United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Midterm Exam, Trimester: Summer 2024

Course Code: CSE-1115, Course Title: Object Oriented Programming

Total Marks: 30, Duration: 1 Hour 45 Minutes

Any examinee found adopting unfair means will be expelled from the trimester / program as per UIU disciplinary rules.

Answer all Five Questions

QUESTION 1 [2+2+2 MARKS]

Consider the following codes:

```
public class Person {
  public String name, gender;
  private int age; // private = restricted access

  // Write constructor to initialize name and gender with this reference keyword;

  // Write getter method for age;

  // Write setter method for age;

  public static void main(String[] args) {
    Person p1 = new Person("Prof. Albert Einstein", "Male");
    System.out.println(p1.name);
  }
}
```

Now:

I. Write constructor to initialize name and gender with this reference keyword.

II. Write getter method for age variable.

III. Write setter method for age variable.

QUESTION 2 [3+3 MARKS]

Consider the following codes:

```
class Vehicle {
  protected String brand;

  public Vehicle(String brand) {
     this.brand = brand;
  }

  public void honk() {
    System.out.println("Tuut, tuut!");
  }
}
```

Output:

```
A vehicle horn is a sound-making device.
Tuut, tuut!
Ford Mustang
```

public class Car extends Vehicle {
  private String modelName;
 	
  // Invoke parent class constructor;
 	
  // Invoking overriding method;
 	
  public static void main(String[] args) {
  Car myCar = new Car("Ford", "Mustang");
  myCar.honk();
  System.out.println(myCar.brand + " " +
myCar.modelName);
  }
}	

Now:

I. Write the constructor of car class and invoke the parent class constructor.

II. Override the honk() method and print "A vehicle horn is a sound-making device." then invoke the overridden method.

QUESTION 3 [6 MARKS]

Write output of the following codes:

```
class Calculate{
  static int count=10;

  static{  System.out.println("United International University");  }

  static int cube(int x){
    return x*x*x;
  }

  public static void Counter(){
    count++;//incrementing the value of static variable
    System.out.println(count);
  }

  public static void main(String args[]){
    Calculate.Counter();
    Calculate c1 = new Calculate();
    c1.Counter();
    Calculate c2 = new Calculate();
    c2.Counter();
    System.out.println(c1.count);
    int result=Calculate.cube(Calculate.count);
    System.out.println(result);
  }
}
```

QUESTION 4 [6 MARKS]

Write output of the following codes:

```
public class Sum {
   int x, y, z;

   {
      System.out.println(x+y+z);
   }

   {
      x = 10;
      y = 20;
      z = 30;
      System.out.println(x+y+z);
   }

   public Sum(int x) {
      this.x = x;
      System.out.println(x+y+z);
   }

   public Sum(int x, int y) {
      this(1000);
      this.x = x;
      this.y = y;
      System.out.println(x+y+z);
   }

   public Sum(int x, int y, int z) {
      this(100, 200);
      this.x = x;
      this.y = y;
      this.z = z;
      System.out.println(x+y+z);
   }

   public void display(){
      this.display("That's one small step for man, one giant leap for mankind.");
   }

   public void display(String str){
      System.out.println(str);
   }

   public static void main(String args[])
   {
      Sum s = new Sum(10, 20, 30);
      s.display();
   }
}
```

QUESTION 5 [6 MARKS]

Consider the following Java code:

```
class Shape {
   void draw() {
      System.out.println("drawing...");
   }
}

class Rectangle extends Shape {
   void draw() {
      System.out.println("drawing rectangle...");
   }
}

class Circle extends Shape {
   void draw() {
      System.out.println("drawing circle...");
   }
}

class Triangle extends Shape {
   void draw() {
      System.out.println("drawing triangle...");
   }
}
```

Output:

```
drawing rectangle...
drawing circle...
drawing triangle...
```

Write a class named Test, whish has the main() method. In the main() method, create a heterogeneous array named “s” of Shape class, where array length is three. Index s[0] creates with Rectangle class, s[1] creates with Circle class, s[2] creates with Triangle class. Finally, iterate a loop to call draw() method of each object.