Prof. Dr. Friedrich, Dr. Lenzner, Boockmeyer, Neumann, Stangl
Sommersemester 2017

Woche 09 – (Adv.) Competitive Programming

Abgabe 19.06.2017 17:00 Uhr, über das Judge-Interface

Aufgabe 1 (Texture atlas). (100 Points – 1 second timelimit)

In your free time, you are developing a video game. Part of your game are a lot of textures, which you pack into several texture atlases. For that you are using a program that generally does a good job, but fails do find a good packing if you include a specific texture.

Frustrated, you decide to tackle the problem yourself. The texture in question is of a pyramid shape, like this (just a lot larger):
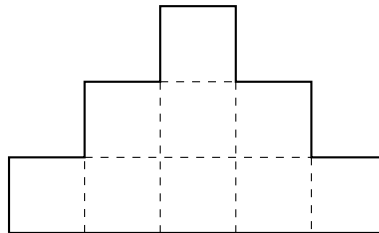
You want to fit it into the existing texture atlases, and are ok with scaling it down, but only uniformly. The problem you have is finding the largest free area in the atlases that could hold the texture. To avoid further quality losses, you only want to rotate the texture in 90 degree increments.

Input   The first line contains a ($0 \leq a \leq 20$), the number of texture atlases. Each atlas starts with a line containing w and h ($0 < w, h \leq 1300$), the width and height of the texture atlas. The following h lines contain w characters each. Each character represents a pixel in the atlas, and is either 'f', if the pixel is still free, or 'u', if it is already used.

Output   For each atlas, print the maximum number of pixels that you could store the texture at in this atlas.

Points There are three groups of test sets:

- *easy:* The first group of operations worth 20 points, you can assume that $w, h \leq 100$.

- *medium:* For the second group worth 30 Points, you can assume that $w, h \leq 800$.

- *hard:* For the third group worth 50 Points, there are also no additional assumptions.

Sample Input	Sample Output
1	4

```
1
3 5
fuf
ffu
ffu
ffu
fff
```

```
4
```