



Problem D: Escape the Maze

Time limit: 1s; Memory limit: 256 MB

You have been kidnapped and abandoned inside a mysterious maze. While desperately searching for a way out, you accidentally find a small piece of paper containing some strange writings. Since part of the paper has been torn away, you cannot determine the original string of characters. However, the paper still contains four integers a_1 , a_2 , a_3 , and a_4 . You realize that they represent the number of occurrences of the four characters L, R, U, and D in a mysterious string:

- a_1 — the number of occurrences of the character L.
- a_2 — the number of occurrences of the character R.
- a_3 — the number of occurrences of the character U.
- a_4 — the number of occurrences of the character D.

There is also a very large integer k ($1 \leq k \leq 10^9$) written on the paper.

You suspect that this must be a clue left behind by someone who was trapped in the maze before you. After carefully studying the strange message, you finally manage to decode it.

You realize that a path through the maze is represented by a string consisting only of the four characters L, R, U, and D (L — move left; R — move right; U — move up; D — move down). The escape route must use exactly a_1 steps L, a_2 steps R, a_3 steps U, and a_4 steps D. The clue does not directly tell you the exact order of the moves. Instead, the escape route is the k -th string in lexicographical order among all distinct strings that can be formed by rearranging these moves. For lexicographical ordering, the characters are ordered as: **L < R < U < D**.

Your task is to determine the escape route. If there are fewer than k distinct possible paths, output -1.

Input

The first line contains four integers a_1, a_2, a_3, a_4 ($0 \leq a_1, a_2, a_3, a_4 \leq 10^4$, $1 \leq a_1 + a_2 + a_3 + a_4 \leq 10^4$) and an integer k ($1 \leq k \leq 10^9$).

Output

Print the escape route — the k -th distinct string in lexicographical order formed using exactly a_1 characters L, a_2 characters R, a_3 characters U, and a_4 characters D.

If there are fewer than k distinct strings that can be formed, print -1.

Sample

Sample Input	Sample Output
1 1 1 1 3	LURD
1 2 1 1 50	DLRUR
1 2 1 1 61	-1
1 0 1 1 5	DLU



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