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Consider the bordered matrix

$$A = \begin{bmatrix} D & w \\ v^T & c \end{bmatrix}$$

where $D \in \mathbb{R}^{n \times n}$ is diagonal with diagonal vector $d \in \mathbb{R}^n$, $w, v \in \mathbb{R}^n$, and $c \in \mathbb{R}$. Describe an $O(n)$ time algorithm to solve the linear system $Ax = b$.