**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Chapter 4**

**Exercises 4.2**

In Exercises 1 through 18, determine the output displayed when the button is clicked.

**1.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim num As Double = 7

AddTwo(num)

txtOutput.Text = CStr(num)

End Sub

Sub AddTwo(ByRef num As Double)

'Add 2 to the value of num

num += 2

End Sub

**2.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim term As String

term = "Fall"

Plural(term)

txtOutput.Text = term

End Sub

Sub Plural(ByRef term As String)

'Concatenate the letter "s"to the value of term

term &= "s"

End Sub

**3.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim dance As String

dance = "Can "

Twice(dance)

txtOutput.Text = dance

End Sub

Sub Twice(ByRef dance As String)

'Concatenate the value of dance to itself

dance &= dance

End Sub

**4.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim a As Integer = 1, b As Integer = 3

lstOutput.Items.Add(a & " "& b)

Combine(a, b)

lstOutput.Items.Add(a & " "& b)

Combine((a), b)

lstOutput.Items.Add(a & " "& b)

End Sub

Sub Combine(ByRef x As Integer, ByVal y As Integer)

x = y - x

y = x + y

lstOutput.Items.Add(x & " "& y)

End Sub

**5.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim a As Double = 5

Square(a)

txtOutput.Text = CStr(a)

End Sub

Sub Square(ByRef num As Double)

num = num \* num

End Sub

**6.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim state As String = "NEBRASKA"

Abbreviate(state)

txtOutput.Text = state

End Sub

Sub Abbreviate(ByRef a As String)

a = a.SubString(0, 2)

End Sub

**7.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim word As String = " "

GetWord(word)

txtOutput.Text = "Less is "& word & "."

End Sub

Sub GetWord(ByRef w As String)

w = "more"

End Sub

**8.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim hourlyWage, annualWage As Double

hourlyWage = 10

CalcAnnualWage(hourlyWage, annualWage)

txtOutput.Text = "Approximate Annual Wage: "& \_

FormatCurrency(annualWage)

End Sub

Sub CalcAnnualWage(ByVal hWage As Double, ByRef aWage As Double)

aWage = 2000 \* hWage

End Sub

**9.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim name As String = "", yob As Integer

GetVita(name, yob)

txtOutput.Text = name & " was born in the year "& yob

End Sub

Sub GetVita(ByRef name As String, ByRef yob As Integer)

name = "Gabriel"

yob = 1980 'Year of birth

End Sub

**10.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim word1, word2 As String

word1 = "fail"

word2 = "plan"

txtOutput.Text = "If you "

Sentence(word1, word2)

txtOutput.Text &= ","

Exchange(word1, word2)

txtOutput.Text &= " then you "

Sentence(word1, word2)

txtOutput.Text &= "."

End Sub

Sub Exchange(ByRef word1 As String, ByRef word2 As String)

Dim temp As String

temp = word1

word1 = word2

word2 = temp

End Sub

Sub Sentence(ByVal word1 As String, ByVal word2 As String)

txtOutput.Text &= word1 & " to "& word2

End Sub

**11.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim state As String = "Ohio "

Team()

End Sub

Sub Team()

Dim state As String

txtOutput.Text = state

vtxtOutput.Text &= "Buckeyes"

End Sub

**12.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim a As Double = 5

Multiply(7)

lstOutput.Items.Add(a \* 7)

End Sub

Sub Multiply(ByRef num As Double)

Dim a As Double

a = 11

lstOutput.Items.Add(a \* num)

End Sub

**13.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim a As Double = 5

Multiply(7)

End Sub

Sub Multiply(ByVal num As Double)

Dim a As Double

txtOutput.Text = CStr(a \* num)

End Sub

**14.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim name, n As String

name = "Ray"

Hello(name)

lstOutput.Items.Add(n & " and "& name)

End Sub

Sub Hello(ByRef name As String)

Dim n As String

n = name

name = "Bob"

lstOutput.Items.Add("Hello "& n & " and "& name)

End Sub

**15.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim num As Double = 1

Amount(num)

Amount(num)

End Sub

Sub Amount(ByVal num As Double)

Dim total As Double

total += num 'Add the value of num to the value of total

lstOutput.Items.Add(total)

End Sub

**16.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim river As String

river = "Wabash"

Another()

lstOutput.Items.Add(river & " River")

