

# **Module 11: Data Access Using the Data Control**



# Overview

**Overview of a Database**

**How Does Visual Basic Access Databases?**

**What Is the Data Control?**

**The Current Row and the Dynaset**

**Finding Records**

**Updating, Deleting, and Adding Records**

**Data Control Events**

**How Locking Is Handled**

**Filling a Grid with Data from a Table**

# Overview of a Database

NWIND.MDB

*Employee*

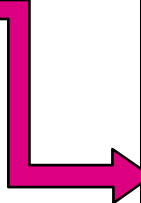
\$
<b>Employee ID</b>
<b>Last Name</b>
<b>First Name</b>
•
•
•

*Orders*

<b>Order ID</b>
<b>Customer ID</b>
<b>Employee ID</b>
•
•
•

*Customer*

\$
<b>Customer ID</b>
<b>Company</b>
<b>Name</b>
<b>Contact</b>
•
<b>Name</b>

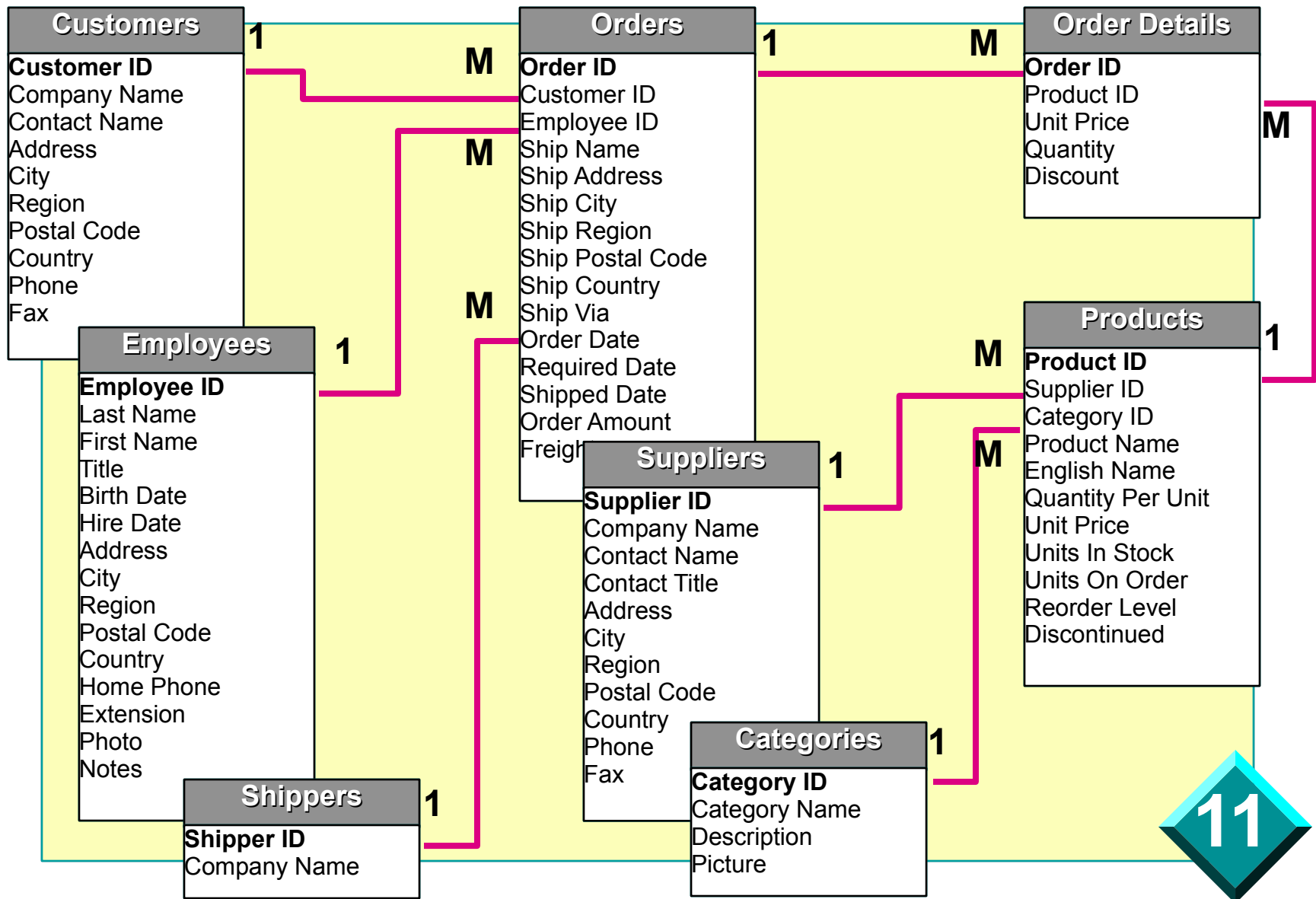


# Overview of a Table

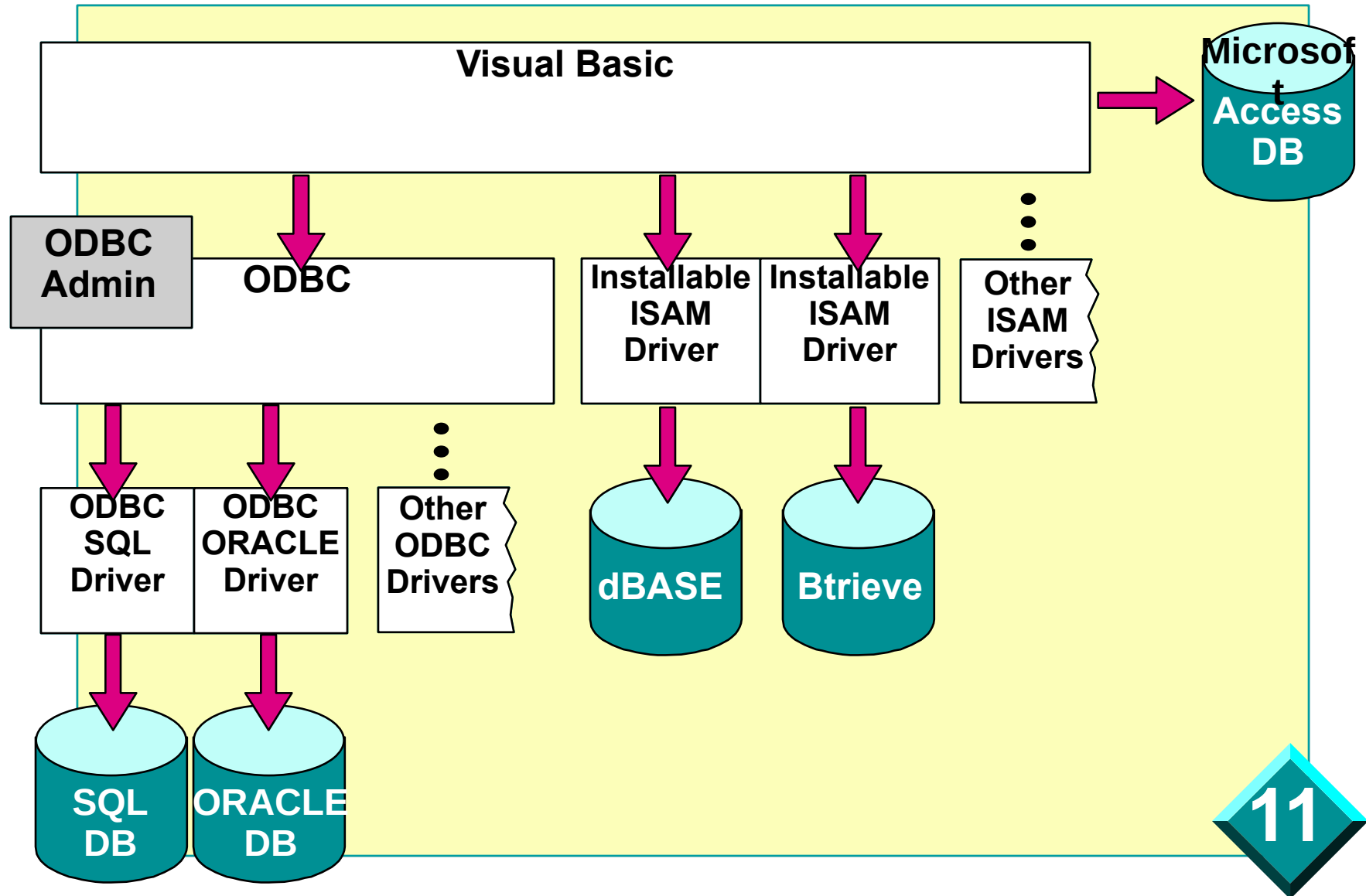
*Employees Table*

Rows (records)	Employee ID	Last Name	First Name
	135	Leverling	Tim
	284	Buchanan	B.L.
	• • •	• • •	• • •
Columns (fields)			

# Northwind Database Diagram



# How Does Visual Basic Access Databases?



# The Data Control

**Creates DYNASET**  
**Reflects DB Table or SQL Query**



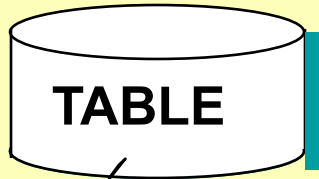
Move First

Move Previous

Move Next

Move Last

# Characteristics of a DYNASET Object



Emp ID	Last Name	First Name
1		
2		
3		
4		
N		


**Populated 2048 Bytes  
worth of Records at  
a time on demand**

**Default ordered by  
Primary Index Key  
e.g. Emp ID**



# Binding Controls to the Data Control

```
.DataSource = Data1  
.DataField = 'Last Name'
```



Form1

Last Name:

Navigation buttons: |< < > >|

Data1

# Data Control Walkthrough

The image shows a screenshot of a Microsoft Access form titled "Form1". The form has a title bar with a green background and the text "Form1". Below the title bar, there are two text boxes. The first text box is labeled "Last Name:" and the second text box is labeled "First Name:". Below these text boxes, there is a control labeled "Data1" which has four navigation buttons: a "Previous" button (left arrow), a "First" button (double left arrow), a "Next" button (double right arrow), and a "Last" button (right arrow).

