

6962 Lucky Digit

John believes that the digit D is lucky, and looks out for it in numbers everywhere. When he learned how to represent numbers of bases other than 10, he was very excited, because some numbers will be luckier in other bases. He wants your help to determine, for each number he gives you, the luckiest representation in any base from 2 to 10, inclusive.

For example, suppose $D = 7$, and John gives you the number 507 (in base 10). In base 8 this would be written 773 (because $7 \cdot 8^2 + 7 \cdot 8^1 + 3 \cdot 8^0 = 507$), and in base 9 it would be written 623. Since 773 has the most 7s in it, this is considered the luckiest representation. If there is a tie, the representation in the higher base is considered luckier.

Input

The input consists of an arbitrary number of records, but no more than 50. Each record is a line containing two integers (in base 10), N and D , separated by a space. The end of input is marked by a line containing only the value '-1'.

In all test cases, $0 \leq N \leq 1000000$ and $0 \leq D \leq 9$.

Output

For each test case, output a line containing the luckiest representation of N for the lucky digit D .

Sample Input

```
507 7
64 0
123 9
-1
```

Sample Output

```
773
1000000
123
```