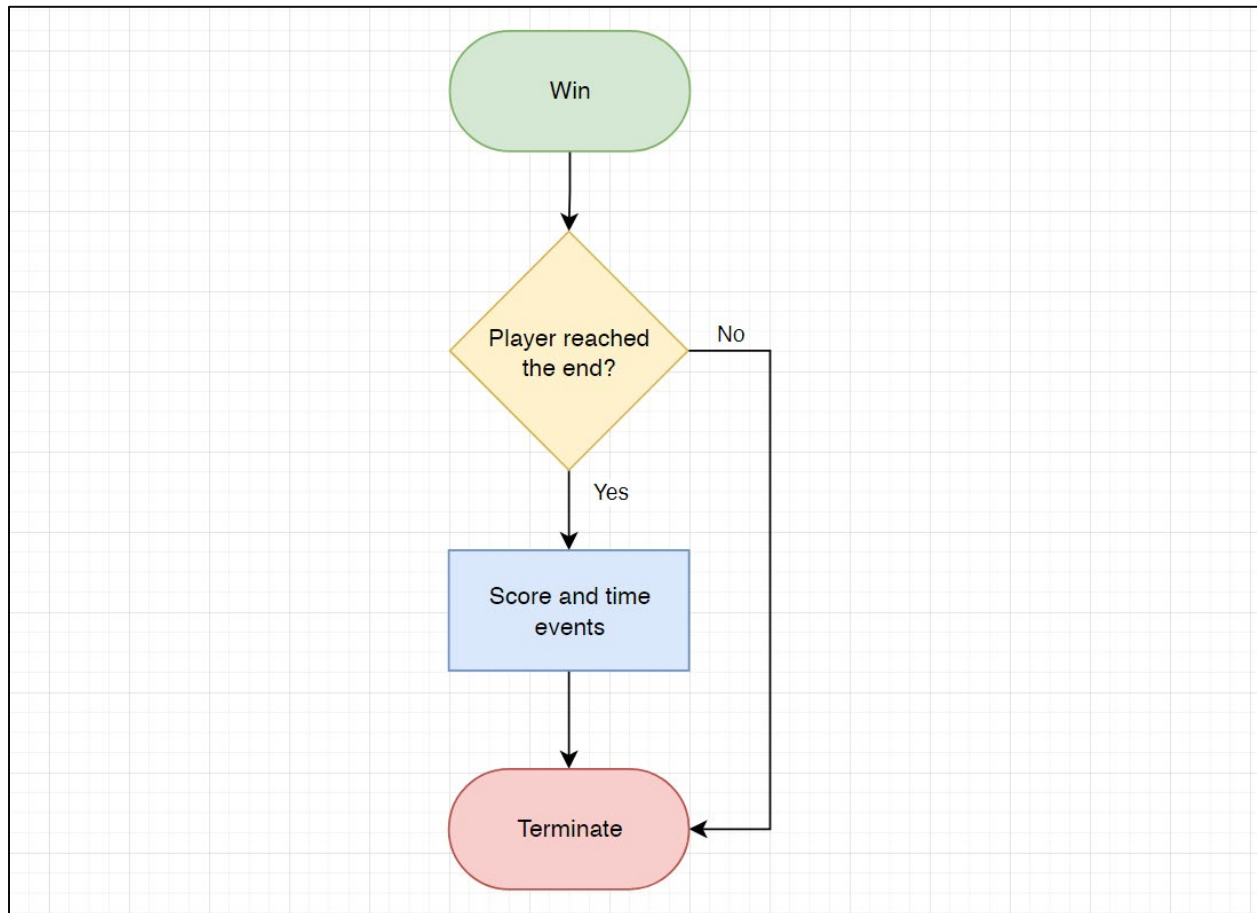


Applying damage to enemies

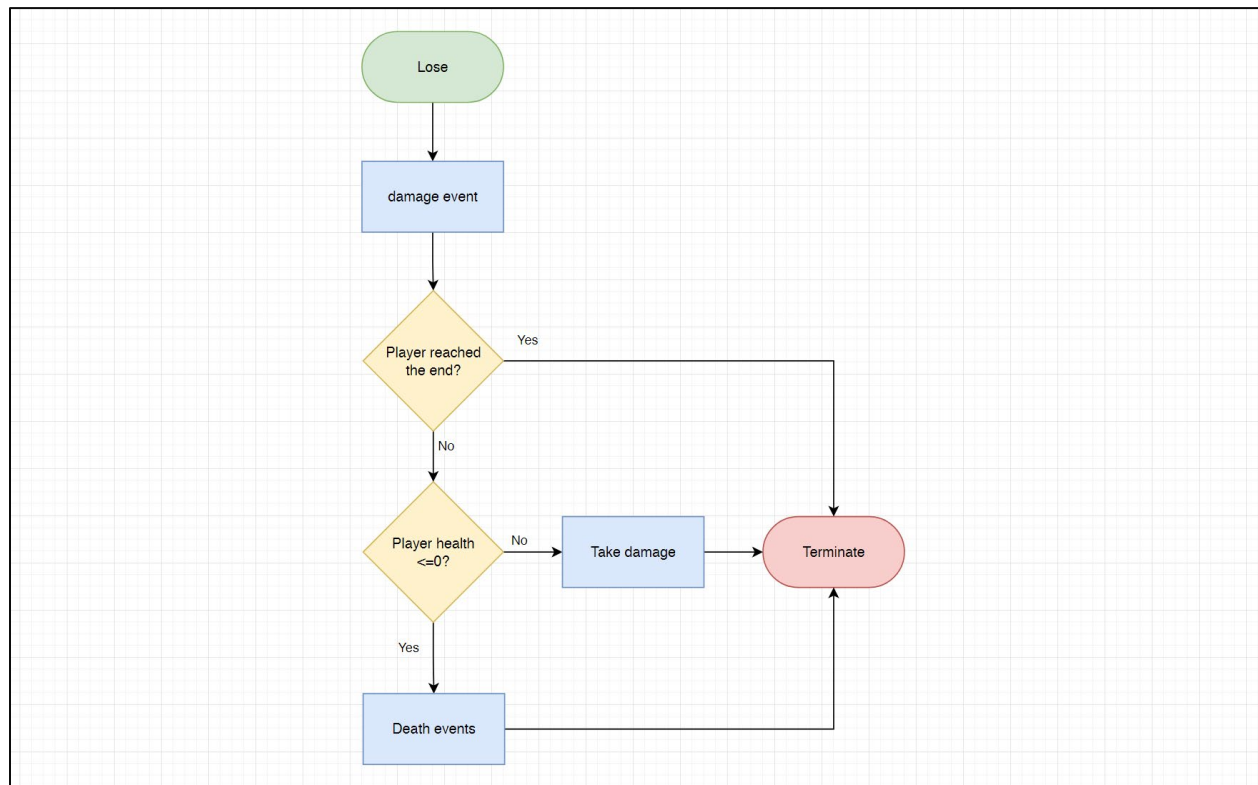


Game conditions

Win



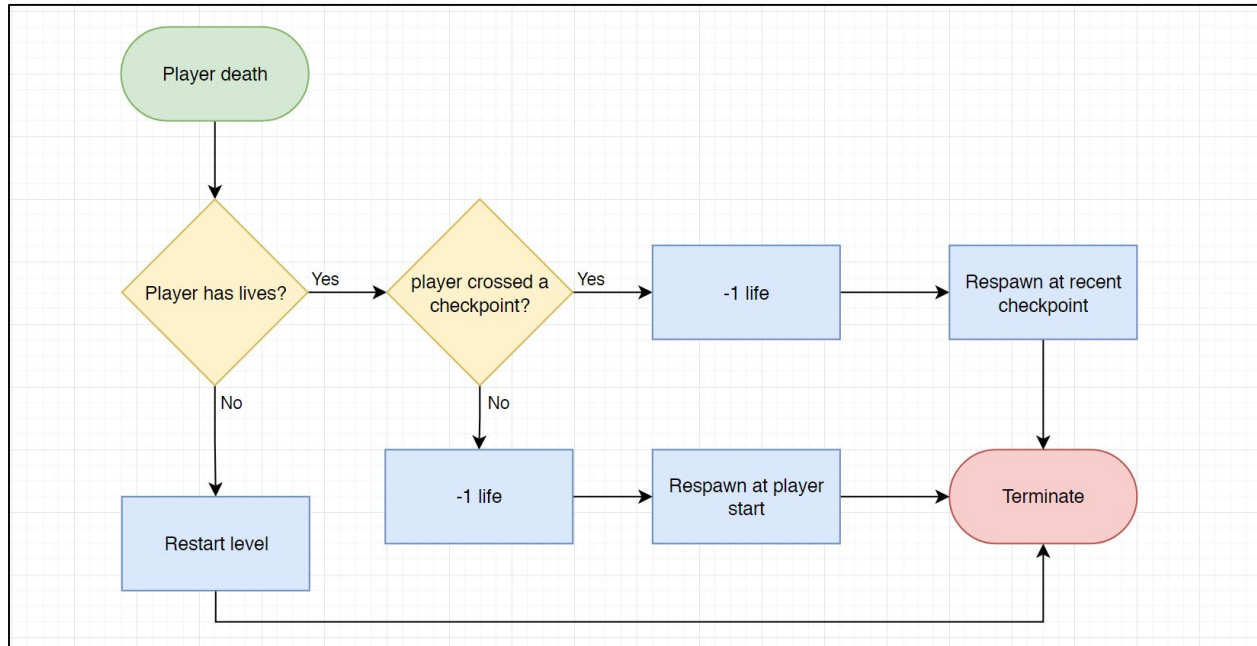
Lose



Death mechanics

Death

- The player starts with 3 lives on each map and if the player dies, they will be respawned on the closest checkpoint.
- If the player runs out of lives the level will be restarted.



