

**Course Name: Basic Competitive Programming**

**Online Exam**

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**University Roll No.**

**CODETHON-1 2025-26**  
**BCA, 2nd Year, 3rd Semester**  
**Basic Competitive Programming(BTDE 0010)**

**Time: 3 Hours**

**Maximum Marks: 30**

**Coding Questions**

**1. Natural Numbers**

**(EASY)**

Write a program to print all the natural numbers from 1 to N. Then print the same in reverse order.

Input Format

The first line contains an integer N.

Constraints

$0 < N < 1000$

Output Format

Display space separated numbers from 1 to N in first line and in reverse order in the second line.

Sample Input

10

Sample Output

1 2 3 4 5 6 7 8 9

9 8 7 6 5 4 3 2 1

## 2. Pattern Number Ladder

(EASY)

Take N (number of rows), print the following pattern (for N = 4)

```
1
2 3
4 5 6
7 8 9 10
```

Input Format

Constraints

$0 < N < 100$

Output Format

Sample Input

4

Sample Output

```
1
2      3
4      5      6
7      8      9      10
```

Explanation

Each number is separated from other by a tab.

### 3. Arrays-Linear Search

(Medium)

Take as input N, the size of an array. Take N more inputs and store that in an array. Take another number's input as M. Write a function which returns the index on which M is found in an array, in case M is not found -1 is returned. Print the value returned.

1. It reads a number N.
2. Take Another N numbers as an input and store them in an Array.
3. Take another number M as an input.
4. If M is found in the Array the index of M is returned else -1 is returned and print the value returned.

Input Format

Constraints

N cannot be Negative. Range of Numbers can be between -1000000000 to 1000000000. M can be between -1000000000 to 1000000000.

Output Format

Sample Input

5  
2  
4  
6  
9  
17  
17

Sample Output

4

Explanation

Given array = {2, 4, 6, 9, 17}. Target number = 17. Index = 4.

#### 4. Pattern Numbers & Stars - 2

(Medium)

Take as input N, a number. Print the pattern as given in the input and output section.

Input Format

Enter value of N

Constraints

$1 \leq N < 10$

Output Format

Print the pattern.

Sample Input

7

Sample Output

1\*\*\*\*\*

12\*\*\*\*\*

123\*\*\*\*

1234\*\*\*

12345\*\*

123456\*

1234567

Explanation

There is no space between any two numbers. Catch the pattern for corresponding input and print them accordingly.

## 5. Arrays-Max Value In Array

(HARD)

Take an input N, the size of the array. Take N more inputs and store that in an array. Write a function which returns the maximum value in the array. Print the value returned.

1. It reads a number N.
2. Take Another N number as input and store it in an Array.
3. calculate the max value in the array and return that value.

### Input Format

The first line contains integer n as the size of the array. Next n lines contain a single integer as an element of the array.

### Constraints

N cannot be Negative. The range of Numbers can be between -1000000000 to 1000000000

### Output Format

Print the required output.

### Sample Input

4  
2  
8  
6  
4

### Sample Output

8

### Explanation

Arrays= {2, 8, 6, 4} => Max value = 8.

## 6. Odd and Even back in Delhi

(HARD)

Due to an immense rise in Pollution, Kejriwal is back with the Odd and Even Rule in Delhi. The scheme is as follows, each car will be allowed to run on Sunday if the sum of digits which are even is divisible by 4 or the sum of digits which are odd in that number is divisible by 3. However, to check every car for the above criteria can't be done by the Delhi Police. You need to help Delhi Police by finding out if a car numbered N will be allowed to run on Sunday?

### Input Format

The first line contains N , then N integers follow each denoting the number of the car.

### Constraints

$N \leq 1000$  Car No  $\geq 0$  && Car No  $\leq 1000000000$

### Output Format

N lines each denoting "Yes" or "No" depending upon whether that car will be allowed on Sunday or Not !

### Sample Input

2  
12345  
12134

### Sample Output

Yes  
No

### Explanation

$1 + 3 + 5 = 9$  which is divisible by 3  
 $1 + 1 + 3 = 5$  which is NOT divisible by 3 and  $2 + 4 = 6$  which is not divisible by 4.