Problem ANTONGRAPH: AntOnGraph

You are given a directed graph with n vertices, labeled 0 to n-1. The edges of the graph contain values, and each time you traverse an edge, the value of that edge gets added to your total score. If the same edge is traversed multiple times, its value gets added every time. Values can be any number between -499 and 499, inclusive. There are no edges that connect a vertex to itself.

There's an ant at vertex 0 and it wants to get to vertex 1. It must do this in an integer number of seconds between 1 and timeLimit , inclusive. The ant must make exactly stepsPerSecond steps each second, where each step consists of moving from its current vertex V to an adjacent vertex W (W is adjacent to V if there's a directed edge from V to W in the graph). The ant's goal is to get the highest score possible.

The graph is given as three lists of Strings p0 , p1 and p2 . Concatenate the j-th characters of the i-th elements of p0 , p1 and p2 (in that order) to get a 3-digit String S. If S is "000", then there is no edge from vertex i to vertex j. Otherwise, there is an edge from vertex i to vertex j, and its value is A - 500, where A is the integer value of S. For example, if S is "100", then the value is -400, and if S is "999", the value is 499.

Input

The first contains, in this order, n, stepsPerSecond and timeLimit.

n will be between 2 and 50, inclusive.

stepsPerSecond will be between 1 and 100, inclusive.

timeLimit will be between 1 and 1000000000 (10^9), inclusive.

The next three lines contain the three lists of Strings, one line for p0, one for p1 and one for p2. Each line contains exactly n strings of n digits ('0'-'9'), separated by one space.

Output

Print the decimal representation of the highest possible score as a String with no extra leading zeroes. If it is impossible to reach vertex 1 under the given constraints, print "IMPOSSIBLE" (quotes for clarity) instead.

Sample Explanation

Sample 1

Here, there are two vertices. There's an edge from vertex 0 to vertex 1 and an edge from vertex 1 to vertex 0. Both edges have a value of 1. The ant must make exactly 3 steps per second, so during the first second, it will make the following moves: 0->1, 1->0, 0->1. The time limit is 2, so there's time for 3 more moves. However, that would place the ant back at vertex 0, so the ant should stop after the first second.

Sample 2

This is the same graph as the previous example, but this time, the ant must make exactly 2 steps per second. The ant can therefore never reach vertex 1 because it will always return to vertex 0 after each second.

Sample 3

In this case the ant can traverse cycle 0->2->3->0 and earn 3 points. The ant will keep moving along this cycle and finally go to vertex 1 and earn another point. Thus the number of points modulo 3 is 1. Among all multiple of 7 less than or equal to 63, 49 is the biggest one that satisfies the constraints.

Sample Input 1

```
2 3 2
05 50
00 00
01 10
```

Sample Output 1

```
3
```

Sample Input 2

```
2 2 3
05 50
00 00
01 10
```

Sample Output 2

```
IMPOSSIBLE
```

Sample Input 3

```
4 7 9
0550 0000 0005 5000
0000 0000 0000 0000
0110 0000 0001 1000
```

Sample Output 3

```
49
```

Sample Input 4

```
4 7 9
0540 0000 0004 4000
0090 0000 0009 9000
0190 0000 0009 9000
```

Sample Output 4

```
-5
```

Sample Input 5

```
12 37 1221
079269665406 506042219642 720809987956 315099331918 952306192584 406390344278 999241035142
038604914953 804585763146 350629473403 028096403898 575205051686 427800322647 655168017864
063231394554 109852259379 740182746422 853015982521 476805512496 898530717993 430534005863
```

Sample Output 5

```
20992235
```