CS2710: Data Structures and Programming Lab

Assignment-1: Home-Work

August 8, 2016

1. Write a program to find the Maximum and the Next-Maximum of an array of integers.

Input Description: First line of the input will contain a single integer n, the size of the array, followed by n space-separated integers, the array elements, in the second line. You can assume that $2 \leq n \leq 10^5$

Expected Output: A single line containing two space-separated integers with the Maximum followed by the Next-Maximum in a single line

ex-
Input:

10
2 9 8 1 3 -6 -18 19 15 -89

Output:

19 15

2. Given an integer as input, convert it to its Hexadecimal equivalent. You can assume that $1 \leq n \leq 10^9$ where n is the given decimal number

Input Description: A single line containing an integer
Expected Output: a single line containing the Hexadecimal equivalent of the input integer

ex-
Input: 1562
Output: 0x0000061a

3. Determine the common prime-factors of two positive integers.

Input Description: A single line containing two space-separated integers
Expected Output: A single line containing space-separated common prime factors of the two integers

ex
Input: 36 54
Output: 2 3

4. Given two strings of lowercase letters as input, determine if both are **anagrams**. Anagrams of a string are formed by permuting the characters in it and a set of characters can form several anagrams. You can assume that $1 \leq$ n1, n2 ≤ 100 where n1 and n2 are the lengths of the two string respectively.

Input Description: A single line containing two space-separated strings
Output Description: A single line containing 1 if the strings are anagrams or 0 otherwise.

example
Input: programming mmioprrngag
Output: 1
Input: computer retmpucu
Output: 0

5. Implement a function to calculate the square root of an integer precisely upto 15 digits after decimal point (**Note**: You are not supposed to use any library function to calculate the square root violating which will result in 0 for this question). You can assume that $1 \leq$ n $\leq 10^4$ where n is the input number

Input Description: A single line containing an integer
Expected Output: A single line containing a floating point number in the aforementioned format

ex-
Input: 2
Output: 1.414213562373095

Note: Use **stdin** for all I/O operations