1. Describe an efficient algorithm that, given an undirected graph $G$, determines a spanning tree of $G$ whose largest edge weight is minimum over all spanning trees of $G$.


3. Professor Dey has written a program that he claims implements Dijkstra’s algorithm. The program produces $v.p$ (priority) and $v.\pi$ (parent field) for each vertex $v \in V$. Give an $O(|V| + |E|)$-time algorithm to check the output of the program. It should determine whether the $d$ and $\pi$ attributes match those of some shortest-paths tree. You may assume that all edge weights are nonnegative.