

Intro To Game Design Project

Cosmic Defender 2.5

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1. Game title: Cosmic Defender 2.5

2. Game Overview

2.1 Game Concept

Our game is a 2D side scrolling space shooter based on the classic game franchise Cosmic Defender. The game takes place in space during an alien invasion of Mars. The aliens are attempting to abduct the humanoids of Mars and the player's goal is to protect them as well as destroy all hostile alien threats. In addition to the normal shooting mechanic present in the original, there are different powers the player can gain access to over the course of the game. These powers have a limited number of uses so deciding when to use these powers is key to completing the game.

2.2 Genre:

2D Space Shooter

2.3 Key Features:

- 1) Improved graphics and movement controls.
- 2) New enemy types to keep the game varied and engaging.
- 3) An extra power and the ability to toggle between the extra power and normal one at will
- 4) Limited ammunition system for the extra power. This adds an extra element of strategy to the game.
- 5) Final Boss Fight with the Mother Ship.

2.4 Target Audience

Teenagers and older players, looking for an old school side scrolling space shooter experience.

2.5 Game Flow Summary

The game progresses from left to right with no backtracking. Level difficulty increases as you progress through the level. **Stopping abductions is key to ensuring the final boss encounter is easier to manage.** The mother ship gets stronger with every humanoid that was successfully abducted till that point.

2.6 Look & Feel

The game has a starry background to establish more immersion and make the player feel like they are in space. The game has a futuristic look and this is brought about with the player and enemy ship design.



Fig 1. Look and feel (Player ship, enemy ships and Mother ship)

3. Gameplay & Mechanics

3.1 Gameplay

Defender is a 2-D side scrolling (left to right) shooter game. The player flies a small spaceship in space. The player's ship can fly through the space freely without being harmed by it. The player is armed with a default gun that shoots bullets horizontally from the front of the spaceship. There are few special power cubs that the player can collect by flying over them. If the player consumes these special power cubs, he gets special bullets that allow him to shoot at three angles simultaneously or a shield that blocks bullets for a certain time or till it gets a hit by enemy ship/bullet. Special bullets are limited. The challenge becomes more intense as the game progresses with more enemies spawning at a time. The player also has to stop, the humanoids that spawn at the bottom of the screen from being abducted. The level culminates in a final battle with the mother ship. The mother ship gets stronger depending on the number of humanoids that were successfully abducted.

Player activities:

1. Flying
2. Shooting
3. Collecting special powers
4. Saving Humanoids from abduction

3.1.1 Game Progression

The player will progress through the game as he kills the enemies. He gets extra bullets points/bullets if he destroys enemy ships.

