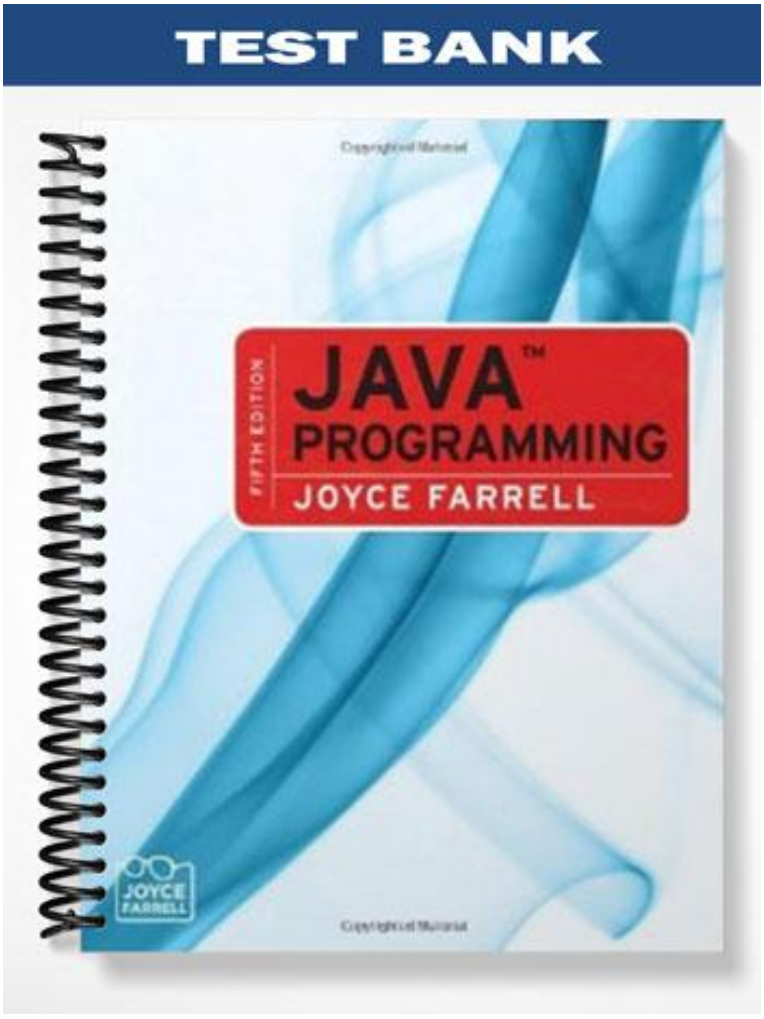
TEST BANK


JAVA™
PROGRAMMING
FIFTH EDITION
JOYCE FARRELL
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ch02

True/False
Indicate whether the statement is true or false.

____ 1. A variable can hold more than one value at a time.

____ 2. The legal integer values are -2^{31} through $2^{31}-1$. These are the highest and lowest values that you can store in four bytes of memory, which is the size of an int variable.

____ 3. Multiplication, division, and modulus always take place after addition or subtraction in an expression.

____ 4. The term parse means to break into component parts.

____ 5. You can create a confirm dialog box with five arguments.

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 6. A data item is ____ when it cannot be changed while a program is running.
a. variable
b. constant
c. primitive
d. literal

____ 7. A(n) ____ is a named memory location that you can use to store a value.
a. cast
b. variable
c. reference
d. primitive

____ 8. Primitive types serve as the building blocks for more complex data types, called ____ types.
a. integer
b. literal
c. reference
d. data

____ 9. ____ refers to the order in which values are used with operators.
a. Associativity
b. Initialization
c. Declaration
d. Floating

____ 10. In Java, you use variables of type ____ to store integers, or whole numbers.
a. `num`
b. `double`
c. `var`
d. `int`

____ 11. In Java, when a numeric variable is concatenated to a `String` using the ____ , the entire expression becomes a `String`.
a. plus sign
b. equal sign
c. concatenate() statement
d. string() statement

____ 12. You use ____ operators to perform calculations with values in your programs.
a. calculation
b. arithmetic
c. integer
d. precedence

____ 13. When you perform _____ , whether the two operators used in the arithmetic expression are integer constants or integer variables, the result is an integer.
a. data modeling
b. a type cast
c. integer division
d. an unlike assignment

