24-780 Engineering Computation Problem Set 05

You need to create a ZIP file (It may appear as a compressed folder in Windows) and submit the ZIP file via the 24-780 Canvas course. The file name of the ZIP file must be:

PS05-YourAndrewID.zip

For example, if your Andrew account is *hummingbird@andrew.cmu.edu*, the file name must be:

PS05-hummingbird.zip

If your ZIP file does not comply with this naming rule, you will automatically lose 5% credit from this assignment. If we are not able to identify who submitted the file, you will lose another 5% credit. If we finally are not able to connect you and the submitted ZIP file, you will receive 0 point for this assignment. Therefore, please make sure you strictly adhere to this naming rule before submitting a file.

The ZIP file needs to be submitted to the 24-780 Canvas course. If you find a mistake in the previous submission, you can re-submit the ZIP file with no penalty as long as it is before the submission deadline.

Notice that the grade will be given to the final submission only. If you submit multiple files, the earlier version will be discarded. Therefore, if you re-submit a ZIP file, the ZIP file MUST include all the required files. Also, if your final version is submitted after the submission deadline, late-submission policy will be applied no matter how early your earlier version was submitted.

Make sure you upload your Zip file to the correct location.

The ZIP file needs to include:

- C++ source file of your program (ps5.cpp)
- Brief description of your program that includes the following information in a PDF or plain-text.

Submission Due: Please see Canvas.

START EARLY!

Unless you are already a good programmer, there is no way to finish the assignment overnight.

PS5 Go creative! [ps5.cpp] (100 points)

Write a program that

- uses OpenGL animation using double-buffering. (20 pts)
- runs the animation in a for or while loop until the user wants to terminate (for example, pressing ESC key. Or if you write a game program, it is also ok to run the program until the game is over.) (10 pts)
- must be an interactive program. (10 pts)
- uses at least one of the three features of OpenGL explained in class, color gradation, line stipple, or alpha blending. (20 pts)
- uses at least two types of OpenGL primitives from GL_POINTS, GL_LINES, GL_LINE_STRIP, GL_LINE_LOOP, GL_TRIANGLES, GL_TRIANGLE_STRIP, GL_TRIANGLE_FAN, GL_QUADS, GL_QUAD_STRIP, and GL_POLYGON. (20 pts)
- uses at least one of the following. (20 pts)
    - math library function,
    - shuffling,
    - sorting,
    - state transition,
    - numerical integration using Euler's method.

And, submit

- C++ source code (ps5.cpp) **Make sure you include CPP file in the Zip.**
- Brief description of your program that includes the following information in a PDF or plain-text.
    - How to use your program, and
    - Which features you used for satisfying the above requirements.
    - **Include the document in the Zip.**

Our TAs and graders will select top 4 creative programs that will be shown in class.

Make sure your program can be compiled with no error in one of the compiler servers. Don't wait until the last minute. Compiler servers may get very busy minutes before the submission deadline!