CSC508
Data Structures

Lab Exercise 1 – Built-in `ArrayList` Class

(in Java API - https://docs.oracle.com/javase/7/docs/api/)

Write a Java program to perform the following:

a. Define a class named `Student` that contains:

Data members:
- student's name
- students's id
- score

Methods:
- default and normal constructors
- accessors for each data member
- mutators
- `toString()`

b. Write the main program to perform the following:

i) Declare an `ArrayList` object named `studList`.

ii) Insert `Student` objects at the end of the list.

iii) Display the details of students.

iv) Compute and display the total and average scores of all students.

v) Find and display the minimum and maximum scores.

vi) Display the names of the students who have scores greater than 50.

Sample Main program (Part of the exercises)

```
import javax.swing.*;
import java.util.ArrayList; // ArrayList ADT
import java.util.Scanner;

/**
 * A sample program that illustrate the use of ArrayList class in
 * Java API
 * @author Zulaile Mabni
 */

public class ArrayListApp
{
    public static void main(String [] args)
    {
        Scanner in = new Scanner(System.in);

        // declare ArrayList object studList
        ArrayList<Student> studList = new ArrayList<Student>();
        String nm;long id; int sc;

        System.out.print ("Number of students:");
        int num = in.nextInt();

        for (int i = 0; i < num; i++)
        {
            // input data for the student here
            System.out.print("\nEnter name : ") ;
            nm = (in.next());

            System.out.print("Student id : ") ;
            id = in.nextLong() ;

            System.out.print("Student score: ") ;
            sc = in.nextInt() ;

        // store data
            Student stud = new Student (nm, id, sc);

        // add data at the end of ArrayList
           studList.add(stud);
        }
        System.out.println(" \nStudent Details: ");
        for (int i = 0; i < studList.size(); i++)
            System.out.println(studList.get(i));

// Please complete the exercises
    }
}
```