2011 EARTH

In *The Masked Lady … and the Circuitous Circumnavigation* our eponymous explorer galloped gamely across the globe trying to decode her aunt's perplexing last will and testament. At the end of the fifth chapter, after the tearjerking moment when she arrived at the apparent legacy location too late and saw her dishonourable doppelgänger departing into the distance, it was revealed that the longitude in the will had been concealed by a cunningly crafted code.

It was revealed that her artful aunt had split the equator into n pieces and numbered them from *1* to n in alphabetical order. (As was explained, in the author's customary excruciating detail, numbers had been considered spelt as though their digits were read one at a time.) The knowing kinswoman had then referred to the m^{th} longitude.

For example, the number 90 would be spelt NINEZERO. If n is 100 then the numbers around 90 in alphabetical order are *…, 92, 90, 1, 18, …* and 90 is the 44^{th} number in alphabetical order.

Write a program that determines the correct longitude. The first line of the input will consist of two integers n then m ($1 \le m \le n \le 2^{31}$), indicating the number of pieces into which the equator has been split followed by the required piece. To assist with foreign translations of the book this will be followed by ten lines, giving the spelling for the digits 0, 1, …, 9 in uppercase letters. No digit's spelling will be the prefix of another digit's spelling or be more than 10 characters in length.

You should output a single integer, the m^{th} number from the sequence 1 to n when written in alphabetical order.

SAMPLE INPUT

```
100 44
ZERO
ONE
TWO
THREE
FOUR
FIVE
SIX
SEVEN
EIGHT
NINE
```

SAMPLE OUTPUT

```
90
```