## Crossroads

Our favorite super-spy action hero Sam is back from his mission in the previous exam, and he has finally found some time to go on a **holiday**. He is taking his wife somewhere nice and they're going to have a really good time, but first, they have to get there. Even on his holiday trip, Sam is still going to run into some **problems** and the first one is, of course, getting to the airport. Right now, he is stuck in a traffic jam at a **very** **active** **crossroads** where a lot of **accidents** happen.

Your job is to keep track of traffic at the crossroads and report whether a **crash happened** or everyone **passed** the **crossroads** **safely** and our hero is one step closer to a much desired vacation.

The road Sam is on has a **single** **lane** where cars queue up until the **light** **goes** **green**. When it does, they start passing one by one during the **green** **light** and the **free window** before the **intersecting** **road's** **light** goes **green**. During **one** **second** only **one** **part** of a **car** (a **single** **character**) passes the crossroads. If a car is still in the crossroads when the **free** **window** ends, it will get hit at the **first character** that is still in the crossroads.

### Input

* On the **first line**, you will receive the duration of the **green** **light** in seconds – an **integer** **in the range [1-100]**
* On the **second line**, you will receive the duration of the **free** **window** in seconds – an **integer** **in the range [0-100]**
* On the **following lines**, until you receive the "**END**" command, you will receive one of two things:
  + A **car** – a **string** containing the model of the car, or
  + The command "**green**" which indicates the **start** of a **green** **light** **cycle**

A **green** **light** **cycle** goes as follows:

* During the **green** **light** cars will enter and exit the crossroads one by one
* During the **free window** cars will only exit the crossroads

### Output

* If a **crash** **happens**, **end the program** and print:  
  "A crash happened!"  
  "{car} was hit at {character\_hit}."
* If everything **goes** **smoothly** and you receive an "**END**" command, print:  
  "Everyone is safe."  
  **"**{total\_cars\_passed} total cars passed the crossroads.**"**

### Constraints

* The input will be **within the constaints** specified above and will **always be valid**. There is **no need** to check it explicitly.

### Examples

|  |  |  |
| --- | --- | --- |
| **Input** | **Output** | **Comments** |
| 10  5  Mercedes  green  Mercedes  BMW  Skoda  green  END | Everyone is safe.  3 total cars passed the crossroads. | During the first green light (10 seconds), the Mercedes (8) passes safely.  During the second green light, the Mercedes (8) passes safely and there are 2 seconds left.  The BMW enters the crossroads and when the green light ends, it still has 1 part inside ('W'), but has 5 seconds to leave and passes successfully.  The Skoda never enters the crossroads, so 3 cars passed successfully. |
| 9  3  Mercedes  Hummer  green  Hummer  Mercedes  green  END | A crash happened!  Hummer was hit at e. | Mercedes (8) passes successfully and Hummer (6) enters the crossroads but only the 'H' passes during the green light. There are 3 seconds of free window, so "umm" passes and the Hummer gets hit at 'e' and the program ends with a crash. |