CSC8014 Topics: GPU Programming
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Lab 2: Ray Tracking Example

1. **Objectives**
    a. **To learn how to create a project running CUDA C**
    b. **To learn how the threads work in GPU**
2. **Run the CUDA C code ray.cu (posted on blackboard) and answer the following questions (40 Points):**
    a. **Which variable(s) control the number of spheres?**

    Ans: the constant variable SPHERE control the number of spheres, in

    b. **Which variable(s) control the color(s) of the spheres?**

    Ans: variables *of temp_s[i].r, temp_s[i].g, temp_s[i].b* decide the color of the *i*th sphere.

    c. **Which variable(s) control the location of the spheres?**

    Ans: variables of *temp_s[i].x, temp_s[i].y, temp_s[i].z* decide the location of the *i*th spheres **-**

    d. **Which variable(s) control the size of each sphere?**

    Ans: the variable temp_s[i].radius decides the size of the *i*th sphere**.**

    Please attach a screenshot.
3. **Modify and re-compile the code to generate desired outputs (60 points)**
    a. **10 randomly located spheres with blue color.**
    b. **10 spheres of the same size with random colors.**
    c. **10 spheres of random size with random colors. The spheres line up on the diagonal (See Fig 1).**
    d. **10 spheres of increasing sizes with random colors. The spheres line up on the diagonal. (See Fig 2)**

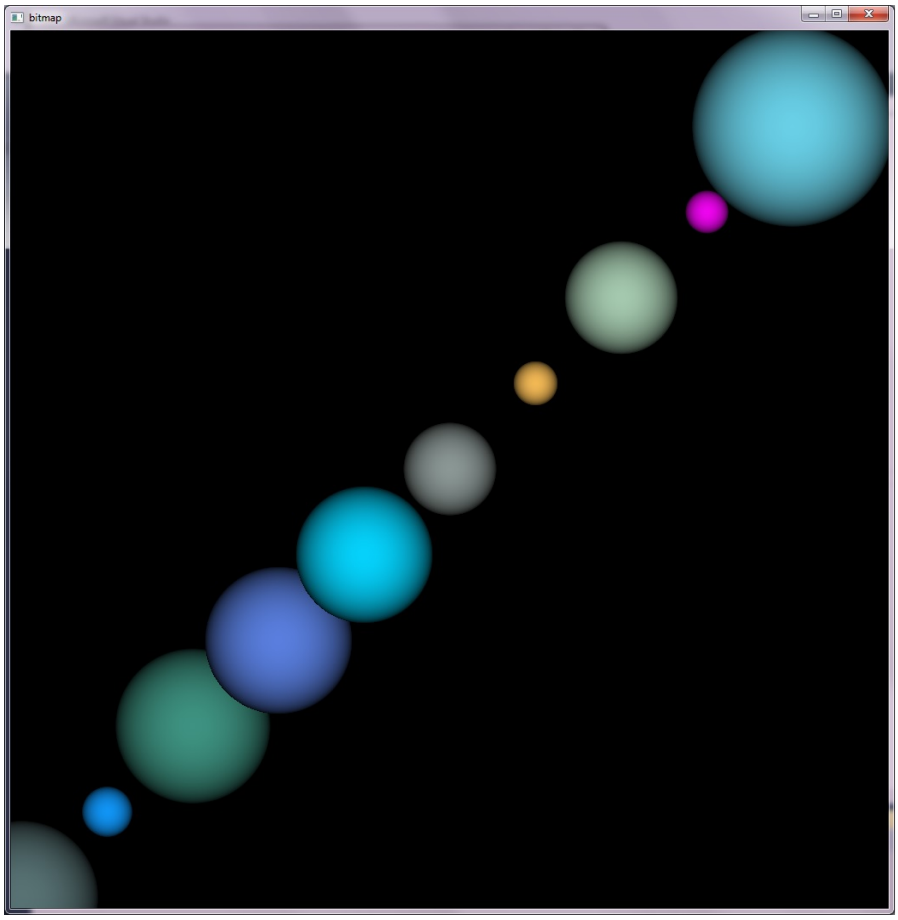

Fig1

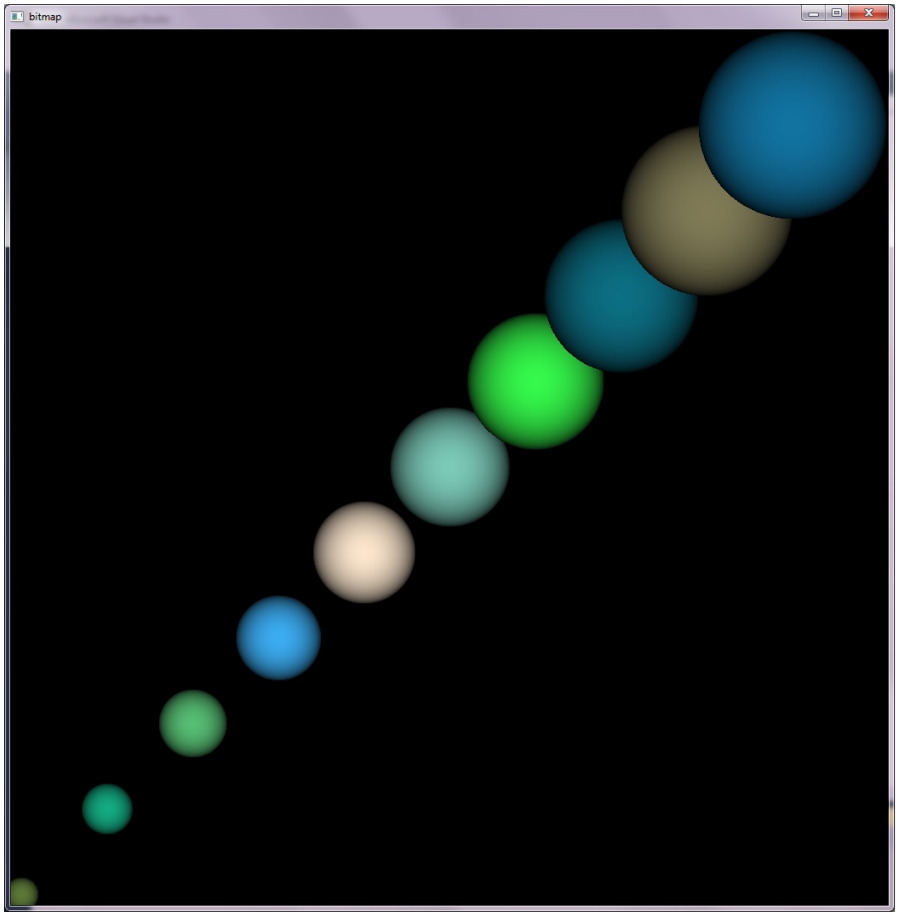

Fig2