Exam

Name_____

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

1) After the following Dim statement is executed, how many subscripted variables called *myvar(i)* will be available?   1) _____

```
Dim myVar(7) As Double
```
   A) 0                    B) 1                    C) 8                    D) 9

Answer:  C

2) What names are displayed in the list box when the button is clicked?   2) _____
```
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
  Dim name(4) As String
  Dim sr As IO.StreamReader = IO.File.OpenText("DATA.TXT")
  For i As Integer = 0 To 4
    name(i) = sr.ReadLine
  Next
  sr.Close()
  lstBox.Items.Clear()
  For i As Integer = 4 To 0 Step -2
    lstBox.Items.Add(name(i))
  Next
End Sub
```
Assume the five lines of the file DATA.TXT contain the following entries: Bach, Borodin, Brahms, Beethoven, Britain.
   A) Britain, Brahms, and Bach
   B) Britain, Beethoven, Brahms, Borodin, and Bach
   C) Bach, Borodin, Brahms, Beethoven, and Britain
   D) Bach, Brahms, and Britain

Answer:  A

3) What is the output of the following program segment?   3) _____
```
Dim numbers(3) As Double, h As Double = 0
Dim sr As IO.StreamReader = IO.File.OpenText("DATA.TXT")
For i As Integer = 0 To 3
  numbers(i) = CDbl(sr.ReadLine)
Next
sr.Close()
For k As Integer = 0 to 3
  h += numbers(k)
Next
txtBox.Text = CStr(h)
```
Assume the four rows of the file DATA.TXT contain the following entries: 2, 4, 2, 3
   A) **11**                    B) **2**                    C) **4**                    D) **7**

Answer:  A

4) Given the Dim statement below, which set of statements will initialize all elements of *myArray()* to 100?

4) _____

```
Dim myArray(100) As Double
```
  A) `For i = 0 To 100`
      `(i) = 100`
   `Next`
  B) *myArray()* is already initialized to 100 by the Dim statement.
  C) `For j = 0 to 100`
      `myArray(j) = 100`
   `Next`
  D) `myArray = 100`

Answer: C

5) What is the output of the following program segment?

5) _____

```
Dim antonym(7) As String
Dim sr As IO.StreamReader = IO.File.OpenText("DATA.TXT")
For i As Integer = 0 To 6 Step 2
  antonym(i) = sr.ReadLine
  antonym(i + 1) = sr.ReadLine
Next
sr.Close()
txtBox.Text = antonym(3)
```
Assume the twelve rows of the file DATA.TXT contain the following entries: big, small, black, white, old, young, fast, slow, tall, short, hard, soft.

  A) white
               B) black
  C) small
               D) Subscript out of range

Answer: A

6) Each individual variable in the list

6) _____

`student(0), student(1), student(2)`

is known as a(n)
  A) type.          B) dimension.        C) element.        D) subscript.

Answer: C

7) The ReDim statement causes an array to lose its current contents unless the word ReDim is followed by the keyword

7) _____

  A) MyBase        B) CInt        C) Add        D) Preserve

Answer: D

8) The GetUpperBound(0) function returns what information about an array?

8) _____

  A) the highest dimension of the array
  B) the largest value that can be assigned to an array element
  C) the highest number that can be used as a subscript for the array
  D) the number of elements in the array

Answer: C

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

9) If the following statement appears in a program, the array *score()* must have been declared using the String data type.

9) _____

`score(1) = 87`

Answer:    True      ✓ False

2

10) Like other variables, array variables can be declared and assigned initial values at the same time.    10) _____

Answer: ● True        False

11) If you use the ReDim statement to make an array smaller than it was, data in the eliminated     11) _____
elements can be retrieved by using the Preserve keyword.

Answer:    True      ● False

12) The following statements are valid. (T/F)'    12) _____

```
x = CInt(InputBox("Enter number of items to be processed:"))
ReDim myArray(x - 1)
```

Answer: ● True        False

SHORT ANSWER.  Write the word or phrase that best completes each statement or answers the question.

13) Consider the following Visual Basic statements:    13) _____

```
Dim nums(4) As Double
For index As Integer = 0 To 4
  nums(index) = 1 + (index * 2)
Next
```

What values are placed in the array by the above statements? (Show each element of the array and the value for that element.)

Answer:  nums(0)=1, nums(1)=3, nums(2)=5, nums(3)=7, nums(4)=9

14) What will be the size of the array *stones()* after the following two lines of code are     14) _____
executed?

```
Dim stones() As String = {"Watts", "Jagger", "Wood", "Richards"}
ReDim Preserve stones(10)
```

Answer: 11

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

15) What is the value of *j* after the following code segment has been executed?    15) _____

```
Dim state(49) As String, j as Integer
'Assume that the data file STATES.TXT contains
'the names of the 50 states of the United States
'in the order they were admitted to the union.
Dim sr As IO.StreamReader = IO.File.OpenText("STATES.TXT")
j = 0
Do While sr.Peek <> -1
  state(j) = sr.ReadLine
  j += 1
Loop
sr.Close()
For i As Integer = 0 to state.GetUpperBound(0)
  lstBox.Items.Add( "State Number " & i + 1 & " is " & state(i))
Next
```

A) 48                                      B) 49
C) 50                                      D) Unable to determine

Answer: C

16) Which of the following is NOT an example of an ordered array?                                        16) _____

A) num()

| 457 | 457 | 457 | 458 |

B) years()

| 1877 | 1944 | 2011 | 4301 |

C) cities()

| Selah | Wapato | Yakima | Zillah |

D) nbrhoods()

| Hockinson | Bush Prairie | Dollars Corner | Battle Ground |

Answer: D

17) In the ordered array declared with the statement below, the value of the element *namfriend(0)* is      17) _____
equal to that of which of the other following elements?
```
Dim namfriend() As String = {"Fred", "Fred", "fred", "fred"}
```
A) namfriend(1     B) namfriend(2)        C) namfriend(3)        D) namfriend(4)

Answer: A

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

18) Arrays are said to be ordered only if the values are in ascending order.                                18) _____

Answer:    True      ✅ False

19) The statement                                                                                           19) _____
```
Dim newlist(10) As String
```
is used to declare a variable where each element has the value of 10.

Answer:    True      ✅ False

20) In the line of code                                                                                     20) _____
```
Function Sum(ByVal score() As Integer) As Integer
```
the pair of parentheses that follows **score** can be removed.

Answer:    True      ✅ False

21) In the line of code                                                                                     21) _____
```
Dim score() As Integer = {55, 33, 12}
```
the upper bound of the array *score()* is 12.

Answer:    True      ✅ False

22) Beginning with the first element of an ordered list and searching successive elements is known as a      22) _____
sequential search.

