Special pairs

You are given a number N and function F such that $F(x)$ is equal to the sum of all the digits of a number x. Your task is to find the count of the number of special pairs (x, y) such that the following conditions hold true:

- $0 \le x, y \le N$
- $F(x) + F(y)$ is prime in nature

Note: (x, y) and (y, x) should be counted only once

Input format

- First line: N

Output format

Print the number of special pairs modulo $10^9 + 7$.

Constraints

$1 \le N \le 10^{50}$

Sample Input	Sample Output
2	2

Explanation

The pairs are (0,2) and (1,2) as F[0]+F[1]=2 which is prime and F[1]+F[2]=3 which is prime too

Question 3

Max. Marks 100.00

Bidirectional roads

You are given N cities connected by $N-1$ bidirectional roads. In other words, these roads form a graph. The odd-numbered cities belong to Jack and even-numbered cities belong to Alice. Initially, each city has some popularity given by array **Popularity**. Now, there are Q tours taken by some tourists from city u to v taking a simple path.

As these tourists travel from city u to v, the popularity of cities in between increases by x units.

Let $P1$, $P2$ be the popularity of cities that belong to Jack and Alice after Q tours. You are required to print the **absolute** difference of $P1$ and $P2$.

Note: It is guaranteed that the provided graph is a tree and there is always one answer.

Input format

- The first line contains N denoting the number of cities.
- The second line contains N integers defining array **Popularity** describing the initial popularity of cities.
- The next $N-1$ lines contain two integers u, v which denotes a road joining cities u and v.
- The next line contains Q denoting the number of tours taken by tourists.
- Each of Q tour is defined by three integers a, b, and x and these integers represent tourists traveling from city a to b and every city in path gains x popularity.

3 Questions　　　　　　Total Marks: 225.0

3 Programming Questions

1. The water tanker dealer　　+ 50.0

2. The minimum size of a board　　+ 75.0

3. XOR on a tree　　+ 100.0

Question 3　　　　　　　　　　　　　　　　　Max. Marks 100.00 ❓

XOR on a tree

You are given a tree and an integer K. You have to assign a value to the tree by following these rules:

- Each node must be assigned a value between 1 and 63 inclusive ($1 \leq$ *assigned value to the node* ≤ 63).
- If X and Y values are assigned to any two adjacent nodes, then $(K \wedge X \wedge Y) \geq Minimum(X, Y)$, where $\wedge$ denotes the bitwise XOR operator.

Your task is to find the total number of ways to assign the values to the tree. Since the output can be large, print (*total number of ways to assign values*) *modulo* $(10^9 + 7)$.

Input format

- The first line contains two integers N and K where N denotes the number of nodes in the tree and K is an arbitrary integer.
- The next $N - 1$ lines contain two integers X and Y denoting an edge between X and Y nodes.

Output Format

Print (*total number of ways to assign values*) *modulo* $(10^9 + 7)$

Constraints

$1 \leq N \leq 10^5$
$1 \leq K \leq 63$
$1 \leq X, Y \leq N$

Sample Input　　　　　　　　　　Sample Output

HackWithInfy 2020

3 Questions	Total Marks: 225.0

3 Programming Questions

1. Number of ways	+ 50.0
2. Valid groups	+ 75.0
3. Intervals in a race	+ 100.0

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Strong primes

+ 50.0

You are given Q queries and in each query, there are two numbers L and R. You have to calculate the number of **strong primes** present in the range L and R inclusive.

Note

+ 75.0

A **strong prime** is a prime number that is greater than the arithmetic mean of the nearest prime above and below. Algebraically, a prime P_n is said to be strong if $2P_n > P_{n-1} + P_{n+1}$ where n is their index in the ordered set of prime numbers, where P_i denotes the ith prime.
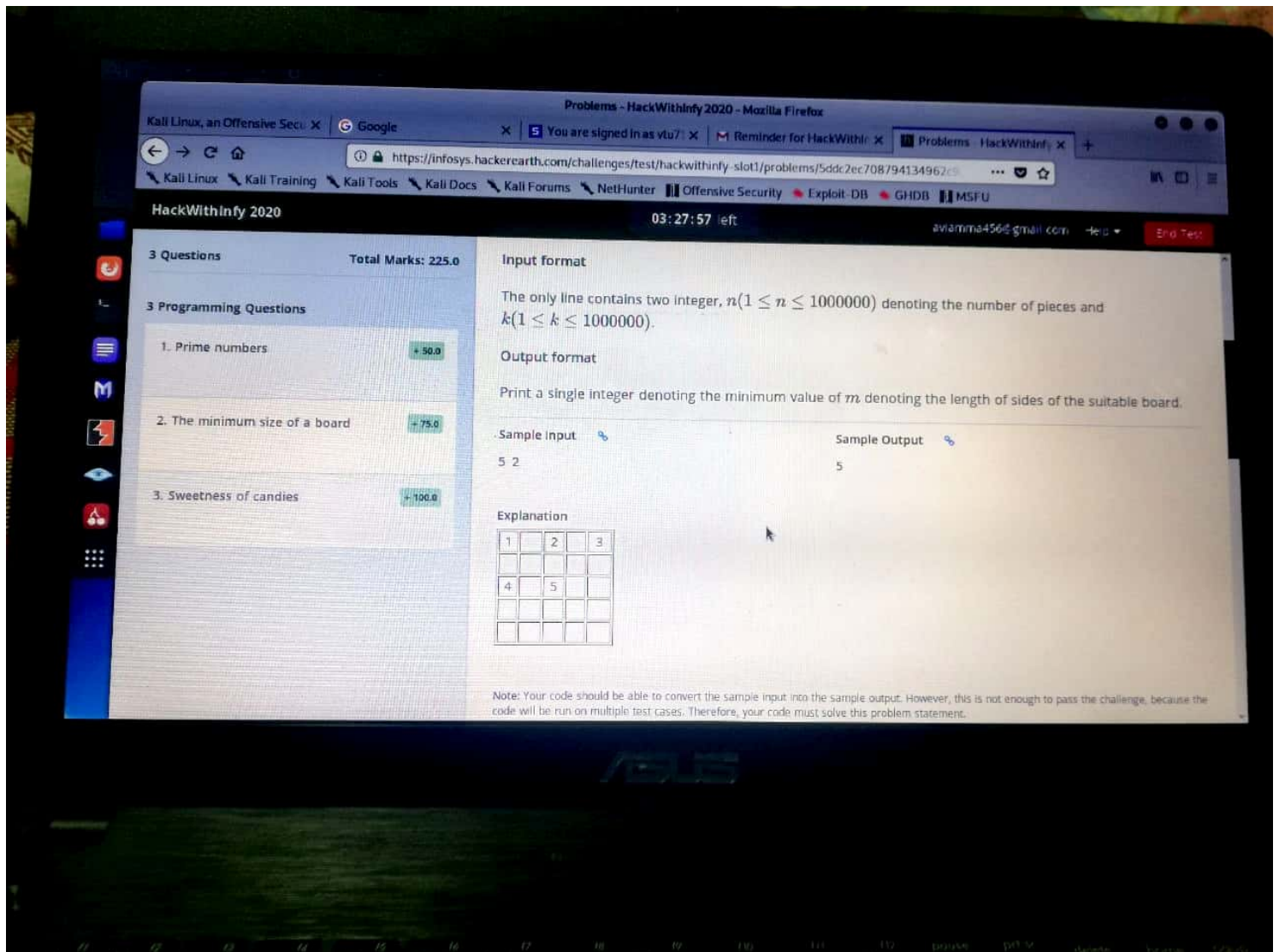
+ 100.0

Input format

- The first line of the input contains an integer Q denoting the number of Queries.
- Then Q lines follow each containing two numbers L and R.

Output format

For each query, print the number of $Strong$ primes present in the range L to R inclusive. The answer to each test case should come in a new line.

Constraints

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Problems - HackWithInfy 2020 - Mozilla Firefox

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HackWithInfy 2020

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aviamma4566 gmail com   Help ▾   End Test

3 Questions   **Total Marks: 225.0**

3 Programming Questions

1. Prime numbers   + 50.0

2. The minimum size of a board   + 75.0

3. Sweetness of candies   + 100.0

Input format

The only line contains two integer, $n(1 \leq n \leq 1000000)$ denoting the number of pieces and $k(1 \leq k \leq 1000000)$.

Output format

Print a single integer denoting the minimum value of m denoting the length of sides of the suitable board.

Sample input

5 2

Sample Output

5

Explanation

1	2	3	
4	5		

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

ASUS

For each test case, print the name of the winner in a new line.

Constraints

$$1 \leq T \leq 10^5$$
$$1 \leq N \leq 10^{18}$$

Sample Input

```
3
30
3
12
```

Sample Output

```
A
B
A
```

Explanation

In the first testcase, there are 30 stones and A will pick all in his chance.

3 Programming Questions

1. Game of coordinates	+ 50.0
2. Count of K numbers	+ 75.0
3. Intervals in a race	+ 100.0

Game of coordinates

You are given the coordinates (x, y). Initially, you are at $(1, 1)$ and are required to go to (x, y) using the following rules:

If the current position is (a, b), then in the next move, you can only move to $(a + b, b)$ or $(a, a + b)$.

Write a program to check if you can reach (x, y) using only the described moves.

Input format

- The first line contains an integer T that represents the number of test cases.
- Each of the next T lines contains two space-separated integers representing x, y.

Output format

For each test case, print "Yes" if it is possible for you to reach (x, y) else print "No" (without quotes) in a separate line.

Constraints

$$1 \le T \le 10^5$$

$$1 \le x, y \le 10^{18}$$

Sample Input

```
3
1 2
2 3
4 6
```

Sample Output

```
Yes
Yes
No
```

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Total Marks: 225.0

Question 1

Max. Marks 50.00   ❷

Dividing strings

+ 50.0

You are given $F(S)$ and $X(S)$ functions on a string S that are defined as follows:

$$F(S) = (length(S)^{distinct(S)})$$

+ 75.0

$$X(S) = (\sum F(S')) \text{ (over all the distinct segments S' of the string S)}$$

where:

+ 100.0

$length(S)$ denotes the number of characters in string S

$distinct(S)$ denotes the number of distinct characters in string S

You are given a string S that consists of N lowercase letters. Your task is to divide the string into the minimum number of parts so as to minimize the sum of the $X(S')$ function over all the segments of strings that are segregated. You are allowed to arrange the string in your desired way before dividing it.

Input format

- The first line of the input contains T denoting the number of test cases. It is followed by T lines.
- Each of the T line contains a single string S.

