FruitCorner

A Stock Control and Ordering System
for a small/medium sized organisation

ANDiDAS.COM
June 2004

Contents:

Introduction

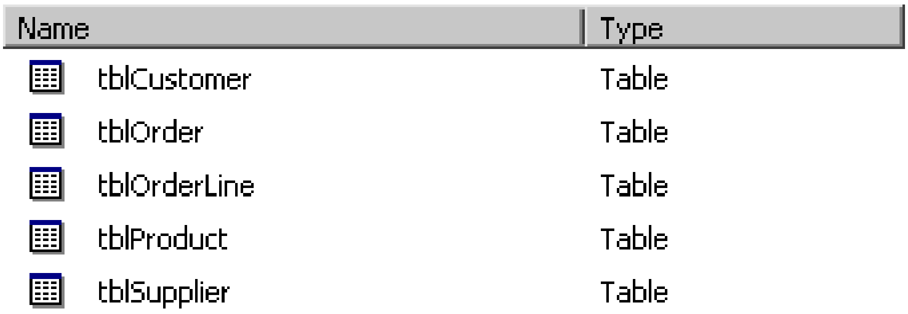
Using Microsoft Access a database providing stock control and ordering facilities, which could be used by a small/medium sized organisation, has been developed. The attached .mdb file has been created with **Access 2000**. This is the accompanying report for “Fruitcorner’s Stock and Ordering System”. First described will be the applications development, extra features and their functionality in a “Technical Guide”. Criticism and comments will be made when each function/feature is discussed.

Finally, the report will conclude with a critical appraisal of the system as a whole, as submitted.

Technical Guide

Data Structures

Data tables have been taken over as completed in the lab sessions. The fields contained by each table with a sample record (there are many more in the database) are given below. A Supplier table has been added to accommodate supplier details. Notice that the fields tblOrder.Shipping and tblProduct.SupplierNo are new. The first has been added to prevent the editing/deletion of shipped orders and the second links supplier to specific products, which is used when reordering new fruit.



Name	Type
tblCustomer	Table
tblOrder	Table
tblOrderLine	Table
tblProduct	Table
tblSupplier	Table

tblCustomer

CustomerNo	Surname	Forename	Address	Postcode	Phone
2	Hauptmann	Herr	2. PzBatl 203, Ostenschlahstrasse 67	SW1 3GH	(987) 233-421

tblOrder

OrderNo	CustomerNo	OrderDate	DeliveryDate	Shipping
4	2	09-Jun-04	16-Jun-04	TRUE

tblOrderLine

OrderNo	**ProductNo**	ProductPrice	QuantityOrdered
4	5	£6.00	1
4	8	£7.00	3

tblProduct

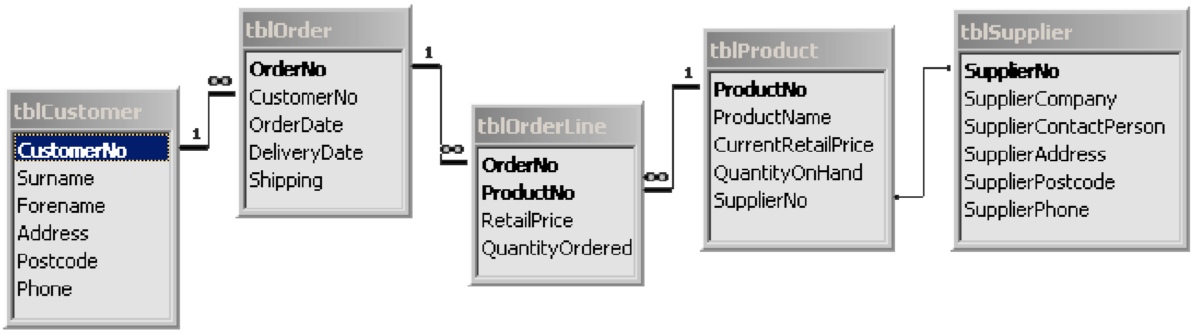
ProductNo	ProductName	CurrentRetailPrice	QuantityOnHand	SupplierNo
5	Pineapple	£6.00	120	2
8	Peach	£7.00	116	4

tblSupplier

SupplierNo	SupplierCompany	SupplierContactPerson	SupplierAddress	SupplierPostcode	SupplierPhone
2	Chiquita	Carl Lindener	Cincinatti Road 23, Seattle, USA	CH11 2CH	(343) 434-3434
4	Fyffes	John Geest	Green Leaf Avenue 65, Belfast, Ireland	IR43 4JH	(656) 565-6565