Answer: ✅ True        False

4

23) Consider the following structure definition. Which Dim statement would correctly declare an array     23) _____
of this structure for elements having subscripts from 0 through 30?
```
Structure carType
  Dim yr As Integer
  Dim make As String
  Dim model As String
End Structure
```
   A) You cannot have an array of structures.        B) `Dim carType(30) As car`
   C) `Dim car(30) As carType`             D) `Dim carType(30)`

Answer:  C

24) Each of the following statements declares a control array except one. Which of the following     24) _____
statements does not create a control array?
   A) `Dim txtNumber(8) As TextBox`       B) `Dim btnAmount() As Button`
   C) `Dim lblTitle(10) As Label`         D) `Dim score(5) As Integer`

Answer:  D

25) A program contains a form (Form1) with four text boxes (TextBox1, TextBox2, TextBox3, and     25) _____
TextBox4) and a button. The line
`Dim txtBox(3) As TextBox`
is placed in the Declarations section of the Code window. This code makes txtBox(3) available to
which of the following?
   A) all of the form's procedures
   B) TextBox3's event procedures only
   C) the three textboxes's event procedures only
   D) the button's event procedures only

Answer:  A

26) Suppose a structure is created with the code     26) _____
```
Structure stateUSA
  Dim capCity As String
  Dim stateNum As Integer
End Structure
```
in the Declarations section of the Code editor. Which of the following statements correctly declares
a variable of type stateWA?
   A) `Dim stateWA As Structure`      B) `Dim stateWA As stateUSA`
   C) `Dim stateWA As Member`        D) `Dim stateUSA As stateWA`

Answer:  B

27) A program contains a form (Form1) with three text boxes (TextBox1, TextBox2, and TextBox3) and a button The line

```
Dim txtBox(2) As TextBox
```

is placed in the *Declarations* section of the Code window. The three lines

```
txtBox(0) = TextBox1
txtBox(1) = TextBox2
txtBox(2) = TextBox3
```

are placed in the Form1_Load procedure for this program. The button's click event procedure contains the code

```
For lpNum As Integer = 0 To 2
  txtBox(lpNum).Text = "Value is " & lpNum + 1
Next
```

What output will be displayed in *txtBox(1)* when the button is clicked?

A) Value is lpNum    B) Value is 2    C) 2    D) Value is 1

27) _____

Answer: B

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

28) A program contains a form (Form1) with three textboxes (TextBox1, TextBox2, and TextBox3). The line

```
Dim txtBox(3) As TextBox
```

is placed in the *Declarations* section of the Code window. The three lines

```
txtBox(3) = TextBox1
txtBox(1) = TextBox2
txtBox(2) = TextBox3
```

are placed in the Form1_Load procedure for this program. This code will cause an error because the numbers of the subscripted control array elements do not match up to the numbers at the end of the default text box names.

28) _____

Answer:    True    ◉ False

29) Suppose a structure is created with the code

```
Structure stateUSA
  Dim capCity As String
  Dim yearFounded As Integer
End Structure
```

in the Declarations section of the Code window. In this structure, the variable *capCity* is known as a *member*.

29) _____

Answer: ◉ True    False

30) A structure can contain members that are simple variables only; members cannot be arrays.

30) _____

Answer:    True    ◉ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

31) How many comparisons will be made in the first pass of a bubble sort of 6 items?

A) 4    B) 6

C) 5    D) depends on the elements to be sorted

31) _____

Answer: C

32) From the following list of unsorted items, how many passes of a bubble sort are required to sort the list in ascending order?

Groucho   Harpo   Zeppo   Chico   Gummo

 A) 1      B) 2      C) 3      D) 4

Answer: C

32) _____

33) The Shell sort is so named because

 A) it resembles the familiar carnival game that moves a pea back and forth under walnut shells.
 B) it works through successive layers (shells) of unsorted data.
 C) it was invented by Donald Shell.
 D) None of the above

Answer: C

33) _____

34) Assume a binary search is looking for "Mankato" in the following list. Which city would be compared with "Mankato" first?

Akron   Hartford   Ithaca   Seattle   Tulsa

 A) Seattle   B) Hartford   C) Akron   D) Tulsa   E) Ithaca

Answer: E

34) _____

35) Each of the following represents a step in the *bubble sort* algorithm except one. Which of the following is not a step used in a pass through a list by the *bubble sort* algorithm?

 A) Compare the first and last items. If they are in the wrong order, swap them.
 B) On the final comparison of the first pass, the possible swap is between the next-to-last and last items.
 C) Compare the second and third items. If they are in the wrong order, swap them.
 D) Compare the first and second items. If they are in the wrong order, swap them.

Answer: A

35) _____

36) When using the *bubble sort* algorithm, after the first pass through the list, which of the following will be true?

 A) The first item only is guaranteed to be in its proper position.
 B) The last two items are guaranteed to be in their proper positions.
 C) The last item only is guaranteed to be in its proper position.
 D) The first two items are guaranteed to be in their proper positions.

Answer: C

36) _____

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

37) A *binary search* searches an ordered list by successively dividing the list in halves until the item searched for is found or determined to be not present.

Answer: ✔ True   False

37) _____

38) Both the *bubble sort* and the *Shell sort* require the interchanging of values stored in a pair of variables.

Answer: ✔ True   False

38) _____

39) When using the *bubble sort* algorithm, only lists containing data of the String type can be correctly ordered.

Answer: True   ✔ False

39) _____

40) The *Shell sort* algorithm, which compares distant items first and works its way down to nearby items, is more efficient than the *bubble sort* algorithm.

Answer: ● True        False

40) _____

41) The bubble sort is usually faster than the Shell sort.

Answer:    True      ● False

41) _____

42) A binary search that begins in the middle of a list does not require the data to be in any order.

Answer:    True      ● False

42) _____

43) Although three assignment statements can be used to swap a pair of array elements, three assignment statements alone cannot swap all the items in one array with all of the items in another array.

Answer:    True      ● False

43) _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

44) Use the following array, *age()*, and assume the bubble sort is used to sort the array from smallest to largest: age(0)=16, age(1)=3, age(2)=21, age(3)=43,age(4)=2, age(5)=16, age(6)=32.
(a) What is the contents of the array after one pass?
(b) What is the contents of the array after two passes?
(c) What is the contents of the array after three passes?

Answer:  (a)3, 16, 21, 2, 16, 32, 43
         (b)3, 16, 2, 16, 21, 32, 43
         (c)3, 2, 16, 16, 21, 32, 43

44) _____

45) Given an array of size 10 with the following ten values stored in order—1.8, 2.9, 4.7, 9.3, 10.1, 13.6, 17.4, 19.2, 21.5, 23.3—you want to perform a binary search for the value 4.7. What are the successive values of First, Last, and Middle as determined when performing this search?  (Fill in the table below until the search is completed.)

45) _____

| First | Middle | Last |
|-------|--------|------|
| 0     |        | 9    |
|       |        |      |
|       |        |      |
|       |        |      |

Answer:

| First | Middle | Last |
|-------|--------|------|
| 0     | 4      | 9    |
| 0     | 1      | 3    |
| 2     | 2      | 3    |

8

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

46) Assume the *array b()* has been filled as shown. What is the output of the following program segment?      46) _____

```
                                                 b()
                                          0    1    2    3
s = 0                                  |------------------------
For k As Integer = 0 To 2         0    |    2    3    4    5
  s += b(k, k + 1)                     |
Next                              1    |    6    5    4    3
lstBox.Items.Add(s)                    |
                                  2    |    2    3    4    5
                                       |
                                  3    |    6    5    4    3
```

A) 64
B) 12
C) 25
D) 13
E) None of the above

Answer:  B

47) Which of the following types of variables is capable of holding the information contained in a table that has four rows and four columns?      47) _____
    A) single-subscripted variables           B) simple variables
    C) double-subscripted variables        D) one-dimensional arrays

Answer:  C

48) Which of the following types of variables can only hold a single item of data?      48) _____
    A) two-dimensional arrays           B) single-subscripted variables
    C) simple variables                D) double-subscripted variables

Answer:  C

49) Which of the following declarations can be used to create a three-dimensional array?      49) _____
    A) `Dim newVar(2, 2, 2) As Double`      B) `Dim newVar(3, 3) As Double`
    C) `Dim newVar(3) As Double`          D) `Dim newVar(3) As TextBox`

Answer:  A

TRUE/FALSE.  Write 'T' if the statement is true and 'F' if the statement is false.

