CSC248 – Fundamentals of Data Structure
Academic Session October 2023 – February 2024
Lab Assignment 2 – ArrayList (Built-in Method)

Course Outcomes (CO)	LO1	LO2	LO3
CO1			
CO2	√	√	√
CO3			

Answer **ALL** Questions by using built-in method `ArrayList`.

Question 1

Declare a list to hold integer numbers. Then you have to do the following operation

i. Add new element into a list
ii. Delete element from a list
iii. The number of elements in a list
iv. Calculate the total of number in a list
v. Print all elements in a list

Write a program to solve the problem by using *ArrayList* class. Use an appropriate menu selection to perform the option as given above.

Question 2

Declare a list to hold a collection string of name. Then you have to do the following operation

i. Add new element into a list
ii. Delete element from a list
iii. The number of elements in a list
iv. To determine either the name exist or not in a list
v. Sort the list of names in ascending order
vi. Print all the name in a list

Write a program to solve the problem by using *ArrayList* class. Use an appropriate menu selection to perform the option as given above.

Question 3

Given the following `Product` and `ArrayList` ADTs:

```
public class Product
{
     private String productName;
     private double price;
     private int quantity;

     public Product(String pn, double p, int q)  {…}
     public void setProductName(String pn)  {…}
     public void setPrice (double p) {…}
     public void setQuantity (int q) {…}
     public String getProductName()  {…}
     public double getPrice()  {…}
     public int getQuantity()  {…}
     public String toString() {…}

}
public class ArrayList
{
     //default constructor
     public ArrayList ()
     //insert at back
     public boolean add (Object elem)
     //remove element based on object
     public boolean remove (Object elem)
     //return element from the specified location
     public Object get (int index)
     //replace with specified element at specified location
     public Object set (int index, Object elem)
     //return size of list
     public int size();

     //definition for other methods

}
```

Write a complete program for the `Product` ADT. Then, by using the `ArrayList` ADT as given above, write a java application to solve the following problems.

a) Declare two sequential lists named `listProduct1` and `listProduct2`.
b) Insert 10 (ten) products into `listProduct1`.
c) Find and display the record based on `productName`. If the record does not exist display an appropriate message.

d) Update the record where the `productName` is equal to `Pen`. If the record exists replace its current value of `quantity` with `30` and `price` with `RM 1.00` respectively, otherwise display an appropriate message.

e) Remove all records for total price is more than RM 1000 and store them into `listProduct2`. Total price is calculated by `quantity` multiply by `price`.

f) Display all records from `listProduct1` and `listProduct2`.