In Exercises 1 through 30, determine the output produced by the lines of code.

```
1.    txtOutput.Text = FormatNumber(1234.56, 0)


2.    txtOutput.Text = FormatNumber(-12.3456, 3)


3.    txtOutput.Text = FormatNumber(1234, 1)


4.    txtOutput.Text = FormatNumber(12345)


5.    txtOutput.Text = FormatNumber(0.012, 1)


6.    txtOutput.Text = FormatNumber(5 * (10 ^ -2), 1)


7.    txtOutput.Text = FormatNumber(-2/3)


8.    Dim numVar As Double = Math.Round(1.2345, 1)
      txtOutput.Text = FormatNumber(numVar)


9.    Dim numVar As Double = Math.Round(12345.9)
      txtOutput.Text = FormatNumber(numVar, 3)


10.   Dim numVar As Double = Math.Round(12.5)
      txtOutput.Text = FormatNumber(numVar, 0)


11.   Dim numVar As Double = Math.Round(11.5)
      txtOutput.Text = FormatNumber(numVar, 0)


12.   txtOutput.Text = FormatCurrency(1234.5)


13.   txtOutput.Text = FormatCurrency(12345.67, 0)


14.   txtOutput.Text = FormatCurrency(-1234567)


15.   txtOutput.Text = FormatCurrency(-0.225)


16.   txtOutput.Text = FormatCurrency(32 * (10 ^ 2))


17.   txtOutput.Text = FormatCurrency(4 / 5)


18.   txtOutput.Text = FormatPercent(0.04, 0)


19.   txtOutput.Text = FormatPercent(0.075)


20.   txtOutput.Text = FormatPercent(-.05, 3)


21.   txtOutput.Text = FormatPercent(1)


22.   txtOutput.Text = FormatPercent(0.01)


23.   txtOutput.Text = FormatPercent(2 / 3)


24.   txtOutput.Text = FormatPercent(3 / 4, 1)
```

25. `txtOutput.Text = "Pay to France " & FormatCurrency(27267622)`

26. `txtOutput.Text = "Manhattan was purchased for " & FormatCurrency(24)`

27.
```
Dim popUSover24 As Double = 177.6      'Million
Dim collegeGrads As Double = 45.5      'Million
                              '45.5/177.6 = 0.2561937
txtOutput.Text = FormatPercent(collegeGrads / popUSover24, 1) & _
" of the U.S. population 25+ years old are college graduates."
```

28.
```
Dim degrees As String = FormatNumber(1711500, 0)
txtOutput.Text = degrees & " degrees were conferred."
```

29. `txtOutput.Text = "The likelihood of Heads is " & FormatPercent(1 / 2, 0)`

30. `txtOutput.Text = "Pi = " & FormatNumber(3.1415926536, 4)`

In Exercises 31 through 40, determine the output produced by the lines of code. Assume that Courier New is the font for the list box.

31.
```
Dim fmtStr As String = "{0,-5}{1,5}"
With lstOutput.Items
    .Add("12345678901234567890")
    .Add(String.Format(fmtStr, 1, 2))
End With
```

32.
```
Dim fmtStr As String = "{0,5}{1,5}"
With lstOutput.Items
    .Add("12345678901234567890")
    .Add(String.Format(fmtStr, 1, 2))
End With
```

33.
```
Dim fmtStr As String = "{0,5}{1,-5}"
With lstOutput.Items
    .Add("12345678901234567890")
    .Add(String.Format(fmtStr, 1, 2))
End With
```

34.
```
Dim fmtStr As String = "{0,-5}{1,-5}"
With lstOutput.Items
    .Add("12345678901234567890")
    .Add(String.Format(fmtStr, 1, 2))
End With
```

35.
```
Dim fmtStr As String = "{0,3}{1,10}"
With lstOutput.Items
    .Add("12345678901234567890")
    .Add(String.Format(fmtStr, "A", "Alice"))
End With
```

36.
```
Dim fmtStr As String = "{0,-13}{1,-10}{2,-7:N0}"
With lstOutput.Items
    .Add("123456789012345678901234567890")
    .Add(String.Format(fmtStr, "Mountain", "Place", "Ht (ft)"))
    .Add(String.Format(fmtStr, "K2", "Kashmir", 28250))
End With
```

37.
```
Dim fmtStr As String = "{0,11} {1,-11}" 'Three spaces
With lstOutput.Items
      .Add("12345678901234567890")
      .Add(String.Format(fmtStr, "College", "Mascot"))
      .Add(String.Format(fmtStr, "Univ. of MD", "Terrapins"))
      .Add(String.Format(fmtStr, "Duke", "Blue Devils"))
End With
```

38.
```
'Toss coin twice
Dim fmtStr As String = "{0,8} {1,-7:P0}" 'Two spaces
With lstOutput.Items
      .Clear()
      .Add("12345678901234567890")
      .Add(String.Format(fmtStr, "Number", "Percent"))
      .Add(String.Format(fmtStr, "of Heads", "of time"))
      .Add(String.Format(fmtStr, 0, 1 / 4))
      .Add(String.Format(fmtStr, 1, 1 / 2))
      .Add(String.Format(fmtStr, 2, 1 / 4))
End With
```

