

Rajalakshmi Engineering College

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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;
```

```
import java.util.Scanner;
```

```
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  $\times$  Rate  $\times$  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