

Cetaklah halaman ini, kemudian jawablah pertanyaan pada kotak-kotak yang sudah disediakan

EXERCISES

1

LEARN THE LINGO

Test your knowledge of the chapter's vocabulary by completing the following crossword puzzle.



Across

- 2 Used for interactive input
- 4 A variable name cannot be a _____
- 6 Operator || has ___ precedence than &&
- 8 Named constants add to the ___ of a program
- 10 A variable that cannot be altered
- 11 A variable is accessed via its _____
- 12 Statement that places a value in a variable
- 14 Java will not automatically ___ a larger type to a smaller one
- 18 Largest integer type
- 19 Constant names should be _____
- 21 Like main() and println(), nextInt() is a _____
- 22 A variable declaration must specify the _____
- 23 Smallest integer type
- 24 Give a value in a declaration
- 26 Assignment is ___ associative
- 27 Smaller decimal type

Down

- 1 Choose variable names that are _____
- 3 Scanner method
- 5 Every variable must be _____
- 7 A Scanner object skips _____
- 9 Named memory location
- 13 To use a Scanner you must ___ java.util.*
- 15 ++ denotes the _____ operator
- 16 Type that does not allow casting
- 17 -- operator
- 20 Number of bits in a short integer
- 25 If x is of type byte then x + 1 is of type _____

Computing Loan Payments

The problem is to write a program that computes loan payments. The loan can be a car loan, a student loan, or a home mortgage loan. The program lets the user enter the interest rate, number of years, and loan amount, and displays the monthly and total payments.

The formula to compute the monthly payment is as follows:

$$\text{monthlyPayment} = \frac{\text{loanAmount} \times \text{monthlyInterestRate}}{1 - \frac{1}{(1 + \text{monthlyInterestRate})^{\text{numberOfYears} \times 12}}}$$

You don't have to know how this formula is derived. Nonetheless, given the monthly interest rate, number of years, and loan amount, you can use it to compute the monthly payment.

In the formula, you have to compute $(1 + \text{monthlyInterestRate})^{\text{numberOfYears} \times 12}$. The `pow(a, b)` method in the `Math` class can be used to compute a^b . The `Math` class, which comes with the Java API, is available to all Java programs. For example,

```
System.out.println(Math.pow(2, 3)); // Display 8
System.out.println(Math.pow(4, 0.5)); // Display 4
```

$(1 + \text{monthlyInterestRate})^{\text{numberOfYears} \times 12}$ can be computed using `Math.pow(1 + monthlyInterestRate, numberOfYears * 12)`.

Here are the steps in developing the program:

1. Prompt the user to enter the annual interest rate, number of years, and loan amount.
2. Obtain the monthly interest rate from the annual interest rate.
3. Compute the monthly payment using the preceding formula.
4. Compute the total payment, which is the monthly payment multiplied by 12 and multiplied by the number of years.
5. Display the monthly payment and total payment.