39.
```
'Elements in a 150 Pound Person
Dim fmtStr As String = "{0,-7} {1,-7:N1} {2,-7:P1}"    '2 spaces
With lstOutput.Items
      .Clear()
      .Add("12345678901234567890")
      .Add(String.Format(fmtStr, "Element", "Weight", "Percent"))
      .Add(String.Format(fmtStr, "Oxygen", 97.5, 97.5 / 150))
      .Add(String.Format(fmtStr, "Carbon", 27, 27 / 150))
End With
```

40.
```
Dim fmtStr As String = "{0,10} {1,-10:C0}" 'Three spaces
With lstOutput.Items
      .Clear()
      .Add("12345678901234567890")
      .Add(String.Format(fmtStr, "", "Tuition"))
      .Add(String.Format(fmtStr, "College", "& Fees"))
      .Add(String.Format(fmtStr, "Stanford", 24441))
      .Add(String.Format(fmtStr, "Harvard", 25128))
End With
```

In Exercises 41 through 50, assume that the file DATA.TXT (shown to the right of the code) has been accessed with the statement Dim sr As IO.StreamReader = IO.File.OpenText("DATA.TXT") and closed afterwards with the statement sr.Close(). Determine the output displayed by the lines of code.

41.
```
Dim num As Double
num = CDbl(sr.ReadLine)
txtOutput.Text = CStr(num * num)
```
DATA.TXT
4

42.
```
Dim word As String
word = sr.ReadLine
txtOutput.Text = "un" & word
```
DATA.TXT
speakable

43.
```
Dim str1, str2 As String
str1 = sr.ReadLine
str2 = sr.ReadLine
txtOutput.Text = str1 & str2
```
DATA.TXT
base
ball

```
44.   Dim numl, num2, num3 As Double                      DATA.TXT
      num1 = CDbl(sr.ReadLine)                           3
      num2 = CDbl(sr.ReadLine)                           4
      num3 = CDbl(sr.ReadLine)                           5
      txtOutput.Text = CStr((numl + num2) * num3)


45.   Dim yrOfBirth, curYr As Double                     DATA.TXT
      yrOfBirth = CDbl(sr.ReadLine)                      1986
      curYr = CDbl(sr.ReadLine)         'Current year 2006
      txtOutput.Text = "Age: " & curYr – yrOfBirth

46.   Dim strl, str2 As String                           DATA.TXT
      strl = sr.ReadLine                                 A, my name is
      str2 = sr.ReadLine                                 Alice
      txtOutput.Text = strl & " " & str2

47.   Dim building As String                             DATA.TXT
      Dim numRooms As Double                             White House
      building = sr.ReadLine                             132
      numRooms = CDbl(sr.ReadLine)
      txtOutput.Text = "The " & building " has " & numRooms & " rooms."

48.   Dim major As String                                DATA.TXT
      Dim percent As Double                              Computer Science
      major = sr.ReadLine                                1.4
      percent = CDbl(sr.ReadLine)
      txtOutput.Text = "In 2004, " & percent & _
      "% of entering college freshmen majored in " & major & "."

49.   Dim num, sum As Double                             DATA.TXT
      sum = 0                                            123
      num = CDbl(sr.ReadLine)                            321
      sum += num
      num = CDbl(sr.ReadLine)
      sum += num
      txtOutput.Text = "Sum: "& sum

50.   Dim grade, total, average As Double                DATA.TXT
      Dim numGrades As Integer                           85
      total = 0                                          95
      numGrades = 0
      grade = CDbl(sr.ReadLine)
      total += grade        'Increase value of total by value of grade
      numGrades += 1        'Increase value of numGrades by 1
      grade = CDbl(sr.ReadLine)
      total += grade        'Increase value of total by value of grade
      numGrades += 1        'Increase value of numGrades by 1
      average = total / numGrades
      txtOutput.Text = "Average grade: " & average
```

51.
```
Dim college As String                                DATA.TXT
college = sr.ReadLine                                Harvard
lstOutput.Items.Add(college)                         Yale
sr.Close()
sr = IO.File.OpenText("DATA.TXT")
college = sr.ReadLine
lstOutput.Items.Add(college)
```

52.
```
Dim num As Integer, str As String                    DATA.TXT
num = CInt(sr.ReadLine)                               4
str = sr.ReadLine                                     calling birds
lstOutput.Items.Add(num & " " & str)                 3
sr.Close()                                            French hens
sr = IO.File.OpenText("DATA.TXT")
num = CInt(sr.ReadLine)
str = sr.ReadLine
lstOutput.Items.Add(num & " " & str)
```

In Exercises 53 through 58, determine the output displayed.

