Assignment 3 – Asteroids

For this assignment, you will be creating an Asteroids clone using HTML5, CSS3, and JavaScript.

# Due Date

This homework assignment is due **Wednesday, October 8th by 2:30pm** (Just before class).

# Requirements

You will need to:

1. Test for collisions between asteroids using a spatial data structure (NOT brute force) (20 points).
2. Implement collisions between asteroids using conservation of momentum and conservation of energy. Play the bounce sound effect (or a sound effect of your choice) when a collision occurs (20 points).
3. Add random craters to the surface of the asteroids (10 points).
4. Add a player ship to the game which is:
   1. Appears on the center of the screen (10 points)
   2. Rotates and fires based on player input (10 points)
   3. Can shoot missiles that destroy asteroids (10 points)
5. Add victory and loss conditions
   1. Advance to the next level when all asteroids are destroyed (10 points).
   2. Player loses when they use 3 lives (display lives on-screen) (10 points).

**Extra Credit**

1. Add rotational velocity to the asteroids and transfer rotational velocity during collisions (10 points).
2. Add thrust to the player’s ship which either (a) moves the ship or (b) moves everything else (10 points)

# Turning Your Work In

To turn your work in, you must:

1. Post your working solution on your personal CIS web space (or your own website). Supply the direct url to KSOL. *Make sure that your site is publicly visible!*
2. Zip your project files and attach them to your KSOL submission.

Failing to do one or the other will result in a 50% reduction in your grade