C – Central Post Office

One of the post services companies in a country plans to designate one of its branches as the central office. The company has a branch in each and every city in the country. The cities are so connected by roads that to go from any city to another, there is a unique sequence of roads to take. The central office is in charge of dispatching parcels to all other branches. For this purpose, a car is used that starting from the central office goes through all cities to the last one delivering their parcels. As time is always a top priority in post services, the company's administration wants a designation which minimizes dispatching times. If the car travels the distance between any two adjacent cities in one hour, calculate the minimum total dispatching time T_m, considering the optimal designation.

Input

The first line of input contains an integer $T \leq 100$ denoting the number of test-cases. Each test-case begins with an integer $1 \leq N \leq 10{,}000$ denoting the number of cities (numbered from 1 to N) of the country, on a separate line. The i^{th} line of the following N lines starts with the number M_i of the cities adjacent to the i^{th} city followed by M_i integers, the neighboring city indexes.

Output

For each test-case, output on a single line the minimum dispatching time T_m.

Sample Input	Sample Output
2 2 1 2 1 1 5 3 2 3 4 1 1 2 1 5 1 1 1 3	1 5