MR.NGÂU AND MRS.NGÂU

**\*Problem:**

You probably know the annual "Mr. Ngâu, Mrs. Ngâu" day, which is a day full of rain and tears. However, the day before that, God's house allowed the reunion. In the galactic universe where Mr. Ngâu and Mrs. Ngâu reign, there are N planets numbered from 1 to N, he is on planet Adam (with number S) and she is on planet Eve (with number as T). . They need to find each other.

N planets are connected by a rainbow system. Any two planets can have no or only one rainbow (two-dimensional) connecting them. They always go to the goal by the shortest path. They travel at a constant speed and faster than the speed of light. Their meeting point could only be on a certain 3rd planet.

Requirements: Find a planet such that Mr. Ngâu and Mrs. Ngâu go there at the same time and the arrival time is the earliest. Know that two people can pass through the same planet if they arrive at that planet at different times.

* **Input:** The first line is 4 numbers N M S T (N ≤ 100, 1 ≤ S ≠ T ≤ N), M is the rainbow number. The next M lines, each containing two numbers I J L, represent a rainbow connecting the two planets I , J and that rainbow has a length of L (1 ≤ I ≠ J ≤ N, 0 < L ≤ 200).
* **Output:** Due to the nature of the rainbow, each year is different, so if there are no planets that meet the requirements, write a CRY line. If there are many planets that satisfy, write down the planet with the smallest index.

Example:

|  |  |
| --- | --- |
| INPUT  4 4 1 4  1 2 1  2 4 1  1 3 2  3 4 2 | OUTPUT  2 |

**\*Analysis:**

+ Any two planets are only connected by at most one rainbow

+ Mr. Ngau and Mrs. Ngau always go to the goal in the shortest way

+ They travel at a constant speed and faster than the speed of light

In fact, this is a graph problem, we have the following algorithm:

-From planet S (where Mr. Ngau lives), we build a table man, where man[i] is the shortest path from planet S. Planet S to planet i (because Mr. Ngau always goes to his goal by the shortest path). man[i] = 0 mean there is no path from planet S to planet i.

-Similarly, we will build a table women, where women[i] is the shortest path from planet T to planet i. And women[i] = 0 mean there is no path from planet T to planet i.

-Due to the requirement of the problem is to find a planet other than S and T that 2 Ngau and his wife arrived at the same time and in the fastest time. That is, we will find the planet h such that (h is different from S and T) and (SP[h] = ST[h] ) reaches the value minimum non-zero 0. If there is no such planet h, then we say CRY

-To build an array of SP and ST, we choose Dijkstra's algorithm to find the shortest path between two graph vertices.

-At the end of Dijkstra's algorithm, we will use the Linear search algorithm to find out if there is any point where two people meet and at the same time in that search we also find the smallest distance of the point where two people can meet.

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**\*Algorithm used:**

+Dijktra

+Linear search