Relationship Model

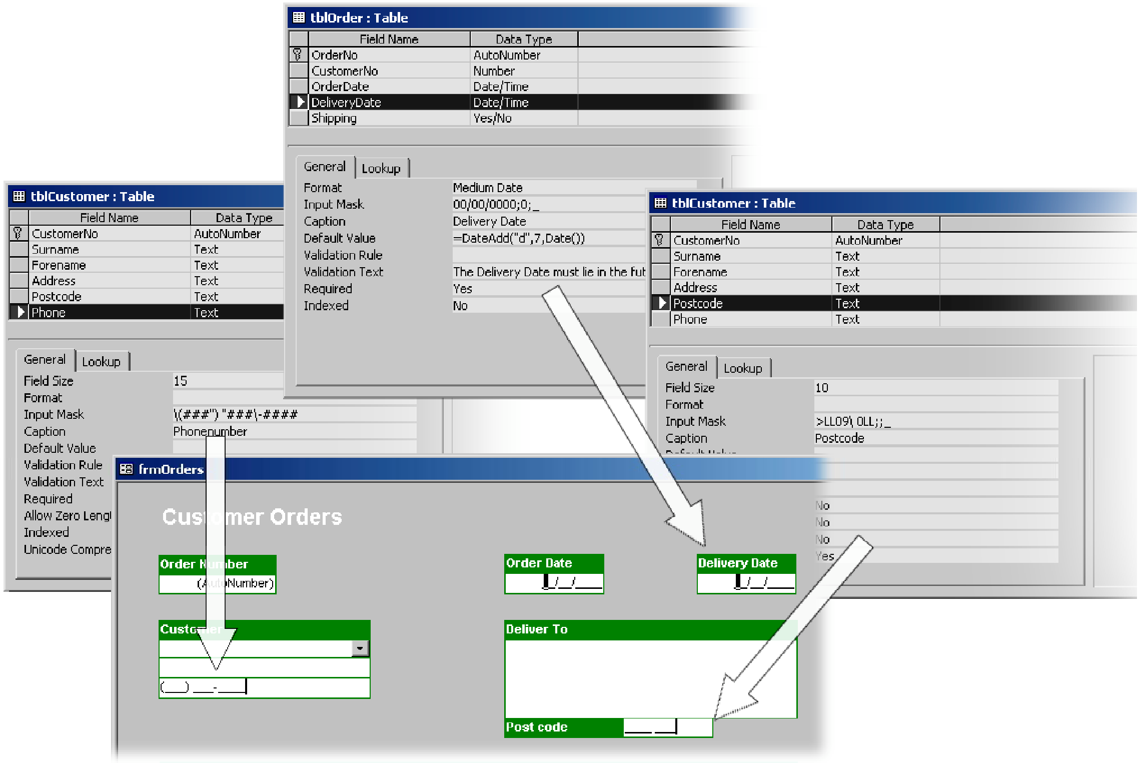
The relationships have been set up and extended by a link to Suppliers. To simplify, it is assumed that a fruit is obtained from a single Supplier every time, i.e. there is a single supplier of a particular fruit.



Extra Features & Functions

Data Validation

Several attempts have been made to facilitate data entry and to reduce the danger of false entries. For example, data entry into the phone field has been enhanced by creating an input mask (`\###”)”###\-####`) which puts phone numbers into a specific uniform format with no additional user input (brackets and stroke are given) and also forces a numerical input (#).
The postcode format has been ensured with the following input mask “`>LL09\ 0LL;;_`”. This allows inputs such as KT1 2AJ as well as KT22 2AJ. Of course the phone and postcode entries will be valid only in the UK, but not for international addresses. Given that this database is for a small organisation this might be feasible, but would require alteration should international operation be desired.
Similarly, correct input of dates is enforced by providing an `00/00/0000;0;_` input mask which requires numericals.



tblOrder : Table

	Field Name	Data Type
	OrderNo	AutoNumber
	CustomerNo	Number
	OrderDate	Date/Time
	DeliveryDate	Date/Time
	Shipping	Yes/No

General | Lookup

Format	Medium Date
Input Mask	00/00/0000;0;_
Caption	Delivery Date
Default Value	=DateAdd("d",7,Date())
Validation Rule	
Validation Text	The Delivery Date must lie in the fut
Required	Yes
Indexed	No

tblCustomer : Table

	Field Name	Data Type
	CustomerNo	AutoNumber
	Surname	Text
	Forename	Text
	Address	Text
	Postcode	Text
	Phone	Text

General | Lookup

Field Size	15
Format	
Input Mask	\(###") "###\-####
Caption	Phonenumber
Default Value	
Validation Rule	
Validation Text	
Required	
Allow Zero Lengt	
Indexed	
Unicode Compre	

tblCustomer : Table

	Field Name	Data Type
	CustomerNo	AutoNumber
	Surname	Text
	Forename	Text
	Address	Text
	Postcode	Text
	Phone	Text

General | Lookup

Field Size	10
Format	
Input Mask	>LL09\ 0LL;;_
Caption	Postcode
	No
	No
	No
	Yes

frmOrders

Customer Orders

Order Number: (AutoNumber)

Order Date: __/__/____

Delivery Date: __/__/____

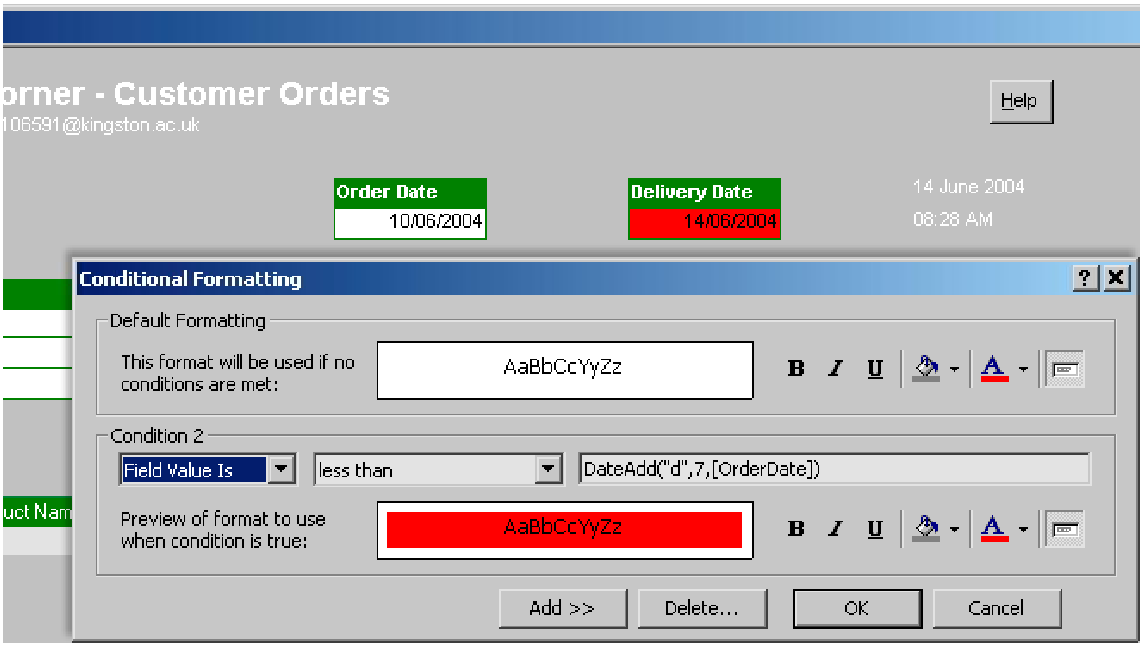
Customer: (___) ___-____

Deliver To

Post code: ___ ___

Critical fields (i.e. OrderDate, DeliveryDate, Surname, etc) have been set as “Required” so that they cannot be left blank. The previous improvements have been made using the Access help (F1).

