Section 7.2

7.2 Q1: Which of the following statements about arrays are true?
A. Arrays are a group of variables containing values that all have the same type.
B. Elements are located by index or subscript.
C. The length of array c is determined by the expression c.length();
D. The seventh element of array c is specified by c[7].
   a. A, C, D.
   b. A, B.
   c. C, D.
   d. A, B, C, D.
ANS: b. A, B. Statements C and D are false. The length of array c is determined by c.length, and the seventh element of array c is specified by c[6] because index start at 0.

7.2 Q2: Consider the array:
\[
\begin{array}{c|c}
 s[0] & 7 \\
 s[1] & 0 \\
 s[2] & -12 \\
 s[3] & 9 \\
 s[4] & 10 \\
 s[5] & 3 \\
 s[6] & 6 \\
\end{array}
\]
   a. 0.
   b. 3.
   c. 9.
   d. 0.
ANS: c. 9.

Section 7.3

7.3 Q1: A programmer must do the following before using an array:
   a. Declare then reference the array.
   b. Create then declare the array.
   c. Create then reference the array.
   d. Declare then create the array.
ANS: d. Declare then create the array.

7.3 Q2: Consider the code segment below. Which of the following statements is not true.
1. int g[];
2. g = new int[ 23 ];
   a. Statement 1 declares an array reference.
   b. Statement 2 creates the array.
   c. g is a reference to an array of integers.
   d. The value of g[3] is -1.
ANS: d. The value of g[3] is -1. The elements of an array of type int are initialized to 0.

Section 7.4

Creating and Initializing an Array

7.4.1 Q1: Which of the following statements about creating arrays and initializing their elements is not true?
   a. The new keyword should be used to create an array.
   b. When an array is created, the number of elements must be placed in square brackets following the type of element being stored.
   c. The elements of an array of integers have a value of null before they are initialized.
A for loop is an excellent way to initialize the elements of an array.

ANS: c. The elements of an array of integers have a value of null before they are initialized.

Using an Array Initializer

7.4.2 Q1: Which of the following initializer lists would correctly set the elements of array n?
   a. int n[] = {1, 2, 3, 4, 5};
   b. array n[ int ] = { 1, 2, 3, 4, 5 };
   c. int n[ 5 ] = {1; 2; 3; 4; 5 };
   d. int n = new int( 1, 2, 3, 4, 5 );

ANS: a. int n[] = {1, 2, 3, 4, 5 };

Calculating the Value to Store in Each Array Element

7.4.3 Q1: Which of the following will not produce a compiler error?
   a. Changing the value of a constant variable after it is declared.
   b. Changing the value at a given index of an array after it is created.
   c. Using a final variable before it is initialized.
   d. All of the above will produce compiler errors.

ANS: b. Changing the value at a given index of an array after it is created.

Summing the Elements of an Array

7.4.4 Q1: Consider the class below.
   ```java
   public class Test {
     public static void main( String args[] ) {
       int a[];
       a = new int[ 10 ];
       for ( int i = 0; i < a.length; i++ )
         a[ i ] = i + 1 * 2;
       int result = 0;
       for ( int i = 0; i < a.length; i++ )
         result += a[ i ];
     }
   }
   ```

The output of this Java program will be:
   a. Result is: 62.
   b. Result is: 64.
   c. Result is: 65.
   d. Result is: 67.


7.4.4 Q2: Consider the program below:
   ```java
   public class Test {
     public static void main( String args[] ) {
       int a[] = { 99, 22, 11, 3, 11, 55, 44, 88, 2, -3 };
       int result = 0;
       for ( int i = 0; i < a.length; i++ )
         result += a[ i ];
     }
   }
   ```

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if ( a[ i ] > 30 )
    result += a[ i ];
}

System.out.println("Result is : " + result);
System.exit( 0 );
}

The output of this Java program will be:
- a. Result is: 280.
- b. Result is: 154.
- c. Result is: 286.
- d. Result is: 198.

ANS: c. Result is: 286.

Using Histograms to Display Array Data Graphically

Using the Elements of an Array as Counters

7.4.6 Q1: Which of these statements can be used to complete the following sentence?
   Invalid possibilities for array indices include ________.
   a. Positive integers.
   b. Negative integers.
   c. Non-consecutive integers.
   d. Zero.

ANS: b. Negative integers.