50) Arrays that are capable of holding the contents of a table with several rows and columns, are known as *two-dimensional arrays* or *double subscripted variables*.      50) _____
Answer: ☑ True       False

51) The statement      51) _____
`Dim nextVar(3, 5) As Double`
declares a two-dimensional array that can store a table containing 4 columns and 6 rows of numeric data.
Answer:    True    ☑ False

52) A *two-dimensional array* can be declared and initialized at the same time.      52) _____
Answer: ☑ True       False

53) In the two-dimensional array declaration
**Dim newVar(,) As Double = {{1, 2, 3}, {4, 5, 2054}, {6, 802, 2786}}**
the comma in newVar(,) can be removed.
Answer:    True    ✅ False

53) _____

54) Variable arrays can only be one- or *two-dimensional*.
Answer:    True    ✅ False

54) _____

55) ReDim statements can be used to change a one-dimensional array into a three-dimensional array.
Answer:    True    ✅ False

55) _____

56) Given the following statements, the first subscript in the second statement references the column.
**Dim myArray(15, 20) As Double**
**myArray(5, 10) = 0**
Answer:    True    ✅ False

56) _____

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

57) Opening a file for output means that
   A) data may be read from and stored onto the disk.
   B) data may be stored onto the disk.
   C) anything that appears as output on the screen is written to the disk.
   D) data may be read from the disk.
Answer: B

57) _____

58) When a file is opened for Append,
   A) data may be read starting at the beginning of the file.
   B) data written to the file replaces the data already there.
   C) data written to the file are added at the end of the file.
   D) data written to the file are inserted at the beginning of the file.
Answer: C

58) _____

59) Assume the file ALPHABET.TXT contains 26 records, the lowercase letters of the alphabet in ascending order. What happens when the following code is executed?
```
Dim letter As String
Dim sr As IO.StreamReader = IO.File.OpenText("ALPHABET.TXT")
Do While sr.Peek <> -1
  letter = sr.ReadLine
  Dim sw As IO.StreamWriter = IO.File.CreateText(letter.ToUpper &
".TXT")
  sw.WriteLine(letter.ToUpper & ".TXT")
  sw.Close()
Loop
sr.Close()
```
   A) A file called z is created containing all of the letters of the alphabet in lowercase.
   B) Twenty-six files are created and named with one of the uppercase letters of the alphabet and each containing only its own file name.
   C) An "invalid file name" error is produced.
   D) A "too many files open" error is produced.
Answer: B

59) _____

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60) Which of the following is an example of how a *filespec* for a sequential file would be written within    60) _____
a Visual Basic application?
   A) "C\TEXT FILES\INCOME DATA.TXT"          B) C:\TEXT FILES\INCOME DATA.TXT
   C) "C:\TEXT FILES\INCOME DATA.*"           D) "C:\TEXT FILES\INCOME DATA.TXT"

Answer: D

61) Which of the terms in the following line of code are named variables that could be replaced as long    61) _____
as all other references were also updated?
```
sr = IO.File.OpenText(fileName)
```
   A) IO                 B) fileName                C) OpenText              D) File

Answer: B

62) If a sequential file is opened for input, then this allows    62) _____
   A) data to be deleted from the file.
   B) data to be appended to the end of the file by the Visual Basic application.
   C) data to be placed into the file by the Visual Basic application.
   D) data that is in the file to be used in the Visual Basic application.

Answer: D

63) Which one of the following is NOT an example of a *bug*?    63) _____
   A) accessing the wrong property value          B) typos
   C) viruses                                     D) using an incorrect formula

Answer: C

64) When an exception is generated by a Visual Basic application, the default exception handler will    64) _____
   A) restart the program.
   B) continue to execute the program.
   C) terminate the program.
   D) display a dialog box that asks the user if they wish to restart the computer.

Answer: C

65) Which of the following exceptions will be generated by trying to access a disk drive that doesn't    65) _____
contain a disk?
   A) OverflowException                       B) IndexOutOfRangeException
   C) NullReferenceException                  D) IO.DirectoryNotFoundException

Answer: D

66) The code for an application tests to see if a file exists using the following line in the Try block:    66) _____
```
IO.File.Exists(fileName)
```
The first catch block is written as follows:
```
Catch exc As IO.IOException
```
This catch block is meant to handle which of the following exceptions?
   A) an exception generated by deleting or renaming an open file
   B) an exception generated by attempting to access a file within a folder that is missing
   C) an exception generated by attempting to access a file that is missing
   D) any exception that hasn't been handled by the Try block

Answer: A

TRUE/FALSE.  Write 'T' if the statement is true and 'F' if the statement is false.

67) To get rid of an existing file, execute a statement of the form  **`IO.File.Delete(filespec)`**.

67) _____

Answer: ✅ True        False

68) When a text file is created in Visual Basic using a StreamWriter, the extension .TXT is automatically added to the file name if no other extension is specified.

68) _____

Answer:    True      ✅ False

69) If an existing sequential file is opened for output, the computer will append any new data to the end of this existing file.

69) _____

Answer:    True      ✅ False

70) An individual item of a sequential file cannot be changed or deleted directly.

70) _____

Answer: ✅ True        False

71) In a Try-Catch-Finally block, the clause in the first listed Catch block is considered if an exception is thrown in the Try block.

71) _____

Answer: ✅ True        False

72) In the line of code
**`sw = IO.File.CreateText(fileName)`**
**`sw`** is a variable that holds the value of a *filespec* for an existing sequential file.

72) _____

Answer:    True      ✅ False

73) A Catch block of code that is initiated by the keyword **`Catch`** and doesn't contain any additional clause will execute regardless of whether an exception occurred.

73) _____

Answer:    True      ✅ False

74) If an attempt is made to access a missing file within an existing folder using the **`OpenText`** method, the *IO.DirectoryNotFoundException* will be thrown.

74) _____

Answer:    True      ✅ False

SHORT ANSWER.  Write the word or phrase that best completes each statement or answers the question.

75) Give three different file modes that Visual Basic allows you to use when accessing a file?

75) _____

Answer:  Input, Output, and Append

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

76) Which of the tasks is the *Split* function used to complete in the following code?
**`Dim words() As String`**
**`words = line.Split(",")`**

76) _____

A) Split adds a comma delimiter between all items of text in the given line.
B) Split parses or separates out all items of text that are delimited by a *c* in the given line.
C) Split parses or separates out all items of text that are delimited by a comma in the given line.
D) Split adds a comma followed by a *c* to the end of the given line.

