**Game Design Document for**

**"Galaxy Impact"**

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## 1. Introduction

This Game Design Document (GDD) outlines the design and features of "Galaxy Impact," a 2D space shooter game aimed at PC gaming enthusiasts. The document covers gameplay mechanics, characters, enemies, environments, levels, user interface, art style, sound design, and technical specifications.

## 2. Game Overview

"Galaxy Impact" is a visually captivating 2D space shooter game set in a vast and mesmerizing galaxy. Players take control of customizable spacecraft, navigating through challenging levels filled with intense battles against waves of enemy spacecraft and formidable boss encounters. The game offers a blend of classic arcade nostalgia with immersive soundtracks and ambient sounds.

## 3. Gameplay Mechanics

## 3.1 Player Controls:

Players can navigate their spacecraft using directional keys (Arrow keys or WASD) and shoot using the Enter key or Spacebar to launch missiles. Special abilities can be activated using assigned extra keys.

## 3.2 Items Pickup:

Players can pick up various weapons (laser beams, missiles) or charge kit to restore missing health.

## 3.3 Enemy AI:

Enemies exhibit diverse attack patterns, including evasive maneuvers, formations. Boss encounters present formidable challenges with complex attack and interesting strategies.

## 4. Main Character

Main character is a skilled space pilot eager to discover the mysteries hidden within the galaxy. Piloting a spacecraft, the player navigates through the galaxy, facing adversaries.

## 5. Enemies

## 5.1 Regular Enemies:

Small, nimble spaceships with sleek designs armed with laser guns or heavy weaponry. They exhibit diverse attack patterns to provide challenging targets.

## 5.2 Bosses:

Large and heavily armored battleships with imposing presence. They feature multiple weapon emplacements, including heavy lasers and missile launchers, requiring players to adapt their strategies.

## 6. Environments

The game is set in visually captivating galactic environments featuring vibrant nebulae, asteroid fields, and cosmic phenomena.

Each level offers a unique backdrop, from outer space battles to futuristic urban landscapes, enhancing the overall gaming experience.

## 7. Levels

Structured progression with increasing difficulty levels. Each level presents unique challenges, enemies, and environments. The narrative unfolds gradually, providing a sense of purpose and depth to the fast-paced action.

## 8. User Interface

## 8.1 Main Menu:

Provides options for starting the game, resuming progress, restarting, and viewing controls. Intuitive interface design ensures seamless navigation.

## 8.2 In-Game HUD:

Displays player health, current weapon availability, and total lives using SFML rendering.

## 9. Art Style and Sound Design

## 9.1 Visual Style:

Classic 8-bit graphics combined with modern visual effects using SFML. Spaceships, enemies, and environments designed to evoke nostalgia while maintaining visual appeal.

## 9.2 Sound Design:

Dynamic soundtrack and sound effects implemented using SFML audio module. Sound effects include player and enemies weapon sounds including laser blasts, enemies special abilities and ambient noises of the galactic environment.

## 10. Technical Specifications

* **Platform**: PC (Windows, macOS, Linux)
* **Engine**: Developed in C++ using the SFML (Simple and Fast Multimedia Library) for graphics and multimedia handling.
* **Programming Language**: C++
* **Optimization**: Code optimization techniques ensure smooth performance on various PC configurations.

## 11. Conclusion

"Galaxy Impact" offers players an immersive and visually captivating 2D space shooter experience, blending classic arcade nostalgia with modern gameplay mechanics. With its engaging gameplay, diverse characters, challenging enemies, and stunning environments, the game promises to deliver an unforgettable journey through the stars.