Output format

For each test case, print a single number denoting the number of distinct segments that are available on the string.

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Total Marks: 225.0

Question 1

Max. Marks 50.00 ?

ns

+ 50.0

+ 75.0

+ 100.0

Division

You are given three numbers, $a, b,$ and $c.$ Write a program to determine the largest number that is less than or equal to c and leaves a remainder b when divided by a.

Input format

- First line: t denoting the number of test cases
- Each of the next t lines: Three space-separated integers denoting the values of $a, b,$ and c respectively

Output format

Print the required answer for each test case in a new line. If no such number exists, then print -1.

Note: The output cannot be negative.

Constraints

$1 \le t \le 1000$
$1 \le a, b, c \le 10^{18}$

Sample Input

```
2
3 2 9
1 2 4
```

Sample Output

```
8
-1
```

Intervals in a race

You have participated in a race. You are given a fixed map that contains N intervals of the race $(A_1, A_2, A_3, \ldots, A_N)$ which denotes that you have run A_i meter in the ith time interval. If you rest in the jth time interval, then your speed increases M times for the next D time intervals. The speed of any interval can never be increased more than M times.

If you rest during any time interval, then it means that you ran for **0** meter in that time interval. Therefore, you decide that now you will rest exactly in K time intervals.

Your task is to optimally select exactly K time intervals of rest such that you can cover maximum distance. Print the maximum distance that you can cover.

Input format

- The first line contains T denoting the number of test cases. Each test case contains two lines.
- The first line of each test case contains 4 integers N, K, D, M.
- The second line of each test case contains N space-separated integers $A_1, A_2, A_3, \ldots, A_N$.

Output format

For each test case, print the maximum distance that you can cover. Print the output for each test case in new line.

Constraints

$1 \leq T \leq 100$

$1 \leq N \leq 100$

3 Questions   **Total Marks: 2**

3 Programming Questions

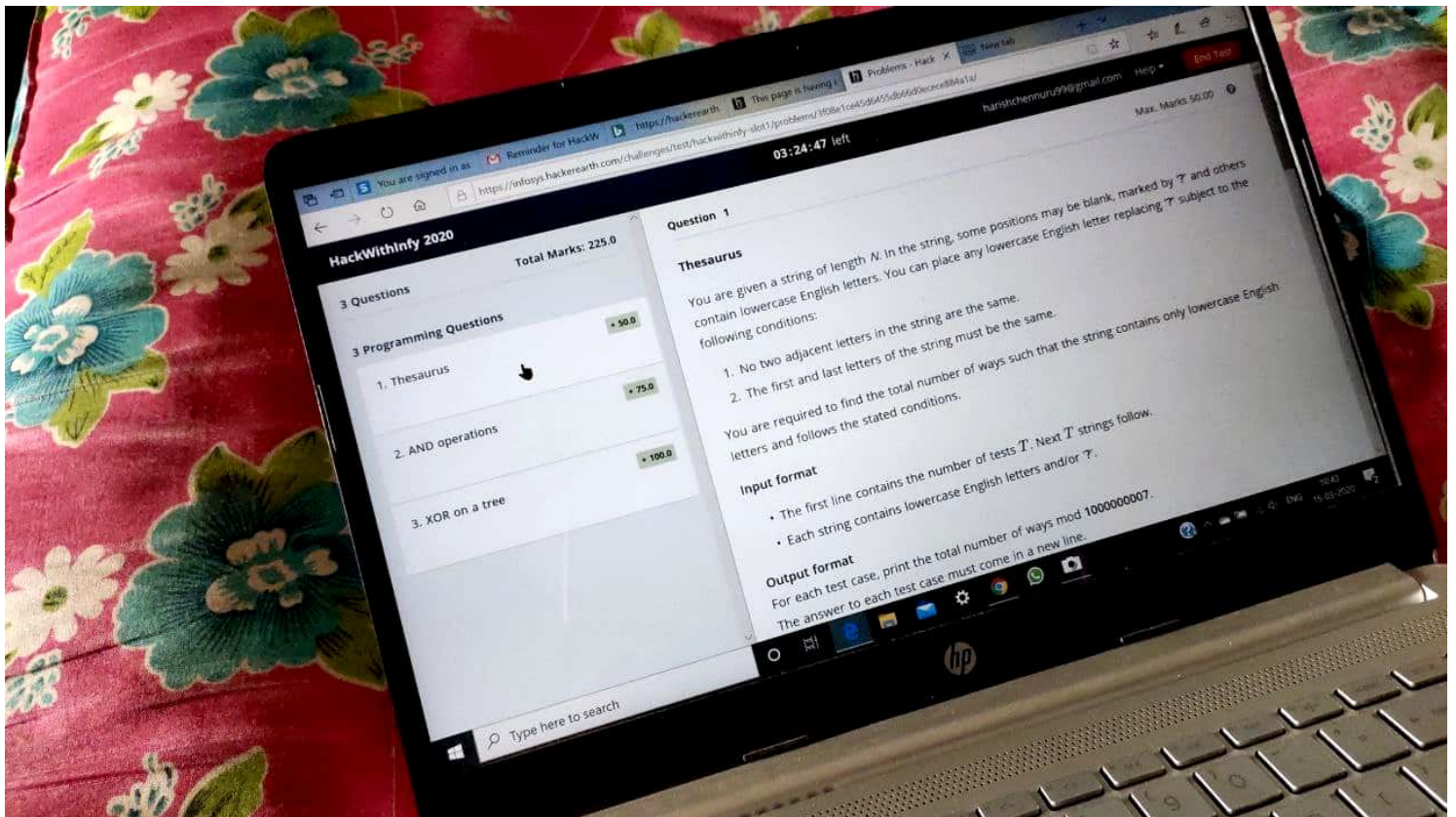1. Thesaurus   + 50.0

2. Good numbers   + 75.0

3. Remainder problem   + 100.0

HackWithInfy 2020

Total Marks: 225.0

3 Questions

3 Programming Questions   ◆ 50.0

1. Thesaurus

◆ 75.0

2. AND operations

◆ 100.0

3. XOR on a tree

Question 1

Thesaurus

You are given a string of length N. In the string, some positions may be blank, marked by '?' and others contain lowercase English letters. You can place any lowercase English letter replacing '?' subject to the following conditions:

1. No two adjacent letters in the string are the same.
2. The first and last letters of the string must be the same.

You are required to find the total number of ways such that the string contains only lowercase English letters and follows the stated conditions.

Input format

- The first line contains the number of tests T. Next T strings follow.
- Each string contains lowercase English letters and/or '?'.

Output format

For each test case, print the total number of ways mod **1000000007**. The answer to each test case must come in a new line.

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HackWithInfy 2020

3 Questions	Total Marks: 225.0

3 Programming Questions

1. Division	+ 50.0

2. Dividing waffles	+ 75.0

3. Division nodes	+ 100.0

Input format

- The first line contains an integer m $
- The next line contains an integer n d
- Each line i of $m - 1$ subsequent line
- Each line i of $n - 1$ subsequent line

Sample Input

```
3
3
1
1
1
1
```

Explanation

In this case, the total cost will be 8 regardless of

Note: Your code should be able to convert the sample in
will be run on multiple test cases. Therefore, your code m

Time Limit: 5.0 second for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB
Marking Scheme: Marks are awarded if any
Allowed Languages:

3 Questions   Total Marks: 225.0

3 Programming Questions

1. Thesaurus   `+ 50.0`

2. Prioritized numbers   `+ 75.0`

3. Bidirectional roads   `+ 100.0`

Question 3

Bidirectional roads

You are given N cities connected by $N - 1$ bidirectional r
Alice. Initially, each city has some popularity given by array

As these tourists travel from city u to v, the popularity of ci

Let $P1$, $P2$ be the popularity of cities that belong to Jack an

Note: It is guaranteed that the provided graph is a tree and

Input format

- The first line contains N denoting the number of cities.
- The second line contains N integers defining array **Popu**
- The next $N - 1$ lines contain two integers u, v which de
- The next line contains Q denoting the number of tours ta
- Each of Q tour is defined by three integers a, b, and x an

Output format

We are given 2 things:

- An original string called sentence
- A list of words, called seed

We have to choose the shortest substring from sentence such that all the elements of seed are present in this substring.

Input format

- The first line contains T, the number of test cases. For each T line after that:
- The first line contains sentence
- The following line contains n the size of seed
- The next line contains n space-separated words which are part of the seed

Example Input

```
1  2
2  Talk is cheap. Show me the code. Some talk is not cheap. show the code
3  3
4  show the code
5  The world is here and there. this is a life full of ups and downs. life is world.
6  4
7  world there life is
```
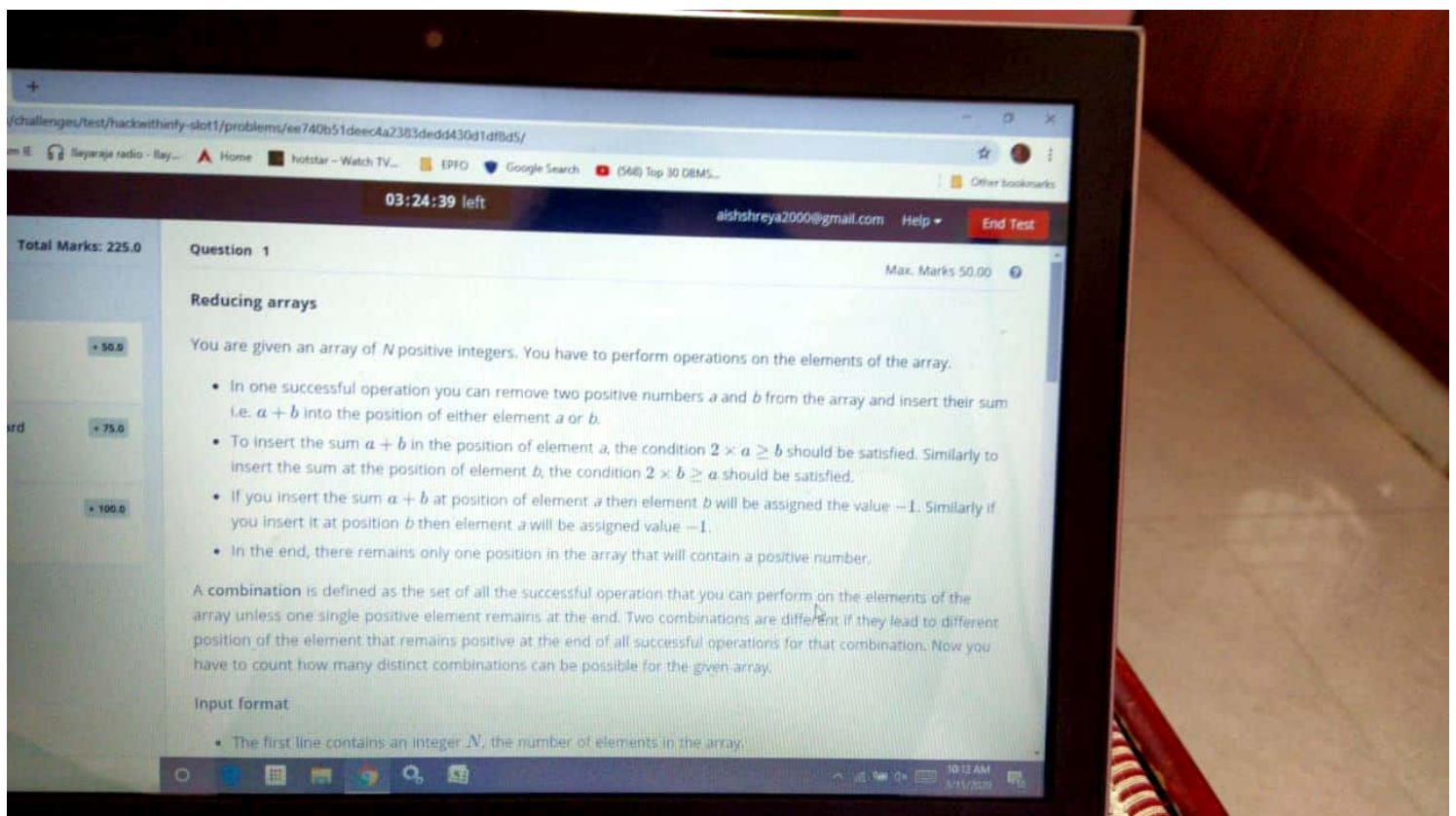
Output

```
1  show the code
2  world is here and there. this is a life
```