While the OrderDate is set to the current date (`Date()`) when a new record is entered, the delivery date is unlikely to happen on the same day. Therefore, the DeliveryDate will automatically be set seven days in the future with the following expression (`=DateAdd(“d”,7,[OrderDate]`) as the default value of that field. If this seven day delivery period is shortened by the user, (i.e. any delivery dates that are less than seven days away from the OrderDate) the delivery field is highlighted in red (urgent) via conditional formatting, see below. Using `Date()` instead of the `[Orderdate]` field would highlight orders that are due seven days from today regardless when the order was created.



Order Date 10/06/2004

Delivery Date 14/06/2004

14 June 2004
08:28 AM

Conditional Formatting

Default Formatting

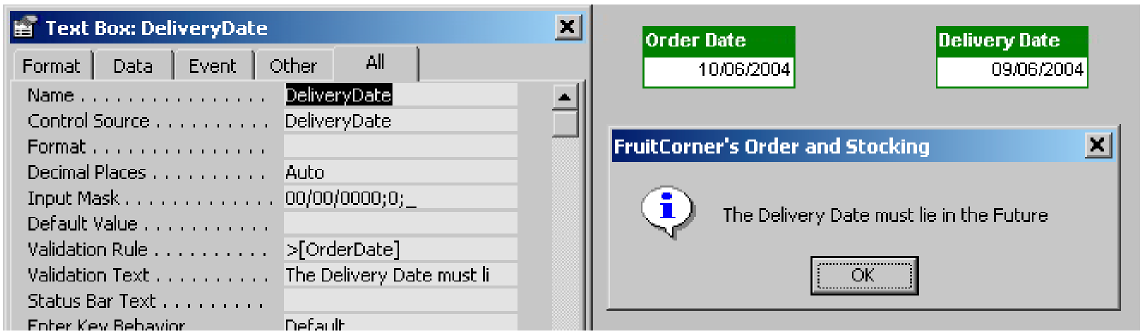
This format will be used if no conditions are met: AaBbCcYyZz

Condition 2

Field Value Is | less than | DateAdd("d",7,[OrderDate])

Preview of format to use when condition is true: AaBbCcYyZz

A validation rule has been put in place to disallow past delivery dates, or rather dates before the Order date, which would be illogical. The validation rule ensures that the Delivery Date is set after the Order Date (`>[OrderDate]`). If not, a message popup box alerts the user to do so.



Name	DeliveryDate
Control Source	DeliveryDate
Format	
Decimal Places	Auto
Input Mask	00/00/0000;0;_
Default Value	
Validation Rule	>[OrderDate]
Validation Text	The Delivery Date must li
Status Bar Text	
Enter Key Behavior	Default

Order Date 10/06/2004

Delivery Date 09/06/2004

FruitCorner's Order and Stocking

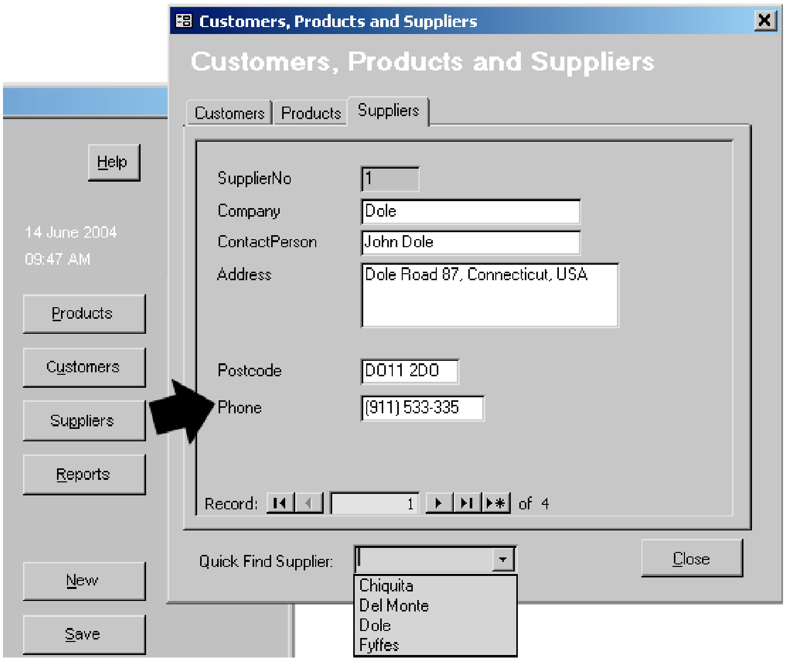
The Delivery Date must lie in the Future

Several methods to simplify user input and to prevent false entries have been deployed. It seems that the opportunities for these measures are almost endless, but the most relevant and important ones have been tried to be implemented here.

