

## CS 12 - Lab 1

In this lab you will be formatting output and using data files. You will experiment with formatting your output using both C++ constructs and using `printf`.

1. Write a program to compute the time that it takes light and sound to cover a given distance. The formulas to compute this information are the following:

$$Time_{light} = distance / speed_{light}$$

$$Time_{sound} = distance / speed_{sound}$$

where the speed of light is 186,000 miles per second and the speed of sound is 0.206 miles per second. Your program should prompt the user for the distance (in miles). The time it takes for light to travel that distance should be computed and displayed in seconds using scientific notation. The time it takes for sound to travel that distance should be computed and displayed in seconds using fixed-point notation with two digits to the right of the decimal.

Your output should look like the following (including headings):

Distance (miles)	Time for light (seconds)	Time for sound (seconds)
1	5.376e-06	4.85

Be sure to test your program on different inputs.

- (a) Write the above program using the C++ formatting constructs.
  - (b) Rewrite the above program using `printf` to format. Also, allow the user to continue entering a new distance until they decide to quit. Each set of computed information should still be displayed as above.
2. Write a program that uses data files. This program should read in integers from a file called *values.dat* and should compute the sum of these integers. The sum should then be outputted to the screen. Be sure to allow for the integers to be in any format in the input file. There may be only one on a line, there may be more than one on a line, and there may be blank lines in between numbers or at the end of the file.