Red–black BST with no extra memory. Describe how to save the memory for storing the color information when implementing a red–black BST.

Note: these interview questions are ungraded and purely for your own enrichment. To get a hint, submit a solution.

Thank you for your response.

Hint: modify the structure of the BST to encode the color information.

Correct

1 / 1 points

2.

Document search. Design an algorithm that takes a sequence of n document words and a sequence of m query words and find the shortest interval in which the m query words appear in the document in the order given. The length of an interval is the number of words in that interval.

Thank you for your response.

Hint: for each word, maintain a sorted list of the indices in the document in which that word appears. Scan through the sorted lists of the query words in a judicious manner.

Correct

1 / 1 points

3.

Generalized queue. Design a generalized queue data type that supports all of the following operations in logarithmic time (or better) in the worst case.

Create an empty data structure.

Append an item to the end of the queue.

Remove an item from the front of the queue.

Return the ith item in the queue.

Remove the ith item from the queue.

Thank you for your response.

Hint: create a red–black BST where the keys are integers and the values are the items such that the ith largest integer key in the red–black BST corresponds to the ith item in the queue.