Puzzle: Flee the Island!

You run a shady criminal organization on a secluded island that's now under police surveillance. You plan to relocate to a safer island. There is a large network of airports and flights routes, and you have many important members who all need one-way flights to a final island with the shortest possible travel times. However, if two members arrive at the same time, it draws unwanted attention! Therefore, each member must arrive at a different time.

Your goal is to figure out the flight route the k-th member must take to reach the new island while following the below constraints: - The k-th member must take the shortest possible journey to the new island. - The k-th member must arrive at a different time than any other member. - If two routes have the same arrival time, use the one with the shortest average flight duration. - Paths may contain loops of any length. - These constraints must hold for any value of k as long as it is possible to find k routes with distinct lengths.

In other words, if there are k members traveling, each one taking the next shortest route, your algorithm will compute the route the *last* one takes (the k-th shortest).

Input Format

First line: n m s t k
n < 10^5 = number of islands (nodes in the graph)
m < 10^6 = number of flight routes (edges in the graph)
s = index of the island you are fleeing from
t = index of the final destination island
k = index of the path to compute

Next m lines: u v w
A flight route goes from island u to island v (**not** from v to u) with a travel time w.
You can assume there will always be k paths with distinct lengths for any test case given, and that all edge weights are positive integers. ### Output Format
Output the nodes visited by the k-th member on their journey from s to t, separated by spaces.

Example

Suppose you have:

```
7 11 0 5 3
0 1 2
0 5 3
0 2 4
1 3 2
2 3 2
3 4 3
```

```
4 5 1
3 5 4
2 6 2
6 5 3
6 4 1
```

Answer: **0 2 6 5**

Here: - There are 7 islands (0 to 6). - There are 11 flight routes between islands. - The starting island is island 0. - The final safe island is island 5. - You are finding the route for the 3rd member (k=3). - Hint: you will need to compute at least 5 paths to get the correct answer for this example. - The optimal path is (0, 5), with length 3. There are three paths of length 8, only one of which is taken. The path returned has length 9.