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aishshreya2000@gmail.com   Help ▾   **End Test**

Total Marks: 225.0

Question 1

Max. Marks 50.00

Reducing arrays

+ 50.0

You are given an array of N positive integers. You have to perform operations on the elements of the array.

- In one successful operation you can remove two positive numbers a and b from the array and insert their sum i.e. $a + b$ into the position of either element a or b.

rd   + 75.0

- To insert the sum $a + b$ in the position of element a, the condition $2 \times a \geq b$ should be satisfied. Similarly to insert the sum at the position of element b, the condition $2 \times b \geq a$ should be satisfied.

+ 100.0

- If you insert the sum $a + b$ at position of element a then element b will be assigned the value -1. Similarly if you insert it at position b then element a will be assigned value -1.

- In the end, there remains only one position in the array that will contain a positive number.

A **combination** is defined as the set of all the successful operation that you can perform on the elements of the array unless one single positive element remains at the end. Two combinations are different if they lead to different position of the element that remains positive at the end of all successful operations for that combination. Now you have to count how many distinct combinations can be possible for the given array.

Input format

- The first line contains an integer N, the number of elements in the array.

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Special set bits

Max. Marks 50.00

You are given a set of numbers. You have to write the binary representation of all the numbers from L to R and have to count the special ones on the list.

Important notes

- A bit is called to be set if it has value 1.

- The special one is a set bit in the binary representation of any number X where $L \leq X \leq R$ and this bit is at prime index in the binary representation of L.

- The positioning of the bits is done from right to left and starts from 1.

For example, the binary representation of 4 is 100. In this, 1st and 2nd bits are not set while 3rd bit is set. Also, this 3rd bit is a special one because 3 is a prime number.

Input format

- First line of input contains a single integer T denoting the number of test cases

- T lines follow each containing two space-separated integer L and R

Output format

Valid groups

A group of numbers is *valid*, if all numbers in this set are divisible by the minimum number that is available in this set without the remainder. For example, $[40, 10, 60]$ is valid since 40, 10, and 60 are all divisible by 10.

You are given n numbers. Determine the minimum amount of *valid* groups that you can distribute these numbers into.

Function description

Complete the **minGroups** function in the editor below. It contains the following parameters:

Parameters	Name	Type	Description
	a	INTEGER ARRAY	Numbers
Return	The function must return an integer denoting the minimum possible amount of groups the numbers can be distributed into.		

Constraints

$1 \le n \le 10^2$
$1 \le a[i] \le 10^2$

Input format

- The first line contains an integer n denoting the number of elements in a.
- Each line i of the n subsequent lines (where $0 \le i < n$) contains an integer describing a_i.

Sample Input   Sample Output

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Total Marks: 225.0

Question 1

Max. Marks 50.00   ❓

Division

+ 50.0

You are given three numbers, a, b, and c. Write a program to determine the largest number that is less than or equal to c and leaves a remainder b when divided by a.

+ 75.0

Input format

- First line: t denoting the number of test cases
- Each of the next t lines: Three space-separated integers denoting the values of $a, b,$ and c respectively

+ 100.0

Output format

Print the required answer for each test case in a new line. If no such number exists, then print -1.

Note: The output cannot be negative.

Constraints

$$1 \leq t \leq 1000$$
$$1 \leq a, b, c \leq 10^{18}$$

Sample Input   ⚯

```
2
3 2 9
1 2 4
```

Sample Output   ⚯

```
8
-1
```

Question 2

Max. Marks 75.00

+ 50.0

+ 75.0

+ 100.0

Good numbers

You are given a number N in base-10 written on your computer screen. You are required to delete the whole number by repeatedly selecting two consecutive digits and deleting them. The remaining digits come together like they would in an actual editor. Also, the sum of these two selected digits must not be 17. We call the numbers which are fully delete-able by repeating the above operation well.

You are given such numbers that can be fully deleted by repeating the mentioned operation. The valid numbers are called as **good numbers**.

For example, if the number is **9889**, then the steps are as follows:

1. Delete **88** to get **99**
2. Delete **99** to fully delete
3. Therefore, **9889** is a good number while **98** is not

Note: N is an even number

Your task is to find the number of good $N - digit$ numbers. Print the output as *number of good numbers modulo 1000000007* since the actual number of numbers can be huge.

Important

...ding zeros too.

Total Marks: 225.0

Questions

nbers   + 50.0

ns   + 75.0

es   + 100.0

Question 2

Max. Marks 75.00   ❓

Sum of coins

Alice has N coins of amount 0 to $(N-1)$ respectively. Bob wants to take K coins out of them. But Alice will only give it if the set of K coins is interesting.

A set of coins is interesting if the sum of them is divisible by a unique integer M. Now, Bob wants to know in how many ways can he get K coins.

Since the answer can be large, so print **answer % $10^9 + 7$.**

Input format
First line: Three space-separated integers N, K, M

Output format
Print the answer.

Constraints
$1 \leq N \leq 10^3$
$1 \leq K \leq 10^2$
$1 \leq M \leq 10^3$

Sample Input   Sample Output

gramming Questions

| The maximum product | • 50.0 |

| Valid groups | • 75.0 |

| Number in a range | • 100.0 |

3

Valid groups

A group of numbers is *valid*, if all numbers in this set are divisible by the minimum number that is available in this set without the remainder. For example, $[40, 10, 60]$ is valid since 40, 10, and 60 are all divisible by 10.

You are given n numbers. Determine the minimum amount of *valid* groups that you can distribute these numbers into.
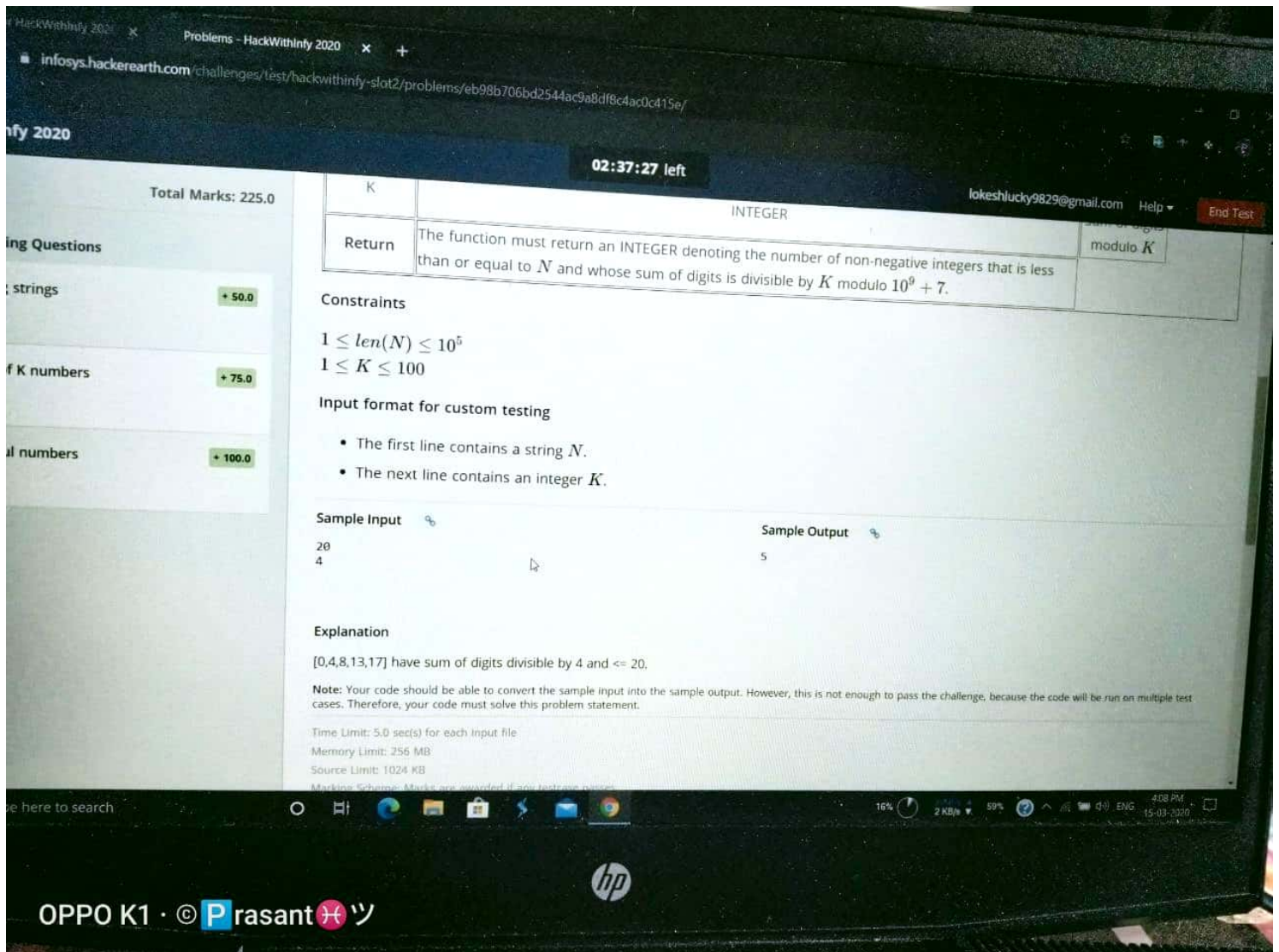
Function description

Complete the **minGroups** function in the editor below. It contains the following parameters:

Parameters	Name	Type	Description
	a	INTEGER ARRAY	Numbers
Return	The function must return an integer denoting the minimum possible amount of groups the numbers can be distributed into.		

