Question: Every C++ program begins execution at the function: main

Question: Every C++ statement ends with a(n): semicolon

Question: What statement is used to make decisions: if

Question: Comments cause the computer to print the text after the // on the screen when the program is executed: false

Question: The escape sequence \n, when output with cout and the stream insertion operator, causes the cursor to position to the beginning of the next line on the screen true

Question: All variables must be declared before they are used true

Question: All variables must be given a type when they are declared true

Question: C++ considers the variables number and NuMbEr to be identical false

Question: Declarations can appear almost anywhere in the body of a C++ function true

Question: The modulus operator (%) can be used only with integer operands true

Question: The arithmetic operators *, /, %, + and all have the same level of precedence false

Question: A C++ program that prints three lines of output must contain three statements using cout and the stream insertion operator false

Question: Declare the variables c, thisIsAVariable, q76354 and number to be of type int. int c, thisIsAVariable, q76354, number;

Question: Prompt the user to enter an integer. End your prompting message with a colon (:) followed by a space and leave the cursor positioned after the space std::cout << "Enter an integer: ";

Question: Read an integer from the user at the keyboard and store the value entered in integer variable age. std::cin >> age;

Question: If the variable number is not equal to 7, print "The variable number is not equal to 7". if (number != 7) std::cout << "The variable number is not equal to 7\n";

Question: Print the message "This is a C++ program" on one line. std::cout << "This is a C++ program\n";

Question: Print the message "This is a C++ program" with each word on a separate line. std::cout << "This\nis\na\nC++\nprogram\n";

Question: Print the message "This is a C++ program" with each word separated from the next by a tab. std::cout << "This\tis\ta\tC++\tprogram\n";

Question: Identify and correct the errors in the following statement (assume that the statement using std::cout; is used):

```
if ( c < 7 );

cout << "c is less than 7\n";.
```

```
if ( c < 7 ) cout << "c is less than 7\n";
```

Question: Identify and correct the errors in the following statement (assume that the statement using std::cout; is used):

```
if ( c => 7 ) cout << "c is equal to or greater than 7\n";
```

```
if ( c >= 7 ) cout << "c is equal to or greater than 7\n";
```

Question: A house is to a blueprint as a(n) _____ is to a class

object

Question: Every class definition contains keyword _____ followed immediately by the class's name

class

Question: A class definition is typically stored in a file with the _____ filename extension

.h

Question: Each parameter in a function header should specify both a(n) _____ and a(n) _____.

type, name

Question: When each object of a class maintains its own copy of an attribute, the variable that represents the attribute is also known as a(n) _____.

data member

Question: Keyword public is a(n) _____.

access specifier

Question: Return type _____ indicates that a function will perform a task but will not return any information when it completes its task

void

Question: Function _____ from the <string> library reads characters until a newline character is encountered, then copies those characters into the specified string

getline

Question: When a member function is defined outside the class definition, the function header must include the class name and the _____, followed by the function name to "tie" the member function to the class definition

binary scope resolution operator (::)

Question: The source-code file and any other files that use a class can include the class's header file via an _____ preprocessor directive

#include

Question: By convention, function names begin with a capital letter and all subsequent words in the name begin with a capital letter

false

Question: Empty parentheses following a function name in a function prototype indicate that the function does not require any parameters to perform its task

true

Question: Data members or member functions declared with access specifier private are accessible to member functions of the class in which they are declared

true

Question: Variables declared in the body of a particular member function are known as data members and can be used in all member functions of the class

false

Question: Every function's body is delimited by left and right braces ({ and }).

true

Question: Any source-code file that contains int main() can be used to execute a program

true

Question: The types of arguments in a function call must match the types of the corresponding parameters in the function prototype's parameter list

true

Question: What is the difference between a local variable and a data member?

A local variable is declared in the body of a function and can be used only from the point at which it is declared to the immediately following closing brace. A data member is declared in a class definition, but not in the body of any of the class's member functions. Every object (instance) of a class has a separate copy of the class's data members. Also, data members are accessible to all member functions of the class.

Question: Explain the purpose of a function parameter. What is the difference between a parameter and an argument?

A parameter represents additional information that a function requires to perform its task. Each parameter required by a function is specified in the function header. An argument is the value supplied in the function call. When the function is called, the argument value is passed into the function parameter so that the function can perform its task

Question: All programs can be written in terms of three types of control structures:_____, _____and_____.

