

## E. Connected Component on a Chessboard

time limit per test: 2 seconds  
 memory limit per test: 256 megabytes  
 input: standard input  
 output: standard output

You are given two integers  $b$  and  $w$ . You have a chessboard of size  $10^9 \times 10^9$  with the top left cell at  $(1; 1)$ , the cell  $(1; 1)$  is painted **white**.

Your task is to find a connected component on this chessboard that contains exactly  $b$  black cells and exactly  $w$  white cells. Two cells are called connected if they share a side (i.e. for the cell  $(x, y)$  there are at most four connected cells:  $(x - 1, y), (x + 1, y), (x, y - 1), (x, y + 1)$ ). A set of cells is called a connected component if for every pair of cells  $C_1$  and  $C_2$  from this set, there exists a sequence of cells  $c_1, c_2, \dots, c_k$  such that  $c_1 = C_1, c_k = C_2$ , all  $c_i$  from 1 to  $k$  are belong to this set of cells and for every  $i \in [1, k - 1]$ , cells  $c_i$  and  $c_{i+1}$  are connected.

Obviously, it can be impossible to find such component. In this case print "NO". Otherwise, print "YES" and **any** suitable connected component.

You have to answer  $q$  independent queries.

### Input

The first line of the input contains one integer  $q$  ( $1 \leq q \leq 10^5$ ) — the number of queries. Then  $q$  queries follow.

The only line of the query contains two integers  $b$  and  $w$  ( $1 \leq b, w \leq 10^5$ ) — the number of black cells required and the number of white cells required.

It is guaranteed that the sum of numbers of cells does not exceed  $2 \cdot 10^5$  ( $\sum w + \sum b \leq 2 \cdot 10^5$ ).

### Output

For each query, print the answer to it.

If it is impossible to find the required component, print "NO" on the first line.

Otherwise, print "YES" on the first line. In the next  $b + w$  lines print coordinates of cells of your component in any order. There should be exactly  $b$  black cells and  $w$  white cells in your answer. The printed component should be connected.

If there are several answers, you can print **any**. All coordinates in the answer should be in the range  $[1; 10^9]$ .

### Example

input	Copy
3 1 1 1 4 2 5	
output	Copy
YES 2 2 1 2 YES 2 3 1 3 3 3 2 2 2 4 YES 2 3 2 4 2 5 1 3 1 5	

### Codeforces Round #575 (Div. 3)

Finished

Practice



### → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

### → Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

### → Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

### → Submit?

Language:

Choose file:

Submit

### → Last submissions

Submission	Time	Verdict
<a href="#">58121702</a>	Aug/01/2019 14:03	Accepted

### → Problem tags

constructive algorithms implementation  
 \*1900

No tag edit access

### → Contest materials

- Announcement #1 (en) ✕
- Announcement #2 (ru) ✕
- Tutorial #1 (en) ✕
- Tutorial #2 (ru) ✕
- Tutorial #3 (en) ✕

3 3  
3 5

- [Tutorial #4 \(en\)](#) ☐
- [Tutorial #5 \(ru\)](#) ☐
- [Tutorial #6 \(en\)](#) ☐

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