Sashka is a vacuum cleaner. Not just any vacuum cleaner, but a space robot vacuum cleaner. She's hired to clean Harry's room, which can be represented as a table with rows and columns. Initially, all the cells are dirty. Harry is weird, so he placed concentrated black holes in his room, the -th of them located in cell . Sashka is unaffected by the attraction of the black holes (after all, her creator Kyusho has foreseen all sorts of events), but they do affect the cosmic dust she assiduously wants to collect. The more cosmic dust Sashka collects, the better. Let Sashka be in cell of the table. Then the distance between her and the -th black hole is equal to , where the notation represents the largest integer . She finds the distance to the nearest black hole and denotes it as the dust collection factor. If the cell was dirty, Sashka would collect grams of dust. Otherwise, sadly, she won’t collect any space dust. Notice, . Sashka is initially in cell at moment zero. She can move into adjacent cells of side in second. In each cell Sashka goes through, she vacuums everything. She will vacuum her initial cell as well. Sashka will wander around the table for exactly seconds before her battery runs out. That means, she will move between cells exactly times.

The black holes in Harry's room warp the spacetime so much, that they themselves change locations every seconds. The new location of the -th black hole would be . More precisely, at each shift, for each black hole, and , where ≔ denotes the assignment sign. Also, each cell becomes dirty again.

Surpriseeee! It turns out you’re Sashka. Write a program cleanUP.cpp that outputs a route that you will clean around the table.

**Input**

The first line of cleanUP.in contains seven positive integers – *,* , , , , и *.* The next line contains positive integers, respectively. Next, lines follow, the -th of which contains two positive integers, and .

**Output**

On one line of cleanUP.out print symbols, describing your route of vacuuming. Suppose after moves, you are positioned in . Then if:

* -th symbol of the output is L – you move to cell .
* -th symbol of the output is U – you move to cell .
* -th symbol of the output is R – you move to cell .
* -th symbol of the output is D – you move to cell .

Your route of vacuuming will be valid only if each of the following requirements is complied with:

* Contains exactly symbols.
* Each of them is L, U, R or D.
* You don’t exit the table.

**Constraints**

**Scoring**

The score of a participant for a test is the amount of space dust he has collected.

If your route is not valid for a test, you will get points for it. Otherwise, let be your score and be the maximum score among all participants. Then your score for the test will be .

**Subtasks**

|  |  |
| --- | --- |
| **Percentage of tests** | **Constraints** |
|  |  |
|  |  |
|  |  |

**Time Limit: 5.0 sec.**

**Memory limit: 256 MB.**

**Sample test**

|  |  |
| --- | --- |
| **Input (cleanUP.in)** | **Output (cleanUP.out)** |
| 10 2 15 2 1 6 1  8 10 8 1 6 6 4 1 2 6 8 2 7  4 2  3 2 | UUUUURRRRRRRRRD |

**Explanation of the sample test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Second** | **Event** | **New values** | **Result** | **Explanation** |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Moving | The new loctiton of the black holes respectively are и . | | |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Moving | The new loctiton of the black holes respectively are и . | | |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Moving | The new loctiton of the black holes respectively are и . | | |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Moving | The new loctiton of the black holes respectively are и . | | |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Cleaning | Location: |  | Minimal distance: |
|  | Moving | The new loctiton of the black holes respectively are и . | | |
|  | Cleaning | Location: |  | Minimal distance: |
| **Sum:** | | | grams of dust | |

The table explains Sashka’s(Your) behaviour, if she follows the route, described in the sample output. In the “Event” column is described the current event, cleaning when the vacuum cleans and moving, when the black holes move. The grams of space dust collected by the vacuum is given in the “Result” column. The minimal distance to black hole is given in the “Explanation” column.