Given a directed acyclic graph $G = (V, E)$ and two vertices $u, v \in V$, construct a linear time algorithm, $O(V+E)$, that returns the number of distinct simple paths from $u$ to $v$. A path is a sequence of vertices $(u = w_1, w_2, \ldots, w_k = v)$ such that $(w_{i-1}, w_i) \in E$ for $1 \leq i \leq k$. Two paths are distinct if their sequences have different length or if their sequences have the same length but differ in some component. Submit the pseudo-code for your algorithm and explain why it is linear. You need not write an executable Java program.