# G - Accumulation of Wealth

Editorial (/contests/abc409/tasks/abc409_g/editorial)

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Time Limit: 2 sec / Memory Limit: 1024 MiB

Score : $625$ points

## Problem Statement

You are given an integer $N \geq 2$ and an integer $P$ between $0$ and $100$, inclusive. Let $p = P/100$.

There is a sequence $A$. Initially, the length of $A$ is $1$, and its only element is $1$.

The following operation is repeated $N-1$ times on sequence $A$:

- Let $m$ be the smallest positive integer that does not appear in $A$. With probability $p$, perform operation $1$; with probability $1-p$, perform operation $2$:
  - Operation $1$: Append $m$ to the end of $A$.
  - Operation $2$: Let $c_1, c_2, \ldots, c_{m-1}$ be the number of times $1, 2, \ldots, m-1$ appear in $A$, respectively. Choose an integer $k$ between $1$ and $m-1$, inclusive, with probability proportional to $c_k$. That is, choose $k$ with probability $c_k / \sum_{j=1}^{m-1} c_j$. Then, append $k$ to the end of $A$.

For each $k = 1, 2, \ldots, N$, find the expected number of occurrences of $k$ in $A$ after $N-1$ operations, modulo $998244353$.

▶ Definition of expected value modulo $998244353$

## Constraints

- $2 \leq N \leq 10^5$
- $0 \leq P \leq 100$
- All input values are integers.

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## Input

The input is given from Standard Input in the following format:

```
N P
```

## Output

Output $N$ lines. The $k$-th $(1 \leq k \leq N)$ line should contain the expected number of occurrences of $k$ in $A$ after the operations, modulo $998244353$.

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## Sample Input 1 Copy

```
3 50
```

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## Sample Output 1 Copy

```
124780546
124780545
748683265
```

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The operations proceed as follows:

- Initially, $A = (1)$.
- 1st operation: It becomes $A = (1, 2)$ with probability $1/2$, and $A = (1, 1)$ with probability $1/2$.
- 2nd operation:
  - If $A = (1, 2)$, it becomes $A = (1, 2, 3)$ with probability $1/2$, $A = (1, 2, 1)$ with probability $1/4$, and $A = (1, 2, 2)$ with probability $1/4$.
  - If $A = (1, 1)$, it becomes $A = (1, 1, 2)$ with probability $1/2$, and $A = (1, 1, 1)$ with probability $1/2$.

The expected numbers of occurrences of $1, 2, 3$ in the final $A$ are $\frac{15}{8}$, $\frac{7}{8}$, $\frac{1}{4}$, respectively.

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## Sample Input 2 Copy

```
2 0
```

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## Sample Output 2 Copy

```
2
0
```

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## Sample Input 3 Copy

```
5 24
```

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## Sample Output 3 Copy

```
297734288
442981554
937492320
798158491
518366411
```

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'#telegram)

url=https%3A%2F%2Fatcoder.jp%2Fcontests%2Fabc409%2Ftasks%2Fabc409_g%3Flang%3Den&title=G%20-
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