

Assignment 8

Q1. A left rotation operation on an array shifts each of the array's elements unit to the left.

For example, if left rotations are performed on array ,

then the array would become . Note that the lowest index item moves to the highest index in a rotation. This is called a circular array.

Given an array of integers and a number , , perform left rotations on the array.

Return the updated array to be printed as a single line of space-separated integers.

Function Description

rotLeft has the following parameter(s):

- `int a[n]`: the array to rotate
- `int d`: the number of rotations

Returns

- `int a'[n]`: the rotated array

Input Format

The first line contains two space-separated integers and , the size of and the number of left rotations.

The second line contains space-separated integers, each an .

Sample Input

```
5 4
1 2 3 4 5
```

Sample Output

```
5 1 2 3 4
```

Q2. An array contains both positive and negative numbers in random order.

Rearrange the array elements so that all negative numbers appear before all positive numbers.

Examples :

Input: -12, 11, -13, -5, 6, -7, 5, -3, -6

Output: -12 -13 -5 -7 -3 -6 11 6 5

Note: Order of elements is not important here.

Q3. Given an array of positive and negative numbers,
arrange them in an alternate fashion such that
every positive number is followed by negative and vice-versa.
Order of elements in output doesn't matter.
Extra positive or negative elements should be moved to end.

Examples:

Input :

arr[] = {-2, 3, 4, -1}

Output :

arr[] = {-2, 3, -1, 4} OR {-1, 3, -2, 4} OR ..

Input :

arr[] = {-2, 3, 1}

Output :

`arr[] = {-2, 3, 1} OR {-2, 1, 3}`

Input :

`arr[] = {-5, 3, 4, 5, -6, -2, 8, 9, -1, -4}`

Output :

`arr[] = {-5, 3, -2, 5, -6, 4, -4, 9, -1, 8}`

Q4. The Caesar cipher is a type of substitution cipher in which each alphabet in the plaintext or messages is shifted by a number of places down the alphabet.

For example, with a shift of 1, P would be replaced by Q, Q would become R, and so on.

To pass an encrypted message from one person to another, it is first necessary that both parties have the 'Key' for the cipher so that the sender may encrypt and the receiver may decrypt it.

Key is the number of offsets to shift the cipher alphabet. Key can have basic shifts from 1 to 25 positions as there are 26 total alphabets.

As we are designing custom Caesar Cipher, in addition to alphabets, we are considering numeric digits from 0 to 9. Digits can also be shifted by key places.

For Example, if a given plain text contains any digit with values 5 and key =2, then 5 will be replaced by 7, "-" (minus sign) will remain as it is. Key-value less than 0 should result in "INVALID INPUT"

Input 1:

Enter your PlainText: All the best

Enter the Key: 1

Expected Output : The encrypted Text is: Bmm uif Cftu

Explanation

The function Caesar(int key, String message) will accept plaintext and key as input parameters and returns its ciphertext as output.