# Displaying a Calculated Field

The image shows a screenshot of a Visual Basic form titled "Form1". The form contains three text boxes labeled "Quantity:", "Price:", and "Total:". Below these is a data grid with a single column labeled "Data1". A pink arrow points from the "Total:" label to the "Data1" column. Another pink arrow points from the "Data1" column to a text box containing the formula `total = [Unit Price] * Quantity`. Below the form, a text box contains the record source code: `.RecordSource = "Select [Unit Price], quantity, [Unit Price] * quantity As total from [Order Details]"`. A pink arrow points from the record source code to the "Data1" column.

Form1

Quantity:

Price:

Total:

Data1

`total = [Unit Price] * Quantity`

`.RecordSource = "Select [Unit Price], quantity, [Unit Price] * quantity As total from [Order Details]"`

# Data Control Methods and Properties

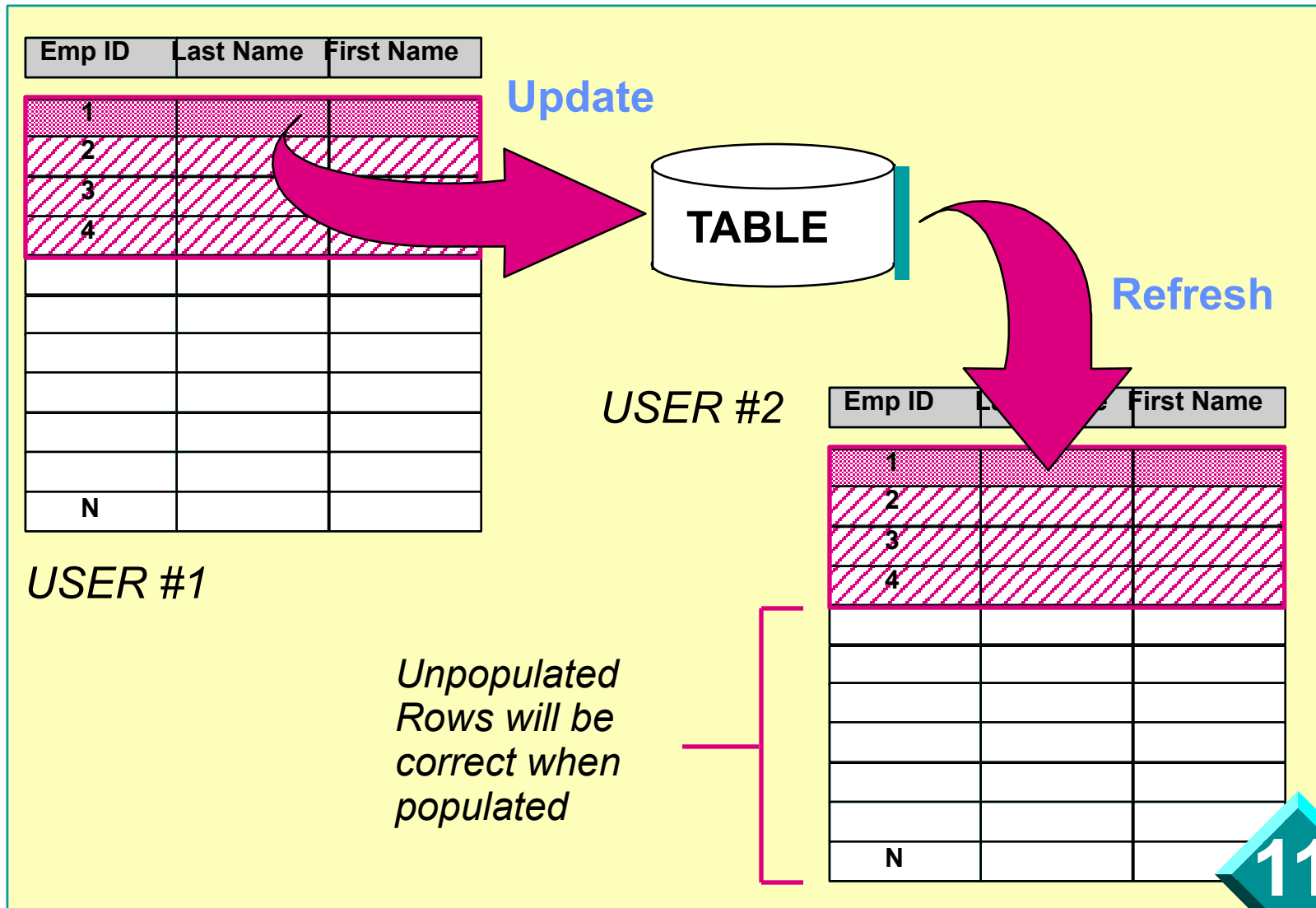
**Refresh** Method

**Connect** Property

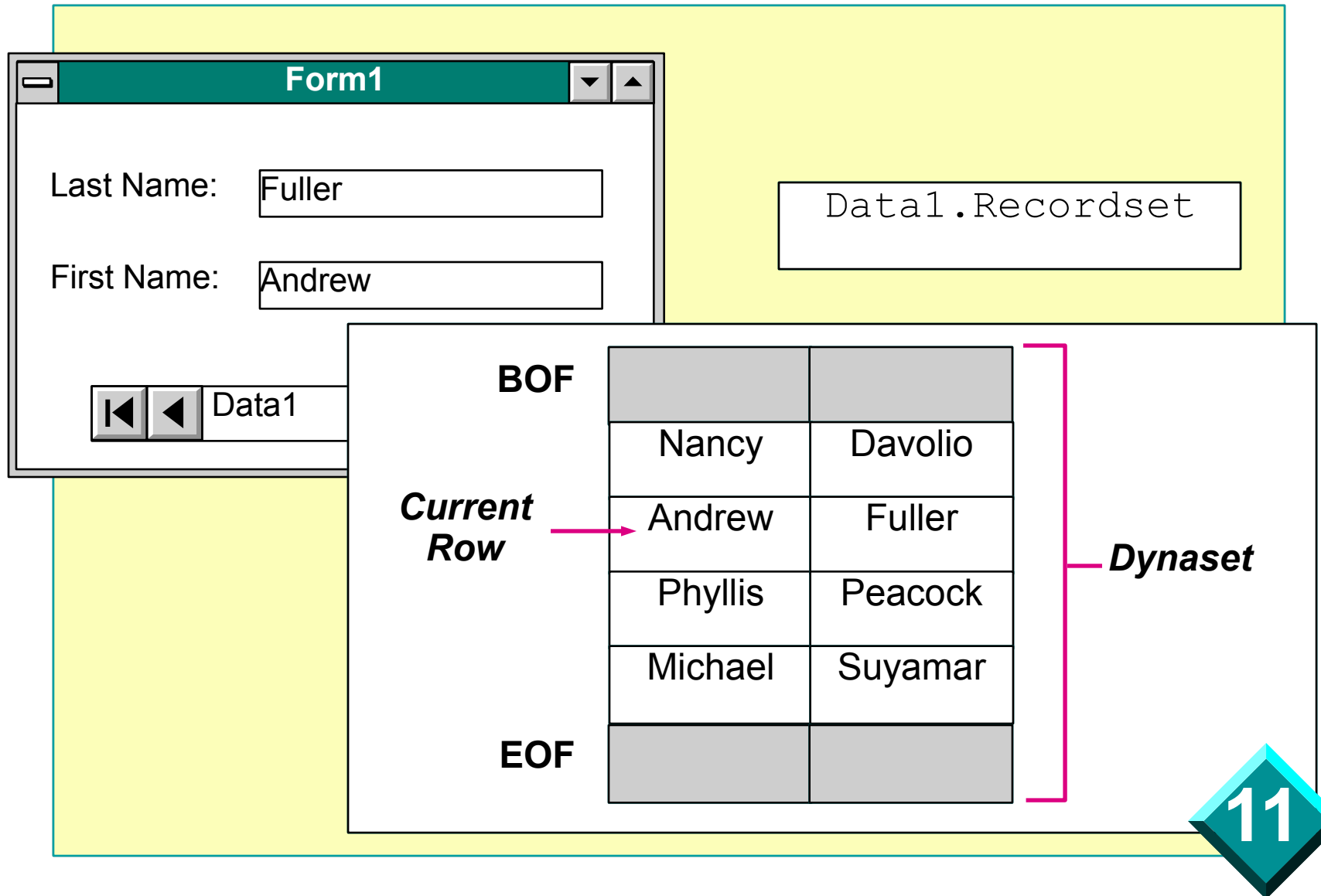
**Exclusive** Property

**ReadOnly** Property

# Multiple Concurrent TABLE Users



# The Current Row and The Dynaset



# Finding Records

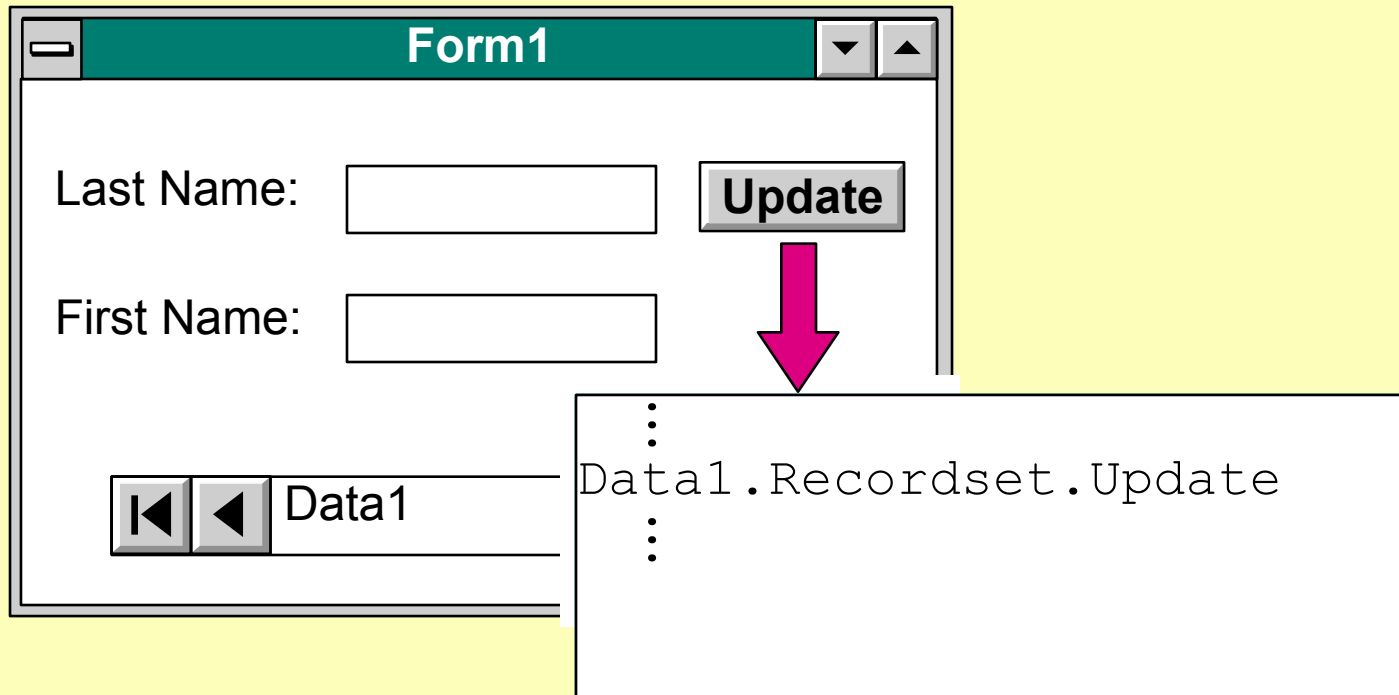
Find Methods: **FindFirst**, **FindLast**, **FindPrevious**, **FindNext**