Answer:  C

77) Which of the tasks is the *Join* function used to complete in the following statement?      77) _____
```
Dim line As String
line = Join(strArrData, ",")
```
   A) Join parses or separates out all items of text that are delimited by a comma in *line*.
   B) Join concatenates the values of all elements of the array *strArrData*, and adds a comma
      delimiter between successive values.
   C) Join concatenates the values of all elements of *line*, and adds a comma to the end of the line.
   D) Join parses or separates out all items of text that are delimited by a comma in *strArrData*.

Answer: B

78) In an application that merges sequential files without duplications, which of the following lines of      78) _____
code would be used to open a file for output?
   A) `Dim sr1 As IO.StreamReader = IO.File.OpenText(file3)`
   B) `Dim sw As IO.StreamWriter = IO.File.CreateText(file3)`
   C) `file3 = txtDataMerged.Text`
   D) `data1 = CDbl(sr1.ReadLine)`

Answer: B

79) When merging sequential files without duplications, the last step in any algorithm should be to      79) _____
complete which of the following tasks?
   A) Delete all items of data that remain in the ordered files once the files have been merged.
   B) Index all opened files.
   C) After there is no longer data in one of the ordered files, write out all remaining data in the
      other file.
   D) Close all opened files.

Answer: D

80) *Control break processing* means which of the following?      80) _____
   A) a program that processes data based on a variable scope
   B) a program that processes data based on a variable type
   C) a program that processes data based on a change to the value of a variable
   D) a program that processes data based on a variable that maintains a constant value

Answer: C

81) Identify the control variable in the following code block.      81) _____
```
Dim loopStart As Integer = 1
Dim message As String
Dim loopContinue As Integer = 1
Do While loopContinue <= 3
  message = "The number is " & loopContinue
  MessageBox.Show(message)
  loopContinue += loopStart
Loop
```
   A) loopStart      B) loopContinue      C) message      D) Integer

Answer: B

TRUE/FALSE.  Write 'T' if the statement is true and 'F' if the statement is false.

82) The *Trim* function is often used with the output of a *Split* function to delete extraneous spaces.      82) _____
Answer: ● True      False

83) In the following statement, the term Join is used to concatenate the data contained in the array    83) _____
   *outputLine()* into one comma delimited line that can be placed in a sequential file.
   **sw.WriteLine(Join(outputLine, ","))**

   Answer: ● True        False

84) Sequential files must always be opened, processed, and closed within a single procedure.    84) _____

   Answer:    True    ● False

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

85) Which of the following statements will remove all items from the list box?    85) _____
   A) **lstBox.Clear()**
   B) **For i As Integer = 1 to lstBox.Items.Count**
       **lstBox.Items.RemoveAt(i)**
     **Next**
   C) **lstBox.Items.Clear()**
   D) **lstBox.Items.RemoveAll**

   Answer: C

86) The following statement will insert *str* into the list box at the proper sorted position and assign to    86) _____
   *num* the index of that position provided that one of the following has also occurred. Which one of
   these *properties* must also have been set to allow the statement to complete the described tasks?
   **num = lstbox.Items.Add(str)**
   A) The Sorted property of the list box has been set to Alphabetical.
   B) The Sorted property of the list box has been set to True.
   C) The Sorted property of the list box has been set to False.
   D) The Count property of the list box has been set to Sorted.

   Answer: B

87) A list box named lstBox has its Sorted property set to False and contains the three items Cat, Dog,    87) _____
   and Gnu in its list. If the word Elephant is added to the list at runtime, what will be its index value?
   A) 1                    B) 2                    C) 0                    D) 3

   Answer: D

88) Which of the following controls has a drop down arrow and an attached text box that allows users    88) _____
   to type selections?
   A) Simple ComboBox                         B) ListBox
   C) DropDown ComboBox                       D) DropDownList ComboBox

   Answer: C

89) The following statement causes the Open dialog box to become visible on the form.    89) _____
   **OpenFileDialog1.ShowDialog()**
   After a file has been selected and the Open button is pressed, the value of
   **OpenFileDialog1.FileName**
   will be the file's filespec; this will include all of the following except
   A) the file's extension.                     B) the file's drive.
   C) the file's path.                          D) the file's date of creation.

   Answer: D

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

90) Assume lstBox has its Sorted property set to True. After the following statement is executed, the value of the Integer variable *num* is the index of the position in the list where "Hello" was inserted.
```
num = lstBox.Items.Add("Hello")
```
Answer: ● True        False

90) _____

91) The following lines of code display all the items of lstBox.

```
For n As Integer = 1 to lstBox.Items.Count
  lstBox2.Items.Add(lstBox.Items(n))
Next
```
Answer:    True    ● False

91) _____

92) In a Simple combo box, the list is always visible.
Answer: ● True        False

92) _____

93) If no item in a combo box is selected, the value of lstBox.SelectedIndex is 0.
Answer:    True    ● False

93) _____

94) The value of cboBox.Text is the currently highlighted item.
Answer: ● True        False

94) _____

95) For a list box named lstBox, the following statement will delete the first occurrence of the value of *num* from its list.
```
lstBox.Items.RemoveAt(num)
```
Answer:    True    ● False

95) _____

96) With a simple combo box, the list drops down when the user clicks on the arrow and then disappears after a selection is made.
Answer:    True    ● False

96) _____

97) The DropDownStyle property of a combo box must be set at design time.
Answer: ● True        False

97) _____

98) Combo boxes have most of the same properties, events, and methods as list boxes.
Answer: ● True        False

98) _____

99) In order to use the OpenFileDialog control, the programmer must first change its Name property to something other than the default OpenFileDialog1.
Answer:    True    ● False

99) _____

100) The following statement could be used to set the Filter property of the OpenFileDialog control so that it displays files with the .TXT extension.
```
Text Files (*.TXT)|(.TXT)
```
Answer:    True    ● False

100) _____

15

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

101) Which of the following techniques does NOT always toggle the checked and unchecked state of a check box control?

   A) Press Alt+Access key (if an access key has been specified).
   B) Set the Checked property equal to 1.
   C) Press the spacebar when the square has the focus.
   D) Click on the square or its caption with the mouse.

Answer: B

102) For a scroll bar, the value of the Value property is

   A) a number between the values of the Minimum and Maximum properties.
   B) a number between the values of the SmallChange and LargeChange properties.
   C) true or false.
   D) any number.

Answer: A

103) To move the scroll box of a scroll bar a large distance

   A) click on the bar between the scroll box and the furthermost arrow.
   B) It can only be moved by writing code.
   C) click on the scroll box.
   D) click on the furthermost arrow button.

Answer: A

104) When a check box is checked, the value of the Checked property will be

   A) False.       B) True.       C) 0.       D) 1.

Answer: B

105) Which of the following methods is used to load a new picture into a picture box control?

   A) picBox.Picture = LoadPicture*(filespec)*       B) picBox.Image = Image.FromFile*(filespec)*
   C) picBox.Picture = *filespec*       D) picBox.Image = *filespec*

Answer: B

106) Which of the following controls is not used to select an item from a list?