Supplier Details

As required Supplier details have been implemented as fully as possible. A new supplier button has been introduced on the main orderform interface.
VBA Code behind the Supplier button on the Order Form to focus on the Supplier tab (with an empty data set, ready for entry, focus set on the company field):

```
Private Sub cmdSuppliers_Click()
On Error GoTo Err_cmdSuppliers_Click

    DoCmd.OpenForm "frmCustomersAndProducts"

    Forms!frmCustomersAndProducts!pgSuppliers.SetFocus
    Forms!frmCustomersAndProducts!subSuppliers.SetFocus
    DoCmd.GoToRecord , , acNewRec
    Forms!frmCustomersAndProducts!subSuppliers!txtSupplierCompany.SetFocus

Exit_cmdSuppliers_Click:
    Exit Sub

Err_cmdSuppliers_Click:
    MsgBox Err.Description
    Resume Exit_cmdSuppliers_Click
End Sub
```



SupplierNo 1
Company Dole
ContactPerson John Dole
Address Dole Road 87, Connecticut, USA
Postcode D011 2D0
Phone (911) 533-335
Record: 1 of 4

Quick Find Supplier:
Chiquita
Del Monte
Dole
Fyffes

Supplier Quick Find Combo Box AfterUpdate added Code:

```
Private Sub cboFindSupplier_AfterUpdate()

    Me!subSuppliers.SetFocus

    Me!subSuppliers!txtSupplierNo.Enabled = True
    Me!subSuppliers!txtSupplierNo.Locked = False

    Me!subSuppliers!txtSupplierNo.SetFocus
    DoCmd.FindRecord Me!cboFindSupplier
    Me!subSuppliers!txtSupplierCompany.SetFocus

    Me!subSuppliers!txtSupplierNo.Enabled = False
    Me!subSuppliers!txtSupplierNo.Locked = True

End Sub
```

Supplier Combobox Rowsource: `SELECT tblSupplier.SupplierNo, tblSupplier.SupplierCompany FROM tblSupplier ORDER BY tblSupplier.SupplierCompany`;

Modified OnChange Event of tabCustomersAndProducts (to hide/unhide the QuickFind combo boxes):

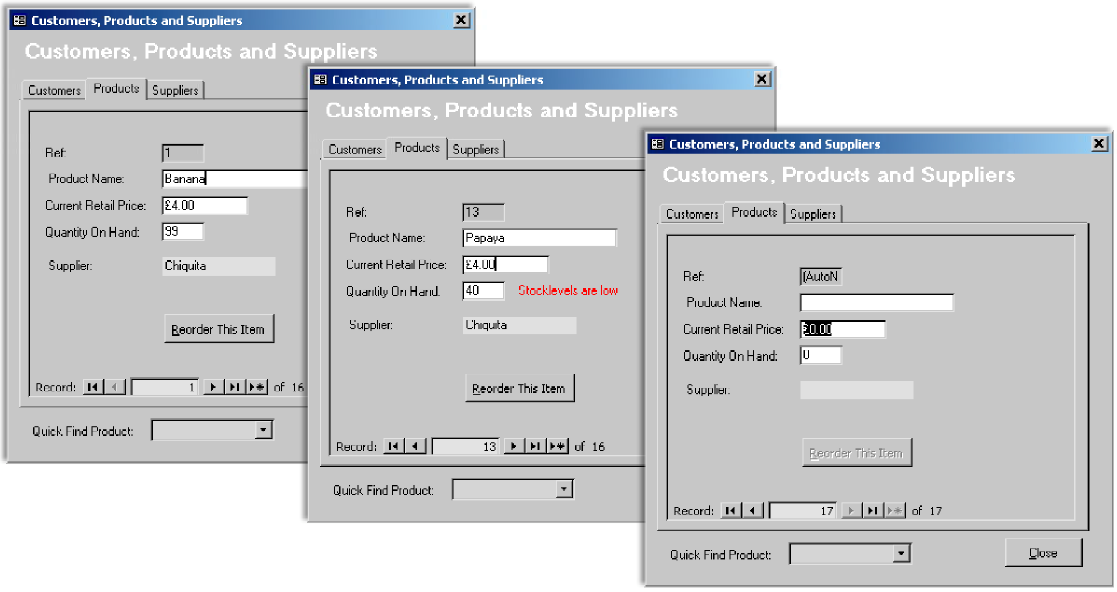
```
Private Sub tabCustomersAndProducts_Change()
    Select Case tabCustomersAndProducts.Value
        Case 0
            Me!cboFindCustomer.Visible = True
            Me!cboFindProduct.Visible = False
            Me!cboFindSupplier.Visible = False
        Case 1
            Me!cboFindCustomer.Visible = False
            Me!cboFindProduct.Visible = True
            Me!cboFindSupplier.Visible = False
        Case 2
            Me!cboFindCustomer.Visible = False
            Me!cboFindProduct.Visible = False
            Me!cboFindSupplier.Visible = True
    End Select
End Sub
```

The reports menu now also allows producing a supplier list in the same style as the customer list.

Suppliers have also been linked to specific products. As mentioned earlier a new field on the products table links a specific fruit to a certain supplier. This supplier is now displayed on the Products tab (left picture): (ControlSource `=DLookUp("[SupplierCompany]","[tblSupplier]","[SupplierNo]=[txtSupplierNo]")`).

In addition, once stock levels for a fruit fall below 50 a red font warning “Stocklevels are low” appears behind the QuantityOnHand field (middle picture). This was achieved by using a short expression as the ControlSource: `=IIf([QuantityOnHand]<50,"Stocklevels are low","")`. The foreground of the field has been set to red.
A most basic reordering option has also been created. The “Reorder This Item” button creates a fruit-order-report for the current Fruit. Should currently no Fruit be selected (right example below), which is the case when the supplier dialog is called up from the frmOrder form then the reorder button is disabled, enabled by the VBA script below.

```
Private Sub Form_Current()
        'DoCmd.Requery [txtProductName]

        If IsNull(txtProductName) Then
        cmdReorderFruit.Enabled = False

        Else
        cmdReorderFruit.Enabled = True

        End If
End Sub
```



Customers, Products and Suppliers

Ref: 1
Product Name: Banana
Current Retail Price: £4.00
Quantity On Hand: 99
Supplier: Chiquita
Record: 1 of 16

