DS & Algorithms & Collection - Assignments
Session 1
Duration (Number of Hrs): 4

Topic: Array, List

Compulsory

Q1. Write a program to implement an array list using array.The arraylist must be accommodated to fulfill following operations.

a)Adding an item into array list and check if list is full, then resizing that arraylist

b)Adding an item into array list at the given particular location i

c)Retrieving the first occurrence of an item based on its given location

d)Retrieving the first index of particular item in the arraylist

e)Removing an item based on particular location

f)Remove given particular item from the arraylist

g)Clear the list i.e. remove all the elements of the list

h)Reverse the arraylist

i)Sort the elements of arraylist

Q2: If the above created list is list1 then add another list list2 to the first list. So the resultant list list1 must contain now all the

elements of its own list and in addition to the elements contained in list2.

Q3: WAP to implement a singly Linkedlist that must contain following operations:

a)Creation of linked list

b)Add the particular item in the linked list at the particular location

c)Removal of an item based on its value

d)Removal of an item based on its index

e)Retrieval of an item of particular index

f)Reversal of linked list

g)Sorting of linked list

Q4: WAP to implement the doubly Linkedlist that must contain all of the above operations.

Optional

Q5. WAP to search for an element in an array using Binary search.

Q6: WAP to display third largest element in an array with using only single loop and without sorting.

Q7. Write a Program to solve the Josephus problem.

Suppose n people are arranged in a circle and we are given a positive integer m <= n.

Starting with a designated person, proceed around the circle removing every m th person.

After removal, counting continues around the remaining circle.

Output:

1. The order in which persons get removed

2. The list elements after each deletion

3. Final Winner