Java Software Development Quiz 5

1. What will be the result of attempting to compile and run the following class?

```java
public class IfTest {
    public static void main(String[] args) {
        if (true)
            if (false)
                System.out.println("a");
            else
                System.out.println("b");
    }
}
```

Select the one correct answer.

(a) The code will fail to compile because the syntax of the if statement is incorrect.

(b) The code will fail to compile because the compiler will not be able to determine which if statement the else clause belongs to.

(c) The code will compile correctly and display the letter a, when run.

(d) The code will compile correctly and display the letter b, when run.

(e) The code will compile correctly, but will not display any output.

2. Which statements are true?

Select the three correct answers.

(a) The conditional expression in an if statement can have method calls.

(b) If a and b are of type boolean, the expression (a = b) can be the conditional expression of an if statement.

(c) An if statement can have either an if clause or an else clause.

(d) The statement if (false) ; else ; is illegal.

(e) Only expressions which evaluate to a boolean value can be used as the condition in an if statement.

3. What will be the result of attempting to compile and run the following program?

```java
public class Switching {
    public static void main(String[] args) {
        final int iLoc = 3;
        switch (6) {
            case 1:
            case iLoc:
            case 2 * iLoc:
                System.out.println("I am not OK.");
            default:
                System.out.println("You are OK.");
            case 4:
                System.out.println("It's OK.");
        }
    }
}
```

Select the one correct answer.

(a) The code will fail to compile because of the case label value 2 * iLoc.

(b) The code will fail to compile because the default label is not specified last in the switch statement.

(c) The code will compile correctly and will only print the following, when run:

I am not OK.

You are OK.

It's OK.

(d) The code will compile correctly and will only print the following, when run:

You are OK.

It's OK.

(e) The code will compile correctly and will only print the following, when run:

It's OK.

4. What will be the output when running the following program?

```java
public class MyClass {
  public static void main(String[] args) {
    int i=0;
    int j;
    for (j=0; j<10; ++j) { i++; }
    System.out.println(i + " " + j);
  }
}
```

Select the two correct answers.

(a) The first number printed will be 9.

(b) The first number printed will be 10.

(c) The first number printed will be 11.

(d) The second number printed will be 9.

(e) The second number printed will be 10.

(f) The second number printed will be 11.

5. Which one of these for statements is valid?

Select the one correct answer.

(a) int j=10; for (int i=0, j+=90; i<j; i++) { j--; }

(b) for (int i=10; i=0; i--) {}

(c) for (int i=0, j=100; i<j; i++, --j) {;}

(d) int i, j; for (j=100; i<j; j--) { i += 2; }

(e) int i=100; for ((i>0); i--) {}

6. Given the following code, which statement is true?

```
class MyClass {
  public static void main(String[] args) {
    int k=0;
    int l=0;
    for (int i=0; i <= 3; i++) {
      k++;
      if (i == 2) break;
      l++;
    }
    System.out.println(k + ", " + l);
  }
}
```

Select the one correct answer.

(a) The program will fail to compile.

(b) The program will print 3, 3, when run.

(c) The program will print 4, 3, when run, if break is replaced by continue.

(d) The program will fail to compile if break is replaced by return.

(e) The program will fail to compile if break is by an empty statement.

Answer

1. (d)

The program will display the letter b when run. The second if statement is evaluated since the boolean expression of the first if statement is true. The else clause belongs to the second if statement. Since the boolean expression of the second if statement is false, the if block is skipped and the else clause is executed.

2. (a), (b), and (e)

The conditional expression of an if statement can have any subexpressions, including method calls, as long as the whole expression evaluates to a value of type boolean. The expression (a = b) does not compare the variables a and b, but assigns the value of b to the variable a. The result of the expression is the value being assigned. Since a and b are boolean variables, the value returned by the expression is also boolean. This allows the expression to be used as the condition for an if statement. An if statement must always have an if block, but the else clause is optional. The expression if (false) ; else ; is legal. In this case, both the if block and the else block are simply the empty statement.

3. (c)

The case label value 2 * iLoc is a constant expression whose value is 6, the same as the switch expression. Fall through results in the printout shown in (c).

4. (b) and (e)

Both the first and the second number printed will be 10. Both the loop body and the increment expression will be executed exactly 10 times. Each execution of the loop body will be directly followed by an execution of the increment expression. Afterwards, the condition j<10 is evaluated to see whether the loop body should be executed again.

5. (c)

Only (c) contains a valid for loop. The initializer in a for statement can contain either declarations or a list of expression statements, but not both as attempted in (a). The loop condition must be of type boolean. (b) tries to use an assignment of an int value (notice the use of = rather than ==) as a loop condition and is, therefore, not valid. The loop condition in the for loop (d) tries to use the uninitialized variable i, and the for loop in (e) is syntactically invalid, as there is only one semicolon.

6. (c)

As it stands, the program will compile correctly and will print "3, 2" when run. If the break statement is replaced with a continue statement, the loop will perform all four iterations and will print "4, 3". If the break statement is replaced with a return statement, the whole method will end when i equals 2, before anything is printed. If the break statement is simply removed, leaving the empty statement (;), the loop will complete all four iterations and will print "4, 4".