

CS 321, Lab #1, C++ Console Program

1 PURPOSE

The purpose of this lab is to write a simple console program in C++ using C++ standard library function.

2 PREREQUISITES

- An operational Linux environment either native or as a virtual machine.

3 ASSIGNMENT

Write a C++ console program that will:

- accept a filename of an ASCII STL file via the command line
- open and read file (recommend reading line-by-line using `getline`)
- identify each facet, and print the coordinates of each of its vertices to the console, readable and formatted
- summarize contents
 - the number of facets in the file
 - the min and max of the x, y, and z coordinates
- No need to store vertices, etc – we will do that later

The program must be a quality, commented implementation commensurate with your programming experience. The implementation must be structured (not all code in `main`) as we may reuse some of this code later. It may be in single `.cpp` source file, or multiple source files.

See: [https://en.wikipedia.org/wiki/STL_\(file_format\)](https://en.wikipedia.org/wiki/STL_(file_format))

A sample ASCII STL file will be provided for testing your program, but I suggesting testing with other files to ensure a robust implementation.

4 DUE DATE AND DELIVERABLE

This project is due to be submitted prior to next week's lab (prior to Thursday of Week 2). You may be asked to demonstrate the program during lab in Week 2. Any submissions that are late will only earn 80% credit for the assignment, and an additional 10% deducted each business day late.

5 GRADING CHECKLIST

- Submission received on time (grade multiplier 0.80 if not)
- Check items that will apply to all assignments (50 pts, 10 pts each)
 - Submission complies with guidelines (color pdf, no wrapped lines, line numbers, proper ordering, zip file with buildable code with Makefile included)
 - Source code presents as professionally written (comments, indentation, variable naming, structured)
 - Compiles with no errors or warnings (using `-Wall`)
 - Runs to completion with no crashes or memory leaks (using `valgrind`)
 - Makes exclusive use of C++ standard library features - no `libc` unless absolutely necessary

- Check items that are particular to this assignment (50 pts, divided equally unless otherwise noted)
 - Accepts a filename via command-line arguments
 - Prints each facet's vertices to console in a readable, formatted fashion
 - Correctly reports how many facets were present in the file
 - Reports minimum and maximum value of each of the coordinates
 - File is handled properly, that is, opened and closed properly