

Java-回溯-给一个字符串和一个二维字符数组

题目描述:

给一个字符串和一个二维字符数组,如果该字符串存在于该数组中,则按字符串的字符顺序输出字符串每个字符所在单元格的位置下标字符串,如果找不到返回字符串"N"。

1.需要按照字符串的字符组成顺序搜索,且搜索到的位置必须是相邻单元格,其中“相邻单元格”是指那些水平相邻或垂直相邻的单元格。

2.同一个单元格内的字母不允许被重复使用。

3.假定在数组中最多只存在一个可能的匹配。

输入描述:

1.第 1 行为一个数字 (N) 指示二维数组在后续输入所占的行数。

2.第 2 行到第 $N+1$ 行输入为一个二维大写字符数组,每行字符用半角,分割。

3.第 $N+2$ 行为待查找的字符串,由大写字符组成。

4.二维数组的大小为 $N*N$, $0 < N \leq 100$ 。

5.单词长度 K , $0 < K \leq 1000$ 。

输出描述:

输出一个位置下标字符串,拼接格式为:第 1 个字符行下标+","+第 1 个字符列下标+","+第 2 个字符行下标+","+第 2 个字符列下标...+","+第 N 个字符行下标+","+第 N 个字符列下标

补充说明:

示例 1

输入:

4

A,C,C,F

C,D,E,D

B,E,S,S

F,E,C,A

ACCESS

输出：

0,0,0,1,0,2,1,2,2,2,2,3

说明：

ACCESS 分别对应二维数组的[0,0] [0,1] [0,2] [1,2] [2,2] [2,3]下标位置

```
import java.util.LinkedList;
```

```
import java.util.Scanner;
```

```
import java.util.StringJoiner;
```

```
public class Main {
```

```
    static int n;
```

```
    static String[][] matrix;
```

```
    static String tar;
```

```
    public static void main(String[] args) {
```

```
        // 将输入分隔符改为“,”和换行
```

```
        Scanner sc = new Scanner(System.in).useDelimiter("[,\\n]");
```

```
n = sc.nextInt();
```

```
matrix = new String[n][n];
```

```
for (int i = 0; i < n; i++) {
```

```
    for (int j = 0; j < n; j++) {
```

```
        matrix[i][j] = sc.next();
```

```
    }
```

```
}
```

```
tar = sc.next();
```

```
System.out.println(getResult());
```

```
}
```

```
public static String getResult() {
```

```
    for (int i = 0; i < n; i++) {
```

```
        for (int j = 0; j < n; j++) {
```

```
            LinkedList<Integer[]> path = new LinkedList<>();
```

```
            if (dfs(i, j, 0, path)) {
```

```
                StringJoiner sj = new StringJoiner(",");
```

```
                for (Integer[] pos : path) sj.add(pos[0] + "," + pos[1]);
```

```
                return sj.toString();
```

```
}
```

```
}
```

```
}
```

```
return "N";
```

```
}
```

```
public static boolean dfs(int i, int j, int k, LinkedList<Integer[]> path) {
```

```
    if (i < 0 || i >= n || j < 0 || j >= n || !tar.substring(k, k + 1).equals(matrix[i][j]))
```

```
{
```

```
    return false;
```

```
}
```

```
    path.add(new Integer[] {i, j});
```

```
    if (path.size() == tar.length()) return true;
```

```
    String tmp = matrix[i][j];
```

```
    matrix[i][j] = null;
```

```
    boolean res =
```

```
        dfs(i - 1, j, k + 1, path)
```

```
        || dfs(i + 1, j, k + 1, path)
```

```
        || dfs(i, j - 1, k + 1, path)
```

```
|| dfs(i, j + 1, k + 1, path);
```

```
if (!res) {
```

```
    matrix[i][j] = tmp;
```

```
    path.removeLast();
```

```
}
```

```
return res;
```

```
}
```

```
}
```