Leaves and bees   P27309_en

It is spring! The vegetable garden of our friend Pau Gargallo is full of flowers. However, and for reasons difficult to explain (and that they don't mind) we are more interested in the leaves. Pau only let us to cut plants with flower, and he charges us F cents of euro for each flowered plant that we cut; moreover, we know that we can obtain L cents of euro for each leaf that we sell in the black market of collectors of leaves. ¿Would you know to tell us which is the maximal profit that we can obtain, and how many plants we should cut to reach it? In case that there were many different ways to reach the same profit, our lazy nature drives us to accept only as correct answer the one which requires to cut the minimal number of plants.

A small detail: some flowers have bees! Under any circumstances we dare to cut plants which flower has at least a bee.

Input

An input contains only a garden. The first line of the garden contains the numbers $0 \leq F \leq 1000$, $0 \leq L \leq 1000$ and $3 \leq m \leq 1000$, that are, respectively, the cost of cutting a plant, the profit that we obtain per leaf, and the length of the garden. The description of a garden of length m takes up m lines. (look the instances of the input to undestand better the explanation).

- Each row of the garden can contain a plant.

- The character – indicates the stem of the plant.

- The character b indicates a leaf that belongs to the stem placed immediately below.

- The character P indicates a leaf that belongs to the stem placed immediately above.

- A square 3 by 3 formed by characters x or B, and placed at the end of a stem (the stem ends in the middle of the wall on the left of the square), indicates that the plant is flowered. The characters B represent pieces of flower taken up by bees.

  Any plant has a stem of length greater than 80.

The plants placed in the first and the last position of the garden never will have flowers. The characters of two different plants will never superimpose.

Output

Your program must print two lines, each one of them ended in a return of line. In the first line it must print the maximal profit that can be obtained from the garden in euro cents, and in the second line the minimal number of necessary cuts to reach it.

Scoring

- **TestA:**   35 Points

  Test cases where between each pair of stems there is, at least, a space without plant, as in the instance 1 or the instance 2.

- **TestA:**   65 Points

  Test cases without the previous limitation.

Sample input 1

```
0 1 11
         b b  xxx
-------------xxx
  P P P bP P  xxx
------------
   PPbb        bb xxx
-----------------xxx
 b xxx         PP xxx
---xxx
   xxBb xxx
-------xxx
     PPP xxx
```

Sample output 1

```
17
3
```

Sample input 2

```
4 2 12
         bxxx
---------xxx
         Pxxx
         bxxx
---------xBx
         Pxxx
    b b   xxx
---------xxx
    P P   xxx
    b b   xxx
---------xBx
    P P   xxx
```

Sample output 2

```
4
1
```

Sample input 3

```
13 3 26
---------------
-bPbxxx   PPPP
----xxx
-bP xxx
---
-PP  bbb xxx
---------xxx
-----PPPPxxx b xxx
---------------xxx
-----  PPP P P xxxbbbbb
----------------------
---------xxx  P P P  PP
---------xxx
- PbPbPbPxxxbb
------------- bxxx
----------------xxx
---PbPxxxP P PPPxxx
------xxx
- bPb xxx bbxxx
------------xxx
- bbb  PPP  xxx
-----
--b P
```

```
----------
--    bbPPbbbbbb
--------------------
```

Sample output 3

```
32
```

Problem information

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