Problem F - Fearsome Travelling Gang

Jonathan has decided to return to his homeland of PokeCountry. After Jonathan's last escapades bankrupted the local government, the cities of PokeCountry have simplified the amount of Bulbasaurs they breed (see problem B for unnecessary backstory). Due to the city's successful Bulbasaur training program, all of the evil Bulbasaurs of problem B are now nice. There are n cities in PokeCountry, labelled from 1 to n. Each city i decides to place i Bulbasaurs on every road connected to it. As you may know, Bulbasaurs are very kind to travellers, so kind that each Bulbasaur hands out one gold coin to a traveller who walks down the road.

Jonathan was alerted of this change, so in order to exploit the country's generosity again, he brought a gang of travelers with him. $2^n - 2$ others to be exact. They decided that each traveller (including Jonathan) is going to be responsible for visiting a different non-empty subset X of cities. In order to not bankrupt PokeCountry again, Jonathan decided that each traveller would visit all the cities in X (in some order) to minimize the amount of gold coins they receive. If only 1 city is visited, then no gold coins are received. How much money does Jonathan's Travelling Gang earn in total? This result could be quite large, so output your answer modulo 1000000007.

Input

The first line will contain an integer T, denoting the number of test cases. Each of the following T lines has an integer n ($2 \leq n \leq 100,000$), denoting the number of cities in PokeCountry.

Output

For each test case, output how many gold coins all the travellers receive in total.

Sample Input

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2
3
10
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Sample Output

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19
39867
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