CE 311 K Fall 2006   **Second Exam**   **Name: ____KEY_____**

The exam is open book and open notes. You may use your course text book and your notes and handouts for this class.

Problem 1. Change the following loop so that it will be executed at least once

```
Do While continue = "yes"
    answer = InputBox(" Do you want to continue? (Y or N)")
    If UCase(answer) = "Y" Then
        continue = "Yes"
    Else
        continue = "No"
    End If
Loop
```

ANSWER:

```
Do
    answer = InputBox(" Do you want to continue? (Y or N)")
    If UCase(answer) = "Y" Then
        continue = "Yes"
    Else
        continue = "No"
    End If
Until continue = "yes"
```

Problem 2. In a – d below, replace each phrase containing Until with as equivalent phrase containing While, and vice versa.

a. Until a = "Bob"   ___While a <> "Bob"_____

b. While a <> " "   ___ Until a = " "_____

c. Until (a = " ") Or (n = 0)   ____While (a <> " ") Or (n <> 0))_____

d. Until Not (n = 0)   ____ While (n = 0) _____

Problem 3. What is displayed in the picture box by the following code when the command button is clicked?

```
        Private Sub cmdButton_Click()

            'Demonstrate Sub procedures
        calling other Sub procedures
            Call FirstPart
            picOutput.Print 1;

        End Sub

        Private Sub FirstPart()

            picOutput.Print 4;
            Call SecondPart
            picOutput.Print 2;

        End Sub

        Private Sub SecondPart()

            picOutput.Print 3;

        End Sub
```
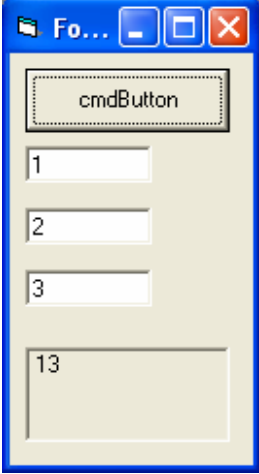
Fo...

cmdButton

4 3 2 1

Problem 4. Find the errors?

```
        Private Sub cmdDisplay_Click()

            Dim word As String, number As Single
            word = "seven"
            number = 7
            Call Display(word, number)

        End Sub

        Private Sub Display(num As Single, term As String)

            picOutput.Print num; term

        End Sub
```
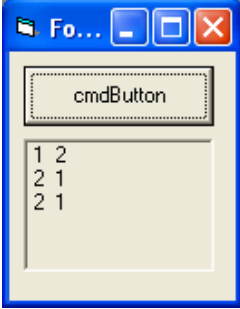
ANSWER: Data types are switched between main program (word As String, number As Single) and Sub Display (num As Single, term As String)

Problem 5. Write a program that gets three numbers from three text boxes as input and displays the average of the three numbers. The output should be produced by a call to a Sub Procedure named *Average*.

```
Private Sub cmdButton_Click()

   Dim Ave As Single

   Call Average(Text1.Text + text2Text
+ Text3.Text)

End Sub

Private Sub Average(Ave As Single)

   picOutput.Print Ave;

End Sub
```


Problem 6. Determine the output displayed in the picture box when the command button s clicked.

```
Private Sub cmdButton_Click()

    Dim amt1 As Integer, amt2 As
Integer
    amt1 = 1
    amt2 = 2
    picOutput.Print amt1; amt2
    Call Swap(amt1, amt2)
    picOutput.Print amt1; amt2

End Sub

Private Sub Swap(num1 As
Integer, num2 As Integer)

    Dim temp As Integer
    temp = num1
    num1 = num2
    num2 = temp
    picOutput.Print num1; num2

End Sub
```

Problem 7. Find the errors.

```
Private Sub cmdButton_Click()

    Dim a As Single, b As Single, c As Single
    a = 1
    b = 2
    Call Sum(a, b, c)
    picOutput.Print "The sum is"; c

End Sub

Private Sub Sum(x As Single, y As Single)

    Dim c As Single
    c = x + y

End Sub
```

ANSWER: Sub does not have same number of arguments as Call statement

Problem 8. Determine the output displayed in the picture box when the command button is clicked.

```
Private Sub cmdButton_Click()

    Dim acres As Single
    'acres - Number of acres in a parking lot
    acres = 5
    picOutput.Print "You can park about"; Cars(acres); "cars."

End Sub

Private Function Cars(x As Single) As Single

    'parking cars
    Cars = 100 * x

End Function
```