Sequence, selection and repetition

Question: The_____selection statement is used to execute one action when a condition is true or a different action when that condition is false.

if…else

Question: Repeating a set of instructions a specific number of times is called_____repetition

Counter-controlled or definite

Question: When it is not known in advance how many times a set of statements will be repeated, a(n)_____value can be used to terminate the repetition

Sentinel, signal, flag or dummy

Question: Write four different C++ statements that each add 1 to integer variable x

x =+ 1; x += 1; ++x; x++;

Question: In one statement, assign the sum of the current value of x and y to z and postincrement the value of x

z = x++ + y;

Question: Determine whether the value of the variable count is greater than 10. If it is, print "Count is greater than 10."

if (count > 10) cout << "Count is greater than 10" << endl;

Question: Predecrement the variable x by 1, then subtract it from the variable total

total -= --x;

Question: Calculate the remainder after q is divided by divisor and assign the result to q. Write this statement two different ways

q %= divisor;

q = q % divisor;

Question: Declare variables sum and x to be of type int

int sum, x;

Question: Set variable x to 1

x=1;

Question: Set variable sum to 0

sum=0;

Question: Add variable x to variable sum and assign the result to variable sum

sum+=x;

Question: Print "The sum is: " followed by the value of variable sum

cout << "The sum is: " << sum << end1;

Question: State the values of the variable after the calculation is performed. Assume that, when a statement begins executing, all variables have the integer value 5:

product *= x++;

product = 25, x = 6;

Question: State the values of the variable after the calculation is performed. Assume that, when a statement begins executing, all variables have the integer value 5:

quotient /= ++x;

quotient = 0, x = 6;

Question: Write single C++ statements that input integer variable x with cin and >>

cin>>x;

Question: Write single C++ statements that input integer variable y with cin and >>.

```
cin >> y;
```

Question: Write single C++ statements that postincrement variable i by 1

```
i++;
```

Question: Write single C++ statements that determine whether i is less than or equal to y

```
if (i<=y)
```

Question: Write single C++ statements that output integer variable power with cout and <<

```
cout << power << endl;
```

Question: Identify and correct the errors in the following code:

```
        while ( c <= 5 )
        {
          product *= c;
          c++;
while ( c <= 5 )
{
  product *= c;
  c++;
}
```

Question: Identify and correct the errors in the following code:

```
if ( gender == 1 )
   cout << "Woman" << endl;
else;
   cout << "Man" << endl;
if ( gender == 1 )
  cout << "Woman" << endl;
else
```

```
   cout << "Man" << endl;
```

Question: Identify and correct the errors in the following code:

```
cin << value;
```

```
cin >> value;
```

Question: What is wrong with the following while repetition statement?

```
while ( z >= 0 )
```

```
   sum += z;
```

The value of the variable z is never changed in the while statement. Therefore, if the loop continuation condition (z >= 0) is initially true, an infinite loop is created. To prevent the infinite loop, z must be decremented so that it eventually becomes less than 0.

Question: The default case is required in the switch selection statement

false

Question: The break statement is required in the default case of a switch selection statement to exit the switch properly

false

Question: The expression (x > y && a < b) is true if either the expression x > y is true or the expression a < b is true

false

Question: An expression containing the || operator is true if either or both of its operands are true

true

Question: Write a C++ statement or a set of C++ statements to sum the odd integers between 1 and 99 using a for statement. Assume the integer variables sum and count have been declared

```
sum = 0;
```

```
        for ( count = 1; count <= 99; count += 2 ) sum += count;
```

Question: Write a C++ statement or a set of C++ statements to print the value 333.546372 in a field width of 15 characters with precisions of 1, 2 and 3. Print each number on the same line. Left-justify each number in its field.

```
cout << fixed << left

   << setprecision( 1 ) << setw( 15 ) << 333.546372

   << setprecision( 2 ) << setw( 15 ) << 333.546372

   << setprecision( 3 ) << setw( 15 ) << 333.546372

   << endl;
```

Question: Write a C++ statement or a set of C++ statements to calculate the value of 2.5 raised to the power 3 using function pow. Print the result with a precision of 2 in a field width of 10 positions

```
cout << fixed << setprecision( 2 ) << setw( 10 ) << pow( 2.5, 3 ) << endl;
```

