

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 exemplify the results) :

- i. Display()
- ii. Add/Append(x)
- iii. Insert(index,x)
- iv. Delete(x)
- v. LinearSearch(s)
- vi. BinarySearch(x)
- vii. Get(index)
- viii. Set(index,x)
- ix. Max()
- x. Min()
- xi. Reverse()
- xii. Shift()
- xiii. Rotate()

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

- i. Check if an array is sorted
- ii. Merge arrays
- iii. Set operations on array: Union, Intersection

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

- i. Finding single element in an array
- ii. Finding multiple elements in an array
- iii. Finding duplicates in a sorted array
- iv. Finding duplicates in an unsorted array
- v. Finding a pair of elements with sum k
- vi. Finding a pair of elements with sum k in sorted array
- vii. Finding max and min in a single scan

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

- i. Display the elements of a LL
- ii. Count and sum the nodes of a LL
- iii. Search for a key element in a LL
- iv. Delete an element from a LL
- v. Check if a LL is sorted
- vi. Merge 2 LLs
- vii. Concatenate 2 LLs
- viii. Reverse the elements of a LL
- ix. Create and Display a circular LL
- x. Create a doubly LL, insert in a doubly LL and reverse a doubly LL.

