

Chapter
2

**DYNAMIC DATA
EXCHANGE**

*Get on the
Fast Track!*



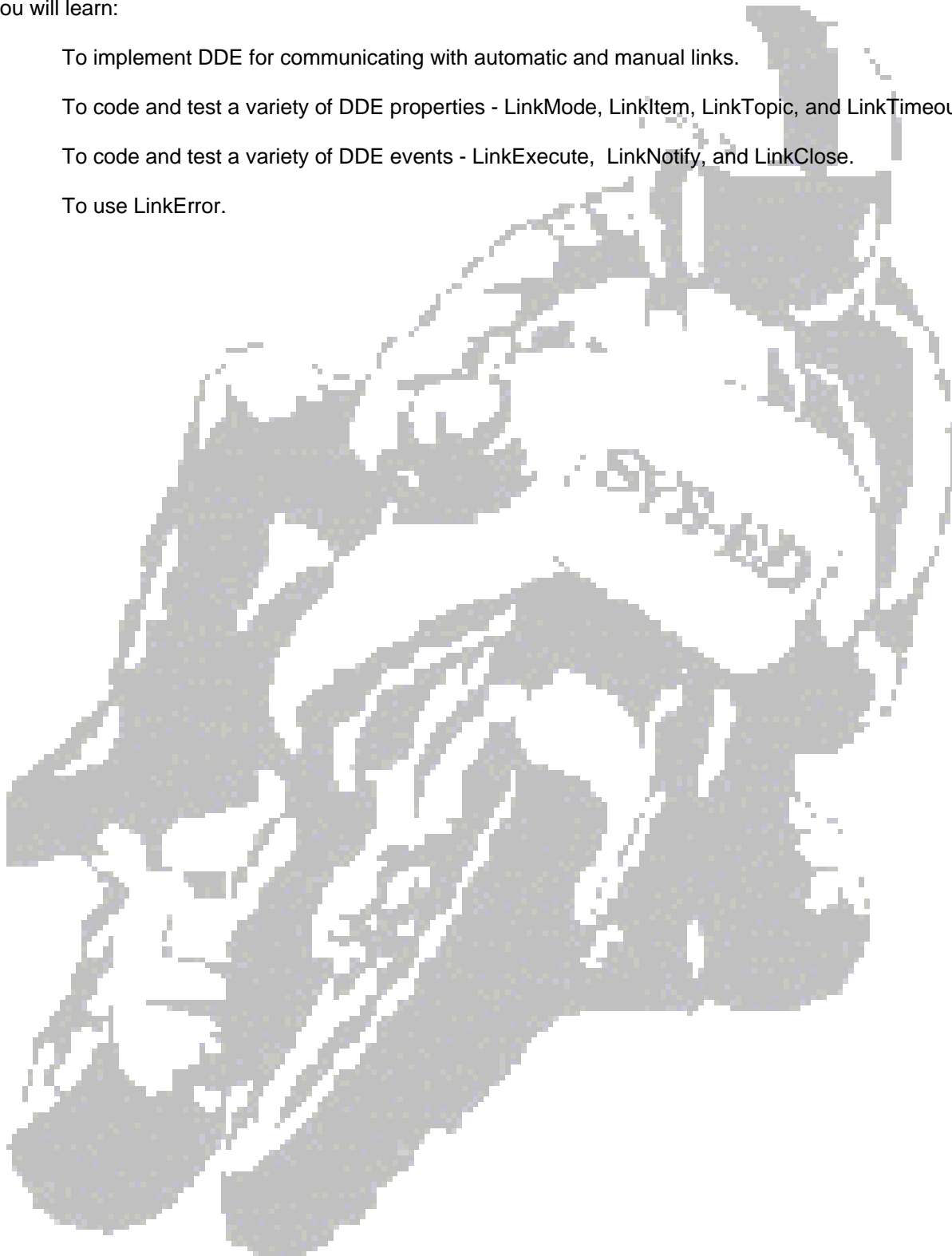
TM

**SYS-ED/
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Objectives

You will learn:

- C To implement DDE for communicating with automatic and manual links.
- C To code and test a variety of DDE properties - LinkMode, LinkItem, LinkTopic, and LinkTimeout.
- C To code and test a variety of DDE events - LinkExecute, LinkNotify, and LinkClose.
- C To use LinkError.



1 What is DDE

Dynamic Data exchange is used to automatically enable two applications to talk with each other. The conversation is automatic and continuous.

DDE can be used instead of the clipboard technique; it is faster and can be "invisible" to the user.

- C Each application has a unique name.
- C DDE requires that both applications support the DDE environment.
- C Applications exchange information via a DDE conversation.
- C The destination application is the one that initiates the conversation.
- C The source application responds to the destination.
- C An application can be a source, destination or both.
- C The destination and source is sometimes called the client and the server.
- C When a DDE conversation begins, the destination specifies the source and the subject of conversation (topic).
- C When a source detects a destination, a conversation begins.
- C During a conversation, if the application or topic changes, the conversation is terminated.
- C Items (reference to data from both applications) can be passed between the applications.

2 LinkTopic Property

Format:

```
[form.] [label. | picturebox. | textbox.] LinkTopic [ = link ]
```

LinkTopic property determines the source application and the topic.

LinkTopic is used with the LinkItem property to specify the complete data link.

A source form determines the topic that the source form responds to in a DDE conversation.

The "pipe" character (|, or character code 124) separates the application from the topic.

3 LinkItem Property

Format:

```
[form.]{label|picturebox|textbox}.LinkItem[ = stringexpression ]
```

LinkItem property specifies the data passed to a destination control in a DDE conversation with another application.