Another()

End Sub

Sub Another()

Dim river As String

lstOutput.Items.Add(river & " River")

river = "Yukon"

End Sub

**17.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim n As Integer = 4, word As String = "overwhelming"

lstOutput.Items.Add(n & " "& word)

Crop(n, word)

lstOutput.Items.Add(n & " "& word)

Crop(n, (word))

lstOutput.Items.Add(n & " "& word)

End Sub

Sub Crop(ByVal n As Integer, ByRef word As String)

n = word.Length - n

word = word.Substring(word.Length - n)

lstOutput.Items.Add(n & " "& word)

End Sub

**18.** Private Sub btnCompute\_Click(...) Handles btnCompute.Click

Dim tax, price, total As Double

tax = 0.05

GetPrice("bicycle", price)

ProcessItem(price, tax, total)

DisplayResult(total)

End Sub

Sub DisplayResult(ByVal total As Double)

txtOutput.Text = "With tax, price is "& FormatCurrency(total)

End Sub

Sub GetPrice(ByVal item As String, ByRef price As Double)

Dim strVar As String

strVar = InputBox("What is the price of a "& item & "?")

price = CDbl(strVar)

End Sub

Sub ProcessItem(ByVal price As Double, ByVal tax As Double, \_

ByRef total As Double)

total = (1 + tax) \* price

End Sub (Assume that the cost of the bicycle is $200.)

In Exercises 19 and 20, find the errors.

**19.** Private Sub btnCompute\_Click(...) Handles btnCompute.Click

Dim a, b, c As Double

a = 1

b = 2

Sum(a, b, c)

txtOutput.Text = "The sum is "& c

End Sub

Sub Sum(ByVal x As Double, ByVal y As Double)

Dim c As Double

c = x + y

End Sub

**20.** Private Sub btnDisplay\_Click(...) Handles btnDisplay.Click

Dim ano As String = ""

GetYear(ano)

txtOutput.Text = ano

End Sub

Sub GetYear(ByRef yr As Double)

yr = 2006

End Sub

In Exercises 1 through 9, write a program to perform the stated task. The input, processing, and output should be performed by calls to Sub procedures.

**1.** Request a person's first name and last name as input and display the corresponding initials.

**2.** Request the amount of a restaurant bill as input and display the amount, the tip (15 percent), and the total amount.

**3.** Request the cost and selling price of an item of merchandise as input and display the percentage markup. Test the

 program with a cost of $4 and a selling price of $6. Note: The percentage markup is (sellingprice cost) / cost.

**4.** Read the number of students in public colleges (12.1 million) and private colleges (3.7 million) from a file, and

 display the percentage of college students attending public colleges.

**5.** Read a baseball player's name (Sheffield), times at bat (557), and hits (184) from a file and display his name and

 batting average. Note: Batting average is calculated as (hits)/ (times at bat).

**6.** Request three numbers as input, and then calculate and display the average of the three numbers.

**7.** The Hat Rack is considering locating its new branch store in one of three malls. The following file gives the

monthly rent per square foot and the total square feet available at each of the three locations. Write a program to display a table exhibiting this information along with the total monthly rent for each mall.

(Assume the nine lines of the file MALLS.TXT contain the following data: Green Mall, 6.50, 583, Red Mall, 7.25, 426, Blue Mall, 5.00, 823.)

**8.** Write a program that uses the data in the file CHARGES.TXT to display the end-ofmonth credit-card balances of

 three people. (Each set of four lines gives a person's name, beginning balance, purchases during month, and

 payment for the month.) The end-of month balance is calculated as

[finance charges] + [beginning-of-month balance] + [purchases] - [payment],

where the finance charge is 1.5 percent of the beginning-of month balance.

(Assume the 12 lines of the file CHARGES.TXT contain the following data: John Adams, 125.00, 60.00, 110.00, Sue Jones, 0, 117.25, 117.25, John Smith, 350.00, 200.50, 300.00.)

**9.** Write a program to produce a sales receipt. Each time the user clicks on a button, an item

and its price should be read from a pair of text boxes and displayed in a list box. Use a

class-level variable to track the sum of the prices. When the user clicks on a second

button (after all the entries have been made), the program should display the sum of the

prices, the sales tax (5 percent of total), and the total amount to be paid. Figure 4.5 shows

a sample output of the program.