The screenshot shows a Windows-style form titled "Form1". It contains two text input fields labeled "Last Name:" and "First Name:". To the right of the "Last Name:" field is a button labeled "Find". A large pink arrow points from the "Find" button down to a data grid. The data grid has a header row with "Data1.Recordset.FindFirst criteria" and a single data row with three vertical ellipsis dots. To the left of the data grid are two navigation buttons: a "Go to first" button (represented by a vertical bar and a left arrow) and a "Go to previous" button (represented by a left arrow).

**Criteria: Any Valid SQL “Where” Clause**

**Use Bookmark Property to Save Current Position**

# Updating Records





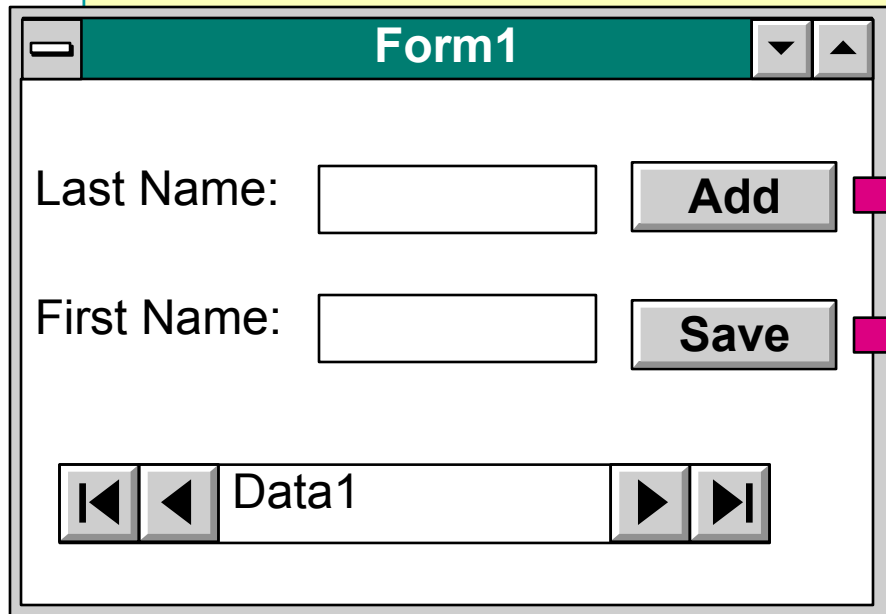
# Deleting Records

The diagram illustrates a Visual Basic form titled "Form1". It contains two text boxes labeled "Last Name:" and "First Name:". To the right of the "Last Name:" text box is a button labeled "Delete". A large pink arrow points from the "Delete" button to a code window. The code window displays the following code:

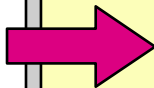
```
⋮  
Data1.Recordset.Delete  
⋮
```

At the bottom left of the form, there is a data control labeled "Data1" with navigation buttons (first, previous, next, last).

