Asteroids Deluxe Clone

Breakdown of design and features (planning document)

Design Breakdown

Although I know the super obvious basics of the asteroids game I have never really played it heavily and had previously never heard of the "Deluxe" variant. I have tried to distill the important design elements of the game through YouTube videos and wikis online; as well as playing a few mobile clones.

Main References

- https://www.youtube.com/watch?v=_1xFOAKKVW8
- https://www.youtube.com/watch?v=GGODay8YUio&t=108s
- https://strategywiki.org/wiki/Asteroids_Deluxe

Player Controls/Movement

- Fixed camera
- Arrows to rotate
- Boost button
- Player keeps momentum but there is drag and it seems he will eventually come to a stop
- Fire button shoots in the direction of ship. 4 bullets at a time
- Shield button. One shield per life that lasts 12 seconds. Colliding when shield is active would apparently send your ship flying. That aspect can perhaps be a stretch goal
- When Player goes off screen on one side they appear on the other side (bullets as well) Player has multiple lives (3-5). Gains a life every 10k points

Enemy Types

Asteroids

- Spawn off-screen and drift in a somewhat random direction
- When shot they break into 2 smaller pieces until they are small in which case they are destroyed Large -> 2x Medium -> 2x Small -> dead
- They wrap around the screen but there appears to be a bit of "fuzziness" in what point they actually come out the other side. An asteroid going Northwest and hitting the middle of the top edge will spawn back in more on the right side of the bottom edge rather than in the middle where it was before. It's unclear if this is an important element but might be hard to nail down the exact behaviour without being able to actually play. I will proceed with "normal" wrapping and see how that goes

- Asteroids destroy ship on impact (also destroyed saucers)

Saucers

- "The shot accuracy of the large and small saucers have been improved. The large saucers fire 3 shots at asteroids and 1 directly at you. The small saucers fire 2 shots at you, and 1 at an asteroid."
- Not sure the exact design of when they should spawn and how they move. May just need to pick a simple approach

"Death Stars"

- "this enemy would appear on the screen towards the end of a round when few asteroids were left and slowly home in on your position. Shooting it would cause it to break up in to three diamond shapes that pursued your ship a little more quickly. Hitting each of the diamonds cause them to break up in to two wedges which chased your ship the fastest. Ultimately to destroy this enemy, you had to destroy six wedges."
- Assume it can track player across screen boundaries and pick the most optimal path
- Assume only one at a time
- Spawning like the saucers and not part of the level completion
- The "root" death star enemy seems to drift like an asteroid with only the children having the "homing behaviour"

Project Scope

Since this is a time-boxed project I'm going to attempt to establish very achievable scope and leave off a number of features as "stretch goals". Prioritizing clean code and trying not to get into to much of a "game jam" mentality where I am just throwing things in in super hacky ways to try to get it done.

Will be using Unity 2021.3.31f1 (the recommended Unity version at the time of this writing)

Will attempt to stick to public domain art assets (probably kenney stuff) and avoid spending time creating my own art assets

MVP Features

- Player ship with shooting and boosting (leaving off shield as a stretch goal)
- Asteroids
- "Death Star" (prioritizing this over the saucer as it is probably the most noteworthy feature of Deluxe and that is the assignment after-all)
- Screen wrapping
- Score
- Lives

- "Level/Wave" system
- Some basic UI to show score and lives

Stretch Goals

- Title Screen
- Audio
- Small Saucer Enemy
- Large Saucer Enemy
- Player shield power
- Difficulty curve