Champlain College - Lennoxville

Assignment 3: Level design

PROGRAM:	420.B0 Computer Science Technology	
COURSE:	Game Programming 2	
COURSE CODE:	420-540-LE	
WEIGHT:	7% of the final score	
SEMESTER:	Winter 2024	
INSTRUCTOR:	Francis Gauthier fgauthier@crcmail.net	Office C-239

Objectives:

- Practice using Godot 4 to create a visually appealing level
- Practice using scenes, nodes, scripts, and signals in Godot
- Practice using light nodes
- Practice using audio nodes
- Practice using particle systems nodes
- Practice using parallax background or tilemaps

Goal

The goal of this assignment is to create a level that can offer a specific themed ambiance. The level created should be visually appealing and complemented with sounds and music.
The level offers ways to interact with the scene through minimum 2 game objects.

Level design (50%)

The project should have one scene that represents an entire level.
Requirements on the scene:

1. Have a background music auto playing
2. Make use of directional and point lights by:
    - Setting in a dark environment, like nighttime, underground, dusk, dawn, etc. **OR**
    - Use a day and night cycle to shift between two light settings
3. Have an active particle system enhancing the environment (rain, snow, ashes, fireflies, etc.)

Size of the scene

The size of the scene must be significant.

By using either a **Tilemap** or an **infinite scrolling parallax background**, create a level that spans at least two times the camera width.

The camera movement should allow us to visit different areas of the scene through game inputs or simulate movement using a scrolling background.

Interactable game objects (50%)

The game should contain at least two game objects that can be interacted with.
Each object should be activated by:

- An input key pressed (like spacebar)
- A button pressed
- A character moving in range
- A timed event or signal

The object when activated should change the aspect of the level by:

- Emitting light **and/or**
- Emitting sound effects **and/or**
- Emitting particles **and/or**
- Changing the UI, like increasing a counter

The object can then be deactivated by pressing or releasing a key or automatically after a specific time.

Example of a scene

Theme: modern or Mad Max inspired

Level design:

- An infinite scrolling background representing a city at dusk (low energy light)
- Point lights are set on buildings and traffic lights and from the car head lights
- Background music is rock theme/radio station

Interactions:

- By holding space (accelerate):
    - The car appears to move faster by adding wind/dust particles moving backward
    - The background moves faster
    - The music accelerates
- Some barrels are spawned in the path ahead. When the car hits them:
    - Barrels are sent flying forward
    - After a short time flying, barrels explode creating a light effect, explosion sound and particles simulating a small explosion

Inspiration: Sunset drive

Working in Teams

The assignment is to be made in teams of 2.
Students are allowed to work individually but the scope of the assignment will not be reduced.

Here is a suggestion on how to split the work between team members:

Together:

- Deciding on the theme, look and interactions possible

Level designer (member 1)

- **Setup**: Creation of the Godot project, scenes, Git repo, adding members as collaborators
- **Locating assets**: Finding music assets, sprites assets
- **Creation of the main scene**:
    - Adding BG music
    - Adding lights and themed objects
    - Creating the level with a parallax or a tilemap

Gameplay programmer (member 2)

- **Creation of the two interactions**
    - Scripting objects
    - Managing inputs
    - Managing layers and masks
    - Creating special effects related to the interactions
    - Saving interactable objects as separate scenes

Evaluation

One grade will be assigned per team.

The evaluation will be on:

- The assignment criteria being met
- The symbiosis of the theme and assets together
- The complexity of the interactions and special effects
- The quality of the special effects

Submission

Correction will be made in class, through an appointment with your teacher. Code should be pushed to a GitHub repository and given access to the teacher (**frangauthier** username).

Appointment schedules:

- **Wednesday March 28th, 11AM-1PM**.
- **Wednesday April 3rd, 11AM-1PM**. (Late) -> 20% penalty