

4. Describe how a path-compressed trie may be used to solve Problems 1 and 2. Depict the trie for the problem instances of Question 3. Outline the actions of the algorithms for building the trie and answering the queries.

5. Explain why the algorithm of section 2.2 initializes $L'(q)$ to $\{0, \dots, n - 1\}$.

6. For the instance of Question 3, provide a few illustrative examples of states u and v such that $u \equiv_p v$. Explain your answer.

7. Provide concrete examples of states u and v such that

(a) $u \equiv_p v$ and $\mathcal{L}(u) = \mathcal{L}(v)$;

(b) $u \equiv_p v$ and $\mathcal{L}(u) \neq \mathcal{L}(v)$.

Explain your answer.