United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Midterm Exam, Trimester: Fall 2024

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

Total Marks: 30, Duration: 1 Hour 30 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 Employee{
 public String name;
 private int employee_id;
 private double salary;

// Write constructor to initialize name, employee
// id and salary with this reference keyword;

 // Write getter method for salary;
 // Write setter method for salary;
```

```
 public static void main(String[] args) {
       Employee e1 = new Employee("Prof. Albert Einstein",
                                  19, 2000.50 );
       System.out.println(e1.name);
  }
}
```

- Write constructor to initialize name, employee_id and salary with this reference keyword.
- Write getter method for salary variable.
- Write setter method for salary variable.

QUESTION 2 [3+3 MARKS]

Consider the following codes:

```
class Vehicle {
 protected String brand;
 protected int serial;

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

 public Vehicle(int serial) {
    this.serial = serial;
 }

 public Vehicle(String brand. int serial){
    this(brand);
    this(serial);
 }
```

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

public class Car extends Vehicle {
 private String modelName;

 // Invoke parent class constructor;
 // Invoking overriding method;

  public static void main(String[] args) {
     Car car1= new Car("Honda", 20245 , "Integra");
     car1.honk();
    System.out.println(car1.brand + " " +car1.modelName);
  }
}
```

Output:
A vehicle horn is a sound-making device.
Tuut, tuut!
Honda Integra

- Write the constructor of car class and invoke the parent class constructor.
- Override 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 Operations {
   static int total = 20;

   static {
      System.out.println("Global Tech Academy");
   }

   static int square(int y) {
      return y * y;
   }

   public static void Increment() {
      total++;
      System.out.println(total);
   }
```

```
public static void main(String args[]) {

      Operations.Increment();

      Operations obj1 = new Operations();

      obj1.Increment();

      Operations obj2 = new Operations();

      obj2.Increment();

      System.out.println(obj1.total);

      int result = Operations.square(Operations.total);

      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 = 11;
  y = 22;
  z = 33;
  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(500);
  this.x = x;
  this.y = y;
  System.out.println(x+y+z);
 }
```

```
public Sum(int x, int y, int z) {
  this(50, 20);
  this.x = x;
  this.y = y;
  this.z = z;
  System.out.println(x+y+z);
}

public void display(){
  this.display("The pen is stronger than the sword.");
}

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

public static void main(String args[])
 {
  Sum s = new Sum(100, 150, 300);
  s.display();
 }
}
```

QUESTION 5 [6 MARKS]

```
class Figure {
    void render() {
        System.out.println("rendering...");
    }
}

class Square extends Figure {
    void render() {
        System.out.println("rendering square...");
    }
}
```

```
class Oval extends Figure {
    void render() {
        System.out.println("rendering oval...");
    }
}

class Polygon extends Figure {
    void render() {
        System.out.println("rendering polygon...");
    }
}
```

Write a class named Demo, which contains the main() method. In the main() method, create a heterogeneous array named f of the Figure class, where the array length is three. Index f[0] should be created with the Square class, f[1] with the Oval class, and f[2] with the Polygon class. Finally, iterate through a loop to call the render() method of each object.