Dungeon Run

(3D Game Development with C++)

A PROJECT PROGRESS REPORT

Submitted to

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Contents

Introduction

Dungeon Run is a 3D Platform game.

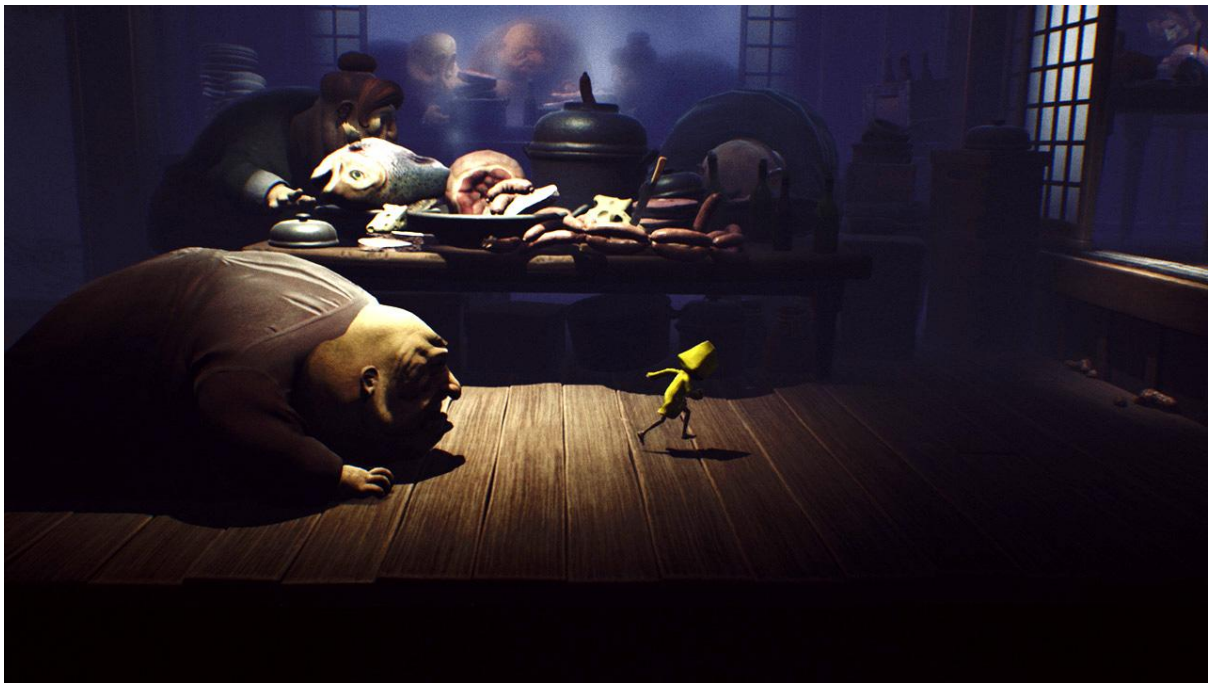
Platform game is a genre in which the player moves from point A to Point B, while facing multiple obstacles, enemies and checkpoints in between.

The game is in a 3d space with 8 directional movement with multiple interactive actions to perform.

Study of the existing system

Dungeon run is based on the style and features of Little Nightmare and Mario.

1. **Little Nightmare:** It is a puzzle platform adventure game, developed by the acclaimed Tarsier Studios and publishes by Bandai Namco Entertainment. It is available in Microsoft Windows, Nintendo Switch, Play station 4 & Xbox One. Where the player moves from left to right while solving puzzle to unlock items and complete the level



2. **Mario:** It is a game from the last century and is from the 2d platform genre, made by Nintend0o. It is considered to be one of the most influential games in the world. Based on the same left to right movement Mario is one of the earliest games in the platform genre. And inspired

Limitation of Existing System

1. Newer games use too much of the computer resources and thus can’t be played on low end Hardware.
2. Difficulty in understanding the controls and has unnecessarily complex movement.
3. Most of the old systems including Mario were made for endangered console and cant be played on PC.