Constraints

$1 \leq n \leq 10^2$

$1 < a[i] < 10^2$

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Total Marks: 225.0

ing Questions

: strings   + 50.0

f K numbers   + 75.0

al numbers   + 100.0

K		
	INTEGER	modulo K
Return	The function must return an INTEGER denoting the number of non-negative integers that is less than or equal to N and whose sum of digits is divisible by K modulo $10^9 + 7$.	

Constraints

$$1 \le len(N) \le 10^5$$
$$1 \le K \le 100$$

Input format for custom testing

- The first line contains a string N.
- The next line contains an integer K.

Sample Input

20
4

Sample Output

5

Explanation

[0,4,8,13,17] have sum of digits divisible by 4 and <= 20.

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

Time Limit: 5.0 sec(s) for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB
Marking Scheme: Marks are awarded if any testcase passes

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Sample Input %

```
3
10 20
20 30
30 50
```

Sample Output %

```
2
1
2
```

+ 50.0

Explanation

For the range 10 to 20, there are 2 strong primes $(11, 17)$.
For the range 20 to 30, there is 1 strong prime (29).
For the range 30 to 50, there are 2 strong primes $(37, 41)$.

+ 75.0

+ 100.0

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, becaus will be run on multiple test cases. Therefore, your code must solve this problem statement.

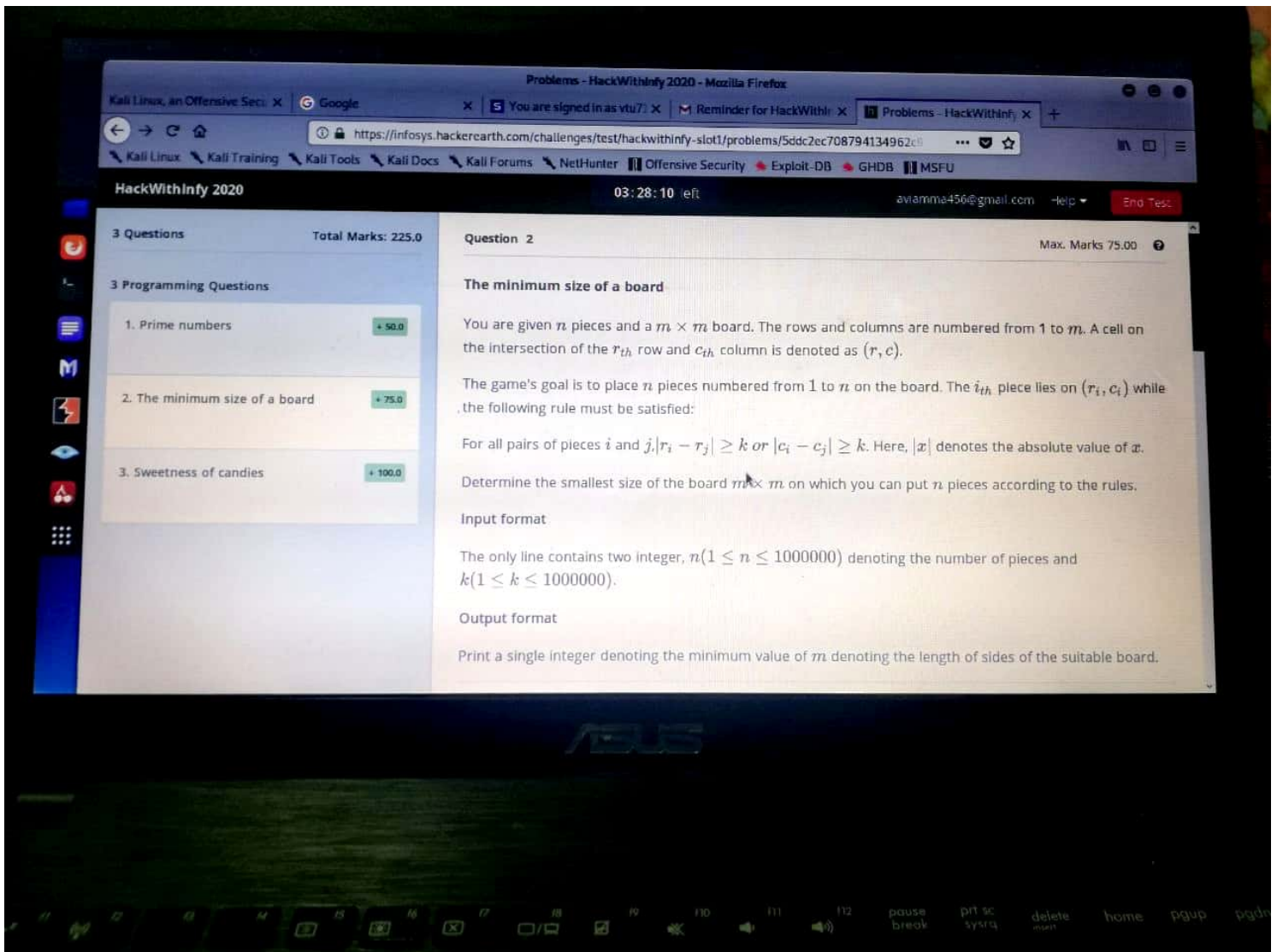Time Limit: 1.0 sec(s) for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB
Marking Scheme: Marks are awarded if any testcase passes

HackWithInfy 2020

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avianma456@gmail.com   Help ▾   End Test

3 Questions   **Total Marks: 225.0**

3 Programming Questions

1. Prime numbers   + 50.0

2. The minimum size of a board   + 75.0

3. Sweetness of candies   + 100.0

Question 2   Max. Marks 75.00 ❓

The minimum size of a board

You are given n pieces and a $m \times m$ board. The rows and columns are numbered from 1 to m. A cell on the intersection of the r_{th} row and c_{th} column is denoted as (r, c).

The game's goal is to place n pieces numbered from 1 to n on the board. The i_{th} piece lies on (r_i, c_i) while the following rule must be satisfied:

For all pairs of pieces i and j, $|r_i - r_j| \geq k$ or $|c_i - c_j| \geq k$. Here, $|x|$ denotes the absolute value of x.

Determine the smallest size of the board $m \times m$ on which you can put n pieces according to the rules.

Input format

The only line contains two integer, $n(1 \leq n \leq 1000000)$ denoting the number of pieces and $k(1 \leq k \leq 1000000)$.

Output format

Print a single integer denoting the minimum value of m denoting the length of sides of the suitable board.

3 Questions   Total Marks: 225.0

3 Programming Questions

1. The Pile game   + 50.0

2. Modulus of 5   + 75.0

3. Intervals in a race   + 100.0

Question 1   Max. Marks 50.00

The Pile game

Players A and B are playing a game with a pile of stones. The pile contains N number of stones. In each turn, a player can remove either one or an even number of stones from the pile. A player loses if he or she is not able to remove any stone. A always moves first.

Your task is to determine who will win the game.

Input format

- First line: T denotes the number of test cases

- Next T lines: N

Output format

For each test case, print the name of the winner in a new line.

Constraints

$1 \le T \le 10^5$

$1 \le N \le 10^{18}$

... or equal to N and whose sum of digits is divisible by K modulo $10^9 + 7$.

Constraints

$$1 \le len(N) \le 10^5$$
$$1 \le K \le 100$$

Input format for custom testing

- The first line contains a string N.
- The next line contains an integer K.

Sample Input	Sample Output
20	5
4	

Explanation

[0,4,8,13,17] have sum of digits divisible by 4 and <= 20.

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

Time Limit: 1.0 sec for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB
Marking Scheme: Marks are awarded if any testcase passes
Allowed Languages: Bash, C, C++, C++14, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Racket, Ruby, Rust, Scala, Swift, Swift-4.1, TypeScript, Visual Basic

Output format

Print a single value that is equal to the minimum number of coins you have spent.

Constraints

$$2 < n \leq 2 \times 10^5$$
$$1 \leq x \leq 2 \times 10^5$$
$$1 \leq C_i \leq 2 \times 10^5$$

Sample Input

5 2
1 2 3 4 5

Sample Output

12

Explanation

Alice would shop from 1st and 5th shop and demand three candies.

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

HackWithInfy 2020

3 Questions   **Total Marks: 225.0**   Question 1

3 Programming Questions   **Hiring emp**

1. Hiring employees   **+ 50.0**   You want to

                                   These emplo

                                   same group.

2. The smallest subset   **+ 75.0**   You want to

                                   Input format

3. Sweetness of candies   **+ 100.0**

                                     • First line

                                     • Next *N* li

                                     • Then ther

                                     • *Q* lines fo

                                     • Last line c

                                 Output format

                                 Print a single ins

                                 Constraints

3 Questions	Total Marks: 225.0

3 Programming Questions

1. Special set bits	+ 50.0
2. Good numbers	+ 75.0
3. XOR on a tree	+ 100.0

Problems - HackWithInfy 2020 - Mozilla Firefox

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3 Questions   **Total Marks: 225.0**

3 Programming Questions

1. Prime numbers   + 50.0

2. The minimum size of a board   + 75.0

3. Sweetness of candies   + 100.0

Prime numbers

You are given two numbers L and R. You are required to find the total number of lucky numbers present in between L and R (inclusive).

Note: A number is said to be lucky if the factors of that number are not repeated (power to the factors can only be 1).

Input format

- The first line of the input contains an integer T denoting the number of test cases.
- Each test case is described by a line containing two space-separated integers L and R.

Output format

Print the answer for each test case in a new line.

Sample Input   Sample Output

1   2
2 4

3 Programming Questions

1. The maximum product	• 50.0
2. Valid groups	• 75.0
3. Number in a range	• 100.0

6

For each test case, print the Kth number in the range $[L, R]$ in the new line. If there are less than K numbers in the range $[L, R]$, then print -1 in a new line.

