king Saud University
College of Computer &Information Science
CSC111 – Lab
Object – I –
All Sections

Objectives:

- To describe objects and classes, and use classes to model objects.
- To use UML graphical notation to describe classes and objects.
- To demonstrate how to define classes and create objects.
- To create objects using default constructors.
- To access objects via object reference variables.
- To define a reference variable using a reference type.
- To access an object's data and methods using the object member access operator (.).

Lab Exercise 1

Part 1

Write a program that prints name and age of two students

Sample Run

```
Student Name: Saleh
Student age: 22
------------------------
Student Name: Ali
Student age: 25
```

Part 2

In the previous program you have defined two variables to store the names of two students and another two to store the ages. But if we want to have more than two students, then we'll have variables

like `student1Name`, `student2Name`, `student3Name`… etc. In this case, it is better to use objects.

Rewrite the previous program using classes and objects. The new program will contain one class named `Student` and two objects of this class. Write the program by completing the following pseudo code:

Sample Run

```
Student Name: Saleh
Student age: 22
------------------------
Student Name: Ali
Student age: 25
```

```
class Student{
        // data members
        public String  name;
        //define instance variable age as integer
        /* modifier  datatype  variable name*/
}
public class TestStudent{
     public static void main(String[] args){
         //creating objects of student
        //create first student object named s1
        Student s1 = new Student();

        /*create second student object named s2*/

        //assign first student name "Saleh"
        s1.name="Saleh";
        //assign first student age 22
        s1.age=22;

        /*assign second student name "Ali"*/

        /*assign second student age 25*/

        //printing students information

        //print first student name
        System.out.println("Student name:\t"+ s1.name);

        /*print first student age*/
```

```
        /*print second student name*/

        /*print second student age*/

        }
}
```

Part 3

Now write the same program and add a new instance variable of type double to store student's GPA

Sample Run

```
Student Name: Saleh
Student age: 22
Student GPA: 4.25
------------------------
Student Name: Ali
Student age: 25
Student GPA: 3.75
```

```
class Student
{
    // data members
    // define instance variables name, age, GPA
    /* modifier  datatype  variable name*/
    /* modifier  datatype  variable name*/
    /* modifier  datatype  variable name*/
}
//class TestStudent
//tests the Student class above
public class TestStudent
 {
    public static void main(String[] args)
  {
        //creating objects
        /*create object s1*/
        /*create object s2*/

        //assign values to the instance
        //variables of the two objects
        /* */
        //print the two students information
        /* */
```

```
  }
}
```

Part 4

Now we would like to change previous program to allow the user of the program to enter a course name and then we assign all students to this course. Start by adding a property called `course` of type `String` to class Student. Add a `String` variable named `course`. The value of course is read from the user at the beginning of the program. After that, assign this course to each student that you create.

Sample Run

```
Student Name: Saleh
Student age: 22
Student GPA: 4.25
-------------------------
Student Name: Ali
Student age: 25
Student GPA: 3.75
```

```
class Student
{
      // data members
      // define instance variables name, age, GPA, course
      /* modifier  datatype  variable name*/
      /* modifier  datatype  variable name*/
      /* modifier  datatype  variable name*/
      /* modifier  datatype  variable name*/

}
//class TestStudent
//tests the Student class above
public class TestStudent
 {
      public static void main(String[] args)
   {
          /*define variable course and read its value*/

          //creating objects
          /*create object s1*/
          /*create object s2*/
```

```
        //assign values to the instance variables
        //of the two objects
        /* */
        //print the two students information including the course
        /* */


  }
}
```

Part 5

Now write the same program and add a method printInfo() to print student's information. The method dose not receive any parameter and dose not return any value.

Sample Run

```
Student Name: Saleh
Student age: 22
Student GPA: 4.25
-------------------------
Student Name: Ali
Student age: 25
Student GPA: 3.75
```

```
class Student
{
    // data members
    // define instance variables name, age, GPA, course
    /* modifier  datatype  variable name*/
    /* modifier  datatype  variable name*/
    /* modifier  datatype  variable name*/
    /* modifier  datatype  variable name*/



    //Define method printInfo that is used to print
    //Student's information
    /* modifier  returntype*/  printInfo(/*parameters*/)
    {
    /* body */
    }
```

```
}
//class TestStudent
//tests the Student class above
public class TestStudent
 {
      public static void main(String[] args)
   {
          /*define variable course and read its value*/

          //creating objects
          /*create object s1*/
          /*create object s2*/

          //assign values to the instance variables
          //of the two objects
          /* */

          //print the two students information
          /*call printInfo on each of the two objects*/


   }
 }
```