Computer Graphics Final Project

Project Presentation/Expo Deadline: 13 December (*students will show a project demo in class*)
Documentation/Source Code Deadline: 13 December on the LML Course Manager (lcm.liacs.nl)

During this course, you have been regularly learning the theory and practice (programming) of computer graphics. For the final project, you should use your skills to to write a computer graphics project in OpenGL (any version with glut or SDL). The two most important factors in the grading criteria are level of difficulty and novelty. Level of difficulty will take into account how much further you went beyond the class assignments in visual realism, lighting and animation. A short scientific summary of what you (no teams allowed) did and source code are also necessary and also parts of the grading. The theme can be one of the following:

(1) **Fireworks:** The Fireworks can be displayed in any way you choose - its up to your imagination. It is important to have audio (e.g explosion sounds) integrated into the fireworks:

```
For cross-platform, our suggestion is to use SDL to play sounds and/or music.
```

Note that a basic implementation will earn a sufficient/passing grade, but the more elaborate the better (***Visual realism is the focus here.***). A basic, low-difficulty implementation example for the fireworks would be firing a cylinder up from the ground and having it explode in a similar way as the particle cannon assignment with diffuse & specular lighting and gravity on (which is simply an extension of the assignments). An example of a medium difficulty approach would be to add (1) a more sophisticated effect like the particles exploding into a shimmering sidewards moving curtain or into a disk (instead of a sphere) and (2) make the particles "glow". An example of *a high difficulty approach would be to simulate the dragon fireworks from Gandalf in the movie, The Fellowship of the Ring (2001) or to have real-time soft shadows.* If you are trying to do the "high difficulty" direction, please talk to Prof. Lew beforehand so that it is clear whether or not your ideas fit into the final project theme.

(2) **Scenery:** The goal is to present scenery or landscape, which should be interesting or beautiful to look at. *Realism is very important for this project.* An additional level of difficulty would be making the scenery interactive - eg. having a branch move realistically as you walk by it. A movable camera is required.

Project Presentation/Expo (see deadline above)

What happens on the Presentation/Expo day? Each student (no teams allowed) will show their work followed by a few short comments about what was interesting in the project. *You should bring your own laptop or computer or borrow a friend's computer.* Please check beforehand that it runs and that it will display on the beamer in the classroom.

Documentation: Submission Checklist

Each student should also upload a zip file containing:
(1) Report: A PDF file which includes
- a) your name,
- b) at least 5 screenshots of your simulation, and
- c) a scientific toned description (abstract, summary, implementation, references): what you did, how well it worked and which parts of the source code were written by you. It is OK to use other libraries but you will be graded on the parts that you wrote.

(2) Which PC: Which PC in 302 or 306 does the executable run on?
(3) Application: the working executable and necessary dlls; and
(4) Source Code: the source code and clear instructions on how to compile.

If you have any questions on grading or appropriate projects (or other theme possibilities), please contact me at lewmsk@gmail.com with Subject Line starting CG: