There are two cases to consider when determining the successor of node x:

1. Node x has a right child: the minimum key in x's right subtree serves as x's successor.

2. Node x has no right child: traverse the unique path from node x to the root. The first node encountered on this path, which has a left child subtree containing x, becomes x's successor. If no such node is found along the path, x has no successor.

   2.1. If x is the left child of its parent, then its successor is its parent.

   2.2. If x is not the left child of its parent, trace back to the root until the first node is encountered, which has x in its left subtree. This node becomes its successor.