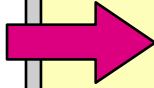
# Adding New Records



A screenshot of a Windows-style window titled "Form1". Inside the window, there are two rows of controls. The first row contains the text "Last Name:" followed by a text input field and a button labeled "Add". The second row contains the text "First Name:" followed by a text input field and a button labeled "Save". At the bottom of the window, there is a data control bar with navigation buttons (back, forward, first, last) and a label "Data1".



```
⋮  
Data1.Recordset.AddNew  
⋮
```



```
⋮  
Data1.Recordset.Update  
⋮
```

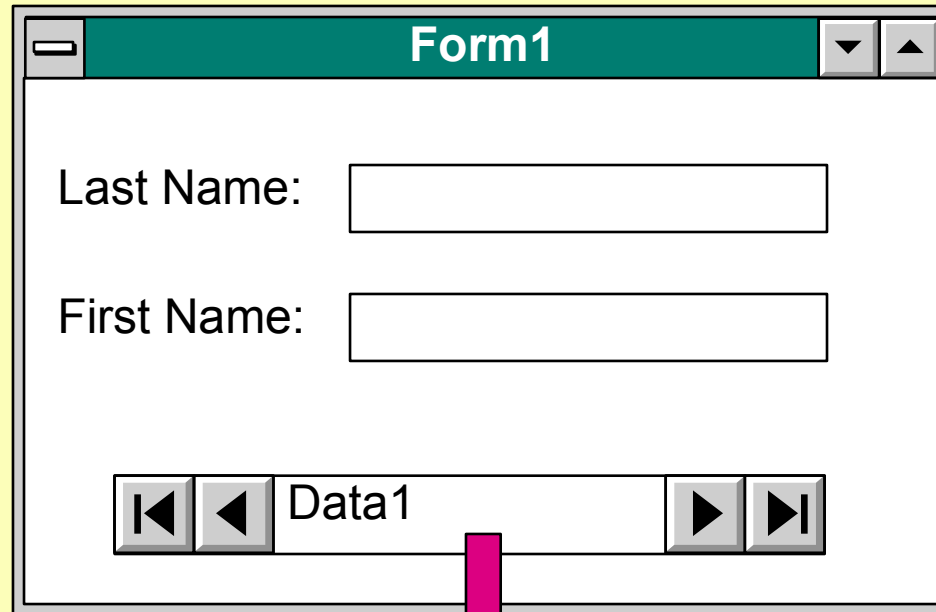
# Data Control Events

**Validate**

**Reposition**

**Error**

# The Validate Event



Form1

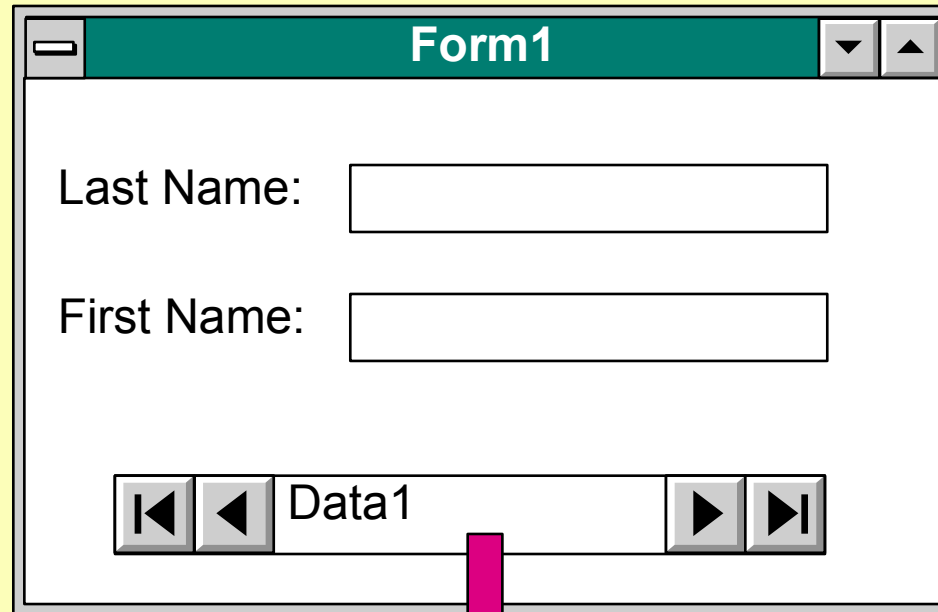
Last Name:

First Name:

Data1

```
Sub Data1_Validate (Action As Integer, Save As Integer)  
    'Occurs when current record changes
```

