

8289 Sum Squared Digits Function

The *Sum Squared Digits* function, $SSD(b, n)$ of a positive integer n , in base b is defined by representing n in base b as in:

$$n = a_0 + a_1 * b + a_2 * b^2 + \dots$$

then:

$$SSD(b, n) = a_0^2 + a_1^2 + a_2^2 + \dots$$

is the sum of squares of the digits of the representation.

Write a program to compute the *Sum Squared Digits* function of an input positive number.

Input

The first line of input contains a single decimal integer P , ($1 \leq P \leq 10000$), which is the number of data sets that follow. Each data set should be processed identically and independently.

Each data set consists of a single line of input. It contains the data set number, K , followed by the base, b ($3 \leq b \leq 16$) as a decimal integer, followed by the positive integer, n (as a decimal integer) for which the *Sum Squared Digits* function is to be computed with respect to the base b . n will fit in a 32 bit unsigned integer.

Output

For each data set there is a single line of output.

The single line of output consists of the data set number, K , followed by a single space followed by the value of $SSD(b, n)$ as a decimal integer.

Sample Input

```
3
1 10 1234
2 3 98765
3 16 987654321
```

Sample Output

```
1 30
2 19
3 696
```