Title:

- “Solar System”

Team member:

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Library:

- OpenGL (freeglut, glew…)
- Assimp
- FreeImage
- irrKlang
- Texture sources: http://planetpixelemporium.com/earth.html and https://free3d.com/3d-models/obj-saturn

(All of them above are x86)

Approach:

- Interactivity
  - Camera can be controlled by user input (15 pts)
    - This function is realised in the Camera class (Camera.h, Camera.cpp);
    - A user can use mouse and Buttons “W, A, S, D, Q, E” to adjust the direction the camera is looking towards and move the camera.
  - Other animation and motion events can be triggered by user input (15 pts)
    - Buttons “+” and “-” can adjust the speed of objects’ movement;
    - Buttons “P” and “G” can pause or continue the scene.
- Rendering
  - Multiple viewports or windows (15 pts)
    - A user can change the viewport by Buttons “6”, “7”, “8”, “9”, “0”
    - The function is realised by the Camera class;
    - The programme will initial 5 Camera instances at the beginning.
  - Texture mapping: 5 or more different textures on objects in your scene (15 pts)

        - Textures include:
            - 8 planets
            - Sun
            - Moon
            - Two kinds of asteroids
            - Skybox
    - Particle System (20 pts)
        - This function is realised in the “particle.h” and “particle.cpp”
        - Use particle system to simulate the effect of “solar corona”
    - Skycube (10 pts)
        - This function is realised by Cube mapping in the “Cube.h” and “Cube.cpp”;
        - The background is universe.
- Other features
    - Background music + 5 or more sound effects (15 pts)
        - This function is realised by library “irrKlang”;
        - Buttons “1”, “2”, “3”, “4”, “5” can changes the background music;
        - When a user accelerates or slow down the movement speed, there are two kinds of sound effects to let his/her know the event;
        - When a user pauses or continues the scene, there are two kinds of sound effects to let his/her know the event.
    - Many shaders: Use 5 or more visually distinct shaders (20 pts)
        - There are five distinct shaders:
            - “particle_vs”, “particles_fs” are shaders of particles;
            - “planet_vs”, “planet_fs” are shaders of 8 planets and moon;
            - “cube_vs”, “cube_fs” are shaders of Skybox;
            - “sun_vs”, “sun_fs” are shader of Sun

        - “asteroid_vs”, “asteroid_fs” are shader of asteroids between Mars and Saturn

- Total: 125 pts