10.4-3.

Write an $O(n)$-time nonrecursive procedure that, given an n-node binary tree, prints out the key of each node in the tree. Use a stack as an auxiliary data structure.

Answer.

```
PRINT-BINARY-TREE(T, S)
 1  PUSH(S, T.root)
 2  while not STACK-EMPTY(S)
 3      x = S[S.top]
 4      while x ≠ NIL                 // store all nodes on the path towards the leftmost leaf
 5          PUSH(S, x.left)
 6          x = S[S.top]
 7      POP(S)                        // S has NIL on its top, so pop it
 8      if not STACK-EMPTY(S)         // print this node, leap to its in-order successor
 9          x = POP(S)
10          print x.key
11          PUSH(S, x.right)
```


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