Constraints

$1 \leq T \leq 200$

$1 \leq L \leq R \leq 10^{18}$

$1 \leq K \leq 10^{18}$

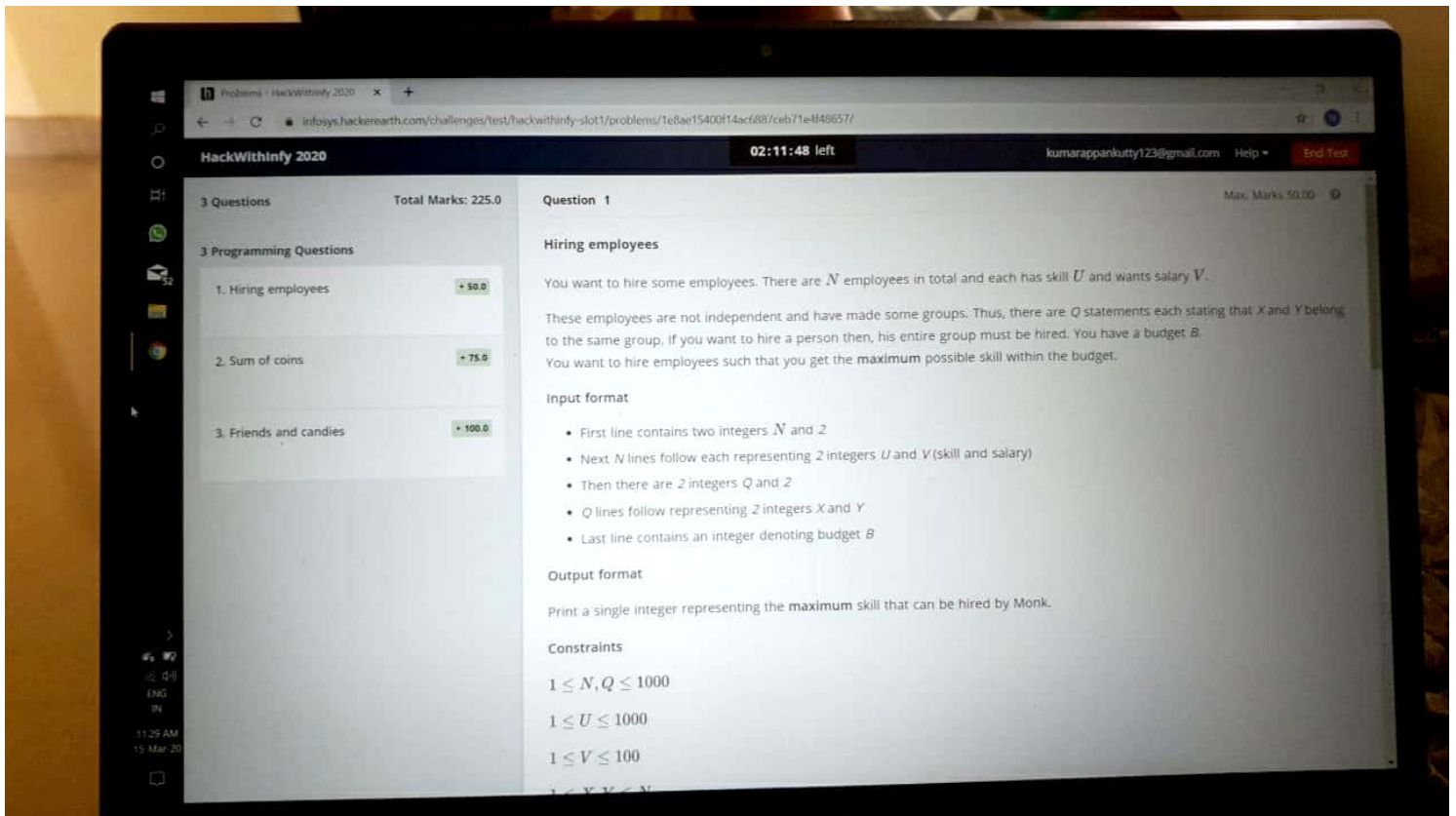Sample Input

```
6
5 40 6
5 12 4
9 20 3
7 7 3
14 37 4
13 25 4
```

Sample Output

```
21
-1
-1
-1
23
22
```

Explanation

For test case 1:

All lucky number between 5 and 40 are 5 10 11 13 20 21 22 23 26 27 29 37 40 . Sixth lucky number is 21.

For test case 2:

All lucky number between 5 and 12 are 5 10 11. There are less than 4 lucky numbers so print -1.

HackWithInfy 2020   **02:11:48** left   kumarappankutty123@gmail.com   Help ▾   End Test

3 Questions	Total Marks: 225.0	Question 1	Max. Marks 50.00

3 Programming Questions

1. Hiring employees	• 50.0

2. Sum of coins	• 75.0

3. Friends and candies	• 100.0

Hiring employees

You want to hire some employees. There are N employees in total and each has skill U and wants salary V.

These employees are not independent and have made some groups. Thus, there are Q statements each stating that X and Y belong to the same group. If you want to hire a person then, his entire group must be hired. You have a budget B.
You want to hire employees such that you get the **maximum** possible skill within the budget.

Input format

- First line contains two integers N and 2
- Next N lines follow each representing 2 integers U and V (skill and salary)
- Then there are 2 integers Q and 2
- Q lines follow representing 2 integers X and Y
- Last line contains an integer denoting budget B

Output format

Print a single integer representing the **maximum** skill that can be hired by Monk.

Constraints

$1 \leq N, Q \leq 1000$

$1 \leq U \leq 1000$

$1 \leq V \leq 100$

$1 \leq X, Y \leq N$

Question 2

Sum of coins

Alice has N coins of amount 0 to $(N - 1)$ respectively. Bob wants to take K coins out of them. But Alice will only give it if the set of K coins is interesting.

A set of coins is interesting if the sum of them is divisible by a unique integer M. Now, Bob wants to know in how many ways can he get K coins.

Since the answer can be large, so print answer % $10^9 + 7$.

Input format
First line: Three space-separated integers N, K, M

Output format
Print the answer.

Constraints
$1 \leq N \leq 10^3$
$1 \leq K \leq 10^2$
$1 \leq M \leq 10^3$

3 Questions   Total Marks: 225.0

Prime numbers

3 Programming Questions

You are given two numbers L and R. You are required to find the total number of lucky numbers present in

1. Prime numbers   + 50.0

between L and R (inclusive).

Note: A number is said to be lucky if the factors of that number are not repeated (power to the factors can only b

1).

2. Sum of coins   + 75.0

Input format

- The first line of the input contains an integer T denoting the number of test cases.

3. Hard queries   + 100.0

- Each test case is described by a line containing two space-separated integers L and R.

Output format

Print the answer for each test case in a new line.

Sample Input ✎

1
2 4

Sample Output ✎

2

Total Marks: 225.0

ions

+ 50.0

+ 75.0

+ 100.0

Special set bits

You are given a set of numbers. You have to write the binary representation of all the numbers from L to R and have to count the special ones on the list.

Important notes

- A bit is called to be set if it has value 1.

- The special one is a set bit in the binary representation of any number X where $L \leq X \leq R$ and this bit is at prime index in the binary representation of L.

- The positioning of the bits is done from right to left and starts from 1.

For example, the binary representation of 4 is 100. In this, 1st and 2nd bits are not set while 3rd bit is set. Also, this 3rd bit is a special one because 3 is a prime number.

Input format

- First line of input contains a single integer T denoting the number of test cases

- T lines follow each containing two space-separated integer L and R

Output format

For each test case, print a single integer denoting the number of special 1's on the list.

Game of coordinates

You are given the coordinates (x, y). Initially, you are at $(1, 1)$ and are required to go to (x, y) using the following rules:

If the current position is (a, b), then in the next move, you can only move to $(a + b, b)$ or $(a, a + b)$.

Write a program to check if you can reach (x, y) using only the described moves.

Input format

- The first line contains an integer T that represents the number of test cases.
- Each of the next T lines contains two space-separated integers representing x, y.

Output format

For each test case, print "**Yes**" if it is possible for you to reach (x, y) else print "**No**" (without quotes) in a separate line.
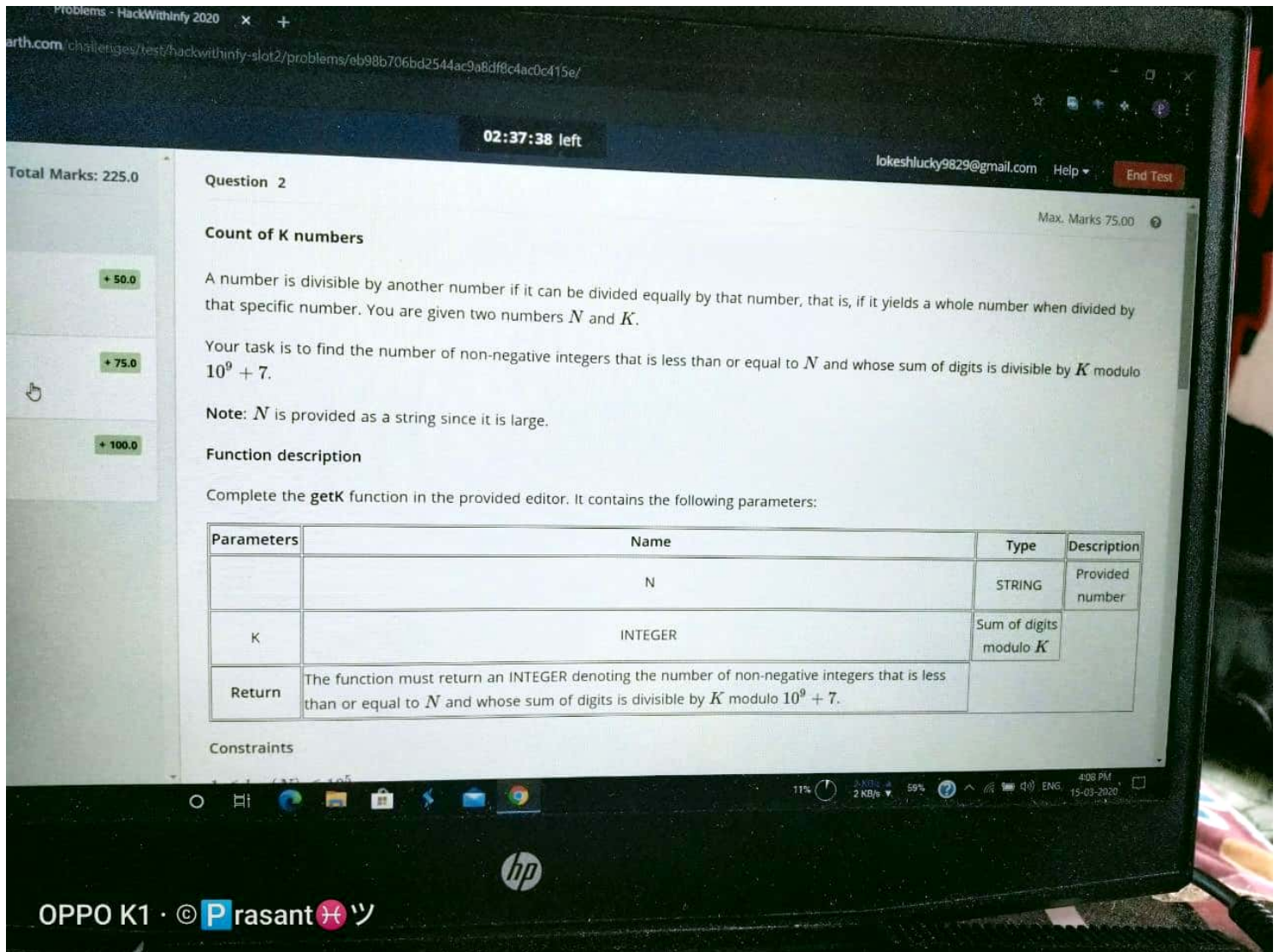
Constraints

