Problem Link:

<https://leetcode.com/problems/ways-to-express-an-integer-as-sum-of-powers/?envType=daily-question&envId=2025-08-12>

Solution:

class Solution {

public:

const int MOD = 1e9 + 7;

int dp[305][305];

int power(int base, int exp) {

int p = 1;

while(exp > 0)

{

p \*= base;

exp--;

}

return p;

}

int countWays(int n, int x, int curr) {

if(n == 0)

return 1;

if(n < 0 || power(curr, x) > n)

return 0;

if(dp[curr][n] != -1)

return dp[curr][n];

int t = countWays(n - power(curr, x), x, curr + 1);

int s = countWays(n, x, curr + 1);

return dp[curr][n] = (t + s) % MOD;

}

int numberOfWays(int n, int x) {

memset(dp, -1, sizeof(dp));

return countWays(n, x, 1);

}

};