Assignment 1 (Individual)

Endless Shooting Game

Deadline: Thursday 18/10 at 11:59 pm

Description & Game Play:

➔ General idea:

In this assignment, you are required to implement a **2D** shooting game (similar to chicken invaders). The main game idea is that there is an enemy (attacker) that moves along the screen and keeps moving left and right. There is a moving background. The main shooter (the player) tries to throw bullets/ weapons/ anything on the enemy; which attacks the player by firing obstacles. If the player is hit by one obstacle, it loses the game. The shooter (player) fires at the target (enemy) till the health of the enemy reaches zero then a new enemy appears with more health (larger value for health).

➔ The requirements:

- **The main Character (the player)**: it moves horizontally by the mouse or the keyboard. It rotates to the left and right while moving. It shoots when a certain key is pressed.
- **The Enemy (attacker)**: it moves along a randomly generated curved path forward and backward. Its head is facing the direction of its motion along the path.
- **The obstacles**: they are fired at a fixed time and a fixed position (from the enemy).
- **An enemy defender**: it is an object that appears at a certain time that can fire at the player and defend the enemy by blocking the shots coming from the player.
- **Score and powerups**: a health bar for the enemy and a score are displayed. There are powerups that move from the top to the bottom and appear at random positions and random amount of time.
- **A dynamic background**.

Theme:

You are required to choose a theme for the assignment. For example:

1) Harry Potter: The main character can be a wizard throwing spells on the enemy (death eater) and potions increase the score.
2) Chicken invaders.
3) Star defender.

All ideas are encouraged as long as the theme is **consistent**.

Modeling:

1) The Enemy should be implemented as a minimum of 3 different primitive TYPES. It should have a head and a body. A total of minimum 8 primitives.
2) The main character should be implemented as a minimum of 3 different primitive TYPES. It should have a head and a body. A total of minimum 5 primitives.
3) At least 2 scenes should be implemented in the background. Continuous movement of scene(s) is required as the character moves to give the impression that the character is moving.
4) An obstacle must be implemented (A minimum of 3 primitives).
5) A bullet/weapon/another object must be implemented for shooting (A minimum of 3 primitives).
6) At least two powerups with different functionalities and different shapes.
7) Score and health bar must be displayed on the screen.
8) The background must be textured or drawn.

Animation:

1) The enemy moves along randomly generated paths using Bezier curves (attached: **bezier.cpp** file). It tilts while moving along the curved path.
2) While moving right and left, the main character/object (player) must follow a smooth motion path (slight rotation while moving).

Score:

- The score is calculated throughout the game whenever the main character/object correctly shoots the enemy.
- The health bar of the enemy decreases when the enemy gets shot.

Bonus:

1) Complex modeling.
2) Sound for every action in the game. For example, a sound when the character/object takes a power up. Another sound when it hits the enemy, etc.
3) Everything is textured.

Other ideas are encouraged as long as they are original ☺

Submission Guidelines:

➔ The assignment should be implemented in OpenGL

➔ This is an **INDIVIDUAL** assignment. Cheating cases will lead to a **ZERO**. Also, copying the code from the Internet will lead to a **ZERO**.

➔ This assignment is worth 7.5%

➔ Deadline for the assignment: Thursday 18/10 at 11:59 pm

➔ Submit your **.cpp** file:

- Submission email address: graphics.dmet502@gmail.com
- Email subject: Your tutorial number followed by your id **(T-01 37-XXXX)**
- **Emails without a subject will not be graded.**