Features to be included in the system

1. The game should allow movement in 3D axis.
2. Player should be able to perform actions such as jump, double jump, attack and interact with their surroundings.
3. The game should have dynamic obstacles with NPC(Non Player Character) enemies.
4. The game will contain 2-3 levels, with different environments.

Feasibility Study and Requirement Analysis

Software Requirement

Windows 10 - 11

Unreal Engine 5, v5.0.3

DirectX 12

Hardware Requirement

4GB Ram

2gb Vram

Graphics Card (GTX 1650)

6 GB of Disk Space

Scheduled Feasibility

Gantt Chart

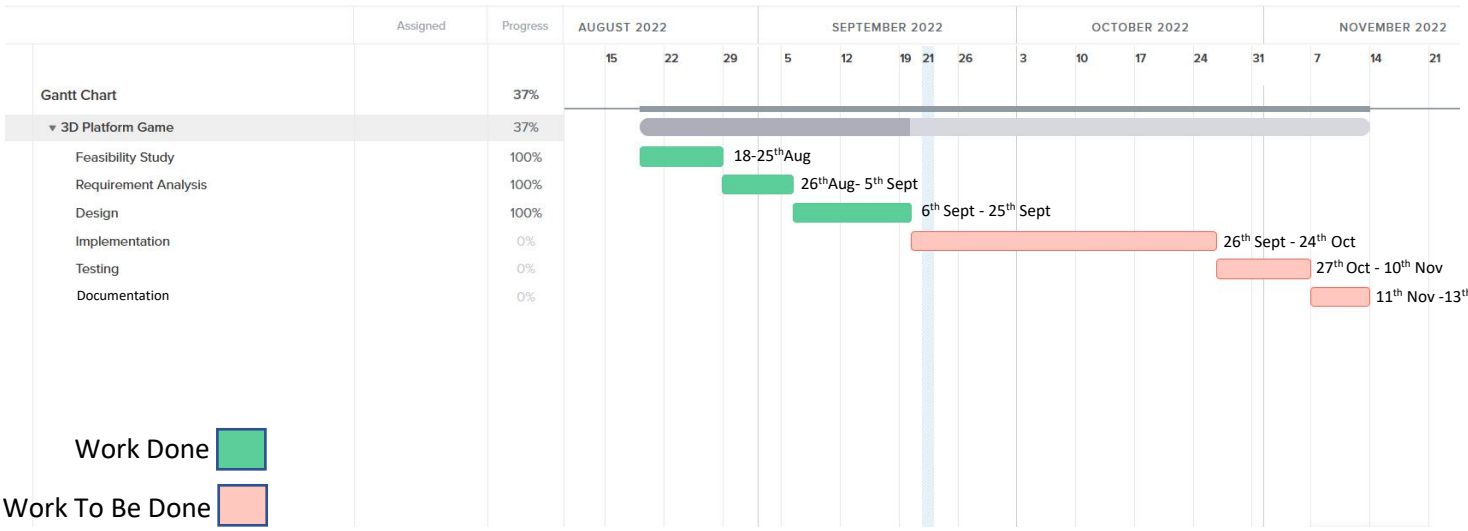


Fig. 1.1 Gantt Chart

Economic Feasibility

The Basic COCOMO model is a static, single-valued model that computes software development effort (and cost) as a function of program size expressed in estimated lines of code (LOC).

COCOMO Model Constructive Cost Model (COCOMO) The basic COCOMO equations take the form:

Effort Applied (E) = $A(KLOC)^B$ person-months

Development Time (D) - $C(\text{Effort Applied})^D$ months

People Required (P) = Effort Applied/Development Time [Count].

