Simple Numbers Conversion

Every integer number n is represented in positional number system of base r by a sequence of digits $0 \le d_i < r$, so the value is equal to:

$n = d0 + r * d1 + r^2 * d2 + r^3 * d3 + ...$

Your task is to convert a given number in r-base represantation into s-base representation, for example: decimal 231 into binary 11100111. Assume that $r \le 36$ and the digits are 0,1,2,3,4,5,6,7,8,9, *A*, *B*, *C*, *D*, *E*, *F*, *G*, *H*, *I*, *J*, *K*, *L*, *M*, *N*, *O*, *P*, *Q*, *R*, *S*, *T*, *U*, *V*, *W*, *X*, *Y*, *Z*.

Input

N [the number of series ≤ 1000]
n r s [$n \le 10^{1000}$, $r,s \le 36$]

Output

n [s-base representation of number n]

Text grouped in [ ] does not appear in the input and output file.

Example

Input:
3
231 10 2
ABC 15 10
XYZ 36 2

Output:
11100111
2427
1010101111111011

Test cases

There are five categories of the input data:

- Test case 1: (1 pt), $r = 2$ and $s = 10$, or conversely, $n \le 10^9$, $N = 100$,
- Test case 2: (1 pt), $2 \le r,s \le 10$, $n \le 10^9$, $N = 1000$,
- Test case 3: (1 pt), $2 \le r,s \le 36$, $n \le 10^9$, $N = 1000$,
- Test case 4: (3 pts), $2 \le r,s \le 10$, $n \le 10^{1000}$, $N = 1000$,
- Test case 5: (4 pts), $2 \le r,s \le 36$, $n \le 10^{1000}$, $N = 1000$.