**Father trouble**

Jack is an old farmer in his late 80s. He wants to divide his farming land between his three sons. But he needs to do it very carefully because he knows his sons are not in good terms with each other. He has decided to do it in following manner.

1. The production rate of each piece of land is different, and he wants to divide the land property, in such a way that each of his sons gets equal amounts of production, otherwise, there may be a dispute between them

2. He also wants to give them k options, so they can choose among the given options and everyone is satisfied

3. To avoid a dispute, he wants each son to have his separate land. i.e., all the pieces of the land which are given to a particular son should be together he asks for your help. He has given you k options and asks you to find out if he has at least k options to offer to his sons so that everyone lives happily

**Input Specification**

input1:Number of pieces in which the land is divided

Input2:Number of options he wants to have

Input3:An array in which input3[i] represents the production rate of ith piece of land

**Output Specification**

Your function should return a string containing Yes followed by number of options he has. if he has at least k options otherwise return a string containing No followed by number of options he lacks from his target options.

**Example 1**

input1: 5

Input2: 1

Input3: {4,1,3,3,1}

Output: Yes 1

**Explanation:**

He can divide the land in the following manner:

First son will get first piece, second son will get second

piece and third piece and the last son will receive the

fourth and fifth piece of land. So, Jack has 1 option to give them, hence ouput, Yes 1.

**Shot put reward**

In the game of shot put, a heavy ball is thrown by players to the farthest distance possible. In an academy, the coach offers some chocolates to the players performing better than others to encourage them. The players stand in a line and take turns for throwing the ball one-by-one, and only the student who makes an attempt knows his/her score after the attempt. A player can ask the score of the player just adjacent to him/her and the player next to the adjacent player. The coach decides to give chocolates in such a way that no player can say that he/she gets fewer chocolates than he/she should get. Find the minimum chocolates the coach requires to do so.

**Input Specification:**

input1: Number of players

input2: Integer array containing the scores of players

**Output Specification:**

Return the minimum number of chocolates given to each player by the coach.

**Example 1:**

input1: 5

input2: (35,14,42,44,39}

Output: 6

**Adam’s Charity**

Adam decides to be generous and do some charity. starting today, from day 1 until day n, he gives i^2 coins to charity on day ‘i’ (1<=i<=n). Return the total coins he would give to charity.

**Input specification:**

Input 1: number of days of Charity.

**Output Specification:**

Return the total number of coins till charity days.

**Example 1:**

Input 1: 2

Output: 5

**Explanation:**

There are 2 days.

**Example 2:**

Input 1: 3

Output: 14

**Explanation:**

There are 3 days.

**Special Elements in Matrix**

**Problem Statement:**

Given a matrix of size m\*n, m denotes the row starting with index 0 and n denotes the column starting with index 0.

The matrix will hold distinct integers as elements.

We need to find a distinct number of positional elements which are either the minimum or maximum in their corresponding row or column.

Please return -1 if any row or any column has multiple minimum or maximum elements.

For example, given a matrix of size 3\*3, the elements are stored as follows.

1 3 4

5 2 9

8 7 6

The expected output is 7.

In the above example, we identified the output as 7 based on below.

1 - minimum in row and column

4 - Maximum in row

2 - Minimum in column and row

9 - Maximum in row and column

8 - Maximum in row and column

7 - Maximum in column

6 - Minimum in row

**Input:**

m - integer - number of rows

n - integer - number of columns

m \* n matrix

**Output:**

r - integer - result

**Constraints:**

0<m,n<100

Elements in the matrix are positive integers.

**Output:**

7

**Minimum Number of Coins Required to Make Given Amount**

**Problem Statement:**

You have given a set of coins. Write a program to find the minimum number of coins required to match the given amount value.

**Example**

You have coins 1, 5, 7, 9, 11. Calculate minimum number of coins required for any input amount 250.

Amount 6 will require 2 coins (1, 5).

Amount 25 will require 3 coins (5, 9, 11).

**Output**

5

**Explanation**

18 => 5 coins (3 coins of 5, 1 coin of 2, 1 coin of 1)

Here min\_coins[i] is a list of minimum coins required amount ‘i’. If you print min\_coin, it will look like this.

min\_coins = [0, 1, 1, 2, 2, 1, 2, 2, 3, 3, 2, 3, 3, 4, 4, 3, 4, 4, 5]

min\_coins[0] => 0

min\_coins[1] => 1

min\_coins[2] => 1

min\_coins[3] => 2

.

.

.

min\_coins[18] => 5

**Remove All Duplicates Chars from a given String**

You have given a string. You need to remove all the duplicates from the string.

The final output string should contain each character only once. The respective order of the characters inside the string should remain the same.

You can only traverse the string at once.

**Example:**

Input string: ababacd

Output string: abcd

**Basic Coding Questions**

What is the Harmonic Series? Write a program to generate the Harmonic Series.

Find all the permutations of the given string.

Write a program to check if the array is sorted.

Write a program to convert the Decimal number to Binary.

Write a program to find the transpose of a square matrix of size N\*N. Transpose of a matrix is obtained by changing rows to columns and columns to rows.