# The Reposition Event

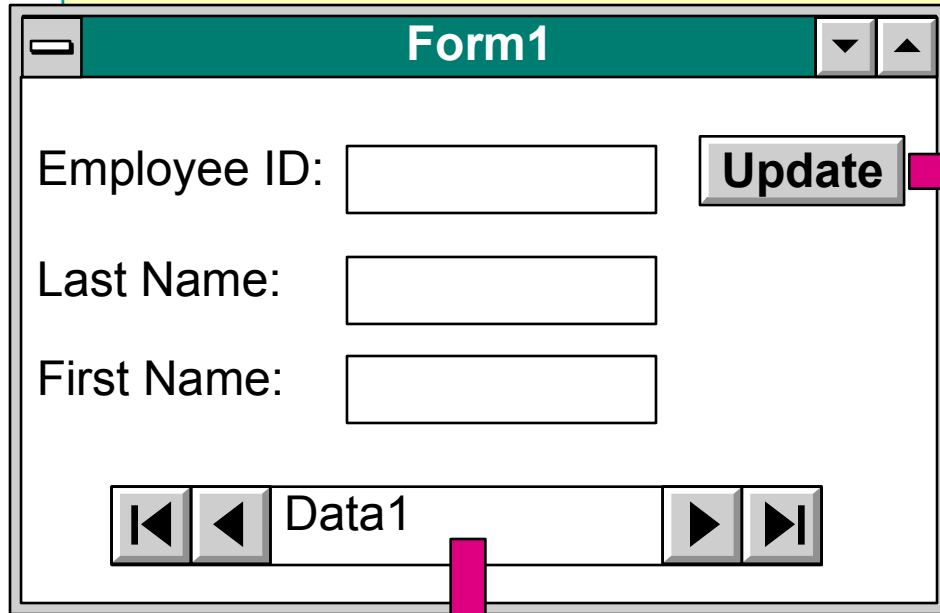


A screenshot of a Visual Basic form titled "Form1". The form contains two text boxes labeled "Last Name:" and "First Name:". Below these is a control labeled "Data1" which includes navigation buttons (first, previous, next, last) and a central text area.



```
Sub Data1_Reposition()  
    'Occurs when current record changes
```

# The Error Event



A screenshot of a Windows-style form titled "Form1". It contains three text input fields labeled "Employee ID:", "Last Name:", and "First Name:". To the right of the "Employee ID:" field is an "Update" button. Below the input fields is a data grid control labeled "Data1" with navigation buttons (back, forward, first, last). A pink arrow points from the "Update" button to a code block on the right. Another pink arrow points from the "Data1" control to a code block at the bottom.

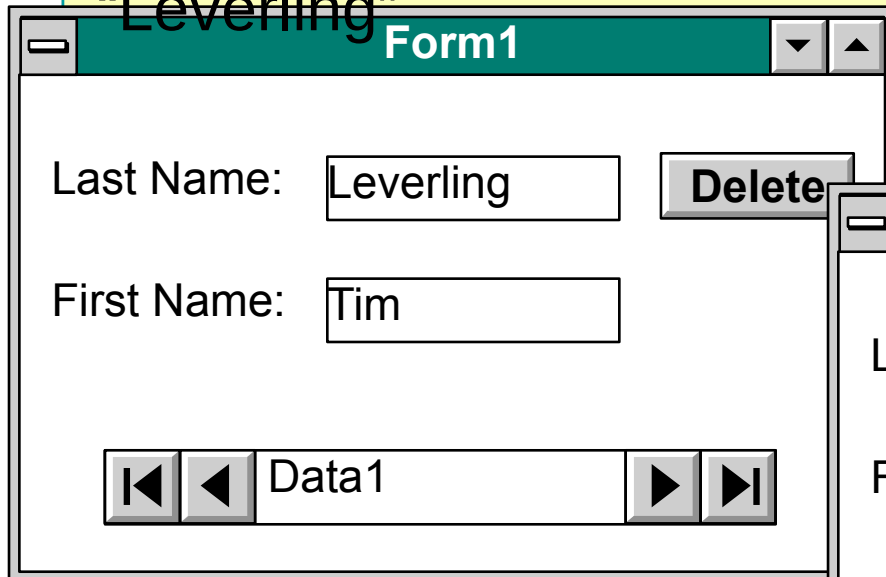
```
Sub cmd Update  
  On Error...  
  :  
  'Handle Duplicate Key
```

```
Sub Data1_Error()  
  'If error occurs, for example: Duplicate Key
```

# Handling Multiple Users

User #1  
Deletes

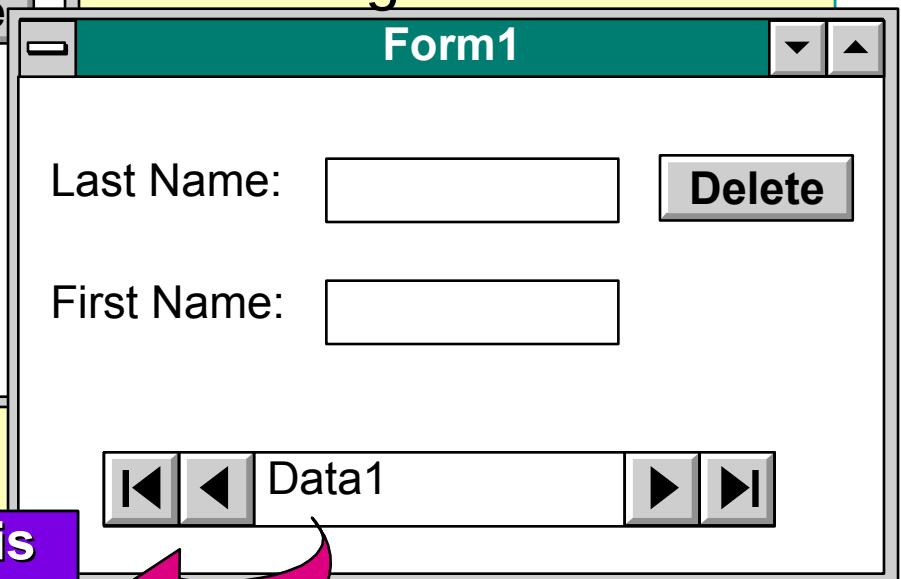
“Leverling”



A screenshot of a Windows-style window titled "Form1". It contains two text input fields: "Last Name:" with the text "Leverling" and "First Name:" with the text "Tim". To the right of the "Last Name" field is a "Delete" button. At the bottom, there is a data grid with a single row labeled "Data1" and navigation buttons (back, forward, first, last).

