Fibonacci’s Revenge

A sequence of strings is generated as follows: the first two strings are given and each successive string is made by joining together the previous two strings (in their original order). For example, if the first string is \texttt{abc} and the second string is \texttt{cde}, the third string will be \texttt{abccde} and the fourth will be \texttt{cdeabccde}.

The task for this question is to determine the \textit{i}^{th} character in the sequence of strings \textit{(not the i}^{th} string). In the previous example the 2^{nd} character is \texttt{b}, the 5^{th} is \texttt{d}, as is the 11^{th}. The 13^{th} character, which happens to be the 1^{st} character of the 4^{th} term, is \texttt{c}.

Write a program that reads in three lines. The first line will contain the first string, of between 1 and 10 characters, using lower case letters. The second line will contain the second string, again between 1 and 10 lower case letters. The third line will be a single integer \textit{i} (1 \leq \textit{i} \leq 2^{30}). You should output the \textit{i}^{th} character in the sequence.

**Sample Input**

```
fibonacci
revenge
1000000
```

**Sample Output**

```
e
```