Problem G : Jackson House

Jackson, after witnessing the advancements in the world of technology, decided to sell his small cozy house and enroll in the programming-and-algorithm micromaster. He came across an interesting algorithm that he needed to analyze and solve the problem related to it, in order to pass the exam at this stage of the course. The pseudocode of this algorithm is as follows:

```
input: a permutation π = ⟨π_1, π_2, ..., π_n⟩ of numbers {1, 2, ..., n}
while π is changing during this iteration:
    for i := n downto 2:
        if π_i < π_⌊i/2⌋:
            swap(π_i, π_⌊i/2⌋)
```

He wants to know for how many permutations π of length n from the possible $n!$ ones, the final permutation will be sorted after running this algorithm.

Input

The first line contains an integer t ($1 \leqslant t \leqslant 100$), the number of test cases.

Each of the next t lines contains an integer n_i ($2 \leqslant n_i \leqslant 10^9$), representing the length of the permutation for the i^{th} test case.

Output

Output t lines. On the i^{th} line, print the number of permutations of length n_i which will be sorted after running the provided algorithm on it. Since the output could be very large, output the result modulo $10^9 + 7$.

Example

Standard Input	Standard Output
4 3 5 10 20	4 16 1728 23887872