____ 14. The percent sign is the ____ operator.
a. remainder
b. remaining
c. percentage
d. integer division

____ 15. What is the value of `result` after the following statement is executed?

```
int result = 2 + 3 * 4;
```

a. 9
c. 14
b. 10
d. 20

____ 16. A(n) ____ variable can hold only one of two values: true or false.
a. integer
c. true
b. Boolean
d. comparison

____ 17. The term ____ refers to the mathematical accuracy of a value.
a. float data
c. significant digits
b. real integers
d. single-precision floating-point number

____ 18. A ____ data type can hold 14 or 15 significant digits of accuracy.
a. `double`
c. `char`
b. `float`
d. `boolean`

____ 19. The ____ is the type to which all operands in an expression are converted so that they are compatible with each other.
a. unifying type
c. numbered
b. data type
d. primitive

____ 20. You use the ____ data type to hold any single character.
a. `single`
c. `byte`
b. `char`
d. `float`

____ 21. In Java, ____ is a built-in class that provides you with the means for storing and manipulating character strings.
a. `Escape`
c. `String`
b. `Type`
d. `Character`

____ 22. You can store any character, including nonprinting characters such as a backspace or a tab in a(n) ____ variable.
a. `int`
c. `boolean`
b. `char`
d. `set`

____ 23. The characters ____ move the cursor to the next line when used within a `println()` statement.
a. /n
c. .+
b. \n
d. $

____ 24. A(n) ____ dialog box asks a question and provides a text field in which the user can enter a response.
a. question
c. confirm
b. `JOptPane`
d. input

____ 25. Each primitive type in Java has a corresponding class contained in the java.lang package. These classes are called ____ classes .
a. case
c. type-wrapper
b. primitive
d. show

____ 26. A(n) ____ dialog box displays the options Yes, No, and Cancel.
a. confirm
c. message
b. input
d. answer

Completion

Complete each statement.

27. A(n) _____ is a simple data type.

28. A(n) _____ operator compares two items and the result has a Boolean value.

29. A(n) _____ number contains decimal positions.

30. _____ forces a value of one data type to be used as a value of another type.

31. A(n) _____ is a message requesting user input.

Matching

Match each term with the correct statement below.

a. operand
b. cast
c. assignment
d. operator precedence
e. garbage
f. primitive
g. `float`
h. Boolean
i. escape sequence

____ 32. true or false
____ 33. operator is represented by an equal sign (=)
____ 34. programming term for an unknown value
____ 35. Java consistently specifies their size and format
____ 36. value which can be used on either side of an operator
____ 37. rules for the order in which parts of a mathematical expression are evaluated
____ 38. floating-point data type
____ 39. procedure which may result in loss of data
____ 40. begins with a backslash followed by a character

Short Answer

41. A variable declaration is a statement that reserves a named memory location. It includes what four elements?

42. Describe variation types `byte`, `short`, and `long` of the integer type.

43. Describe and give an example of operator precedence.

44. Describe how to assign values based on the result of comparisons to Boolean variables.

45. What is the difference between the `float` data type and the `double` data type?

46. In Java, how is it possible to perform mathematical operations on operands with unlike types?

47. Explain how you can override a unifying type imposed by Java.

48. What is an escape sequence and why would a Java programmer use it to store a character?

49. How can you create and use an input dialog box in Java?

50. How would you ask the user to confirm an action using a dialog box?

ch02
Answer Section

TRUE/FALSE

1. ANS: F PTS: 1 REF: 44
2. ANS: T PTS: 1 REF: 48
3. ANS: F PTS: 1 REF: 52
4. ANS: T PTS: 1 REF: 68
5. ANS: T PTS: 1 REF: 71

MULTIPLE CHOICE

6. ANS: B PTS: 1 REF: 44
7. ANS: B PTS: 1 REF: 44
8. ANS: C PTS: 1 REF: 45
9. ANS: A PTS: 1 REF: 45
10. ANS: D PTS: 1 REF: 48
11. ANS: A PTS: 1 REF: 50
12. ANS: B PTS: 1 REF: 51
13. ANS: C PTS: 1 REF: 52
14. ANS: A PTS: 1 REF: 52
15. ANS: C PTS: 1 REF: 52
16. ANS: B PTS: 1 REF: 54
17. ANS: C PTS: 1 REF: 55
18. ANS: A PTS: 1 REF: 55
19. ANS: A PTS: 1 REF: 56
20. ANS: B PTS: 1 REF: 58
21. ANS: C PTS: 1 REF: 59
22. ANS: B PTS: 1 REF: 59
23. ANS: B PTS: 1 REF: 60
24. ANS: D PTS: 1 REF: 66
25. ANS: C PTS: 1 REF: 68
26. ANS: A PTS: 1 REF: 70