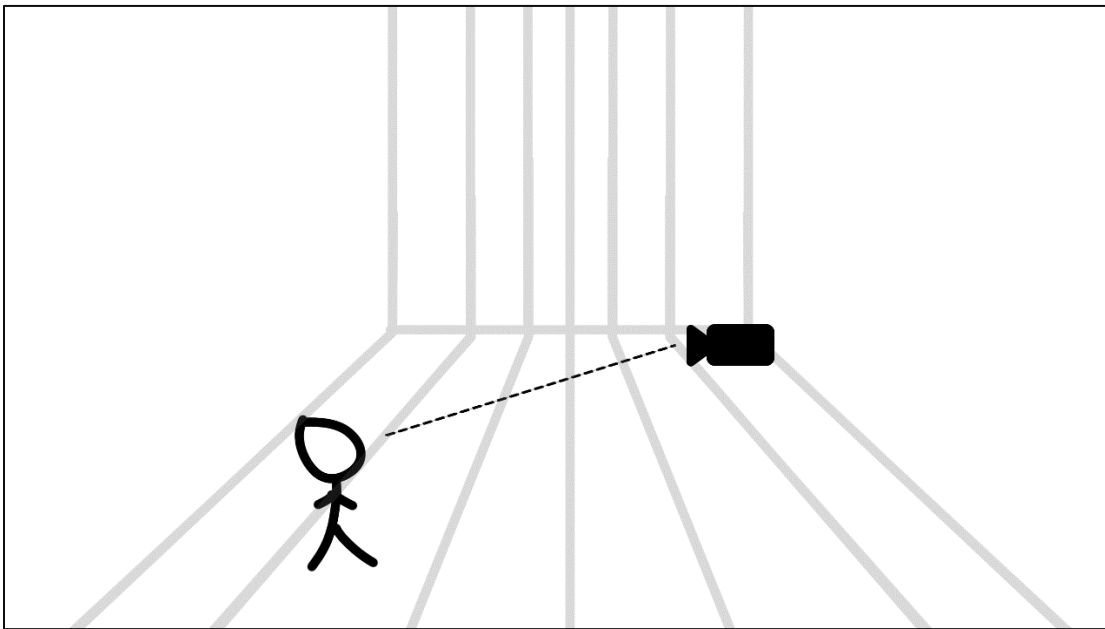
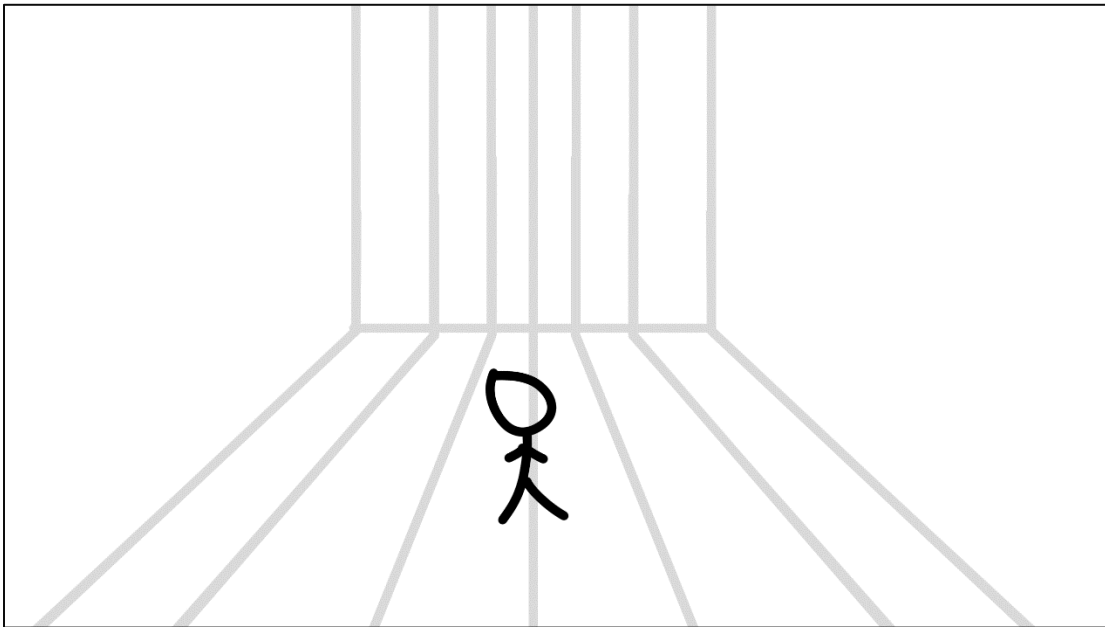
Progression

Character Progression

The player will gain abilities as they complete levels. These abilities will help the player interact with more interactive elements and allows them to complete certain platform section or a puzzle in many ways.

Camera

Player view



- The players field of view will be 90° and they can look 90° up and down.

