

10.2-4.

As written, each loop iteration in the LIST-SEARCH' procedure requires two tests: one for $x \neq L.nil$ and one for $x.key \neq k$. Show how to eliminate the test for $x \neq L.nil$ in each iteration.

Answer.

An ingenious way to eliminating the test for $x \neq L.nil$ is to set the sentinel's key to k before entering the **while** loop. By doing this, LIST-SEARCH'(L, k) either returns the pointer to the first element with key k in list L , or returns the pointer to the sentinel if no object with key k exists in the list.

LIST-SEARCH'(L, k)

```
1   $L.nil.key = k$ 
2   $x = L.nil.next$ 
3  while  $x.key \neq k$ 
4       $x = x.next$ 
5  return  $x$ 
```

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