Game Engine

by

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2 HND in Computing (Video Games Programming)

SHORT INTRODUCTION

The game is a 2D version of a shoot em up. The enemies spawn in one side of the screen and you can destroy them. You can modify the enemies properties to be spawn as well as the bullet and ship, also you can add new objects to the game, making a complete custom game.

STRATEGIES AND SOLUTIONS

The class GameObject contains all the drawable things that can appear in a scene, there are 4 childs (Shape, Sprite, Label, Background).

For the Shape class, i use convex shapes, with an array of points and a number of points defined in shape_points.h, to create a new Shape type it must be defined in this file.

The Sprite class is made using the proper class from SFML, there are two main parts in this class, the transform, have all the data related to the position in the screen, and the handle, which is a texture loaded with differents methods. Both of them are handle inside the single Sprite class.

The Label class is made using three SFML classes: String, Font, Text. The String contains the text that will be display in the window. The Font loads and handle the font data used in the text. The Text is the SFML class who has all the transform values needed to display the text.

Background use a Sprite and a RectangleShape, this class uses the offset in the texture assign to the shape to move and create the tileable effect. You can change the size of it and the velocity to create different layouts of Backgrounds.

The scene(main_scene) contains all the data and logic used in the game, the engine only has one scene for test, but is prepared to create and use more with the game class. When pressing Tab during the game execution we can start the Editor window made of three small windows with his own propourse: Create, Hierarchy and Editor. In the create window are four buttons each one of them creates a different game object and adds it to the main objects vector to start the render and update. The hierarchy shows all the gameobjects in the scene, also allows the user to Save or Load the DB. And the last one is the Editor window, which displays all the current editable properties of the gameobjects.

In order to edit a specific gameobject you have to select the one you want to change, then all the data related to that object will be show in the editor allowing the user to change it.

USER MANUAL

In order to play it go to the bin folder and run the output.exe.

To start the imGui editor press tab, it will show a few windows, you can edit the game from there**.

In the main scene press Up/W and Down/S arrow to move the ship, and the Space to shoot.

** It's recommendable to delete data.db file in the bin folder, you can't store new data in a created db.

CONCLUSION AND FUTURE WORK

The game is highly uncompleted, some problem where related to the start of the project and the base class like gameobject.

In order to improve the project i could add new features such as

-       More scenes using the Scene class implemented

-       Load all the data related to gameobject in the DataBase and not only the crucial data.

-       Create a game loop with death, score, hp, etc.