Question: Write a C++ statement or a set of C++ statements to print the integers from 1 to 20 using a while loop and the counter variable x. Assume that the variable x has been declared, but not initialized. Print only 5 integers per line. [Hint: Use the calculation x % 5. When the value of this is 0, print a newline character; otherwise, print a tab character.]

```
x = 1;

while ( x <= 20 )

{

   cout << x;

   if ( x % 5 == 0 )

      cout << endl;

   else

      cout << '\t';

   x++;

}
```

Question: Find the error(s) in the following code segment:

```
        x = 1;

        while ( x <= 10 );

        x++;

        }
```

```
x = 1;

while ( x <= 10 )

x++;

}
```

Question: Find the error(s) in the following code segment:

```
for ( y = .1; y != 1.0; y += .1 ) cout << y << endl;
```

```
for ( y = 1; y != 10; y++ ) cout << ( static_cast< double >( y ) / 10
) << endl;
```

Question: Find the error(s) in the following code segment:

```
switch ( n )

{

 case 1:

  cout << "The number is 1" << endl;

           case 2:

    cout << "The number is 2" << endl;

    break;

          default:

    cout << "The number is not 1 or 2" << endl;

    break;

}

switch ( n )

{

case 1:

    cout << "The number is 1" << endl;

    break;

 case 2:
```

```
    cout << "The number is 2" << endl;
    break;
default:
    cout << "The number is not 1 or 2" << endl;
    break;
}
```

Question: Find the error(s) in the following code segment. The following code should print the values 1 to 10:

```
n = 1;
while ( n < 10 )  cout << n++ << endl;
n = 1;
while ( n < 11 )  cout << n++ << endl;
```

Question: What variable is?

named part in a memory

Question: Program components in C++ are called _____ and _____.

functions, classes

A function is invoked with a(n) _____.

function call

Question: A variable that is known only within the function in which it is defined is called a(n) _____.

local variable

Question: The _____ statement in a called function passes the value of an expression back to the calling function

return

Question: The keyword _____ is used in a function header to indicate that a function does not return a value or to indicate that a function contains no parameters

void

Question: The _____ of an identifier is the portion of the program in which the identifier can be used

scope

Question: The three ways to return control from a called function to a caller are _____, _____ and _____.

return, return expression or encounter the closing right brace of a function.

Question: A(n)_____ allows the compiler to check the number, types and order of the arguments passed to a function.

function prototype

Question: Function _____ is used to produce random numbers

rand()

Question: Function _____ is used to set the random number seed to randomize a program

srand()

Question: The storage-class specifiers are mutable, _____, _____, _____ and _____.

auto, register, extern, static

Question: Variables declared in a block or in the parameter list of a function are assumed to be of storage class _____ unless specified otherwise

auto

Question: Storage-class specifier _____ is a recommendation to the compiler to store a variable in one of the computer's registers

register

Question: A variable declared outside any block or function is a(n) _____ variable

global

Question: For a local variable in a function to retain its value between calls to the function, it must be declared with the _____ storage-class specifier

static

Question: The six possible scopes of an identifier are _____, _____, _____, _____, _____ and _____.

function scope, file scope, block scope, function-prototype scope, class scope, namespace scope

Question: A function that calls itself either directly or indirectly (i.e., through another function) is a(n) _____ function

recursive

Question: A recursive function typically has two components: One that provides a means for the recursion to terminate by testing for a(n) _____ case and one that expresses the problem as a recursive call for a slightly simpler problem than the original call

base

Question: In C++, it is possible to have various functions with the same name that operate on different types or numbers of arguments. This is called function _____.

overloading

Question: The _____ enables access to a global variable with the same name as a variable in the current scope

unary scope resolution operator (::)

Question: The _____ qualifier is used to declare read-only variables

const

Question: A function _____ enables a single function to be defined to perform a task on many different data types

template

Question: Give the function header for the following function. Function hypotenuse that takes two double-precision, floating-point arguments, side1 and side2, and returns a double-precision, floating-point result.

double hypotenuse(double side1, double side2)

Question: Give the function header for the following function. Function smallest that takes three integers, x, y and z, and returns an integer.

int smallest(int x, int y, int z)

Question: Give the function header for the following function. Function instructions that does not receive any arguments and does not return a value. [Note: Such functions are commonly used to display instructions to a user.]

```
void instructions( void )
```

Question: Give the function header for the following function. Function intToDouble that takes an integer argument, number, and returns a double-precision, floating-point result.

```
double intToDouble( int number)
```

Question: Write a declaration for the following: Integer count that should be maintained in a register. Initialize count to 0.

```
register int count = 0;
```

