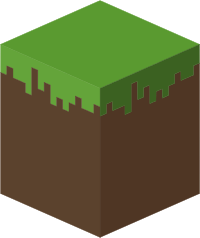
Fight Blocks

All Blocks Development

Submitted by: Rie Kumar Submitted to: Calvin Caldwell



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# 3. Revision History

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| Signature (Calvin Caldwell) |  | Date |

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| Signature (Rie Kumar) |  | Date |

This document submitted by:

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# 5. Introduction

## 5.1. Purpose

The purpose of this document is to propose a project idea for senior project. I will be creating a 3D action RPG. The document will address the scope, requirements, and design related to the project.

## 5.2. Scope

The scope of this document is a general descript of the project. This includes the project management, system general discussion and the project requirements.

## 5.3. Intended Audience

The intended audience for this document is Calvin Caldwell, the senior project instructor.

# 6. Project Management

## 6.1. Change Management Procedures

### 6.1.1 CAT Team

The CAT team consists of the senior project instructor and Rie Kumar.

### 6.1.2 Medium

Changes should be requested via email to [rie.kumar@oit.edu](mailto:rie.kumar@oit.edu) and calvin.caldwell@oit.edu.

### 6.1.3 Protocol and Response Time

Change requests will be analyzed and responded to within 2 days of the change request.

### 6.1.4 Time Lines and Impact Analysis

Any changes requested will go through an impact analysis to determine what the change will affect and how the timeline will change in result.

### 6.1.5 Archive

All changes will be archived on google drive with its impact analysis and will be able to be referenced at any point in the future.

## 6.2 Software Delivery, Installation, and Acceptance Criteria

The project will be a 3D game built in Unity, there will be an installer provided that will allow the user to choose the directory that they would like to install the game. Acceptance will depend upon how much the game matches the functional requirements.

## 6.3 Documentation and Online Help

There will be documentation for the project, that will be presented in the form of a game manual, which will be viewable by Rie Kumar and the senior project instructor. The game will provide a short tutorial for new players that will assist the user in understanding the basic mechanics of the game.

## 6.4 Project Risks

There are many risks for this project. The developer has a strong background in Unity, but minimal experience in implementing some of the features in the functional requirements. Since, there are multiple resolutions and systems that can run a video game, the Unity game will have to accommodate a general set of resolutions and must have the ability to support systems with weaker than average specifications.

## 6.5 Customer Responsibilities

Customer is responsible for any errors that occur, if they altered or modified the game files in any way.

## 6.6 Status Reporting

The information provided on the status reports will be the work completed in a given week, the work to be completed in the following week, and any issues that occurred.

# 7. System General Description

## 7.1 Problem Statement

I will be creating a 3D Action RPG. The user will be placed on the starting screen when launching game, which he/she will then be given the option to choose between four menu options: start, skill tree, settings, and exit.

The start game option will place the user on a map, created by me. The map will have two large castles (one eleven and one human styled), with three paths leading between the castles. The castle will be filled with at least four houses each, a farm, and a main large building with banners on the front. When the game first loads up, eight enemies that will be placed in the same location each time a user wishes to play, and the user will be placed inside the middle of the castle of human styled castle.

The user will have the option to move in eight different directions: north, south, east, west, southeast, southwest, northeast, northwest. All movements will use root motion, to provide the smoothest movement possible. Other abilities that the user will be able to do, is attack using a single-handed swing animation with a single-handed weapon. If the user has a two-handed sword, then the animation will switch to a two-handed swing animation. The user starts with a single-handed weapon, and to gain a two-handed weapon, the user must find a two-handed weapon in the map, hover over it, and press the action button (“E”). A two-handed weapon does 55 points of damage per hit, and a one-handed weapon does 30 points of damage per hit. However, the animation for the two-handed weapon are two seconds longer than the one-handed swing. Once, the user has grabbed the two-handed weapon, the weapon will be stored in an inventory system.

The inventory system, will have several boxes, with each box housing an item. Each item does not stack, meaning that picking up a second two-handed weapon, will not place it on top of the previous weapon. Other items that can be stored inside the inventory are potions of healing that can be found scattered across the map in set locations. To access the inventory, the user must press the inventory button (“TAB”), which will bring up the inventory interface mentioned earlier. To select an item from the inventory, the user will hover over the item with a mouse, and right click the item. If the item is a weapon (single or two handed) then the character will store their current weapon in the inventory and hold the selected weapon. If the item the user has selected is a potion, then the potion will be expended from the inventory and consider to be “consumed”, meaning that the effects will simply be applied to the user. Each potion heals 10 life points, with the user having a default value of 100. If the user’s health is already at their maximum value (with no skills default is 100), a potion will provide no healing.