   A) ComboBox       B) OpenFileDialog
   C) List Box       D) Timer Control

Answer: D

107) A check box control named chkFirst contains the following code in its **CheckedChanged** event procedure. Which of the following is true concerning the use of this control?

```
Dim message As String = "hello"
MessageBox.Show(message)
```
   A) The message "hello" will appear when the user checks the control but not when it is unchecked.
   B) The message "hello" will appear when the user checks the control and again when it is unchecked.
   C) The message "hello" will appear when the user unchecks the control but not when it is checked.
   D) The message "hello" will not appear using this source code.

Answer: B

108) Suppose there are four radio button controls attached to a group box control on a form. How many     108) _____
radio buttons can be selected (that is, be "on") at any given time?

    A) 4                 B) 1                 C) 2                 D) 3

Answer: B

109) In the following statement which term is used to designate the distance (in pixels) from the left side     109) _____
of the picture box to the left side of the rectangle?

`picBox.CreateGraphics.DrawRectangle(Pens.Blue, x, y, w, h)`

    A) w                 B) x                 C) y                 D) h

Answer: B

110) A form contains a horizontal scroll bar control named hsbXpos, and the statement **lblFace.Top**     110) _____
**= hsbXpos.Value** is placed inside the hsbXpos.Scroll event procedure (where lblFace identifies a
label on the form, and the hsbXpos's Minimum and Maximum properties are set at their default
values). What will happen when the hsbXpos.Scroll event is triggered by moving the scroll bar's
scroll box to the right?

    A) lblFace will move to the left.                 B) lblFace will move to the right.

    C) lblFace will move down.                    D) lblFace will move up.

Answer: C

TRUE/FALSE.  Write 'T' if the statement is true and 'F' if the statement is false.

111) With a check box control, toggling the state of the small square triggers the CheckChanged event.     111) _____

Answer: ✔ True        False

112) With a scroll bar control, the default values of the Minimum and Maximum properties are 1 and     112) _____
100 respectively.

Answer:    True        ✔ False

113) When the SizeMode property of a picture box control is set to StretchImage, a picture placed in the     113) _____
control will be resized to fit the picture control.

Answer: ✔ True        False

114) The main properties of a scroll bar are set in millimeters.     114) _____

Answer:    True        ✔ False

115) If you set a group box control's Visible property to False, the attached controls will still remain     115) _____
visible.

Answer:    True        ✔ False

116) When a check box control has focus, the spacebar can be used to invoke its CheckedChanged event.     116) _____

Answer: ✔ True        False

117) The timer control is invisible during run time.     117) _____

Answer: ✔ True        False

118) The following statement can be used to assign the PLANE.BMP image to the picBox picture box     118) _____
control at runtime.

`picBox.Image = "plane.bmp"`

Answer:    True        ✔ False

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

119) The Clipboard object is used for all of the following except which one?                               119) _____
    A) Paste text from the Clipboard.            B) Clear the screen.
    C) Clear the Clipboard.                  D) Copy text to the Clipboard.

    Answer:  B

120) The correct code for replacing the selected text in txtBox with the contents of the Clipboard is      120) _____
    A) txtBox.SelectedText = Clipboard          B) txtBox.SelectedText = Clipboard.SetText
    C) txtBox.SelectedText = Clipboard.GetText      D) txtBox.SelectedText = Clipboard.Text

    Answer:  C

121) What expression should be used to generate random numbers from the set 2, 3, 4, 5, 6, 7? (Assume      121) _____
    that the statement `Dim randomNum As New Random()` has been executed.)
    A) `randomNum.Next(1, 8)`             B) `randomNum.Next(1, 7)`
    C) `randomNum.Next(2, 7)`             D) `randomNum.Next(2, 8)`

    Answer:  D

122) MenuStrip controls respond to which one of the following events?                                       122) _____
    A) Double          B) Click          C) Load          D) Change

    Answer:  B

123) The term *modal* refers to                                                                             123) _____
    A) the ability to reposition a form at run time.
    B) the BorderStyle property is set to "3-Fixed Double."
    C) the user not being allowed to shift the focus to any other form until the displayed modal form
       is hidden.
    D) the ability to display more than one form at one time.

    Answer:  C

124) A form contains a text box named txtBox and a button named btnClip. The statement                     124) _____
    `Clipboard.SetText("")` is placed inside btnClip's Click event procedure. At run time, what
    will be placed into the Clipboard if the user enters the word "Hello" into txtBox and then clicks on
    btnClip,?
    A) The Clipboard will be emptied of all contents.
    B) the word "Hello"
    C) the word "btnClip"
    D) the word "txtBox"

    Answer:  A

125) The statement `Dim secondForm As New Form2()` is used to do which of the following?                    125) _____
    A) Cause *secondForm* to appear.
    B) Declare *secondForm* as an instance of the Form2 class.
    C) Set the focus to *secondForm*.
    D) Place the text "Form2" in the title bar of *secondForm*.

    Answer:  B

TRUE/FALSE.  Write 'T' if the statement is true and 'F' if the statement is false.

126) Pressing Ctrl+V with the cursor in a text box inserts the contents of the Clipboard at the cursor position.

126) _____

Answer: ● True        False

127) Menus are designed with the MenuStrip control invoked from the Toolbar.

127) _____

Answer: ● True        False

128) When working with multiple forms, only one form can be visible at one time.

128) _____

Answer:    True        ● False

129) A modal form cannot lose the focus until the form disappears.

129) _____

Answer: ● True        False

130) A random number generator object can be declared with the following statement.
    `Dim rndNum As New Random()`

130) _____

Answer: ● True        False

131) When working with the MenuStrip control, the programmer is not allowed to set up access keys by placing an ampersand in front of a character of text.

131) _____

Answer:    True        ● False

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

In the following exercises assume the statement `Dim gr As Graphics = picOutput.CreateGraphics` has been executed.

132) What is the effect of the statement `gr.DrawString("Hello", Me.Font, Brushes.Blue, 50, 60)`?
     A) Display the word Hello beginning 50 pixels from the left side of the picture box.
     B) Display the word Hello with the top of the word 60 pixels from the top of the picture box.
     C) Display the word Hello in blue.
     D) All of the above

132) _____

Answer:  D

133) Give a statement that displays the value of the string variable *strVar* with yellow letters.
     A) `gr.DrawString(strVar, Me.Font, Yellow, 50, 50)`
     B) `gr.DrawString(strVar, Me.Font, Color.Yellow, 50, 60)`
     C) `gr.DrawString(strVar, Me.Font, Pens.Yellow, 50, 60)`
     D) `gr.DrawString(strVar, Me.Font, Brushes.Yellow, 50, 60)`

133) _____

Answer:  D

134) Give a statement that draws a red diagonal from the upper-left corner of the picture box to the lower-right corner.
     A) `gr.DrawLine(Pens.Red, picOutput.Width, 0, 0, picOutput.Height)`
     B) `gr.DrawLine(Pens.Red, 0, 0, picOutput.Width, picOutput.Height)`
     C) `gr.DrawLine(Pens.Red, 0, 0, picOutput.Height, picOutput.Width)`
     D) `gr.DrawLine(Color.Red, 0, 0, picOutput.Width, picOutput.Height)`

134) _____

Answer:  B

135) The distance from the top of the picture box to the top of the circle drawn by the statement

    **gr.DrawEllipse(Brushes.Red, 10, 20, 40, 40)** is.

    A) 80 pixels           B) 10 pixels           C) 40 pixels           D) 20 pixels

    Answer: D

135) _____

136) Give a statement that deletes all graphics and text from picOutput.

