



Greetings From Globussoft

- ❖ Given below are 5 Programming questions, you have to solve any 3 out of 5 questions.
- ❖ These 5 questions you can attempt in any technology like C/C++, java, .Net, PHP
- ❖ To solve these 3 questions you've max. 3 hours.
- ❖ While Solving these questions you are not allowed to use any Search Engine like Google, Yahoo, Bing ...

All the best for your test

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QUESTION - 1

One of your friends wrote numbers 1, 2, 3, ..., N on the sheet of paper. After that he placed signs + and - between every pair of adjacent digits alternately. Now he wants to find the value of the expression he has made. Help him.

For example, if $N=12$ then $+1 -2 +3 -4 +5 -6 +7 -8 +9 -1+0 -1+1 -1+2 = 5$

Input

Each line contains one integer number N ($1 \leq N \leq 10^{15}$). Last line contains 0 and shouldn't be processed. Number of lines in the input does not exceed 40.

Output

For every line in the input write the answer on a separate line.

Example

Input :

12

0

Output :

5

QUESTION – 2

Adolf wants to send a cake to Blue Mary to celebrate her birthday. The cake looks like a tower which has M floors, each floor is a cylinder. The i-th cylinder counted from downside to upside has a integer height h_i and a integer radius r_i . These numbers fulfill the following two conditions:

- $h_1 > h_2 > h_3 > \dots > h_M$
- $r_1 > r_2 > r_3 > \dots > r_M$

Adolf is interested in minimising the area of the surface of the cake, except for the underside of the lowest cylinder. He needs your help because of his poor math knowledge.

Input

The very first line contains a integer number T. T test cases follow.

For each test case, the first line contains a single integer number N ($N \leq 10000$), the second line contains a single integer number M ($M \leq 10$). The cake must be made of M cylinders and its volume must be $N \cdot \pi$.

Output

For each test case, a single line containing a single integer S must be written to output. The required minimum area must be $S \cdot \pi$.

Example

Sample Input:

```
1
100
2
```

Sample Output:

```
68
```

QUESTION – 3

There are N Barbarians living on an unknown island. On the island there are M caves, we can number them $1, 2, \dots, M$ clockwise. When we find the island, the barbarians are living in N distinct caves numbered C_1, C_2, \dots, C_N . Every year each barbarian walks out of his cave and goes along the road, passes P_i caves and then go into that cave. Every Barbarian has a living time: L_i years, after L_i years the i th barbarian died.

We are surprised to find out that no two barbarians live in one cave in the same year so no conflicts have happened. We are interesting about the minimum number of caves on the island.

Please note that this problem has a somewhat strict source limit and time limit.

Input

The very first line contains a single integer T , the number of test cases. T blocks follow.

For each test case, the first line contains a single integer N ($N \leq 15$). N lines follow, each contains 3 integers C_i ($1 \leq C_i \leq 100$), P_i ($1 \leq P_i \leq 100$), L_i ($1 \leq L_i \leq 1,000,000$).

Output

For each test case, the first and only line contains a single integer M - the answer. You may assume $M \leq 1,000,000$.

Example

Input :

```
1
3
1 3 4
2 7 3
3 2 1
```

Output :

```
6
```

Hints

Year	Barb. No.1	Barb. No. 2	Barb. No. 3
0	1	2	3
1	4	3	5
2	1	4	Died
3	4	5	Died
4	1	Died	Died

QUESTION – 4

Blue Mary is a cashier of a big company. The boss of this company is so annoying that he always increases or decreases wage of all workers. He increases all the workers' wage with a same number when he is happy or decreases all the worker's wage with a same number when he is depressed.

All the workers are angry with the boss, especially when he decreases their wage. A worker will leave the company and never go back when he finds his wage is lower than the least wage written on his contract. Blue Mary must delete the worker's files at that time. Another task she is to do is to build a file when a new worker joins this company.

The boss usually asks Blue Mary how much money the worker who gets the k-th most wage gets. Blue Mary is very tired with her work. Could you give her a hand?

Input

T

[the number of tests ≤ 10]

M MIN

[M is the number of commands below, MIN is the least wage]

C K

[C is one of the 4 characters I,A,S,F. I denotes that Mary should build a new file, and the new worker's wage is K($0 \leq K \leq 100000$) at start. If K is less than MIN, the worker will not join the company. A denotes that the boss increases all the workers' wage with K($0 \leq K \leq 1000$). S denotes that the boss decreases all the workers' wage with K($0 \leq K \leq 1000$). F denotes that the boss asks Blue Mary a question: how much money does the worker who gets the k-th most wage get($K > 0$)?]

[M-1 other commands]

[other tests]

You may assume that:

- The number of worker in the company at start is 0.
- The number of command I is no more than 100000.
- The total number of command A and S is no more than 100.
- The number of command F is no more than 100000.

Output

For each test case:

For each F command you must output one line contains a single integer which is the answer or -1 if K is more than the number of workers in the company at that time.

In the last line you must output a single integer - the number of workers who leave the company(excluded the ones who don't join the company)

Example

Sample Input:

```
1
9 10
I 60
I 70
S 50
F 2
I 30
S 15
A 5
F 1
F 2
```

Sample Output:

```
10
20
-1
2
```

QUESTION – 5

CS&T, the well-known cellphone company, is going to set some new service stations among n possible ones, which are numbered $1, 2, \dots, n$. The costs of setting these stations are known as P_1, P_2, \dots, P_n . Also the company has made a survey among the cellphone users, and now they know that there are m user groups numbered $1, 2, \dots, m$, which will communicate by service station A_i and B_i , and the company can profit C_i .

Now CS&T wants to know which service stations are to be set that the company will profit most.

Input

```
T [The number of tests]
n m [n<=5000 m<=50000]
P1 P2 P3 ... Pn [Pi<=100]
A1 B1 C1
A2 B2 C2
...
Am Bm Cm [1<=Ai,Bi<=n, Ci<=100]
[other tests]
```

At least 80% of the tests satisfy that $n \leq 200$, $m \leq 1000$.

Output

```
MaximumProfit
[other tests]
```

Example**Input:**

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

Output :

4