Problem I
Metro and Buses

Time Limit: 3 Seconds
Memory Limit: 512 megabytes

Ho Chi Minh city has built a metro system. The metro system consists of n stations and m bi-directional lines. The i^{th} line connects the stations a_i and b_i, and has a cost c_i.

It is known that we can get from any station to any other (possibly with transfers), and the cost of any route that consists of several consequent lines is equal to the cost of the most expensive in them. More formally, the cost of the route from the station s_1 to station s_k with $(k-2)$ transfers using stations $s_2, s_3, s_4, \dots, s_{k-1}$ is equal to the **maximum cost of the lines** from s_1 to s_2, from s_2 to s_3, from s_3 to s_4, and so on until the line s_{k-1} to s_k.

Today, the government decides to build some bus lines (also bi-directional) for all pairs of metro stations that are not directly connected by metro lines. Therefore, between any pair of stations, there is one direct line of either metro or bus.

The cost of the bus is calculated as follows: for each pair of stations a and b that is connected by a bus line, the cost of this line is equal to the **minimum cost of the metro route** from a to b according to the pricing strategy described above.

It is known that with the help of bus lines, you can get from any station to any other with possible transfers, and, similarly to the metro, the cost of a route between any two stations that consists of several bus lines is equal to the cost of the most expensive line.

Due to the increasing competition with the bus system, the metro's manager introduces a new reform and changes the costs of its lines. Particularly, for the i^{th} metro line that connects the stations a_i and b_i, the cost of this line should be equal to the minimum cost of the (bus) route between the stations a_i and b_i by bus. Please help the metro's manager calculate the new costs of metro lines.

Input

The input consists of multiple test cases. The first line contains one integer t $(1 \le t \le 10^4)$ — the number of test cases.

The first line of each test case contains two integers n and m, the number of stations in Ho Chi Minh Station and the number of metro lines $\left(4 \le n \le 2 \times 10^5,\ n-1 \le m \le 2 \times 10^5,\ m \le \frac{(n-1)(n-2)}{2}\right)$.

The next m lines contain the description of the metro lines. The i^{th} line contains three integers a_i, b_i and c_i $(1 \le a_i, b_i \le n, 1 \le c_i \le 10^9)$ — the two stations that are connected with the i^{th} metro line and the price of the i^{th} metro line.

It is guaranteed that no line connects a station with itself, no two lines connect the same pair of stations. It is guaranteed that by using metro lines it is possible to get from any station to any other and by using bus lines it is possible to get from any station to any other.

Let N be the sum of n over all test cases and M be the sum of m over all test cases. It is guaranteed that $N, M \le 2 \times 10^5$.

Output

For each test case you should print m integers in a single line where the i^{th} number is the price of the i^{th} metro line after the reform.

Sample Input	Sample Output
3 4 3 1 2 1 2 3 2 4 3 3 5 5 1 2 1 1 3 1 2 4 1 4 5 2 5 1 3 6 6 1 2 3 2 3 1 3 6 5 3 4 2 4 5 4 2 4 2	3 3 3 1 1 1 2 2 4 4 5 3 4 4

Explanation

In the first test case, bus system will provide lines between these pairs of stations: (1,3), (1,4) and (2,4).

The cost of a route between stations 1 and 3 will be equal to 2, since the minimum cost of the metro route is 2 — the route consists of a line between stations 1 and 2 costing 1 and a line between stations 2 and 3 costing 2, the maximum cost is 2.

The cost of a route between stations 1 and 4 will be 3, since the minimum cost of the Metro route is 3 — the route consists of a line between stations 1 and 2 costing 1, a line between stations 2 and 3 costing 2, and a line between stations 3 and 4 costing 3, the maximum cost is 3.

The cost of a route between stations 2 and 4 will be 3, since the minimum cost of the Metro route is 3 — the route consists of a line between stations 2 and 3 costing 2 and a line between stations 3 and 4 costing 3, the maximum cost is 3.

After the reform, the cost of the Metro line between stations 1 and 2 will be 3, since the minimum cost of the Bus route between these stations is 3 — the route consists of a line between stations 1 and 4 costing 3 and a line between stations 2 and 4 costing 3, the maximum cost is 3.

The cost of the Metro line between stations 2 and 3 will be 3, since the minimum cost of the Bus route between these stations is 3 — the route consists of a line between stations 2 and 4 costing 3, a line between stations 1 and 4 costing 3 and a line between 1 and 3 costing 2, the maximum cost is 3.

The cost of the Metro line between stations 3 and 4 will be 3, since the minimum cost of the Bus route between these stations is 3 — the route consists of a line between stations 1 and 3 costing 2 and a line between stations 1 and 4 costing 3, the maximum cost is 3.

In the second test case, the Bus system will have the following lines: between stations 1 and 4 costing 1, between stations 2 and 3 costing 1, between stations 2 and 5 costing 2, between stations 3 and 4 costing 1, and between stations 3 and 5 costing 2.