时间限制：C/C++/Rust/Pascal 3秒，其他语言6秒

空间限制：C/C++/Rust/Pascal 512 M，其他语言1024 M

Special Judge, 64bit IO Format: %lld

题目描述

The highway system in NowLand has been used for quite some decades and requires upgrades.

In the country, there are n cities and m one-way highways that go from one city to another. Using the i-th highway, one car can go from City u_i to City v_i in t_i minutes. An upgrade reduces the time used in the journey by w_i minutes. The highway can be upgraded as many times as you want.

As a selfish person, the president of NowLand only considers his own interests. It's his last job to upgrade the highways, and after that, he will retire. After he retires, he will leave City 1, the capital of NowLand, for City n, where he will spend the rest of his life. He will only use highways for this journey, so he only cares about the time to go to City n from City 1 and wants it to be as short as possible.

But as the government doesn't have enough money, there's a limited budget for upgrades. With the budget yet to be confirmed, the president needs to prepare for different conditions. That's why he wants to know the minimum time he needs to get to City n from City 1 if he can do k upgrades. What are the results, though?

It's guaranteed that it is always possible to get to City n from City 1 using only highways.

输入描述:

Each test contains multiple test cases. The first line contains the number of test cases t $(1 \leq t \leq 10^4)$.

Each test case consists of many lines.

The first line contains 2 integers n, m $(4 \leq n \leq 10^5, 1 \leq m \leq 3 \times 10^5)$, the number of cities and highways in the country.

Each line from the 2-nd to the $(m+1)$-th contains 4 integers u_i, v_i, t_i, w_i $(1 \leq u_i, v_i \leq n, u_i \neq v_i, 2 \leq t_i \leq 10^{12}, 1 \leq w_i \leq \min(t_i - 1, 10^9))$, representing the starting point, ending point, original travel time, and the upgrade parameter of the i-th highway. It is guaranteed that it is possible to travel from City 1 to City n using highways.

The $(m+2)$-th line contains one integer q $(1 \leq q \leq 3 \times 10^5)$, the number of queries to ask.

Each line from the $(m+3)$-th to the $(m+q+2)$-th contains one integer k_i $(1 \leq k_i \leq 10^9)$, the number of upgrades. It is guaranteed that $\forall 1 \leq j \leq m, t_j - w_j \times k_i > 0$.