

E. Grid Sequences

Problem Description

In this problem you are given the arduous task of finding the longest increasing sub-sequence within a grid.

A strictly increasing sub-sequence is a path of connected nodes in the grid where the values of the nodes in the path increase from one to the next.

In this grid, adjacent nodes are those which are in contact with each other. This means a node is connected to any node that is immediately above/below it, left/right of it, or on one of its diagonals.

```
A B C
D E F
G H I
```

In the above case E is adjacent to A, B, C, D, F, G, H, and I.

Input

The input will be a grid of positive integers where each line represents a row of the matrix and the number represents the value of that entry. You are to read the grid until EOF (End of File) is reached. There is **NO LIMIT** on the size of the input grid and there will only be one input grid.

Output

Output should consist of the message:

Length of the longest path = n

where n is the length of the longest path on it's own line. The actual path is not required as there could be multiple paths of longest length within the grid.

Sample Input

```
45 64 90 89 23
```

```
90 45 54 23 23
18 12 41 15 6
0 45 45 22 9
23 84 58 65 75
```

Sample Output

```
Length of the longest path = 9
```