**Dice Game I**

Each player will be allowed to throw  a dice 2 times. The points for each player will be calculated as follows :  
If the values thrown are different, the points scored is equal to the sum of the 2 values.  
If the values thrown are the same, the points scored is equal to double the sum of the 2 values.  
  
Write a program to calculate the points scored by a player.  
**Input and Output Format:**  
Input consists of 2 integers. The valid range of inputs is from 0 to 6. [ Both 0 and 6 inclusive]  
Output the points scored. In case of invalid inputs, print “Invalid Input”.  
  
Refer sample input and output for formatting specificaions.  
[All text in bold corresponds to input and the rest corresponds to output.]  
**Sample Input and Output 1:**  
Enter Value 1:  
**5**  
Enter Value 2:  
**6**  
The points scored is 11  
  
**Sample Input and Output 2:**  
  
Enter Value 1:  
**5**  
Enter Value 2:  
**5**  
The points scored is  20  
  
**Sample Input and Output 3:**  
  
Enter Value 1:  
**8**  
Enter Value 2:  
**6**  
Invalid Input

**Dice Game II**

Each player will be allowed to throw a dice 2 times. The points for each player will be calculated as follows :  
The points scored is the absolute difference between 8 and the sum of the 2 values, provided the sum of the 2 values is less than 8.  
In all other cases, the point  scored is double the absolute difference between 8 and the sum of the 2 values.  
  
Write a program to calculate the points scored by a player.  
  
**Input and Output Format:**  
Input consists of 2 integers. The valid range of inputs is from 0 to 6.  
Output the points scored. In case of invalid inputs, print “Invalid Input”.  
  
Refer sample input and output for formatting specificaions.  
  
[All text in bold corresponds to input and the rest corresponds to output.]  
**Sample Input and Output 1:**  
  
Enter Value 1:  
**5**  
Enter Value 2:  
**6**  
The points scored is 6  
  
**Sample Input and Output 2:**  
  
Enter Value 1:  
**3**  
Enter Value 2:  
**2**  
The points scored is  3  
  
**Sample Input and Output 3:**  
  
Enter Value 1:  
**8**  
Enter Value 2:  
**6**  
Invalid Input

**Introductory Algebra I**

One of the assignments given to the kids in the Introductory Algebra class is to write one 2-digit positive number and one 2-digit negative number. They can write the numbers in any order.  
All the kids have written 2 numbers each.  
Can you write a program to ease out the teacher's task?  
  
**Input and Output Format:**  
  
Input consists of 2 integers. A valid input should contain only 2 digits. If any of the integers is not a 2-digit number, then the input is invalid.  
  
Output is a string.  Output is either “Correct” or “Incorrect” or “Invalid Input”.  
  
Refer sample input and output for formatting specificaions.  
  
[All text in bold corresponds to input and the rest corresponds to output.]  
  
**Sample Input and Output 1:**  
  
Enter Value 1:  
**-51**  
Enter Value 2:  
**60**  
Correct  
  
**Sample Input and Output 2:**  
  
Enter Value 1:  
**31**  
Enter Value 2:  
**35**  
Incorrect  
  
**Sample Input and Output 3:**  
  
Enter Value 1:  
**3**  
Enter Value 2:  
**-35**  
Invalid Input

**Crafts Teacher**

The Gandhian School has decided to promote all old crafts and it has planned to offer crafts classes to all students in its primary classes.    
They have assigned 1 hour per week for crafts for each class. They have recruited 2 part-time teachers for handling the crafts classes.  The part-time teachers were asked to come for 3 days a week and they can decide on the days based on their convenience.  
One teacher can handle the entire workload for a day. The Gandhian school expected only one Crafts Teacher to turn up on any day of the week.  
The school administration will be in trouble if both the teachers didn't turn up on any day (They need to make alternate arrangements for all classes) or if both the teachers turned up on the same day (There will not be any workload for one of the teachers and they would be free but the school administration needs to pay for both of them for that day).  
  
Write a program to indicate whether the school administration is in trouble on a particular day.  
  
**Input and Output Format:**  
Input consists of 2 strings. The 2 valid values for the input are “Present” and “Absent”. Any other input value is invalid.  
Output consists of a string. Output is either “Not in Trouble”, “In Trouble” or “Invalid Input”.  
  
Refer sample input and output for formatting specificaions.  
[All text in bold corresponds to input and the rest corresponds to output.]  
  
