**Lab Assignment 2**

**UCS 406 Data Structures and Algorithms**

Note: Use C/C++ or JAVA programming language.

Q1. If a one dimensional integer type array with its size and length given, write the code in C++ language to create functions to perform the following operations (Please assume whatever is necessary to examplify the results) :

1. Display()
2. Add/Append(x)
3. Insert(index,x)
4. Delete(x)
5. LinearSearch(s)
6. BinarySearch(x)
7. Get(index)
8. Set(index,x)
9. Max()
10. Min()
11. Reverse()
12. Shift()
13. Rotate()

Q2. For a given array, write functions to perform the following:

1. Check if an array is sorted
2. Merge arrays
3. Set operations on array: Union, Intersection

Q3. For a given array, write functions to perform the following:

1. Finding single element in an array
2. Finding multiple elements in an array
3. Finding duplicates in a sorted array
4. Finding duplicates in an unsorted array
5. Finding a pair of elements with sum k
6. Finding a pair of elements with sum k in sorted array
7. Finding max and min in a single scan

Q4. For a given Linked List (LL), write programs to perform the following functions

1. Display the elements of a LL
2. Count and sum the nodes of a LL
3. Search for a key element in a LL
4. Delete an element from a LL
5. Check if a LL is sorted
6. Merge 2 LLs
7. Concatenate 2 LLs
8. Reverse the elements of a LL
9. Create and Display a circular Ll
10. Create a doubly LL, insert in a doubly LL and reverse a doubly LL.