Question: Write a declaration for the following: Double-precision, floating-point variable lastVal that is to retain its value between calls to the function in which it is defined.

```
static double lastVal;
```

Question: Find the error in the following program segment:

```
int g( void)
  {
    cout << "Inside function g" << endl;
    int h( void )
    {
       cout << "Inside function h" << endl;
     }
  }
int g( void)
  {
    cout << "Inside function g" << endl;
  }
  int h( void )
```

```
 {
   cout << "Inside function h" << endl;
 }
```

Question: Find the error in the following program segment:

```
int sum( int x, int y )
{
   int result;
   result = x + y;
}
int sum( int x, int y )
{
   return x + y;
}
```

Question: Find the error in the following program segment:

```
int sum( int n )
{
   if ( n == 0 )
      return 0;
   else
      n + sum( n - 1 );
}
int sum( int n )
{
  if ( n == 0 )
      return 0;
```

```
    else
      return n + sum( n - 1 );
}
```

Question: Find the error in the following program segment

```
void f ( double a);
{
   float a;
   cout << a << endl;
}
void f ( double a)
{
   cout << a << endl;
}
```

Question: Find the error in the following program segment:

```
void product( void )
{
   int a;
   int b;
   int c;
   int result;
   cout << "Enter three integers: ";
   cin >> a >> b >> c;
   result = a * b * c;
   cout << "Result is " << result;
   return result;
```

```
}

void product( void )

{

   int a;

   int b;

   int c;

   int result;

   cout << "Enter three integers: ";

   cin >> a >> b >> c;

   result = a * b * c;

   cout << "Result is " << result;

}
```

Question: Why would a function prototype contain a parameter type declaration such as double &?

This creates a reference parameter of type "reference to double" that enables the function to modify the original variable in the calling function

Question: All arguments to function calls in C++ are passed by value

false

Question: Lists and tables of values can be stored in _____ or _____.

arrays, vectors

Question: The elements of an array are related by the fact that they have the same _____ and _____.

name, type

Question: The number used to refer to a particular element of an array is called its _____.

subscript (or index)

Question: A(n) _____ should be used to declare the size of an array, because it makes the program more scalable

constant variable

Question: The process of placing the elements of an array in order is called _____ the array

sorting

The process of determining if an array contains a particular key value is called _____ the array

searching

Question: An array that uses two subscripts is referred to as a(n) _____ array

two-dimensional

Question: An array can store many different types of values

false

Question: An array subscript should normally be of data type float

false

Question: If there are fewer initializers in an initializer list than the number of elements in the array, the remaining elements are initialized to the last value in the initializer list

false

Question: It is an error if an initializer list contains more initializers than there are elements in the array

true

Question: An individual array element that is passed to a function and modified in that function will contain the modified value when the called function completes execution

false

Question: Write one or more statements that perform the following task for and array called “fractions”. Define a constant variable arraySize initialized to 10.

const int arraySize = 10;

Question: Write one or more statements that perform the following task for and array called “fractions”. Declare an array with arraySize elements of type double, and initialize the elements to 0.

double fractions[arraySize] = { 0.0};

Question: Write one or more statements that perform the following task for and array called “fractions”. Name the fourth element of the array

```
fractions[ 3 ]
```

Question: Write one or more statements that perform the following task for and array called “fractions”. Refer to array element 4

```
fractions[ 4 ]
```

Question: Write one or more statements that perform the following task for and array called “fractions”. Assign the value 1.667 to array element 9

```
fractions[ 9 ] = 1.667;
```

Question: Write one or more statements that perform the following task for and array called “fractions”. Assign the value 3.333 to the seventh element of the array

```
fractions[ 6 ] = 3.333;
```

Question: Write one or more statements that perform the following task for and array called “fractions”. Print array elements 6 and 9 with two digits of precision to the right of the decimal point.

```
cout << fixed << setprecision ( 2 ); cout << fractions[ 6 ] < < ' ' fractions[ 9 ] << endl;
```

Question: Write one or more statements that perform the following task for and array called “fractions”. Print all the array elements using a for statement. Define the integer variable i as a control variable for the loop.

```
for ( int i = 0; < arraySize; i++ ) cout << "fractions[" < i << "] = " << fractions[ i ] <<
endl;
```

Question: Declare the array to be an integer array and to have 3 rows and 3 columns. Assume that the constant variable arraySize has been defined to be 3:

```
int table[ arraySize ][ arraySize];
```