**Sample Input and Output 1:**  
Teacher 1's Swipe Card Details  
**Present**  
Teacher 2's Swipe Card Details  
**Absent**  
Not in Trouble  
  
**Sample Input and Output 2:**  
Teacher 1's Swipe Card Details  
**Present**  
Teacher 2's Swipe Card Details  
**Present**  
In Trouble  
  
**Sample Input and Output 3:**  
Teacher 1's Swipe Card Details  
**Prsent**  
Teacher 2's Swipe Card Details  
**Absent**  
Invalid Input

**Lucky Prize IV**

In all the theatres in the Amphi Multiplex, prizes will be given to few lucky winners every day.

The lucky winners will be decided based on the ticket number and the criteria set for that day.

The criteria set for day 4 is that prizes will be given to all ticket holders whose ticket number satisy both the conditions given below :

1. The ticket number is a palindrome
2. The sum of the digits in the ticket number is even

Given a ticket number, write a program to determine whether that ticket holder will be a lucky prize winner or not.

**Input and Output Format:**

Input consists of an integer that corresponds to the ticket number.

Output consists of a string that is either “Winner” or “Not a winner”

**Sample Input 1:**

525

**Sample Output 1:**

Winner

**Sample Input 2:**

7896

**Sample Output 2:**

Not a winner

**Lucky Prize III**

In all the theatres in the Amphi Multiplex, prizes will be given to few lucky winners every day.

The lucky winners will be decided based on the ticket number and the criteria set for that day.

The criteria set for day 3 is that prizes will be given to all ticket holders whose ticket number satisy all the 3 conditions given below :

1. All the digits in the ticket number are either 4 or 7
2. The number of 4's in the ticket number is greater than the number of 7's
3. Sum of the digits in the ticket number is odd

Given a ticket number, write a program to determine whether that ticket holder will be a lucky prize winner or not.

**Input and Output Format:**

Input consists of an integer that corresponds to the ticket number.

Output consists of a string that is either “Winner” or “Not a winner”

**Sample Input 1:**

4444777

**Sample Output 1:**

Winner

**Sample Input 2:**

44477

**Sample Output 2:**

Not a winner

**Run Length IV**

Write a program to find the length of the longest running sequence of even numbers in the given array. Also find the starting index of the longest running sequence of even numbers.

**Example :**

Consider the array ... { 2, 16, 15, 2, 6, 8, 10, 7, 22, 4 , 6}

The 3 even number sequences in this array are {2, 16}, {2, 6, 8, 10} and {22, 4, 6}.

The longest running even number sequence is {2, 6, 8, 10}

The length of the longest running even number sequence is 4 and the starting index is 3.

**Note:**

The array indexing starts from 0.

If there are multiple choices, select the choice where the starting index is minimum.

**Input and Output Format:**

The first line of the input consists of an integer n that corresponds to the number of elements in the array. The next 'n' lines of input consists of a single integer that correspond to the elements in the array.

The first line of the output consists of the length of the longest running even number sequence and the second line of the output consists of the starting index of the longest running even number sequence.

**Sample Input :**

11

2

16

15

2

6

8

10

7

22

4

6

**Sample Output :**

4

3

**Run Length III**

Write a program to find the length of the longest consequtive sequence of any number in the given array. Also find the starting index of the longest such sequence.

**Example :**

Consider the array ... { 3, 5, 6, 6, 6, 6, 7, 7, 2, 1, 8}

6 appears 4 times consequtively in this array.

The length of the ongest consequtive sequence of any number in the given array is 4 and the starting index is 2.

**Note:**

The array indexing starts from 0.

If there are multiple choices, select the choice where the starting index is minimum.

**Input and Output Format:**

The first line of the input consists of an integer n that corresponds to the number of elements in the array. The next 'n' lines of input consists of a single integer that correspond to the elements in the array.

The first line of the output consists of the length of the ongest consequtive sequence of any number in the given array and the second line of the output consists of the starting index of the longest such sequence.

**Sample Input :**

11

3

5

6

6

6

6

7

7

2

1

8

**Sample Output :**

4

2

**Mahirl and Subsets**

Mahirl has started learning about subsets. Her teacher gave her a *simple* task. Given a list of numbers, Mahirl has to choose the subset which gives the maximum product. However as she is a small kid, the teacher asked Mahirl only to submit the maximum product obtained by taking exactly two numbers from the list.

Please help Mahirl in finding out the answer to this assignment.

**Input Format:**

The first line of the input contains an integer *N*, that corresponds to the number of elements in the array.

The next n lines of the input contains *N* integers that corresponds to the elements in the array.

Please note that the array elements can also be negative.

Assume that the maximum size of the array is 20.

**Output Format:**

Output consists of a single integer that corresponds to the maximum product.

