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BIBLIO: An Overview

The BIBLIO sample application is a database browser designed to illustrate the use of the Data control.

It is implemented as a browser front end to the BIBLIO.MDB sample database of books about database programming.   The program uses six separate Data controls to present this information to the user in a manner that makes it easy to navigate through the titles, authors and publishers listed in the database.

To use the database browser, simply select Titles, Authors or Publishers by clicking on the appropriate command button, from the Select menu, or by clicking directly on the picture box itself.   You can move through each set of records by clicking on the Data control at the bottom of the form, or move instantly to related records by clicking on them in the list boxes.

See also:
Program Logic

Database Schema

Navigating the Database

Program Logic

The BIBLIO Database Browser is designed to allow easy browsing through a bibliography of database books.   To permit this, three separate forms are needed, one each for the Titles, Authors and Publishers tables.   These forms are implemented as Picture Box controls rather than MDI forms, to allow complete interaction among all the Data controls on all forms.

Each form is assigned a Data control with its Recordset property set to the corresponding table of the database.   In addition, each form contains a list box which will contain related information from other tables, and is controlled by a separate Data control.   Thus, there are six Data controls in the application.

When each of the main data controls is clicked (repositioned to a new record) the text box controls on its form are automatically updated with the values of the fields from the new record.   In addition, the Reposition event triggers a function to fill the associated list boxes.   For example, when the Publishers Data control is clicked, the following code executes:

```
Sub ListPubsTitles()
    Dim Qry As String
    'Build the query
    Qry = "SELECT DISTINCTROW Titles.Title FROM Titles"
    Qry = Qry + " WHERE (Titles.PubID=" + txtPubs(0).Text + ")"
    'Refresh the data control
    dcPubsTitles.RecordSource = Qry
    dcPubsTitles.Refresh
    'Clear the listbox and build the new list
    lstPubsTitles.Clear
    If dcPubsTitles.Recordset.EOF Then
        lstPubsTitles.AddItem "No titles for this publisher."
    End If
    Do While Not dcPubsTitles.Recordset.EOF
        lstPubsTitles.AddItem dcPubsTitles.Recordset(0)
        dcPubsTitles.Recordset.MoveNext
    Loop
End Sub
```

This fills the list box with the Titles published by that particular Publisher.   To move to the Titles record for one of these listed titles, clicking on the title in the list box executes the following code:

```
Private Sub lstPubsTitles_Click()
    Dim BM As Variant
    BM = dbCtrl(Titles).Recordset.Bookmark
    dbCtrl(Titles).Recordset.FindFirst _
        "Title = '" + lstPubsTitles.List(lstPubsTitles.ListIndex) + "'"
    If dbCtrl(Titles).Recordset.NoMatch = True Then
        dbCtrl(Titles).Recordset.Bookmark = BM
    Else
        DisplayGroup_Click (Titles)
    End If
End Sub
```

This repositions the Titles Data control to the selected title, and brings the Titles form to the top of the stack.

The other forms and their related list boxes follow the same logic.

See also:

Database Schema

The schema, or database design, of the BIBLIO.MDB database consists of four related tables, as shown below:

Titles:

Title	Book title
Year Published	Publication date
ISBN	Unique key
PubID	Foreign key into Publishers table
Description	Reference info
Notes	General notes
Subject	Keywords
Comments	Description of book contents

Authors:

Au_ID	Unique key identifier
Author	Authors name
Year born	Authors birthdate

Publishers:

PubID	Unique key identifier
Name	Short (bibliographic) name
Company name	Full business name of publisher
Address	Publishers address
City	Publishers city
State	Publishers state
Zip	Zip code
Telephone	Phone number
Fax	Fax number
Comments	General comments on publisher

Title Author:

ISBN	Foreign key into Titles table
Au_ID	Foreign key into Authors table

NOTE: The BIBLIO.MDB database was modified after the Data Access Guide for Visual Basic, version 4.0 went to print.   Where there are differences, the schema presented in this Help file is more up to date.