$1 \leq T \leq 10^5$

$1 \leq x, y \leq 10^{18}$

Sample Input

```
3
1 2
2 3
4 6
```

Sample Output

```
Yes
Yes
No
```

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lokeshlucky9829@gmail.com   Help ▾   End Test

Total Marks: 225.0

Question 2

Max. Marks 75.00 ⊘

Count of K numbers

+ 50.0

A number is divisible by another number if it can be divided equally by that number, that is, if it yields a whole number when divided by that specific number. You are given two numbers N and K.

+ 75.0

Your task is to find the number of non-negative integers that is less than or equal to N and whose sum of digits is divisible by K modulo $10^9 + 7$.

Note: N is provided as a string since it is large.

+ 100.0

Function description

Complete the **getK** function in the provided editor. It contains the following parameters:

Parameters	Name	Type	Description
	N	STRING	Provided number
K	INTEGER	Sum of digits modulo K	
Return	The function must return an INTEGER denoting the number of non-negative integers that is less than or equal to N and whose sum of digits is divisible by K modulo $10^9 + 7$.		

Constraints

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Game of coordinates	+ 50.0
Count of K numbers	+ 75.0
Intervals in a race	+ 100.0

Count of K numbers

A number is divisible by another number if it can be divided equally by that number, that is, if it yields a whole number when divided by that specific number. You are given two numbers N and K.

Your task is to find the number of non-negative integers that is less than or equal to N and whose sum of digits is divisible by K modulo $10^9 + 7$.

Note: N is provided as a string since it is large.

Function description

Complete the getK function in the provided editor. It contains the following parameters:

Parameters	Name	Type	Description
	N	STRING	Provided number
K	INTEGER	Sum of digits modulo K	
Return	The function must return an INTEGER denoting the number of non-negative integers that is less than or equal to N and whose sum of digits is divisible by K modulo $10^9 + 7$.		

Constraints

$1 \le len(N) \le 10^5$
$1 < K < 100$

he smallest subset

ou are given an array and you are required to select the smallest subset of the array such that the **bitwise OR** of the array is maximum. rite a program that prints the smallest size of the subset.

put format

- First line: T that denotes the number of test cases
- For each test case:
    - First line: An integer N that denotes the size of the array
    - Second line: N space-separated integers that denote the elements of the array

utput format

rint a single integer corresponding to the minimum size of the subset which will result in the same OR as the original array A. For each est case, print the answer in a separate line.

Constraints

$1 \leq T \leq 3$
$1 \leq N \leq 10^5$
$1 \leq A[i] \leq 10^6$ – $A[i]$ represents the elements of the array

Sample Output

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5.0

Question 1

Max. Marks 50.00

Hiring employees

50.0

You want to hire some employees. There are N employees in total and each has skill U and wants salary V.

These employees are not independent and have made some groups. Thus, there are Q statements each stating that X and Y belong to the same group. If you want to hire a person then, his entire group must be hired. You have a budget B.

75.0

You want to hire employees such that you get the **maximum** possible skill within the budget.

Input format

100.0

- First line contains two integers N and 2
- Next N lines follow each representing 2 integers U and V (skill and salary)
- Then there are 2 integers Q and 2
- Q lines follow representing 2 integers X and Y
- Last line contains an integer denoting budget B

Output format

Print a single integer representing the maximum skill that can be hired by Monk.

Constraints

Question 1

Max. Marks 50.00 ❓

Shops and candies

+ 50.0

There are n shops in a row. The number of coins that you can spend while shopping is denoted by $C_1, C_2, \ldots, C_n$ where C_i is the number of coins that you can spend when you shop at the ith shop.

+ 75.0

You start shopping from the very first shop and move towards the nth shop sequentially. It is possible to skip some shops and you have to buy one candy for each shop that you skip in between. Each candy costs x coins.

Note

+ 100.0

- You cannot skip more than three shops in a row.
- You cannot skip the first and last shop.

Your task is to determine the minimum number of coins that you have spent after shopping from the nth shop.

Input format

- The first line consists of two integer n and x denoting the number of shops and cost of a single candy.
- The next line contains n space-separated integers representing the number of coins that you spend in shops 1 to n respectively.

Output format

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Other bookmarks

Total Marks: 225.0   Question 1
                                                                                    Max. Marks 50.00   ❓

Questions   **Hiring employees**

loyees   + 50.0   You want to hire some employees. There are N employees in total and each has skill U and wants salary V.

                                   These employees are not independent and have made some groups. Thus, there are Q statements each stating that X and Y belong to the
st subset   + 75.0   same group. If you want to hire a person then, his entire group must be hired. You have a budget B.
                                   You want to hire employees such that you get the **maximum** possible skill within the budget.

                                   Input format

of candies   + 100.0
                                   • First line contains two integers N and 2
                                   • Next N lines follow each representing 2 integers U and V (skill and salary)
                                   • Then there are 2 integers Q and 2
                                   • Q lines follow representing 2 integers X and Y
                                   • Last line contains an integer denoting budget B

                                   Output format

                                   Print a single integer representing the **maximum** skill that can be hired by Monk.

                                   Constraints

                                   $1 \leq N, Q \leq 1000$

                                   $1 \leq U < 1000$

Max. Marks 50.00 ?

Reducing arrays

+ 50.0

You are given an array of N positive integers. You have to perform operations on the elements of the array.

- In one successful operation you can remove two positive numbers a and b from the array and insert their sum i.e. $a + b$ into the position of either element a or b.

+ 75.0

- To insert the sum $a + b$ in the position of element a, the condition $2 \times a \geq b$ should be satisfied. Similarly to insert the sum at the position of element b, the condition $2 \times b \geq a$ should be satisfied.

- If you insert the sum $a + b$ at position of element a then element b will be assigned the value -1. Similarly if you insert it at position b then element a will be assigned value -1.

+ 100.0

- In the end, there remains only one position in the array that will contain a positive number.

A **combination** is defined as the set of all the successful operation that you can perform on the elements of the array unless one single positive element remains at the end. Two combinations are different if they lead to different position of the element that remains positive at the end of all successful operations for that combination. Now you have to count how many distinct combinations can be possible for the given array.

Input format

- The first line contains an integer N, the number of elements in the array.
- The next line contains N space-separated integers $A_1, A_2, \ldots, A_N$, representing the value of each element.

Output format

In a single line, print the answer.

Constraints

Total Marks: 225.0

Question 2

Max. Marks 75.00 ❓

The minimum size of a board

+ 50.0

You are given n pieces and a $m \times m$ board. The rows and columns are numbered from 1 to m. A cell on the intersection of the r_{th} row and c_{th} column is denoted as (r, c).

of a board   + 75.0

The game's goal is to place n pieces numbered from 1 to n on the board. The i_{th} piece lies on (r_i, c_i) while the following rule must be satisfied:

For all pairs of pieces i and j, $|r_i - r_j| \geq k$ or $|c_i - c_j| \geq k$. Here, $|x|$ denotes the absolute value of x.
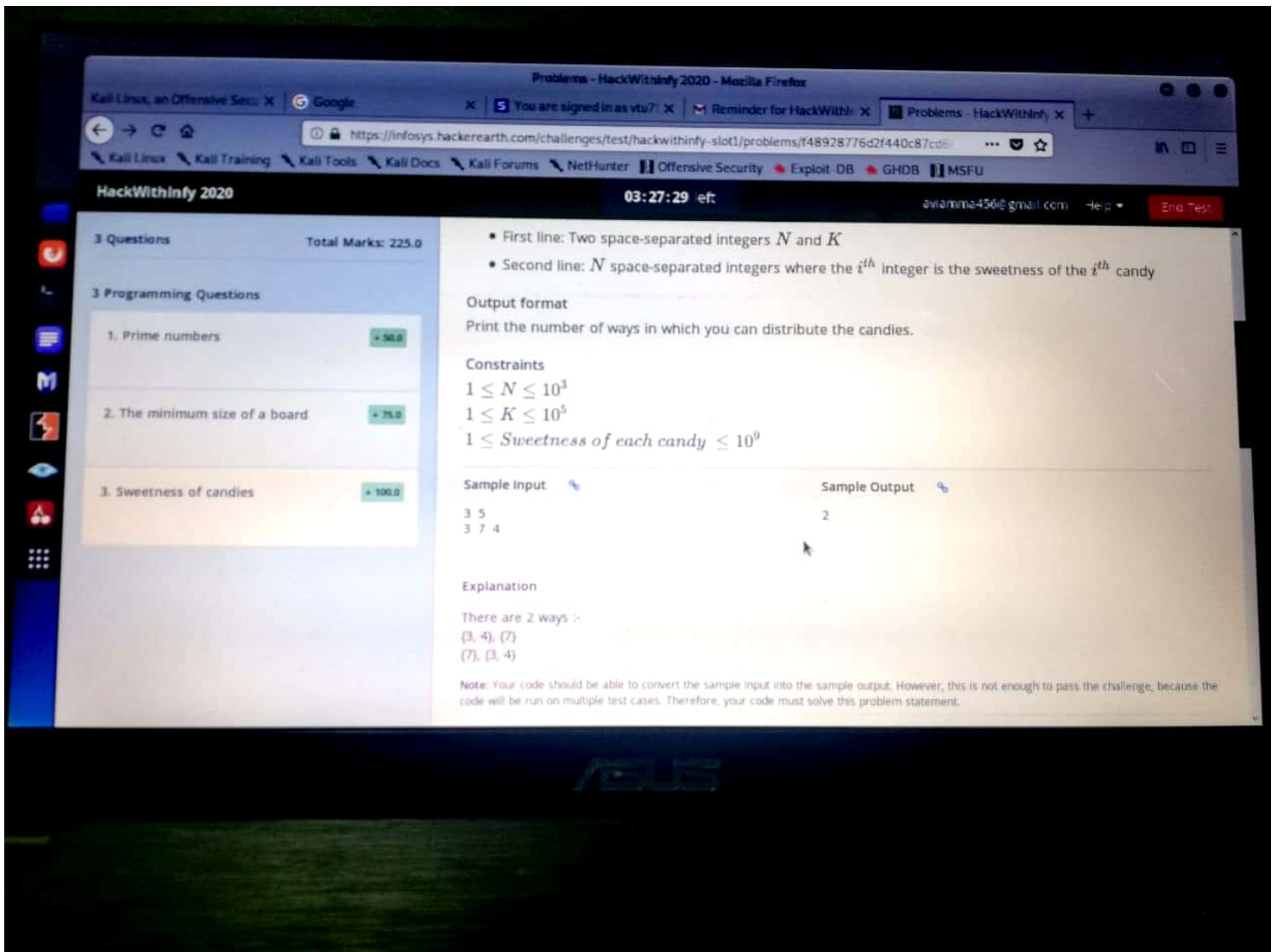
es   + 100.0

