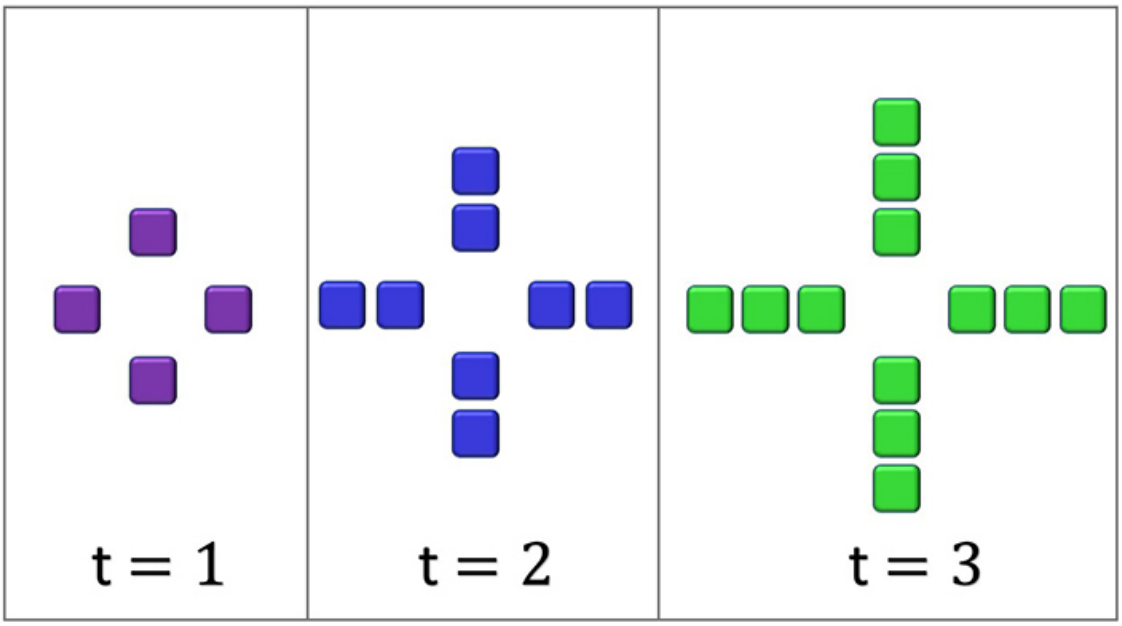
Leading Group

Mr. John Cena is the athlete teacher of the 'Mount Hill College'. He is known as a tuff-necked teacher in the school. Every morning he summons $N \times N$ number of students for the morning exercise session. The number of students he is going to summon for a day depends on his mood. First, he aligns students in **rows as a square**, and then he gives **points** (points can be negative or positive) to students according to their previous performances.

Then he moves on to the second exercise session. In this session a group of students are leading all other students. Mr. John tells Game's Captain to choose the best group as the leading group according to a group pattern. The pattern can be identified with an integer t. So when he inform the number t, Captain should select the best group which he can choose according to the given pattern. The group with **maximum total points**, will be the leading group. Print the total points that the leading group has gained.

The Relation between the integer t and the pattern has been explained by the following diagram.



Input Format

- First line contains a single integer N denoting total number of students in a row.
- Next N lines contain, N space seperated integers denoting the points p that each student has gained.
- Next line contains integer t, the group pattern that Mr. John has chosen.

Constraints

- $1 < N < 10^9$
- When N is $Odd : 0 < t < \frac{N+1}{2}$
- When N is $Even : 0 < t < \frac{N}{2}$
- $p \, is \, an \, Integer$

Output Format

Print the **total number of points** that the leading group has gained.

