



(CL-1004) OBJECT ORIENTED PROGRAMMING LAB

LAB TASK # 1

NOTE: Late submissions will NOT be accepted for any task/assignment.

- Copied task will be awarded zero marks
- Lab Tasks will be graded in Lab

Q No.1: Chlorine Calculation for Pool Maintenance

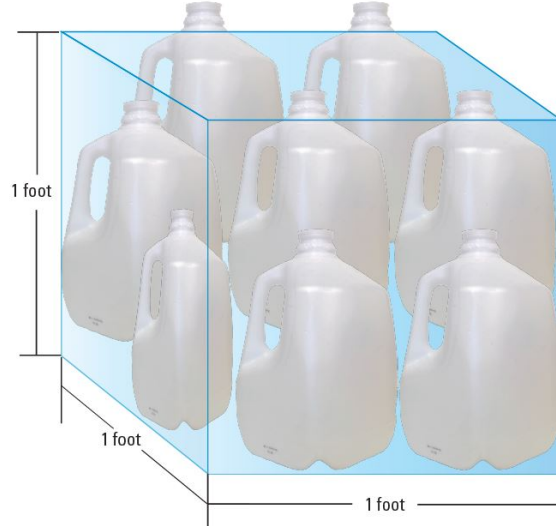
Marks: 12

Maintaining balanced chlorine levels is essential for pool hygiene and safety. In this lab task, Develop a user-friendly C++ program to assist in determining the necessary chlorine dosage for your swimming pool. The program will account for your pool's size, desired chlorine level, and the concentration of the chlorine product you're using.

Program Flow

- Users will be prompted to input crucial details:
 - Pool size in gallons, Desired chlorine level, within the recommended range of 1.0 to 3.0 parts per million (ppm), and Concentration of the chlorine product in use.
- Employing user-friendly validation, the program will ensure accurate input.
- Using the following formulas, it will calculate the required chlorine dosage:
 - **Convert gallons to cubic feet:**
$$\text{PoolCubicFeet} = \text{VolumeInGallons} / 7.481$$
 - **Calculate chlorine needed in pounds:**
$$\text{ClPounds} = (\text{DesiredCl} - \text{CurrentCl}) * \text{PoolCubicFeet} / \text{ClConc}$$
- The program will then present the recommended chlorine dosage needed to attain the desired chlorine level.
- To validate the program's functionality, conduct thorough testing with a variety of scenarios involving different pool sizes, current chlorine levels, desired levels, and chlorine product concentrations.

A **cubic foot** (CF) is a measure of water volume approximately equivalent to 7.5 gallons.



Q No.2: Fraction Calculations

Marks: 3

If you have two fractions, a/b and c/d , their sum can be obtained from the formula

$$\frac{a}{b} + \frac{c}{d} = \frac{a*d + b*c}{b*d}$$

For example, $1/4$ plus $2/3$ is

$$\frac{1}{4} + \frac{2}{3} = \frac{1*3 + 4*2}{4*3} = \frac{3 + 8}{12} = \frac{11}{12}$$

Write a program that encourages the user to enter two fractions, and then displays their sum in fractional form. (You don't need to reduce it to lowest terms.) The interaction with the user might look like this:

Enter first fraction: $1/2$

Enter second fraction: $2/5$

Sum = $9/10$

Note: Take values from user at runtime using cin