

Software Requirements Specification for Basic First-Person Shooter (FPS) Game

Version 1.0

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1. Introduction

1.1 Purpose

This document specifies the requirements for a basic offline first-person shooter (FPS) game developed using Unreal Engine and C++. The game provides core FPS gameplay mechanics and features one game mode against AI-controlled enemy bots.

1.2 Document Conventions

Requirements are prioritized as High (critical for initial release), Medium (important but not essential for initial release), or Low (future enhancements).

1.3 Intended Audience and Reading Suggestions

This document is intended for developers, testers, project managers, and stakeholders. Developers should focus on Sections 3 and 4 for detailed requirements, while testers may reference performance and quality attributes in Section 5.

1.4 Product Scope

The FPS game aims to offer an engaging, offline shooting experience with basic mechanics. Players will navigate levels, aim and shoot, and combat AI-controlled enemies. The project emphasizes performance, responsive controls, and scalable game logic.

1.5 References

Unreal Engine Documentation (<https://docs.unrealengine.com>) and C++ Programming Guidelines.

2. Overall Description

2.1 Product Perspective

The game is a standalone, single-player experience, designed to showcase FPS mechanics developed using Unreal Engine and C++. It does not depend on online connectivity or external services.

2.2 Product Functions

- Player movement (walking, jumping, crouching)
- Aiming and shooting
- Weapon management (reload, switch weapons)
- Basic AI for enemy bots
- Health and damage systems

2.3 User Classes and Characteristics

- Players: Individuals playing the game with basic gaming experience
- Developers: Programmers maintaining and extending game features

2.4 Operating Environment

- Unreal Engine 5
- Development on Windows 10/11
- Hardware: Desktop/laptop with a mid-range GPU

2.5 Design and Implementation Constraints

- C++ for core game logic
- Use of Unreal Engine's standard input and rendering systems

2.6 User Documentation

- In-game tutorial prompts
- Basic user manual for controls and mechanics

2.7 Assumptions and Dependencies

- No reliance on multiplayer features
- Use of default Unreal Engine physics and rendering systems

3. External Interface Requirements

3.1 User Interfaces

- First-person camera perspective
- HUD displaying health, ammo, and crosshair
- Keyboard and mouse input

3.2 Hardware Interfaces

- Mouse and keyboard
- Display with a minimum resolution of 1080p

3.3 Software Interfaces

- Unreal Engine 5 libraries and APIs
- Windows 10/11 operating system

3.4 Communications Interfaces

- Not applicable (offline-only)

4. System Features

4.1 Core Gameplay Mechanics

Description and Priority: Core movement and camera control (High)

Stimulus/Response Sequences:

- User presses movement keys: Player moves
- User moves mouse: Camera rotates

Functional Requirements:

- REQ-1: WASD for movement
- REQ-2: Mouse input for camera control

4.2 Weapon Handling and Shooting

Description and Priority: Weapon management and shooting mechanics (High)

Stimulus/Response Sequences:

- User clicks: Weapon fires
- User presses reload key: Weapon reloads

Functional Requirements:

- REQ-3: Left-click to shoot
- REQ-4: R to reload

4.3 Enemy AI Bots

Description and Priority: Basic AI for enemy bots (Medium)

Stimulus/Response Sequences:

- Enemy detects player: Moves toward player
- Enemy takes damage: Reduces health

Functional Requirements:

- REQ-5: AI follows player
- REQ-6: AI attacks when in range

5. Other Nonfunctional Requirements**5.1 Performance Requirements**

- Smooth gameplay at 60 FPS on mid-range hardware

5.2 Safety Requirements

- Prevent buffer overflow or memory leaks

5.3 Security Requirements

- No online features; minimal risk

5.4 Software Quality Attributes

- Maintainable, scalable code structure

5.5 Business Rules

- No monetization or in-app purchases

6. Other Requirements

- Extendable for additional features, such as new weapons or AI behaviors

Appendix A: Glossary

- FPS: First-Person Shooter
- AI: Artificial Intelligence

Appendix B: Analysis Models

- Simple flowchart of player-enemy interactions

Appendix C: To Be Determined List

- Advanced AI behaviours
- Additional weapon mechanics
- Multiplayer features.