National University of Computer and Emerging Sciences Islamabad

Programming Fundamentals Lab FALL 2019

Lab Manual 12
Functions

Lab Tasks

Problem 01
In this task, you need to do the following:

- Write a function named displayMessage() that takes user name as input in character array and then shows greetings
- Now take the name input in main() and pass the name as an argument to displayMessage() function
- Change the displayMessage() method such that it returns the number of characters after displaying the greetings

Problem 02
Write a function power that takes two parameters a and b. And it returns the power as a^b.

Problem 03
Write a function that inputs two integers in main() function and passes the integers to a function by reference. The function swaps the value. The main() function should display the values before and after swapping.
Temp= Variable A;
Variable A= Variable B;
Variable B= Temp

Problem 04
Write a function that takes an integer n as parameter and returns the sum of its digits. For example the program should display 9 if the user enters 135.

Problem 05
Write a function that takes an array of integers and size of that array as argument and returns the mode, which is the maximum value occurred in the array.

Problem 06
Define a function named 'perfect' that determines if parameter number is a perfect number. Call this function multiple times in main() to determine and print all the perfect numbers between 1 and 1000.

Note: An integer number is said to be "perfect number" if its factors, including 1(but not the number itself), sum to the number. E.g., 6 is a perfect number because 6=1+2+3].

Problem 07

The Fibonacci Sequence is the series of numbers such that the next number is found by adding up the two numbers before it.
0, 1, 1, 2, 3, 5, 8, 13, 21, 34, ...

Define a function that returns the nth term of a Fibonacci series.
e.g if n=7 then function should return **8**

Problem 08

Write a function that converts an array of integers to binary numbers. You function should take a Two Dimensional array, number of rows and number of columns in that array as argument, and store the result in another 2D-array containing binary representation of those numbers.

Submission Instructions:

1. Save all **.cpp** files with your roll no and task number
   e.g. i19XXXX_Task01.cpp
2. Now create a new folder with name *ROLLNO_LAB12* **e.g. i19XXXX_LAB12**
3. Move all of your .cpp files to this newly created directory and compress it into **.zip file**.
4. Now you have to submit this zipped file on Slate.

THE END