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CMPS 160 Final Project Part 1

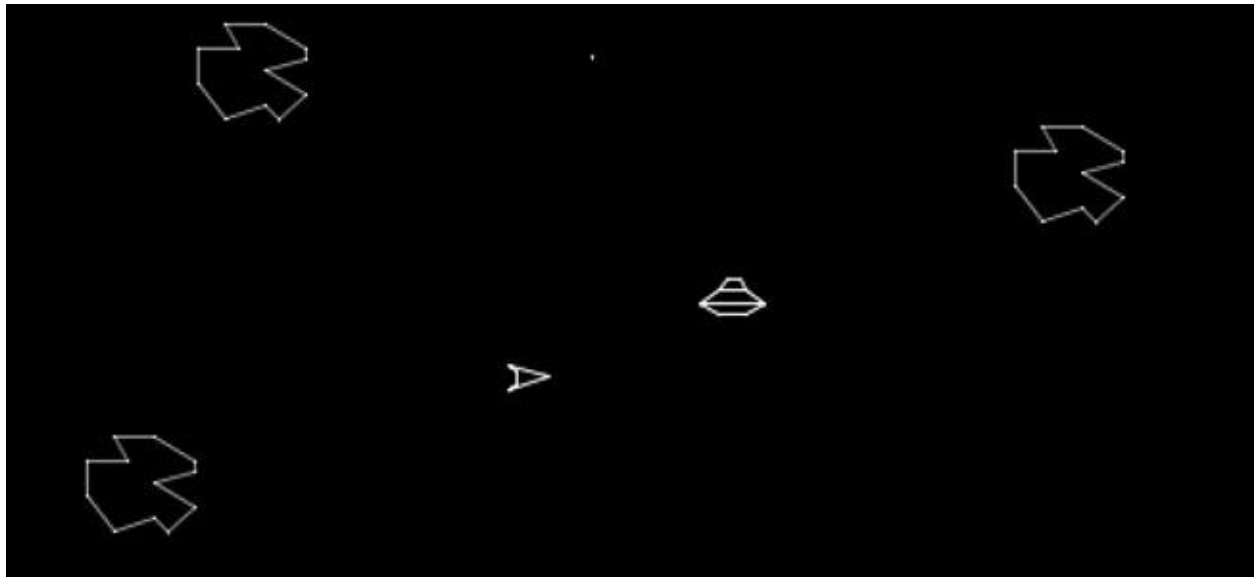
Design Goals:

For my final project I will be recreating the Asteroids video game with 2-dimensional physics. I want the user to be able to interact with the game using the WASD movement keys, as well as be able to click different elements on the screen to change the colors of the ship and asteroids. The momentum and shooting physics particularly interest me.

Ideally, there will be a background that the asteroids and ship are displayed on. The movement of the ship will be determined by the WASD keys and the ship will fire bullets using the space bar. The bullets will travel to the end of the screen before being removed, while the ship and asteroids will be able to travel across these borders and reappear on the other side of the screen.

If a bullet collides with an asteroid the asteroid will break into two smaller asteroids or disappear if small enough. If the ship collides with an asteroid it will explode, and the game will end. The game will show an end screen, with a clickable object offering to restart the game.

Visual Representation:



This is the asteroids game that I wish to recreate. Instead of outlines I will have shaded objects and different colors.

Interaction:

W: Move the ship in the direction that it is pointing, building up speed

A/D: Rotate the ship left or right respectively

Space: Shoot a bullet in the direction the ship is pointing

Objects: Click on start/restart/color objects for effect on the game

Features:

Collision Detection: I will have collision detection implemented using position vertices generated from the translation matrices that each object will have for animation. At each call to render the positions of each object will be assessed and interactions take place based on overlap.

HUD: I will implement a Heads Up Display to show the amount of time elapsed and allow switching of colors and difficulty (# of asteroids generated)

Aesthetic:

I am aiming for a smooth and fun interface to play this game. Most of my time will be spent on the implementation of the momentum physics and responsiveness. If I can create a game as fun to play as asteroids I will consider this project a success.