See also:
<u>Authors</u>

<u>Publishers</u>

<u>Titles</u>

<u>Title Author</u>

Relations in the BIBLIO Database

The BIBLIO.MDB schema creates several relations.   The most important ones are:

One to Many:
Publishers to Titles   A publisher can publish many titles

Many to Many:
Authors to TitlesAn author can write many titles AND a title
                    can have many authors (collaborators).

Relations are implemented in the sample application through list boxes that display the Many side of the
      relation.   For example

• The <u>Titles</u> form contains a list of the Authors of each title

• The <u>Authors</u> form contains a list of Titles by each author

• The <u>Publishers</u> form contains a list of the Titles release by each publisher

Authors

The Authors table lists basic information about each author.   Because it is in a Many-to-Many relation with the Titles table, it does not contain any foreign keys.   Instead, its connection to Titles is maintained through the Title Author table.

Authors:
Au_ID   Unique key identifier
Author   Authors name
Year born   Authors birthdate

The Authors form in the application lists therse fields.   It also contains a list box that is filled with the titles written by each author.   When the Authors data control is repositioned, the following query is executed and assigned to the Recordset property of the data control that fills the list box:

Qry = "SELECT Titles.Title FROM Titles INNER JOIN [Title Author] ON Titles.ISBN = [Title Author].ISBN WHERE ([Title Author].Au_ID=txtAuthors(1).Text)

where txtAuthors(1) is the text box that displays the Au_ID field.

See also:
Database Schema

Publishers

The Publishers table contains basic information about the Publisher of each volume in the bibliography database:

Publishers:
PubID   Unique key identifier
Name   Short (bibliographic) name
Company name   Full business name of publisher
Address   Publishers address
City   Publishers city
State   Publishers state
Zip   Zip code
Telephone   Phone number
Fax   Fax number
Comments   General comments on publisher

The Publishers form in the application lists these fields.   It also contains a list box that is filled with the titles published by each publisher.   When the Publishers data control is repositioned, the following query is executed and assigned to the Recordset property of the data control that fills the list box:

Qry = "SELECT DISTINCTROW Titles.Title FROM Titles WHERE (Titles.PubID=txtPubs(0).Text)

where txtPubs(0) is the text box that displays the PubID field.

See also:
Database Schema

Titles

The Titles table lists each book title in the bibliography

Titles:
Title	Book title
Year Published	Publication date
ISBN	Unique key
PubID	Foreign key into Publishers table
Description	Reference info
Notes	General notes
Subject	Keywords
Comments	Description of book contents

The Titles form in the application lists these fields.   It also contains a list box that is filled with the Author(s) written by each author.   When the Titles data control is repositioned, the following query is executed and assigned to the Recordset property of the data control that fills the list box:

Qry = "SELECT Authors.Author FROM Authors INNER JOIN [Title Author] ON Authors.Au_ID = [Title Author].Au_ID WHERE ([Title Author].ISBN=txtTitles(2).Text)

where txtTitles(2) is the text box that displays the ISBN field.

See also:
Database Schema

Title Author

The Title Author table is a two-field table whose only purpose is to define a many-to-many <u>relation</u> between the Titles table and the Authors table.

Title Author:

ISBN	Foreign key into Titles table
Au_ID	Foreign key into Authors table

Because this table works behind the scenes to define this relation, there is no screen for it in the applications user interface.   Instead, it is used to fill the list boxes that show the Author(s) of a particular Title, and the Titles written by a particular Author.

See also:
<u>Database Schema</u>

<u>Relations</u>

Navigating the Database

Navigating through records in the BIBLIO.MDB database is entirely visual:

1. Select the form you want to start with by clicking on Titles, Authors or Publishers.

2. Click the forward and backward arrows on the Data control to move from record to record.

3. To move to a related record (for example, to move to a particular Title in the list box of titles shown on the Authors form), click on the item you want to move to.   The appropriate record will be found and its form placed on top of the stack.