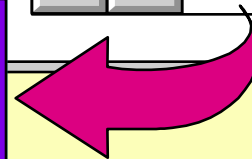
User #2

“Record is Deleted”  
message  
when moving to  
“Leverling”



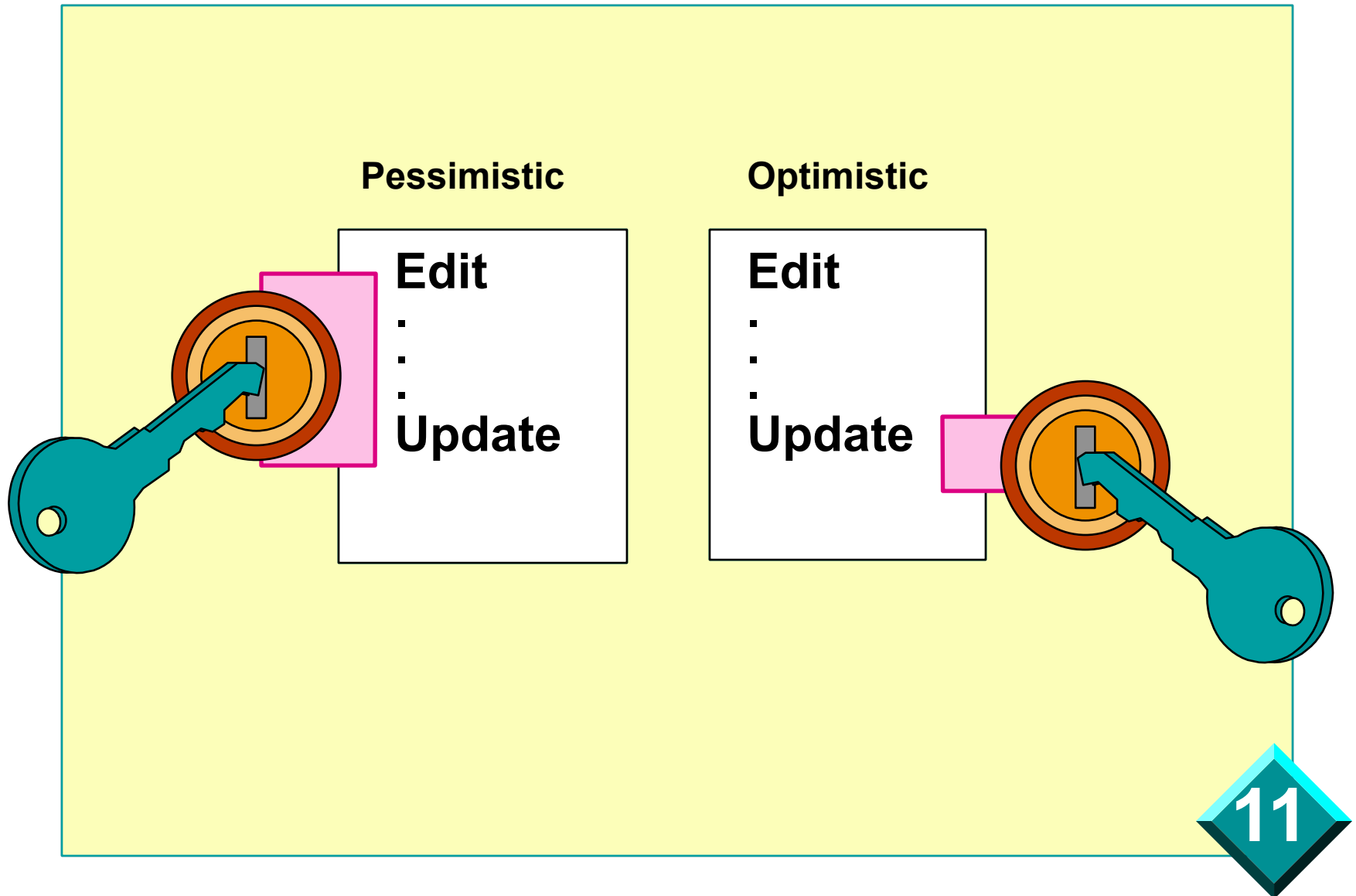
A screenshot of a Windows-style window titled "Form1". It contains two empty text input fields: "Last Name:" and "First Name:". To the right of the "Last Name" field is a "Delete" button. At the bottom, there is a data grid with a single row labeled "Data1" and navigation buttons (back, forward, first, last).

“Record is  
Deleted”



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# How Locking Is Handled





# Accessing Data Programmatically

```
Data1.Recordset("Last Name")  
Data1.Recordset![Last Name]  
Data1.Recordset.Fields(0).Value
```

# Filling a Grid with Data

**Single Record**

Last Name:

First Name:

**Multiple Records**

Last Name	First Name
Leverling	Tim
Buchanan	B.L.
⋮	⋮

**Note: Many 3rd Party Grid Control are Bound Controls**

# Determining the Files You Need to Distribute

## Special DLLs Are Required For

- Data control

- Accessing Btrieve, Paradox, or Microsoft FoxPro® files

- Accessing ODBC format databases

- Accessing SQL Server (Professional Edition only)

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