National Institute of Technology Calicut

Department of Computer Science and Engineering

B. Tech. (CSE) – Third Semester

CS2092D: Programming Laboratory

Assignment -1

General Instructions

- Programs should be written in C language and compiled using C compiler in Linux platform.
- Invalid input should be detected and suitable error messages should be generated.
- Sample inputs are just indicative.
- Please do the programs in your free time either from System software Lab (SSL) / Network Systems Lab (NSL), when the lab is not used for regular lab hours or do the programs using your own computer. Even if the programs work in your own computer, there is a chance that they may not work properly in the computers in SSL / NSL, due to some compatibility issues of the C compiler or the machine. Hence, before the evaluation day, check that your programs are ready for execution in the computers in NSL/SSL.
- Evaluation of few random questions from the following questions will be conducted on **19, July 2018 (Thursday).**

Part A: Conditional and Iterative concepts

1. Write a program to find the factorial of an input number *x* without using recursion.
   Input *x* = 5
   Output Factorial of *x* = 120

2. Write a program to print the first *n* Fibonacci numbers.
   Input *n* = 2
   Output: 0, 1

   Input *n* = 10
   Output: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34

3. Write a program to print all the prime numbers between the two input numbers.
   Input: 3, 15
   Output: 3, 5, 7, 11, 13

   Input: 25, 28
   Output: No prime numbers between 25 and 28

4. Write a program to check whether a given number is an Armstrong number or not. A number is an Armstrong number if it is equal to the sum of cubes of its digits (eg: 1 (as $1= 1^1$), 371 (as $371= 3^3 + 7^3 + 1^3$).

   Input: 1
   Output: 1 is an Armstrong number

   Input: 371
   Output: 371 is an Armstrong number

   Input: 125
   Output: 125 is not an Armstrong number

5. Write a program to display the sum of first *n* terms of the harmonic series $1+\frac{1}{2}+\frac{1}{3}+... + 1/n$.

   Input n = 5
   Output: 2.283334

6. Write a program to display the Pascal's triangle with *n* rows.

   Input n = 5
   Output

```
        1
      1   1
    1   2   1
  1   3   3   1
1   4   6   4   1
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