1. Write a recursive procedure OS-KEY-RANK(T, k) that takes as input an order-statistic tree T and a key k and returns the rank of k in the dynamic set represented by T. Assume that the keys of T are distinct.
2. Given an interval tree T and an interval , describe how all intervals in T that overlap can be listed in time, where k is the number of intervals in the output list. (Optional: Find a solution that does not modify the tree.)