PDS Lab, Section - 17, Date: 28th Dec 2020
Assignment - 4 [Arrays and Strings]

Instructions

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1. **Create a directory named as <rollno>_A4, where <rollno> is your roll number.**
2. **Give the name of the program as <p>.c where <p> implies the problems number, like 1.c 2.c 3.c etc. Store all the program under this Assignment in the directory <rollno>_A4**
3. **Zip the entire directory <rollno>_A4.**
4. **You should upload your zipped file <rollno>_A4.zip to the Moodle course web page latest by 5 PM (without penalty). The cutoff time will be till 5.30 PM with a penalty of 25% on your secured marks (i.e., if you secured 80 marks, after penalty you will get 60 marks). Beyond 5.30 PM, the moodle system will not allow you to submit, as a result you will get zero.**

Section - A (15 + 15 + 20 = 50)

Q1 : Write a C program that will read a line of text and delete all occurrences of the article ‘an’ from entered text. Also count the number of ‘an’ removed from the entered text. **(15M)**

Input text should be all lowercase characters and remove only the two letter word ‘an’.

Example :

Input :

“**an** owl **an** elephant **an** umbrella **an** animal **an** apartment all are examples of **an** article”

Output:

owl elephant umbrella animal apartment all are examples of article

Count of **an** removed from entered text = 6

Q2. You are given input number n, then you will be given ‘n + 3’ numbers as input that you have to store in an array ,each number given to you as input lies between [1,n] , every number in those ‘n+3’ numbers given to you as an input comes only once except one number that comes 4 times, you have to **(15M)**

(i) Print that repeated number

(ii) Print all the numbers that come before the first occurrence of that repeated number in the array

Note: You are allowed to use only one array in your whole code

Note : n should be less than 50

Input: n = 5

Arr = 1 2 5 4 3 4 4 4

Ans : Repeated Number : 4

Numbers in the array before the first occurrence of repeated number

1 2 5

Q3. Write a C program that will take n numbers through the keyboard by the user and delete the first k numbers from the beginning of the array. Then append m numbers at the end of the array. Print the arrays after every operation. **(20M)**

Example :

n=5, array- 5,6,7,2,3
k=2, after deletion the array - 7,2,3
m=3, after insertion the array - 7,2,3,4,1,6

Section - B (25 + 25 = 50)

Q4. Take an integer array P of length >=2, where all the elements are distinct. In the array P, a group is defined as (P[m], P[n]) where m and n are array indices and they are distinct. **(25M)**

I. Find all such groups from the array P. Print the groups along with the maximum among the elements in each group. Also, store the maximum among the elements of each group in an array L.

II. In the array P, we have the following property for some of the groups: P[m]>P[n] when m<n. Find and print all such groups from the array.

Note: Write all the codes in a single C source file.

Sample Input: P is {8,7,12,15,4}

Sample Output: (I) Possible groups = (8,7), (8,12), (8,15), (8,4), (7,12), (7,15), (7,4), (12,15), (12,4), (15,4)

Maximum in each group = 8, 12, 15, 8, 12, 15, 7, 15, 12, 15

(II) The groups satisfying the property (P[m] > P[n] & m < n) are:

Group:(8,7)

Group:(8,4)

Group:(7,4)

Group:(12,4)

Group:(15,4)

Q5. Write a C program to accept a key string and some test string from the user through keyboard. The program should validate the test string, and return the message that whether the key string is present in the test string or not. **(25M)**

Note: If a key string is present in the test string means the frequency of characters of key string should either match or below the frequency of characters of the test string

Example :

Key string = "ab"
Test string = “ac”
Key string is not present in the Test string.

Key string = "ab"
Test string = “acb”
Key string is present in the Test string.

Key string = "abbbcdd"
Test string = “abcdbdbefdba”
Key string is present in the Test string.

Key string = "abbbcdd"
Test string = “abbcbdasc”
Key string is not present in the Test string.