

lone survivor

Game Design Document

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2019, March 25th

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1 Game Overview

1.1 Game Name

Lone Survivor

1.2 Game Concept

Lone Survivor is an arcade shooter where the player is a pilot and the last of their wing command and has to fend off wave after wave of enemy, fighting to get to their home base. After each wave it gets more challenging until they leave enemy territory and complete the level. Each level is a base closer to home and each subsequent levels expand on enemy types and movement. At the end of the third and fifth level the player will fight a unique boss to defeat. The player only has the gun at their side to survive and their quick wits to out maneuver the oncoming hoard. The longer they survive, the higher the score they will end up with. The player need not destroy every enemy but each one defeated awards points

1.3 Target Audience

The target audience is people who enjoy a consistent playthrough with an increasing challenge as the game goes on. It also suits players who enjoy small aspects of random elements such as pickup which make them run faster, vary fire rate of their gun, add extra damage or a second bullet.

1.4 Game Summary

Lone survivor is a game very comparable to [raden X](#) which offers the player a progressively more difficult experience as they defeat waves of enemies, they can gain the advantage by getting pickups from enemies to enhance their abilities. The longer they survive the larger the more difficult it gets, until they arrive to a safe location.

1.5 Look and Feel

Lone Survivor has a typical pixel art ascetic, the overall look will be of the player flying over a field or ocean depending on the level where the player flies over as enemies come from the top of the screen following patterns and shooting bullets in the players direction. The game can be described as a bullet-hell style game. The player should begin to feel claustrophobic from being overwhelmed by enemies and projectiles but not to a degree where the game is impossible.

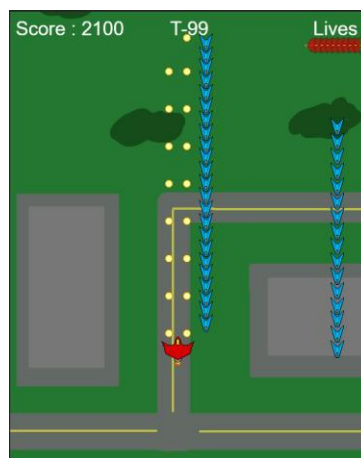


Figure 1: in game screen

1.6 Game Design Document Note

The various sections of this document are based on the Game Design Document Outline.

(Pozefsky, D. (n.d.)).6

2 Gameplay

2.1 Objectives

The objectives of Lone Survivor are:

1. Survive for the length of the flight, dodging bullets and enemies to get base at the end of the level.
2. There are 5 progressively harder levels that the player must complete to get back home.
3. The players score is derived from the sum of points gathered the levels.
4. Points can be gathered from:
 - a. Destroying enemies, each awarding 100 points.
 - b. Gathering pickups, each awarding 100 points.
 - c. The number of hit points left at the end of the level, each hit point counts for 1000 points.
 - d. Completing a level, the points awarded are calculated from this formula: $1000 * \text{level \#}$.
 - e. By eliminating multiple enemies in a row, the player will get a kill counter displayed on screen and after 2 seconds of not eliminating an enemy they will get an additional 100 * streak points

2.2 Game Progression

1. The player begins at the start of the level with nothing on screen but themselves and the background scenery.
2. Enemies begin appearing from the top of the screen, descending according to a defined pattern.
3. Enemies also fire bullets at the player as they descend towards the bottom of the screen.
4. The player has the option to destroy or avoid the enemies.
 - a. By avoiding they don't risk getting hit.
 - b. By destroying them they are awarded points and have a chance of getting a pickup to acquire a power-up
 - c. Power-ups have synergy and affect one another, combining patterns.
5. This pattern continues, and as the player gets closer to the end of the level.
6. At the end of the third and fifth level the player will fight a unique boss.
7. There are 5 levels.
8. Each level introduces a new enemy pattern to have them spawn from.
9. If a player dies before finishing, they are shown a game over screen and their final score.
10. If a player succeeds, they are shown a win screen with their final score.
11. A player's score is added to the leader boards.

