

Chipmunks with Brain

There is a Chipmunk with "**Brain**" and he want to dig holes in a yard to store his food. There is a rectangular yard which is divided into unit cells, initially having some holes(**H**) and sand(**S**). The chipmunk can dig one row at a time, But he have to dig all the sand(**S**) positions simultaneously and due to this holes(**H**) which are already there got filled with sand.

Example:

Suppose a Row is "**SHSHH**" then after digging the row becomes "**HSHSS**" i.e all "**S**" replace with "**H**" and vice versa.

Now Chipmunk wants to have a **large square of holes** somewhere in the yard. The sides of square must be parallel to the sides of the yard. Find a sequence of turns that produces the largest possible square of holes somewhere in the yard and help him to find the area of that square.

Input

Given two interger Rows(**R**) and column(**C**) ($1 \leq R, C \leq 30$)
Next line contain a **RxC** rectangular yard of sand (**S**) and hole (**H**).

Output

Print largest "Area of the Square" that can be obtain after sequence of turns.

Example

Input:

2 2
SS
HH

Output:

4

Input:

5 1
H
S
H
H
H

Output:

1