

Extragalaxigal Numbers

Sharaf was surprised while learning about factorials that $61!$ is already bigger than the numbers of atoms in the universe!

So he decided to take this idea to the extreme and calculate $f(n, k)$:

$$f(n, k) = \begin{cases} n! & \text{if } k = 1 \\ \prod_{i=1}^n f(i, k-1) & \text{if } k \geq 2 \end{cases}$$

His friend thought that this number could be much bigger, so he asked you to calculate q queries of the form $n_1 \ k_1 \ n_2 \ k_2$

the answer to each query should be

$$\prod_{j=n_1}^{n_2} \prod_{i=k_1}^{k_2} f(j, i)$$

print the answer mod $10^9 + 7$

$$1 \leq n, k \leq 1000$$

$$1 \leq q \leq 2 \times 10^5$$