Course: Object Oriented Programming

Lab 05

Arrays and Array List

**Task 1**:

Make a class Course with following attributes courseCode, courseTitle and courseCreditHr. All attributes are private and exposed with getter and setter. In main class, create an array of courses. Ask user to input number of courses and then for each course, get all data from user. Once user input is done, print information of courses in following format:

**Course 1 Data:**

Course Title: Object Oriented Programming

Course Code: CSC241

Course Credit Hour: 4

# **Task 2**

Make a class Course with attributes courseTitle and 2-dimensional int array of marks.

i.e.

int[][] marks=new int[noOfStudents][];

First user will input total number of students and then number of test for each student. Create a method inputMarksData() which will input marks of all student in a course. Create another method displayStudentData() which will print courseTitle and marks of each student. In main class instantiate object of Course class, ask user to inpur courseTitle and call both methods.

# **Task 3**

* Create an arraylist of strings named student and apply given methods on array list.
  + Add name of students in arrayList
    - Ali
    - Ahmad
    - Umar
    - Talha
* Create a static function named *display(ArrayList<String> students)* and call it after each of following steps and also print a blank line after each step.
* Add two more students at the end of students list using students.add()
  + 1)Tooba 2) Waleed
* Print the size of list.
* Add “Hamza” in the start of students.
* Add “Rizwan” as second element of list.
* Sort list of students
* Remove “Tooba” from list.
* Remove last element from list.

Hint: To remove last element use (size()-1)

* Display second element from list.
* Update name of first student. New name should be “Muhammad Waleed”
* Remove the first name.
* Remove all elements from list.

**Task 4**

Create a fully encapsulated class named Student.

Student class has three attributes name, id and CGPA. Create a constructor, which take two attributes i.e. id and name.

* Create test class with name StudentTest

**In main class:**

* Create three objects of Student named s1, s2 and s3 with following attributes
  + Ali, FA23-BCS-010
  + Ahmad, FA23-BCS-001
  + Talha, FA23-BCS-002
* Create a static function named *display, call it after each of following steps,* and print a blank line after each step. This method should display id, name and CGPA of student.

Hint: set CGPA using setCGPA(double cgpa) method

* Create an ArrayList named arraylist and add the above objects to arraylist
* Add another Student object at the start of ArrayList with the following attributes
  + Waleed, FA23-BSE-020
* Add another Student object at the end of ArrayList with the following attributes
  + Maha, FA23-BSE-002
* Remove second student from list using index.
* Remove first student from list using object reference.
* Print total number of students.
* Replace the student at index 0 with new student.
* Now display information of first student in list.