Where KLOC is the estimated number of delivered lines (expressed in thousands) of code. The coefficients a_b, b_b, C_b, and d_b are given in the following table:

Software Project	A	B	C	D
Organic	2.4	1.05	2.5	0.38
Semi-detached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

Our project type is Organic project, Estimate LOC = 2300 Now the basic COCOMO equation of our project is

Effort Applied (E) = $A(KLOC)^B$ [person-months]

= $2.4(2.3K)^{1.05}$ [person-months]

= 5.75 [person-months]

Development Time (D) = C(Effort Applied)^{D} [months]

= 2.5(5.75)$^{0.38}$ [months]

= 4.85 [months]

People Required (P) = Effort Applied/Development Time [count]

= 5.75 /4.85 [count]

= 1.18 [count] = 1 (approximately)

The project development time for this project is 5.75 months which will require 1 person. As we have a limited time of approximately 3 months to complete this project we will require more people to develop this project.

Since we have 3 members in our group the project development time is justified.

Operational Feasibility

The Project is operationally feasible as the final output of the project is a game with easy to understand controls, simple movement mechanics, has interactive world with NPC enemies and Obstacles.

Design Diagrams

Class Diagram:

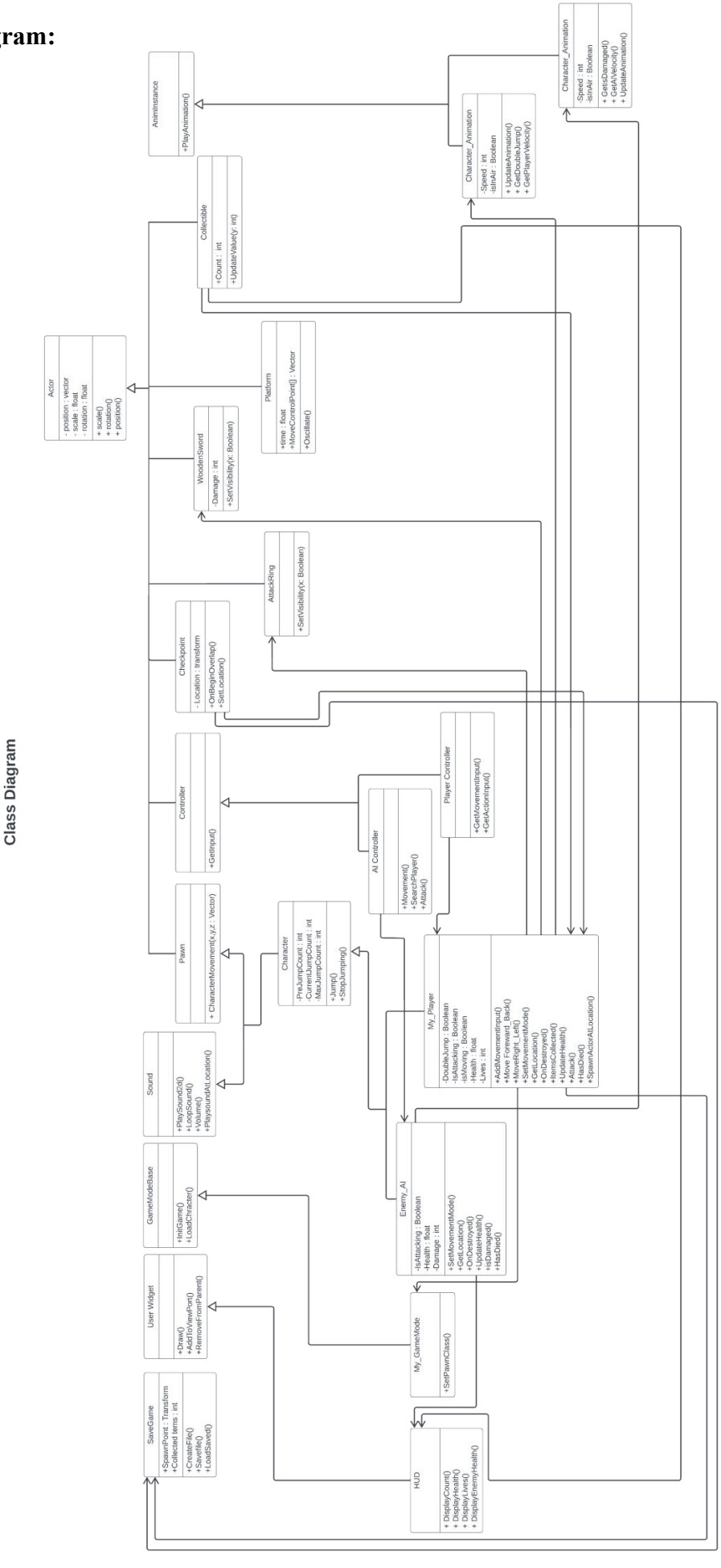


Fig. 1.2 Class Diagram

Activity Diagram:

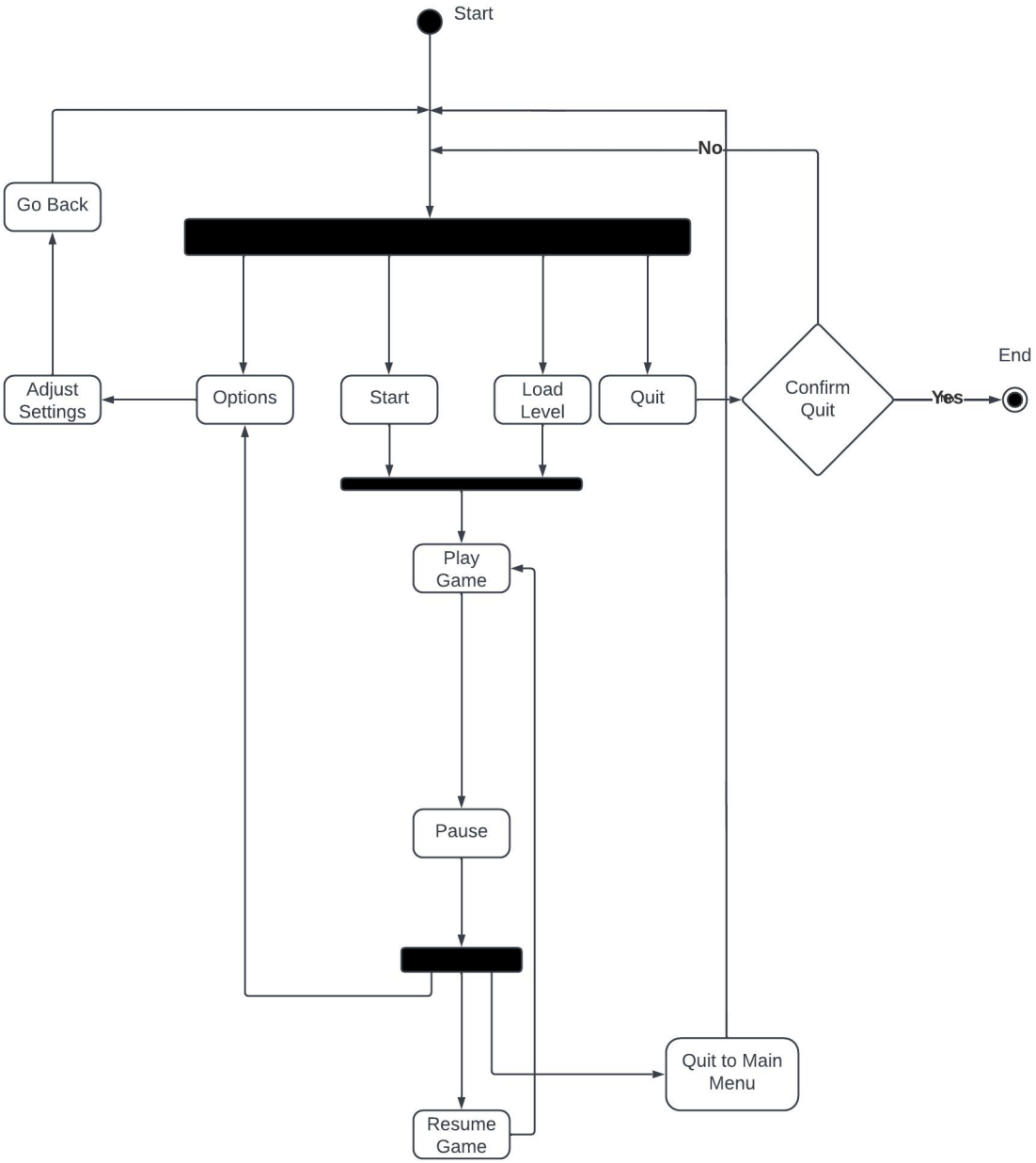


Fig. 1.3 Class Diagram

