

# Lab Assignment 04



Inspiring Excellence

Course Code:	CSE111
Course Title:	Programming Language II
Topic:	OOP Basics, Instance Variable, and Instance Method
Number of Tasks:	11

*[Submit all the Coding Tasks (Task 1 to 9) in the Google Form shared on buX before the next lab. Submit the Tracing Tasks (Task 10 & 11) handwritten to your Lab Instructors at the beginning of the lab]*

## Task 1

You are given the following “**University**” class:

```
public class University{  
    public String name;  
    public String country;  
}
```

Now write a Java **tester** class named “**UniversityTester**”.

- Write the main method and create 2 objects of **University** class and print the location of the objects and print the instance variables of the objects. Are the location of the objects the same?
- Now change the instance variables of the first object.  
name = “Imperial College London”  
country = “England”

Now change the instance variables of the second object.

name = “Brac University”  
country = “Bangladesh”

Now check if the instance variables of both objects have changed or not and whether the instance variables of both objects are of the same value or not.

## Task 2

Write the driver code of “**Test2**” class to generate the following output:

```
public class Test2{  
    public static void main(String [] args){  
        //Your code here  
    }  
}
```

Design Class	Output
<pre>public class Circle {     public double radius = 5; }</pre>	<pre>Radius of the circle is 5.0 The area of the circle is 78.53981633974483 The circumference of the circle is 31.41592653589793</pre>

### Task 3

Design the “**Student**” class so that the main method prints the following:

Tester Class	Output
<pre>public class Test3{     public static void main(String [] args){         Student s1 = new Student();         System.out.println("Name of the Student: "+s1.name);         System.out.println("ID of the Student: "+s1.id);         s1.id = 123;         System.out.println("ID of the Student: "+s1.id);     } }</pre>	Name of the Student: Bob ID of the Student: 1 ID of the Student: 123

### Task 4

Write the code in java for the “**Vehicle**” class. The tester class and the output is given below:

Tester class	Output
<pre>public class Tester4{     public static void main(String [] args){         Vehicle car = new Vehicle();         System.out.println("Attributes of car object:");         System.out.println(car.type);         System.out.println(car.wheels);         System.out.println(car.color);         System.out.println("=====");         Vehicle bike = new Vehicle();         bike.type="Motor bike";         bike.wheels=2;         bike.color="Red";         System.out.println("Attributes of bike object:");         System.out.println(bike.type);         System.out.println(bike.wheels);         System.out.println(bike.color);     } }</pre>	Attributes of car object: Car 4 White ===== Attributes of bike object: Motor bike 2 Red

## Task 5

Write the code in java for the “**Tournament**” class. The tester class and the **output** is given below:

Tester class	Output
<pre>public class Tester5{     public static void main(String [] args){         Tournament asiaCup = new Tournament();         System.out.println(asiaCup.name+" "+ asiaCup.sportsType+" "+asiaCup.numberOfTeams+" "+asiaCup.teams);         System.out.println("*****");         asiaCup.name="Asia Cup";         asiaCup.sportsType="Cricket";         asiaCup.numberOfTeams=4;         asiaCup.teams = new String[] {"BD","IND","PAK","SL"};         System.out.printf("%s %s Tournament is played between %d teams\n",asiaCup.name, asiaCup.sportsType, asiaCup.numberOfTeams);         System.out.println("The teams are:");         for(int i=0; i&lt;asiaCup.teams.length; i++){             System.out.println(asiaCup.teams[i]);         }     } }</pre>	<pre>null null 0 null ***** Asia Cup Cricket Tournament is played between 4 teams The teams are: BD IND PAK SL</pre>

### Task 6

Design the “**ImaginaryNumber**” to generate the **output** given below:

Tester Class	Output
<pre>public class Tester6{     public static void main(String [] args){         ImaginaryNumber num1 = new ImaginaryNumber();         num1.printNumber();         System.out.println("1*****");         num1.realPart=3;         num1.imaginaryPart=7;         num1.printNumber();         System.out.println("2*****");         ImaginaryNumber num2 = new ImaginaryNumber();         num2.realPart=1;         num2.imaginaryPart=9;         num2.printNumber();     } }</pre>	<pre>0 + 0i 1***** 3 + 7i 2***** 1 + 9i</pre>

### Task 7

Complete the “**Cat**” class so the main method produces the following output:

Test Class	Output
<pre>public class Test7{     public static void main(String [] args){         Cat c1 = new Cat();         System.out.println("=====");         c1.printCat();         c1.color = "Black";         System.out.println("=====");         c1.printCat();         c1.color = "Brown";         c1.action = "jumping";         System.out.println("=====");         c1.printCat();     } }</pre>	<pre>===== White cat is sitting ===== Black cat is sitting ===== Brown cat is jumping</pre>

## Task 8

Complete the **Bird** class so that main method produces the following **output**:

Test class	Output
<pre>public class Test8{     public static void main(String args[]) {         Bird b1 = new Bird();         b1.name = "Parrot";         b1.flyUp(3);         b1.makeNoise();         b1.flyDown(5);         b1.flyDown(2);         b1.flyDown(1);         Bird b2 = new Bird();         b2.name = "Eagle";         b2.flyUp(5);         b2.flyDown(5);         b2.makeNoise();     } }</pre>	<pre>Parrot has flown up 3 feet. Squawk Parrot cannot fly down 5 feet. Parrot has flown down 2 feet. Parrot has flown down 1 feet and landed. Eagle has flown up 5 feet. Eagle has flown down 5 feet and landed. Squee</pre>

## Task 9

Design the **CellPhone** class so that the **main** method of tester class can produce the following output:

Tester Class	Output
<pre>public class Tester9{     public static void main(String[]args){         CellPhone phone1 = new CellPhone();         phone1.printDetails();         phone1.model ="Nokia 1100";         System.out.println("1#####");         phone1.storeContact("Joy - 01834");         System.out.println("=====");         phone1.printDetails();         System.out.println("2#####");         phone1.storeContact("Toya - 01334");         phone1.storeContact("Aayan - 01135");         System.out.println("=====");         phone1.printDetails();         System.out.println("3#####");         phone1.storeContact("Sani - 01441");         System.out.println("=====");         phone1.printDetails();     } }</pre>	<pre>Phone Model unknown Contacts Stored 0 1##### Contact Stored ===== Phone Model Nokia 1100 Contacts Stored 1 Stored Contacts: Joy - 01834 2##### Contact Stored Contact Stored ===== Phone Model Nokia 1100 Contacts Stored 3 Stored Contacts: Joy - 01834 Toya - 01334 Aayan - 01135 3##### Memory full. New contact can't be stored. ===== Phone Model Nokia 1100 Contacts Stored 3 Stored Contacts: Joy - 01834 Toya - 01334 Aayan - 01135</pre>

## Task 10

Consider the following class:

```
public class Human{
    public int age;
    public double height;
}
```

**Show the output of the following sequence of statements:**

[illegible]



## Task 11

Consider the following class:

```
public class Student{
    public String name;
    public double cgpa;
}
```

**Show the output of the following sequence of statements:**

[illegible]

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