Sample Input 0

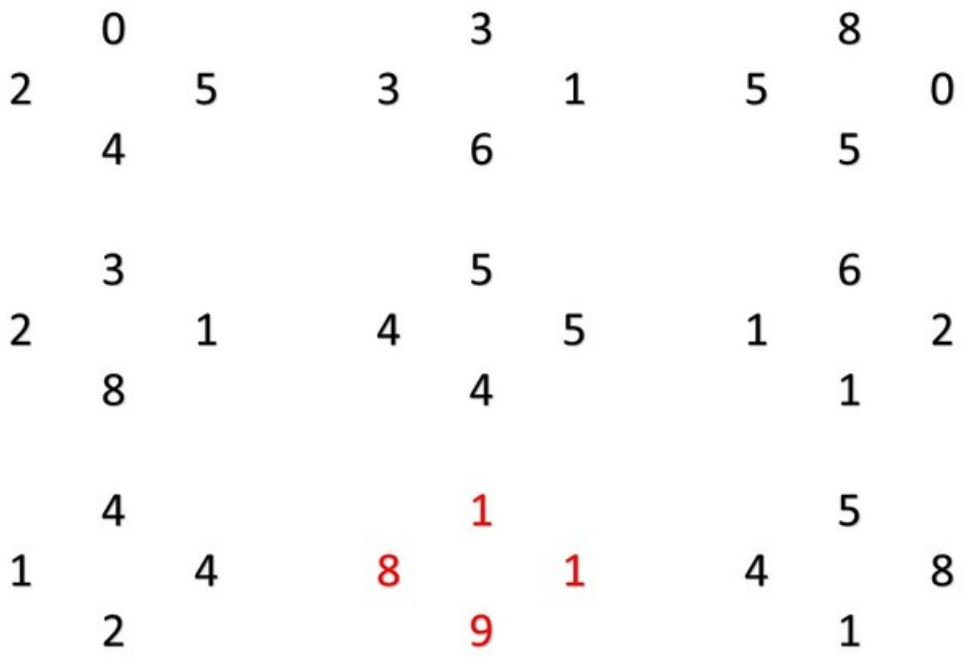
```
5
1 0 3 8 4
2 3 5 6 0
2 4 1 5 2
1 8 4 1 8
4 2 9 1 0
1
```

Sample Output 0

```
19
```

Explanation 0

We can consider students with the given pattern like this,



The leading group with the maximum points has been illustrated by red color. Therefore, the **Maximum Sum** will be 19 : $8 + 1 + 1 + 9$

CamelCase

Alice wrote a sequence of words in CamelCase as a string of letters, s, having the following properties:

- It is a concatenation of one or more *words* consisting of English letters.
- All letters in the first word are *lowercase*.
- For each of the subsequent words, the first letter is *uppercase* and rest of the letters are *lowercase*.

Given s, print the number of words in s on a new line.

Input Format

A single line containing string s.

Constraints

- $1 \leq |s| \leq 10^5$

Output Format

Print the number of words in string s.

Sample Input

```
saveChangesInTheEditor
```

Sample Output

```
5
```

Explanation

String s contains five words:

1. save
2. Changes
3. In
4. The
5. Editor

Thus, we print 5 on a new line.

Need help? Try this problem first to get familiar with HackerRank environment.

DNA Analysis

All kind of natural creatures passes their features to their children through DNA. However, through DNA parent does not pass the whole features to their children.

Student in University of Moratuwa has done a research about **a Single Feature** with his relations to prove that chronic features pass to the child by the parent. He has build a software program to compare a feature with his ancestor by appearance. He compared each parent and child and he noted the ***percentage*** of that specific feature came to child from parent. (Suppose that a couple would only have a single child)

Input Format

- First line contains a single integer showing the count of relationships n.
- Next each n lines contains 3 space seperated integer values to show respectively, a - Parent Index, b - Child Index, and c - Percentage of Similarity within a specific feature.
- The last line contains x and y: 2 index numbers of the people who want to compare the specific feature. $(x > y)$

Constraints

- $0 \leqslant n \leqslant 10^9$

Output Format

The output is a **floating point number**, denoting the **feature precentage** the child has gained from his/her ancestor.

