

1) Radius of the circle

Jack is cricket coach. He knew the radius (r in meters) of circular cricket ground. Write a program to help Jack to find the area of cricket ground. You can use standard formula to calculate the area of circle.

Note – For your reference Area(P) of circle formula is $P = \pi r^2$ (Take π value as 3.14159)

- **Input Format**

- First line contains input integer which is radius(r) of circle.

- **Output Format**

- Output contains area of circle in float format with 2-point precision.

- **Constraints**

- $20 \leq r \leq 30$

Sample Input 1:

22

Sample Output 1:

1520.53

Sample Input 2:

-

• First line contains input integer which is radius(r) of circle.

• **Output Format**

• Output contains area of circle in float format with 2 point precision.

• **Constraints**

- $20 \leq r \leq 30$

Sample Input 1:
22

Sample Output 1:
1520.53

Sample Input 2:
31

Sample Output 2:
Wrong Radius Entry

Explanation:
Sample Input 1 – 22 is within range of 20 to 30. Hence the output will calculate correct value of area and print 1520.53 accordingly.
Sample Input 2 – 31 is not in range of 20 to 30. Hence output will display "Wrong Radius Entry"

```
r = int(input())  
print(round(3.14159 * r * r, 2) if 22 <= r and r <= 30 else 'Wrong Radius Entry')
```

2) Rearrangement of array

A wrecking ball is used to demolish buildings. The ball is suspended by a certain length of steel chain that is attached to the lifting hook of the crane. The crane is fed with values according to which the ball moves. An array(a[]) consisting of 'N' number of distinct elements representing the distances that the ball can move is given. The task here is to find a new array of N elements constructed by using the elements of a[] in the following manner, based on which if the ball moves, the entire building gets demolished.

Start forming the new array by first placing the least value (L) of a[] in the new array. Then the next bigger number after L goes to the right of L in the new array, the next bigger number goes to the left of L in the new array, and it continues this way till all N numbers of a[] are used.

Example 1:
Input:
 5
 {10,12,4,5,15}
 → Value of N
 → a[], Elements a[0] to a[N-1], where each input element is separated by new line