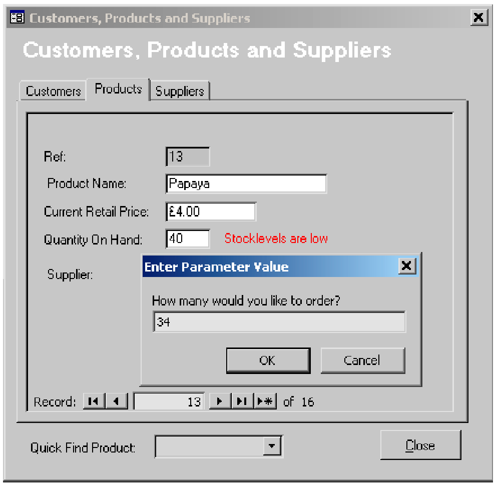
Customers, Products and Suppliers

Ref: 13
Product Name: Papaya
Current Retail Price: £4.00
Quantity On Hand: 40 Stocklevels are low
Supplier: Chiquita
Record: 13 of 16

Customers, Products and Suppliers

Ref: (AutoN
Product Name:
Current Retail Price: £0.00
Quantity On Hand: 0
Supplier:
Record: 17 of 17

Creating a fruit order is simple. Upon clicking the button the user is asked to specify the quantity. Then a report is created which automatically fills in the correct supplier in the address field and puts down the Productname, ProductNo and desired quantity. This Order could then be printed and send of via mail or (preferably) sent directly via email, EDI, extranet to the supplier. Unfortunately this function currently only allows a single fruit to be ordered. This is not very realistic and needs improvement.



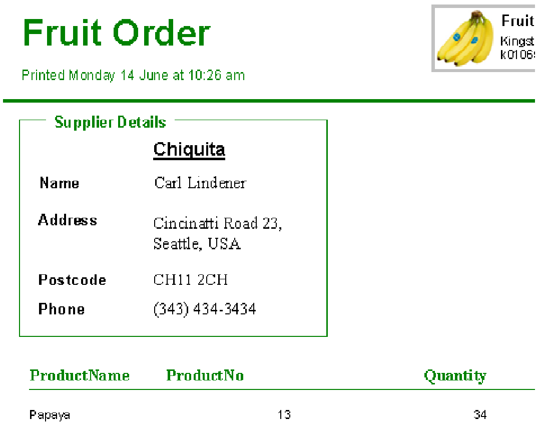
Customers, Products and Suppliers

Ref: 13
Product Name: Papaya
Current Retail Price: £4.00
Quantity On Hand: 40 Stocklevels are low
Supplier:

Enter Parameter Value

How many would you like to order?
34

Record: 13 of 16



Fruit Order

Printed Monday 14 June at 10:26 am

Supplier Details

Chiquita

Name Carl Lindener

Address Cincinatti Road 23,
Seattle, USA

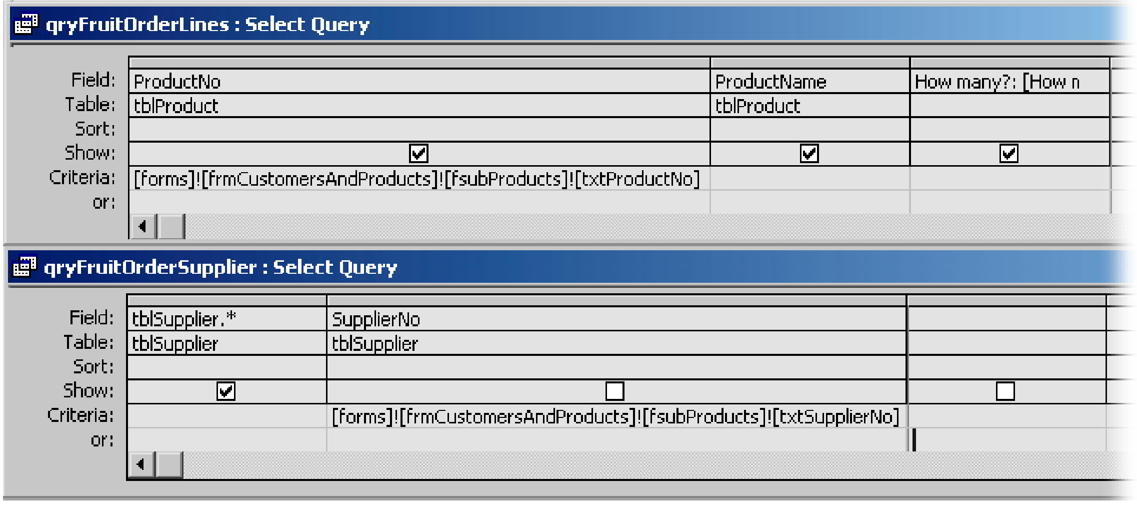
Postcode CH11 2CH

Phone (343) 434-3434

ProductName	ProductNo	Quantity
Papaya	13	34

Fruit
Kingst
k0106

The Fruit Order is fed by two queries (similarly to the Customer Invoice):



qryFruitOrderLines : Select Query

Field:	ProductNo	ProductName	How many?: [How n
Table:	tblProduct	tblProduct	
Sort:			
Show:	☑	☑	☑
Criteria:	[forms]![frmCustomersAndProducts]![fsubProducts]![txtProductNo]		
or:			

qryFruitOrderSupplier : Select Query

Field:	tblSupplier.*	SupplierNo	
Table:	tblSupplier	tblSupplier	
Sort:			
Show:	☑	□	□
Criteria:		[forms]![frmCustomersAndProducts]![fsubProducts]![txtSupplierNo]	
or:			

It captures values directly from the form and from the tables. The top one collects the Product details and asks for the order quantity. The bottom one collects the supplier address, based on the selected product.
When the reorder button is clicked the supplier form is closed. Previously, formcontent to be displayed in reports was held by a public function.

```
Public Function getMatchText()
    getMatchText = MatchText
End Function
```

For this fruit order report it has been found possible to circumvene this process by placing the closing command *behind* the opening of the fruitorder. While the public function might be more elegant, the author has found it easier this way, clearly this is because of a lack of experience.

