CSE 101
Winter 2022
Quiz 4 **Solutions**

1. (30 Points) Consider the List ADT from pa5 but *without* the `cleanup()` function. Write a C++ client function called `RemoveDuplicates()` that does the same thing as `cleanup()` (except that it does not matter where the cursor ends up.) In other words, `RemoveDuplicates(L)` will alter List L so that it contains only the first occurrence or each of its data items. To do this, you may use all ADT operations in List.h *except* `cleanup()`.

Solution (one of several possible):

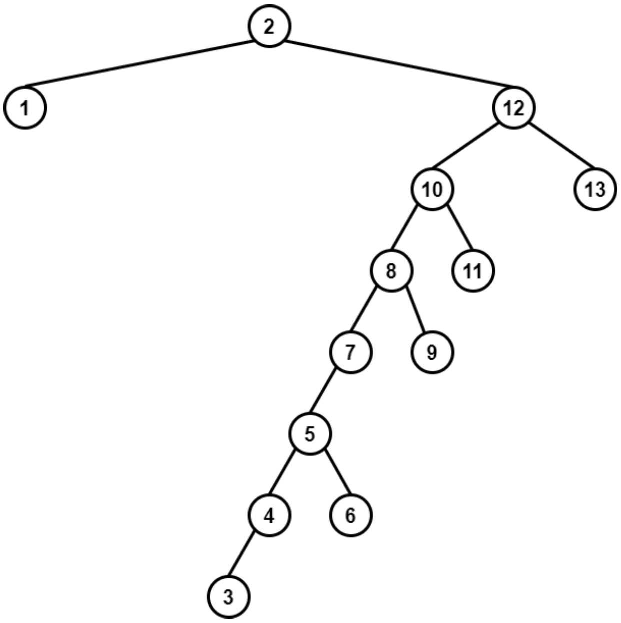
```
void RemoveDuplicates(List& L){

   int p, x, y;

   L.moveFront();
   p = 0;
   while( p<L.length() ){
      x = L.moveNext();
      while(L.position()<L.length()){
         y = L.moveNext();
         if( y==x ){
            L.eraseBefore();
         }
      }
      p++;
      while(L.position()>p){
         L.movePrev();
      }
   }
}
```

2. (20 Points) Let T be a Binary Search Tree containing the keys $\{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13\}$. Suppose that a **pre-order tree walk** prints the keys in order: $2, 1, 12, 10, 8, 7, 5, 4, 3, 6, 9, 11, 13$, and that a post-order tree walk prints the keys in order: $1, 3, 4, 6, 5, 7, 9, 8, 11, 10, 13, 12, 2$. Determine the structure of T. (Note: only one of the two tree walks is really necessary since each of them uniquely determines the structure of T.) Present your solution either by drawing a picture of the tree, or by constructing a table giving the parent of each Node.

Solution1 (Picture):



Solution2 (Table):

Node	Parent
1	2
2	Nil
3	4
4	5
5	7
6	5
7	8
8	10
9	8
10	12
11	10
12	2
13	12