Chapter 5  General Procedures

Section 5.1  Function Procedures

1. Variables appearing inside the parentheses of a calling statement are called ____________.
   (A) values of the function
   (B) parameters
   (C) coordinates
   (D) arguments
   D

2. Variables appearing in the header of a Function procedure are called ____________.
   (A) values of the function
   (B) parameters
   (C) coordinates
   (D) arguments
   B

3. What is displayed when the button is clicked on?

   Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
       Dim a, b as String
       Dim x as Integer
       a = "How now brown cow."
       b = "brown"
       x = FindIt(a, b)
       txtBox.Text = CStr(x)
   End Sub

   Function FindIt(z1 as String, z2 as String) As Integer
       Dim x as Integer
       x = z1.IndexOf(z2)
   End Function

   (A) "How now"
   (B) 8
   (C) 0
   (D) An error
   (E) None of the above
   C
4. Consider the following event procedure that calls a Function procedure named Cube, which returns the cube of a number.

```vba
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim num, result As Double
    num = CDbl(InputBox("Enter a number to cube:"))
    result = Cube(num)
    txtBox.Text = "The cube of " & num & " is " & result & "."
End Sub
```

Which of the following is a correct Function definition for Cube?

1. Function Cube(var As Double) As Double
   Return var ^ 3
   End Function

2. Function Cube(num As Double) As Double
   Return num ^ 3
   End Function

(A) 1 only  
(B) 2 only  
(C) Both 1 and 2  
(D) Neither 1 nor 2  
C

5. Which of the following names would be best for the following Function (called NoName)?

```vba
Function NoName(number As Double) As Double
    Return number ^ 3 + number ^ 3
End Function
```

(A) SquareAndCube  
(B) CubeAndDouble  
(C) CubeAndSquare  
(D) DoubleAndCube  
B
6. What will be the output of the following program when the button is clicked on?

```vbnet
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim word, result As String
    word = "Benjamin"
    result = Rotate(word)
    result = Rotate(result & word)
    result = Rotate(result)
    txtBox.Text = result
End Sub

Function Rotate(var As String) As String
    Dim varlength As Integer
    varlength = var.Length
    Return var.Substring(1) & var.Substring(0, 1)
End Function
```

(A) jaminBBenjaminen
(B) BenjaminBenjamin
(C) njaminBe
(D) None of the above

A

7. The arguments appearing in a calling statement must match the parameters in the appropriate Sub or Function header in all but one of the following ways. Which one?

(A) Number of arguments
(B) Names of arguments
(C) Data type of arguments
(D) Order of arguments

B

8. Based on what it returns, what would be a better name for the function "Mystery" in the following program?

```vbnet
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim sentence As String, result As String
    sentence = "Socrates is a man."
    result = Mystery(sentence)
    txtBox.Text = result
End Sub

Function Mystery(sentence As String) As String
    Dim position As Integer
    position = sentence.IndexOf(" ")
    Return sentence.Substring(0, position)
End Function
```

(A) FirstWord
(B) LastWord
(C) FirstLetter
(D) LastLetter
(E) DoesNothing

A
9. The input to a user-defined function can consist of:
   (A) a single value
   (B) one or more values
   (C) no values
   (D) All of the above
   D

10. A Function procedure need not have parameters. (T/F)
    T

11. A Function procedure may return up to two values. (T/F)
    F

12. Function procedures can call other Function procedures. (T/F)
    T

13. Although a Function procedure can return a value, it cannot directly display information in a text box. (T/F)
    F

14. The value returned by a Function procedure must be a number or a string. (T/F)
    F

15. When the button is clicked on, the output of the following program will be 5. (T/F)
    Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
      Dim x, y, result As Double
      x = 3
      y = 4
      result = CInt((Norm(x, y)))
      txtBox.Text = CStr(result)
    End Sub
    Function Norm(x As Double, y As Double) As Double
      Return Math.Sqrt(x^2 + y^2)
    End Function
    T

16. Both the input and output of a Function procedure can consist of several values. (T/F)
    F

17. The input to a user-defined function can consist of one or more values. (T/F)
    T

18. The header of a Function procedure must include parameters. (T/F)
    F

19. A user-defined function cannot be used in an expression. (T/F)
    F
20. Function names should be suggestive of the role performed. The names also must conform to the rules for naming variables. (T/F)

T

Section 5.2 Sub Procedures, Part I

1. When an End Sub statement is reached in a Sub procedure, execution jumps to
   (A) the statement before the statement that called the Sub procedure.
   (B) the statement after the statement that called the Sub procedure.
   (C) the beginning of the event procedure containing the calling statement.
   (D) the end of the event procedure containing the calling statement.

