A: Binary is the Best!

We all know that computers think in binary--if only people could also! In fact, in Star Trek Next Generation, the *Binars* were an alien race that once took over the Enterprise by talking to each other in binary. On Earth, the binary system of the I Ching, a text for divination, is based on the duality of yin and yang, reportedly invented by ancient King and philosopher named Fuxi. Of course, other number bases are important too. Haven't we all counted in base 5 recently? So, we need a program that converts binary to other number bases (between 3 and 10). We will assume that all the binary numbers are unsigned.

Input

The first line of input is an integer (1 <= T <= 30) indicating the number of test cases to follow. Each test case consists of an integer base (between 3 and 10), followed by a binary number between 1 and 31 digits long.

Output

For each input test case, your program must output the converted number, printed in the specified base numbering system.

Sample Input

```
4
10 101011
8  101011
4  101011
7  1110001
```

Sample Output

```
43
53
223
221
```