Chapter 5

Section 5.2

5.2 Q1 Counter-controlled repetition requires
   a. A control variable and initial value.
   b. A control variable increment (or decrement).
   c. A condition that tests for the final value of the control variable.
   d. All of the above.
   ANS: d. All of the above.

5.2 Q2 The control variable of a counter-controlled loop should be declared as:
   a. int.
   b. float.
   c. double.
   d. Any of the above.
   ANS: a. int.

Section 5.3

5.3 Q1: Consider the following two Java code segments:

Segment 1
```java
int i = 0;
while ( i < 20 ) {
    System.out.println( i );
    i++;
}
System.out.println( i );
```

Segment 2
```java
for ( int i = 0; i <= 20; i++ ) {
    System.out.println( i );
}
```

Which of the following statements are true?
   a. The output from these segments is not the same.
   b. The scope of the control variable i is different for the two segments.
   c. Both (a) and (b) are true.
   d. Neither (a) nor (b) is true.
   ANS: c. Both (a) and (b) are true.

5.3 Q2: Consider the classes below:

```java
public class TestA {
    public static void main( String args[] )
    {
        int x = 2, y = 20, counter = 0;
        for ( int j = y % x; j < 100; j += ( y / x ) ) {
            counter++;
        }
    }
}

public class TestB {
    public static void main(String args[])
    {
        int counter = 0;
        for ( int j = 10; j > 0; --j ) {
            ++counter;
        }
    }
}
```

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Which of the following statements is true?

a. The value of counter will be the different at the end of each for loop for each class.
b. The value of j will be the same for each loop for all iterations
c. Both (a) and (b) are true.
d. Neither (a) nor (b) is true.
ANS: d. Neither (a) nor (b) is true.

Section 5.4

5.4 Q1: Which of the following for-loop control headers results in equivalent numbers of iterations:

A. for ( int q = 1; q <= 100; q++ )
B. for ( int q = 100; q >= 0; q-- )
C. for ( int q = 99; q > 0; q -= 9 )
D. for ( int q = 990; q > 0; q -= 90 )

a. A and B.
b. C and D.
c. A and B have equivalent iterations and C and D have equivalent iterations.
d. None of the loops have equivalent iterations.
ANS: b. C and D.

5.4 Q2: Which of the following will count down from 10 to 1 correctly?

a. for ( int j = 10; j <= 1; j++ )
b. for ( int j = 1; j <= 10; j++ )
c. for ( int j = 10; j > 1; j-- )
d. for ( int j = 10; j >= 1; j-- )
ANS: d. for ( int j = 10; j >= 1; j-- )

Section 5.5

5.5 Q1: Which of the following statements about a do…while repetition statement is true?

a. The body of a do…while loop is executed only if the terminating condition is true.
b. The body of a do…while loop is executed only once.
c. The body of a do…while loop is always executed at least once.
d. None of the above
ANS: c. The body of a do…while loop is always executed at least once.

5.5 Q2: Which of the following will not help prevent infinite loops?

a. Include braces around the statements in a do…while statement.
b. Ensure that the header of a for or while statement is not followed by a semicolon.
c. If the loop is counter-controlled, the body of the loop should increment or decrement the counter as needed.
d. If the loop is sentinel-controlled, ensure that the sentinel value is input eventually.
ANS: a. Include braces around the statements in a do…while statement.

Section 5.6

5.6 Q1: For the two code segments below:

Segment A
int q = 5;
switch( q ) {
case 1:
    System.out.println( 1 );
case 2:
    System.out.println( 2 );
case 3:
    System.out.println( 3 );
case 4:
}
System.out.println( 4 );
case 5:
    System.out.println( 5 );
default:
    System.out.println( "default" );
}

Segment B
q = 4;
switch( q ) {
    case 1:
        System.out.println( 1 );
    case 2:
        System.out.println( 2 );
    case 3:
        System.out.println( 3 );
    case 4:
        System.out.println( 4 );
    case 5:
        System.out.println( 5 );
    default:
        System.out.println( "default" );
}

Which of the following statements is true?

b. The output for Segment A is: default
c. The output for Segment B is: 4
d. The output for Segment B is: 45default
e. The output for Segment A is: 5 default

ANS: d. The output for Segment A is: 5 default

5.6 Q2: For the code segment below,
switch( q ) {
    case 1:
        System.out.println( "apple" );
        break;
    case 2:
        System.out.println( "orange" );
        break;
    case 3:
        System.out.println( "banana" );
        break;
    case 4:
        System.out.println( "pear" );
    case 5:
        System.out.println( "grapes" );
    default:
        System.out.println( "kiwi" );
}
Which of the following values for \( q \) will result in \textit{kiwi} being output?

a. 2.
b. 4 and anything greater than 4.
c. 1.
d. 3.