    A) **picOutput.Delete()**           B) **picOutput.Refresh()**

    C) **picOutput.Clear()**           D) **picOutput.Text = ""**

    Answer: C

136) _____

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

137) The statements **gr.DrawLine(Pens.Red, 0, 0, 30, 40)** and **gr.DrawLine(Pens.Red, 0, 0, 40, 30)** draw lines of the same length.

    Answer: ☑ True        False

137) _____

138) The statement **gr.FillRectangle(Brushes.Red, 10, 20, 30, 40)** draws a solid rectangle of width 40 pixels.

    Answer:    True        ☑ False

138) _____

139) The sector of a circle with sweep angle 90 consists of a-quarter of the circle.

    Answer: ☑ True        False

139) _____

140) Animation can be produced by placing an image in a picture box and moving the picture box.

    Answer: ☑ True        False

140) _____

141) The statement **Dim pn As Pen = Pens.Blue** is valid.

    Answer: ☑ True        False

141) _____

142) The pair of statements

    **Dim fnt As Font = New Font("Times New Roman", 12)**

    **Gr.DrawString("Hello", fnt, Brushes.Blue,10,10)**

    Displays the word Hello in 12-point Times New Roman font.

    Answer: ☑ True        False

142) _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

143) A rectangular array of data is called a

    A) field.                        B) table.

    C) database management system.      D) record.

    Answer: B

143) _____

144) Each row in a table is also called a(n)

    A) selection.          B) field.           C) array.           D) record.

    Answer: D

144) _____

145) Which property should be used to bind a list box to a data table?                    145) _____
    A) The Items property of the list box.
    B) The DataSource property of the list box.
    C) The DataSource property of the data table.
    D) The Bound property of the list box.
    Answer:  B

146) Which of the following is a collection of one or more (usually related) rectangular arrays of data?   146) _____
    A) a field        B) a database        C) a record        D) a table
    Answer:  B

TRUE/FALSE.  Write 'T' if the statement is true and 'F' if the statement is false.

147) Each entry of a field of a table must contain some information.                    147) _____
    Answer:    True    🟢 False

148) The management of databases is the number one use of computers today.                148) _____
    Answer: 🟢 True    False

149) *DataBase Explorer* is used to browse through all parts of a database.               149) _____
    Answer: 🟢 True    False

150) If *dt* is a DataTable object, then the value of                        150) _____
    `dt.Columns.Count`
    is the number of records in the table.
    Answer:    True    🟢 False

151) A list box can be bound or connected directly to a data table.                  151) _____
    Answer: 🟢 True    False

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

152) What is a primary key?                                152) _____
    A) a field that uniquely identifies each record
    B) the largest field in every record
    C) the first field in every record
    D) the first field specified when a table is created
    Answer:  A

153) SQL is an abbreviation for                              153) _____
    A) Structured Query Language.        B) Standard Query Language.
    C) Simple Query Language.        D) None of the above
    Answer:  A

154) A virtual table is also called a(n)                          154) _____
    A) hierarchy table.    B) view.        C) appendix.        D) standard table.
    Answer:  B

155) Which one of the following statements is true about primary keys?  155) \_\_\_\_\_
    A) Only a single record can be used as a primary key.
    B) A column of names is usually a good choice for use as a primary key.
    C) A primary key is used to uniquely identify records in a table.
    D) Social Security numbers are never used as a primary key.

Answer: C

156) Which of the following terms is defined as two or more interdependent tables?  156) \_\_\_\_\_
    A) join                       B) Rule of Referential Integrity
    C) SQL                     D) relational database

Answer: D

157) The error message  157) \_\_\_\_\_
**You cannot add or change a record because a related record is required in table 'Countries'.**
will be generated by attempting which of the following with the MEGACITIES database?
    A) The user tries to request a joined table using the SQL language.
    B) A user tries to enter a record in the table Countries that doesn't contain data in the primary key.
    C) A user tries to enter a record to the table Countries with the same primary key as another record.
    D) A user tries to add a record to a table that is related to the Countries table, and that record contains a foreign key value that does not correspond to a primary key value in the Countries table.

Answer: D

158) The error message  158) \_\_\_\_\_
**The changes you requested to the table were not successful because they would create duplicate values in the index, primary key, or relationship.  Change the data in the field or fields that contain duplicate data, remove the index, or redefine the index to permit duplicate entries and try again.**
will be generated by attempting which of the following?
    A) A user tries to enter a record in the table Countries with the same primary key as another record.
    B) A user tries to add a record to a table that is related to the Countries table, and that record contains a foreign key value that does NOT correspond to a primary key value in the Countries table.
    C) A user tries to request a joined table using the SQL language.
    D) A user tries to enter a record in the table Countries that doesn't contain data in the primary key.

Answer: A

159) The following form of *SQL* command is classified as which of the four basic types of *SQL* requests?  159) \_\_\_\_\_
**SELECT field1, field2, ..., fieldN FROM Table1 WHERE criteria**
    A) Request III: join the tables together (connected by a foreign key) and present the records
    B) Request IV: make available just some of the fields of a table
    C) Request II: show just the records that meet certain criteria
    D) Request I: show the records of a table in a specified order

Answer: B

160) The following form of *SQL* command is classified as which of the four basic types of *SQL* requests?    160) _____
```
SELECT * FROM Table1 WHERE criteria
```
    A) Request III: join the tables together (connected by a foreign key) and present the records
    B) Request IV: make available just some of the fields of either the basic table or joined *table*
    C) Request I: show the records of a table in a specified order
    D) Request II: show just the records that meet certain criteria

Answer: D

161) Which SQL statement below would be used to display all of the records from the Cities table that    161) _____
contain the letter e as the second character in the name listed in their city field?
    A) `SELECT * FROM Cities WHERE city Like 'e%'`
    B) `SELECT * FROM Cities WHERE city Like '_e%'`
    C) `SELECT * FROM Cities WHERE city Like 'E%'`
    D) `SELECT * FROM Cities WHERE city Like 'eb_%'`

Answer: B

162) A program uses the lines    162) _____
```
Dim dataAdapter As New OleDb.OleDbDataAdapter(sqlStr, connStr)
Dim commandBuilder As New OleDb.OleDbCommandBuilder(dataAdapter)
changes = dataAdapter.Update(dt)
```
to update a database with changes made to a data table through a DataGridView control. In this code, which one of the following is not the name of a variable?
    A) connStr         B) dataAdapter         C) Update         D) changes

Answer: C

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

163) The Rule of Referential Integrity insists that each value in the foreign key must also appear in the    163) _____
primary key of the other table.
Answer: ✅ True        False

164) A foreign key allows Visual Basic to join together two tables from a relational database in a    164) _____
meaningful way.
Answer: ✅ True        False

165) SQL may be used to create virtual tables in Visual Basic.    165) _____
Answer: ✅ True        False

166) SQL can be used in Visual Basic to sort records.    166) _____
Answer: ✅ True        False

167) A virtual table (or view) of a database table may be displayed in a DataGridView control by setting    167) _____
the first argument of the OleDbDataAdapter equal to the appropriate SQL string.
Answer: ✅ True        False

168) In the following *SQL* command, the phrase `WHERE criteria` is used to present the records as    168) _____
ordered by the specified field or fields.
```
SELECT fields FROM clause WHERE criteria
```
Answer:    True        ✅ False

169) If a DataGridView control is filled from a table whose DataAdapter uses an SQL statement of the form

    **SELECT * FROM clause ORDER BY field ASC**

the result will be the display (in ascending order) of all records that are contained in the table or tables designated by *clause*.

