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Section : Bscs 5

Lab task 4

Q1:

Code :

Package file code :

```java
package mathoperation;
public class MathOperation {
    public static double add(double a, double b) {
        return a + b;
    }
    public static double subtract(double a, double b) {
        return a - b;
    }

    public static double multiply(double a, double b) {
        return a * b;
    }

    public static double divide(double a, double b) {
        if (b == 0) {
            System.out.println("Error: Division by zero is not allowed.");

        }
        return a / b;
    }
}
```

main test class file :

```java
import mathoperation.MathOperation;

public class Main {
    public static void main(String[] args) {
        double num1 = 10, num2 = 5, num3 = 0;

        System.out.println("Addition: " + MathOperation.add(num1, num2));
```

```java
        System.out.println("Subtraction: " + MathOperation.subtract(num1,
num2));
        System.out.println("Multiplication: " + MathOperation.multiply(num1,
num2));
        System.out.println("Division (valid case): " +
MathOperation.divide(num1, num2));
        System.out.println("Division (divide by zero): " +
MathOperation.divide(num1, num3));
    }
}
```

output :

Q2 :

Package code :

```java
package greetings;
import java.time.LocalTime;
public class Greetings {
    public static String getGreeting(String name) {
        LocalTime currentTime = LocalTime.now();
        int hour = currentTime.getHour();
        String greetingMessage;

        if (hour < 12) {
```

```
        greetingMessage = "Good morning";
    } else if (hour < 18) {
        greetingMessage = "Good afternoon";
    } else {
        greetingMessage = "Good evening";
    }

    return greetingMessage + ", " + name + "!";
    }
}
```
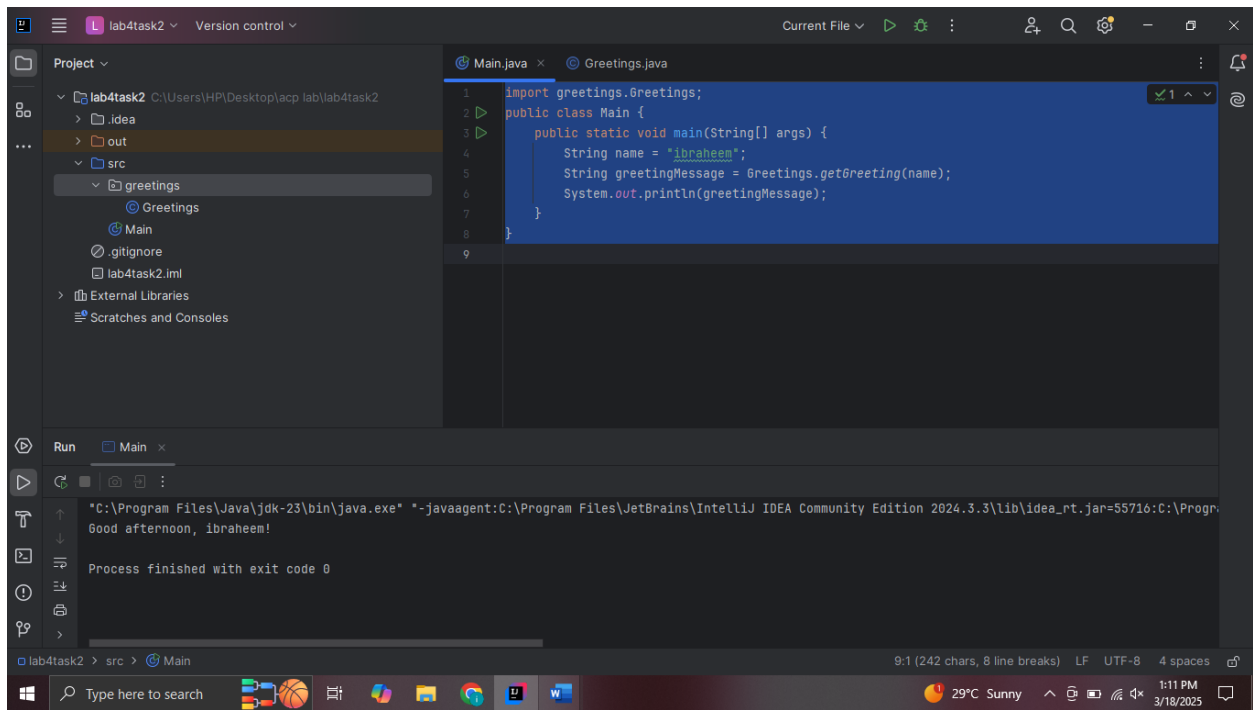
main class code :

```java
import greetings.Greetings;
public class Main {
    public static void main(String[] args) {
        String name = "ibraheem";
        String greetingMessage = Greetings.getGreeting(name);
        System.out.println(greetingMessage);
    }
}
```

output :