ANS: b. 4 and anything greater than 4.

Section 5.7

5.7 Q1: Which of the following statements about \textit{break} and \textit{continue} statements is true?

a. The \textit{continue} statement is used to exit a repetition structure early and continue execution after the loop.
b. The \textit{continue} statement is used to continue after a \textit{switch} statement.
c. The \textit{break} statement, when executed in a \textit{while}, \textit{for} or \textit{do...while}, skips the remaining statements in the loop body and proceeds with the next iteration of the loop.
d. The \textit{continue} statement, when executed in a \textit{while}, \textit{for} or \textit{do...while}, skips the remaining statements in the loop body and proceeds with the next iteration of the loop.

ANS: d. The \textit{continue} statement, when executed in a \textit{while}, \textit{for} or \textit{do...while}, skips the remaining statements in the loop body and proceeds with the next iteration of the loop.

5.7 Q2: To exit out of a loop completely, and resume the flow of control at the next line in the method, use ______.

a. A \textit{continue} statement.
b. A \textit{break} statement.
c. A \textit{return} statement.
d. Any of the above.


Section 5.8

5.8 Q1: Which of the following statements is not true?

A. A \textit{break} statement can only break out of an immediately enclosing \textit{while}, \textit{for}, \textit{do...while} or \textit{switch} statement.
B. Labeled \textit{break} statements break out of any number of enclosing repetition structures.
C. A \textit{continue} statement proceeds with the next iteration of the immediately enclosing \textit{while}, \textit{for}, \textit{do...while} statement.
D. Labeled \textit{continue} statements break out of any number of enclosing repetition structures, and continue execution with next iteration of the labeled repetition structure.

a. A and C.
b. B and D.
c. None of the above are true.
d. All of the above are true.

ANS: d. All of the above are true.

5.8 Q2: Labeled \textit{break} statements cannot be used to break out of which of the following?

a. A \textit{while} statement.
b. A method.
c. A \textit{for} loop.
d. A \textit{switch} statement.


Section 5.9

5.9 Q1: Consider the code segment below.

```java
if ( gender == 1 )
    if ( age >= 65 )
        ++seniorFemales;
```

This segment is equivalent to which of the following?

a. if ( gender == 1 || age >= 65 )
   ++seniorFemales;
b. if ( gender == 1 && age >= 65 )
   ++seniorFemales;
c. if ( gender == 1 AND age >= 65 )
   ++seniorFemales;
d. if ( gender == 1 OR age >= 65 )
   ++seniorFemales;

ANS: b. if ( gender == 1 && age >= 65 )
   ++seniorFemales;

5.9 Q2: Which case of the following would warrant using the boolean logical inclusive OR (|) rather than the conditional OR (||)?

a. Testing if two conditions are both true.
b. Testing if at least one of two conditions is true.
c. Testing if at least one of two conditions is true when the right operand has a required side effect.
d. Testing if at least one of two conditions is true when the left operand has a required side effect.

ANS: c. Testing if at least one of two conditions is true when the right operand has a required side effect.

Section 5.10

5.10 Q1: Which statement below is not true?

a. Structured programming produces programs are easier to test.
b. Structured programming requires four forms of control.
c. Structured programming produces programs that are easier to modify.
a. Structured programming promotes simplicity.

ANS: b. Structured programming requires four forms of control. (Only three forms are necessary: sequence, selection, repetition)

5.10 Q2: Which of the following is NOT a way that repetition is implemented in Java programs?

a. while structures.
b. do...while structures.
c. for structures.
d. if structures.

ANS: d. if structures.