03. The Lost Expedition

Condition:

A team of explorers is lost in an unknown mountain range and must return to base camp. The mountain is filled with different types of terrain - some easily surmountable, while others pose serious risks to the explorers' lives. To succeed, they must find the fastest route back, while minimizing the risk of falling into dangerous areas. Your task is to help the team find the fastest route back, taking into account both the distance and potential hazards along the way.

Some terrain is easy to traverse, others are dangerous and require more time and effort, and in rare cases there are sections that are completely impassable. The team must choose the fastest route, avoiding as many dangerous terrains as possible.

Your task is to calculate the shortest route for the explorers from their current location to the base camp, while also taking into account the risks along the way.

Input:

1. The first line specifies two integers **N** and **M** (≤ 1000), which represent the number of locations and the paths between them.
2. There are **M** lines, each containing three integers **A** , **B ,** and **T** , which indicate that there is a path between locations **A** and **B** with duration **T** . Paths with duration **T** above 10 are considered dangerous and increase the travel time.
3. On the last line are two integers **X** and **Y** , which specify the current location of the explorers and the base camp between which the transition should be made.

Output:

Output an integer that represents the minimum time to travel from the current location to the base camp while minimizing crossing dangerous terrain.

Additional conditions:

- Every road is two-way, i.e. if there is a road from location A **to** B **,** there is also one from **B** to **A.**
- Roads with a **T time** above 10 are considered dangerous.
- If there are several roads with the same travel time, choose the one that passes through less dangerous terrain.

Example:

Input	Output
4 5 1 2 4 1 3 12 2 3 7 2 4 3 3 4 9 1 4	10

Explanation:

The shortest route from location 1 to location 4 is via location 2, with a total time of 10. This is the optimal route, as it passes through only one dangerous path with a duration of 12 (but it is unavoidable if we have to pass through location 3).

Solving instructions:

- Represent the network as a graph, where each location is a vertex and the paths between them are edges with weight.
- Use a shortest path algorithm, such as **Dijkstra** , with additional tracking of the number of dangerous roads along the way.
- There are two minimization criteria: minimum crossing time and minimum number of dangerous sections.
- A priority queue can be used to efficiently process edges and find the optimal route.