Sample Input 0

```
4
0 2 30
1 2 50
2 4 15
3 4 40
0 4
```

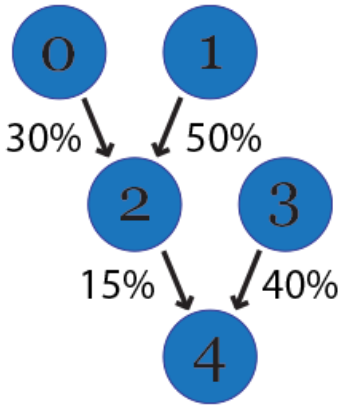
Sample Output 0

```
4.50
```

Explanation 0

We need to compare the feature precentage in-between 0 and 4,

- 2 is the child of 0 and 1.
- 2 will inherit 30% from 0's feature.
- 4 is the child of 2 and 3.
- 4 will inherit 15% from 2's feature.
- Therefore, all together 4 inherits 4.5% from 0's feature. ***(Use the below graph for better understanding)***


0
1
30%
50%
2
3
15%
40%
4

Nerdy Elon

Even when Elon Musk was a 12 year old boy, he dreamt of rockets, and how to build them. Since he was still too young to actually build one on his own, he thought of using a computer to make his imagination come alive. Therefore he wanted to print a rocket shape using a computer, to simply preserve the image of the rocket he had on his mind. The programme he finally came up with was as follows ;

When you enter an integer value n on console the program generates a rocket pattern and prints it out on the console.

Years later,Elon gets the chance to be the guest speaker at an IT related event in a high-school. There, he relates to the students about how he put together his very first steps in programming and his love for aerospace technology in through this simple piece of code. To make things more exciting, he challenges the students in the crowd to recreate his program, and get the result he did.

Imagine you were present at the event, and listened to Elon's story. It's your turn to regenerate Elon's code with any programming language you prefer.

Input Format

The input will contain a single integer n.

Constraints

$1 \leqslant n \leqslant 1000$

Output Format

Below are the patterns that he could generate using the algorithm according to the given input n

Check below samples to get a broad idea

Sample Input 0

```
5
```

Sample Output 0

```
        *
       ***
      *****
     *******
    *********
   ***********
  *************
 ***************
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```

```
***************
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***************
***************
***************
       *
      ***
     *****
    *******
   *********
  ***********
 *************
***************
```

Sample Input 1

```
10
```

Sample Output 1

```
              *
             ***
            *****
           *******
          *********
         ***********
        *************
       ***************
      *****************
     *******************
    *********************
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              *
             ***
```

```
            *****
           *******
          *********
         ***********
        *************
       ***************
      *****************
     *******************
    *********************
   ***********************
  *************************
 ***************************
*****************************
```

Obtain the Max Credits

Siri is a 2nd-year undergraduate at the University of Moratuwa. He has to follow N number of modules in this semester. Each module has included one assignment with a fixed deadline and a credit assigned to it. All the assignments of the modules are optional. He wants to select the assignments that give the highest total credit and he must complete the selected assignments within deadlines. He needs your help to select the assignments.

Note

He can do maximum one assignment per day.

Task

Module	Credit	Deadline
1	4.0	4
2	3.5	2
3	2.0	3
4	3.5	3
5	3.0	1

You have to choose the best assignments for obtaining the highest total credits within the deadline.

Input Format

First line contain **N**, number of modules.

Next **N** lines contain Module ID **(M)**, Credits **(C)**, and Deadline **(D)**.

Constraints

$1 \leq N \leq 10^6$

$D < N$

$1 \leq C \leq 10$

Output Format

First line contains order of assignments **(Using module ID)**

Second line contains sum of maximum credits that the student can gain.

Sample Input 0