Using Arrays to Analyze Survey Results

Section 7.5

7.5 Q1: Which of the following are passed to a method or returned from a method by value?
   A. Objects in a return statement.
   B. Primitive data types in a return statement.
   C. Objects in a parameter list.
   D. Primitive data types in a parameter list.
   a. A and B.
   b. B and C.
   c. A and C.
   d. B and D.

ANS: d. B and D.

7.5 Q2: Consider the following statements. Which statement is not true?
   a. When an argument is passed by value, a copy of the argument's value is made and passed to the called method.
   b. Pass-by-value can improve performance.
   c. Pass-by-reference can weaken security.
   d. With pass-by-value, changes to the called method's copy do not affect the original variable's value in the calling method.


Section 7.6

For the next two questions, consider the following Java program:

import java.awt.Container;
import javax.swing.*;
public class PassArray extends JApplet {
    JTextArea outputArea;
    String output;

    public void init()
    {
        outputArea = new JTextArea();
        Container container = getContentPane();
        container.add( outputArea );

        int a[] = { 1, 2, 3, 4, 5 };

        output = "Effects of passing entire " +
                "array by reference:\n" +
                "The values of the original array are:\n";

        for ( int i = 0; i < a.length; i++ )
            output += "   " + a[ i ];

        modifyArray( a ); // array a passed by reference
        output += "\n\nThe values of the modified array are:\n";

        for ( int i = 0; i < a.length; i++ )
            output += "   " + a[ i ];

        output += "\n\nEffects of passing array " +
                "element by value:\n" +
                "a[3] before modifyElement: " + a[ 3 ];

        modifyElement( a[ 3 ] );
        output += "\na[3] after modifyElement: " + a[ 3 ];
        outputArea.setText( output );
    }

    public void modifyArray( int b[] )
    {
        for ( int j = 0; j < b.length; j++ )
            b[ j ] *= 2;
    }

    public void modifyElement( int e )
    {
        e *= 2;
    }

    7.6 Q1: Which of the following answers contains only scalars?
    a.e, j, output.
    b.e, j, i, a.
    c.j, a[3].
    d.b, a.

    ANS: c. j, a[3]. (output, a, and b are not scalars.)

    7.6 Q2: The method modifyElement does not modify the element in array a because:
a. An element of an array of `int`s is a scalar.
b. Elements of arrays are passed by reference.
c. Elements of arrays are passed by value.
d. Passing arrays by reference improves performance.

ANS: a. An element of an array of `int`s is a scalar. Parts b and c depend on the type of array, and neither is universally true. Part d, while true, is irrelevant in this question.

Section 7.7

7.7 Q1: Which of the following statements about bubble sort are true?
   A. Bubble sort is a simple sorting algorithm.
   B. Bubble sort swaps adjacent items if they are not in the proper order.
   C. Bubble sort is an efficient sorting algorithm.
   D. Bubble sort runs slowly.
   a. A.
   b. B, D, C.
   c. A, D.
   d. A, B, D.
   ANS: d. A, B, D.

Section 7.8

7.8 Q1: The process of locating a particular element value in an array is called ________.
   a. Searching.
   b. Sorting.
   c. Key matching.
   d. Storing.

Searching an Array with Linear Search

7.8.1 Q1: A search key is:
   a. Used only with linear search.
   b. Used only with binary search.
   c. Equal to –1.
   d. The value sought by the search algorithm.
   ANS: d. The value sought by the search algorithm.

Searching a Sorted Array with Binary Search

7.8.2 Q2: A binary search is preferable to a linear search:
   a. If the array is unsorted.
   b. If the array is small.
   c. Because binary search eliminates from consideration half the array after each comparison.
   d. None of the above.
   ANS: c. Because binary search eliminates from consideration half the array after each comparison. (Unsorted small arrays are better suited for linear search).

Section 7.9

7.9 Q1: In Java, multidimensional arrays
   a. Are not directly supported.
   b. Are implemented as arrays of arrays.
   c. Can be initialized with an initializer list.
   d. All of the above.
   ANS: d. All of the above.

7.9 Q2: An array with $m$ rows and $n$ columns is not:
   A. An $m$-by-$n$ array.
   B. An $n$-by-$m$ array.
   C. A two-dimensional array.
   D. A dual-transcripted array.
   a. A and C.
b. A and D.
c. B and D.
d. B and C.

ANS: c. B and D.