See also:
Relations in the BIBLIO Database

Modifying the BIBLIO.MDB Database

Because of the many-to-many relations displayed on the various forms of the BIBLIO.MAK sample application, the database information is presented as Read-Only.   It is left to the user as an exercise to determine how to update a record which depends on a many-to-many relationship with another record or records displayed on the same form.

If you want to modify or add records to the BIBLIO.MDB database, you can do so by opening the database using Microsoft Access or the Data Manager application provided with Visual Basic version 4.0.

See also:
Database Schema

Program Logic

Code Listing for the BIBLIO Database Browser

BIBLIO.BAS:

```
'Declaration for WinHelp
Declare Function OSWinHelp% Lib "User" Alias "WinHelp" (ByVal hwnd%, ByVal HelpFile$, ByVal
wCommand%, dwData As Any)
```

BIBLIO.FRM:

```
'Constant declarations for data control & picture box arrays
Const Titles% = 0
Const Authors% = 1
Const Publishers% = 2

'List all titles from a particular publisher
Sub ListPubsTitles()
    Dim Qry As String
    'Build the query
    Qry = "SELECT DISTINCTROW Titles.Title FROM Titles"
    Qry = Qry + " WHERE (Titles.PubID=" + txtPubs(0).Text + ")"
    'Refresh the data control
    dcPubsTitles.RecordSource = Qry
    dcPubsTitles.Refresh
    'Clear the listbox and build the new list
    lstPubsTitles.Clear
    If dcPubsTitles.Recordset.EOF Then
        lstPubsTitles.AddItem "No titles for this publisher."
    End If
    Do While Not dcPubsTitles.Recordset.EOF
        lstPubsTitles.AddItem dcPubsTitles.Recordset(0)
        dcPubsTitles.Recordset.MoveNext
    Loop
End Sub

'List all titles by a particular author
Sub ListAuthorTitles()
    Dim Qry As String
    'Build the query
    Qry = "SELECT Titles.Title FROM Titles"
    Qry = Qry + " INNER JOIN [Title Author] ON"
    Qry = Qry + " Titles.ISBN = [Title Author].ISBN WHERE"
    Qry = Qry + " (([Title Author].Au_ID=" + txtAuthors(1).Text + "))"
    'Refresh the data control
    dcAuthorTitles.RecordSource = Qry
    dcAuthorTitles.Refresh
    'Clear the listbox and build the new list
    lstAuthorTitles.Clear
    Do While Not dcAuthorTitles.Recordset.EOF
        lstAuthorTitles.AddItem dcAuthorTitles.Recordset(0)
        dcAuthorTitles.Recordset.MoveNext
    Loop
End Sub

'List the authors of a particular title
Sub ListTitleAuthors()
```

```vb
    Dim Qry As String
    'Build the query
    Qry = "SELECT Authors.Author FROM Authors"
    Qry = Qry + " INNER JOIN [Title Author] ON"
    Qry = Qry + " Authors.Au_ID = [Title Author].Au_ID WHERE"
    Qry = Qry + " (([Title Author].ISBN='" + txtTitles(2).Text + "'))"
    'Refresh the data control
    dcTitleAuthors.RecordSource = Qry
    dcTitleAuthors.Refresh
    'Clear the listbox and build the new list
    lstTitleAuthors.Clear
    Do While Not dcTitleAuthors.Recordset.EOF
        lstTitleAuthors.AddItem dcTitleAuthors.Recordset(0)
        dcTitleAuthors.Recordset.MoveNext
    Loop
End Sub

'Bring the selected picture box to the top by clicking button
Private Sub btnGroup_Click(Index As Integer)
    DisplayGroup(Index).ZOrder 0
End Sub

'Build the lists of related records when the current record changes
Private Sub dbCtrl_Reposition(Index As Integer)
    If Index = Publishers Then
        ListPubsTitles
