

Gator Happiness

The American alligator is a large aquatic reptile and is one of two crocodilians native to Florida. Alligators can be distinguished from the American crocodile by head shape and color. Alligators have a broad, rounded snout with no lower teeth visible when their jaw is closed. Like all animals, alligators enjoy relaxing from time to time. Their favorite place to take a break and relax is a body of water. When an alligator is cooling down in a lake, the happiness of the alligator is increasing, so the bigger the lake, the more happiness for the alligator. Another factor that comes into the value of a lake for an alligator is the animals they prey upon: Alligators love to have an accessible meal right on the shores of a lake, so animals count as bonus points for the value of a lake. There are three kinds of animals: boars, wild pigs, and deer. For each unique type of animal, the happiness value of the lake increases. Should an animal appear between two or more separate lakes, the animal counts for the happiness value of all the lakes. Happiness formula is defined as following:

Happiness formula for a lake: (number of lake cells) * (1 + unique number of animals)

Two different cells are considered adjacent horizontally, vertically, or diagonally.

Your task is to write a program which computes the total happiness value of a habitat, which may or may not contain multiple lakes. The total happiness value of a habitat is the sum of the happiness value of all lakes within the habitat.

Input

The input begins with a single positive integer $1 \leq T \leq 10$ on a line by itself indicating the number of the habitats following, each of them as described below. Following this is blank line and then each habitat begins with a line containing $1 \leq M \leq 50$ and $1 \leq N \leq 100$, the number of rows and columns in the habitat, separated by a single space. Following this are M lines of N characters each (not counting the end-of-line characters). Each character corresponds to one cell, and is 'W', 'L', 'B', 'P', or 'D', representing water, land, boar, wild pig, or deer respectively. Habitats are separated by a blank line.

Output

For each habitat, output the happiness value of all the lakes contained within the habitat. Two different cells are considered adjacent horizontally, vertically, or diagonally.

Sample Input

Sample Output

| | |
|------------|----|
| 2 | 30 |
| 5 10 | 21 |
| LLLLLLLLLL | |
| LLBBBLLLLL | |
| LWWWWLWLLL | |
| LLWWWWLWLL | |
| LLLLLDLLLL | |
| 5 10 | |
| LLLLLLLLLL | |
| LWWLLWLLWL | |
| LWLLLLLWLL | |
| LLWWLWLLLL | |
| LLLPWLLLLL | |