



# COLLEGE OF ENGINEERING & TECHNOLOGY

**Department** : Computer Engineering

**Lecturer** : Dr. Nouredin S. Eissa / Eng. Ahmed Zakaria Talha

**Course Name** : Multimedia and Virtual Reality Systems (Game Programming)

**Course Code** : CC447

**Time allowed** : N/A

**Date** : N/A

**Start time** : N/A

## 7<sup>th</sup> Week Evaluation (Part 1)

### Mini Project

#### A. Project briefing:

You are required to use what you learnt throughout the course till now to create the following game using Unity 3D game engine. The game consists of two players playing locally on the same PC. Each player has a different character to control using the same keyboard. The players play against each other, and each player has the ability to fire a projectile.

First, each player has got 3 lives. After receiving a valid hit from a projectile fired by the other player, the hit player loses 1 life. Whoever loses all their 3 lives first is the loser, and the game ends.

#### B. Requirements and constraints:

##### Scene setup:

- 1) The game takes place on top of a **plane** scaled to (50, 0, 50).
- 2) The screen must be split in half, vertically, and each player is situated on one half.
  - a. Player 1 should be placed at (-20, 1, -50)
  - b. Player 2 should be placed at (20, 1, -50)
- 3) Two overlay texts that show the players' lives must be anchored to the top left and top right of the screen.
  - a. Player 1's lives are displayed in red and are anchored to the top left of the screen.
  - b. Player 2's lives are displayed in blue and are anchored to the top right of the screen.

##### Player(s) setup:

- 1) Each player has a different **model** assigned to it. The models are attached with this exam on Moodle.
  - a. The red **slime** model is to be assigned to player 1.
  - b. The blue **turtle shell** model is to be assigned to player 2.
- 2) Each player must have their own camera (Orbital or Freelook) with the following constraints:
  - a. Mouse movements should be completely disabled.
  - b. Each camera follows each player on their viewport, independent from the other player.
- 3) The following inputs must be set for the players:

Action	Key bindings for Player 1	Key bindings for Player 2
Move forward	W	I
Move backward	A	K
Turn and move left	S	J
Turn and move right	D	L
Fire projectile	Q	O



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## Projectile setup:

- 1) Projectiles are made of **Spheres** with a scale of (1, 1, 1).
- 2) Each projectile must match the color of the player who fired it.
  - a. Player 1's projectile must be red.
  - b. Player 2's projectile must be blue.

## Game rules:

- 1) Players cannot be hit by their own projectiles.
- 2) All newly fired projectiles must have an initial velocity of 10.
- 3) Projectiles must be fired in the direction the player is facing.
- 4) For a projectile to count as a hit, its velocity must be higher than or equal to 5.
- 5) Projectiles that have a velocity smaller than 1 must be destroyed and removed from the game.
- 6) As soon as a player has no remaining lives, they must be deactivated/destroyed, and this player must be removed from the game.

## C. Project submission

- 1) The deadline for the project's submission is on **Sunday 12/11/2023 10:00pm**.
- 2) Submissions will be done in TWO parts.

### a. PART ONE

You are required to submit the following on Moodle before the deadline.

1. Four random screenshots of the gameplay.
2. All scripts that you used in your game.

### b. PART TWO

- i. You must bring the whole project **compressed as a .zip** file with you to the class, **during the 7<sup>th</sup> week**.
  - ii. Projects will be collected by your lecturers using a Flash drive. You can bring your project on a laptop or on your flash drive.
  - iii. **You must record a full video session** while working on the project.
  - iv. The video session might be required by the instructor; therefore, you should have it ready with you.
  - v. If you work on the project in timings (session), you can have more than one video file. However, they must show every part of the project's development.
- 3) **No modifications are allowed after the submission of your project on Moodle.**

## IMPORTANT NOTES:

- 1) You are free to use any resources, including the internet or previous codes.
- 2) You are **NOT ALLOWED** to ask others for specific help regarding your project. This includes:
  - a. Posting on a social group.
  - b. Asking someone else for help.
  - c. Using AI GPT tools.
- 3) You can check the following DEMO gameplay video for the expected output.

[Project demo video](#)