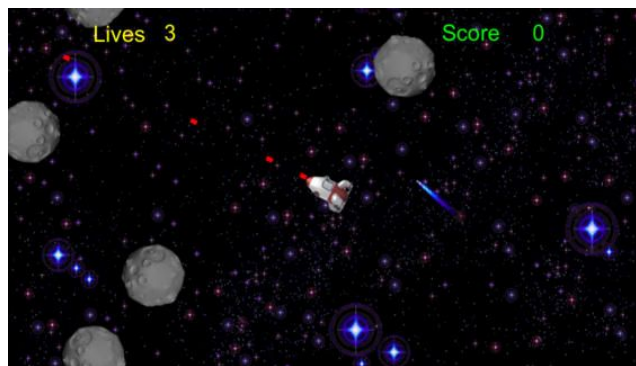


DM2212 Programming Physics

Assignment 1: Kinematics Shooter

Combine Kinematics game with Asteroid shooter



Requirements

General

1. 2D side-view game. Develop & test the game in 2D.
2. Maintain your frame-rate above 30 FPS.
3. Run in full screen
4. Readme file with controls

Gameplay

1. Game with clear objectives and up to 3 levels/waves. Here are some suggestions:
 - a. Space shooter
 - b. Space tower defence
 - c. Space invader
2. Bullets have to follow projectile motion (using kinematics). No straight bullets!
3. Screens:
 - a. Main menu
 - b. Game
 - c. Win/lose screen
4. Show gameplay info:
 - a. Framerate
 - b. Number of active game objects

- c. Player's lives, score, etc.
- d. Number of enemies
- e. Other relevant info

Game Objects

Here is a suggested list of game objects. Feel free to add your own.

1. Player object - a space ship or turret
2. Enemies with different physics behaviour:
 - a. Some moving randomly
 - b. Some moving in patterns
 - c. Some moving towards player
 - d. Some shooting bullets in patterns
 - e. Some shooting bullets towards player
3. Player bullets - Check collision with enemies / asteroids
4. Enemies bullets - Check collision with player
5. Asteroids - Neutral objects that spawn randomly, kill player or enemies
6. Large asteroids - Split into smaller asteroids when collide or shot at
7. Moon or planets - big static objects that cannot be damaged but blows up everything else when collided
8. Bonus items - touch/shoot them to blow up enemies in vicinity, or gain score/live

Physics / behaviours

1. Space ship - Varying speed and direction
2. Asteroids - constant velocity
3. Bullets - constant velocity
4. Missile - constant speed, varying direction based on side thruster
5. Game objects -
 - a. Rebound at screen edges
 - b. Wrap around at screen edges
 - c. Unspawn at screen edges
6. Spawning of game objects should be at an empty position
7. Distance based collision, using radius or scale

Progress Check

Week 6: 23 & 27 May 2016

Player ship, enemy ships, asteroids, bullets, and one unique game object.

Submission

Week 7: Sunday, 5 Jun 2015, 2359

1. Zip of solution folder, including source codes, dll, textures, OBJ, etc.
2. 2x screenshots
3. 30 sec video
4. Code will be marked
5. Will not be marked if above 20MB

Marking Criteria

Assessment item	Quantities	Component marks
Screenshot	2	5
Video	< 30s	5
Relevant game info on screen		10
Player ship/turret with physics		10
Shooting mechanism		10
Enemy ships with physics		10
Asteroids with physics		10
Bullets with physics		10
Distance based collision		10
Other game objects with physics (e.g. missiles, power ups)	Cap at 2	10 per object
Visual		+10 (bonus)
Main menu and win/lose screen		+10 (bonus)
Gameplay objectives and up to 3 levels/waves		+20 (bonus)
Memory leakage		-20 (penalty)
Improper submission, cannot compile or run	NA	Up to -20 (penalty)
Late submission	-5% per day	Up to -50% (penalty)
Submission file size > 20MB		Up to -10 (penalty)
Missing readme file		-5 (penalty)