Question: Write a program segment to print the values of each element of array table in tabular format with 3 rows and 3 columns. Assume that the array was initialized with the declaration

```
int table[ arraySize ][ arraySize ] = { { 1, 8 }, { 2, 4, 6 }, { 5 } };
```

and the integer variables i and j are declared as control variables.

```
cout << "     [0] [1] [2]" << endl;

for ( int i = 0; i < arraySize; i++ ) {
```

```
   cout << '[' << i << "] ";
   for ( int j = 0; j < arraySize; j++ )
      cout << setw( 3 ) << table[ i ][ j ] << " ";
   cout << endl;
```

Question: Find the error in the following program segment and correct the error:

```
        #include <iostream>;
```

```
#include <iostream>
```

Question: Find the error in the following program segment and correct the error:

```
    arraySize = 10; // arraySize was declared const
```

```
const int arraySize=10;
```

Question: Find the error in the following program segment and correct the error:

Assume that int b[10] = { 0 };

```
        for ( int i = 0; <= 10; i++ )
           b[ i ] = 1;
```

```
for ( int i = 0; <= 9; i++ )
   b[ i ] = 1;
```

Question: the error in the following program segment and correct the error:

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

```
        a[ 1, 1 ] = 5;
```

```
a[ 1, 1 ] = 5;
```

Question: A pointer is a variable that contains as its value the_____ of another variable

address

Question: The three values that can be used to initialize a pointer are_____,_____ and_____.

0, NULL, an address

Question: The only integer that can be assigned directly to a pointer is_____.

0

Question: The address operator & can be applied only to constants and to expressions

false

Question: A pointer that is declared to be of type void * can be dereferenced

false

Question: Pointers of different types can never be assigned to one another without a cast operation

false

Question: Declare an array of type double called numbers with 10 elements, and initialize the elements to the values 0.0, 1.1, 2.2, ..., 9.9. Assume that the symbolic constant SIZE has been defined as 10

double numbers[SIZE] = { 0.0, 1.1, 2.2, 3.3, 4.4, 5.5, 6.6, 7.7, 8.8, 9.9 };

Question: Declare a pointer nPtr that points to a variable of type double

double *nPtr;

Question: Use a for statement to print the elements of array numbers using array subscript notation. Print each number with one position of precision to the right of the decimal point:

```
cout << fixed << showpoint << setprecision( 1 );

for ( int i = 0; i < SIZE; i++ )

  cout << numbers[ i ] <<' ';
```

Question: Write two separate statements that each assign the starting address of array numbers to the pointer variable nPtr.

nPtr = numbers;

nPtr = &numbers[0];

Question: Use a for statement to print the elements of array numbers using pointer/offset notation with pointer nPtr

```
cout << fixed << showpoint << setprecision( 1 );

for ( int j = 0; j < SIZE; j++ )

  cout << *( nPtr + j ) << ' ';
```

Question: Use a for statement to print the elements of array numbers using pointer/offset notation with the array name as the pointer

```
cout << fixed << showpoint << setprecision( 1 );

for ( int k = 0; k < SIZE; k++ )

  cout << *( numbers + k ) << ' ';
```

Question: Use a for statement to print the elements of array numbers using pointer/subscript notation with pointer nPtr

```
cout << fixed << showpoint << setprecision( 1 );

for ( int m = 0; m < SIZE; m++ )

  cout << nPtr[ m ] << ' ';
```

Question: Refer to the fourth element of array numbers using array subscript notation, pointer/offset notation with the array name as the pointer, pointer subscript notation with nPtr and pointer/offset notation with nPtr

```
numbers[ 3 ]

*( numbers + 3 )

nPtr[ 3 ]

*( nPtr + 3 )
```

Question: Assuming that nPtr points to the beginning of array numbers (the starting address of the array is at location 1002500 in memory), what address is referenced by nPtr + 8?

The address is 1002500 + 8 * 8 = 1002564

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Declare the variable fPtr to be a pointer to an object of type double.

```
double *fPtr;
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Assign the address of variable number1 to pointer variable fPtr.

```
fPtr = &number1;
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Print the value of the object pointed to by fPtr.

```
cout << "The value of *fPtr is " << *fPtr << endl;
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Assign the value of the object pointed to by fPtr to variable number2.

```
number2 = *fPtr;
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Print the value of number2.

```
cout << "The value of number2 is " << number2 << endl;
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Print the address of number1.

