Solution Manual for Introduction to Java
Programming
Comprehensive Version 10th Edition Liang
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Test
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Student Name: _____
Class and Section _____
Total Points (20 pts) _____
Due: Jan 31, 2011 before the class

Project: Calculating Future Investment Value

CSCI 1301 Introduction to Programming Principles
Armstrong Atlantic State University

Problem Description:

Write a program that reads in investment amount, annual interest rate, and number of years, and displays the future investment value using the following formula:
and displays the future investment value using the following formula:

futureInvestmentValue =
  investmentAmount * (1 + monthlyInterestRate)^{numberOfYears*12}

For example, if you enter amount 1000, annual interest rate 3.25%, and number of years 1, the future investment value is 1032.98.

Hint: Use the Math.pow(a, b) method to compute a raised to the power of b.

Here is a sample run:

1

Sample 1:

```
Enter investment amount: 1000
Enter annual interest rate: 4.25
Enter number of years: 1
Accumulated value is 1043.34
```

Sample 2:

```
Enter investment amount: 1000
Enter annual interest rate: 4.25
Enter number of years: 1
Accumulated value is 1043.34
```

Analysis:

(Describe the problem including input and output in your own words.)

Design:
(Describe the major steps for solving the problem.)

Coding: (Copy and Paste Source Code here. Format your code using `Courier 10pts`)

[Copy and Paste Your program here]

Testing: (Describe how you test this program)

Submit the following items:

1. Print this Word file and Submit to me before the class on the due day

2. Compile, Run, and Submit to LiveLab as Exercise02_17 (you must submit the program regardless whether it complete or incomplete, correct or incorrect)

Code Solution:

```java
public class Test {
  public static void main(String[] args) {
    java.util.Scanner input = new java.util.Scanner(System.in);

    // Enter the investment amount
    System.out.print(
      "Enter the investment amount, for example 120000.95: ");
    double investmentAmount = input.nextDouble();

    // Enter yearly interest rate
    System.out.print("Enter annual interest rate, for example 8.25: ");
    double annualInterestRate = input.nextDouble();

    // Obtain monthly interest rate
    double monthlyInterestRate = annualInterestRate / 1200;

    // Enter number of years
    System.out.print(
      "Enter number of years as an integer, \nfor example 5: ");
    int numOfYears = input.nextInt();

    double futureValue =
      investmentAmount * Math.pow(1 + monthlyInterestRate,
      numOfYears * 12);

    System.out.print("Future value is " +
      (int)(futureValue * 100) / 100.0);
  }
}
```