B

2. Consider the following Sub procedure.
   ```vbscript
   Sub TruncateSum(var1 As Double, var2 As Double, var3 As Double)
       txtBox.Text = CStr(Int(var1 + var2 + var3))
   End Sub
   ```

   What will be the output when TruncateSum is used in the following lines of code?
   ```vbscript
   Dim num1, num2, num3 As Double
   num1 = 3.5
   num2 = 6.75
   num3 = 1
   TruncateSum(num1, num2, num3)
   ```

   (A) 10
   (B) 12
   (C) 0
   (D) 11

   D

3. What is wrong with the following calling statement and its corresponding Sub statement?
   ```vbscript
   MyProcedure("The Jetsons", 1000, 209.53)
   Sub MyProcedure(var1 As Double, var2 As Double, var3 As Double)
   ```

   (A) It is not valid to pass something like "The Jetsons."
   (B) Constant values like 1000 cannot be passed, only variables.
   (C) var1 is not of the same data type as "The Jetsons."
   (D) Nothing is wrong with them.

   C
4. Which one of the following is true about arguments and parameters?
   (A) Arguments appear in calling statements; parameters appear in Sub statements.
   (B) Parameters appear in calling statements; arguments appear in Sub statements.
   (C) They are synonymous terms.
   (D) They are completely unrelated in a program.
   A

5. What will be the output when the button is clicked on?

   Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
   Dim first, middle, last As String
   first = "Augusta"
   middle = "Ada"
   last = "Byron"
   Initials(first, middle, last)
   End Sub

   Sub Initials(c As String, b As String, a As String)
   Dim theInitials As String
   theInitials = a.Substring(0, 1) & b.Substring(0, 1) & c.Substring(0, 1)
   txtBox.Text = theInitials
   End Sub

   (A) AAB
   (B) BAA
   (C) abc
   (D) ABA
   B

6. What will be displayed when the button is clicked on?

   Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
   Dim lng, wid As Double
   lng = 5
   wid = 10
   ComputeArea(lng, wid)
   End Sub

   Sub ComputeArea(length As Double, width As Double)
   Dim area As Double
   area = length * width
   txtBox.Text = CStr(area)
   End Sub

   (A) 0
   (B) 50
   (C) 15
   (D) 25
   B
7. What will be the output of the following program when the button is clicked on?

```vbscript
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim word As String
    word = "progression"
    Strange(word)
End Sub

Sub Strange(var As String)
    txtBox.Text = var.Substring(CInt(Int(var.Length / 2)), 1)
End Sub
```

(A) progr  
(B) r  
(C) e  
(D) progre

8. What is the output of the following program when the button is clicked on?

```vbscript
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim a, b As String
    txtBox.Clear()
    a = "A"
    b = "B"
    PrintWords(a, b)
    PrintWords(b, a)
End Sub

Sub PrintWords(a As String, b As String)
    txtBox.Text &= a & b
End Sub
```

(A) ab ba  
(B) abba  
(C) ABBA  
(D) AB BA

9. Which of the following is NOT a reason for using procedures?
(A) They break a complex problem down into smaller pieces.
(B) They make a program run faster.
(C) They can be reused easily.
(D) They make it easier for a team of people to work together on a single program.

B
10. What will be the output of the following program when the button is clicked on?

```vbnet
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim word1, word2, word3 As String
    word1 = "First"
    word2 = "Second"
    word3 = "Third"
    Myproc(word1, word2, word3)
End Sub

Sub Myproc(var3 As String, var2 As String, var1 As String)
    txtBox.Text = var1 & var2 & var3
End Sub
```

(A) FirstSecondThird
(B) ThirdSecondFirst
(C) SecondThirdFirst
(D) No output

B

11. What will be the output of the following program when the button is clicked on?

```vbnet
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim num As Integer = 10
    DisplayMult(num)
    num = 5
    DisplayMult(num)
    num = 2
    DisplayMult(num)
End Sub

Sub DisplayMult(num As Integer)
    If num <= 3 Then
        txtOutput.Text &= CStr(3 * num)
    Else
        If num > 7 Then
            txtOutput.Text &= CStr(7 * num)
        End If
    End If
End Sub
```

(A) 7014
(B) 30614
(C) 706
(D) No output

C
12. The ______________ of a Sub procedure are vehicles for passing numbers and strings to the Sub procedure.
   (A) calling statements
   (B) arguments
   (C) parameters
   (D) variables declared inside
   C

