Sum of Tetranacci numbers (easy)

The sequence of Tetranacci numbers is defined as follows:
$a_n = a_{n-1} + a_{n-2} + a_{n-3} + a_{n-4}$ with $a_0 = a_1 = a_2 = 0$ and $a_3 = 1$.

Input

Input starts with a positive integer $t \leq 4000$, then t lines follow. Each of the t lines contains two space separated integers m and n with $0 \leq m \leq n \leq 10^9$.

Output

Calculate $a_m + a_{m+1} + ... + a_n$ and print the result modulo 1000000007.

Example

Input:
2
1 2
1919 5393

Output:
0
66616

Note: If your solution is fast enough, you may try the classical version.