COMPLETION

27. ANS: primitive type

    PTS: 1 REF: 44
28. ANS:
    relational
    comparison

    PTS: 1 REF: 54

29. ANS:
floating-point
`float`
`double`

PTS: 1 REF: 55

30. ANS:
Type casting
Casting

PTS: 1 REF: 57

31. ANS: prompt

PTS: 1 REF: 63

MATCHING

32. ANS: H PTS: 1 REF: 54
33. ANS: C PTS: 1 REF: 45
34. ANS: E PTS: 1 REF: 46
35. ANS: F PTS: 1 REF: 49
36. ANS: A PTS: 1 REF: 51
37. ANS: D PTS: 1 REF: 52
38. ANS: G PTS: 1 REF: 55
39. ANS: B PTS: 1 REF: 57
40. ANS: I PTS: 1 REF: 59

SHORT ANSWER

41. ANS:
A data type that identifies the type of data that the variable will store
An identifier that is the variable's name
An optional assignment operator and assigned value, if you want a variable to contain an initial value
An ending semicolon

PTS: 1 REF: 45

42. ANS:
The types `byte`, `short`, and `long` are all variations of the integer type. You use a `byte` or a `short` if you know a variable will need to hold only small values, so you can save space in memory. You use a `long` if you know you will be working with very large values.

PTS: 1 REF: 48

43. ANS:

Operator precedence refers to the rules for the order in which parts of a mathematical expression are evaluated. The multiplication, division, and remainder operators have the same precedence. Their precedence is higher than that for the addition and subtraction operators. Addition and subtraction have the same precedence. In other words, multiplication, division, and remainder always take place from left to right prior to addition or subtraction in an expression. For example, the following statement assigns 14 to `result`: `int result = 2 + 3 * 4;`

PTS: 1 REF: 52

44. ANS:
Java supports six relational operators that are used to make comparisons. A relational operator compares two items; an expression that contains a relational operator has a Boolean value. When you use any of the operators that have two symbols (==, <=, >=, or !=), you cannot place any whitespace between the two symbols. You also cannot reverse the order of the symbols. That is, =<, =>, and =! are all invalid operators.

PTS: 1 REF: 54

45. ANS:
Java supports two floating-point data types: `float` and `double`. A `float` data type can hold floating-point values of up to six or seven significant digits of accuracy. A `double` data type requires more memory than a `float`, and can hold 14 or 15 significant digits of accuracy. The term significant digits refers to the mathematical accuracy of a value. For example, a `float` given the value 0.324616777 displays as 0.324617 because the value is accurate only to the sixth decimal position.

PTS: 1 REF: 55

46. ANS:
When you perform arithmetic operations with operands of unlike types, Java chooses a unifying type for the result. The unifying type is the type to which all operands in an expression are converted so that they are compatible with each other. Java performs an implicit conversion; that is, it automatically converts nonconforming operands to the unifying type.

PTS: 1 REF: 56

47. ANS:
You can explicitly (or purposely) override the unifying type imposed by Java by performing a type cast. Type casting forces a value of one data type to be used as a value of another type. To perform a type cast, you use a cast operator, which is created by placing the desired result type in parentheses. Using a cast operator is an explicit conversion. The cast operator is followed by the variable or constant to be cast.

PTS: 1 REF: 57

48. ANS:
You can store any character—including nonprinting characters such as a backspace or a tab—in a char variable. To store these characters, you can use an escape sequence, which always begins with a backslash followed by a character—the pair represents a single character.

PTS: 1 REF: 59

49. ANS:
You can create an input dialog box using the `showInputDialog()` method. Six overloaded versions of this method are available, but the simplest version uses a single argument that is the prompt you want to display within the dialog box. The `showInputDialog()` method returns a `String` that represents a user's response; this means that you can assign the `showInputDialog()` method to a `String` variable and the variable will hold the value that the user enters.

PTS: 1 REF: 66

50. ANS:
A confirm dialog box displays the options Yes, No, and Cancel; you can create one using the `showConfirmDialog()` method in the `JOptionPane` class. Four overloaded versions of the method are available; the simplest requires a parent component (which can be `null`) and the `String` prompt that is displayed in the box. The `showConfirmDialog()` method returns an integer containing one of three possible values: `JOptionPane.YES_OPTION`, `JOptionPane.NO_OPTION`, or `JOptionPane.CANCEL_OPTION`.

PTS: 1 REF: 70