**Bottleneck minimum spanning tree.** Given a connected edge-weighted graph, design an efficient algorithm to find a minimum bottleneck spanning tree. The bottleneck capacity of a spanning tree is the weights of its largest edge. A minimum bottleneck spanning tree is a spanning tree of minimum bottleneck capacity.

**Is an edge in a MST.** Given an edge-weighted graph *G* and an edge *e*, design a linear-time algorithm to determine whether *e* appears in some MST of *G*.

Note: Since your algorithm must take linear time in the worst case, you cannot afford to compute the MST itself.

**Minimum-weight feedback edge set.** A *feedback edge set* of a graph is a subset of edges that contains at least one edge from every cycle in the graph. If the edges of a feedback edge set are removed, the resulting graph is acyclic. Given an edge-weighted graph, design an efficient algorithm to find a feedback edge set of minimum weight. Assume the edge weights are positive.