C++ Programming Basics

I. Introduction

This lab session is aimed to introduce the foundational elements required to begin programming in C++. We will focus on core fundamentals including basic program structure, variables, and input/output (I/O). In addition, we will implement essential supporting features such as comments, arithmetic and increment operators, data type conversion, and standard library functions.

II. Approximate Performance Time

Three Hours

III. Objectives

Students will develop familiarity and confidence with the syntax and style of C++. Students will learn how multiple elements interact to create simple yet functional programs.

IV. Practice Tasks

Task-1
Write statements that display on the screen a. the character 'x' b. the name *Jim* c. the number 509
Task-2
Write a statement that displays the variable george in a field 10 characters wide.
Task-3
Write a statement that gets an integer value from the keyboard and places it in the variable temp.
Task-4
Write a statement that uses an arithmetic assignment operator to increase the value of the variable temp by 23.

Task-5
Write a program that generates the following table: 1990 135 1991 7290 1992 11300 1993 16200 Use a single cout statement for all output.
Task-6
On a certain day the British pound was equivalent to $1.487 U.S., the French franc was $0.172, the German deutschemark was $0.584, and the Japanese yen was $0.00955. Write a program that allows the user to enter an amount in dollars, and then displays this value converted to these four other monetary units.

V. Assessment Task

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

You can take advantage of the fact that the extraction operator (>>) can be chained to read in more than one quantity at once:

cin >> a >> dummychar >> b;