

Question :

Draw the red-black BST that results when you insert letters A to K in order into an initially empty red-black BST. Then, describe what happens in general when red-black BSTs are built by inserting keys in ascending order.

Solution :

If the keys to be inserted in the BST are in ascending order then the functions `rotateleft()`, `rotateright()`, `flipcolour()` are necessary to be called many numbers of times. But it does not affect the complexity of Red-Black BST since the complexity of it is $O(\log N)$ in any case. The proof is shown below.,

