Ain Shams University

Faculty of Engineering

CSE331 Data Structures and Algorithms

Lab 1 Report

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Section 5

1- Implement the reverse list method

```
11  int* reverseArray(int a_count, int* a, int* result_count) {
12
13      int i=0,j = (a_count-1),temp = 0; // Counters for array;
14      *result_count = a_count; // Number of elements in array
15      while(i<j){
16          temp = a[i];
17          a[i] = a[j];
18          a[j] = temp;
19          i++;
20          j--;
21      }
22
23      return a;
24
25  }
26
```

Time Complexity: O(n/2) where n is array elements

2- Implement the remove list method

```
 9  // write your implementation here
10  int removeElement(int val,vector<int>&nums)
11  {
12    int count = 0;
13    for(int i = 0 ; i<nums.size(); i++){
14        if(val != nums[i]){
15            nums[count] = nums[i];
16            count++;
17        }
18    }
19      return count;
20  }
21
```

Time Complexity: O(n)

3 – Implement Box Class

```
10  class Box {
11  private :
12      int l;
13      int b;
14      int h;
15
16      public :
17      Box(){
18          l=b=h=0;
19      }
20      Box(int lenght,int breadth , int height){
21          l = lenght;
22          h = height;
23          b = breadth;
24      }
25      Box(const Box &box){
26          l = box.l;
27          h = box.h;
28          b = box.b;
29      }
30
31      int getLength(){
32          return l;
33      }
34      int getBreadth(){
35          return b;
36      }
37      int getHeight(){
```

```
37      int getHeight(){
38          return h;
39      }
40      long long CalculateVolume(){
41          return ((long long)l*b*h);
42      }
43     friend bool operator < (Box& b1, Box& b2)
44          {
45              if((b1.l < b2.l) || (b1.l == b2.l && b1.b < b2.b) ||
46                 (b1.l == b2.l && b1.b == b2.b && b1.h <b2.h))
47                  return(true);
48              else
49                  return(false);
50          }
51
52          friend ostream& operator << (ostream& s,Box& b1)
53          {
54              s << b1.l << " " << b1.b << " " << b1.h;
55              return s;
56          }
57  };
58
```