**Sample Input 1:**

4

2  
8  
1  
4

**Sample Output 1:**

32

**Sample Input 2:**

4

-2  
-8  
1  
4

**Sample Output 2:**

16

**Array Product**

Write a program to find the product of all 2 digit numbers in an array.  
  
If the size of the input array is negative or if any of the input elements is negative , print “Invalid Input” and terminate the program.  
  
**Input and Output Format:**  
  
Input consists of n+1 integers. The first integer corresponds to n, the number of elements in the array. The next 'n' integers correspond to the elements in the array.  
Output consists of an integer that corresponds to the product.  
  
**Refer sample output for formatting specifications.**  
Assume that the maximum number of elements in the array is 20.  
  
**Sample Input 1:**  
6  
2  
7  
10  
3  
13  
100  
  
**Sample Output 1:**  
130  
  
**Sample Input 2:**  
-4  
  
**Sample Output 2:**  
Invalid Input  
  
**Sample Input 3:**  
4  
1  
-2  
  
**Sample Output 3:**  
Invalid Input

**Maximum Product**

Playing with arrays has become a hobby for Arun. This time Arun wants to find the greatest number in the array such that it is the product of any two numbers in the array.  
Write a program to help Arun to the do the task. If no such number exists, then print -1.  
[**Note:** The two number that are used to find the product can be the number itself.  For example, if the array elements are [1,2,3] , then 1\*3 = 3 will be the solution for this array.]  
  
**Input Format :**  
First input is an integer value that denotes the size of the array.  
Second input is a series of integers separated by space that denotes the array values.  
  
**Output Format :**  
Output is an  integer that denotes the maximum product.  
  
**Sample Input 1:**  
5  
35 30 7 6 5  
**Sample Output 1:**  
35  
  
**Sample Input 2:**  
5  
2 4 6 89 78  
**Sample Output 2:**  
-1

**University - Requirement 3**

**Requirement 3:**  
   In this requirement, you need to validate the website and the mobile number of the note.  
  
a)Create a Class **Main** with the following static methods:

|  |  |
| --- | --- |
| **Method Website** | **Description** |
| static Boolean validateWebsite(String website) | Validate the website based on the rules given below. Returns **true**ifwebsite is valid else return **false** |
| static Boolean validateMobile(String mobileNo) | Validate the mobile number based on the rules given below. Returns**true**ifmobileNo is valid else return**false** |

b) While validating website follow the below rules,  
     
http://www.iit.edu.in  
iit - domain name  
edu - sTLD  
in - ccTLD  
  
1. The website should start **http://** or **https://** protocol  
2. The website may or may not contain " **www."**after the protocol.  
3. The domain name should contain only alphabets, either uppercase or lowercase and should not contain any special characters.  
4. sTLD (sponsored top-level domain) should contain 2 to 6 characters  
5. ccTLD(country code top-level domain) may or may not be present in a website and it should contain 2 to 6 characters  
  
c) While validating mobile number follow the below rules,  
  
1.The mobile number should have prefix as **" +91 "**(international calling code).  
2.The mobile number should have 10 numbers [0-9].  
  
**Note:** Print "**Website is valid**" if website is valid else print "**Website is invalid**". Print "**Mobile number is valid**" if mobile number is valid else print "**Mobile number is invalid**".  
            All the above print statements are present in the main method.  
  
Menu:  
1.Validate Website  
2.Validate Mobile number  
  
**Sample Input and Output 1:**  
  
1.Validate Website  
2.Validate Mobile number  
Enter your choice:  
**1**  
Enter the Website to be validated:  
**https://caspercollege.edu.in**  
Website is valid  
  
**Sample Input and Output 2:**  
  
1.Validate Website  
2.Validate Mobile number  
Enter your choice:  
**1**  
Enter the Website to be validated:  
**https://www.iit\_m.ac.in**  
Website is invalid  
  
**Sample Input and Output 3:**  
  
1.Validate Website  
2.Validate Mobile number  
Enter your choice:  
**2**  
Enter the Mobile no. to be validated:  
**+919876543210**  
Mobile number is valid  
  
**Sample Input and Output 4:**  
  
1.Validate Website  
2.Validate Mobile number  
Enter your choice:  
**2**  
Enter the Mobile no. to be validated:  
**+9987643210**  
Mobile number is invalid