Problem 9. Construct a user-defined function to carry out the primary task(s) of a program to determine the number of square centimeters (sq. cm.) of tin needed to make a tin can (include the top, bottom and sides of the can in your calculation). Write a program that gets the radius and height of a tin can (in centimeters) from text boxes as input, uses a function to compute the sq. cm. of tin needed, and displays the number of square centimeters required to make the can.

```
Private Sub cmdButton_Click()

    Dim r As Single, h As Single
    r = TxtRadius.Text
    h = txtHeight.Text

End Sub

Private Function



End Function
```

ANSWER

```
Private Sub cmdButton_Click()

    Dim r As Single, h As Single
    r = TxtRadius.Text
    h = txtHeight.Text

    picOutput.Print Area(r, h)

End Sub

Private Function Area(r as single, h as single)

    Area = 2*3.14159*r^2+2*3.14159*r*h

End Function
```
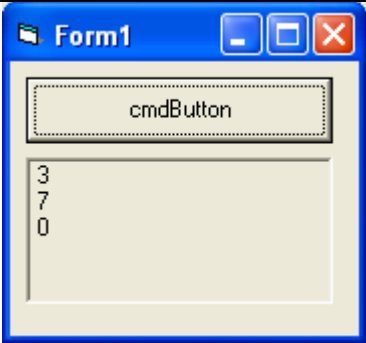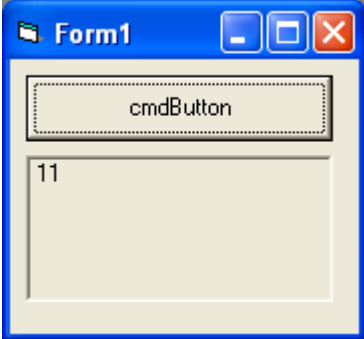
Problem 10. In (a) and (b) below, determine the output displayed in the picture box when the command button is clicked.

10a.

```
Private Sub cmdDisplay_Click()

    Dim a(1 To 20) As Integer
    a(5) = 1
    a(10) = 2
    a(15) = 7
    picOutput.Print a(5) + a(10)
    picOutput.Print a(5 + 10)
    picOutput.Print a(20)

End Sub
```

Form1

cmdButton

```
3
7
0
```

10b.

```
        Private Sub cmdDisplay_Click()

            Dim s(1 To 4) As Integer
            Dim t As Integer, k As
        Integer
            Open "Data,txt" For Input As
        #1
            t = 0
            For k = 1 To 4
                Input #1, s(k)
                t = t + s(k)
            Next k
            picOutput.Print t

        End Sub
```

Form1

cmdButton

11

Assume that the file Data.txt contains the following entries: 3, 5, 2, 1

Problem 11. Identify the error(s).

a.

```
        Private Sub cmdDisplay_Click()

            Dim p(1 To 100) As Single
            Dim i As Integer
            For i = 1 To 200
                p(i) = i / 2
            Next i

        End Sub
```

ANSWER: When the index *i* gets to 101 there will be an error.

b.

```
        Private Sub cmdDisplay_Click()

            Dim a(1 To 10) As Single
            Dim i As Integer, k As Integer
            Open "Data.txt" For Input As #1
            For i = 1 To 9
                Input #1, a(i)
            Next i

            For k = 1 To 9
                a(k) = a(5 - k)
            Next k

        End Sub
```

Assume that the file Data.txt contains the following entries: 1, 2, 3, 4, 5, 6, 7, 8, 9

Answer: A is declared (1 – 10) and the last loop will access A(0) to A(-4).

Problem 12. Assuming that the array *river*( ) is as shown below, fill in the empty rectangle to illustrate the progressing status of *river*( ) after the execution of each programming statement..
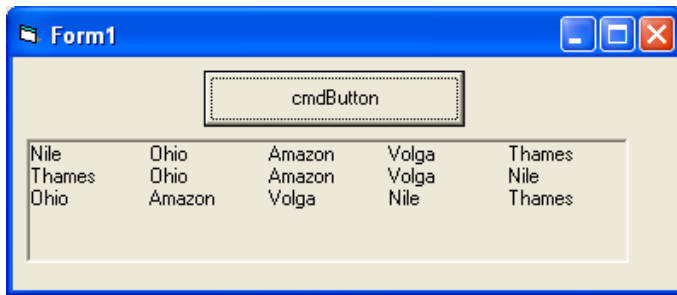
	river(1)	river(2)	river(3)	river(4)	river(5)
river( )	Nile	Ohio	Amazon	Volga	Thames

```
temp = river(1)
river(1) = river(5)
river(5) = temp
```

	river(1)	river(2)	river(3)	river(4)	river(5)
river( )					

```
temp = river(1)
For i = 1 To 4
     river(i) = river(i + 1)
Next i
river(5) = temp
```

	river(1)	river(2)	river(3)	river(4)	river(5)
river( )					

Problem 13. In the following, write a line of code or program segment to complete the stated task.

a. Inside a Sub Procedure, dimension a string array bestPicture( ) to have subscripts ranging from 1993 to 2003.

