Lab 1 report – implement ADT using class

1. Objective:
   The student will practice how to
   - Design a class and implement the required methods (task 2)
   - Extend the list class and implement reverse method (task 1)
   - Give time analysis for the implemented methods

2. Tasks:
   2.1. List class:
   An array is a type of data structure that stores elements of the same type in a contiguous block of memory. In an array, A, of size N, each memory location has some unique index, i that can be referenced by A[i].

   Required:
   1- Implement the reverse list method that takes an array and reverse its elements.
   For example:
   A = [1,2,3,4]
   Returns [4,3,2,1]
   2- What is the running time of the reverse method?
   3- Implement the remove list method that takes an array and removes all occurrences of and a given element and return the size of the list after removing the element
   For example:
   A = [1,2,3,4] and value = 3
   Returns 3 as the size of the list after removing element with value 3 is 3 and the first 3 elements in the list contains [1,2,4] in any order
   4- What is the running time of the remove method?

   2.2. Box class:
   Design a class named *Box* whose dimensions are integers and private to the class. The dimensions are labelled: length **l**, breadth **b**, and height **h**.

   Required:
   Design the Box class to support the following methods:

Method name	input	behavior
Default constructor		Should initialize the class members to zero
Parameterized constructor	int length int breadth int height	Should initialize the class members with the given inputs

Copy constructor	Const Box& b	Puts b data into the caller object
getLength()		Returns box's length
getBreadth()		Returns box's breadth
getHeight()		Returns box's height
CalculateVolume()		Returns box's volume
Overload operator <	Box object	Compares 2 box objects
Overload operator <<	Box object	Prints the box data members