Assignment VII
Lab MC504

Send your assignment solution to mc504lab@gmail.com.
Deadline: 03.03.2021, 12 midnight.
Put all files into one folder, create a zip and name it as <**RollNo**>_<**Assignment_<No>** and mention the files name as: Q1.c, Q2.c and so on. In each file please mention your roll number.
Subject of mail should be: <**RollNo**>_**Assignment_<No>**. **For example : 1911MC04_Assignment_II.**
You have to take inputs from the user. Otherwise marks (40%) will be deducted.

1Q.

Implement a sorting algorithm using divide and conquer technique. First Pick an element from the MID position of the array, this element is called a root element. Then Divide the unsorted array of elements in two arrays with values less than the root come in the first sub array, while all elements with values greater than the root come in the second sub-array (equal values can go either way). This step is called the partition operation. Then Recursively repeat until the sub-arrays are sorted. One sub-array contains elements with smaller values compared to root and separately to other sub-array of elements with greater values.

2Q

Chandu and chandni Talk on phone for a long time daily. Being afraid that someone will hear their private conversation chandu suggested chandni an idea. He suggested that he will talk only with encrypted strings with her and only she would know how to decrypt the string. So that even if someone hears, He/She would not be able to anticipate their conversation.

Rules of encryption are as follows:

1. String on length N is assumed to be cyclic consisting of lower case English alphabets. (**cyclic string**: We call a string cyclic if it can be obtained by concatenating another string to itself many times (for example, s2 = "abcabcabcabc..." is cyclic since it can be obtained from s1 = "abc" in such a way)).

2. In each iteration, we pick the last character and put it in the starting of the string. For example: april performing

iterations and collecting each string formed in a set until we get the original string. Ex: {april,lapri, ilapr, rilap, prila}

3. sort the set of string in lexicographically reverse order. Ex: {rilap, prila,lapri, ilapr, april }

4. Taking the last character of each string in the set is the encrypted string. Ex: pairl

Chandu also sends the position(K) of first letter in encrypted string from original string i.e 2 (p is on position 2 in original string and is the first character of encrypted string)

Now, Chandni is ofcourse not that brilliant to decrypt the strings in real time and understand what chandu is saying. So, chandu decided to write a program for the same.

Help chandu write this program.

(HINT USE HEAP SORT)

Input:
First line contains an integer t, which is the number of test cases. Next t lines contain an encrypted string and K as described above.

Output:
Print the decrypted string for each test case.

Constraints:
1<=t<=1000
1<=length of string<=10000
1<=k<=length of string

Sample Input
2
d 1
pairl 2

Sample Output
d
april
