

C-6.3

Algorithm preorderNext(Node v):

```
if  $v$  is Internal() then
    return  $v$ 's left child
else
    Node  $p$  = parent of  $v$ 
    if  $v$  is left child of  $p$  then
        return right child of  $p$ 
    else
        while  $v$  is not left child of  $p$  do
             $v = p$ 
             $p = p.parent$ 
        return right child of  $p$ 
```

Algorithm inorderNext(Node v):

```
if isInternal( $v$ ) then
    return  $v$ 's right child
else
    Node  $p$  = parent of  $v$ 
    if  $v$  is left child of  $p$  then
        return  $p$ 
    else
        while  $v$  is not left child of  $p$  do
             $v = p$ 
             $p = p.parent$ 
        return  $p$ 
```

The worst case running times for these algorithms are all $O(\log n)$ where n is the height of the tree T .

Algorithm postorderNext(Node v):

```
if isInternal( $v$ ) then
   $p$  = parent of  $v$ 
  if  $v$  = right child of  $p$  then
    return  $p$ 
  else
     $v$  = right child of  $p$ 
    while  $v$  is not external do
       $v$  = left child of  $v$ 
    return  $v$ 
else
   $p$  = parent of  $v$ 
  if  $v$  is left child of  $p$  then
    return right child of  $p$ 
  else
    return  $p$ 
```