

24780 Engineering Computation: Problem Set 1

(*) In the following instructions (and in all course materials), substitute your Andrew ID wherever you see *yourAndrewId*.

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

PS01-YourAndrewID.zip

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

PS01-hummingbird.zip

Failure to comply with this naming rule will result in an automatic 5% deduction from this assignment's credit. If we cannot identify the submitter of the file, an additional 5% credit will be lost. If we are ultimately unable to connect you with the submitted ZIP file, you will receive 0 points for this assignment. Therefore, ensure strict adherence to this naming rule before submitting a file.

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

Notice: The grade will be assigned to the final submission only. In the case of multiple file submissions, earlier versions will be discarded. Therefore, when resubmitting a ZIP file, it **MUST** include all the required files. Also, if your final version is submitted after the submission deadline, the late-submission policy will be applied, regardless of how early your earlier version was submitted.

Ensure that your program can be compiled without errors on one of the compiler servers. Do not wait until the last minute, as the compiler servers may become very busy just minutes before the submission deadline!

Submission Due: Please refer to Canvas.

PS1-1 Download and read the course syllabus from the Canvas. (15 pts)

Ensure that you can successfully log in to the 24-780 Canvas. Download and review the syllabus. There is no need to submit anything for this assignment.

PS1-2 Download and install a developing environment. (15 pts)

Follow the instructions provided in the lecture notes to install Visual Studio if you are using Windows, or XCode if you are using macOS. If you're working on Linux, you can use clang++ for assignments. In this case, you'll need to independently learn how to set up and utilize clang++, or you can attend the instructor's office hours for assistance.

PS1-3 Program to solve linear simultaneous equations [ps1-3.cpp] (70 pts)

Write a C++ program that solves linear simultaneous equations

$$ax + by = c$$

$$dx + ey = f$$

The solution to the equations is:

$$x = (ec - bf)/(ae - bd)$$

$$y = (af - cd)/(ae - bd)$$

The program should prompt the user to enter a,b,c,d,e, and f as:

```
ax+by=c
dx+ey=f
Enter a b c d e f:
```

And take these parameters from the terminal. Then, if the absolute value of $ae - bd$ is less than 0.000001, then print:

```
No solution.
```

Otherwise, print the solution like:

```
x=? y=?
```

You can use C standard library or C++ standard library of your choice. If you go with C standard library, and use printf, you would see output (and input) like:

```
ax+by=c
dx+ey=f
Enter a b c d e f:1 1 0 -1 1 2
x=-1.000000 y=1.000000
```

If you go with C++ standard library, you would see output (and input) like:

```
ax+by=c
dx+ey=f
Enter a b c d e f:1 1 0 -1 1 2
x=-1 y=1
```

Save the source file as ps1-3.cpp and your Zip file for submission needs to include this file, but do not include project files (such as .sln, .vcproj, .xcodeproj etc.)

Test Your Program with One of the Compiler Servers

Test your program with one of the following compiler servers:

```
http://freefood1.lan.local.cmu.edu
http://freefood2.lan.local.cmu.edu
http://freefood3.lan.local.cmu.edu
http://freefood4.lan.local.cmu.edu
```

You need to make sure you are not getting any errors (red lines) from the compiler server.

It is a good practice to remove warnings as well. However, we will not take points off for warnings as long as your program satisfies requirements of the assignment.

You can only access these servers from CMU network. If you need to access from your home, use CMU VPN. Please visit the CMU computing services web site how to install the VPN.