Output:
 4 5 10 12 15

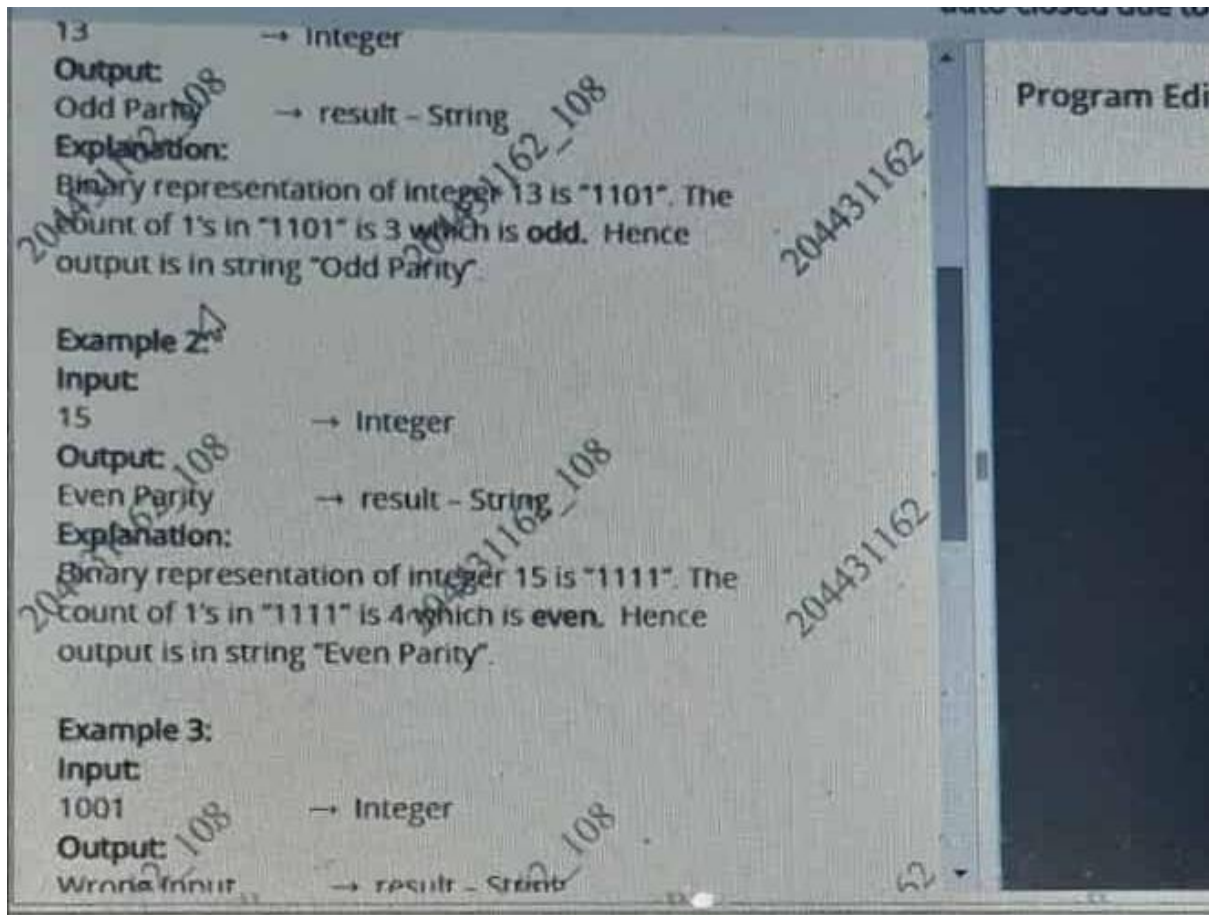
```
n = int(input())
lst = [int(input()) for _ in range(n)]

ant = []
lst.sort()
for i in range(n-1, -1, -2):
    ant.append(lst[i])

for i in range(1, n, 2):
    ant.append(lst[i])

print(ant)
```

3) Even/Odd Parity in Binary



```
num = (bin(int(input())))[2:]  
  
ones = 0  
for ch in num:  
    if ch == '1':  
        ones += 1  
  
print('Even Parity' if ones % 2 == 0 else 'Odd Parity')
```

4) Distribution of Pages of Novels

Tim is inviting his friends over for dinner. All of his friends are great readers. So, Tim decided to give them novels to read. But there is a problem.

The number of novels is less than the number of friends, that is, if there are F friends, then there are only N novels, where, $N < F$.

The novels are numbered from 0, 1, to $N-1$ and the number of pages in the novels are given as elements of an array $A[]$, with $A[i]$ being the number of pages of novel i , where $i=0, 1, \dots, N-1$.

So, he got an idea in his mind. He decided to split all the novels among his friends. After seeing this his friends got angry and challenged Tim.

The challenge is to find the number of pages to be given to each friend satisfying the following conditions:

The pages in novels should be divided equally with each friend getting the **maximum possible number of pages**. If there are leftover pages, no issues.

No one should get a mix of pages from different novels.

More than 1 friend can get pages from the same novel.

Maximum numbers of pages should be shared among the friends. Try to reduce the leftover pages as much as possible (See the Example 3).

```
def check(pages: List, lst: int, fN: int) -> bool:
    count = 0
    for i in range(len(lst)):
        while pages[i] - lst >= 0:
            pages[i] -= lst
            count += 1

    return count >= fN

n = int(input())
fN = int(input())
pages = list(map(int, input().split()))

s = 1
e = 99999

m = s + (e-s)//2
res = -1

while s <= e:
    if check(pages, m, fN):
        res = max(res, m)
        s = m + 1
    else:
        e = m - 1

    m = s + (e-s) // 2

print(f"Max Pages per person possible is: {res}")
```

