Object Oriented Programming
Lab Task 2

SUBMITTED BY:

Hasaan Ahmad SP22-BSE-017

SUBMITTED TO: Sir Muzaffar Iqbal

Solved Lab Activity 1:

```java
package Lab2;

class Rectangle {
    public int length, width;

    public int Calculatearea() {
        return (length * width);
    }
}

public class runner {
    public static void main(String args[]) {
        Rectangle rect = new Rectangle();
        rect.length = 10;
        rect.width = 5;
        System.out.println(rect.Calculatearea());
    }
}
```

Output:

```
2.runner'
Area is: 50
PS D:\Ishtudy Materia
```

Solved Lab Activity 2:

```java
package Lab2;

class Rectangle {
    public int length, width;

    public Rectangle() {
        length = 5;
        width = 2;
    }

    public Rectangle(int l, int w) {
        length = l;
        width = w;
```

```
    }

    public int Calculatearea() {
        return (length * width);
    }
}

public class runner2 {
    public static void main(String args[]) {
        Rectangle rect = new Rectangle();
        System.out.println(rect.Calculatearea());
        Rectangle rect1 = new Rectangle(10, 20);
        System.out.println(rect1.Calculatearea());
    }
}
```

Output:

```
PS D:\Ishtudy Materi
tudy Material\3rd Se
a\jdk-18.0.2\bin\jav
s' '-cp' 'D:\Ishtudy
2.runner2'
10
200
PS D:\Ishtudy Materi
```

Solved Lab Activity 3:

```
package Lab2;

class Point {
    private int x;
    private int y;

    public Point() {
        x = 1;
        y = 2;
    }
```

```
    public Point(int a, int b) {
        x = a;
        y = b;
    }

    public void setX(int a) {
        x = a;
    }

    public void setY(int b) {
        y = b;
    }

    public void display() {
        System.out.println("x coordinate = " + x + " y coordinate = "
                + y);
    }

    public void movePoint(int a, int b) {
        x = x + a;
        y = y + b;
        System.out.println("x coordinate after moving = " + x + " y
coordinate after moving = " + y);
    }
}

public class runner3 {
    public static void main(String args[]) {
        Point p1 = new Point();
        p1.movePoint(2, 3);
        p1.display();
        Point p2 = new Point();
        p2.movePoint(2, 3);
        p2.display();
    }
}
```

Output:

```
onMessages' '-cp' 'D:\Ishtudy Material\3rd Sem\OOP\LABS\LabManual\
bin' 'Lab2.runner3'
x coordinate after moving = 3 y coordinate after moving = 5
x coordinate = 3 y coordinate = 5
x coordinate after moving = 3 y coordinate after moving = 5
x coordinate = 3 y coordinate = 5
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\LabManual>
```

Graded Lab Task 1:

```java
package Lab2;

public class GLT1 {
    public static void main(String[] args) {
        Circle c1 = new Circle(); // Create a Circle object with radius
0.0
        Circle c2 = new Circle(2.5); // Create a Circle object with radius
2.5

        double cir1 = c1.calculateCircumference();
        double cir2 = c2.calculateCircumference();
        System.out.println(cir1);
        System.out.println(cir2);
    }

}

class Circle {

    private double radius;

    public Circle() {
        radius = 0.0;
    }

    public Circle(double r) {
        radius = r;
    }

    public double calculateCircumference() {
        return 2 * Math.PI * radius;
    }
```

```
}
```

Output:

```
2.GLT1'
0.0
15.707963267948966
PS D:\Ishtudy Material\
```

Graded Lab Task 2:

```
package Lab2;

class Account {
    double balance;

    public Account(double bal) {
        balance = bal;
    }

    public Account() {
        balance = 5000; // As default, balance= 5000
    }

    void withdraw(double amount) {
        balance -= amount;
    }

    void deposit(double amount) {
        balance += amount;
    }

    void display() {
        System.out.println("The total balance is " + balance);
    }

}

public class GLT2 {
    public static void main(String[] args) {
        Account a1 = new Account(50000);
        Account a2 = new Account();
```

```
        a1.display();
        a2.display();
        a2.deposit(5000);
        a2.display();
        a2.withdraw(1000);
        a2.display();
    }

}
```

Output:

```
 s' '-cp' 'D:\Ishtudy Material\3rd Sem\
 2.GLT2'
 The total balance is 50000.0
 The total balance is 5000.0
 The total balance is 10000.0
 The total balance is 9000.0
 PS D:\Ishtudy Material\3rd Sem\OOP\LAB
```