Dim bestPicture(1993 to 2003) as String

b. The arrays a( ) and b( ) have been dimensioned to have range 1 to 4, and values have been assigned to a(1) through a(4). Store the values in b( ) in reverse order.

For i = 1 to 4
        b(5 - i) = a(i)
Next

13c. Given two arrays p( ) and q( ), each with range 1 to 20, compute the sum of the products of the corresponding array elements, that is,

p(1)*q(1) + p(2)*q(2) + p(3)*q(3) + … + p(20)*q(20)

sum = 0
For I = 1 to 20
        sum = sum + p(i)*q(i)
Next

Problem 14. Determine the output displayed in the picture box when the command button is clicked.

```
Private Sub cmdDisplay_Click()

    Dim rainfall(1 To 12) As Single
    rainfall(1) = 2.4
    rainfall(2) = 3.6
    rainfall(3) = 4.0
    rainfall(4) = 5.0
    picOutput.Print "The total rainfall for the first quarter is";
    picOutput.Print Total(rainfall(), 3)

End Sub

Private Function Total(rainfall() As Single, n As Integer) As Single

    Dim sun As Single, i As Integer
    Sum = 0
    For i = 1 To n
        Sum = Sum + rainfall(i)
    Next i
    Total = Sum

End Function
```
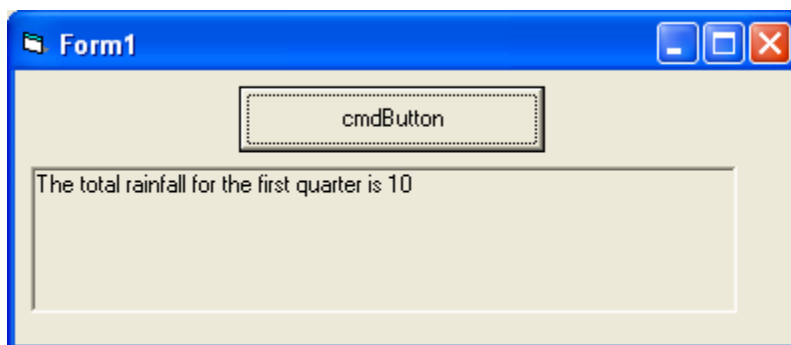

(8)

Problem 15. Identify the error(s).

a.
```
Private Sub cmdDisplay_click()

    Dim city(1 To 5) As String
    Call Assign(city())
    picOutput.Print city

End Sub

Private Sub Assign(town() As String)

    town(1) = "Chicago"

End Sub
```

ANSWER: No array element is identified in the print statement.

15b.
```
Private Sub cmdDisplay_click()

    Dim hue(0 To 15) As stinrg
    hue(1) = "Blue"
    Call Favorite(hue())

End Sub

Private Sub Favorite(tone() As String)

    tone(1) = hue(1)
    picOutput.Print tone

End Sub
```

Answer: Keyword "string" misspelled as "stinrg"; hue() not declared in Sub Favorite; need to know which element of tone() to print.

Problem 16. Find the error in the program and make the necessary changes in the program to correctly perform the intended task.

```
Private Sub cmdDisplay_click()

    Dim i As Integer
    Dim a(1 To 10) As Integer
    Dim b(1 To 10) As Integer
    For i = 1 To 10
        a(i) = i ^ 2
    Next i
    Call CopyArray(a(), b())
    picOutput.Print b(10)

End Sub

Private Sub CopyArray(a() As Integer, b() As Integer)

    'Place a's in b's
    b() = a()

End Sub
```

ANSWER:

```
Private Sub CopyArray(a() As Integer, b() As Integer)

    'Place a's in b's
    Dim i As Integer
    For i = 1 To 10
        b(i) = a(i)
    Next

End Sub
```

Problem 17. Write a procedure to perform the following task. Given an array declared with the statement

```
Dim a(1 To 10, 1 To 10) As Single
```

Set the entries in the jth column to j for j = 1, 2, …, 10.

```
Private Sub cmdDisplay_click()

    Dim i As Integer, j As Integer
    Dim a(1 To 10, 1 To 10) As Single
    For j = 1 To 10
        For i = 1 To 10
            a(i, j) = j
        Next i
    Next j

End Sub
```