

CS 575

Project #7

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1. What machine you ran this on

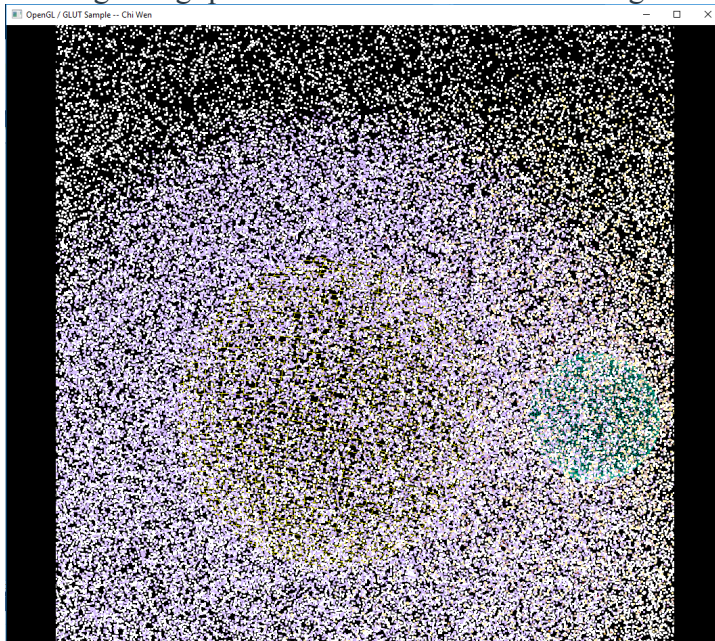
I ran this on CGEL's computer.

2. What dynamic thing did you do with the particle colors

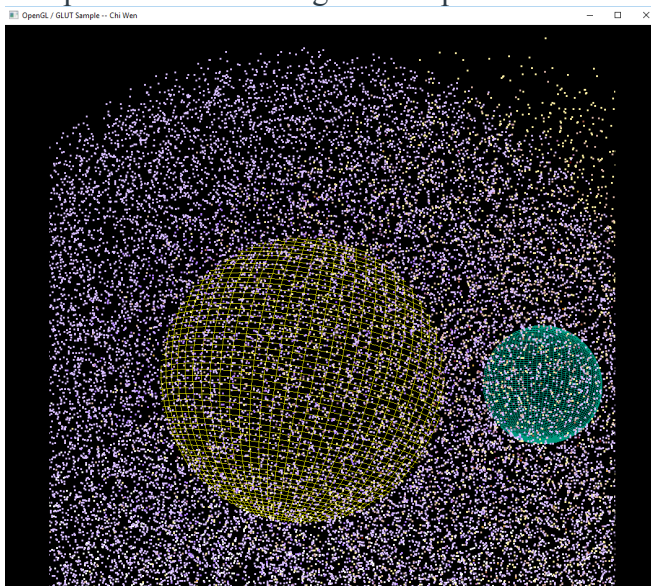
The particle starts with all white, but when it bounces off of the left sphere, the r of the rgba will minus 0.15 and the g of the rgba will minus 0.25, makes it to be more purple, and if the particle bounces off of the right sphere, the g of the rgba will minus 0.05 and the b of the rgba will minus 0.35, makes it to be more yellow. So that, every time the particles bounce off of a sphere, it will change its color.

3. Include at least one screen capture image of your project in action

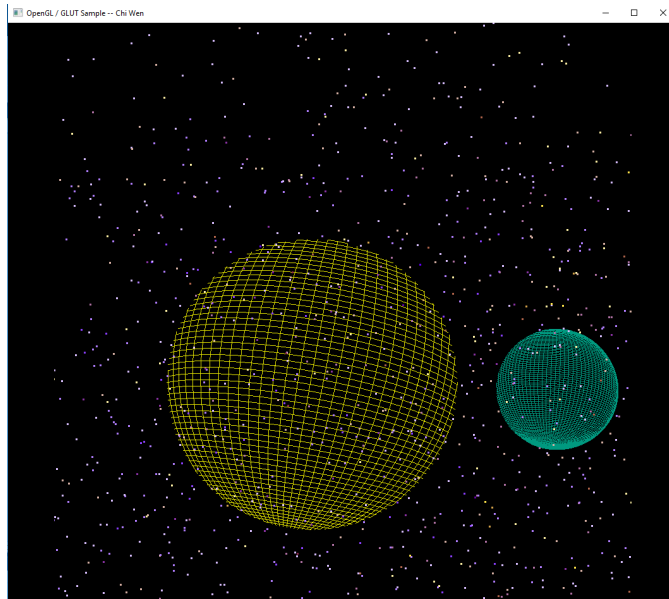
The beginning: particles start to fall and bouncing off the sphere



The particles is bouncing off the sphere



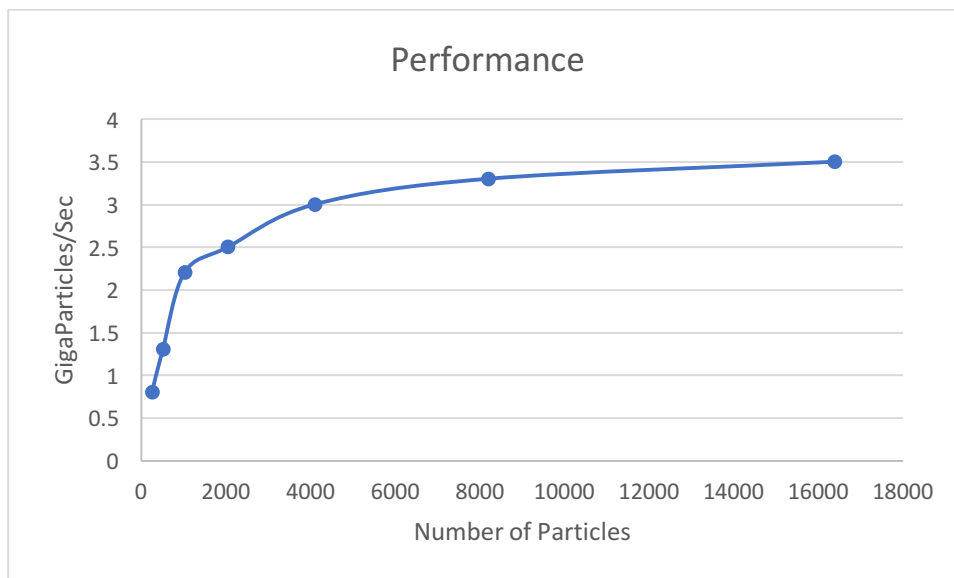
Almost finished



4. Show the table and graph

Performance versus Total Number of Particles:

Number of Particles	256	512	1024	2048	4096	8192	16384
Performance	0.8	1.3	2.2	2.5	3	3.3	3.5



5. What patterns are you seeing in the performance curve?

It is very obvious that when the number of particles increase, its performance will also increase. However, when the number of particles becomes larger, the performance starts to level off.

6. Why do you think the patterns look this way?

When the local work size is fixed (in this case, it is fixed to 32) and the global work size (Number of Particles) increases, each work group could get more to compute, because they haven't yet reach to their limitations; however, the "leveling off" part of the performance is where they almost reach to their limitations.

7. What does that mean for the proper use of GPU parallel computing?

The reason that the output can be as good is because we have CPU and GPU work together, or else, the output will not be as good as this one; also, it is much better to do it when you have a large data set.