

## Assignment XI

### Lab MC504

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Send your assignment solution to [mc504lab@gmail.com](mailto:mc504lab@gmail.com).

Deadline: 07.04.2021, 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.**

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#### Q1.

Consider the given array arr[], we need to find if we can sort the array with the given operation.

The operation is:

1. We have to select a subarray from the given array such that the middle element(or elements (in case of even number of elements)) of subarray is also the middle element(or elements (in case of even number of elements)) of the given array.

2. Then we have to reverse the selected subarray and place this reversed subarray in the array.

We can do the above operation as many times as we want.

The task is to find if we can sort array with the given operation.

Input :

arr[] = {1, 6, 3, 4, 5, 2, 7}

Output : Yes

Explanation:

We can choose sub-array[3, 4, 5] on

reversing this we get [1, 6, 5, 4, 3, 2, 7]

again on selecting [6, 5, 4, 3, 2] and

reversing this one we get [1, 2, 3, 4, 5, 6, 7]

which is sorted at last thus it is possible

to sort on multiple reverse operations.

Input :

arr[] = {1, 6, 3, 4, 5, 7, 2}

Output : No

## Q2.

Ram and Shyam are playing a game with a string of English alphabets (both capital letter and small letter). They can select a character either from the start or end of the string. Put the selected character in a common box. The winner of the game is the first person who can make a string palindrome of length greater than 1 by using some of the box's characters. Ram starts first to pick a character and both players play optimally. Determine the winner of the game or depict if it is a Tie.

Note: A tie occurs when no one wins.

**For example:** If the string is **aabc**, then Ram can select the character '**a**' or '**c**' and store it into the box. If Ram chooses '**a**', then the resulting string for Shyam is **abc**. This helps Shyam so that he can select either '**a**' or '**c**', so he can select '**a**' and store it into a box. Now, Shyam can make a string '**aa**' which is a palindrome of length is greater than 1. Hence, Shyam wins the game.

**NOTE** We don't need to see the whole string for the palindrome, we can use 2 same characters for making a string into a palindrome, so we need to see 27 characters from beginning and 27 characters from ending. As lowercase characters will repeat from the 27th index. And that's why we consider this 27th character from the ending.

### Input format

The only line contains a string  $s$  of  $n$  small letter and capital letter English letters. ( $1 \leq |s| \leq 10^5$ )

### Output format

If Ram wins the game, then print **Ram**. If Shyam wins the game, then print **Shyam**. If no one wins the game, then print **Tie**.

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### Sample Input

abcabc

### Sample Output

Shyam

### Explanation

In **abcabc**, we can see that if Ram picks 'a' and store in a box then Shyam can pick 'c' or 'b', if Shyam picks 'b' and store it into box then Ram can pick either 'c' from starting and store in the box, Now Shyam can pick 'a' or 'c', But we can see that if he picks 'a' and store in the box. Then using box characters a **palindrome of length > 1** can be formed "aa" hence **Shyam** is the winner.

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