53.
```
Dim bet As Double 'Amount bet at roulette
bet = CDbl(InputBox("How much do you want to bet?", "Wager"))
txtOutput.Text = "You might win " & 36 * bet & " dollars."
      (Assume that the response is 10.)
```

54.
```
Dim word As String
word = InputBox("Word to negate:", "Negatives")
txtOutput.Text = "un" & word
      (Assume that the response is "tied".)
```

55.
```
Dim lastName, message, firstName As String
lastName = "Jones"
message = "What is your first name Mr. " & lastName & "?"
firstName = InputBox(message, "Name")
txtOutput.Text = "Hello " & firstName & " " & lastName
      (Assume that the response is "John".)
```

56.
```
Dim intRate, doublingTime As Double 'Current interest rate, time to double
intRate = CDbl(InputBox("Current interest rate?", "Interest"))
doublingTime = 72 / intRate
lstOutput.Items.Add("At the current interest rate, money will")
lstOutput.Items.Add("double in " & doublingTime & " years.")
      (Assume that the response is 4.)
```

In Exercises 57 and 58, write a line of code to carry out the task.
57. Pop up a message dialog box with "Good Advice" in the title bar and the message "Keep cool, but don't freeze."

58. Pop up a message dialog box with "Taking Risks Proverb" in the title bar and the message "You can't steal second base and keep one foot on first."

In Exercises 59 through 66, identify any errors. If the code refers to a file, assume that DATA.TXT (on the right of the code) already has been opened for input.

59.
```
Dim num As Double                                      DATA.TXT
num = CDbl(sr.ReadLine)                                1 + 2
txtOutput.Text = CStr(3 * num)
```

60.
```
'Each line triplet of DATA.TXT contains                DATA.TXT
'building, height, # of stories                        Sears Tower
Dim building As String                                 1454
Dim ht As Double                                       110
Dim numStories As Integer                              Empire State Building
lstOutput.Items.Clear()                                1250
building = sr.ReadLine                                 102
ht = CDbl(sr.ReadLine)
lstOutput.Items.Add(building & " is " & ht & " feet tall.")
building = sr.ReadLine
ht = CDbl(sr.ReadLine)
lstOutput.Items.Add(building & " is " & ht & " feet tall.")
```

61.
```
Dim num As Double
num = InputBox("Pick a number from 1 to 10.")
txtOutput.Text = "Your number is " & num
```

62.
```
info = InputBox()
```

63.
```
Dim num As Double = FormatNumber(123456)
lstOutput.Items.Add(num)
```

64.
```
txtOutput.Text = FormatCurrency($1234)
```

65.
```
Dim fmtStr As String = "{0,20}{1,10}"
lstOutput.Items.Add(fmtStr, "Washington", "George")
```

66.
```
MsgBox("Proof", "Pulitzer Prize for Drama")
```

SECTION 3.5 – LAB: **write an event procedure to solve the problem and display the answer in a list box. The program should use variables for each of the quantities.**

1.   The following steps display the changes in majors for first-year college students from 2003 to 2004. Assume that file MAJORS.TXT consists of six lines containing the following data: Elementary Education, 4.9, 4.6, Psychology, 4.7, 4.6.
   a. Declare all variables used in the steps that follow.
   b. Open the file MAJORS.TXT for input.
   c. Use ReadLine statements to assign values to the variables major, percent03, and percent04.
   d. Display the following chart:

Major	%03	%04	% Change
Elementary Education	4.9	4.6	-.3
Psychology	4.7	4.6	-.1

2.   The following steps calculate the amount of money earned in a walk-a-thon:
   a. Declare all variables used in the steps that follow.
   b. Request the amount pledged per mile from an input dialog box, and assign it to the variable pledge.
   c. Request the number of miles walked from an input dialog box, and assign it to the variable miles.
   d. Display a sentence giving the amount to be paid.
      (Test the program with a pledge of $2.00 and a 15-mile walk.)

3.   The table below contains a list of colleges with their student enrollments and faculty sizes. Write a program to display the names of the colleges and their student/faculty ratios, and the ratio for the total collection of students and faculty. Assume that the data for the colleges are stored in a text file.
   Colleges: Source: The World Almanac, 2005.

	Enrollment	**Faculty**	**Student/Faculty Ratio**
Ohio State	50721	3657	319/23
Univ. of MD, College Park	35262	2087	35262/2087
Princeton	6849	1015	6849/1015
Total	92832	6759	30944/2253

4.   The table below gives the year 2003 populations of three New England states. Write a program that calculates the average population and then displays the name of each state and the difference between its population and the average population. The states and their populations should be stored in a text file.
   2003 population (in thousands) of three New England states.

State	Population	Difference Population - Average
Maine	1305	-2435
Massachusetts	6433	2692
Connecticut	3483	-257

5.   Design a form with two text boxes labeled "Name" and "Phone number". Then write an event procedure that shows a message dialog box stating "Be sure to include the area code!" when the second text box receives the focus.

6.   Write a program to calculate the amount of a waiter's tip given the amount of the bill and the percentage tip obtained via input dialog boxes. The output should be a complete sentence that reiterates the inputs and gives the resulting tip, as shown below: