

Nacci Fear

We all know about the classical fibonaaci series, Fibonacci series is $F(n)=F(n-1)+F(n-2)$. For this question we call it a 2-Nacci series as a new element is calculated as the sum of the last 2 terms of the series. For fibonaaci we assume $F(0)=0$ and $F(1)=1$. We define as new series N-Nacci where $F(n)$ is the sum of the last n terms and here we assume that $F(0)=0$, $F(1)=1$, $F(2)=2$... $F(n-1)=(n-1)$. Your task is to calculate the last K digits of the L th term of the N-Nacci series(no leading zeros needed).

Constraints

$$2 \leq N \leq 30$$

$$K \leq 8$$

$$L \leq 1000000000$$

Input

The first line of the input denotes the number of test cases t (atmost 10). Each line denotes a test case consisting of N, K, L .

Output

For each test case print the last K digits of the L th term of the N-Nacci series.

Example

Input:

```
4
2 1 5
3 6 12
4 1 10
4 2 10
```

Output:

```
5
778
6
16
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