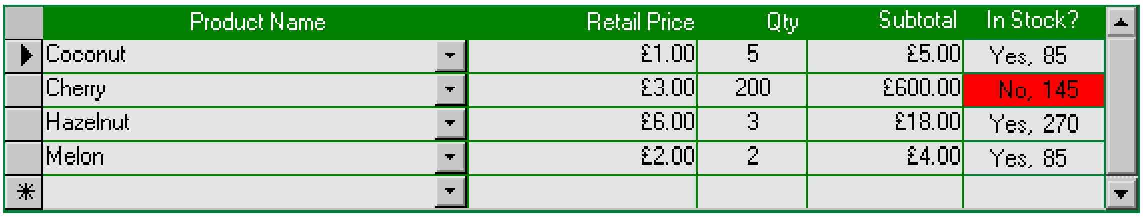
Code behind the “Reorder This Product” button:

```
Private Sub cmdReorderFruit_Click()
On Error GoTo Err_cmdReorderFruit_Click

    Dim stDocName As String
    Dim stFormName As String

    stDocName = "rptFruitOrder"
    stFormName = "frmCustomersAndProducts"

    DoCmd.OpenReport stDocName, acPreview

    DoCmd.Close acForm, stFormName, acSaveNo
    DoCmd.SelectObject acReport, stDocName, Yes

Exit_cmdReorderFruit_Click:
    Exit Sub

Err_cmdReorderFruit_Click:
    MsgBox Err.Description
    Resume Exit_cmdReorderFruit_Click

End Sub
```

The report is opened (collecting the input from the form while it is still open), the form is closed and the report is selected (previously is was hidden behind the frmOrder form).

Stock Control

For a company such as a fruit distributor stock inventory monitoring is vital. To provide the user taking the order with this information the OrderLine subform has been modified. An additional column now shows if sufficient items are in stock (Yes/No) and the exact QuantityOnHand. A negative indication will color the field background red to alert the user.

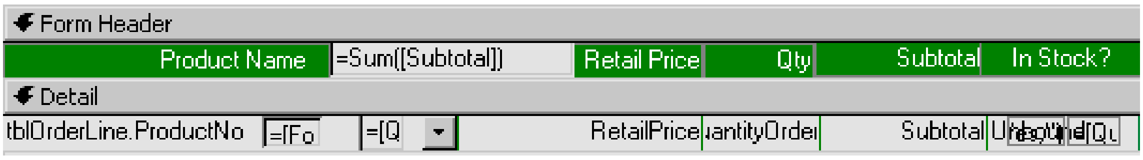


	Product Name	Retail Price	Qty	Subtotal	In Stock?
▶	Coconut	£1.00	5	£5.00	Yes, 85
	Cherry	£3.00	200	£600.00	No, 145
	Hazelnut	£6.00	3	£18.00	Yes, 270
	Melon	£2.00	2	£4.00	Yes, 85
✳					

Being one of the first new features to be implemented the method to achieve this is ugly and tedious.

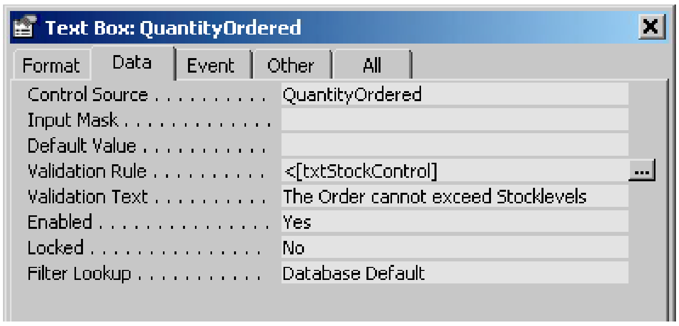
An invisible field has been placed on each orderline (`=[QuantityOnHand]-[QuantityOrdered]`). The InStock? control is actually made up from three fields: One returning Yes/No, one returning the stocklevel and one providing the background colouring.

Should the invisible field contain a negative value the first field will display “No,” (Control Source= `IIf([txtStockAvailable]<0,"No,","Yes,")`). The second field simply shows the stock level looking it up in tblProducts (`=[QuantityOnHand]`). These two fields have been made transparent. Using conditional formatting the third field will change its background colour to red if `[QuantityOnHand]-[QuantityOrdered]<1`.



A VBA solution should be preferred and has certainly been attempted…but frustration has led to this solution. Unfortunately, the current method does not disallow an order that is larger than the stock present. However, the stocklevels (in the tblProduct table) will be updated upon save (as shown later), so that the stocklevel would have to become negative. But negative stocklevels are not allowed by the validation rules, so that saving such an order returns an error message to the user and disallows saving.

Nonetheless, the red warnings are not easy to miss.

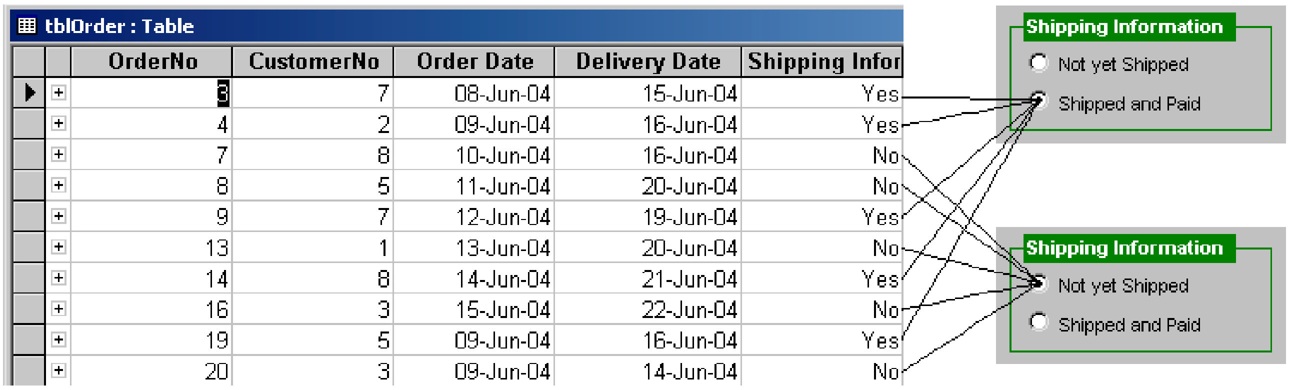


Control Source	QuantityOrdered
Input Mask	
Default Value	
Validation Rule	<[txtStockControl]
Validation Text	The Order cannot exceed Stocklevels
Enabled	Yes
Locked	No
Filter Lookup	Database Default

One way to prevent an order that exceeds the actual stock level would be to include a validation rule. The OrderQuantity field would have to be less than the actual stocklevel (shown in `[txtStockControl]`). This method has been found *after* the previous had been implemented. All the colour coding would be rendered obsolete.