Q3 :

Package screenshot and code :

Circle code :

```java
package shapes;
public class circle {
    public double radius;

    public circle(double radius) {
        this.radius = radius;
    }
    public double getArea() {
        return 3.14 * radius * radius;
    }
}
```

rectangle code :

```java
package shapes;
public class rectangle {
    public double length;
    public double width;
    public rectangle(double length, double width) {
        this.length = length;
        this.width = width;
    }
    public double getArea() {
        return length * width;
    }
}
```

main class :

```java
import shapes.circle;
import shapes.rectangle;

public class Main {
    public static void main(String[] args) {
        circle circle = new circle(5.0);
        System.out.println("Area of Circle: " + circle.getArea());
        rectangle rectangle = new rectangle(4.0, 6.0);
        System.out.println("Area of Rectangle: " + rectangle.getArea());
    }
}
```

output:

Q4 :
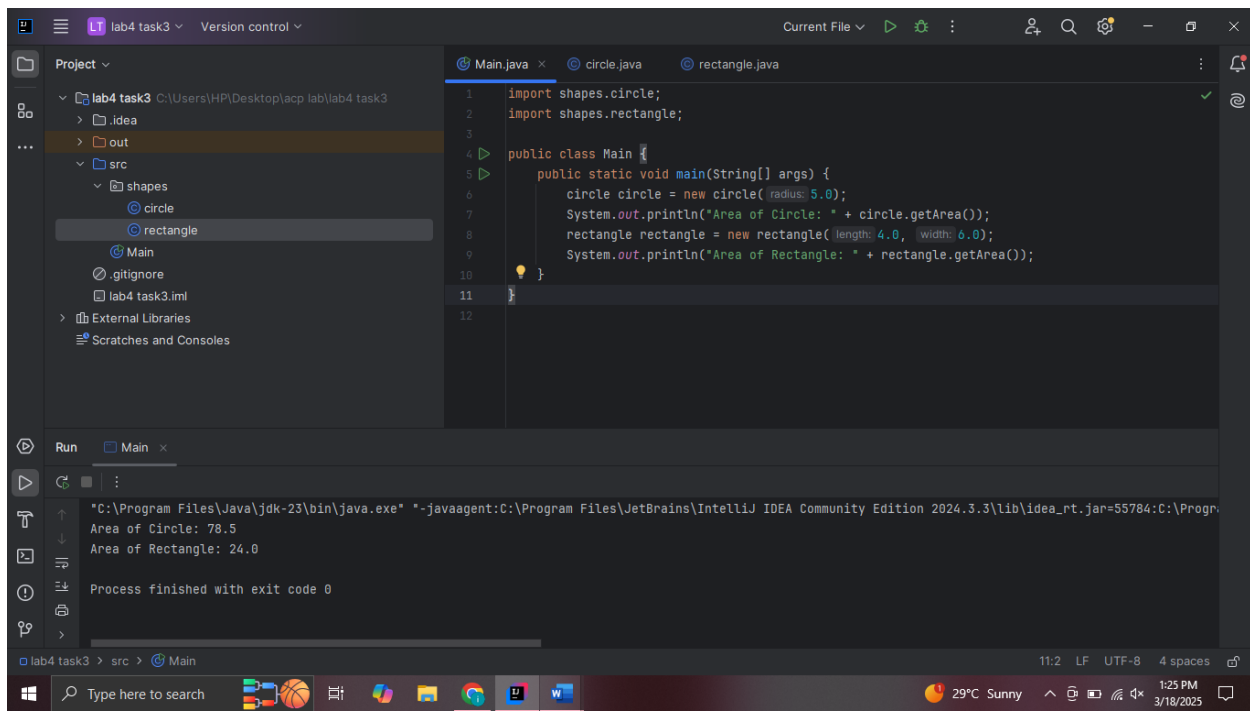
Package code :

```java
package randomgame;
import java.util.Random;
import java.util.Scanner;
public class numbergame {
    private int randomNumber;

    public numbergame() {
        Random random = new Random();
        this.randomNumber = random.nextInt(10) + 1;
    }

    public void play() {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Guess a number between 1 and 10:");
        int userGuess = scanner.nextInt();
        if (userGuess == randomNumber) {
            System.out.println("Congratulations! You guessed the correct number.");
        } else {
            System.out.println("Sorry, the correct number was " +
randomNumber + ". Try again!");
        }
        scanner.close();
    }
}
```

main code :

```
import randomgame.numbergame;
public class Main {
    public static void main(String[] args) {
        numbergame game = new numbergame();
        game.play();
    }
}
```

output :