

CSE 101
Winter 2021
Quiz 1

Solutions

1. (25 Points) Using only the List ADT operations defined in the [project description for pal](#) (pages 2-3), write a client function with the heading

```
List searchList(List L, int x)
```

Your function will perform a linear search of L for the target x , then return a new List containing all indices in L at which the target x is found, ordered from smallest index to largest index. If the target x is not in L , your function will return an empty List. Upon return, the input List L will have its cursor in the undefined state.

One of several possible solutions:

```
List searchList(List L, int x){
    List found = newList();
    for(moveFront(L); index(L)>=0; moveNext(L)){
        if( x==get(L) ){
            append(found, index(L));
        }
    }
    return found;
}
```

2. (25 Points) Using only the List ADT operations defined in the [project description for pal](#) (pages 2-3), write a client function with the heading

```
int isPalindrome(List L)
```

Your function will return `true` (1) if the integer sequence represented by L is a palindrome (i.e. is identical to its own reversal.) Your function will return `false` (0) if L is not a palindrome.

One of several possible solutions:

```
int isPalindrome(List L){
    int eq;
    List R = newList();
    for(moveFront(L); index(L)>=0; moveNext(L)){
        prepend(R, get(L));
    }
    eq = equals(L, R);
    freeList(&R);
    return eq;
}
```

Another solution:

```
int isPalindrome(List L){
    int eq = 1;
    List C = copyList(L);
    while( eq && length(C)>1 ){
        eq = ( front(C)==back(C) );
        deleteFront(C);
        deleteBack(C);
    }
    freeList(&C);
    return eq;
}
```