Determine the smallest size of the board $m \times m$ on which you can put n pieces according to the rules.

Input format

The only line contains two integer, $n(1 \leq n \leq 1000000)$ denoting the number of pieces and $k(1 \leq k \leq 1000000)$.

Output format

Print a single integer denoting the minimum value of m denoting the length of sides of the suitable board.

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3 Questions	Total Marks: 225.0

3 Programming Questions

1. Prime numbers	+ 50.0
2. The minimum size of a board	+ 75.0
3. Sweetness of candies	+ 100.0

- First line: Two space-separated integers N and K
- Second line: N space-separated integers where the ith integer is the sweetness of the ith candy

Output format

Print the number of ways in which you can distribute the candies.

Constraints

$$1 \leq N \leq 10^3$$
$$1 \leq K \leq 10^5$$
$$1 \leq Sweetness\ of\ each\ candy\ \leq 10^9$$

Sample Input 🔗	Sample Output 🔗
3 5	2
3 7 4	

Explanation

There are 2 ways :-
{3, 4}, {7}
{7}, {3, 4}

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

| Return | The function must return an integer denoting the minimum possible amount of groups the numbers can be distributed into. |

rogramming Questions

1. The maximum product   • 50.0

2. Valid groups   • 75.0

3. Number in a range   • 100.0

Constraints

$$1 \leq n \leq 10^2$$
$$1 \leq a[i] \leq 10^2$$

Input format

- The first line contains an integer n denoting the number of elements in a.
- Each line i of the n subsequent lines (where $0 \leq i < n$) contains an integer describing a_i.

Sample Input   Sample Output

6   3
10
2
3
5
4
2

Explanation

One of the optimal distributions is [10, 5], [3], [2, 4, 2]

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rks: 225.0

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$$1 \leq T \leq 10^6$$
$$1 \leq L \leq R \leq 10^6$$

+ 50.0

Sample Input

2
31 32
7 7

Sample Output

63
7

+ 75.0

Explanation

31 is beautiful:
replace 31 by $3^2 + 1^2 = 10$
replace 10 by $1^2 + 0^2 = 1$
hence 31 is beautiful
32 is also beautiful hence,31+32 = 63

+ 100.0

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

Time Limit: 1.0 sec(s) for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB
Marking Scheme: Marks are awarded if any testcase passes
Allowed Languages: Bash, C, C++, C++14, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Racket, Ruby, Rust, Scala, Swift, Swift-4.1, TypeScript, Visual Basic

New Submission   All Submissions

Save   C (gcc 5.4.0)

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3 Questions   Total Marks: 225.0   Question 1

3 Programming Questions   **Special set bits**

1. Special set bits   + 50.0   You are given a set of numbers. You ha
                                                     have to count the special ones on the li

                                                     Important notes

2. AND operations   + 75.0   • A bit is called to be **set** if it has valu

                                                        • The special one is a set bit in the bir
3. XOR on a tree   + 100.0   prime index in the binary representa

                                                        • The positioning of the bits is done fr

                                                     For example, the binary representation of
                                                     3rd bit is a special one because 3 is a prim

                                                     Input format

                                                       • First line of input contains a single inte
                                                       • 'T' lines follow each containing two spa

WithInfy 2020

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estions   Total Marks: 225.0

ogramming Questions

1. Special set bits   • 50.0

2. Distribution of candies   • 75.0

                    Maximum Marks

3. Hard queries   • 100.0

Question 1

Max. Ma

Special set bits

You are given a set of numbers. You have to write the binary representation of all the numbers from L to R and have to count the special ones on the list.

Important notes

- A bit is called to be set if it has value 1.
- The special one is a set bit in the binary representation of any number X where $L \leq X \leq R$ and this bit is at prime index in the binary representation of L.
- The positioning of the bits is done from right to left and starts from 1.

For example, the binary representation of 4 is 100. In this, 1st and 2nd bits are not set while 3rd bit is set. Also, this 3rd bit is a special one because 3 is a prime number.

Input format

- First line of input contains a single integer T denoting the number of test cases
- T lines follow each containing two space-separated integer L and R

Output format

For each test case, print a single integer denoting the number of special 1's on the list

Constraints

$1 \leq T < 10^4$

$1 \leq L \leq R < 10^{10}$

Sample Input

2
2 4
1 5

Sample Output

3
4

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veinee2000@gmail.com   Help ▾   End Test

Questions   Total Marks: 225.0

Programming Questions

1. The water tanker dealer   + 50.0

2. The minimum size of a board   + 75.0

3. XOR on a tree   + 100.0

Sample Input

7 37
6 5
5 4
4 7
5 2
7 1
1 3

Sample Output

15600154

Explanation

One of the ways to color the given tree is as follows:

NODE	COLOR ASSIGNED
1	1
2	1
3	1
4	1
5	1
6	1

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

Time Limit: 2.0 sec(s) for each input file.

HackWithInfy 2020

3 Questions   **Total Marks: 225.0**

3 Programming Questions

1. Dividing strings	+ 50.0
2. Weighted array subset division	+ 75.0
3. Special pairs	+ 100.0

Outp

For e

Cons

$1 \leq$

$1 \leq$

Samp

1
aba

Explan

As the
should
$X(S)$

Note: Yo
will be r

HackWithInfy 2020

3 Questions	Total Marks: 225.0

$1 \leq A[i]$

3 Programming Questions

1. Reducing arrays	+ 50.0

Sample Inp

3
1 3 4

2. Good numbers	+ 75.0

Explanation

There are tw
The sequenc
Combination
Initial array :
pick 3 and 4
pick 7 and 1
Element at p

3. Unique element problems	+ 100.0

Combination
Initial array :
pick 3 and 4 a
pick 7 and 1 a
Element at po

Note: Your code
will be run on m

Problems - HackWithInfy 2020 - Mozilla Firefox

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3 Questions	Total Marks: 225.0

3 Programming Questions

1. Prime numbers	+ 50.0

2. The minimum size of a board	+ 75.0

3. Sweetness of candies	+ 100.0

Question 3   Max. Marks 100.00

Sweetness of candies

You are given N candies where each candy contains a unique sweetness value. You distribute these candies among 2 children in such a way that the total sweetness value that each child receives is greater than K.

Determine the number of ways in which you can distribute the candies so that the mentioned condition holds true.

Note: Since the answer can be large, print it in modulo $10^9 + 7$.

Input format

- First line: Two space-separated integers N and K
- Second line: N space-separated integers where the ith integer is the sweetness of the ith candy

Output format

Print the number of ways in which you can distribute the candies.

Constraints

$1 \leq N \leq 10^3$

$1 \leq K < 10^5$

For each test case, print **"Yes"** if it is possible for you to reach (x, y) else print **"No"** (without quotes) in a separate line.

Constraints

$1 \leq T \leq 10^5$

$1 \leq x, y \leq 10^{18}$

Sample Input	Sample Output
3	Yes
1 2	Yes
2 3	No
4 6	

Explanation

For test case 1: (1,1)->(1,1+1)
For test case 2: (1,1)->(2,1)->(2,3)
There is no way of reaching (4,6)

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

Time Limit: 1.0 secs for each input file

Memory Limit: 256 MB

Source Limit: 1024 KB

Marking Scheme: Marks are awarded if any testcase passes.

Allowed Languages: Bash, C, C++, C++14, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, R(RScript), Ruby, Rust, Scala, Swift, Swift-4.1, TypeScript, Visual Basic

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Total Marks: 225.0

+ 50.0

+ 75.0

+ 100.0

Input format

- The first line of the input contains T denoting the number of test cases. It is followed by T lines.
- Each of the T line contains a single string S.

Output format

For each test case, print a single number denoting the number of distinct segments that are available on the string.

Constraints

$$1 \leq T \leq 10$$

$$1 \leq |S| \leq 10^5$$

Sample Input   %

1
aba

Sample Output   %

2

Explanation

As the given string is *aba*, the optimal move would be to exchange *1* and *2* indices so the string becomes *baa*. Hence now, the cut should me made as shown *b|aa* which minimises the value of the function $X(S)$. So, number of segments are 2 . $X(S) = (1 + 2) = 3$

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

Time Limit: 2.0 sec(s) for each input file
Memory Limit: 256 MB
Source Limit: 1024 KB
Marking Scheme: Marks are awarded if any testcase passes

Input format

- The first line of the input contains an integer Q denoting the number of Queries.
- Then Q lines follow each containing two numbers L and R.

Output format

For each query, print the number of *Strong* primes present in the range L to R inclusive. The answer to each test case should come in a new line.