```
cout << "The address of number1 is " << &number1 << endl;
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Print the address stored in fPtr.

```
cout << "The address stored in fPtr is " << fPtr << endl;
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Copy the string stored in array s2 into array s1.

```
strcpy( s1, s2 );
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Compare the string in s1 with the string in s2, and print the result.

```
cout << "strcmp(s1, s2) = " << strcmp( s1, s2 ) << endl;
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Append the first 10 characters from the string in s2 to the string in s1.

```
strncat( s1, s2, 10 );
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Determine the length of the string in s1, and print the result.

```
cout << "strlen(s1) = " << strlen( s1 ) << endl;
```

Question: Write a single statement that performs the specified task. Assume that floating-point variables number1 and number2 have been declared and that number1 has been initialized to 7.3. Assume that variable ptr is of type char *. Assume that arrays s1 and s2 are each 100-element char arrays that are initialized with string literals. Assign to ptr the location of the first token in s2. The tokens delimiters are commas (,).

```
ptr = strtok( s2, ",");
```

Question: Write the function header for a function called exchange that takes two pointers to double-precision, floating-point numbers x and y as parameters and does not return a value

```
void exchange( double *x, double *y )
```

Question: Write the function header for a function called evaluate that returns an integer and that takes as parameters integer x and a pointer to function poly. Function poly takes an integer parameter and returns an integer.

```
int evaluate( int x, int (*poly)( int ))
```

Question: Write two statements that each initialize character array vowel with the string of vowels, "AEIOU".

```
char vowel[] = "AEIOU";

char vowel[] = { 'A', 'E', 'I', 'O', 'U', '\0' };
```

Question: Find the error in the following program segment. Assume the following declarations and statements:

```
int *zPtr;       // zPtr will reference array z

int *aPtr = 0;

void *sPtr = 0;

int number;

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

++zPtr;


zPtr = z;

++zPtr;
```

Question: Find the error in the following program segment. Assume the following declarations and statements:

```
int *zPtr;       // zPtr will reference array z

int *aPtr = 0;

void *sPtr = 0;
```

```
int number;

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

// use pointer to get first value of array

number = zPtr;

 number = *zPtr;
```

Question: Find the error in the following program segment. Assume the following declarations and statements:

```
int *zPtr;       // zPtr will reference array z

int *aPtr = 0;

void *sPtr = 0;

int number;

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

// assign array element 2 (the value 3) to number

number = *zPtr[ 2 ];

  number = zPtr[ 2 ];
```

Question: Find the error in the following program segment. Assume the following declarations and statements:

```
int *zPtr;       // zPtr will reference array z

int *aPtr = 0;

void *sPtr = 0;

int number;

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

// print entire array z

for ( int i = 0; i <= 5; i++ ) cout << zPtr[ i ] << endl;

 for ( int i = 0; i < 5; i++ ) cout << zPtr[ i ] << endl;
```

Question: Find the error in the following program segment. Assume the following declarations and statements:

```
int *zPtr;       // zPtr will reference array z

int *aPtr = 0;

void *sPtr = 0;

int number;

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

// assign the value pointed to by sPtr to number

number = *sPtr;

 number = *static_cast< int * >( sPtr );
```

Question: Find the error in the following program segment. Assume the following declarations and statements:

```
int *zPtr;       // zPtr will reference array z

int *aPtr = 0;

void *sPtr = 0;

int number;

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

++z;

 ++z[4];
```

Question: Find the error in the following program segment. Assume the following declarations and statements:

```
int *zPtr;       // zPtr will reference array z

int *aPtr = 0;

void *sPtr = 0;

int number;

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

char s[ 10 ];

cout << strncpy( s, "hello", 5 ) << endl;
```

```
cout << strncpy( s, "hello", 6 ) << endl;
```

Question: Find the error in the following program segment. Assume the following declarations and statements:

```
int *zPtr;       // zPtr will reference array z

int *aPtr = 0;

void *sPtr = 0;

int number;

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

char s[ 12 ];

strcpy( s, "Welcome Home");
```

```
char s[ 13 ];

strcpy( s, "Welcome Home");
```

Question: Find the error in the following program segment. Assume the following declarations and statements:

```
int *zPtr;       // zPtr will reference array z

int *aPtr = 0;

void *sPtr = 0;

int number;

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

if ( strcmp( string1, string2 ) )

   cout << "The strings are equal" << endl;
```

```
if ( strcmp( string1, string2 ) == 0)

   cout << "The strings are equal" << endl;
```

