

# Rajalakshmi Engineering College

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Batch: 2028

Degree: B.E - CSE

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## 2024\_28\_III\_OOPS Using Java Lab

### 2028\_REC\_OOPS using Java\_Week 7\_Q3

Attempt : 1

Total Mark : 10

Marks Obtained : 10

#### **Section 1 : Coding**

##### **1. Problem Statement**

A financial analyst, Alex, needs a program to calculate simple interest for various financial transactions. He requires a straightforward tool that takes in the principal amount, interest rate, and time in years and computes the interest.

The formula to be used is:  $\text{Interest} = \text{Principal} \times \text{Rate} \times \text{Time} / 100$

Implement this functionality using the `InterestCalculator` interface and the `SimpleInterestCalculator` class.

##### ***Input Format***

The first line of input consists of the principal amount `P` as a double value.

The second line of input consists of the annual interest rate  $r$  as a double value.

The third line of input consists of the number of years  $t$  as a positive integer, which is an integer value.

### ***Output Format***

The output displays the calculated simple interest in the following format: "Simple Interest: [interest\_value]", Here, [interest\_value] should be replaced with the actual interest value calculated by the program.

Refer to the sample output for the formatting specifications.

### ***Sample Test Case***

Input: 1000.00

5.00

2

Output: Simple Interest: 100.0

### ***Answer***

```
import java.util.Scanner;  
  
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interface InterestCalculator {  
    double simpleInterest(double principal, double rate, int time);  
}  
  
class SimpleInterestCalculator implements InterestCalculator {  
    @Override  
    public double simpleInterest(double principal, double rate, int time) {  
        // Formula: Interest = Principal × Rate × Time / 100  
        return (principal * rate * time) / 100;  
    }  
  
    public static void main(String[] args) {  
        Scanner scanner = new Scanner(System.in);  
  
        // Get principal amount from the user  
        System.out.print("Enter the principal amount: ");
```

```
double principal = scanner.nextDouble();

// Get interest rate from the user
System.out.print("Enter the annual interest rate (e.g., 5 for 5%): ");
double rate = scanner.nextDouble();

// Get time in years from the user
System.out.print("Enter the time in years: ");
int time = scanner.nextInt();

SimpleInterestCalculator calculator = new SimpleInterestCalculator();
double interest = calculator.simpleInterest(principal, rate, time);

System.out.printf("The simple interest is: %.2f%n", interest);

scanner.close();
}

}

class Main {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        double principal = scanner.nextDouble();

        double rate = scanner.nextDouble();

        int time = scanner.nextInt();

        InterestCalculator calculator = new SimpleInterestCalculator();

        double interest = calculator.simpleInterest(principal, rate, time);

        System.out.println("Simple Interest: " + interest);

    }
}
```

**Status : Correct**

**Marks : 10/10**