

# Escape From Orion

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CSS 450 Final Project Proposal

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## Overview

### Storyline

*Escape From Orion* is a remake of the classic arcade game Asteroids. In *EFO*, you assume the role of a lone space pilot attempting to escape from Orion's Belt back to Earth after the carrier fleet housing your fighter ship was destroyed by a previously unknown alien race. As one of the few survivors, you must reach Earth to inform the leaders of the alien's planned hostilities.

### User Interface

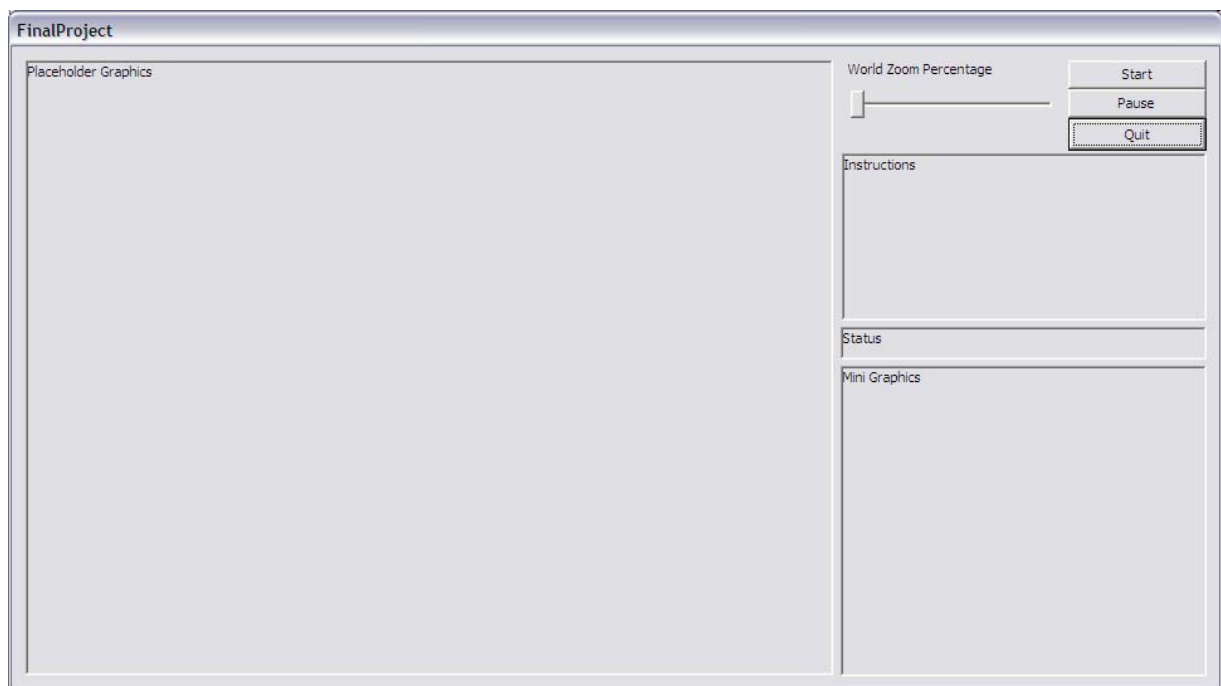


Figure 1: Proposed Design Layout

### Controls

- Hero Control:
  - Left Arrow: Rotate Counter-clockwise
  - Right Arrow: Rotate Clockwise
  - Up Arrow: Accelerate
  - Down Arrow: Decelerate
  - Spacebar: Fire Weapon

## Hero Object

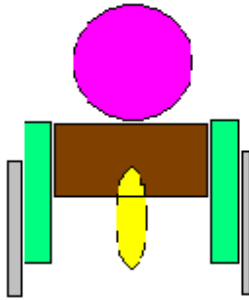


Figure 2: Primitive Ship Layout

### Behavior

The Hero Object is the pilot spaceship embarking toward Earth. It rotates in space with the left and right arrow keys and accelerates or decelerates with the up and down arrow keys respectively. Reverse velocity is impossible. Since space is a zero gravity environment, there is no natural deceleration. A component of the directional velocity will only become zero when decelerated to zero or a collision with its respective wall boundary occurs.

The Hero Object will be composed of a rectangular hull with attached rectangular wings. During acceleration, the Hero Object will show a propulsion animation from the stern of the ship. In addition, a propulsion sound effect will play.

The Hero Object can defend itself by shooting Point primitives as weapons to destroy Asteroids. When a shot is fired, a sound effect will play on fire and on collision.

### Interaction

If the Hero Object collides with an Asteroid or a Stationary Planet, the Hero is destroyed. If the Hero Object collides with a wall boundary, that component of its directional velocity is zeroed.

## Supporting Objects

### Asteroids



Figure 3: Primitive Asteroid Layout

### **Behavior**

A random number of Asteroids will enter the universe at level creation, each with randomized velocity. Smaller meteorites will trail each Asteroid.

### **Interaction**

When an Asteroid collides with another Asteroid or a Stationary Planet, the Asteroid will bounce off in the opposite direction unharmed.

When an Asteroid collides with the Hero Object, the Hero Object is destroyed and the Asteroid is unharmed.

When an Asteroid collides with a bullet from the Hero Object, the Asteroid splits into two smaller Asteroids with a radius half that of the original and X-Y velocity components swapped.

## **Stationary Planets**

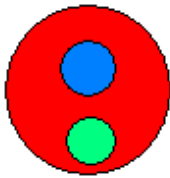


Figure 4: Primitive Stationary Planet Layout

### **Behavior**

A random number of Asteroids will enter the universe at level creation with zero velocity. Each Stationary Planet will have between 0 and 2 moons within its own radius which will move around within the 2D constraints of the Planet.

### **Interaction**

Stationary Planets do not cause any direct interactions as they have zero velocity.

When the Hero Object collides with a Stationary Planet, the Hero Object is destroyed and the Stationary Planet is unharmed.

When an Asteroid collides with a Stationary Planet, the Asteroid reflects off the planet in an opposite direction and the Stationary Planet is unharmed.