**CSC248 – Fundamentals of Data Structure**

**Academic Session October 2023 – February 2024**

**Lab Assignment 2 – ArrayList (Built-in Method)**

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| **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

1. Add new element into a list
2. Delete element from a list
3. The number of elements in a list
4. To determine either the name exist or not in a list
5. Sort the list of names in ascending order
6. 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.

1. Declare two sequential lists named listProduct1 and listProduct2.
2. Insert 10 (ten) products into listProduct1.
3. Find and display the record based on productName. If the record does not exist display an appropriate message.
4. 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.
5. 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.