Indian Institute of Technology, Guwahati
CS348 - Implementation of Programming Languages Lab
ASSIGNMENT 1[SET A]

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1. A document is taken as the input. Take a single character as another input that is to be searched. Print 1 if the searched character is present in the given document, otherwise print 0. Print the number of iterations you need to reach the searched character.

2. Consider an array of size n. Add the first k numbers of the array. If k numbers are not present in array, then print 0 otherwise 1. Take n and k as user inputs.

   EX:

   n= 10 k = 15

   ARRAY: 12, 230,2, 304, 760, 43,203, 300, 450, 130

   sum=2434

   flag=0 ##15 numbers are not present in array

3. Consider an array of size n. Print the smallest and largest number and their location in the array. Take n as a user input.

   EX:

   ARRAY: 12, 230, 2, 304, 760, 43, 203,300, 450, 130

   smallest=2

   loc_small=2

   largest=760

   loc_lar=4 ##array starts with index 0.

4. Design a calculator to perform various operations of floating point numbers: Addition, Subtraction, Multiplication, Division. Your design should follow this convention: to add press 1, to substract press 2, to multiply press 3, and to divide press 4.

5. Consider an unsorted array of size n and a positive integer k, then find out the k^{th} largest element(s) and print the index(es). Take n and k as user inputs.

6. Take an integer and use it to form the following structure(star pattern). Take the number of rows n as user input.

   Example:

   Input: n=3

   Output:

   *****

    ***

     *

7. Write a program to check if the binary representation of a given number is a palindrome or not. Print the binary representation and print TRUE if the representation of the is a palindrome else FALSE. Take the decimal number as user input.

   Ex:

   Input: 27

   Output:

   11011

   TRUE

8. Write a program to print all the non-leap years in the given range (inclusive). Take the range as user inputs.

   Ex:

   Input: 2001 2009

   Output: 2001 2002 2003 2005 2006 2007 2009

9. Write a program to reverse the first k characters of a given string, also return TRUE if all characters in the string are alphabets.

   Ex:

   k= 2

   Input: string

   Output:

   rtsing

   TRUE

10. Write a program to check if a string contains another string. The program takes two strings as inputs and returns the index where the second string is found. If the second string cannot be found, then return -1.

    Ex:

    str1: Hello

    str2: llo

    Output: 2

11. Consider a document containing characters, numbers and special symbols, write a program to find the list of alphabets, numbers and special symbols and their number of occurrences in the document.

12. Write a program which takes two numbers as inputs and shows all the prime numbers in between those numbers and also finds the multiplication between the sum of primes in even position and primes in odd position.

    Ex:

    If n1=1 and n2=10

    Output: 2, 3, 5, 7

    Multiplication = 70.

13. Write a program to find GCD of two numbers using Euclid's algorithm (non-recursive version).

14. Read two single dimensional sorted arrays of size n and generate a 2n sized single dimensional sorted array.

15. Write a program to find the most repeated integer in an array of size n. Take n and the elements of the array as user input.

    Ex:

    Input array: 1 2 3 2 4 2 5

    Output: 2

Best wishes