ASSIGNMENT 1

- **Students are advised to strictly adhere to the following Input/Output specification.**
- **Kindly refrain from using printf statements while reading data from terminal. USE PRINTF ONLY FOR PRINTING THE OUTPUT TO CONSOLE.**
- **Test cases may be very large, therefore USE DYNAMIC MEMORY ALLOCATION.**
- **Make sure your program runs fine in Athena. THE COMPILER VERSIONS MAY AFFECT THE PROGRAM.**

Question #1:

Only alphabets have to be encrypted/decrypted, any other characters and numbers will remain the same.

Sample Input:

1
14
middle-Outz123
2

Sample Output:

okffng-Qwvb123

Input Explanation:

First line either 1 or 2 (1-Encryption, 2-Decryption)
Second line contains string length.
Third line will be the string to be encrypted or decrypted.
Fourth line will be the positive integer denoting K.

Output Explanation:

Shifted String

Question #2:

Read content from file “in.txt” and write the output to file “out.txt”.
Upload only the source code. Do not upload “in.txt” file.
Note that the blank space may include whitespace, tab space or so.

in.txt

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out.txt

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Question #3a:

Content of the string should be modified (in-place).

Sample Input:

data

Sample Output:

atad

Input Explanation:

Single line to read the string to be reversed.

Output Explanation:

Reversed String

Question #3b:

Content of the input matrix should be transposed (in-place) and then print the spiral form of the transposed matrix.

Sample Input:

3
11 2 30
5 25 7
23 4 48

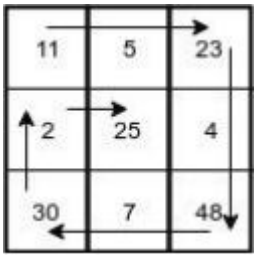
Sample Output:

11 5 23 4 48 7 30 2 25

Input Explanation:

First line reads the order (N) of the matrix.
Next N lines, each line with N integers separated by a single space.

Output Explanation:



Question #4:

Only integer addition, subtraction and multiplication are permitted.
The sum, product and all the ratios should be in simple form.

Sample Input 1:

1
3 4

Sample Output 1:

¾

Sample Input 2:
2
1 2
3 4

Sample Output 2:
5/4
Sample Input 3:
3
4 2
3 4
Sample Output 3:
3/2

Sample Input 4:
4
4
1 2
1 4
1 8
3 4

Sample Output 4:
⅛ ¼ ½ ¾

Sample Input 5:
5
12 -8

Sample Output 5:
-3/2

Input Explanation:
First line indicates the choice

1. Print a/b form
2. Sum of Rational numbers
3. Product of Rational numbers
4. Sort in ascending order
5. Print in Simplest form

If choice=1 or 5, second line reads 2 integers separated by a single space.
If choice=2 or 3, next two lines reads 2 integers separated by a single space.
If choice=4, second line reads the number of rational numbers to be sorted(N)

Next N lines reads 2 integers separated by a single space.

Output Explanation:

If choice=1, 2, 3 or 5, Print the rational number in the form a/b **in simplest form**.

If choice=4, print the sorted rational numbers in a/b format separated by single space.

Note: Strictly follow the naming convention prescribed earlier.