Base Conversion

Write a program to convert a whole number specified in any base (2…16) to a whole number in any other base (2…16). *Digits* above 9 are represented by single capital letters: 10 by A, 11 by B, 12 by C, 13 by D, 14 by E and 15 by F.

Input

The input consists of three values:

- a positive integer indicating the base of the number
- a positive integer indicating the base we wish to convert to
- the actual number in the firs base that we wish to convert to the second base (this number will have letters representing any digits higher than 9; **it may have invalid *digits***)

Output

The output should consist of the original number followed by the string "base", followed by the original base number, followed by the string "=" followed by the converted number, followed by the string "base" followed by the new base.

If the original number is invalid, output the statement:

`originalValue` is an illegal base `originalBase` number

where `originalValue` is replace by the value to be converted and `originalBase` is replaced by the original base value.

Example 1

```
Input:
2 10 10101
Output:
10101 base 2 = 21 base 10
```

Example 2

```
Input:
5 3 126
Output:
126 is an illegal base 5 number
```

Example 3

```
Input:
15 11 A4C
Output:
A4C base 15 = 1821 base 11
```