    ElseIf Index = Authors Then
        ListAuthorTitles
    ElseIf Index = Titles Then
        ListTitleAuthors
    End If
End Sub

'Bring the selected picture box to the top by clicking picture box
Private Sub DisplayGroup_Click(Index As Integer)
    DisplayGroup(Index).ZOrder 0
End Sub


'Move to the selected Publisher when clicked in the Titles form
Private Sub lblTitlePub_Click()
    Dim BM As Variant, FindStr As String
    FindStr = "PubID = " + txtTitles(6).Text
    Debug.Print FindStr
    BM = dbCtrl(Publishers).Recordset.Bookmark
    dbCtrl(Publishers).Recordset.FindFirst FindStr
     If dbCtrl(Publishers).Recordset.NoMatch = True Then
        dbCtrl(Publishers).Recordset.Bookmark = BM
    Else
        DisplayGroup_Click (Publishers)
    End If
End Sub

'Move to the selected title when clicked in the Author's form
Private Sub lstAuthorTitles_Click()
    Dim BM As Variant, FindStr As String
```

```vb
        FindStr = "Title = """ + lstAuthorTitles.List(lstAuthorTitles.ListIndex) + """"
        BM = dbCtrl(Titles).Recordset.Bookmark
        dbCtrl(Titles).Recordset.FindFirst FindStr
        If dbCtrl(Titles).Recordset.NoMatch = True Then
            dbCtrl(Titles).Recordset.Bookmark = BM
        Else
            DisplayGroup_Click (Titles)
        End If
End Sub

'Move to the selected title when clicked in the Publisher's form
Private Sub lstPubsTitles_Click()
    Dim BM As Variant
    BM = dbCtrl(Titles).Recordset.Bookmark
    dbCtrl(Titles).Recordset.FindFirst _
        "Title = """ + lstPubsTitles.List(lstPubsTitles.ListIndex) + """"
    If dbCtrl(Titles).Recordset.NoMatch = True Then
        dbCtrl(Titles).Recordset.Bookmark = BM
    Else
        DisplayGroup_Click (Titles)
    End If
End Sub

'Move to the selected Author when clicked in the Titles form
Private Sub lstTitleAuthors_Click()
    Dim BM As Variant
    BM = dbCtrl(Authors).Recordset.Bookmark
    dbCtrl(Authors).Recordset.FindFirst _
        "Author = """ + lstTitleAuthors.List(lstTitleAuthors.ListIndex) + """"
    If dbCtrl(Authors).Recordset.NoMatch = True Then
        dbCtrl(Authors).Recordset.Bookmark = BM
    Else
        DisplayGroup_Click (Authors)
    End If
End Sub

'Bring the Author's picture box to the top
Private Sub mnuAuthors_Click()
    DisplayGroup_Click (Authors)
End Sub

'Bring the Publishers picture box to the top
Private Sub mnuPublishers_Click()
    DisplayGroup_Click (Publishers)
End Sub

'Bring the Titles picture box to the top
Private Sub mnuTitles_Click()
    DisplayGroup_Click (Titles)
End Sub

'End the program
Private Sub mnuExit_Click()
    End
End Sub
```

```
'Display the About box
Private Sub mnuHelpAbout_Click()
    frmAbout.Show 1
End Sub

'Open Help and display the Contents screen
Private Sub mnuHelpContents_Click()
  Dim Ret As Integer
  Ret = OSWinHelp(Me.hwnd, App.HelpFile, vbHelpContents, 0)
End Sub

'Open Help and display the Search window
Private Sub mnuHelpSearch_Click()
  Dim Ret As Integer
  Ret = OSWinHelp(Me.hwnd, App.HelpFile, vbHelpPartialKey, 0)
End Sub
```

See also:
<u>Program Logic</u>

File List

The following files are used in the BIBLIO.MAK project:

PROJECT FILES:

BIBLIO.MAK   Project file
BIBLIO.FRM   Main form
BIBLIO.BAS   Global declarations

HELP FILE:

BIBLIO.HLP   Compiled Help file

DATABASE FILE:

BIBLIO.MDB   Bibliography of database programming books