A. Bridges

Given an undirected graph find all of its bridges.

Input
First Line: N (O<N<=100000). number of nodes.
Second line: M (0<N<=300000), number of edges.
Next M lines, each: U V (0<=U, V<N), defines an edge between U and V.

Output
List all the bridges in increasing order. For each edge the first node should be smaller than the second. When sorting, edges with smaller first should come first. If two edge has the same first node, then the edge with smaller second node should come first. See sample for clarification

Sample

Input	Output
6 6 1 3 1 2 2 3 0 1 3 4 5 0	0 1 0 5 3 4

B. Biconnected Components

Given an undirected graph find all of its biconnected components. Print the components in increasing order. Remember in a biconnected component, you mention the edges that make the component, as a node can be shared between multiple components.

Input
First line: N (O<N<100000), number of nodes.
Second line: M (0<N<.300000), number of edges.
Next M tines, each: U V (0<=U, V<N), defines an edge between U and V.

Output
List all the BCC in increasing order. See sample for clarification

Sample

Input	Output
6 5 1 3 1 2 0 1 3 2 2 5	0 1 - 1 2 1 3 2 3 - 2 5

C. MST

Given an undirected weighted graph find its minimum spanning tree. The graph is guaranteed to be connected.

Input
First line: N (0<N<=100000), number of nodes.
Second line: M (0<N<=300000), number of edges.
Next M lines, each: U V W(0<=U, V<N), defines an edge between U and V with weight W.

Output
Weight of the MST. See sample for clarification

Sample

Input	Output
6 6 1 3 2 1 2 5 0 1 3 3 2 1 3 4 50 2 5 10	66

Explanation:
Edges in MST are: 0-1 (3), 1-3 (2), 3-2 (1), 3-4 (50) and 2-5 (10). So the result is 3 + 2 + 1 + 50 + 10 = 66.

D. MaxST

Given an undirected weighted graph find its maximum spanning tree. The graph is guaranteed to be connected.

Input
First line: N (0<N<=100000), number of nodes.
Second line: M (0<N<=300000), number of edges.
Next M lines, each: U V W(0<=U, V<N), defines an edge between U and V with weight W.

Output
Weight of the Maximum Spanning Tree. See sample for clarification

Sample

Input	Output
5 4 3 1 8 4 2 7 0 3 6 3 4 9	30