Answer: ● True    False

169) \_\_\_\_\_

170) If a DataGridView control is filled from a table whose DataAdapter uses the SQL statement (with the database MEGACITIES)

    **SELECT * FROM Cities WHERE city Like 'S%'**

the result will be the display of all of the records from the Cities table that contain the letter S in the name listed in their city field.

Answer:    True    ● False

170) \_\_\_\_\_

171) An *SQL* clause of the form

    **tblA INNER JOIN tblB ON foreign key of tblA=primary key of tblB**

causes two *tables* to be *joined*.

Answer: ● True    False

171) \_\_\_\_\_

172) The statement

    **dgvDisplay.DataSource = dt**

(where dgvDisplay is the name of a DataGridView control and *dt* is a data table) will display the contents of a data table in a data grid.

Answer: ● True    False

172) \_\_\_\_\_

173) The Washington State Department of Motor Vehicles maintains a database on all licensed drivers and the cars that they own within the state. In the first table (Names) they have a listing of all of the names of all licensed drivers; they have created a unique license number to identify each individual within this database. In a related second table (Vehicles), the cars owned by Washington State drivers are tracked. Since drivers often own more than one car, an individual's name (and their corresponding driver's license number) is likely to appear more than once in this second table. Therefore, we say that there is a one-to-many relationship from the names table to the vehicles table in this database.

Answer: ● True    False

173) \_\_\_\_\_

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

The following exercises refer to the Countries table discussed in the text. The table has three fields—*country*, *pop2005*, and *monetaryUnit*—with *country* as the key field. In these exercises, give an SQL statement that can be used to accomplish the stated task.

174) Show the records from Countries in descending order based on the 2005 population.

    Answer: **SELECT * FROM Countries ORDER BY pop2005 DESC**

174) _____

175) Show the records from Countries whose monetary unit has five characters.

    Answer: **SELECT * FROM Countries WHERE monetaryUnit Like '\_\_\_\_\_'**

175) _____

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

176) Which line of code will declare and create an instance of a new object variable called *instructor* using a class called *Faculty*?

176) _____

   A) `Dim instructor As New Faculty()`
   B) `Dim Faculty As instructor`
   C) `Dim Faculty As New instructor()`
   D) `Dim instructor As Faculty`

Answer:  A

177) What is the purpose of the Get property procedure?

177) _____

   A) Access private methods.
   B) Retrieve the value of a property.
   C) Verify the data.
   D) Assign values.

Answer:  B

178) Which procedure will set default values for member variables when an object is instantiated?

178) _____

   A) Get property procedure
   B) Set property procedure
   C) New
   D) Form1_Load

Answer:  C

179) Which one of the following statements does NOT apply to object-oriented programming?

179) _____

   A) Object-oriented programming helps to prevent the complete rewriting of a program every time a minor change needs to be made.
   B) Object-oriented programming makes use of the principle of "data hiding."
   C) Object-oriented programming depends on the programmer having access to and understanding all of the code that contains the data and procedures that are encapsulated within an object.
   D) Object-oriented programming makes use of the encapsulation within an object of data and procedures that act on the data.

Answer:  C

180) Which of the following is an example of a control object?

180) _____

   A) array      B) list box      C) string variable      D) primary key

Answer:  B

181) Which of the following statements applies to code objects?

181) _____

   A) They are created from the Toolbox.
   B) They include objects of the type TextBox and ListBox.
   C) They require the writing of a class block of code.
   D) They are predefined and have physical manifestations.

Answer:  C

182) Which of the following is an accurate definition of the term *object-oriented program*?

182) _____

   A) An object-oriented program is a specific instance of a user-defined type.
   B) An object-oriented program is a template from which objects are created.
   C) An object-oriented program is populated with objects that hold data, have properties, respond to methods, and raise events.
   D) An object-oriented program is an encapsulation of data and procedures that has properties and responds to methods.

Answer:  C

183) Which statement form below assigns a value to a property?

183) \_\_\_\_\_

    A) `objectName.methodName(arg1, ...)`
    B) `objectName.propertyName = value`
    C) `varName = objectName.propertyName`
    D) `RaiseEvent eventName`

    Answer: B

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

184) Member variables in a class are normally specified as Private.

184) \_\_\_\_\_

    Answer: ⊘ True       False

185) Set property procedures are used to assign values to member variables.

185) \_\_\_\_\_

    Answer: ⊘ True       False

186) Two instances of the same class may exist in a single program.

186) \_\_\_\_\_

    Answer: ⊘ True       False

187) An object can be created in the Declaration section of a form's Code editor with a pair of statements of the form.
`Dim objectname As className`
`objectName = New className(arg1, arg2, ...)`

187) \_\_\_\_\_

    Answer:    True      ⊘ False

188) A good rule of thumb for object-oriented programming is that classes are the verbs in your analysis of the problem.

188) \_\_\_\_\_

    Answer:    True      ⊘ False

189) Methods can be either Sub or Function procedures.

189) \_\_\_\_\_

    Answer: ⊘ True       False

190) Each *list box* is said to be an *instance* of the class *ListBox*.

190) \_\_\_\_\_

    Answer: ⊘ True       False

191) In the following statement, the word *m_name* demonstrates the proper name for a member or instance variable. If these variables are declared without the prefix "m_", an exception will be thrown.
`Private m_name As String`

191) \_\_\_\_\_

    Answer:    True      ⊘ False

192) Property blocks of code, that are used to access (indirectly) member or instance variables, must always contain both Get and Set property procedures.

192) \_\_\_\_\_

    Answer:    True      ⊘ False

193) Each class has a special method called a *constructor* that is sometimes invoked when an object is instantiated.

193) \_\_\_\_\_

    Answer:    True      ⊘ False

194) The constructor method requires at least one argument, and the code inside the procedure block
performs any tasks needed for initializing an object.

Answer:    True    ✅ False

194) \_\_\_\_\_

MULTIPLE CHOICE.  Choose the one alternative that best completes the statement or answers the question.

195) Which of the following is an example of an array declaration whose data type is a user-defined
object?

195) \_\_\_\_\_

A) `Dim students(50) As Student`   B) `Dim students(50) As String`
C) `Dim students(50) As Integer`   D) `Dim students(50) As TextBox`

Answer:  A

196) In the following code block, which of the following represents the line of code that assigns the
value of the Name property?