Camera arm length	600cm
Camera lag speed	7
FOV	90°

Score system

Time – The time it takes to complete the level

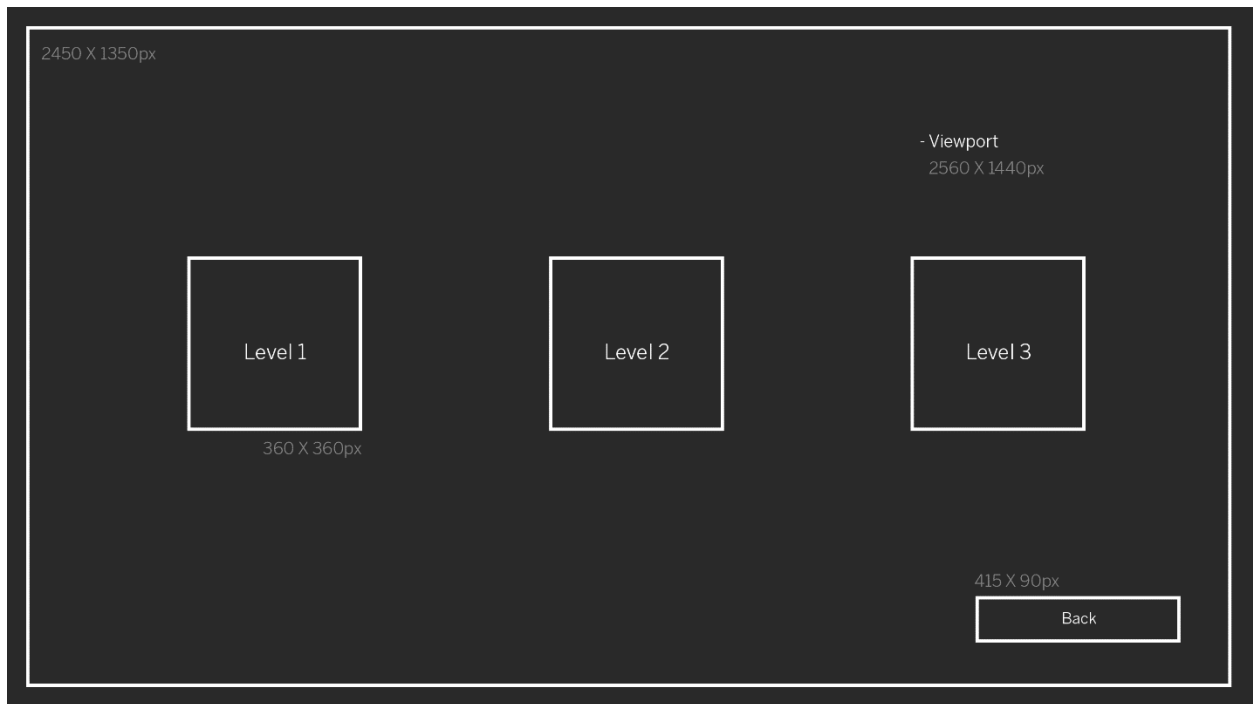
Score – The score is calculated using remaining lives and time $((\text{Max score} - \text{Seconds}) \text{ Lives} + 1)$