Graded Lab Task 3:

```
package Lab2;

public class GLT3 {
    public static void main(String[] args) {
        Distance d1 = new Distance();
        Distance d2 = new Distance(5, 8);
        d1.displayDistance();
        d2.displayDistance();
    }
}

class Distance {
    double feet;
    double inches;

    public Distance() {
        // Default constructor for distance
        feet = 10.0;
        inches = 10.0;
```

```
    }

    public Distance(double feetIn, double inchesIn) {
        feet = feetIn;
        inches = inchesIn;
    }

    void displayDistance() {
        System.out.println("Distance: " + feet + " inches : " + inches);
    }

}
```

Output:

```
bin' 'Lab2.GLT3'
Distance: 10.0 inches : 10.0
Distance: 5.0 inches : 8.0
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\LabManual
```

Graded Lab Task 4:

```
package Lab2;

public class GLT4 {
    public static void main(String[] args) {
        Marks m1 = new Marks();
        Marks m2 = new Marks(80, 60, 90);
        System.out.println(m1.calulateSum());
        System.out.println(m2.calulateSum());
    }

}

class Marks {
    int EngMarks;
```

```
    int CompMarks;
    int BioMarks;

    Marks() {
        // Default constructor
        EngMarks = 50;
        CompMarks = 50;
        BioMarks = 50;
    }

    Marks(int eng, int comp, int bio) {
        EngMarks = eng;
        CompMarks = comp;
        BioMarks = bio;
    }

    int calulateSum() {
        int sum = EngMarks + CompMarks + BioMarks;
        return sum;
    }
}
```

Output:

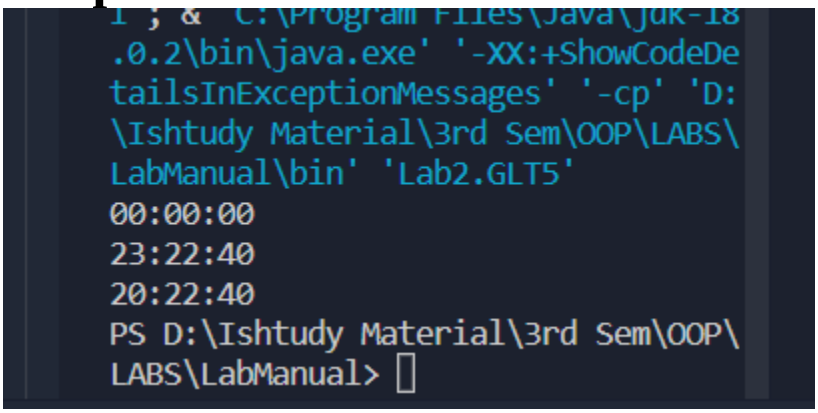
```
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\La
Files\Java\jdk-18.0.2\bin\java.exe' '-XX:+
onMessages' '-cp' 'D:\Ishtudy Material\3rd
bin' 'Lab2.GLT4'
150
230
PS D:\Ishtudy Material\3rd Sem\OOP\LABS\La
```

Graded Lab Task 5:

```
package Lab2;

public class GLT5 {
    public static void main(String[] args) {
```

```
        Time t1 = new Time();
        Time t2 = new Time(23, 22, 40);
        Time t3 = new Time(20, 22, 40);
        t1.display();
        t2.display();
        t3.display();
    }

}

class Time {
    int hours;
    int minutes;
    int seconds;

    public Time() {
        isValidTime(0, 0, 0);
    }

    public Time(int hours, int minutes, int seconds) {
        if (isValidTime(hours, minutes, seconds)) {
            this.hours = hours;
            this.minutes = minutes;
            this.seconds = seconds;
        }
    }

    public static boolean isValidTime(int hours, int minutes, int seconds)
{
        // check if the hours, minutes, and seconds are within the valid
range
        if (hours >= 0 && hours < 24 && minutes >= 0 && minutes < 60 &&
seconds >= 0 && seconds < 60) {
            return true;
        } else {
            return false;
        }
    }

    public void display() {
        System.out.printf("%02d:%02d:%02d\n", hours, minutes, seconds);
    }
}
```

Output:


1'; & 'C:\Program Files\Java\jdk-18
.0.2\bin\java.exe' '-XX:+ShowCodeDe
tailsInExceptionMessages' '-cp' 'D:
\Ishtudy Material\3rd Sem\OOP\LABS\
LabManual\bin' 'Lab2.GLT5'
00:00:00
23:22:40
20:22:40
PS D:\Ishtudy Material\3rd Sem\OOP\
LABS\LabManual>