Problem 4—Quest

Frodo is embarking on a secret mission. Unfortunately, what should just be a simple get there, get in, get out, get back, badda boom, badda bing, is a lot more complicated because of the forests and rivers and mountains and stuff. After Frodo wanders around for a while, you are to determine how far he is from his starting point.

INPUT SPECIFICATION. The input file will consist of a number of data cases consisting of paths. Each path is a sequence of (distance, direction) pairs. The distance is a positive real number indicating how far Frodo walks in miles after making his most recent turn. The direction is the direction Frodo turns after moving. "L" indicates a 90° left turn; "R" indicates a 90° right turn; "D" indicates that Frodo is done moving and signifies the end of the data case. The distances and directions are separated by exactly one space and each data case ends with <**EOLN**>. The last data case is followed by <**EOF**>.

OUTPUT SPECIFICATION. The output cases should appear in the same relative order as the input cases. Each output case should be in the form "Case *c*: Frodo is *d* miles from the starting point." where *c* is the case number and *d* is how far away (as the crow flies) Frodo is from his starting point rounded to two places right of the decimal point. Two extra <**EOLN**>'s follow each data case.

SAMPLE INPUT.

```
6·D<EOLN>
1·R·1·R·1·R·1·D<EOLN>
5·L·10·R·5·D<EOLN>
<EOF>
```

SAMPLE OUTPUT.

```
Case·1:·Frodo·is·6.00·miles·from·the·starting·point.<EOLN>
<EOLN>
Case·2:·Frodo·is·0.00·miles·from·the·starting·point.<EOLN>
<EOLN>
Case·3:·Frodo·is·14.14·miles·from·the·starting·point.<EOLN>
<EOLN>
<EOF>
```