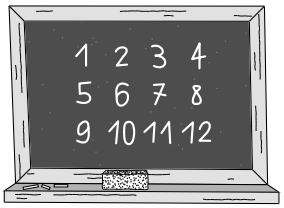
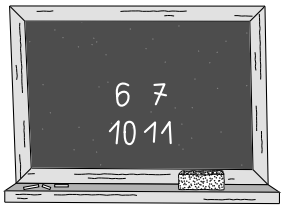
Problem K. Kindergarten Square

Time limit: 3 seconds
Memory limit: 1024 megabytes

Children in kindergarten are learning about natural numbers. The teacher wrote on the board consecutive numbers from 1 to $h \cdot w$ arranged in h rows and w columns ($h, w \geq 2$). The first row thus contains numbers from 1 to w (from left to right), the second row contains numbers from $w+1$ to $2 \cdot w$, and so on. After the lesson the teacher erased all the numbers except for a 2×2 contiguous square containing four adjacent numbers from the original layout.

The drawing shows the board for $h = 3$, $w = 4$, and an example of a remaining 2×2 square:





One of the kindergartners, Kamilek, didn't pay much attention during the lesson and is now wondering which numbers h and w the teacher used. Find any possible pair (h, w) or output the number `-1` if the given square is impossible to obtain. The situation repeats over t days, given as independent test cases.

Input

The first line contains an integer t ($1 \leq t \leq 10$) denoting the number of test cases.

The next $2 \cdot t$ lines describe the test cases. Each test case consists of two rows, each with two integers in the range $[1, 50\,000]$ representing the remaining 2×2 square.

Output

Output t lines, the i-th with the solution for the i-th test case:

- If the given square is possible to obtain output two integers separated by a space – any possible dimensions of the board h, w ($2 \leq h, w \leq 100\,000$). It can be proven that if there exists any valid pair (h, w), there also exists a pair that meets these inequalities. If there are multiple solutions output any one of them.
- If the square could not have been obtained output the single number `-1`.

Example

standard input	standard output
4 6 7 10 11 2 3 4 5 8 5 5 13 1 2 5 6	3 4 -1 -1 3 4

Note

In the first test case we have the square $[[6, 7], [10, 11]]$. The drawing above shows one of the many correct solutions: $h = 3, w = 4$. This is also one of the correct solutions for the fourth test case $[[1, 2], [5, 6]]$.

In the second test case the numbers $[[2, 3], [4, 5]]$ might initially be written by the teacher, but they never form a 2×2 square. Thus the answer is `-1`.