

Question - 1

Moody Mode

Mode is defined as the number which occurs most frequently in a given dataset. Given a set of five numbers 13, 11, 23 13, 21, the mode would be 13 as it occurs twice and the rest of the numbers occur only once. This challenge is to write a program to find the mode of a given list of integers. If there is one clear mode, print that number, if there are more than one modes, print all the numbers in sorted order, if there is no mode, print "Moody Mode".

examples:

I/P:

23 19 2 4 23 4 23

O/P:

23

(23 repeats 3 times)

I/P:

23 19 2 4 2 19

O/P

2

19

I/P:

1 2 3 4 5 6

O/P:

Moody Mode

Question - 2

Quality of Steel

A certain Steel plant categorizes its Steel using the following conditions:

- Hardness must be greater than 50
- Carbon content must be less than 0.7
- Tensile strength must be greater than 5600

The Steel is assigned grades in the following manner:

- Grade is 10 if all three conditions are met.
- Grade is 9 if conditions (i) and (ii) are met.
- Grade is 8 if conditions (ii) and (iii) are met.
- Grade is 7 if conditions (i) and (iii) are met.
- Grade is 6 if only one condition is met.
- Grade is 5 if none of three conditions are met.

Write a program which outputs the grade of the Steel for the given values of hardness, carbon content and tensile strength.

Question - 3

Maximum Distance

Task:

Calculate the maximum difference\distance between the elements in an array,

Input Format

Locked stub code in the editor reads the following input from stdin and passes it to the function:

The first line contains list of all integer array elements

Constraints

$-99 \leq \text{array value} \leq 99$

Output Format

The function must return an **absolute** value denoting the maximum difference among the array elements

This is printed to stdout by locked stub code in the editor.

Sample Input:

```
1 2 4 3
```

Sample Output

```
3
```

Explanation: distance between arr[0] 1 & arr[2] 4 is maximum

Question - 4**Roller Coster alphabets**

You are given a piece of text. Your job is to write a program that sets the case of text characters according to the following rules:

1. The first letter of the line should be in uppercase.
2. The next letter should be in lowercase.
3. The next letter should be in uppercase, and so on.
4. Any characters, except for the letters, are ignored during determination of letter case.

Sample input format:

First line of input contains a single integer T, the number of test cases

Each test is a single line containing a string S

```
2
To be, or not to be: that is the question.
Hello World
```

2 denotes the number of test cases and following it are 2 strings that needs to be transformed

```
Output format
To Be, Or NoT tO bE: tHaT iS tHe QuEsTiOn.
HeLIO wOrLd
```

Question - 5**Running Total**

Write a program that computes the running total of an array of numbers and prints it.

Input format :

First line contains n. The number of elements in the array
subsequent n lines contains elements of the array

Output format

The running total for every array index in a newline

Sample input:

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

Here 5=> denotes the number of elements in the array and the next line 5 has to be read which constitutes an array with 5 elements [1,2,3,4,5]

Sample output

```
1
3
6
10
15
```

where the [1,3,6,10,15] are running total of the array [1,2,3,4,5]

Question - 6

Rotate the elements of an array - Left circular rotation

Write a Program that rotates the elements of the array by r elements

Input Format

The first line contains space-separated integers n r where n denotes the number of elements in the array and r denotes the number of left circular rotations that needs to be performed
The subsequent n line contains array elements

Output

The program prints the space-separated integer values of the newly rotated array.

Sample Input

```
3 2
1
2
3
```

Sample Output

```
3 2 1
```

Explanation

here the first line of input 3 2 to be interpreted as n = 3 and r = 2 => the array has 3 elements that needs to undergo 2 rotations

the second line 1 2 3 are the array elements [1,2,3]

After the first rotation the array becomes [2,3,1]

After the second (and final) rotation, the array becomes [3,1,2]

so, we print 3 1 2 in the output