

3D Space Shooter - Space Destroyer

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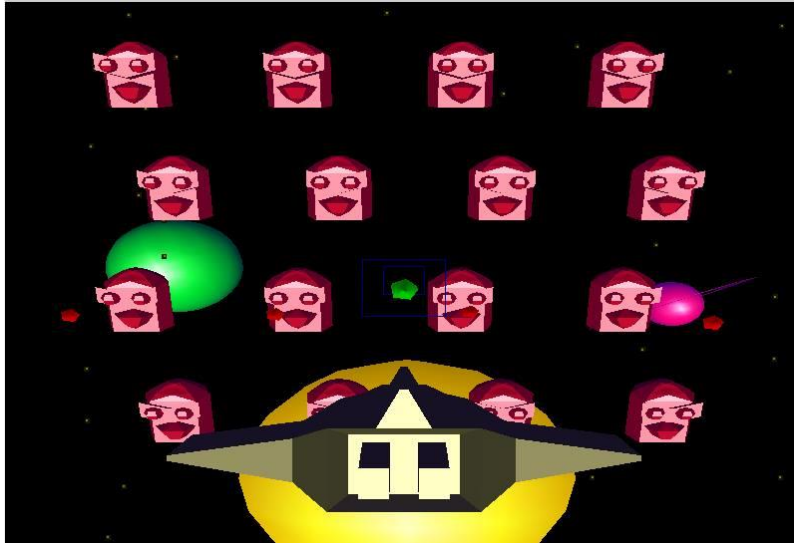
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Game Instructions

Game Objective:

Try to shoot all enemies on screen without getting hit by incoming bullets. Your ship has 3 lives and each enemy has 2 lives.



Game Controls:

SPACEBAR – Shoot Bullet

- Can hold spacebar to fire repeatedly

ARROW KEYS (UP/DOWN/LEFT/RIGHT) – Move Ship

- Ship move space is limited within an 80x80 quadrant

N – New Game

- Keep in mind, do not click N repeatedly too many times (crash)

E - Enable/Disable Lighting

- Allows us to see a 2D art style if desired

PAGE UP/PAGE DOWN - Z Camera Axis (For Looking at Scene)

- Can zoom in to the point where screen flips as well (to view new angle)

KNOWN BUGS:

1. RETICULE SOMETIMES IS AFFECTED BY LIGHTING.
2. EXTRA LAG

IMPORTANT NOTE: If there are any final.o / final.sh files in the folder, please delete them. The makefile could otherwise give an error, and not run the program.

Game Features

List of Basic Game Functionalities Included

- Drawing of objects in space
 - o Planets, Stars, Sun
- Drawing of Enemies & Ship (created using blender as .obj files)
- Shooting bullets (spacebar)
 - o Enemy hitboxes when you shoot them with your bullets
 - o Enemies shooting bullets back at you
- Flying into scene illusion (shown by stars and objects moving toward you gradually)
- Camera zoom (page up/page down)
 - o Can use to closely examine scene at any point

Implementations Included in Project:

- Lighting (5%): This is evident throughout the program (on spheres, enemies, ship etc.).
- Alpha blending (5%): This is specifically exemplified on Saturn's rings and the stars (E toggle).
- Particle systems (5%): Enemies explode yellow particles when they die.
- Animated Characters (5%):
 - o The ship movement is animated (rotated) with precision to account for re-thrust (momentary pause when clicking arrow keys) when turning left/right/up/down.
 - o The enemies are animated (rotated) up and down to simulate shooting their bullets.
- Shaders (10%): Used to calculate the light emitted from other planets, sun, and lasers from ship/enemies.

Implementations Included in Project (NOT Working):

- Textures (10%):
 - o They were to be loaded on the Ship models and Sun; you can see the sun.ppm in the folder, obtained from online stock images. We just couldn't get them to work properly.
- Non-geometric primitives -> Bitmaps (10%):
 - o There are two text file loaders (loadppm and displaylife). Loadppm was supposed to load blender text files, but it was overwritten with the git obj info.

Implementations that should have been Added (Could not due to time):

- Displaying a Menu screen, Win screen, and Lose screen.
- Indication of lives and each enemy's lives (deduct accordingly) to understand game sequence.