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Alguru's World Tour   🔒 locked

H by Code_Addict

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Alguru is planning a trip to N different countries numbered 1 to N, and he needs your help to apply visas for each of them.

For every country i, Alguru knows three things: - The number of the day S_i on which he wants to go to the country. - The number of days L_i he wants to stay in the country, and - The number of days T_i it will take to process a visa application to the country and stick a visa in Alguru's passport. Alguru has P ($1 \le P \le 2$) valid passports and can decide which visa he wants to put in which passport.

For each country, Alguru will have a flight to that country on day S_i and will return back on day $S_i + L_i - 1$. When Alguru is not in any of the N countries, he will be in his hometown.

Alguru can apply for a visa only if he is in his hometown. The earliest Alguru can apply for a visa is day 1. While applying for a visa of country i on day D, Alguru also has to send his passport for verification. So he cannot use that passport till day $D+T_i$.

After applying for a visa of country i on day D, Alguru will get his passport back on day $D + T_i$. Since the passport will be couriered back to Alguru, he can get his passport back even if he is not in his hometown on this day. Alguru can apply for another visa on the same day he received his passport back, if he is in his hometown on this day.

Alguru will not be able to start his trip on day S_i if he does not have a passport with a visa for the corresponding country on that day. In particular, the passport should be couriered back to him atleast by day S_i-1.

Help Alguru to decide which visas he needs to receive in which passport, and when he should apply for each visa.

Input Format

In the first line of the input there are two integers N and P — the number of trips and the number of passports Alguru has, respectively.

The next N lines contain three positive integers S_i, L_i, T_i — the first day of the visit to country i, the length of the visit and number of days required to process the visa application for country i, respectively.

It is guaranteed that no two trips intersect.

Constraints

- $1 \le N \le 22$

- $1 \le P \le 2$

- $1 \le S_i, L_i, T_i \le 10^9$

Output Format

Print "NO" if Alguru cannot get visas for all the countries. If he can, print "YES" and N following lines. The ith line should contain two integers, first the passport number on which Alguru should put the ith country's visa in, and second, the number of the day on which Alguru should apply for it. The order Lof the visas should be the same as the order of the countries in the input. Days start from number 1, and passports can either be 1 or 2.

Note : If there are several possible answers, print any one of them.

Sample Input 0

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

Sample Output 0

```
YES
1 1
1 4
```

Explanation 0

Alguru can apply for a visa to country 1 only on day 1, and the passport arrives back on day 2. On day 3, Alguru flies to country 1 and returns on the same day.

Then, Alguru can apply for a visa to country 2 on day 4, and the passport arrives back on day 5. On day 6, Alguru flies to country 2 and returns on the same day.

Sample Input 1

```
3 1
13 2 2
7 3 1
19 3 4
```

Sample Output 1

```
YES
1 10
1 1
1 2
```

Explanation 1

Alguru applies for a visa to country 2 first, as it is the first country he wants to visit. The passport arrives on day 2, and he applies for a visa to country 3 on the same day. It takes 4 days to process the visa, and the passport arrives on day 6.

On day 7, Alguru flies to country 2, and returns on day 9. He applies for a visa to country 1 on day 10, and the passport arrives on day 12. He later flies to country 1 on day 13, and to country 3 on day 19.

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```cpp
1  #include <cmath>
2  #include <cstdio>
3  #include <vector>
4  #include <iostream>
5  #include <algorithm>
6  using namespace std;
7
8
9  int main() {
10     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11     return 0;
12 }
13
```

Line: 1 Col: 1

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