User Interface

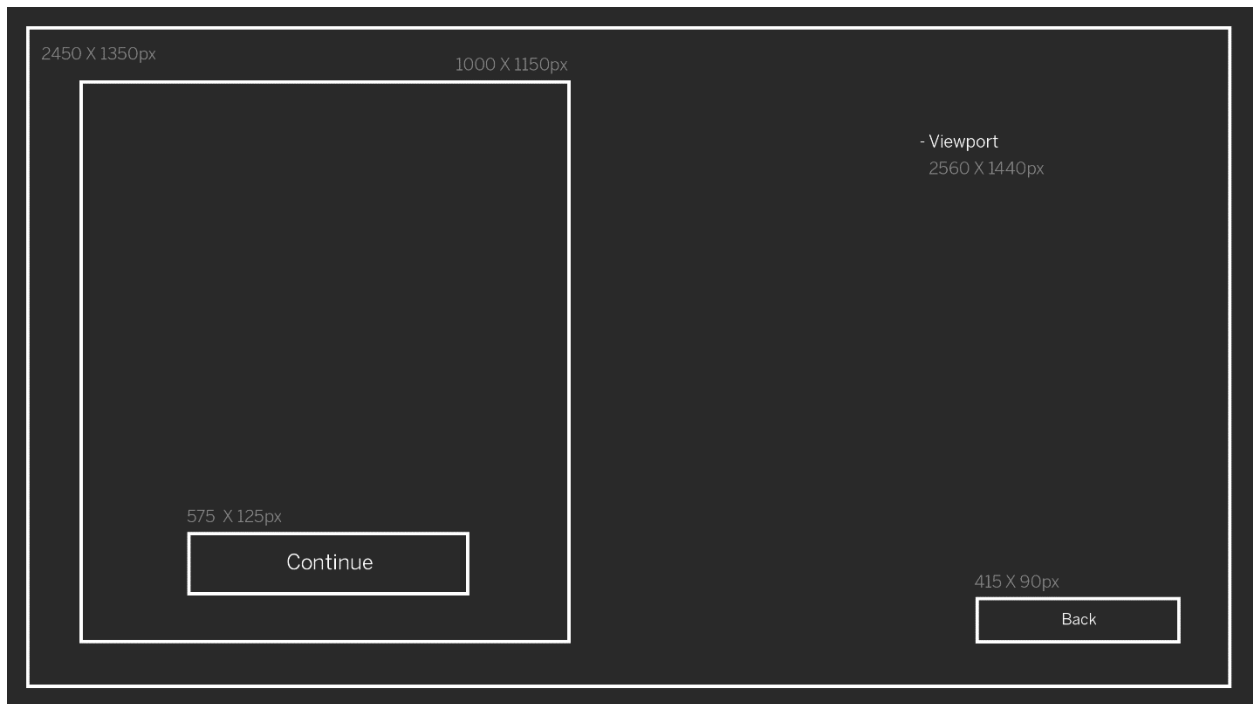
Main menu



Level select



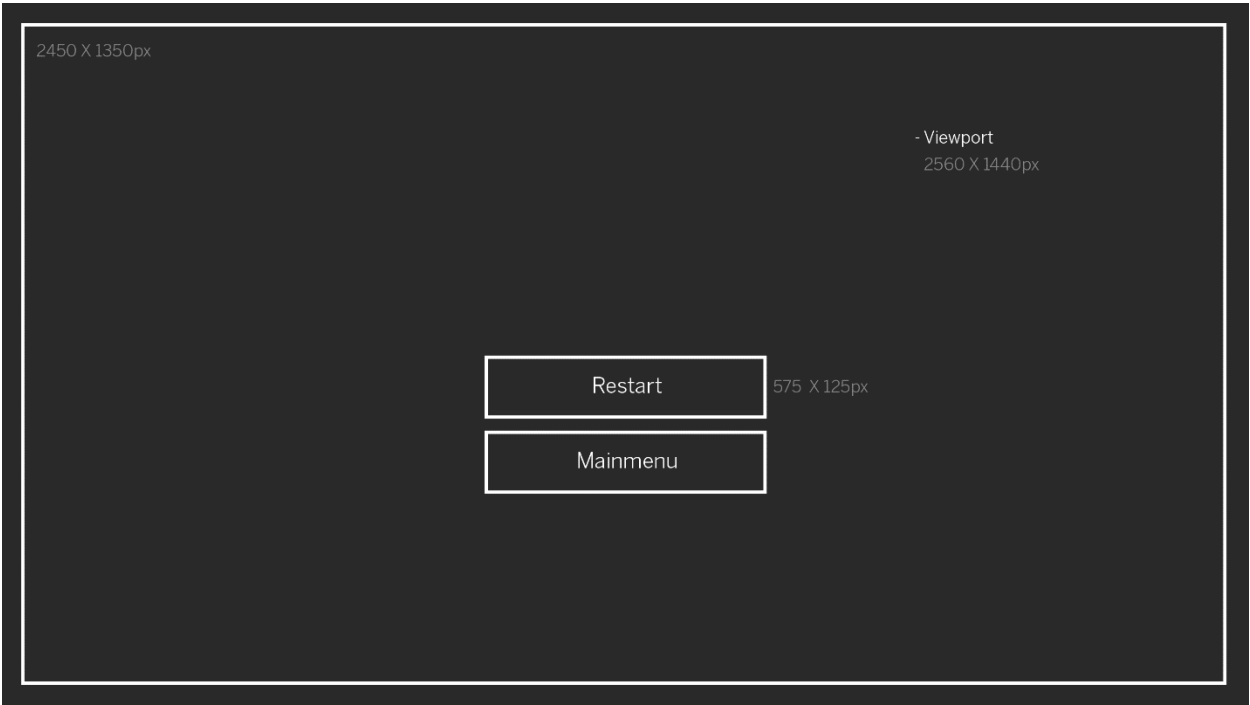
End level



Respawn



Restart



Controls

Movement	W, A, S, D
Aiming	Mouse
Melee Attack	LMB
Ranged Attack	RMB
Jump	Space