CS19101 Programming and Data Structures
Arrays, Sorting, Searching

General instruction to be followed strictly

1. Do not use any global variable unless you are explicitly instructed so.

2. Use proper indentation in your code and comment.

3. Name your file as `<roll_no>_<assignment_no>`. For example, if your roll number is 14CS10001 and you are submitting assignment 3, then name your file as `14CS10001_3.c` or `14CS10001_3.cpp` as applicable.

4. Write your name, roll number, and assignment number at the beginning of your program.

5. Make your program as efficient as possible.

Part-I

Submit one (single) C program.

Write a C program to perform the following tasks.

1. Ask for input positive integers n and m.

2. Construct 2 arrays A and B of type int. A should store n positive integers taken in as input, while B should store m positive integers taken in as input. Note that the numbers taken into A, or into B need not be distinct - two numbers in A can be the same.

3. Construct an array C that only stores the distinct numbers of A and B. In an array D, in the corresponding indices store the frequency of these distinct numbers across A and B. Eg. if $C[0] = 1$, and 1 appears 2 times in A and 2 times in B, then $D[0] = 4$.

4. Without using another array, you have to do the following:

   ▷ If there are n_1 distinct even numbers and n_2 distinct odd numbers, then the even numbers should be sorted in ascending order and stored in the cells $C[0] - C[n_1 - 1]$

   ▷ In array C the odd numbers should be sorted in descending order and stored in the cells starting from cell $C[n_1]$.

   ▷ The frequencies in D should be rearranged such that the indices correspond to the final indices of the number in array C. Continuing from the example in part 3, if finally after the required sorting $C[4] = 1$, then finally it should be that $D[4] = 4$.

5. Print the numbers of C and their corresponding frequencies as shown in the sample output.

Sample Output

```
Enter positive integer n: 5
Enter positive integer m: 6
Enter 5 positive integers for array A: 2 2 1 3 4
Enter 6 positive integers for array B: 1 2 26 14 6 6
The required sorting of the distinct numbers of A and B are:
2 (3)
4 (1)
6 (2)
14 (1)
26 (1)
3 (1)
1 (2)
```

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