Find the Word

One day, Lili found an old kids magazine in her drawer. She then showed it to Bibi, who immediately recalled that the magazine was very popular back when she was in grade school.

The magazine routinely featured a puzzle section, which kids found really challenging and fun to solve. Lili also recalled that some editions famously featured puzzles that were very hard to solve. In fact, some kids speculated that said puzzles were actually unsolvable. Lili and Bibi, now software engineers, then realized that they could check whether the solution existed algorithmically.

The puzzle is a classic find the word puzzle, in which solvers attempt to find a single word in a grid of alphabet letters. The word may appear either vertically or horizontally, and may appear in reverse order (right to left or bottom to top).

Since Lili and Bibi are very busy with their software engineering jobs, they have entrusted the task of solving this childhood mystery up to you. Help Lili and Bibi figure out whether a solution exists for a given puzzle!

Format Input

The first line contains a single integer N, the size of the puzzle grid, and a single string S, the word to be found in the puzzle. The next N lines will contain an $N \times N$ grid of characters, the puzzle itself.

Format Output

Print "YES" or "NO" depending on whether a solution exists in the puzzle.

Constraints

- $1 \leq N \leq 30$
- $1 \leq |S| \leq 30$
- Only uppercase alphabet characters will appear in the puzzle.

Sample Input 1 (standard input)

```
5 BINUS
ABCSD
AINDA
NNNNN
AUSJK
PSPSP
```

Sample Output 1 (standard output)

```
YES
```

Sample Input 2 (standard input)

```
5 KJSUA
ABCSD
AINDA
NNNNN
AUSJK
PSPSP
```

Sample Output 2 (standard output)

```
YES
```

Sample Input 3 (standard input)

```
5 BNNK
ABCSD
AINDA
NNNNN
AUSJK
PSPSP
```

Sample Output 3 (standard output)

```
NO
```

Find the Word

Suatu hari, Lili menemukan sebuah majalah anak-anak tua di rak di kamarnya. Ia lalu menunjukkannya kepada Bibi. Bibi kemudian langsung menyadari bahwa majalah tersebut sangat populer saat Bibi masih di bangku SD.

Majalah itu secara rutin memiliki satu bagian berisi puzzle-puzzle yang menantang dan seru bagi anak-anak. Lili pun mengingat adanya beberapa edisi yang menyertakan puzzle yang sangat sulit untuk diselesaikan. Bahkan, beberapa anak berspekulasi bahwa puzzle-puzzle di edisi-edisi tersebut memang tidak bisa diselesaikan. Lili dan Bibi, yang sekarang merupakan software engineer, kemudian menyadari bahwa mereka dapat mengecek apakah suatu puzzle dapat diselesaikan atau tidak secara algoritmis.

Puzzle yang dimaksud adalah puzzle klasik mencari kata. Di puzzle ini, pembaca harus menemukan suatu kata di dalam suatu grid berisi huruf-huruf alfabet. Kata yang dicari dapat muncul secara horizontal, vertikal, atau bahkan muncul dengan urutan terbalik (kanan ke kiri atau bawah ke atas).

Karena Lili dan Bibi merupakan orang-orang yang sangat sibuk dengan pekerjaan software engineering mereka, mereka memberikan kamu kepercayaan untuk menyelesaikan misteri masa kecil ini. Bantulah Lili dan Bibi mengecek apakah suatu puzzle dapat diselesaikan atau tidak!

Format Input

Baris pertama berisi suatu bilangan bulat N, ukuran grid puzzle, dan sebuah string S, kata yang dicari di dalam puzzle. N baris berikutnya berisi sebuah grid puzzle berukuran $N \times N$.

Format Output

Outputkan "YES" jika puzzle dapat diselesaikan atau "NO" jika sebaliknya.

Constraints

- $1 \leq N \leq 30$
- $1 \leq |S| \leq 30$
- Puzzle hanya akan berisi karakter alfabet uppercase.

Sample Input 1 (standard input)

```
5 BINUS
ABCSD
AINDA
NNNNN
AUSJK
PSPSP
```

Sample Output 1 (standard output)

```
YES
```

Sample Input 2 (standard input)

```
5 KJSUA
ABCSD
AINDA
NNNNN
AUSJK
PSPSP
```

Sample Output 2 (standard output)

```
YES
```

Sample Input 3 (standard input)

```
5 BNNK
ABCSD
AINDA
NNNNN
AUSJK
PSPSP
```

Sample Output 3 (standard output)

```
NO
```