National University of Computer & Emerging Sciences, Karachi
Spring-2020 Computer Science Department
Mock Exam

Course Code: CS118	Course Name: Programming Fundamentals
Instructor Name:	Ms. Farah Sadia

Time: 35 minutes. **Max Marks**: 20

PDF Formation time: 15 minutes

String

Question # 01:

Max. Time: 20, Marks: 10,

Mr. Faisal wants a search feature for his language training website. One can submit a word as a query and the site would return the meaning of that word from a language dictionary. A user however, may sometimes have spell errors in his input. Mr. Faisal wants to take care of this and wants to give him suggestions like "Did you mean this another word?". Mr. Faisal needs your help. You need to write a program that would compare the proximity of two strings according to a given set of rules designed by Mr. Faisal and decide whether one can be suggested for another.

Input Description:

First line of input will contain an integer T = number of test cases. Next T lines will each contain two strings consisting only of lower case English letters separated by space. Strings are compared by these rules designed by Mr. X :

1. All the vowels plus the letter 'y' - set of characters: { 'a', 'e' , 'i', 'o', 'u', 'y' } are removed from both the strings if they are present at any index other than 0. First letter is not removed even if it's a vowel or 'y'.
2. Two strings are similar and can be suggested for each other if the first characters after modification by rule 1 are the same and remaining characters after modification are not different at more than 2 positions. If resulting strings after applying rule 1 are of unequal length, all the extra indices in the larger string should be counted as having different characters. e.g: if we get "bcd" and "bkd" after applying rule 1, they differ at one position. "pqrs" and "pq" differ at 2 positions, (extra positions in "pqrs")

```
4
school sckool
program anagram
lucky luky
contest test
```

Output Description:

For each test case, print "YES", if the strings can be suggested for each other using the given comparison logic, else print "NO".

```
YES
NO
YES
NO
```

Dynamic Memory Allocation

Note: *Must attempt it with DMA. Otherwise not will be considered.*

Question # 02:

Max. Time: 15, Marks: 10,

Given a list of integers, find out the number that has the highest frequency. If there are one or more such numbers, output the smaller one.

Input Description:

First line of input will contain an integer T = number of test cases. Each test case will contain two lines. First line will contain an integer N = number of elements in the sequence and 1 <= N <= 1000. Next line will contain N space separated integers of sequence A. For each Ai in sequence A, 1<= Ai <= 10001.

```
3
7
2 4 5 2 3 2 4
6
1 2 1 1 2 1
10
1 1 1 1 1 1 1 1 1 1
```

Output Description:

For each test case, print on a single line, the number with highest frequency in the sequence.

```
2
1
1
```