

Game Design Document

Game Name: ***ABYSSWALKER***

Date: **28/04/2025**

Student ID: **22168617**

Table of Contents

Game Design Document.....	1
Introduction.....	3
Game Overview.....	3
Game Rules & Mechanics	3
Core System	3
Combat System.....	Error! Bookmark not defined.
Exploration	Error! Bookmark not defined.
Progression.....	Error! Bookmark not defined.
Player Death	Error! Bookmark not defined.
Key Algorithms.....	3
Stamina Regen	4
Essence Resurrection	Error! Bookmark not defined.
Enemy AI.....	Error! Bookmark not defined.
Controls	5
UI/UX Design.....	5
Cheats	5
Assets List	6
Bibliography.....	Error! Bookmark not defined.

Introduction

Abysswalker is a 2D Survival Sidescroller. It revolves around stamina-based combat along with high-risk resurrection mechanics. Players will need to survive waves of enemies that spawn on either side of the screen, and you can also upgrade your stats at the end of each wave.

Game Overview

- Genre: 2D Survival Sidescroller
- Platform: PC / Xbox Controller Support
- Core Themes: Dark Fantasy 2D Sprites with stamina-based combat and risk resurrection.
- Inspirations: Dark Souls, Castlevania, Bloodstained: Ritual of the Night

Game Rules & Mechanics

Core System

- Managing stamina:
 - Attacks: attacks cost 5 stamina
 - Dodges: Dodging takes 10 stamina
 - Regenerates 10 stamina per second when not rolling, attacking or jumping
- Abyssal Essence:
 - Currency for stat upgrades (Health/Stamina/Damage)
 - Lose 15% of total abyssal essence upon each death.
 - Players can revive using Abyssal Essence if have enough.'
- Boss at the end
 - The player will fight the final boss towards the end but need to be strong enough for him to spawn.
- The enemies will constantly move towards the player to keep the tension high.
- There will also be various enemy types

Visual Design

- The game will have 2D animated sprites which include the player and the enemy

Audio

- The combat will have slashing sounds and hit sounds to make it clear for the player that they are attacking and hitting the enemy.
- Different audio tracks when in the main menu

Key Algorithms

Stamina Regen

- Every frame:
 - o If player is not attacking, rolling or jumping:
 - Regen stamina by 10 units per sec
 - Clamp stamina maximum to 100
- Stamina usage:
 - o Jump action: decrease stamina by 15
 - o Attack action decrease stamina by 30
 - o Roll action decrease stamina by 30
- Validation:
 - o Block action if the current stamina < required stamina cost
 - o Keep the stamina between 0 and 100

Movement Physics

- Every frame:
 - o Calculate the horizontal movement
 - Apply the input direction * movement speed
 - If turning, then multiply by the turn factor
 - o Calculate vertical movement
 - If the player is not grounded, then apply gravity acceleration
 - Increase the Y velocity by gravity * deltaTime
 - o Update the position
 - Position += velocity * deltaTime
 - o Ground collision
 - If position.y >= ground level
 - Then the position.y is set to ground level
 - Set isGrounded to be true
 - And the vertical velocity should be reset to 0

Player State Machine

- States:
 - o IDLE
 - o WALK
 - o ATTACK
 - o DEAD
- Transition rules
 - o From IDLE
 - Can go to any valid state
 - o From WALKING
 - Can transition to ATTACK if grounded and stamina is >= 10
 - o From ATTACK

- Cant change states until animation is completed
 - If animation completes can either go IDLE or WALK
 - From DEAD
 - Can only transition to IDLE if was revived
- State enter actions
 - ATTACKING
 - Disable stamina regen
 - Consume 10 stamina
 - Attack animation plays
 - DEAD
 - Stop all movement
 - Cannot transition states unless revived
 - Play death animation
- State exit actions
 - ATTACKING:
 - Re-enable the stamina regen

Controls

Action	Keyboard	Xbox Controller
Move Right	D	Right D-Pad
Move Left	A	Left D-Pad
Dodge/Roll	Q	B
Jump	Space	A
Attack	J	X

UI/UX Design

Mockup

1. Title Screen:
 - Background: Black
 - Buttons: New Game, Continue, Settings, Exit Game
2. Gameplay HUD:
 - Bottom Middle: Health (Red)
 - Bottom Right: Stamina (Green)
 - Bottom Left: Essence needed to resurrect (Purple)
3. Death Screen:
 - Screen turns black with text “You have perished...” + “Resurrect? (Cost: 50 Essence)” [Arise] / [Perish]

Cheats

- Debug Mode:

- Toggle: Press ``
- It will display the ImGui menu which allows the player to see the stats/distance of an enemy and how many have spawned.
- God Mode:
 - Toggle: Press F1 key
 - Players cannot die
- One Shot Enemies:
 - Toggle: Press F2
 - Players will be able to insta kill enemies even on higher waves
- Inf Stamina:
 - Toggle: F3
 - Players will have infinite stamina so they can keep dodging and attacking
- Skip to last wave
 - Toggle: F4
 - Players will be able to skip all the way to the final boss

Assets List

Type	Description	Source
Sprites	Player, Boss, Enemy NPCs	https://aamatniekss.itch.io/fantasy-knight-free-pixelart-animated-character - Player
		Boss -
		Enemy 1 - https://monopixelart.itch.io/dark-fantasy-enemies-asset-pack
		Enemy 2
Audio	Title screen BGM	Title screen – DMC 3 Lullaby
	In Game BGM	In Game BGM – DMC4 Theme and DMC 3 Theme
Font	OptimusPrinceps	OptimusPrinceps font
Environment	Background Image	Background image -