Deletion/Editing Protection

An order that has been shipped should not be editable and not be deleteable. To add this functionality an option group has been added to the order form (bottom left). It allows two states “Shipped” and “Not Shipped”. This is also the dialog that is controlled by the new field in the tblOrder table. A selected “Shipped” option will appear as “Yes” in the Table, it can only have two values; Yes and No. However on the orderform these options have been locked. It will be set to yes if the Order is saved. At the same time all input fields will be disabled.



tblOrder : Table

	OrderNo	CustomerNo	Order Date	Delivery Date	Shipping Infor
▶ +	3	7	08-Jun-04	15-Jun-04	Yes
+	4	2	09-Jun-04	16-Jun-04	Yes
+	7	8	10-Jun-04	16-Jun-04	No
+	8	5	11-Jun-04	20-Jun-04	No
+	9	7	12-Jun-04	19-Jun-04	Yes
+	13	1	13-Jun-04	20-Jun-04	No
+	14	8	14-Jun-04	21-Jun-04	Yes
+	16	3	15-Jun-04	22-Jun-04	No
+	19	5	09-Jun-04	16-Jun-04	Yes
+	20	3	09-Jun-04	14-Jun-04	No

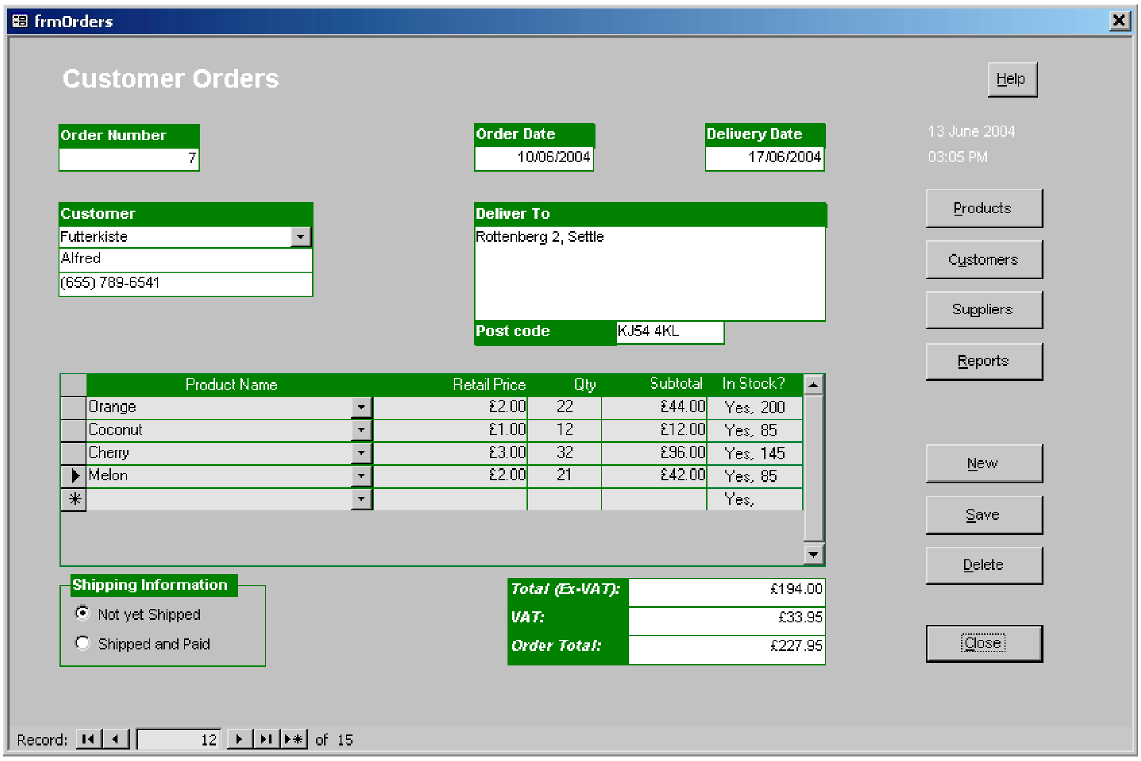
Shipping Information
○ Not yet Shipped
● Shipped and Paid

Shipping Information
● Not yet Shipped
○ Shipped and Paid

Code behind the cmdSave button:

```
Private Sub cmdSave_Click()
    If OrderNo > 0 Then
        DoCmd.OpenQuery "qryStockUpdate"
        Shipping = -1
        Forms!frmOrders!fsubOrderLines!subShipping.Requery
    Else
       MsgBox "The Order has no been filled out completely.
       Please ensure that all necessary fields are filled in", vbOK
    End If

End Sub
```

