

## 6915 Leveling Ground

It is important to first level the ground before you build anything on top of it (e.g., new house, shed, swimming pool, driveway, etc.), especially when there are hills on the land, otherwise whatever you built will not be stable. In case you don't understand, "leveling the ground" means making the ground flat and even (having the same height). In this problem, you are given a land description and the length of land —  $M$  — that you want to level; your task is to determine the minimum amount of land you should dispose in order to have a level land of length  $M$ . Note that in this problem you are only allowed to dispose land, not filling it.

The total length of the given land will be  $N$ , and the land will be encoded with the following format:

- (1) / means ascending slope (disposing an ascending slope cost 0.5),
- (2) \ means descending slope (disposing a descending slope cost 0.5),
- (3) \_ means flat (disposing a flat land cost 0),
- (4) . means full land (disposing a full land cost 1).

Note that the input will only describe the land's surface, thus (4) will not appear in any input. Also note that (1) and (2) are not level.

For example, consider the following input.

Input : //\_\_\\_/\/\\_\\\\_/\_\\_\\\\_//\\_\\\\_/\_

The input corresponds to the following land (which length is 31).

```

Land   :      --      /\_
          /..\_/...\<
          /.....\<   _  /..\_  _
          .....\<_/...\<.....
          .....
Index  :      1234567890123456789012345678901
  
```

Supposed we want to level a land of length  $M = 7$ , and for some reasons, we choose the land we want to level to be at index [11, 17]. Recall that you are only allowed to dispose land, thus if you want to level the land at [11, 17], you should level it such that the height is equal to the height of land at index 14 (because it is the lowest point). In the following figure, '\*' (stars) mark the land which should be disposed.

```

          --      /\_
          /..\_/...*
          /.....**   **_ /..\_  _
          .....*****.\.....
          .....
Index  :      1234567890123456789012345678901
          --      /\_
          /..\_/...|
          /.....|   _  /..\_  _
          .....|_...|.\.....
          .....
Index  :      1234567890123456789012345678901
  
```



```
//____\V  
12 4  
\\\_//\_\  
12 1  
^\\^\\^\\^
```

### Sample Output

```
Case #1: 3.5  
Case #2: 0.0  
Case #3: 1.0  
Case #4: 0.5
```