# Building

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Ivancho decided to become engineer. He went on job interview where they gave him task.

He is given a construction project for building that consists of N parts. Each part has exact area, height and strength. The building goes this way: The first part is placed on the ground. After that each part is placed over some other part that has already been placed. It is considered that the parts don't have specific form. The area of all parts placed over some part must not exceed the area of the bottom part. Also if the strength of some part is less than the total weight placed over it the building collapses. Ivancho must calculate if the building will be possible or somewhere there will be problem with it.

You have to create the program **building** that must help Ivancho solve the given task.

### Input

On the first row of the file `building.in` is entered *N* – the count of the parts. On the next *N* rows are entered 4 numbers – $P_i$ –the index of the part that is under the current; $A_i$ – the area of the part, $W_i$ – it's weight $S_i$ – it's strength.

### Output

On the single row of the file `building.out` your program must print `OK` if building with these parameters is possible. If it is not possible to build such building, because the area of some part doesn't fit you must print `IMPOSSIBLE X`, and if the building will collapse under its weight print – `COLLAPSE X`. X must be replaced with the number of the part that firstly breaks the project.

### Constrains

$1 <= N <= 100\ 000$

$0 <= P_i < i$

$1 <= A_i, W_i, S_i <= 1\ 000\ 000$

The parts are indexed from one 1.

The first part ids placed on the ground e.g $P_1=0$.

### Example

| Вход (building.in) | Изход (building.out) |
|---|---|
| 10<br>0 24 3 32<br>1 6 4 13<br>1 1 2 1<br>1 6 4 12<br>1 4 3 15<br>1 4 20 9<br>1 1 4 8<br>4 3 3 14<br>4 2 3 7<br>2 3 4 7 | COLLAPSE 6 |