

Exercises

- Study KMP Algorithm for String Matching
- Extend Rabin-Karp method to the problem of searching a text string for an occurrence of any one of a given set of k patterns? Start by assuming that all k patterns have the same length. Then generalize your solution to allow the patterns to have different lengths.
- Let P be set of n points in the plane. We define the depth of a point in P as the number of convex hulls that need to be peeled (removed) for p to become a vertex of the convex hull. Design an $O(n^2)$ algorithm to find the depths of **all** points in P .
- The input is two strings of characters $A = a_1, a_2, \dots, a_n$ and $B = b_1, b_2, \dots, b_n$. Design an $O(n)$ time algorithm to determine whether B is a cyclic shift of A . In other words, the algorithm should determine whether there exists an index k , $1 \leq k \leq n$ such that $a_i = b_{(k+i) \bmod n}$, for all i , $1 \leq i \leq n$.