5) Distinct Prime Factors of factors

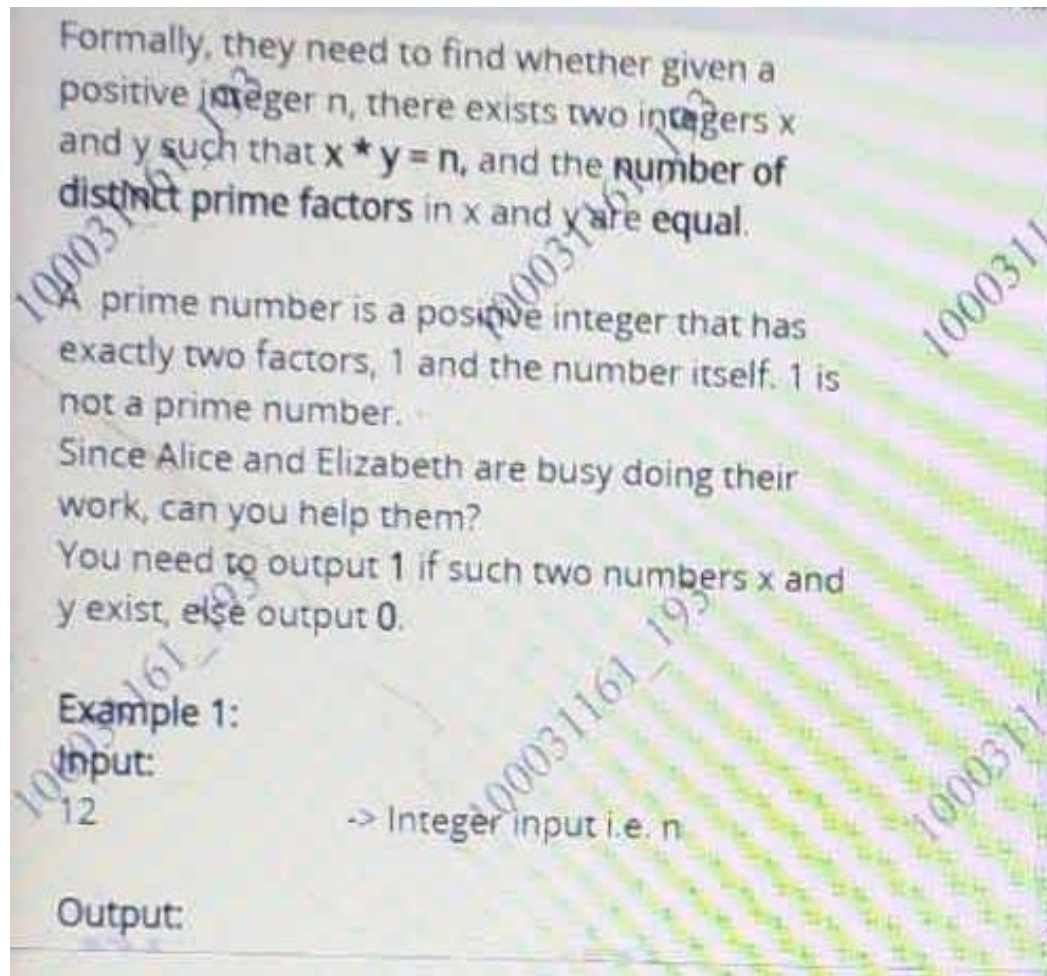
Alice and Elizabeth are coordinators for the programming contest event to be held in their university. They have a lot of work to finish for the upcoming event. Along with this, they also need to set the programming questions for the contest in such a way that the questions are hard enough to challenge the IQ of participants in the contest. Since they are preparing for the problem, they have also made a sub-problem to be solved in order to make their problem statement more accurate. They need to find out whether a given positive number(n) can be represented as the product of two positive numbers (x and y) such that the number of distinct prime divisors in both the numbers is the same.

Formally, they need to find whether given a positive integer n , there exists two integers x and y such that $x \cdot y = n$, and the number of distinct prime factors in x and y are equal.

A prime number is a positive integer that has exactly two factors, 1 and the number itself. 1 is not a prime number.

Since Alice and Elizabeth are busy doing their work, can you help them?

You need to output 1 if such two numbers x and y exist.



