DMOPC '21 Contest 9 P6 - Shortest Paths

Time limit: 2.5s **Memory limit:** 256M

Let the value of a connected undirected graph be the length of the shortest path from 1 to N. Compute the sum of the values of all connected simple graphs with N vertices and M edges of length 1 for each $M \in [N-1, R]$. Since the answers may be very large, output them modulo the prime P.

Constraints

$2 \leq N \leq 60$

$N-1 \leq R \leq \frac{N(N-1)}{2}$

$10^8 \leq P \leq 10^9$

P is prime.

Subtask 1 [30%]

$N, R \leq 15$

Subtask 2 [20%]

$N, R \leq 35$

Subtask 3 [30%]

$N \leq 35$

Subtask 4 [20%]

No additional constraints.

Input Specification

The first and only line contains 3 integers N, R, and P.

Output Specification

On a single line, output the desired values modulo P.

Sample Input 1

```
3 3 100000007
```

Sample Output 1

```
4 1
```

Explanation for Sample 1

There are three graphs with 3 nodes and 2 edges. One has a value of 2, and two have a value of 1. There is one graph with 3 nodes and 3 edges, and it has a value of 1.

Sample Input 2

```
4 6 100000007
```

Sample Output 2

```
26 20 7 1
```