JJP Online

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Software Requirements Specification

Document

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1. Introduction

1.1 Purpose

The purpose of this document is to lay out the requirements of our application. It will demonstrate the general guidelines the application will follow, and explain the different features the application will include.

1.2 Scope

JJP Online an open world RPG with an advanced combat system unlike any that is commonly used in the gaming industry today. This game should be able to run locally on a personal computer, and will be able to connect online to play as an MMO RPG. This game is designed for people who are 13 or older. JJP Online will feature both PVE and PVP functionality with looting opportunities. The game will feature an in game, player driven economy. The environment will be diverse with a variety of different environments, monsters, and weapons.

1.3 Definitions, Acronyms, and Abbreviations.

RPG: Role Play Game- a game in which the user assumes the role of a character for the entirety of the game. The user often gets to choose the appearance and/or name of this character.
PVP: Player vs Player- a characteristic of a game that allows users to compete/fight against other users.
PVE: Player vs Environment- a characteristic of a game that allows users to compete/fight against npc/environment characters or object.
MMO: Massively Multiplayer Online - an online video game which can be played by a very large number of people simultaneously.
Open world: A type of game that allows the user to freely roam without strict guidelines or forced adherence to the storyline(s).
RAM: Random-access memory - a form of computer data storage which stores frequently used program instructions to increase the general speed of a system.
GB: gigabyte - a measure of computer data storage capacity that is roughly equivalent to 1 billion bytes.
Cross-Compatible: Regarding the availability and functionality of a software/application on more than one platform or operating system (i.e. Windows and MacOS).
AI: artificial intelligence - intelligence exhibited by machines, rather than humans.
NPC: non-player character - a video game character that is controlled by the game's artificial intelligence (AI) rather than by a gamer.
FPS: frames per second - a measurement for how many unique consecutive images a camera can handle each second.

1.4 References

1.)“System Requirements for Unity 2017.1” published by Unity Technologies: 2017- https://unity3d.com/unity/system-requirements

2.)“How Much Ram do You Really Need for Gaming” Bo Moore: Febraury 2017 - http://www.pcgamer.com/how-much-ram-do-you-really-need-for-gaming/

3.)”Unity Manual” published by Unity Technologies: 2017- https://docs.unity3d.com/Manual/CrossPlatformConsiderations.html

1.5 Overview

This document contains our detailed requirements and scheduling information for JJP Online. Our overall description covers the components and focuses of this project as well as some of our goals for the JJP Online as a whole. The appendix of this document will give a list of controls to assist unfamiliar users.

2. The Overall Description

Since one of our primary goals is to create a refined combat experience that most role playing type video games currently lack, one our central goals for the first few phases will be to lay the foundation for movement, attack, and defense. This includes setting baselines for speed, and hit box parameters.

The implementations mentioned above necessitate at least a basic environment and and graphic system with which to the user can interact. It also requires the implementation of a basic AI to demonstrate attack and defense capabilities.

The fifth phase will allow us to update all aspects of combat to align more with our goals. This will be where we implement algorithms to determine damage and health, decypher combo strings, and designate AI movement and attack patterns. It will also see updates to the graphics to better visualize our combat system, and command mapping to a hand held controller to make the the system more user friendly.

Future development for this project include refinement and expansion of the combat system to different weapons and classes of character. There are plans to expand the world to include diverse AI opponents and open player vs player combat. The game will be developed in a way that allows it to be accessible via the Internet to PC and mac users online after this sixth phase of expansion.

2.1 Product Perspective

2.1.1 System Interfaces

Our system does not use any external interfaces.

2.1.2 Interfaces

The users will interact with the software via their computer keyboard or a usb controller. In the game, there will be menus that display information to the user about what is going

on. A 3d environment will be shown to the user to display their character, as well as the other characters that are in the game.

2.1.3 Hardware Interfaces

For our application, we will be interfacing an Xbox controller with the computer system. The controller connects and communicates with the host device via usb. The game will also work with a keyboard and mouse, both of which will connect to the computer via usb.

2.1.4 Software Interfaces

The game can be freely downloaded from our github repository. The game is compatible with Windows 7 and above, and Mac OSX 10.12 and above.

2.1.5 Communications Interfaces

The game does not have any communications interfaces.

2.1.6 Memory Constraints

Memory constraints are difficult to determine before the game is complete, but we aim to have a minimum running requirement of 4GB of RAM with a published recommendation for 8GB of RAM or higher to optimize the experience in accordance with the norms in the gaming industry. (See item 2 in the references list)

2.1.7 Operations

The game only has one mode of operation, which is running the game from the home menu.

2.1.8 Site Adaptation Requirements

There are no site adaptation requirements.

2.2 Product Functions

The only function of our application is to be a game which will be installed on a user's personal computer.

2.3 User Characteristics

The application will be similar to other RPG games currently on the market. Experience with these types of games will be useful when playing our game, but not required. The user should have basic computer knowledge and know how to handle a controller to play our game. Because of the advanced control and fighting mechanics the age requirement is 13 years of age.

2.4 Constraints

We will not be creating animations or graphics for the game, for this reason we are constrained to the freely available sources for graphics and the like provided by Unity and sources that are compatible with Unity.