3 Game Mechanics

3.1 Rules

1. A player has a total of 10 hit points.
2. Enemies are slain in 1 hit but are numerous.
3. A player can be damaged through either contacting an enemy or an enemy bullet.
4. A player is given 500 milliseconds of invulnerability when hit.
5. A player can fire automatically by holding down the space bar, firing once every 100 milliseconds.
6. A player can move using the arrow keys.
7. When a player's hit points reach 0, they are shown a game over screen.
8. A timer at the top of the screen shows how long until the player completes the level.
9. Each level's timer is increase as well as the number of enemies they must defeat. The time follows this formula: $\text{time (in seconds)} = 100 + (20 * \text{level \#})$.
10. The number of enemies in each level follows this formula: $\text{enemies} = 125 + (50 * \text{level \#})$.

Enemies use these patterns:

- a. A fast straight line.
 - b. A weaving slow descent.
 - c. Moving in diagonals
 - d. Moving randomly back and forth.
 - e. A cluster spawning, which move together
11. When the player picks up a power-up they automatically gain the bonus. Here is the list of power-ups:
 - a. Faster Firing: the player fires a twice the speed for 20 seconds.
 - b. Double: the place fires a second bullet in parallel with the first for 20 seconds.
 - c. Spread: the player fires three bullets in a spread similar to a shotgun for 20 seconds.
 - d. Speed: the player moves at twice the speed for 20 seconds.
 - e. Health: restores a life.
 - f. Shield: blocks a hit.
 - g. Bomb: a usable bomb to clear the screen.

3.2 Bosses

Bosses are final enemies presented to the player at the end of the third and fifth level of the game. These are more difficult and unique enemies that must be defeated before progressing. Each boss has unique movement and attacks that the player must learn to defeat them. Enemies spawn at a reduced rate during these fights to provide additional challenge as well as the opportunity to get additional pickups to increase their damage.

The first boss is an agile helicopter enemy which moves around on the screen firing bullets at the players position. This boss is not particularly tough and has 100 hit points but can be difficult to hit as it moves and may move behind the player and be unable to be shot at.

The second boss is a stationary gunship boss which can fire from multiple spots on it. It is very tough and fires many bullets in various patterns towards the player and enemies. The boss will fire in sweeping rapid fire, directly at the player for a period of time or in crossing patterns lines of bullets. The gunship has a total of 1200 hit points which makes this a fight of attrition between it and the player.

These fights are meant to be difficult but rewarding, giving the player 300 000 or 500 000 points respectively

4 Story Narrative

4.1 Back Story

The player is the lone survivor of their wing command and must get back to their home base with the intel they've gathered but have the odds stacked against them. They are deep in enemy territory and their only hope is the captured bases along the way they can liberate to land and refuel to continue back home.

5 Interface

5.1 Game Control System

The player can interact with the game with their arrow keys and spacebar. The arrow keys control the player character, giving them 8 degrees of movement. The player can move across the whole screen, and fire while moving. Additionally, the player can use a bomb by pressing the b key and can pause the game with the p key.

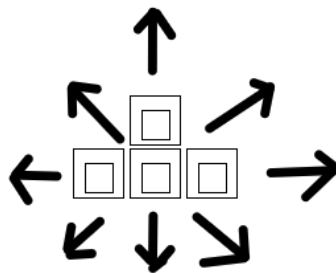


Figure 2: representation of 8 degrees of movement

5.2 Game Menus

The game consists of various game screens along with transitions screens with a handful of menus. The player starts on the home screen with a graphic and a play button and a leaderboard button. The player is displayed the controls as they start the first level of the game, the game screen consists of a scrolling background and the game entities on top. Upon completing a level, the player is shown the addition of the score for their hp to their cumulative score. The next level is loaded and displayed, this pattern continues until being shown a victory or defeat message and final score screen. The leaderboard screen displays the scores from the various play throughs.

Additionally, there is a screen to view the game controls and mechanics with the powerups and controls.