Module1: Assignment 2
BCAC0009 Python Programming
BCA(H) I Yr II Semester

Programming Assignments-1: Addition

In this assignment, you will have to take two numbers (integers) as input and print the addition.

Input Format:

The first line of the input contains two numbers separated by a space.

Output Format:

Print the addition in single line

Example:

Input:
4 2

Output:
6

Explanation:
Since the addition of numbers 4 and 2 is 6, hence the output is 6.

Programming Assignment-2: Small

Given two numbers (integers) as input, print the smaller number.

Input Format:
The first line of input contains two numbers separated by a space

Output Format:
Print the smaller number

Example:

Input:
2 3

Output:
2

Programming Assignment-3: Loops ,List and Sum

You all have seen how to write loops in python. Now is the time to implement what you have learned.

Given an array **A** of **N** numbers (integers), you have to write a program which prints the sum of the elements of array **A** with the corresponding elements of the reverse of array **A**.
If array **A** has elements **[1,2,3]**, then reverse of the array **A** will be **[3,2,1]** and the resultant array should be **[4,4,4]**.

Input Format:

The first line of the input contains a number N representing the number of elements in array A.
The second line of the input contains N numbers separated by a space. (after the last elements, there is no space)

Output Format:

Print the resultant array elements separated by a space. (no space after the last element)

Example:

Input:
4
2 5 3 1

Output:
3 8 8 3

Explanation:
Here array A is [2,5,3,1] and reverse of this array is [1,3,5,2] and hence the resultant array is [3,8,8,3]

Programming Assignment-4: Max and Min

Given a list of numbers (integers), find **second maximum** and **second minimum** in this list.

Input Format:

The first line contains numbers separated by a space.

Output Format:

Print second maximum and second minimum separated by a space

Example:

Input:

1 2 3 4 5

Output:

4 2

Programming Assignment-5: Multiple of 5

Given a list **A** of numbers (integers), you have to print those numbers which are **not multiples** of 5.

Input Format:

The first line contains the numbers of list A separated by a space.

Output Format:

Print the numbers in a single line separated by a space which are not multiples of 5.

Example:

Input:

1 2 3 4 5 6 5

Output:

1 2 3 4 6

Explanation:
Here the elements of A are 1,2,3,4,5,6,5 and since 5 is the multiple of 5, after removing them the list becomes 1,2,3,4,6.

Programming Assignment-6: Digits

You are given a number **A** which contains only digits 0's and 1's. Your task is to make all digits same by just flipping one digit (i.e. 0 to 1 or 1 to 0) only. If it is possible to make all the digits same by just flipping one digit then print '**YES**' else print '**NO**'.

Input Format:

The first line contains a number made up of 0's and 1's.

Output Format:

Print 'YES' or 'NO' accordingly without quotes.

Example:

Input:

101

Output:
YES

Explanation:
If you flip the middle digit from 0 to 1 then all the digits will become same. Hence output is YES.

Programming Assignment-7: Factorial

Given an integer number **n**, you have to print the factorial of this number. To know about factorial please click on this link.

Input Format:

A number **n**.

Output Format:

Print the factorial of **n**.

Example:

Input:
4

Output:
24

Programming Assignment-8: Matrix

You are provided with the number of rows (R) and columns (C). Your task is to generate the matrix having R rows and C columns such that all the numbers are in increasing order starting from 1 in row wise manner.

Input Format:
The first line contain two numbers R and C separated by a space.

Output Format:
Print the elements of the matrix with each row in a new line and elements of each row are separated by a space.

NOTE: There should not be any space after the last element of each row and no new line after the last row.

Example:

Input:
3 3

Output:
1 2 3
4 5 6
7 8 9

Explanation:
Starting from the first row, the numbers are present in the increasing order. Since it's a 3X3 matrix, the numbers are from 1 to 9

Programming Assignment-9: The power of Randomness

You all have used the random library of python. You have seen in the screen-cast of how powerful it is.
In this assignment, you will sort a list let's say **list_1** of numbers in increasing order using the random library.

Following are the steps to sort the numbers using the random library.

Step 1: Import the randint definition of the **random** library of python. Check this page if you want some help.

Step 2: Take the elements of the **list_1** as input.

Step 3: randomly choose two indexes **i** and **j** within the range of the size of **list_1**.

Step 4: Swap the elements present at the indexes i and **j**. After doing this, check whether the **list_1** is **sorted or not**.

Step 5: Repeat step **3** and **4** until the array is **not sorted**.

Input Format:
The first line contains a single number **n** which signifies the number of elements in the **list_1**.
From the second line, the elements of the **list_1** are given with each number in a new line.

Output Format:
Print the elements of the **list_1** in a single line with each element separated by a space.
NOTE 1: There should **not** be any space after the last element.

Example:

Input:
4
3
1
2
5

Output:
1 2 3 5

Explanation:
The first line of the input is **4**. Which means that **n** is **4**, or the number of elements in **list_1** is **4**. The elements of **list_1** are **3, 1, 2, 5** in this order.
The sorted version of this list is **1 2 3 5**, which is the output.

NOTE 2: There are many ways to sort the elements of a list. The purpose of this assignment is to show the power of randomness, and obviously it's fun.

Programming Assignment-10: Cab and walk

Arun is working in an office which is **N** blocks away from his house. He wants to minimize the time it takes him to go from his house to the office.
He can either take the office cab or he can walk to the office.
Arun's velocity is **V1 m/s** when he is walking. The cab moves with velocity **V2 m/s** but whenever he calls for the cab, it always starts from the office, covers **N** blocks, collects Arun and goes back to the office.
The cab crosses a total distance of **N** meters when going from office to Arun's house and vice versa, whereas Arun covers a distance of $(2-\sqrt{}*N)(2*N)$ while walking.
Help Arun to find whether he should walk or take a cab to minimize the time.

Input Format:
A single line containing three integer numbers N, V1, and V2 separated by a space.

Output Format:
Print 'Walk' or 'Cab' accordingly

Constraints:

1<=V1, V2 <=100

1<=N<=200

Example-1:

Input:
5 10 15

Output:
Cab

Example-2:

Input:
2 10 14

Output:
Walk

Programming Assignment-11: End-Sort

Given a list **A** of **N** distinct integer numbers, you can sort the list by moving an element to the end of the list. Find the minimum number of moves required to sort the list using this method in ascending order.

Input Format:
The first line of the input contains N distinct integers of list A separated by a space.

Output Format
Print the minimum number of moves required to sort the elements.

Example:

Input:
1 3 2 4 5

Output:
3

Explanation:
In the first move, we move 3 to the end of the list. In the second move, we move 4 to the end of the list, and finally, in the third movement, we move 5 to the end.

Programming Assignment-12: Semi Primes

A semiprime number is an integer which can be expressed as a product of two distinct primes. For example 15 = 3*5 is a semiprime number but 9 = 3*3 is not .
Given an integer number **N**, find whether it can be expressed as a sum of two semi-primes or not (not necessarily distinct).

Input Format:
The first line contains an integer N.

Output Format:
Print 'Yes' if it is possible to represent N as a sum of two semiprimes 'No' otherwise.

Example:

Input:
30

Output:
Yes

Explanation:
N = 30 can be expressed as 15+15 where 15 is a semi-prime number (5*3 = 15)

NOTE: N is less than equal to 200