



United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Assignment 1(Equivalent to mid), Trimester: Summer 2024

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

Total Marks: 10 (Each question carries equal marks)

You must write a report (**Hardcopy**) consisting of the solution. At the front page of your report you have to mention

1. Course Title, Course Code and Course Teacher
2. your full name;
3. student ID;
4. section;
5. Semester;
6. Submission Date;
7. Assignment No.
8. And your serial number in class. You will find that in the grade sheet that shared with you in classroom.

Deadline: Check ELMS

You have to submit both

- the **scanned handwritten copy** of your assignment - pdf file" in LMS. (Don't Submit any softcopy)
- **Hardcopy** in class.

Please remember this is a strict deadline. Under no circumstances, this deadline will change. Failure to submit during the deadline will result in **penalty marks**.

• **DO NOT COPY from the internet, seniors, batchmates, or any other sources. You must be able to explain your code. Any plagiarism will be severely penalized. If found out, there will be -100% marks reduction. Solve the questions by yourself.**

• **DO NOT PUT the question in chatGPT and ask it to write the answer. If found out, there will be -100% marks reduction.**

QUESTION 1

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

Consider the following codes:

```
class Vehicle {
    protected String brand;

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

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

public class Car extends Vehicle {
    private String modelName;

    // Invoke parent class constructor;

    // Invoking overriding method;

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

Output:

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

<pre> Car myCar = new Car("Ford", "Mustang"); myCar.honk(); System.out.println(myCar.brand + " " + myCar.modelName); } } </pre>	
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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

Write output of the following codes. **For each line of output provide detailed explanation and reasoning.**

```

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

Write a program which will take books names of a library. Where the number of books will be provided by console as **n**. After this number, you will get names of books. Keep them in an array of strings. Find the total number of books whose name starts with a vowel. Please check the following sample input/output along with the explanation.

Sample Input	Sample Output	Explanation
3 I Capture the Castle American Dreamer To kill a mockingbird	Count: 2	Book 1 and 2 starts with vowel

QUESTION 5

You are required to write a program that takes employee information from the console for the best football team in the world, where the number of employees (**n**) will be provided. After this number, you will receive details about each employee including **Name**, **ID**, **Salary**, **Age**, and **Department**. The program should:

1. Store this information in a class `Employee`, and keep track of all employees in an array (list).
2. **Count the number of employees** who have a salary of **at least 12,000** or more.
3. **Print the maximum salary** among all employees.
4. After processing, prompt/ask the user to input a **department** and an **age range** (min age and max age). Then, based on these inputs, filter the employees and **find the maximum salary** of employees that match the department and fall within the given age range.
5. If no employees match the filter criteria, print an appropriate message.

Input	Output
5 Lionel Messi LM-101 10000 28 HR Ángel Di María ADM-102 20000 35 IT Paulo Dybala PD-103 15500 42 Marketing Emiliano Martínez EM-104 21000 45 IT Rodrigo De Paul RDP-105 12500 29 HR Enter department for filter: IT Enter age range (min and max): 30 50	Count of employees with salary >= 12000: 4 Maximum salary among all employees: 21000 Max Salary in IT department for age between 30 and 50: 21000