Assignments_Part 1

Migrating C to C++

1. Write programs to understand to following concepts in C++. These programs need not get examined. Write these introductory programs to understand the basic concepts of C++.

   a) Flexible variable declaration
   b) C++ style of input/output
   c) C++ style type names
   d) Type casting
   e) The use of scope resolution operator (::)
   f) Constants:
   g) Constants and #define
   h) Constants and Pointers. (Also find some area of usage)
   i) References
   j) Constants and references
   k) Usage of references
   l) Functions that return by reference
   m) Inline function
   n) Inline function and macro
   o) Function overloading
   p) Default values of function parameters

C++ style Input/Output

2. Write a program that accepts two integers from keyboard, adds them and prints their values. Use cin and cout.
3. Create a factorial table using cout as follows:

   1! = 1

   2! = 2

   3! = 6

   …

   6! = 720

Flexible Variable Declaration

4. Write a program to print 1 to 10 using a for loop. Declare the loop variable inside the for loop. Check the scope of this variable.

5. Write a program to display Celsius to Fahrenheit conversion table using a for loop. Consider only 0˚ to 100˚ Celsius. Declare variables when they are used for the first time.

Constants

6. Write a program that defines a constant PI and takes radius of a circle from keyboard and prints area of that circle.
7. Write a function that takes an integer and returns the factorial of that number. Declare function parameter as const. Call the function with some argument from main function, store the result and print it.

Reference

8. Write a function swap() that takes two integer arguments and interchanges the values of those arguments using reference. Now in the main function, instantiate two integer variables with some values. Print their values. Call the swap function with these variables. Finally print the values of those variables. Check the result.
9. Now write another function swap() that takes two strings (character array) and interchanges them without reference parameters. Test this function using some arguments. Rewrite the function using reference parameters. Again test this function with some arguments.

Constants and references

10. Write a function that takes an integer and returns the factorial of that number. Declare function parameter as read only reference. Call the function with some argument from main function, store the result and print it.

Constants and pointers

11. Write a function Strcpy to copy one string to another with suitable formal parameters declarations. Following points must be considered.
    a) Source string must not get modified
    b) Target string is allowed to get modified
    c) The Pointers must be constant pointers.

    Use it to copy some strings.

Inline function

12. Write an inline function add() that takes three integer arguments and returns the sum of these arguments.

Function Overloading

13. Consider the following two scenarios:
    a) We want to find out the maximum between three integers.
    b) We also want to find out the maximum element of an array of integers.

    Write two overloaded functions for these two scenarios.

14. Write two overloaded functions print() such that one prints the elements of a vector and the other prints elements of a matrix. Note that a vector and a matrix may be represented as a one-dimensional array and a two-dimensional array respectively.

Default values for function parameters

15. Consider function add() in 13. Specify the default values for second and third parameters to 0 (zero). Now call this function with three, two and one arguments and see the result.