

Problem J

C.S.I.: P15

You have been cast as the computer genius hero-of-the-day for the season finale of the show C.S.I.: P15 (coming this fall). Somewhat unsurprisingly, there is that camera feed that needs to be analyzed. The camera in question is recording pictures in HD-9000 quality with extra regression and the stream is then internally matched by a re-inverted isomorphic bit coefficient matrix, then plasma shifted five times for good measure. You then view the feed through Netscape Navigator 4 Platinum Edition. (Note that “internally” is just fancy talk for “inside the camera”.)



Unfortunately, a saboteur turned on ASCII mode on the camera and set the camera in picture burst mode. So now all you have is a bunch of still ASCII images. And now, for reasons that will be revealed later in the show, you are to design and implement a deterministic algorithm for counting the number of flowers and birds in a given still image. The pictures always include the ground, which will show up as a contiguous row of '=' characters. The ground will always be the bottom-most row of “ASCII pixels”. There will never be anything else on that row (though, on one of the pictures taken before the sabotage there is a stray electron that someone will accidentally find by zooming in too far, but that is for a later episode).

Air is marked in the feed as a '.' (a dot). The ground is the last line of the feed, and it looks like this: '====='. A flower is defined as any 8-connected component (meaning ...) which consists of characters from the set {'|', '/', '\', '-', '@'}, and which is also connected to the ground. A bird is an occurrence of '/\/', surrounded exclusively by air, or by the edges of the image. So if you see something that looks like a bird on the ground, it is a flower (possibly an ex-parrot, but that is also a flower for our purposes).

Input specifications

The first line of the input consists of a single integer T , the number of test cases. Each of the following T cases then begins with a line of two integers separated by a space, the height H and width W , and ends with H lines describing the picture. Each line of the picture has exactly W characters. All lines but the last consist of only the following characters: {'.', '|', '/', '\', '-', '@'}. The last line consists of '=' characters only.

Output specifications

For each test case, output two lines. If the number of flowers is F and the number of birds is B , the output should read

Flowers: F
Birds: B

Notes and Constraints

- $0 < T \leq 100$
- $0 < W \leq 30$
- $0 < H \leq 30$

Sample input

```
1
12 28
.....
.....
\@/.../\ /\ ..... /\ /\ .....
.|.....
.|... \@/ ..... /\ /\ .....
.|.....|.
.|.....|.
.|.....|. \@/ ..... \@/ .....
.|.....|. \... /... | | - | ..
.|.....|. \... /... | | | ..
.|.....|. \... /... | | | ..
=====
```

Output for sample input

```
Flowers: 5
Birds: 2
```