```
5
1 4.0 4
2 3.5 2
3 2.0 3
4 3.5 3
5 3.5 1
```

Sample Output 0

```
[5, 2, 4, 1]
14.0
```

Robo Cars

Mr. Chili is a robotic developer. He developed robotic cars for special purposes such as military, racing, etc. He wants to test these robotic cars before launching by having a drop test to confirm the strength of the cars. So, he got an idea for dropping and took his two racing cars for the test. All the racing cars are identical and interchangeable. He decided to use a building with N floors for this test. If a robotic car drops from the K^{th} floor or above, it will be destroyed. If it is dropped from any floor below, it will not destroy. Find the number of attempts that dropping two cars, such that the total number of attempts is minimized to find the related floor that the cars are not damaging.

Task

Find the minimum number of attempts required to find the related floor, that the cars are not damaging.

Input Format

First line contains the number of floors N

Constraints

- $1 \leqslant N \leqslant 10^5$
- $K \leqslant N$

Output Format

Number of attempts of dropping two cars, such that ***total number of attempts is minimized to find the related floor that the cars are not damaging.***

Sample Input 0

```
10
```

Sample Output 0

```
4
```

Explanation 0

If a building has 10 floors, with the use of total 4 drops, he will be able to find the floor that robotic car would not get damaged when dropped.

Sample Input 1

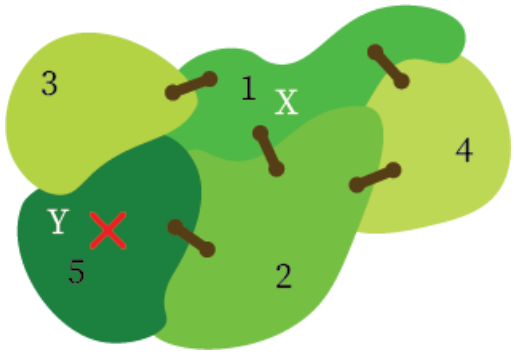
```
36
```

Sample Output 1

```
8
```

Treasure Game

In the treasure game, you are given a map. It has Zones and Tunnels. You can arrive or leave a zone only using those tunnels. Assume there's N number of zones, those zones are numbered from 1 to N. Each tunnel is bidirectional and each has two ends denoted by U and V. There's M number of tunnels to go between zones. It takes C minutes to go through a tunnel and you must rest in each zone you arrive, for T minutes. In the map, your starting zone is denoted by X and the treasure zone is denoted by Y. There can be more than one route to reach the treasure zone. What you have to do is to find the fastest route so that you can accomplish the mission in the least amount of time.



Input Format

Input consists of (M+2) lines and in a line, each value is separated using a SPACE

First line has 4 integer values, N M T C

Then there're M lines representing end points of each tunnel as U V

Final line contains two integer values which are your starting zone and the treasure zone as X Y

Constraints

$1 <= N, T, C <= 10^3$

N-1 <= M <= N*(N-1)/2

1 <= U, V, X, Y <= N

Output Format

The output should contain 2 lines.

First line should have one integer value which is the number of zones you need to pass, when you use the fastest route to find the treasure. (Let's denote this as A)

Second line should contain A number of integer values, representing the zones you pass.

Sample Input 0

```
5 5 3 5
1 2
1 3
2 4
```

```
1 4
2 5
1 5
```

Sample Output 0

```
3
1 2 5
```

Windmills

Mr. Sathira, The owner of “Sathira Windmill” hopes to design a new fan for the mill, and he needs to check the appearance of different sizes of that design. He expects your help to do that. In this fan design, the shape of a blade is an isosceles triangle. The length of a side in the square which is in the middle of the design equals the length of a leg of an isosceles triangle. He needs you to create the following pattern using any programming language you like. As he needs to check different sizes of the fan, when he enters an integer value n on the console, the program should generate the pattern which contains n number of rows.

Input Format

The input will contain a single integer n.

Constraints

$3 \leqslant n \leqslant 15$

Output Format

Output should be the relevant **Windmill Pattern**, for the Input

Sample Input 0

```
3
```

Sample Output 0

```
          *
        * *
      * * *
  * * * + + + *
    * * + + + * *
      * + + + * * *
        * * *
        * *
        *
```