Copyright Notice (`copyright`)

As every respectable web developer, Luca could not properly celebrate last New Year's Eve. The reason is pretty obvious: he had to cope, like every year, with the annoying duty of updating the copyright notice in his website at the stroke of midnight.

Figure 1: Everybody in the world has the same problem: `http://updateyourfooter.com`.

☞ The copyright string has the following format (spaces are highlighted):

`Copyright␣(C)␣YEARS.␣All␣rights␣reserved.`

where `YEARS` is a comma-and-space separated list respecting these rules:

- Each element is either a single four-digit year (e.g., `2016`) or an interval of years (e.g., `2012-2016`).
- Years are listed in chronological order.
- A new year can be added to an already existing interval only when it is in temporal continuity. This means that `2012-2017` can be extended to `2012-2018` and, on the contrary, `2012-2016` must be updated as `2012-2016, 2018`.

In order to make sure that this task will not bother him in the future, Luca has decided to write a small program that does the job for him. Help him by writing a program which given the HTML source of a website updates the copyright for the current (2018) year!

☞ Among the attachments of this task you may find a template file `copyright.*` with a sample incomplete implementation.

Input

The first line contains the only integer N, the number of characters of the HTML source. The rest of the input consists in exactly N characters which represent the HTML source of the web page.

Output

The first line contains the number of characters of the HTML file *after* updating the copyright. In the following lines, you need to write *exactly* the same HTML source received in input with the updated copyright.

Constraints

- $41 \leq N \leq 1\,000\,000$.

- Years in the current copyright notice range from 1900 to 2017.

- There is exactly one copyright notice in the current HTML file and it respects all the aforementioned rules.

- The string S which represents the content of the HTML file is composed only by printable ASCII characters. S may contain "new-line" (\n) characters.

- The string S may not be a valid HTML source.

- The input file always ends with a new-line character, which is *included* in the total of N characters.

Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points)   Examples.

– **Subtask 2** (30 points) S contains only the copyright notice.

– **Subtask 3** (30 points)   The copyright in S was updated in 2017.

– **Subtask 4** (30 points)   The copyright in S was not updated in 2017.

– **Subtask 5** (10 points)   No additional limitations.

Examples

input	output

<pre>180
<html>
  <head>
    <title> My website! </title>
  </head>
  <body>
    I <3 HTML
  </body>
  <footer>
    Copyright (C) 2010, 2012-2017.
      All rights reserved.
  </footer>
</html></pre>
	<pre>180
	<html>
	  <head>
	    <title> My website! </title>
	  </head>
	  <body>
	    I <3 HTML
	  </body>
	  <footer>
	    Copyright (C) 2010, 2012-2018.
	      All rights reserved.
	  </footer>
	</html></pre>

input	output

<pre>164
<html>
  <head>
    <title> My website! </title>
  </head>
  <body>
    Internet seems cool...
    Copyright (C) 1994-1996. All
      rights reserved.
  </body>
</html></pre>
	<pre>170
	<html>
	  <head>
	    <title> My website! </title>
	  </head>
	  <body>
	    Internet seems cool...
	    Copyright (C) 1994-1996, 2018.
	      All rights reserved.
	  </body>
	</html></pre>

Explanation

In the **first sample case** the most recent copyright was specified for the interval of years from 2012 to 2017. Thus, we extend the interval to 2018 and it becomes 2012-2018.

In the **second sample case** the copyright was specified for the interval of years from 1994 to 1996. As 2018 is not consecutive to 1996, it must be added as a separate year.