**Test Cases**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [Assign Groups](https://cognizant.e-box.co.in/problem/showTestcaseGroup/8264)   | **SNo** | **Name** | **Input** | **Output** | **Purpose** | **Sample** | | --- | --- | --- | --- | --- | --- | | 1 | TC 4 | 2 +9987643210 | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Mobile no. to be validated: Mobile number is invalid | General |  | | 2 | TC 14 | 2 +349478451621 | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Mobile no. to be validated: Mobile number is invalid | General |  | | 3 | TC 9 | 1 caspercollege.edu | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Website to be validated: Website is invalid | General |  | | 4 | TC 11 | 1 https:\\www.iitm.ac.in | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Website to be validated: Website is invalid | General |  | | 5 | TC 3 | 2 +919876543210 | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Mobile no. to be validated: Mobile number is valid | General |  | | 6 | TC 10 | 1 https://caspercollege+edu | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Website to be validated: Website is invalid | General |  | | 7 | TC 6 | 1 https://www.iitm.ac.in | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Website to be validated: Website is valid | General |  | | 8 | TC 7 | 1 https://caspercollege.edu. | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Website to be validated: Website is invalid | General |  | | 9 | TC 1 | 1 https://caspercollege.edu.in | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Website to be validated: Website is valid | General |  | | 10 | TC 5 | 1 http://www.skct.edu | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Website to be validated: Website is valid | General |  | | 11 | TC 8 | 1 www.skct.edu.in | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Website to be validated: Website is invalid | General |  | | 12 | TC 2 | 1 https://www.iit\_m.ac.in | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Website to be validated: Website is invalid | General |  | | 13 | TC 13 | 2 919876543210 | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Mobile no. to be validated: Mobile number is invalid | General |  | | 14 | TC 15 | 2 +91976543210 | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Mobile no. to be validated: Mobile number is invalid | General |  | | 15 | TC 12 | 2 +918876543210 | 1.Validate Website 2.Validate Mobile number Enter your choice: Enter the Mobile no. to be validated: Mobile number is valid | General |  | |

**Full Prime**

Siva always try to play with the numbers , he does so because he thinks that it will lead to some special numbers . One day he came up with an idea to know the numbers that are considered as Full Prime .  Full prime is a prime number where each of its digits is also a prime . Given a range from X to Y ,write a program to help Siva find the numbers (excluding X and Y ) that are full primes . If no such numbers exist between the given range,then print -1.  
  
**Note1**: Mention the maximum range of number will vary from 1 to 1000.  
  
**Note2**: 1 is not a prime number.   
  
  
**Input Format:**  
First Input is an integer that denotes the X value.  
Second Input is an integer that denotes the Y value.  
  
**Output Format:**  
Output is a series of integers separated by a comma that is considered as a full prime.  
  
**Sample Input 1:**  
1  
50  
  
**Sample Output 1:**  
2,3,5,7,23,37  
  
**Sample Input 2:**  
8  
10  
  
**Sample Output 2:**  
-1

**Max Integer**

Ram aspires to become a mathematician , he just learnt the  formula for sum of n numbers. He wants to find the maximum number n,such that sum of n numbers is less than a given value.  
Given an integer bound, write a program to find the maximal integer n such that 1 + 2 + ... + n < bound.  
Help Ram with the program.  
  
**Input format:**  
A single integer that denotes the Integer bound  
  
**Output format:**  
A single integer that corresponds to  maximal integer, n.  
  
**Sample Input 1:**  
14  
  
**Sample Output 1:**  
4  
  
**Explanation:**  
n= 1  
Sum = 1  
n=2  
Sum = 1+2 = 3  
n=3  
Sum = 1 + 2 + 3 = 6  
n = 4  
Sum = 1 + 2 + 3 + 4 = 10  
n = 5  
Sum = 1+ 2 + 3 + 4 + 5 = 15  
  
For n = 5 The sum is greater than the bound value 14 , Maximum n value with sum below the bound is 4.  
  
**Sample Input 2:**  
21  
  
**Sample Output 2:**  
5

**N-smallest Elements**

Shreya was attending a coding competition and she was progressing good . Suddenly she got stuck in a problem where she needs to find the n-smallest elements in an array . Given an array of integers of size N and n value as inputs , Write a program to help Shreya find the first - n smallest elements from the array but they must be in the same order as they are in given array.  
  
**Input Format :**  
First input is an integer that denotes the size of the array, N.  
Second line consists of series of integers seperated by a space that denotes the array values.  
Third input is an integer that denotes the n value.  
  
**Output Format:**  
Output is a series of integers seperated by a space that denotes the n smallest elements.  
  
**Sample Input 1:**  
5  
4 8 2 5 9  
3  
  
**Sample Output 1:**  
4 2 5  
  
**Sample Input 2:**  
10  
7 3 8 11 55 22 1 6 13 2  
5  
  
**Sample Output 2:**  
7 3 1 6 2