



ACM-ICPC AFGHANISTAN
ACM-ICPC First Training BootCamp
Hosted by Kateb University

Second Session

Questions paper

1) All Pairs

You have giving a set of integers; your job is to write a program to find all pairs that their sum is equal to a specific number giving by user.

Input Format:

first line of input contains T the number of test cases, second line of input contains K, the value that pairs will equal to it. Third line of the input contains N, the number of integers and last line of the input will contain N integer values separated by a white space.

Constraints:

$$1 \leq k \leq 10^3$$

$$1 \leq n \leq 10^2$$

$$1 \leq n_i \leq 10^5$$

Input:

1

10

5

5 3 6 5 4 6

Output:

5 5

6 4

6 4

2) Reverse numbers

You have given N integer numbers; your job is to write a program to reverse the integers. For example, there is a list of integers {1, 2, 3, 4}, after reversing, the list of integers should look like {4, 3, 2, 1}.

Input format:

The first line of the input contains the T, the number of test cases and second line contains an integer denoting the value of n (n the number of integers), and third line contains n space-separated integers.

Constraints:

$$1 \leq n \leq 10$$

$$1 \leq n_i \leq 10^2$$

Output Format:

print the reversed list of integers.

Input:

1

4

1 2 3 4

Output:

4 3 2 1

1) Shifting

Shifting operation on a list of integers of size n is the way we shift the integers by 1 unit to the right or left side for k times shifting. For example: The list of integers with size of 5 and 3 times shifting is (1, 2, 3, 4, 5} -> {4, 5, 1, 2, 3} (shifting to the left side)

Input format:

The first line of the input contains T, the number of test cases and second line contains n the number of integers, third line contains n space separated integers and last line contains s, the shifting number.

Constraints:

$$1 \leq n \leq 10^3$$

$$1 \leq s \leq n$$

$$1 \leq n_i \leq 10^4$$

Shifting direction: left

Output Format:

print the shifted list of integers with size of n after shifting k times.

input:

1

6

6 3 5 2 7 9

4

Output:

7 9 6 3 5 2

2) Adjacent integers

Given a list of integers, find the pair of adjacent integers that has the largest product.

Input Format:

The first line is the test case T, the next line is the number of integers (N) and the third line is the integers value.

Output Format:

Print the case number of output and result like example.

Constraints:

$2 \leq N \leq 10$,
 $-1000 \leq N_i \leq 1000$.

Input:

2

6

3,6,-2,-5,7,3

7

7,-2,19,-1,3,8,10

Output:

test case #1: 21

test case #2: 80

3) All longest String:

Given an array of strings, return another array containing all of its longest strings.

Input Format:

The first line specifies test case T, second line contains the array length (N), the third line contains the array's elements.

Output Format:

Array of the longest strings, stored in the same order as in the input.

Constraints:

$$1 \leq \text{inputArray.length} \leq 10,$$
$$1 \leq \text{inputArray}[i].\text{length} \leq 10.$$

Test Case:

Input:

2

8

a,abc,cbd,zzzzz,a,abcdef,asasa,aaaaaa

5

aba,aa,ad,vcd,aba

Output:

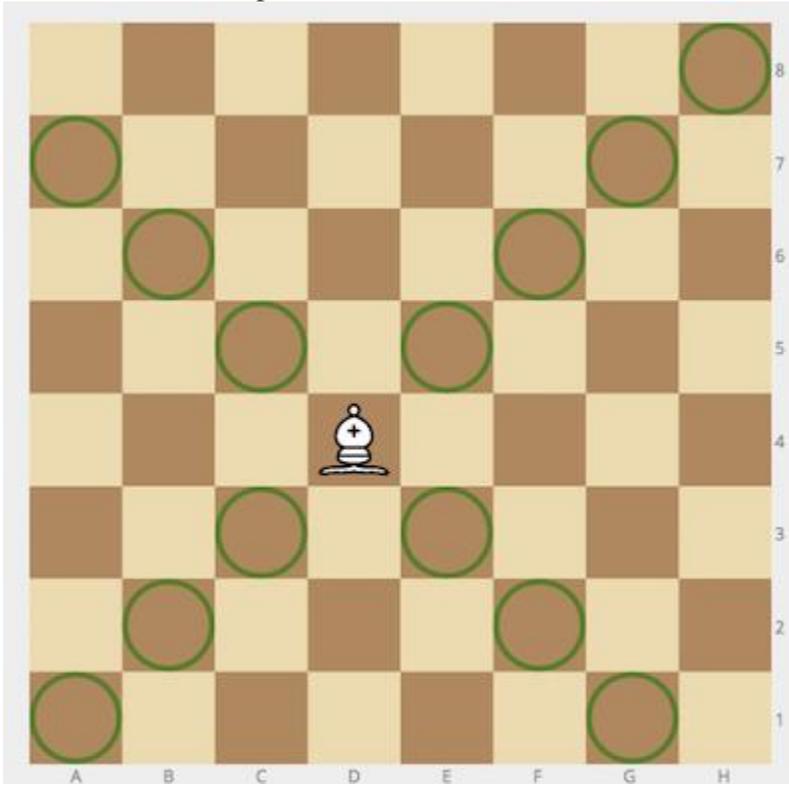
zzzzz, abcdef, aaaaaa

aba, vcd, aba

4) Bishop and pawn:

