Bloomberg
CODECON

Memory Limit: 256 MB
Time Limit: 2 s

Base Arithmetic (250 points)

Introduction

A base-n number is a number that is made up of at most n symbols -

- Base-2 is a number with 0s and 1
- Base-10 is a number with digits in {0,1,2,3,4,5,6,7,8,9}
- Base-16 is a number with digits 0-9,A-F etc

For this problem, you are required to do the following:

- Given a number X (X will be a number in a base between base-2 and base-16), find the minimum base that can be associated with X.
  Example: The minimum base associated 385 is base-9 (as it needs to have a base that supports the digit 8 which is its highest value digit). Similarly, the minimum base associated with B95 is base-12.
- Convert X from this base to a value X_10 in base-10.
- Do the same for another number Y and call its value in base-10 as Y_10
- Print out the sum of these two numbers in base-10, ie X_10 + Y_10

Input Specifications

Your program will take

- A number X in base-m (X >= 0, $2 \leq m \leq 16$)
- A number Y in base-n (Y >= 0, $2 \leq n \leq 16$)

You can assume that X and Y when converted to base-10 will fit in a long long (C++).

Output Specifications

Based on the input, print out the sum of X_10 and Y_10

Sample Input/Output

Input

```
B95
101101
```

Output

```
1742
```

Explanation

B95 is in base-12. In base-10, its value is 1697. 101101 is in base-2. In base-10, its value is 45. 45 + 1697 = 1742