1. This is problem number 29 , chapter 4 from the Tardos Kleinberg book.

Given a list of $n$ natural numbers $d_{1}, \ldots, d_{n}$, show how to decide in polynomial time whether there exists an undirected graph $G=(V, E)$ whose vertex degrees are precisely $d_{1}, \ldots, d_{n}$. (That is, if $V=\left\{v_{1}, \ldots, v_{n}\right\}$, then the degree of $v_{i}$ should be exactly $d_{i}$.) $G$ should not contain mtultiple edges between the same pair of nodes, or "loop" edges (where both end vertices are the same node).