Question: What (if anything) prints when the following statement is performed?Assume the following variable declarations:

```
char s1[ 50 ] = "jack";

char s2[ 50 ] = "jill";

char s3[ 50 ];

cout << strcpy( s3, s2 ) << endl;
```

jill

Question: What (if anything) prints when the following statement is performed?Assume the following variable declarations:

```
char s1[ 50 ] = "jack";

char s2[ 50 ] = "jill";

char s3[ 50 ];

cout << strcat( strcat( strcpy( s3, s1 ), " and " ), s2 ) << endl;
```

jack and jill

Question: What (if anything) prints when the following statement is performed?Assume the following variable declarations:

```
char s1[ 50 ] = "jack";

char s2[ 50 ] = "jill";

char s3[ 50 ];

cout << strlen( s1 ) + strlen( s2 ) << endl;
```

8

Question: What (if anything) prints when the following statement is performed?Assume the following variable declarations:

```
char s1[ 50 ] = "jack";

char s2[ 50 ] = "jill";

char s3[ 50 ];


cout << strlen( s3 ) << endl;
```

13

Question: Class members are accessed via the _____ operator in conjunction with the name of an object (or reference to an object) of the class or via the _____ operator in conjunction with a pointer to an object of the class

dot (.), arrow (->)

Question: Class members specified as _____ are accessible only to member functions of the class and friends of the class

private

Question: Class members specified as _____ are accessible anywhere an object of the class is in scope

public

Question: _____ can be used to assign an object of a class to another object of the same class

Default memberwise assignment (performed by the assignment operator).

Question: Find the error(s) in the following and correct it (them).

Assume the following prototype is declared in class Time:

```
void ~Time( int );
```

~Time( );

Question: Find the error(s) in the following and correct it (them).

The following is a partial definition of class Time:

```
class Time
{
public:
   // function prototypes
private:
   int hour = 0;
   int minute = 0;
   int second = 0;
}; // end class Time
```

```
class Time
{
public:
  // function prototypes
 Time (int my_hour, int my_minute, int my_second)
   {
     hour=my_hour;
     minute=my_minute;
     second=my_second;
   }
private:
  int hour;
  int minute;
  int second;
}; // end class Time
```

Question: Find the error(s) in the following and correct it (them).

Assume the following prototype is declared in class Employee:

```
 int Employee( const char *, const char * );
Employee( const char *, const char * );
```

Question: _____ must be used to initialize constant members of a class

Member initializers

Question: A nonmember function must be declared as a(n) _____ of a class to have access to that class's private data members.

friend

Question: The _____ operator dynamically allocates memory for an object of a specified type and returns a _____ to that type.

new, pointer

Question: A constant object must be _____; it cannot be modified after it is created

initialized

Question: A(n) _____ data member represents class-wide information

static

Question: An object's non-static member functions have access to a "self pointer" to the object called the _____ pointer

this

Question: The keyword _____ specifies that an object or variable is not modifiable after it is initialized

const

Question: If a member initializer is not provided for a member object of a class, the object's _____ is called

default constructor

Question: A member function should be declared static if it does not access _____ class members

non-static

Question: Member objects are constructed _____ their enclosing class object

before

Question: The _____ operator reclaims memory previously allocated by new.

delete

Question: Find the errors in the following class and explain how to correct them:

```
class Example
 {
 public:
```

```
   Example( int y = 10 )
      : data( y )
   {
      // empty body
   } // end Example constructor
   int getIncrementedData() const
   {
      return data++;
   } // end function getIncrementedData
   static int getCount()
   {
      cout << "Data is " << data << endl;
      return count;
   } // end function getCount
private:
   int data;
   static int count;
}; // end class Example
```

Error: The class definition for Example has two errors. The first occurs in function getIncrementedData. The function is declared const, but it modifies the object.

Correction: To correct the first error, remove the const keyword from the definition of getIncrementedData.

Error: The second error occurs in function getCount. This function is declared static, so it is not allowed to access any non-static member of the class.

Correction: To correct the second error, remove the output line from the getCount definition.

Question: Input/output in C++ occurs as _____ of bytes

streams

Question: The stream manipulators that format justification are_____, _____ and _____.

left, right and internal

Question: Member function _____ can be used to set and reset format state

flags

Question: Most C++ programs that do I/O should include the _____ header file that contains the declarations required for all stream-I/O operations.