Across the map are eight enemies, each enemy has 60 life points. An enemy will be given the ability to follow users who are within 10m. If the enemy is proceeding to follow the user, he will attempt to get 2m away. Once, the enemy is within 2m, the enemy will trigger an attack animation. Each enemy has a single-handed sword, and thus have a single-handed attack animation. If the sword during the attack state, hits the player, then the player will be dealt 5 points of damage. If the player attacks the enemy, then the enemy will be dealt damage (damage per weapon was listed earlier). Once, the enemy has reach below or at 0 life points, they will trigger the dying animation and will be unable to move. If the player has reached below or a 0 life points, they will trigger the dying animation, and the player will be sent back to the main menu. If the player manages to defeat all the enemies then they will be presented a game over screen, and proceed to the main menu.

The player will also have a quest giving NPC near the castle entrance, which will provide them with dialogue with each quest, there will be a total of two quests given, one that involves killing at least one enemy, and another that involves reaching the other enemies castle. The quest will automatically be considered complete when the player has achieved the quest goals. No rewards will be given from the quests, they are just for fun. To check the quest the user is currently on, they must press the “T” button, and the quest name and description will be show in the top-right corner. Only one quest can be active at a time, and the player must talk to the quest giving NPC to gain another quest.

If the game is exited prior to the win or lose condition being met (single player mode only), then choosing to start a solo game again will place all the enemies and players back in the location, restore their health to what it was at the time of the game exiting, and the current quest and the quests the user has already completed The only way to restart the enemy/player positions is for the player to achieve the win or lose condition.

If the second menu option (skill tree) has been chosen, nine skills will be viewable. They will be arranged in three columns and three rows, with the set of skills in the first row, having a silverfish border around them. There will be a counter of the number of skill points a user has, which with no skills previously chosen is three. If the player highlights a skill they want and click LMB, then a skill point will be decremented, and they will get the benefit of that skill. There are three basic skills with the other six being a more potent version of the basic three. Skill bonuses stack on top of another skill. The first three skills are: health increase, damage increase, and speed increase. Which as the name suggests, increases the attributes of the player in-game. To get a skill below that (which is just a stronger version of the one before), they must choose the skill at the higher row. Specifically, they cannot take the first increase health and then get the third increase health, they must acquire them in the order from top to bottom. Below the list of skills, is a reset button, the will relock all the skills chosen and provide the user back with the initial number of skill points.

If the player has chosen the third menu option (settings) they will be presented with a small menu that has a volume control, aliasing settings, and music volume control. Finally, if the player has chosen the last menu option (exit), all skill points, player/enemy locations, player/enemy health, quests, dialogue and main menu settings will be saved into the local database.

## 7.2 Perspective

The reason I decided to do this project was because of the lack of experience in Unity. There are several features listed in the functional requirements that I have either never perfected or attempted.

## 7.3 Major Subsystems

The game will be ran on my computer (high-end gaming computer). It will be built using the Unity Game Engine, and will connect to a database that will be hosted on my own server.

## 7.4 Relation of System to Existing System(s)

Not Applicable

## 7.5 Hardware Platform Description

The server that will host the database will be a simple Lenovo Think Server. The actual game will be developed on the same computer that will be running it (mentioned in 7.3).

## 7.6 Software Platform Description

The server will be running Windows Server 2016 Standard Edition, while the game will be running on Windows 10 and built with Unity 5.

# 8. Product Requirements

## 8.1 Functional Requirements

1. The game will feature a main menu, with options:

1.4 Ability to quit the game and save elements such as:

1.4.3 In-game settings

2. The game will have standard RPG features.

2.1 Movement System

2.1.7 Inability to move cross or enter water.

2.4 The ability to take and complete quests

2.4.6 Only one NPC can give quests and will be placed near castle gate)

## 8.2 Third Party Libraries

Unity assets regarding design will include models for weapons and characters, map tiles, and GUI design pack. Assets regarding animations will be for players, characters, buildings, and water. There will also be an asset that clean unused asset models and lowers resolution for static objects such as terrain.

## 8.3 Performance

System Requirements

Recommend:

OS: Windows 10 64-bit

Processor: 3 GHz

Memory: 8GB DDR3 RAM

DirectX: Version 11

Network: Broadband Internet Connection

Storage: 4GB Available Space.

Minimum:

OS: Windows 7 32-bit

Processor: 2 GHz

Memory: 4GB DDR3 RAM

DirectX: Version 9.0c

Network: Broadband Internet Connection

Storage: 4GB Available Space.

## 8.4 Reliability

The game will have 95% uptime, with the other 5% for database maintenance.

## 8.5 Data Description

Up to 1MB of transfer data each time the game saves.

## 8.6 Security and Safety

No security nor safety measures will be implemented in preventing hacking or exploits.

## 8.7 Constraints

Not Applicable

# 9. User Profiles

The group that will be playing the game, are those that enjoy Minecraft and RPG elements. The game offers a simple movement and camera system that is usable by any player who if familiar with 3rd person games.

# 10. Glossary

**Root Motion**

The motion of a character that is based off animation from the root bone of the skeleton.

**Navigation Mesh**

An abstract data structure used in AI applications to aid agents in pathfinding through complicated spaces.

# Appendix A – Change Request Form

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| Name (Print) |  | Email Address |  | Date |

Change Request:

Purpose for Change Request:

Additional Comments: