DWITE '08 R3 #5 - Now in 3D

Time limit: 1.0s **Memory limit:** 64M

DWITE Online Computer Programming Contest, December 2008, Problem 5

Let's try to break out from the confines of the over-simplified 2D problems, and add some depth to the otherwise typical maze problems.

The input will contain 5 sets of data. Each set starts with a single integer $2 \leq n \leq 5$ followed by $n * n$ lines, describing a cube space. `#` for solid space; `.` for free space; `A` for start; `B` for end.

The output will contain 5 lines – each the **shortest** distance between `A` and `B` in the input maze.

The maze traversal is done only through free space, in any of the 6 directions. There are no diagonal movements.

Sample input explanation; first set: is a $2 * 2 * 2$ empty cube, with `A` and `B` in two opposite corners. There are 6 different ways to get from `A` to `B` in 3 steps. There are also 3 different ways to get from `A` to `B` in 7 steps (without backtracking), but since we are looking for the *shortest* distance, the latter is of less interest.

Sample input explanation; second set: is also a $2 * 2 * 2$ cube, but filled space forces only a single path to be available. Think of the path this way, starting at `A`: right, up one layer, down. Also 3 steps.

Sample input explanation; third set: is a $3 * 3 * 3$ cube. `A` and `B` are on empty layers, but they are separated by a mostly filled layer, with a single opening in its "bottom-right" corner.

Sample Input

```
2
A.
..
..
.B
2
A.
##
#.
#B
3
A..
...
...
###
###
##.
B..
...
...
```

Sample Output

```
3
3
10
```

Problem Resource: DWITE