

LAB 6

Create a project **Lab06**

Part -1-

Q1) Write a java class **Student** that contains three instance variables (or data members) and one method. (look at UML)

The Data members:

name: String containing first name of student.

age: int Student's age.

GPA: double Student's GPA.

The Methods:

printInfo(): void This method prints all information of the student as in the following example:

```
-----  
Student name: Ali  
Student age: 25  
Student GPA: 3.75  
-----
```

| Student |
|--|
| +name: String +age: int +GPA: double |
| + printInfo(): void |

Solution:

```
public class Student {  
    public String name;  
    public int age;  
    public double GPA;  
  
    // Methods start here  
  
    public void printInfo () {  
        System.out.println("-----");  
        System.out.println("Student name: "+name);  
        System.out.println("Student age: "+age);  
        System.out.println("Student GPA: "+GPA);  
        System.out.println("-----");  
    }  
}
```

Q2) Write a java class **testStudent** that will declare two Student objects s1 and s2, then read from the user the name, age and GPA for both students. Finally, use the method printInfo() to print the information for each student.

Sample Run:

Please enter Name, Age and GPA of first student: **Mohammed 22 3.0**

Please enter Name, Age and GPA of second student: **Fahad 21 3.2**

Student name: Mohammed
Student age: 22
Student GPA: 3.0

Student name: Fahad
Student age: 21
Student GPA: 3.2

Solution:

```
import java.util.Scanner;
public class testStudent {
    public static void main(String[] args) {
        Scanner kb = new Scanner (System.in);
        Student s1 = new Student ();
        Student s2 = new Student ();

        System.out.print("Please enter Name, Age and GPA of first student: ");
        s1.name =kb.next();
        s1.age = kb.nextInt();
        s1.GPA = kb.nextDouble();

        System.out.print("Please enter Name, Age and GPA of second student:");
        s2.name =kb.next();
        s2.age = kb.nextInt();
        s2.GPA = kb.nextDouble();

        s1.printInfo();
        s2.printInfo();

    }
}
```

Part -2-

Q3) Modify the **Student** class from Q1) so that it contains one more instance variable **course** of type **String** which is a **class variable** representing a class that all the students are taking. (like CSC111) Also add one method **GPAToPercentage** that prints the GPA of a certain student as a percentage. For example, if the GPA = 4 the method will print 80 %.

course: String A class variable. A course that all students are taking.
GPAToPercentage (): void This method prints the GPA of a student after converting it to a percentage.

Solution:

```
public class Student {  
    public String name;  
    public int age;  
    public double GPA;  
    public static String course ;  
    // Methods start here  
    public void printInfo(){  
        System.out.println("-----");  
        System.out.println("Student name: "+name);  
        System.out.println("Student age: "+age);  
        System.out.println("Student GPA: "+GPA);  
        System.out.println("Student course: "+course);  
        System.out.println("-----");  
    }  
    public void GPAToPercentage (){  
        double percentage;  
        // Compute percentage  
        System.out.println("Student GPA: "+GPA);  
        System.out.println("Student GPA as a Percentage: "+percentage);  
    }  
}
```

| Student |
|--|
| +name: String +age: int +GPA: double <u>course</u> : String |
| + printInfo(): void + GPAToPercentage(): void |

Q4) Modify the class **testStudent** that will declare two Student objects s1 and s2, read from the user the course name and then read Name, Age and GPA for both students. Then use the method printInfo() to print the information for each student. Finally, use the method GPAToPercentage() to print the GPA as a percentage for both students.

Sample Run:

Enter course name: **CSC111**

Please enter Name, Age and GPA of first student: **Nawaf 19 4.9**

Please enter Name, Age and GPA of second student: **Hamad 24 2.5**

Student name: Nawaf

Student age: 19

Student GPA: 4.9

Student course: CSC111

Student name: Hamad

Student age: 24

Student GPA: 2.5

Student course: CSC111

Student GPA: 4.9

Student GPA as a Percentage: %98.00000000000001

Student GPA: 2.5

Student GPA as a Percentage: %50.0

Solution:

```
import java.util.Scanner;
public class testStudent {
    public static void main(String[] args) {
        Scanner kb = new Scanner (System.in);
        Student s1 = new Student () ;
        Student s2 = new Student () ;

        // course is a class variable so all Student objects have same value

        System.out.print("Enter course name: ");
        Student.course=kb.next();

        System.out.print("Please enter Name, Age and GPA of first student: ");
        s1.name =kb.next();
        s1.age = kb.nextInt();
        s1.GPA = kb.nextDouble();

        System.out.print("Please enter Name, Age and GPA of second student:");
        s2.name =kb.next();
        s2.age = kb.nextInt();
        s2.GPA = kb.nextDouble();

        s1.printInfo();
        s2.printInfo();
        s1.GPAToPercentage();
        s2.GPAToPercentage();

    }
}
```