Assignment 2

INFR 2310: Computer Animation: Algorithms & Techniques
Dr. Andrew Hogue

DUE DATE: November 5th, 2017

This assignment should be done in groups of 2-3.
This assignment is worth 10% of your final grade.
Submit a single zip file on blackboard.

[30 points] Building a Particle Editor

A good example of a particle editor can be found here: http://particle2dx.com/

Your task is to design and develop a particle system editor that allows for the following animation control:

- Save/Load particle effects. An effect may contain one or more particle systems that work together (layers).
- Play/Pause/Restart
- Specify and control the following parameters for each particle system
    - Particle emitter position
    - Particle lifetime
    - Gravity on/off (amount)
    - Emission Rate
    - Duration of effect
    - Initial Colour
    - Initial Velocity range
    - Initial Position Offset range
        - Offset from the emitter within specified range
    - Particle steering behavior
        - Seek to a particular point
        - Flee from a particular point
        - Repel like a magnet
        - Attract like a magnet
        - Follow a path
            - User must be able to specify/modify the default path
        - Combinations of the above. Hint: think of each as providing a force vector.
- Implement speed-control for the parameters in the system and make sure you can control any parameter that can be manipulated using a spline.
- Demonstrate the versatility of the tool by creating 3 particle systems that have multiple layers each. The 3 particle systems should be your interpretation of the following:
    - Magic
    - Attack
    - Defend

Useful links for more information/inspiration:

- https://www.gdcvault.com/play/1020367/The-inFAMOUS-Second-Son-Particle
- https://pixijs.github.io/pixi-particles-editor/#pixieDust
- https://www.gdcvault.com/play/1015479/Effects-Techniques-Used-in-Uncharted
- https://blog.drewskillman.com/blog/rock-show-vfx-in-brutal-legend
- http://www.gdcvault.com/play/1012551/Rock-Show-VFX-The-Effects
- http://www.gdcvault.com/play/1017660/Technical-Artist-Bootcamp-The-VFX

To Hand In:

- A zipped folder that contains 2 sub-folders entire solution:
    - Sub-Folder 1: FINAL_EXE
        - This should contain your executable file and all necessary resources/DLLs needed to run.
    - Sub-Folder 2: BUILD
        - This folder should contain your project and code
        - Make sure that you look at the main folder for a hidden folder called ".vs" and remove that before zipping the folder.
    - Please ensure that you have a README.txt file containing all group members names and student IDs and instructions on how to use your system.
- Please submit this zip file on blackboard. If it is too big for blackboard, please submit a LINK to a shared folder so I can download the zip file.

Prior to zipping, your directory structure should look like this:

As2 – 100xxxxxx/ (100xxxxxx is your student ID of the leader)
FINAL_EXE/
BUILD/
README.txt

Please note:

- If I cannot get it to compile or run you will receive a ZERO. Please ensure that you have all of the necessary libraries/DLLs installed locally to the project.

Marking Scheme

Your assignment grade is computed out of 45 as:
GRADE = Checklist + Quality

These are specified as follows:

Checklist: [15 marks]

Feature	No (0)	Yes (1)
Save/Load Effects		
Play/Pause/Restart		
Specify Initial Emitter Position		
Specify Initial Particle Lifetime		
Specify Initial Gravity		
Specify Initial Emission Rate		
Specify Initial Colour of particles		
Specify Initial Duration of Effect		
Specify Initial Velocity Range		
Specify Initial Position Offset Range		
Specify Particle Behaviours		
Spline-based Control of parameters		
Particle Effect 1: Magic		
Particle Effect 2: Attack		
Particle Effect 3: Defense		

Effect Quality: [30 marks]

Feature	Not even the basics…(0) Either doesn't exist or is implemented terribly	Basic (2.5) **It works but might not look great or function well but I get the point.**	Good (4) **It works well, and looks ok. Would need some work to use this feature in a game.**	Amazing (5) **Above and beyond function. I would use this feature in a game as implemented.**
Effect 1: Magic				
Effect 2: Attack				
Effect 3: Defense				
Spline Control of Parameters				
Multiple Particle Layers per effect				
Steering Behaviours				