Example 1:

Input:

12

-> Integer input i.e. n

Output:

Explanation:

Case 1): 1 and 12 -> 1 has 0 number of distinct prime factors and 12 has 2 distinct prime factors (2,3)

Case 2): 2 and 6 -> 2 has 1 distinct prime factor (2) and 6 has 2 distinct prime factors (2, 3)

Case 3): 3 and 4 -> 3 has 1 distinct prime factor (3) and 4 has also 1 distinct prime factor (2).

So, the output is 1 (i.e., it is possible to express 12 as a product of two integers with the same number of prime factors).

```
import math

n = int(input())

def xy(n):
    lst = []
    for i in range(2, math.ceil(n ** 0.5)):
        if n % i == 0:
            lst.append((i, n // i))
    return lst

def prime(num):
    count = 0
    for i in range(2, int(num ** 0.5) + 1):
        if num % i == 0:
            count += 1
    return not count

def primefactor(n):
    lst = []
    for i in range(2, n+1):
        if n % i == 0 and prime(i):
            lst.append(i)
    return lst

factor = xy(n)

for ele in factor:
    if len(primefactor(ele[0])) == len(primefactor(ele[1])):
        print(1)
        break
else:
    print(0)
```

6) Number of Milk Bottles

Given N Rupees. A liter plastic bottle of milk costs R1 Rupees and a liter of the glass bottle of milk costs R2 Rupees. But the empty glass bottle after buying can be exchanged for R3 Rupees. Find the maximum liters of milk which can be bought with N Rupees.

Example-1:

Input:

10 a Value of N
11 a Value of R1 i.e. price of plastic bottle
9 a Value of R2 i.e. price of glass bottle
8 a Value of R3 i.e. price of empty glass bottle

Output:

2

Explanation:

One glass bottle can be bought.

in hand=1 Rs.

total milk= 1 liters

Return one glass bottle

in hand=1+8=9

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```
n = int(input())
r1 = int(input())
r2 = int(input())
r3 = int(input())

litres = 0

while n >= r1 or n >= r2:
    if r2 - r3 <= r1:
        litres += 1
        n = n - r2 + r3
    elif r2 - r3 > r1:
        litres += 1
        n = n - r1

print(litres)
```


7) Middle of the Array

User has decided to odd out the array. This means, if the array contains odd number, then let it be like that. But if it contains even number of elements, then add the two middle elements, and then make it odd. So there will always be a unique middle element.

So, new middle is the sum of the two elements whose index numbers when counting from the beginning and from the end of the array differ by one.

The user should finally display the array

Example 1:

Input:

5 -> Value of N

{10,9,5,2,5} -> a[], Elements a[0] to a[N-1], where input each element is separated by new line

Output:

{10,9,5,2,5} -> a[], the middle is replaced, if N is even, otherwise same output

Explanation:

Consider the above array, it contains 5 number of elements, which is odd, which means the middle element is always unique.

Hence the output is same as the original one.

```
lst = [int(input()) for _ in range(int(input()))]

length = len(lst)

if not length % 2:
    lst[(length // 2)-1] += lst[length // 2]
    lst.pop(length // 2)

print(lst)
```

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8) Alphabet Donuts

Note: You need to press "Final Submit" for your program to


Maria is teaching her 2 years old Tina English alphabets. Tina likes donuts a lot, and whenever she sees anything which is even a little bit circular, she says donuts. Maria didn't understand in the beginning, but later she got it, that any alphabets which is enclosed shape, is liked by Tina.

Let say A, this has an enclosure of triangle. Then B, it has 2 enclosures. C has no enclosures. D has 1...and so on.

So, now Maria taught Tina a new way, that if she finds any alphabets with enclosures sum up all the enclosures. For e.g. the word TINA has only 1 enclosure. The word MARIA has 3 enclosures.

Given a word in all upper case, find the total number of enclosures in the entire word.

Example 1:
Input:
HOLLYWOOD → Input string, S
Output:
4 → Output
Explanation:



```
one = 'ADOPQR'
two = 'B'

word = input().upper()
count = 0

for ele in word:
    if ele in one:
        count += 1
    elif ele in two:
        count += 2

print(count)
```

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