

```

1 // Connor Petri
2 // CIS 22C
3 // 2023-11-7
4
5 /*
6  * LHC = Left hand child; RHC = Right hand child
7  *
8  * If current node has a LHC, go to the it and walk down RHC until a leaf node
9  * is encountered
10 * Else if current node is the RHC of parent, return parent
11 * Else move up the tree until current node is a RHC of parent and return it's parent
12 * If root is encountered, then there is no previous node and you are at the tree's
13 * minimum.
14 */
15
16 Node * getPrevious(Node *from)
17 {
18     Node *n = from; // current node
19
20     if (n->LHC) // If LHC exists
21     {
22         n = n->LHC; // Go to LHC
23         while (n->RHC) // Walk down RHC until leaf node encountered
24         {
25             n = n->RHC;
26         }
27         return n; // return encountered leaf
28     }
29
30     if (n->PARENT->RHC == n) // Else if node is the RHC of parent, return parent
31     {
32         return n->PARENT;
33     }
34
35     while (n->PARENT->RHC != n) // loop until RHC found (or root encountered)
36     {
37         if (!n->PARENT) // if root encountered, return null as there is no previous
38         { return nullptr; }
39
40         n = n->PARENT; // walk up the tree one node
41     }
42     return n; // n only returns here if a RHC is found and the root node is not
43 }

```