Challenge 2 - Player Movement and Firing

Refer to "About the Challenges and Solutions" in Session 1 for more information about readings of this type.

Scenario:

After evaluating the scripting needs for the project, you decide to start implementation from a logical foundation: getting the spaceship moving and firing projectiles.

A team artist has created a very basic model of the spaceship and turret, and you have added the ship and projectile prefab to a new Unity project. You've set the ship and the camera in the appropriate starting location and are ready to implement movement and firing.

Challenge:

Implement movement of the spaceship with keyboard controls, aiming the turret with the mouse cursor, and firing projectiles with the mouse 0 button.

Tasks to complete:

- The player can use keyboard controls to move the ship. Because this game will eventually also be built for mobile platforms, you should use the CrossPlatformInputManager class from Unity's Standard Assets—included in the starter project—to turn this input into an Input Axis.

- The player can aim the ship's turret by moving the mouse. The turret should always rotate to point at the mouse location.

- The player can shoot Bullets by clicking the mouse 0 button (by default, the left mouse button). A Bullets object should be instantiated from the ship and move toward the mouse location.

- Bullets should not collide with the player's ship or with each other. Manage physics layers to control collisions.

- Bullets should destroy themselves after two seconds.

- To keep the Hierarchy window tidy, make all Bullets the children of an otherwise empty GameObject named BulletAnchor.

- Both Bullets and the PlayerShip should screen wrap, that is, when they exit at one edge of the screen they should reappear at the opposite edge. This should be handled by a single Script component that works for both the Bullet and the PlayerShip.

- Make sure the screen wrap only happens when the GameObject has completely exited the screen. This is a lot more challenging than wrapping when the pivot of the GameObject has left the screen.

Start by downloading the Unity project files for this Challenge available in the Session Resources as "Challenge 2: Starter Project." Download the zipped file, unzip it to a local folder, and open the project using Unity version 2017.4 LTS.