<iostream>

Question: When using parameterized manipulators, the header file _____ must be included

<iomanip>

Question: Header file _____ contains the declarations required for user-controlled file processing

<fstream>

Question: The ostream member function _____ is used to perform unformatted output

write

Question: Input operations are supported by class _____.

istream

Question: Outputs to the standard error stream are directed to either the _____ or the _____ stream object

cerr or clog

Question: Output operations are supported by class _____.

ostream

Question: The symbol for the stream insertion operator is _____.

<<

Question: The four objects that correspond to the standard devices on the system include _____, _____, _____ and _____.

cin, cout, cerr and clog

Question: The symbol for the stream extraction operator is _____

>>

Question: The stream manipulators _____, _____ and _____ specify that integers should be displayed in octal, hexadecimal and decimal formats, respectively

oct, hex and dec

Question: When used, the _____ stream manipulator causes positive numbers to display with a plus sign.

showpos

Question: The stream member function flags with a long argument sets the flags state variable to its argument and returns its previous value.

false

Question: The stream insertion operator << and the stream-extraction operator >> are overloaded to handle all standard data typesincluding strings and memory addresses (stream-insertion only)and all user-defined data types.

false

Question: The stream member function flags with no arguments resets the stream's format state

false

Question: The stream extraction operator >> can be overloaded with an operator function that takes an istream reference and a reference to a user-defined type as arguments and returns an istream reference.

true

Question: The stream insertion operator << can be overloaded with an operator function that takes an istream reference and a reference to a user-defined type as arguments and returns an istream reference

false

Question: Input with the stream extraction operator >> always skips leading white-space characters in the input stream, by default

true

Question: The stream member function rdstate returns the current state of the stream

true

Question: The cout stream normally is connected to the display screen

true

Question: The stream member function good returns TRUE if the bad, fail and eof member functions all return false

true

Question: The cin stream normally is connected to the display screen

false

Question: If a nonrecoverable error occurs during a stream operation, the bad member function will return TRue

true

Question: Output to cerr is unbuffered and output to clog is buffered

true

Question: Stream manipulator showpoint forces floating-point values to print with the default six digits of precision unless the precision value has been changed, in which case floating-point values print with the specified precision

true

Question: The ostream member function put outputs the specified number of characters

false

Question: The stream manipulators dec, oct and hex affect only the next integer output operation

false

Question: By default, memory addresses are displayed as long integers

false

Question: Output the string "Enter your name: "

```
cout << "Enter your name: ";
```

Question: Use a stream manipulator that causes the exponent in scientific notation and the letters in hexadecimal values to print in capital letters

```
cout << uppercase;
```

Question: Output the address of the variable myString of type char *

```
cout << static_cast< void *  >( myString );
```

Question: Use a stream manipulator to ensure floating-point values print in scientific notation

```
cout << scientific;
```

Question: Output the address in variable integerPtr of type int *.

```
cout << integerPtr;
```

Question: Use a stream manipulator such that, when integer values are output, the integer base for octal and hexadecimal values is displayed.

```
cout << showbase;
```

Question: Output the value pointed to by floatPtr of type float *.

```
cout << *floatPtr;
```

Question: Use a stream member function to set the fill character to '*' for printing in field widths larger than the values being output. Write a separate statement to do this with a stream manipulator

```
cout.fill( '*' );
```

```
cout << setfill( '*' );
```

Question: Output the characters '0' and 'K' in one statement with ostream function put

```
cout.put( '0' ).put( 'K' );
```

Question: Member function read cannot be used to read data from the input object cin

```
false
```

Question: The programmer must create the cin, cout, cerr and clog objects explicitly

false

Question: A program must call function close explicitly to close a file associated with an ifstream, ofstream or fstream object.

false

Question: If the file-position pointer points to a location in a sequential file other than the beginning of the file, the file must be closed and reopened to read from the beginning of the file

false

Question: The ostream member function write can write to standard-output stream cout

true

Question: Data in sequential files always is updated without overwriting nearby data

false

Question: Searching all records in a random-access file to find a specific record is unnecessary

true

Question: Records in random-access files must be of uniform length

false

Question: Member functions seekp and seekg must seek relative to the beginning of a file

false

Question: A selection sort application would take approximately _____ times as long to run on a 128-element vector as on a 32-element vector.

16, because an O(n2) algorithm takes 16 times as long to sort four times as much information

Question: The efficiency of merge sort is _____

O(n log n).