Use Case Diagram

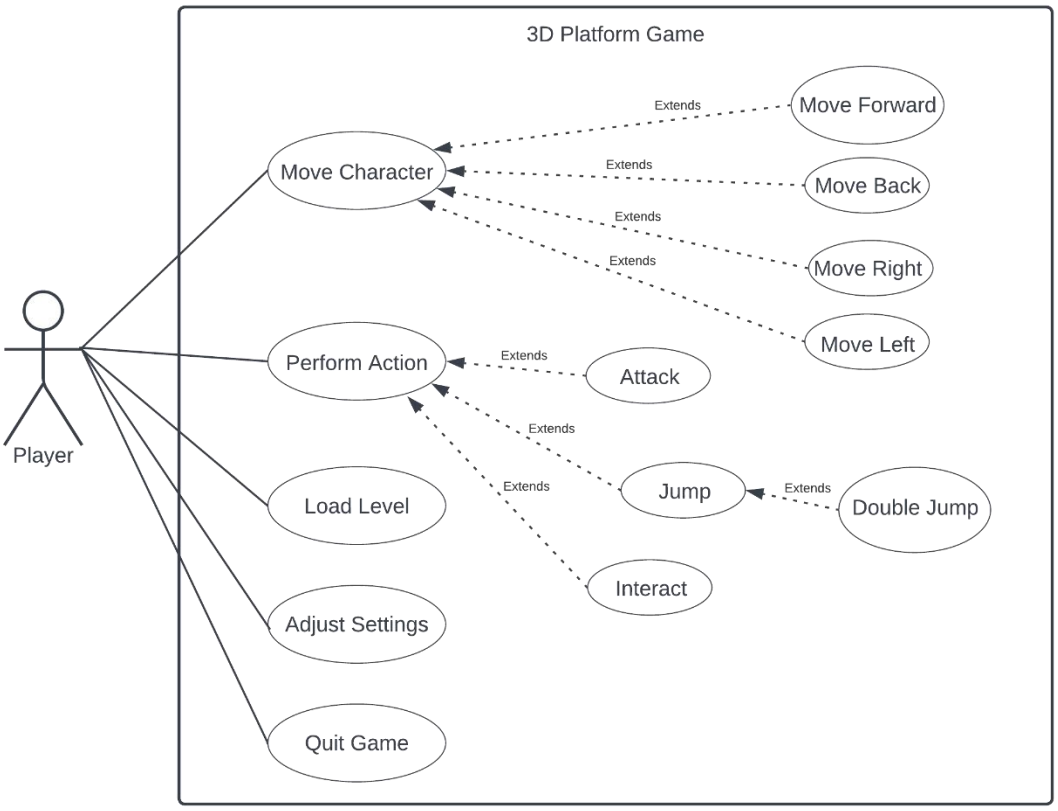


Fig. 1.4 Class Diagram