

TP Videojuegos

Assignment 6

In this assignment, you will start with the code that we have seen in class for the *Asteroids* game with SDLNET, and extend it to have extra functionalities. Note that the number of players is fixed (hardcoded in the class `GameManager`), however, during marking your assignment will be tested with different numbers.

1) Adding Asteroids to the Game

The current version has only fighters and bullets. You are required to add asteroids to the game with the following functionality:

1. When the game is running (i.e., not in a `WAITING` or a `OVER` state), the **master client** adds 1 Asteroid every 10 seconds to the game, with the following configuration:

```
Vector2D vel((1-2*(rand() % 2))*((rand() % 10)+1),((rand() % 10)+1));
vel.normalize();
vel = vel * 0.5;
Vector2D pos(rand() % getGame()->getWindowWidth(), rand() % 30);
Vector2D dir(0, -1);
int width = (rand() % 10) + 20;
int height = (rand() % 10) + 20;
```

2. When adding an asteroid, the master client should send the corresponding information to the other clients so they can create an identical asteroid.
3. The `Asteroid` should rotate while moving (as in the previous assignment), and once it exits the borders of the screen it should be disabled so it can be reused.
4. Asteroids should be visible only when the game state is `RUNNING`
5. When a bullet collides with an asteroid, the bullet disappears (not the asteroid). Note that Asteroids do not split as in assignment 4.
6. When a fighter collides with an asteroid, the fighter dies (the asteroid remain).

The provided code includes a class `AsteroidManager`, complete it and modify the method `initGame` in `AsteroidsGame.cpp` to include add this new component to the game.

2) Handling Client Disconnection

The current version does not handle the case in which a client disconnect. This can happen when pressing `Esc` or due to some network problems. In this part, you are required to modify the game to handle this situation.

First modify the class `Server` such that when a client disconnects, it sends a corresponding message to all clients, and then modify the game such that when a client receives such a message it stops the game and goes to a `WAITING`.