196) \_\_\_\_\_

```
Class Student
  Private m_name As String
  Public Property Name() As String
    Get
      Return m_name
    End Get
    Set(ByVal Value As String)
      m_name = Value
    End Set
  End Property
End Class
```

A) `Return m_name`            B) `m_name = Value`
C) `Private m_name As String`   D) `End Class`

Answer:  B

197) Which of the following statements best applies to the term *user-defined events*?

197) \_\_\_\_\_

A) User-defined events are predefined objects with physical manifestations.
B) User-defined events are used to communicate changes of properties, errors, and the progress
of lengthy operations.
C) User-defined events represent specific instances of a user-defined type.
D) User-defined events are populated with objects that hold data, have properties, respond to
methods, and raise events.

Answer:  B

198) Statements of which of the following kind should be placed in the Declarations section of a class
code block?

198) \_\_\_\_\_

A) `Dim WithEvents object1 As ClassName`
B) `RaiseEvent UserDefinedEvent(arg1, arg2, ...)`
C) `Private Sub object1_UserDefinedEvent(par1, par2, ...) _`
`           Handles object1.UserDefinedEvent`
D) `Public Event UserDefinedEvent(ByVal par1 As dataType1, _`
`                               ByVal par2 As dataType2, ...)`

Answer:  D

199) Statements of which of the following kind should be placed in the form's code to declare an       199) _____
instance of a class that contains an event?
  A) `Dim WithEvents object1 As ClassName`
  B) `Public Event UserDefinedEvent(ByVal par1 As dataType1, _`
                                    `ByVal par2 As dataType2, ...)`
  C) `RaiseEvent UserDefinedEvent(arg1, arg2, ...)`
  D) `Private Sub object1_UserDefinedEvent(par1, par2, ...) _`
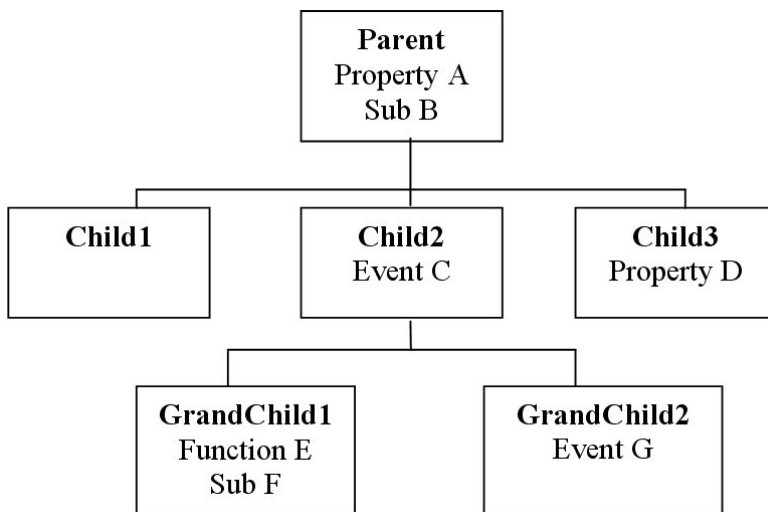                `Handles object1.UserDefinedEvent`

Answer: A

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

200) The statement for triggering a user-defined event is located in the form's code and the event is       200) _____
dealt with in the class block of code.

Answer:    True     ✔ False

201) The statement for triggering a user-defined event is located in the class block of code and the event       201) _____
is dealt with in the form's code.

Answer: ✔ True     False

202) The keyword WithEvents is inserted into the standard declaration statement for instantiation of a       202) _____
class to allow the instance to respond to an event.

Answer: ✔ True     False

203) It can be said that class Student contains class College when a member variable of class Student       203) _____
makes use of an object of type class College.

Answer: ✔ True     False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

204) Which of the following terms does not describe a relationship between classes?       204) _____
  A) containment        B) subclass        C) inheritance        D) use

Answer: B

205) Which of the following best defines the term *hierarchy*?       205) _____
  A) the process by which the properties, methods, and events of one class are passed onto another
     class
  B) when one class manipulates or changes objects of another class
  C) when a member variable of class A makes use of an object of type class B
  D) the collection of a parent class along with its descendants

Answer: D

206) Which of the following best defines the term *inheritance*?       206) _____
  A) when one class manipulates or changes objects of another class
  B) when a member variable of class A makes use of an object of type class B
  C) the collection of a parent class along with its descendants
  D) the process by which the properties, methods, and events of one class are passed onto another
     class

Answer: D

```
                    ┌─────────────────┐
                    │     Parent      │
                    │   Property A    │
                    │     Sub B       │
                    └─────────────────┘
              ┌───────────┼───────────┐
    ┌─────────────┐ ┌─────────────┐ ┌─────────────┐
    │   Child1    │ │   Child2    │ │   Child3    │
    │             │ │   Event C   │ │  Property D │
    └─────────────┘ └─────────────┘ └─────────────┘
                ┌───────────┴───────────┐
        ┌─────────────┐         ┌─────────────┐
        │ GrandChild1 │         │ GrandChild2 │
        │ Function E  │         │   Event G   │
        │   Sub F     │         │             │
        └─────────────┘         └─────────────┘
```

207) In the hierarchy chart shown above, GrandChild1 has access to each of the following items (as a       207) _____
result of inheritance), except one. Which of the following is GrandChild1 NOT able to access?
   A) Sub B              B) Property A              C) Event C              D) Property D

Answer: D

208) Which of the following is a benefit of inheritance?                                                    208) _____
   A) Inheritance allows variables to be collected in arrays.
   B) Inheritance leads to the duplication of code in multiple classes.
   C) Inheritance allows two or more classes to share some common features yet differentiate
      themselves on others.
   D) Inheritance allows Visual Basic applications to directly connect to databases.

Answer: C

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

209) Inheritance does not enhance code reusability.                                                         209) _____
   Answer:    True      ● False

210) Inheritance is the process by which the parent or base class inherits the properties, methods, and     210) _____
events of the child or derived class.
   Answer:    True      ● False

211) The programmer needs to be able to identify useful hierarchies of classes and derived classes in       211) _____
working with object-oriented programming.
   Answer: ● True       False

212) The feature that two classes can have methods with different names but that have the same              212) _____
purpose (and essentially the same implementation), is known as *polymorphism*.
   Answer:    True      ● False

213) In inheritance, the keyword Overridable is used to designate the parent's methods that may be          213) _____
overridden by its children.
   Answer: ● True       False

214) The keyword MustInherit is used to declare an abstract base class.                          214) _____

    Answer: ● True       False

SHORT ANSWER.  Write the word or phrase that best completes each statement or answers the question.

In the exercises below, fill in the blank with one of the following six words:

a. user-defined
b. polymorphism
c. derived
d. interface
e. uses
f. Get

    215) The set of properties, methods, and events for a class is called a class _____.          215) _____
        Answer: interface

    216) In addition to the predefined events for classes, such as New, other events can be defined          216) _____
        by the programmer to communicate changes of properties, errors, and the progress of
        lengthy operations. Such events are called _____ events.
        Answer: user-defined

    217) One class _____ another class if it manipulates objects of that class.          217) _____
        Answer: uses

    218) If class A inherits the properties, methods, and events of class B, then class A is referred to          218) _____
        as a _____ class of class B.
        Answer: derived