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