13. Items appearing in the parentheses of a calling statement are known as ______________.
   (A) call variables
   (B) call strings
   (C) parameters
   (D) arguments
   D

14. The process of transmitting values to a Sub procedure is known as ______________.
   (A) passing
   (B) conveying
   (C) evaluating
   (D) referencing
   A

15. Each argument in a calling statement must have the same name as the corresponding parameter in the header of the called procedure. (T/F)
   F

16. Both constants and expressions can be used as arguments in calling statements. (T/F)
   T

17. Both constants and expressions can be used as parameters in Sub statements. (T/F)
   F

18. A Sub procedure can call another Sub procedure. (T/F)
   T

19. Sub procedures can be called only once during the execution of a program. (T/F)
   F

20. Each parameter defined for a Sub procedure corresponds to an argument passed in a calling statement for that procedure. (T/F)
   T
21. Arguments and parameters can be used to pass values to Sub procedures from event procedures or other Sub procedures. (T/F)  
   T

22. Parameters appearing in a Sub statement are part of the Sub procedure name. (T/F)  
   F

23. Function procedures are different from Sub procedures because functions return a single value. (T/F)  
   T

Section 5.3  Sub Procedures, Part II

1. What keyword in the header of a sub procedure denotes that a variable is passed by reference?
   (A) AsRef  
   (B) ByReference  
   (C) ByRef  
   (D) ByVal  
   C

2. What will be displayed when the button is clicked on?
   Private Sub btnDisplay_Click(...) Handles btnDisplay.Click  
      Dim x, y As String  
      x = "tin"  
      y = "can"  
      Swap(x, y)  
      txtOutput.Text = x & " " & y  
   End Sub  
   Sub Swap(ByRef x As String, y As String)  
      Dim temp As String  
      temp = x  
      x = y  
      y = temp  
   End Sub  
   (A) tin can  
   (B) can tin  
   (C) tin tin  
   (D) can can  
   D
3. What will be the output of the following program when the button is clicked on?

```vbnet
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim word As String
    word = "hairbrush"
    Decapitate(word)
    txtBox.Text = word
End Sub

Sub Decapitate(ByRef word As String)
    'Chop the first letter off the word.
    word = word.Substring(1)
End Sub
```

(A) airbrush
(B) hairbrush
(C) hairbrus
(D) h

A

4. Suppose the variable `myName` is declared in a Dim statement in two different Sub procedures. Which statement is true?

(A) The program will malfunction when it is executed.
(B) When the value of `myName` is changed in one Sub procedure, it will also be changed in the other Sub procedure.
(C) Visual Basic’s smart editor will alert you that this is an error before the program is executed.
(D) The two variables will be local to their respective Sub procedures.

D

5. What will be the output of the following program when the button is clicked on?

```vbnet
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim var1, var2, num As Integer
    var1 = 2
    var2 = 4
    num = 6
    Add(num)
    txtBox.Text = CStr(num)
End Sub

Sub Add(ByRef num As Integer)
    Dim var1, var2 As Integer
    num = var1 + var2
End Sub
```

(A) 0
(B) 12
(C) 6
(D) None of the above

A
6. What will be the output of the following program when the button is clicked on?

```vbnet
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim word1, word2, word3, result As String
    word1 = "The"
    word2 = "English"
    word3 = "Channel"
    CatWords(word1, word2, word3, result)
    txtBox.Text = result
End Sub

Sub CatWords(var1 As String, var2 As String, word3 As String, ByRef final As String)
    final = var1 & var2 & word3
End Sub
```

(A) TheEnglishChannel
(B) TheEnglish
(C) The English Channel
(D) No output

A

7. What will be the output of the following program when the button is clicked on?

```vbnet
Private Sub btnDisplay_Click(...) Handles btnDisplay.Click
    Dim number As Double = 3
    DoubleAndSquare(number)
    txtBox.Text = CStr(number)
End Sub

Sub DoubleAndSquare(ByRef myVar As Double)
    myVar = myVar + myVar
    myVar = myVar * myVar
End Sub
```

(A) 3
(B) 36
(C) 6
(D) 0

B

8. Variables and named constants declared inside a procedure are said to have

______________.

(A) local scope
(B) procedure-level scope
(C) class-level scope
(D) None of the above

A
9. A variable or named constant that is visible to every procedure in a form’s code without being passed is called a __________ variable.

