

(C)The Route

Description

Mr. Le then plans to take the high-speed rail to the destination. As he is eager to see Ms. Y, he will choose the route with the minimum length, and he also wants to know its cost. If there are several shortest routes, please help Mr. Le to choose one with the minimum cost.

There are n railway stations which will be denoted as integers from 1 to n , and Mr. Le will travel from 1 to n . Each bidirectional railway segment will be given as x, y, d, c , where x and y are the starting and ending stations, d is its distance, and c is the cost.

Input

The first line is the number T – the number of test cases. Then T blocks follow, in which the first line contains 2 integers n ($1 < n \leq 1000$), m ($1 < m \leq 10^5$): the number of railway stations and the number of railway segments. Then m lines follow, each of which contains four integers x, y, d, c , where x and y are the starting and ending stations, d is its distance, and c is the cost.

Output

For each test case, print the minimum distance and its cost separated by a blank space.

Example

Input	Output
1 3 2 1 2 5 6 2 3 4 5	9 11