

Starting Out with Java - From Control Structures through Objects
Answers to Review Questions

Chapter 4

Multiple Choice and True/False

1. a
2. b
3. c
4. d
5. a
6. a
7. b
8. a
9. c
10. b
11. a
12. d
13. a
14. a
15. d
16. b
17. d
18. b
19. True
20. False
21. False
22. False
23. False
24. True
25. True
26. False

Find the Error

1. The conditionally-executed statements should be enclosed in a set of braces. Also, the `again` variable should be initialized with either 'y' or 'Y'.
2. The `while` loop is an infinite loop because it does nothing to change the value of `count`.
3. The expression being tested by the `do-while` loop should be `choice == 1`. Also, the `do-while` loop must be terminated by a semicolon.
4. The initialization and test expressions should be terminated with semicolons, not commas. Also, the statement `count++;` should not appear inside the body of the loop.

```

        int number = inFile.nextInt();
        total += number;
    }
    inFile.close();
    System.out.println("The total is " + total);

```

16.

```

FileWriter fwriter =
    new FileWriter("NumberList.txt", true);
PrintWriter outFile = new PrintWriter(fwriter);

```

Short Answer

1. In postfix mode the operator is placed after the operand. In prefix mode the operator is placed before the variable operand. Postfix mode causes the increment or decrement operation to happen after the value of the variable is used in the expression. Prefix mode causes the increment or decrement to happen first.
2. A pretest loop tests its condition before each iteration. A posttest loop tests its condition after each iteration. A posttest loop will always execute at least once.
3. A pretest loop tests its test expression before each iteration. A posttest loop tests its test expression after each iteration.
4. Because the loop executes them only under the condition that its test expression is true.
5. The `while` loop is a pretest loop and the `do-while` loop is a posttest loop.
6. The `while` loop.
7. The `do-while` loop.
8. The `for` loop.
9. An accumulator is used to keep a running total of numbers. In a loop, a value is usually added to the current value of the accumulator. If it is not properly initialized, it will not contain the correct total.
10. A loop that has no way of stopping. Here is an example:

```

int x = 1;
while (x > 0)
    System.out.println("Hello");

```
11. There are many possible examples. A program that asks the user to enter a business's daily sales for a number of days, and then displays the total sales is one example.
12. The loop terminates after the user has entered a specific value.
13. Sometimes the user has a list of input values that is very long, and doesn't know the number of items there are. When the sentinel value is entered, it signals the end of the list, and the user doesn't have to count the number of items in the list.
14. So it cannot be mistaken as a member of the list.
15. There are many possible examples. One example is a program that asks for the average temperature for each month, for a period of five years. The outer loop

- would iterate once for each year and the inner loop would iterate once for each month.
16. When a program writes data to a file, that data is first written to the buffer. When the buffer is filled, all the information stored there is written to the file. This technique increases the system's performance because writing data to memory is faster than writing it to a disk.
 17. Closing a file writes any unsaved data remaining in the file buffer.
 18. The read position is the position of the next item to be read. When the file is opened, its read position is set to the first item in the file.
 19. After the `println` method writes its data, it writes a newline character. The `print` method does not write the newline character.
 20. `false`
 21. The file does not exist.
 22. To write the data to the end of the file's existing contents.
 23. You create an instance of the `FileWriter` class to open the file. You pass the name of the file (a string) as the constructor's first argument, and the boolean value `true` as the second argument. Then, when you create an instance of the `PrintWriter` class, you pass a reference to the `FileWriter` object as an argument to the `PrintWriter` constructor. The file will not be erased if it already exists and new data will be written to the end of the file.