Problem K
Run-Length Encoding, Run!



Photo by secretlondon123

Forrest lives in a prehistoric era of "dial-up Internet." Unlike the fast streaming of today's broadband era, dial-up connections are only capable of transmitting small amounts of text data at reasonable speeds. Forrest has noticed that his communications typically include repeated characters, and has designed a simple compression scheme based on repeated information. Text data is encoded for transmission, possibly resulting in a much shorter data string, and decoded after transmission to reveal the original data.

The compression scheme is rather simple. When encoding a text string, repeated consecutive characters are replaced by a single instance of that character and the number of occurrences of that character (the character's *run length*). Decoding the encoded string results in the original string by repeating each character the number of times encoded by the run length. Forrest calls this encoding scheme *run-length encoding*. (We don't think he was actually the first person to invent it, but we haven't mentioned that to him.)

For example, the string `HHHeelllo` is encoded as `H3e2l3o1`. Decoding `H3e2l3o1` results in the original string. Forrest has hired you to write an implementation for his run-length encoding algorithm.

Input

Input consists of a single line of text. The line starts with a single letter: `E` for encode or `D` for decode. This letter is followed by a single space and then a message. The message consists of 1 to 100 characters.

Each string to *encode* contains only upper- and lowercase English letters, underscores, periods, and exclamation points. No consecutive sequence of characters exceeds 9 repetitions.

Each string to *decode* has even length. Its characters alternate between the same characters as strings to encode and a single digit between 1 and 9, indicating the run length for the preceding character.

Output

On an input of `E` output the run-length encoding of the provided message. On an input of `D` output the original string corresponding to the given run-length encoding.

Sample Input 1	Sample Output 1
`E HHHeellloWooorrrrlld!!`	`H3e2l3o1W1o3r4l2d1!2`

Sample Input 2	Sample Output 2
`D H3e2l3o1W1o3r4l2d1!2`	`HHHeellloWooorrrrlld!!`

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