

PDS LAB – 4 (Section-5) Date: 30th January 2017; Arrays and Strings

Tutorial Problems

1. Write a C program to read a sequence of numbers from a key board (terminated by some user defined constraint such as entry of some specific number) and compute (i) the average of the sequence, (ii) number of entered values greater than, less than and equal to the average of the sequence.

2. Write a C program to enter your name and print the unique characters. Modify your code for both case sensitive and insensitive.

Example:

Input: K Sreenivasa Rao

Output: K S r e n i v a s R o (case sensitive); K S r e n i v a s o (case insensitive)

3. Write a C program to accept input as number of rows, and print the output in the following pattern (Ex: output pattern for 6 rows).

```

      1
    1 1
  1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
```

Assignment Problems (For All Students)

1. Write a C program that reads an array A[] of 'N' integers and a separate integer 'X' from keyboard. Now check whether the X is an element of the array A or not. If X is an element of array 'A' then print 'X' and the position of 'X' in the array.

2. Write a C program to read 'N' real numbers from the user to find the standard

deviation of the series of numbers. $\sigma = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2}$

3. Write a C program to find all possible sub-arrays whose sum equal to zero.

Example:

Input: {4, 2, -3, 1, 6, -2, -1, -1, -2, 5, -2}

Output: Number of possible sub-arrays = 5.

S1: {2,-3,1};

S2: {2,-3,1,6,-2,-1,-1,-2};

S3: {-3,1,6,-2,-1,-1};

S4: {6,-2,-1,-1,-2};

S5: {-1,-2,5,-2}

4. Write a C program to read a string of characters and print it in reverse order. Print the input string also.

Example:

Input: Programming and Data Structure

Output: erutcurtS ataD dna gnimmargorP

5. Write a C program to accept input as number of rows, and print the output in the following pattern (Ex: output pattern for 5 rows).

```
1
123
12345
123
1
```

Additional Assignment Problems (For Students who completed 5 problems)

1. Write a C program that reads an array A[] of N integers and prints the Kth largest element of the array. Do not sort the whole array

Example:

Input Array : 21, 5, 54, 29, 6, 1, 76, 23, 7, 2

Input: k = 3

Output: The 3rd largest element of the array is 29

2. Write a C program that accepts text from keyboard and print the total number of words, number of unique words and their frequencies.

Input: IIT Kharagpur IIT Mumbai IIT Hyderabad IISC Bangalore IITG IIM Alhabad IIM Bangalore IIT Ganghinagar

Output:

Total Number of words = 15

Number of Unique words = 10

Frequency of Occerrence: IIT – 4; Kharagpur – 1; Mumbai – 1; Hyderabad – 1; IISC – 1; Bangalore – 2; IITG – 1; IIM – 2; Alhabad – 1; Ganghinagar – 1;