To set this property, specify a recognizable unit of data in an application as a reference.

Use LinkItem in combination with the LinkTopic property to specify the complete data link for a destination control to a source application.

To activate this link, set the LinkMode property.

4 LinkMode Property

LinkMode property determines the type of link used for a DDE conversation.

Setting LinkMode to a nonzero value for a destination control causes Visual Basic to attempt to initiate the conversation specified in the LinkTopic and LinkItem properties. The source updates the destination control according to the type of link specified (automatic, manual, or notify).

If a source application terminates a conversation with a Visual Basic destination control, the value for that control's LinkMode setting changes to 0 (None).

Format:

```
[form.] [label. | picturebox. | textbox.] LinkMode [ = mode ]
```

For controls used as destinations in DDE conversations, the settings for number are:

Constant	Setting	Description	
VbLinkNone	0 (Default)	None	No DDE interaction.
VbLinkAutomatic	1	Automatic	Destination control is updated each time the linked data changes.
VbLinkManual	2	Manual	Destination control is updated only when the LinkRequest method is invoked.
VbLinkNotify	3	Notify	A LinkNotify event occurs whenever the linked data changes, but the destination control is updated only when the LinkRequest method is invoked.

For forms used as sources in DDE conversations, the settings for number are:

Constant	Setting	Description	
VbLinkNone	0 (Default)	None	<p>No DDE interaction. No destination application can initiate a conversation with the source form as the topic, and no application can poke data to the form.</p> <p>If LinkMode is 0 (None) at design time, it can not be changed to 1 (Source) at run time.</p>
VbLinkSource	1	Source	<p>Allows any Label, PictureBox, or TextBox control on a form to supply data to any destination application that establishes a DDE conversation with the form.</p> <p>If such a link exists, Visual Basic automatically notifies the destination whenever the contents of a control are changed.</p> <p>In addition, a destination application can poke data to any Label, PictureBox, or TextBox control on the form.</p> <p>If LinkMode is 1 (Source) at design time, it can be changed to 0 (None) and back at run time.</p>

If LinkMode for a form is set to the default 0 (None) at design time, LinkMode can not be changed at run time.

If a form is to act as a source, LinkMode must be set to 1 (Source) at design time. The value of LinkMode can then be changed at run time.

Setting a permanent data link at design time with the Paste Link command from the Edit menu also sets the LinkMode, LinkTopic, and LinkItem properties. This creates a link that is saved with the form. Each time the form is loaded, Visual Basic attempts to re-establish the conversation.

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Example:

```
1 Sub Form_Click ()
2   Dim CurRow As String
3
4   Static Row           ' Worksheet row number.
5   Row = Row + 1       ' Increment Row.
6   If Row = 1 Then    ' First time only.
7                       ' Make sure the link is not active.
8       Text1.LinkMode = 0
9       Text1.LinkTopic = "Excel|Sheet1" ' Set the application name and topic name.
10      Text1.LinkItem = "R1C1" ' Set the LinkItem.
11      Text1.LinkMode = 1 ' Activate the link to
12                          ' Automatic.
13  Else
14      ' Update the Row in the data item.
15      CurRow = "R" & Row & "C1"
16      Text1.LinkItem = CurRow ' Set the LinkItem.
17  End If
18 End Sub
```

5 LinkExecute Event

A LinkExecute event occurs when a command string is sent by a destination application in a DDE conversation.

The destination application expects the source application to perform the operation described by the string.

Example:

```
1 Sub Form_LinkExecute (CmdStr As String, Cancel As Integer)
2     Cancel = False
3     Select Case LCase(cmdStr)
4     Case "{big}"
5         WindowState = 2           ' Maximize window.
6     Case "{little}"
7         WindowState = 1         ' Minimize window.
8     Case "{hide}"
9         Visible = False        ' Hide form.
10    Case "{view}"
11        Visible = True         ' Display form.
12    Case Else
13        Cancel = True          ' Execute not allowed.
14    End Select
15 End Sub
```

6 LinkNotify Event

LinkNotify event occurs when the source has changed the data defined by the DDE link, if the LinkMode property of the destination control is set to 3 (Notify).

Typically, in the LinkNotify event the code notifies the user, gets the new data immediately, or defers getting the data until later.

The LinkRequest method can be used to obtain the new data from the source.

7 LinkClose and LinkError Event

LinkClose occurs when a DDE conversation terminates. Either application in a DDE conversation may terminate a conversation at any time.

Typically, a LinkClose procedure is used to notify the user that a DDE conversation has been terminated.

LinkError Event occurs when there is an error during a DDE conversation. This event is recognized only as the result of a DDE-related error that occurs when no Visual Basic code is being executed.

Example:

```
Sub MyTextBox_LinkError (LinkErr As Integer)
Dim Msg
  Select Case LinkErr
    Case 1
      Msg = "Data in wrong format."
    Case 11
      Msg = "Out of memory for DDE."
  End Select
  MsgBox Msg, 48, "MyTextBox"
End Sub
```

8 LinkTimeout Property

Format:

```
[form.]{label|picturebox|textbox}.LinkTimeout[ = duration ]
```

LinkTimeout property determines the amount of time a control waits for a response to a DDE message.

- C The LinkTimeout property is set to 50 (equivalent to 5 seconds), by default.
- C Other settings can be specified in tenths of a second.
- C The maximum length of time is about 1 hour 49 minutes. Setting LinkTimeout to -1 tells the control to wait the maximum.
- C The user can force the control to stop waiting by pressing the Esc key.