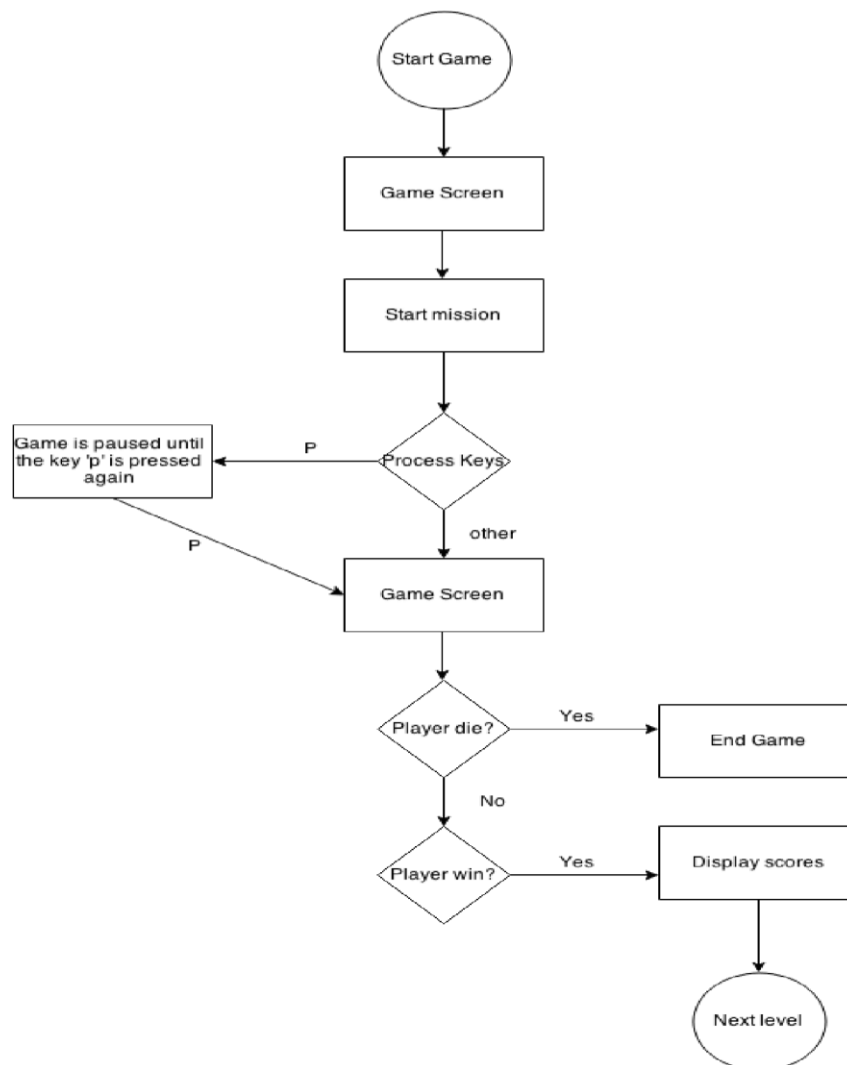
3.1.2 Mission/challenge Structure

The mission structure is to save the humanoids by killing enemy ships and kill mother ship.

3.1.3 Puzzle Structure

The player will be given two bullet choices. He has to select the best bullet to kill the enemy. But super bullets are limited and player should be wise enough to use these bullets properly. He can either use these super bullets for killing the small enemy ships or can save these bullets for killing the mother ship.

3.1.4 Play Flow Diagram



3.1.5 Objectives

The game objective is to:

1. Destroy alien invaders
2. Protect humanoids on the landscape from abduction
3. Kill mother ship

Defeating the aliens allows the player to progress to the next level.

3.2 Mechanics & Rules

The rules are few and simple. The player's ultimate goal is to destroy the mother ship and thwart the alien invasion. The player also has a few sub goals that they can work for in order to either get a strategic advantage in the last fight or just get a higher score. The player gets 10 points for every enemy ship destroyed. The player also needs to stop the aliens from abducting the humanoids in order to have an easier time with the final boss encounter. The mother ship gets stronger and gains more health with every humanoid that is successfully abducted.

3.2.1 Physics

The game progress from left to right and enemies spawn more frequently as the game progresses. The player can move freely within the bounds of the screen and is not affected by gravity and other such physics.

3.2.2. Movement

As the game progresses from left to right the player is naturally prompted to move in that direction. The player can move freely within the bounds of the screen using the standard 8 quadrant movement system.

3.3.3 Combat

The entire game revolves around combat. The player tries to shoot down enemy ships as well as dodge enemy fire. The player can only shoot horizontally in front of the ship with their default bullets. The special fire bullets allows the player to shoot at 3 angles simultaneously. The player can also gain access to a shield that gets activated on pick up. This shield lasts 10 seconds or until the player is hit, whichever comes first.

3.3.4 Screen Flow

Screen flow is simple. The game begins with a start screen. When the player presses the start button the game begins.

4. Story, Setting and Characters

4.1 Story

The story is never explicitly stated to the player but the player can make sense of it by playing the game. Mars is about to be invaded by an alien race and you are out in space in your lone battleship trying to save it. Your goal is to stop the humanoids from being abducted as well as to destroy the enemy mother ship.

4.2 Game World

The entire game takes place in open space. The background is a pitch black contrasted by a number of stars spread throughout. There are no obstacles and the player can move freely through the 2D world. The player ship is destroyed on collision with an enemy ship or bullet.

5. Levels

5.1 Levels

There is only one level in our game. Level is created to reflect the outer space with humanoids and enemy ships flying in the sky.

6. Interface

6.1 Visual System

We have only one menu at the start scene. There is one button (let's play) on the menu to start the game.

6.2 Control System

The user will control the player throughout the game by using the keyboard.

Controls:

- 1 Arrow keys: For moving the player ship
- 2 Space: For shooting bullets
- 3 Keyboard key C: for toggling bullets
- 4 Keyboard key P: For pausing and resume the game
- 5 Keyboard key R: For restarting the game

6.3 Audio

A soft-background music is added in order to make the game a bit more interesting to play.

Apart from the background music, sound effects have been added for the following as well:

- When a player shoots
- When an enemy shoots
- When the player is destroyed

7. Artificial Intelligence

7.1 Opponent and Enemy AI

1. Enemy ships act as opponents in our game. Enemy ships find a random humanoid object and try to abduct it and return to the mother ship.
2. Mother ship is the boss monster in our game. It keeps firing bullets apart from releasing enemy ships.

7.2 Non-Combat and Friendly Characters

Humanoids are non-combat characters. But they pretty much don't have any movement. After being abducted from by the enemy ships, they move along with the enemy ship.

7.3 Support AI

Collision detection mechanisms have been implemented for:

1. The enemy ship to carry the abducted humanoid after getting into contact with the humanoid
2. The explosions to occur when either an enemy or enemy bullet hits the player or vice versa.

8. Hardware

8.1 Target Hardware:

Any modern day PC or Laptop should be able to run the game smoothly.

8.2 Development Software:

This game was developed in Windows OS, using Unity Game Engine (v5.0.2).

8.3 Network Requirements:

This game is an offline game and hence can be played without connecting to the internet.