

Instructions: Please write your answers in the space provided. An extra sheet of paper has been included at the end if you need more space. Question point values are shown in parentheses.

1. (18) You are given an array named A defined as:

Dim A(1 To 4, 1 To 2) As Integer

Assume that all eight cells have been filled with values. Write a segment of code that will exchange the contents of columns 1 and 2. The figure below shows the array before and after the code has been executed.

Array A

	1	2
1	1	2
2	2	4
3	3	6
4	4	8

Before

	1	2
1	2	1
2	4	2
3	6	3
4	8	4

After

```
Dim t As Integer
For i = 1 To 4
    t = A(i, 1)
    A(i, 1) = A(i, 2)
    A(i, 2) = t
Next i
```

2. (17) What values would be in each array when the code segment completes its execution?

a. Dim X(1 To 3, 1 To 3) As Integer
Dim i As Integer, j As Integer
For i = 1 To 3
 For j = i To 3
 X(i, j) = i + j
 Next j
Next i

Array X

	1	2	3
1	2	3	4
2	0	4	5
3	0	0	6

```
b. Dim A(1 to 4) As Integer, B(1 to 5) As Integer
For i = 1 To 4
    A(i) = i ^ 2
    B(i) = i ^ 3
Next i

For i = 1 To 4
    t = A(i)
    A(i) = B(5 - i)
    B(5 - i) = t
Next i
```

	A		B
1	64	1	16
2	27	2	9
3	8	3	4
4	1	4	1

3. (16) For each of the following statements, indicate whether they are True or False. Write your answer in the left margin next to each statement.

- True a. A recordset may be associated with a single database table or several database tables combined with an SQL Select statement.
- False b. The recordset Move methods work with what are referred to as “logical” records.
- True c. A data control may be associated with a several different recordsets as the program executes.
- False d. When working with a recordset, you use the .EOF property if you are working with the Find methods and the .NoMatch property when working with the Move methods.
- True e. For/Next loops are in the category of loops that have a minimum number of iterations equal to zero.
- False f. The Do While ... Loop and the Do ... Loop While type loops are identical in terms of how they would execute. The only difference is the programmer's preference in how they read.

- True g. The statement `Dim X(1 To N)` is only valid if `N` has been defined as a symbolic constant.
- False h. The `ReDim` statement in Visual Basic 6.0 provides the programmer the power to change the size of an array's bounds. For example, an array can first be defined with:

```
ReDim X(1 To 10, 1 To 20)
```

and then later be redefined with:

```
ReDim X(1 To 5, 1 To 10)
```

4. (15) Assume you have the following three database tables (data type are shown in parentheses):

Product			Customer		
ProdNo (Text)	ProdDesc (Text)	Price (Double)	CustNo (Text)	Name (Text)	ZipCode (Text)

Order		
ProdNo (Text)	CustNo (Text)	Qty (Integer)

Write the complete SQL Select statement to generate the set of records as described by each of the following.

- a. The set of records that include the `CustNo`, `Name`, `ProdDesc` and `Price` for all customers in the database.

```
Select CustNo, Name, ProdDesc, Price  
From Product, Customer, Order  
Where Product.ProdNo = Order.ProdNo  
And Customer.CustNo = Order.CustNo
```

- b. The same as part a above except only show customers who live in zip code 98105.

```
Select CustNo, Name, ProdDesc, Price  
From Product, Customer, Order  
Where Product.ProdNo = Order.ProdNo  
And Customer.CustNo = Order.CustNo  
And ZipCode = '98105'
```

- c. The set of all products whose price exceeds \$50. Show the ProdNo and ProdDesc fields.

```
Select ProdNo, ProdDesc
  From Product
  Where Price > 50
```

- d. The set of records that include Name and ProdDesc for all orders whose Qty exceeded 100.

```
Select Name, ProdDesc
  From Product, Customer, Order
  Where Product.ProdNo = Order.ProdNo
     And Customer.CustNo = Order.CustNo
     And Qty > 100
```

- e. The set of records that include ProdNo, ProdDesc, CustNo and Name for all orders where the Price field was less than \$10.

```
Select ProdNo, ProdDesc, CustNo, Name
  From Product, Customer, Order
  Where Product.ProdNo = Order.ProdNo
     And Customer.CustNo = Order.CustNo
     And Price < 10
```

5. (17) Using the database tables described in Question 4, write the VB code segment to place the Name field (from the Customer table) into a list box. Assume that a data control named `datQ5` has been created and connected to the database and its Customer table. Also assume that there is a text box named `txtZipCode` where the user enters a zip code. Finally, assume that the list box is named `lstNames`. Your code segment should fill the list box with only those customers who have the same zip code as entered by the user into the text box `txtZipCode`.

```
SQLQ = "Select Name From Customer Where ZipCode = " & txtZipCode.Text & ""
datQ5.RecordSource = SQLQ
datQ5.Refresh
Do Until datQ5.RecordSet.EOF
  lstNames.AddItem datQ5.Recordset("Name")
  datQ5.Recordset.MoveNext
Loop
```

6. (17) Consider the following statement: “Using the object paradigm, it is easier to modify code (such as adding and processing a new type of savings account) when compared to procedural programming”. Do you agree with this statement? Explain.

Agree. The object paradigm support class hierarchies and inheritance. It also supports polymorphic behavior. Class hierarchies and inheritance support adding subclasses to an existing class hierarchy. The new classes, you only need to define how they differ from the superclass and thus make adding new classes relatively easy.

Polymorphism permits writing code that works with the classes without having to differentiate objects from different classes. This helps support the maintenance activity in that there is often no maintenance associated with adding new subclasses.