2.5 Assumptions and Dependencies

In accordance with Unity's published documentation, we assume that our application can be designed to be cross compatible; however, this is dependent on the packages we require to built the game.(see reference item 3)

We are dependent on the freely available characters and animations provided by Unity and compatible sources.

2.6 Apportioning of Requirements.

There is no apportioning of requirements.

3. Specific Requirements

3.1 External Interfaces

Our system has no additional external interfaces.

3.2 Functions

3.2.1 Phase 1

- 3.2.1.1 Start
  - 3.2.1.1.1 Upon starting the application, the game will load directly into a player view. From here, the user can move their player around, and interact with the environment.
- 3.2.1.2 Player movement
  - 3.2.1.2.1 The player should be able to walk around in 3d space around the environment. By pressing a predetermined button, the user can make the player jump.
- 3.2.1.3 Player combat
  - 3.2.1.3.1 The player should be able to perform a simple sword attack, which will deal damage to whichever obstacle is hit. The player's character should have a basic animation showing the attack, and damage should only be dealt when the characters weapon hits an object.

3.2.1.4 Environment

3.2.1.4.1 A basic environment will be provided for the user to explore, and there will be basic objects scattered around for them to attack. In this environment there will be simple AI enemies that the player can attack. For the first phase, the environment will be very basic, and include only the bare minimum required to test each of the player functions

3.2.1.5 Computer AI characters

3.2.1.5.1 Simple computer AI enemies will roam the world, and act as a target for the player to hit. These enemies will be very basic, and have a randomized AI for simplicity. The enemies should have no advanced algorithms to find the player or use combos.

3.2.2 Phase 2

3.2.2.1 Advanced movement/combat

3.2.2.1.1 In phase 2 the movement and combat systems will be upgraded.

3.2.2.1.2 Players should be able to make their character roll and run, and make combos of different movements. Various different weapons will also be added to enhance the gameplay

3.2.2.1.3 In addition to the base attack, players will be able to block incoming attacks from AI, and make advanced combat combos.

3.2.2.2 Combat components

3.2.2.2.1 Phase 2 will include the addition of health to both the players and the AI. Phase 2 will also introduce experience points.

3.2.2.2.2 Experience points will be scored when a player successfully kills an AI. The experience will be automatically added to the player's xp counter.

3.2.2.2.2 When a player or AI's health is depleted, they will die. For a player, this means that they would lose all their current xp. For an AI, their character model would simply despawn after a certain amount of time. After death, the player will have the option to respawn their character.

3.2.2.3 Advanced AI

3.2.2.3.1 In phase 2 the enemy AI will be updated to be more advanced. Rather than being random, algorithms will be implemented so that they can track where the player is, and logically move towards them and attack.

3.2.3 Future phases

3.2.3.1 Random dungeon generation

3.2.3.1.1 Random dungeon generation will give the environment a richer feel, and keep the player engaged since the gameplay will always be changing

3.2.3.2 Diverse enemies

3.2.3.2.1 Adding diverse enemies for the player to attack will diversify the world and keep the user entertained.

3.2.3.3 NPC interaction

3.2.3.3.1 NPCs could be added to give the environment a more realistic feeling, as well as give the user more interactions, and make them more drawn into the game.

3.2.3.4 Monetary system
3.2.3.4.1 A monetary system will add a goal for the user to work for, and give them a way to exchange goods with the NPCs.
3.2.3.5 More detailed environment
3.2.3.5.1 A more detailed and diverse environment will keep the user from becoming bored with the game.
3.2.3.6 Skill tree/experience system
3.2.3.6.1 By adding an experience system and skill tree the player will have a way to progress through the game.
3.2.3.7 Leaderboards
3.2.3.7.1 Leaderboards will let the player compare themselves with other players worldwide, so that they can try to become number one.
3.2.3.8 Web hosting
3.2.3.8.1 Web hosting could allow for multiplayer, letting users play the game with both their friends, and strangers around the world.

3.3 Performance Requirements

The application should be able to run at 60 fps with no frame drops or stuttering.

3.4 Logical Database Requirements

For the first two phases of the application there will be no online saving, multiplayer, or leaderboards so a database is not required.

3.5 Design Constraints

Since the first two phases of our game will be a strictly offline, single player game, players can only play the game against the computer, and won't be able to play online with their friends. For future phases when it is developed into an online game, it will require more security supports and software interfaces.

3.6 Software System Attributes

3.6.1 Reliability

The game should be reliable enough to play through a level without any bugs or errors. In the case that a bug or error happens, the system should catch it and send a report to the developers, rather than just crashing.

3.6.2 Availability

The game should be available to run all the time. If it has an error or crashes it can be closed and opened again. And after they restart the game, the previous data should be saved automatically.

3.6.3 Security

There are no security features for this system since for these first phases it will be an offline single player game. In future phases, users will be able to log in to recover their player data, and the databases that handle these logins must be secure.

3.6.4 Maintainability

It should be easy to add more functions for this game. Since we are using Git for our version control, we will be able to add new functionality without affecting the current system.

3.6.5 Portability

This game is designed for both Windows and Mac OSX. This game can be installed through the GitHub sources.

4. Change Management Process

Changes to the requirements will be discussed with the customer, and then with the team. If the team members believe the addition is applicable and manageable, it will be added .