CCC '12 J4 - Big Bang Secrets

Canadian Computing Competition: 2012 Stage 1, Junior #4

Sheldon and Leonard are physicists who are fixated on the BIG BANG theory. In order to exchange secret insights they have devised a code that encodes UPPERCASE words by shifting their letters forward.

Shifting a letter by S positions means to go forward S letters in the alphabet. For example, shifting `B` by $S = 3$ positions gives `E`. However, sometimes this makes us go past `Z`, the last letter of the alphabet. Whenever this happens we wrap around, treating `A` as the letter that follows `Z`. For example, shifting `Z` by $S = 2$ positions gives `B`.

Sheldon and Leonard's code depends on a parameter K and also varies depending on the position of each letter in the word. For the letter at position P, they use the shift value of $S = 3P + K$.

For example, here is how `ZOOM` is encoded when $K = 3$. The first letter `Z` has a shift value of $S = 3 \times 1 + 3 = 6$; it wraps around and becomes the letter `F`. The second letter, `O`, has $S = 3 \times 2 + 3 = 9$ and becomes `X`. The last two letters become `A` and `B`. So Sheldon sends Leonard the secret message: `FXAB`

Write a program for Leonard that will **decode** messages sent by Sheldon.

Input Specification

The input will be two lines. The first line will contain the positive integer K ($K < 10$), which is used to compute the shift value. The second line of input will be the word, which will be a sequence of uppercase characters of length at most 20.

Output Specification

The output will be the decoded word of uppercase letters.

Sample Input 1

```
3
FXAB
```

Output for Sample Input 1

```
ZOOM
```

Sample Input 2

```
5
JTUSUKG
```

Output for Sample Input 2

```
BIGBANG
```