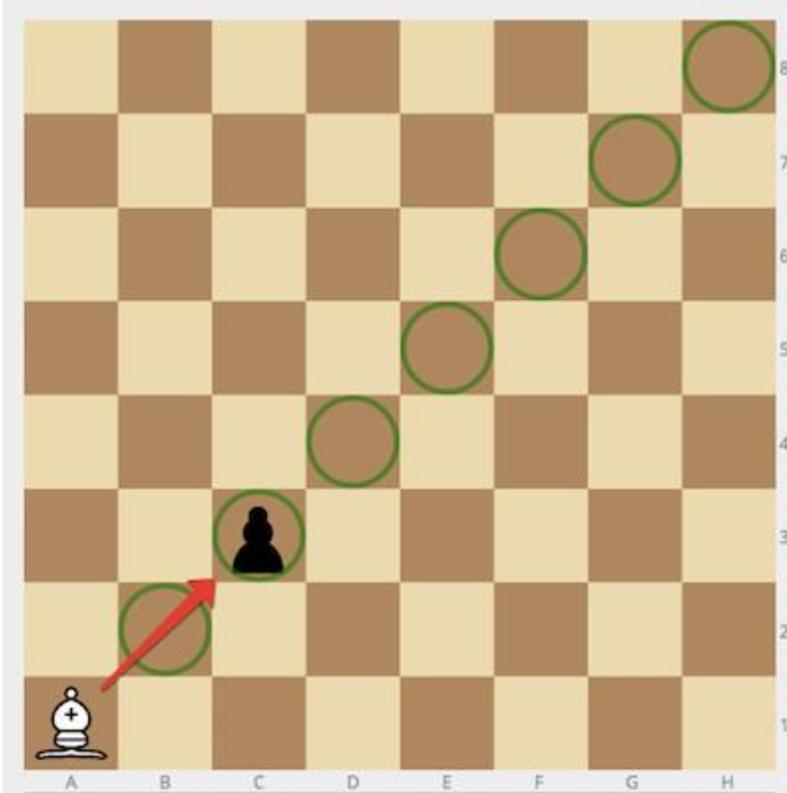
Given the positions of a white bishop and a black pawn on the standard chess board, determine whether the bishop can capture the pawn in one move.

The bishop has no restrictions in distance for each move, but is limited to diagonal movement. Check out the example below to see how it can move:

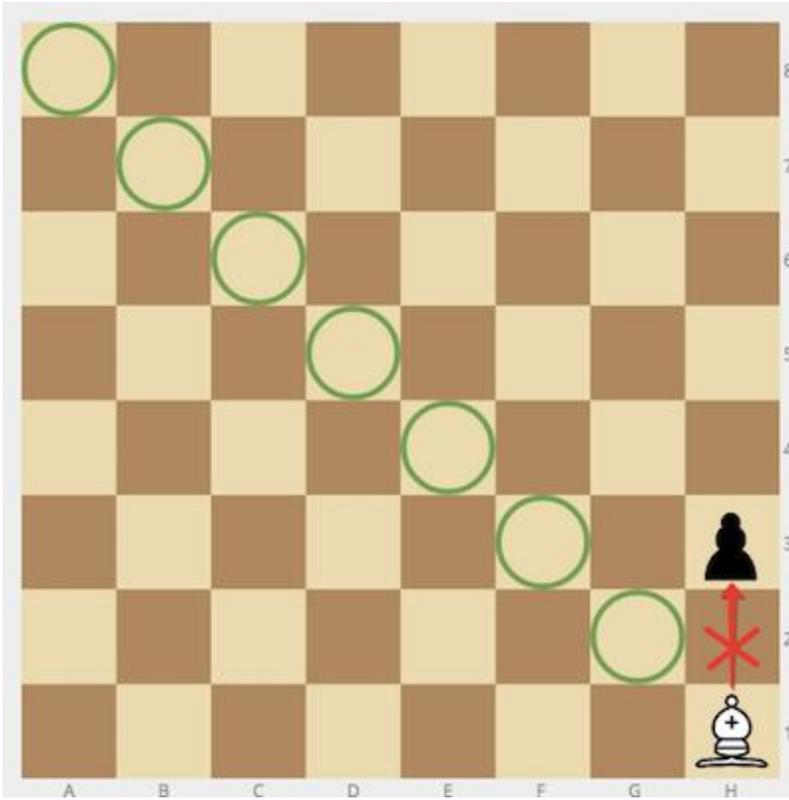


Example

- For bishop = "a1" and pawn = "c3", the output should be bishopAndPawn(bishop, pawn) = true.



- For bishop = "h1" and pawn = "h3", the output should be `bishopAndPawn(bishop, pawn) = false`.



Input/Output

- **[input] string bishop**

Coordinates of the white bishop in the chess notation.

- **[input] string pawn**

Coordinates of the black pawn in the same notation.

- **[output] boolean**

true if the bishop can capture the pawn, false otherwise.

5) Alphabetic shift

Given a string, replace its each character by the next one in the English alphabet (z would be replaced by a, or b would be replaced by c).

Input Format:

First line of the input will contain the T, the number of test cases, the second line of the input will contain the string that will be shifted.

Character type: small letter

Output format:

Print the shifted string.

Input:

2

Hello

ACM

Output:

Ifmmp

bdn