A1- Online 4:

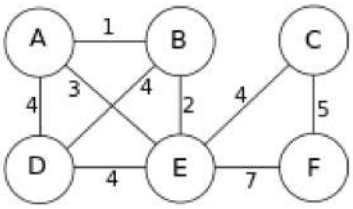
Minimum spanning Tree (MST):

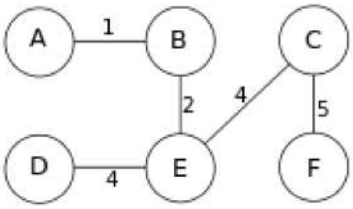
Description:

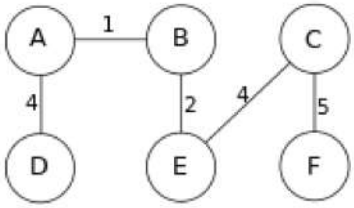
You are given a weighted graph G(V, E) Where V represents vertices & E represents edges. Now given an edge your task is to find the second minimum spanning tree.

The second best MST can be an alternative MST or in case of one best MST the cost of the second best MST will be larger.

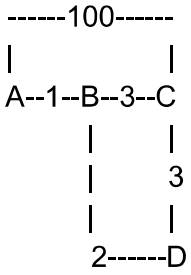
The following figure shows the 2 possible MST of a sample graph. Therefore the second best MST will be of the same cost 16.



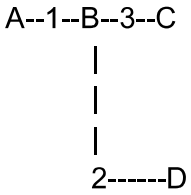




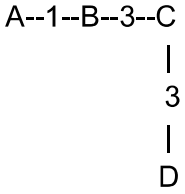
Another scenario here is,



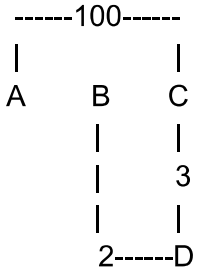
So here you can see the MST is, A- B- D- C with cost 6



Now the second best MST will be A-B-C-D with cost 7



Hint: Clearly here you can see just omitting the minimum cost edge won't be enough. Because if you omit A-B the second best MST become 105. So keep that in mind.



Sample input format:

1. Test case T
2. For each case, first line specifying the number of vertices and edges n, m

3. m following edge description

Sample output format:

1. Case No#
2. Fist MST: value1
3. Second MST: value2

Instructions : Use Kruskal or Prim's algorithm for finding minimum spanning tree.

Mark distribution:

1. MST of Graph - 5
2. Founding second best MST 5

For example sample input and output for the above picture will be
(vertices A-F are numbered as 0-5 here)

Sample Input	Sample Output
2	
6 9 0 1 1 0 3 4 0 4 3 1 3 4 1 4 2 2 4 4 2 5 5 3 4 4 4 5 7	Case 1# Fist MST: 16 Second MST: 16
4 5 0 1 1 0 2 100 1 2 3 1 3 2 2 3 3	 Case 2# Fist MST: 6 Second MST: 7