
Adding subrectangles

P88567_en

Concurso on-line 13 (OIE09) (2009)

Given a grid with uppercase letters, compute the sum of the values of the letters in each rectangle with a corner in the upper-left extreme. The values of the letters are 'A' = 1, 'B' = 1 + 2 = 3, 'C' = 1 + 2 + 3 = 6, 'D' = 1 + 2 + 3 + 4 = 10, etcetera, up to 'Z' = 351.

Input

Input consists of $0 < r \leq 500$ lines, all of them with the same number of uppercase letters $0 < c \leq 500$.

Output

Print r lines with c numbers each. The j -th number of the i -th row must be the sum of the values of the letters of the rectangle whose corners are the first letter of the input, and the j -th letter of the i -th row.

Hint

Consider using the inclusion-exclusion principle.

Sample input 1

```
ZA
AZ
```

Sample output 1

```
351 352
352 704
```

Sample input 2

```
ABCD
EFGH
IJKL
```

Sample output 2

```
1 4 10 20
16 40 74 120
61 140 240 364
```

Problem information

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Generation : 2013-09-02 15:03:17

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