Constraints

$$1 \leq Q \leq 10^5$$

$$1 \leq L \leq R \leq 10^6$$

Sample Input	Sample Output
3	2
10 20	1
20 30	2
30 50	

Explanation

ning Questions

of coordinates   + 50.0

of K numbers   + 75.0

s in a race   + 100.0

$1 \leq T \leq 100$

$1 \leq N \leq 100$

$1 \leq K, D \leq N$

$1 \leq M \leq 1000$

$1 \leq A_i \leq 10^5$

Sample Input	Sample Output
2	110
5 2 2 10	31
1 2 3 4 5	
3 1 1 5	
6 5 5	

Explanation

For the first test case:

Shivam will rest in 1st and 3rd interval, Total distance covered= 0 + 2 * 10 + 0 + 4 * 10 + 5 * 10 = 110.

For the second test case:

Shivam will rest in 2nd interval, Total distance covered= 6 + 0 + 5 * 5 = 31.

Note: Your code should be able to convert the sample input into the sample output. However, this is not enough to pass the challenge, because the code will be run on multiple test cases. Therefore, your code must solve this problem statement.

Time Limit: 1.0 secnd for each input file

Strong primes

You are given Q queries and in each query, there are two numbers L and R. You have to calculate the number of **strong primes** present in the range L and R inclusive.

Note

A **strong prime** is a prime number that is greater than the arithmetic mean of the nearest prime above and below.
Algebraically, a prime P_n is said to be strong if $2P_n > P_{n-1} + P_{n+1}$ where n is their index in the ordered set of prime numbers, where P_i denotes the ith prime.

Input format

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Output format

For each query, print the number of *Strong* primes present in the range L to R inclusive. The answer to each test case should come in a new line.

Constraints

$1 \le Q \le 10^5$

$1 \le L \le R \le 10^6$

Sample Input

```
3
10 20
20 30
30 50
```

Sample Output

```
2
1
2
```

Explanation

For the range 10 to 20, there are 2 strong primes (11, 17).
For the range 20 to 30, there is 1 strong prime (29).
For the range 30 to 50, there are 2 strong primes (37, 41).

HackWithInfy 2020

3 Questions   **Total Marks: 225.0**

3 Programming Questions

1. Selection of kits   + 50.0

2. Good numbers   + 75.0

3. Unique element problems   + 100.0

25.0   **Question 2**

Max. Mark

Modulus of 5

The number 5 is important in number theory because 5 is the length of the hypotenuse of the smallest integer-sided right triangle

A number is called good if the sum of its digits is divisible by 5. You are given an integer K.

Your task is to find the Kth good number that is greater than a provided number N modulo $10^9 + 7$.

For example, 235 is a good number since the sum of all digits is **10** that is divisible by 5 whereas 231 is not a good number.

Function description

Complete the getK function in the provided editor. It contains the following parameters:

Parameters	Name	Type	Description
	N	INTEGER	Provided numbe
K	INTEGER	Provided number	
Return	The function must return an integer denoting the kth good number greater than N.		

Constraints

$1 \le N \le 10^5$
$1 \le K \le 10^5$

Input format for custom testing

acer

Question 1

Max. Marks 50.00 ●

Thesaurus

You are given a string of length N. In the string, some positions may be blank, marked by '?' and others contain lowercase English letters. You can place any lowercase English letter replacing '?' subject to the following conditions:

1. No two adjacent letters in the string are the same.
2. The first and last letters of the string must be the same.

You are required to find the total number of ways such that the string contains only lowercase English letters and follows the stated conditions.

Input format

- The first line contains the number of tests T. Next T strings follow.
- Each string contains lowercase English letters and/or '?'.

Output format

For each test case, print the total number of ways mod 1000000007.
The answer to each test case must come in a new line.

Constraints

$1 \leq T \leq 100$

$2 \leq N \leq 1000$

Sample Input ✎

```
4
abc?
abc?
a?a
abca
```

Sample Output ✎

```
0
1
24
3
```

Explanation

1. In the first test case, since the first and last letter does not match hence output 0.
2. In the second test case, the last position can be replaced with letter 'a' only, because first and last character next to be same hence only one representation.

Sweetness of candies

otal Marks: 225.0

+ 50.0

+ 75.0

+ 100.0

You are given N candies where each candy contains a unique sweetness value. You distribute these candies among 2 children in such a way that the total sweetness value that each child receives is greater than K.

Determine the number of ways in which you can distribute the candies so that the mentioned condition holds true.

Note: Since the answer can be large, print it in modulo $10^9 + 7$.

Input format

- First line: Two space-separated integers N and K
- Second line: N space-separated integers where the ith integer is the sweetness of the ith candy

Output format

Print the number of ways in which you can distribute the candies.

Constraints

$1 \leq N \leq 10^3$

$1 \leq K \leq 10^5$

$1 \leq Sweetness\ of\ each\ candy \leq 10^9$

Sample Input

3 5
3 7 4

Sample Output

2

Question 3   Max. Marks 100.00 ⊙

Number in a range

You are given three integers L, R, and K and you have to find the Kth number in between L and R.

If the Kth lucky number does not exist, then print -1.

A number X is a lucky number if the binary representation of X contains the pattern 101 as a substring. You are required find the Kth number in between L and R.

Input format

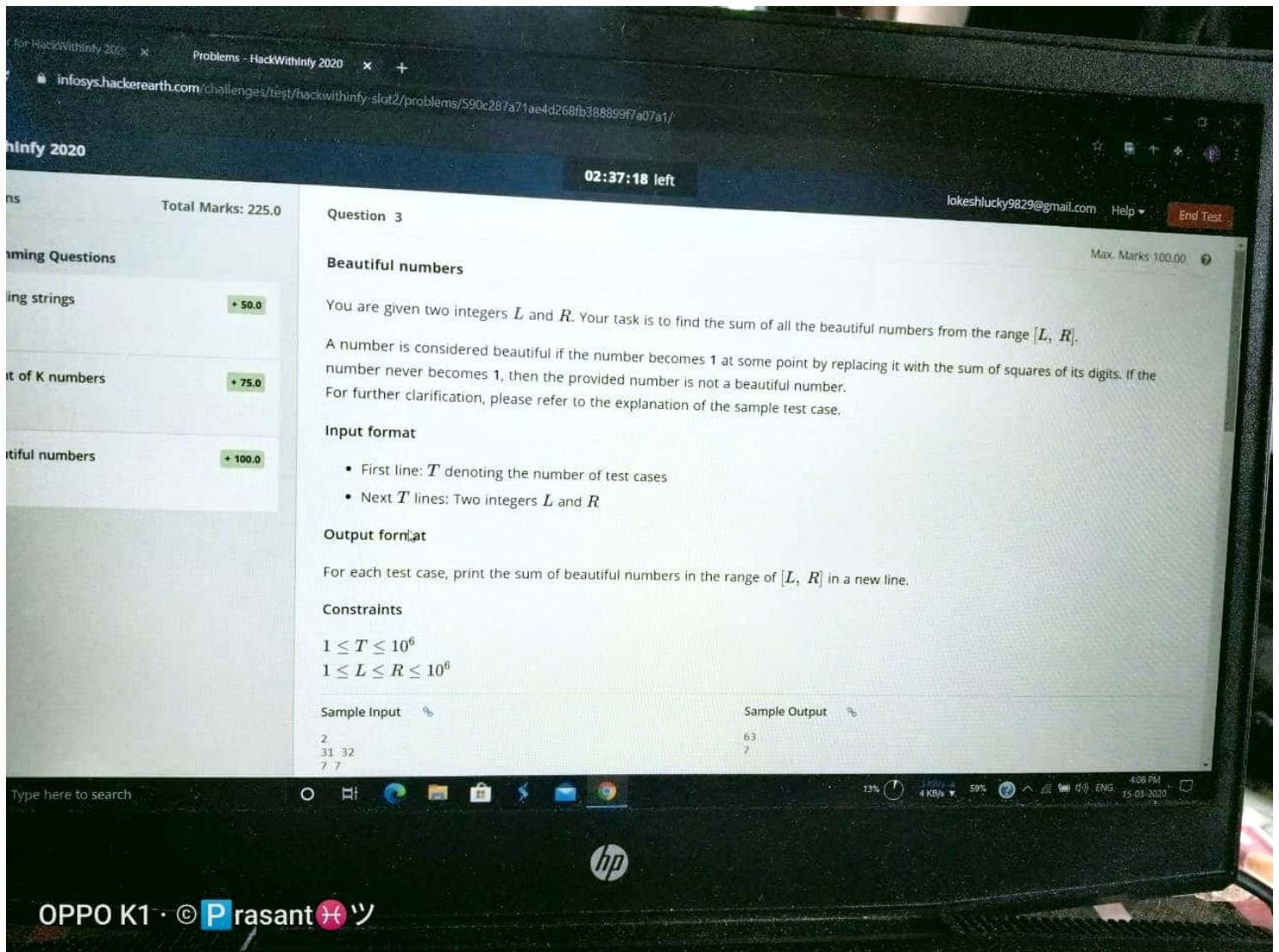- First line: An integer T denoting the number of test cases
- Each of the next T lines: Three space-separated integers L, R, and K

Output format

For each test case, print the Kth number in the range $[L, R]$ in the new line. If there are less than K numbers in the range $[L, R]$, then print -1 in a new line.

Constraints

$1 \leq T \leq 200$

$1 \leq L \leq R \leq 10^{18}$

hInfy 2020

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ns   Total Marks: 225.0   Question 3

aming Questions   Max. Marks 100.00 ❓

Beautiful numbers

ing strings   + 50.0   You are given two integers L and R. Your task is to find the sum of all the beautiful numbers from the range $[L, R]$.

                                          A number is considered beautiful if the number becomes 1 at some point by replacing it with the sum of squares of its digits. If the
t of K numbers   + 75.0   number never becomes 1, then the provided number is not a beautiful number.
                                          For further clarification, please refer to the explanation of the sample test case.

                                          Input format

tiful numbers   + 100.0

                                          - First line: T denoting the number of test cases
                                          - Next T lines: Two integers L and R

                                          Output format

                                          For each test case, print the sum of beautiful numbers in the range of $[L, R]$ in a new line.

                                          Constraints

                                          $1 \leq T \leq 10^6$
                                          $1 \leq L \leq R \leq 10^6$

                                          Sample Input   🔗   Sample Output   🔗

                                          2   63
                                          31 32   7
                                          7 7

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HackWithInfy 2020

3 Questions

Total Marks: 225.0

3 Programming Questions

1. Strong primes
+ 50.0

2. Prioritized numbers
+ 75.0

3. Bidirectional roads
+ 100.0

Y

N

A

Alg

Inp

•

•

Outp

For ea

Constr

$1 \le Q$

$1 \le L \le$

Sample Inpu

3
10 20
20 30