Problem 7

Par for the Course?

6 Points

Program Name: golf.cpp **Input File: golf.dat**

What would happen if a pro golfer enlisted the help of a talented programmer to improve his game? Probably not much, but we're going to fake it anyway. For this problem, the goal is to determine the minimum number of strokes needed to get the golf ball from its starting position to the hole. [FYI, a stroke equates to a single hit of the ball.]

Input Description

Input to this problem will consist of a (non-empty) series of up to 100 data sets. Each data set will be formatted according to the following description, and there will be **no blank lines** separating data sets.

A single data set has 2 components:

Size line - A single line, "*X Y Z*", where:

X : ($1 \le X \le 20$) is an integer number of columns in the *Hole Map*.
Y : ($1 \le Y \le 20$) is an integer number of rows in the *Hole Map*.
Z : ($3 \le Z \le 5$) is an integer number representing *Par* for this *Hole Map*.

Hole Map - A series of *Y* lines, each of length *X*. Each character in the *Hole Map* will represent one of the following:

'*' (asterisk) – represents the starting position of the golf ball. There will be exactly one golf ball.
'O' (capital letter) – represents the hole. There will be exactly one hole.
'T' – represents trees.
'.' (period) – represents fairway.

Note the following important facts:

- The golf ball may only be hit in one of the four cardinal directions; there can be no diagonal hits.
- The golfer only has four clubs, each ALWAYS hits a precise distance (a 'unit' is one row or column):
  - Putter – hits 1 unit
  - Wedge – hits 3 units
  - Iron – hits 5 units
  - Driver – hits 10 units
- When a ball is hit, it travels over any trees.
- A ball may never be hit outside the *Hole Map* or onto a tree.
- The number of strokes needed to finish a hole will never be less than (*Par*-2)
- The number of strokes needed to finish a hole will never be more than (*Par*+2)
- All holes will be completable.

Output Description

For each data set, there will be exactly one line of output indicating the best (lowest) possible score for the hole using the English text representation. The relationship between the number of strokes and *Par* gives the numerical score for the hole, which relates to the English text version of the score according to the following table:

Numerical Score (# Strokes minus Par)	**English Score**
2	"Double Bogey"
1	"Bogey"
0	"Par"
-1	"Birdie"
-2	"Eagle"

Do not print the quotes!

Sample Input

```
3 3 3
TTT
TOT
T*T
5 5 3
TTTTT
TTT.O
TTTTT
TTTTT
*TT.T
11 11 4
*TTTTTTTTT
TTTTTOTTTTT
TTTTT.TTTTT
TTTTT.TTTTT
TTTTT.TTTTT
TTTTT.TTTTT
TTTTTTTTTTT
TTTTTTTTTTT
TTTTTTTTTTT
TTTTTTTTTTT
...........
```

Sample Output

```
Eagle
Par
Bogey
```