(A) local
(B) class-level
(C) global
(D) public

B

10. The declaration statement for a class-level variable should be placed __________.

(A) inside an event procedure
(B) inside a general procedure
(C) anywhere in the program region, except inside a procedure
(D) above the statement Public Class frmName

C

11. Suppose a variable is passed by value to a parameter of a Sub procedure, and the parameter has its value changed inside the Sub procedure. What will the value of the variable be after the Sub procedure has executed?

(A) It will have the newly modified value from inside the Sub procedure.
(B) Its value can’t be determined without more information.
(C) It will retain the value it had before the call to the Sub procedure.
(D) None of the above

C

12. Suppose a variable is passed by reference to a parameter of a Sub procedure, and the parameter has its value changed inside the Sub procedure. What will the value of the variable be after the Sub procedure has executed?

(A) It will have the newly modified value from inside the Sub procedure.
(B) Its value can’t be determined without more information.
(C) It will retain the value it had before the call to the Sub procedure.
(D) None of the above

A

13. What happens to a variable declared locally inside a Sub procedure after the procedure terminates?

(A) It maintains its value even after the End Sub statement executes.
(B) It ceases to exist after the End Sub statement executes.
(C) It loses its value temporarily after the End Sub statement executes, but regains that value upon re-entry to the Sub procedure.
(D) It is reset to its default value.

B

14. Each variable must be passed either by value or by reference. (T/F)

T
15. You can determine whether a variable is being passed by value or reference by looking at the calling statement. (T/F)  
   F

16. When the button is clicked, the output of the following program will be 20. (T/F)  
   Private Sub btnDisplay_Click(...) Handles btnDisplay.Click  
      Dim num As Integer = 20  
      DoubleIt(num)  
      txtBox.Text = CStr(num)  
   End Sub  
   Sub DoubleIt(ByRef var As Integer)  
      var = var * 2  
   End Sub  
   F

17. The value of an argument in a calling statement can be changed by a Sub procedure only if the same name is used in the Sub procedure's parameter list. (T/F)  
   F

18. Sub procedures can be individually tested before being placed into a program. (T/F)  
   T

19. A value assigned to a variable in one part of a program always affects the value of the like-named variable in the other part of the program. (T/F)  
   F

Section 5.4 Modular Design

1. Top-down design refers to  
   (A) an obsolete programming practice in which a program is written without procedures in one large module.  
   (B) a program design where the key event procedures act like supervisors, delegating tasks to various Sub procedures.  
   (C) a method of organizing a team of programmers.  
   (D) a method of increasing the speed of a program.  
   B

2. Stepwise refinement refers to  
   (A) the process whereby a malfunctioning program is fixed by correcting one "bug" at a time.  
   (B) any procedure that calls another procedure (and so on) to accomplish a task.  
   (C) breaking a large task into smaller tasks.  
   (D) the belief that increasing the number of people working on a project decreases the time it will take to complete the project.  
   C
3. Breaking up a large problem into smaller subproblems is called _________________.
   (A) transcribed refinement
   (B) refined modules
   (C) stepwise refinement
   (D) transcribed modules

   C

4. Which of the following is NOT considered part of a good top-down design chart?
   (A) A module should accomplish as many tasks as possible.
   (B) Modules should proceed from general to specific as you read down the chart.
   (C) Modules should be as independent of each other as possible.
   (D) The design should be readable.

   A

5. In modular programming, a driver is
   (A) another name for the team leader of a project.
   (B) a "dummy" program designed solely to call a single procedure and examine its returned values.
   (C) one of the event procedures that a user can invoke.
   (D) never to be used.

   B

6. A program is said to be _________________ if it meets modern standards of program design.
   (A) top-down
   (B) logical
   (C) modular
   (D) structured

   D

7. A(n) __________ is an encapsulation of data and code that operates on the data.
   (A) object
   (B) driver
   (C) decision
   (D) module

   A

8. One advantage to using top-down design in writing a program is that the program can later be modified with less of a chance of introducing new errors. (T/F)

   T

9. "Stub programming" is one method of testing and debugging the key event procedures in a program. (T/F)

   T
10. Studies have shown that despite the many benefits of structured programming, it usually takes a longer amount of time when used on large programming projects. (T/F)  
   F

11. Debugging an unstructured program often requires the programmer to look at the entire program in order to make even a simple modification. (T/F)  
   T

12. With top-down design, higher-level modules control the flow of the program while lower level modules do the actual work. (T/F)  
   T

13. Modular design decreases the programmer’s productivity. (T/F)  
   F

14. Most modern programmers use a blend of traditional structured programming along with object-oriented design. (T/F)  
   T

15. Visual Basic 2012 is an object-oriented language. (T/F)  
   T