Farmer John wants to build a new farm on a large field. The field is represented as a grid of size $R \times C$. Each cell in the field can be used to produce a type of food: either grains (`G`) or livestock (`L`). Below is an example of a field of size $R = 5$, $C = 8$:

```
  12345678
1 GLGGLGLG
2 GGLGGLGL
3 GGLLLGGG
4 LLGLLGLG
5 LGGGLGLL
```

Farmer John already have a set of design blueprints of the farm he wants to build. Each blueprint is represented as a grid of size $H \times W$, where $H \leq R$ and $W \leq C$. Each cell in the blueprint denotes the type of food John wants to produce: either grains (`G`) or livestock (`L`). For example, a blueprint of size $H = 2$, $W = 3$:

```
  123
1 GLL
2 LGG
```

Using this blueprint, Farmer John can build the actual farm on a certain position in the field. The farm position is represented by the position of its top-left corner. Suppose the farm is built at position (r, c) in the field. The farm must entirely built inside the field (i.e., $r + H - 1 \leq R$ and $c + W - 1 \leq C$). If the type of food in the cell of the field at position $(r + i, c + j)$ matches the type of food in the cell of the blueprint at position $(i + 1, j + 1)$ where $0 \leq i < H$, $0 \leq j < W$, then the food can be produced. Farmer John wants to pick the farm position in the field such that the farm produces the most number of foods (grains + livestock). If there are more than one possible position, he prefers the top-most position and if there are still more than one possible position, he prefers the left-most position. From the given field and blueprint examples above, the best position is to build the farm at position (1, 3), which is the position of the top-left corner of the farm in the field. As shown underlined:

```
  12345678
1 GLGGLGLG
2 GGLGGLGL
3 GGLLLGGG
4 LLGLLGLG
5 LGGGLGLL
```

By building the farm at position (1, 3) in the field, Farmer John can produce 5 foods: 3 grains and 2 livestock. That is, for the first row of the blueprint, 1 grain and 1 livestock can be produced and for the second row of the blueprint, 1 livestock and 2 grains can be produced. Note that building the farm at position (2, 5) and (3, 2) also produce the same number of foods, however Farmer Johns prefer the top-most and then the left-most position. Placing the farm at any other position in the field will produce less than 5 foods.

Input

There is only one field in the input. The first line contains two integers R and C where $0 < R, C \leq 500$, followed by R lines each contains C characters describing the field. The next line contains an integer B where $0 < B \leq 5$, which denotes the number of blueprints Farmer John has, followed by B blueprints specifications. Each blueprint starts with a line containing two integers H and W where $0 < H \leq R$ and $0 < W \leq C$, followed by H lines each contains W characters describing the blueprint.

Output

For each case, output '`Case #`X`:` Y' (without quotes) in a line where X is the case number, starting from 1, followed by a single space, and Y is the four integers output separated by a space between them. The first two integers denote the best position to build the farm. The next two integers are the number of grains and livestock that can be produced.

Sample Input

```
5 8
GLGGLGLG
GGLGGLGL
GGLLLGGG
LLGLLGLG
LGGGLGLL
3
2 3
GLL
LGG
3 1
L
G
G
1 4
GGLL
```

Sample Output

```
Case #1: 1 3 3 2
Case #2: 1 2 2 1
Case #3: 3 1 2 2
```