Before order has been saved:



frmOrders

Customer Orders

Order Number: 7

Order Date: 10/06/2004

Delivery Date: 17/06/2004

13 June 2004
03:05 PM

Customer: Futterkiste
Alfred
(655) 789-6541

Deliver To: Rottenberg 2, Settle

Post code: KJ54 4KL

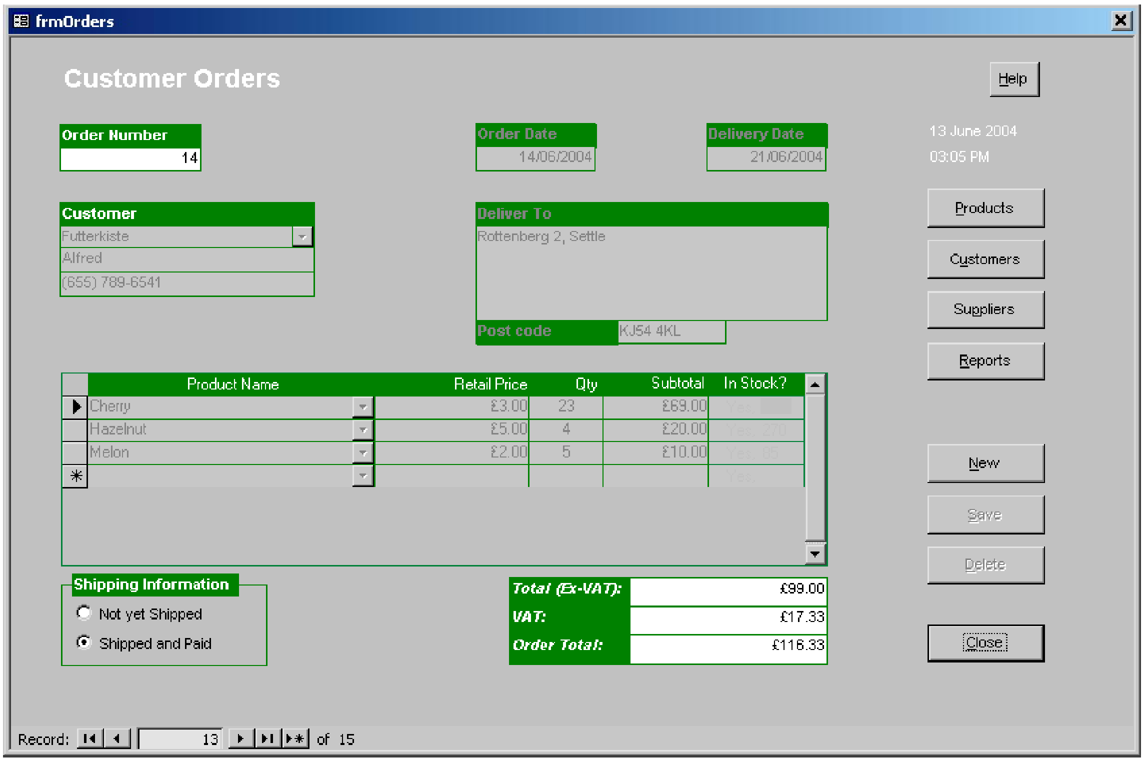
	Product Name	Retail Price	Qty	Subtotal	In Stock?
	Orange	£2.00	22	£44.00	Yes, 200
	Coconut	£1.00	12	£12.00	Yes, 85
	Cherry	£3.00	32	£96.00	Yes, 145
▶	Melon	£2.00	21	£42.00	Yes, 85
*					Yes,

Shipping Information
● Not yet Shipped
○ Shipped and Paid

Total (Ex-VAT):	£194.00
VAT:	£33.95
Order Total:	£227.95

Record: 12 of 15

After saving an order



Customer Orders

Order Number: 14

Order Date: 14/06/2004

Delivery Date: 21/06/2004

13 June 2004
03:05 PM

Customer: Futterkiste
Alfred
(655) 789-6541

Deliver To: Rottenberg 2, Settle

Post code: KJ54 4KL

Product Name	Retail Price	Qty	Subtotal	In Stock?
Cherry	£3.00	23	£69.00	Yes,
Hazelnut	£5.00	4	£20.00	Yes, 270
Melon	£2.00	5	£10.00	Yes, 85
				Yes,

Shipping Information
○ Not yet Shipped
● Shipped and Paid

Total (Ex-VAT):	£99.00
VAT:	£17.33
Order Total:	£116.33

The save button also includes a primitive check for a completed form; The ordernumber must be larger than zero. The "Null" or "IsEmpty" statements could not be made to work for this purpose (?). Unfortunately, this still allows to save an order where no products have been entered. Ideally the check should include all fields (address, name, etc). Although, certain fields will demand entry, because their properties have been set to "required" in the table and form settings.

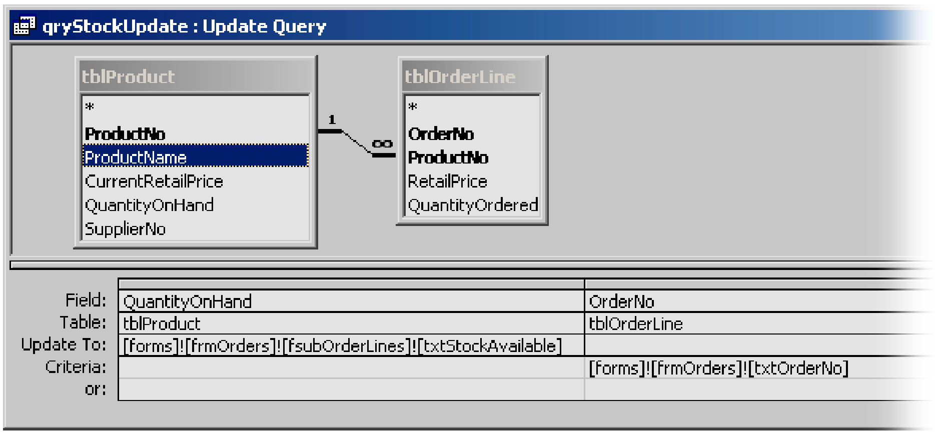
On Current Property of the Order Form

```
Private Sub Form_Current()

    If Shipping = -1 Then
        cmdSave.Enabled = False
        cmdDelete.Enabled = False
    Else
        cmdSave.Enabled = True
        cmdDelete.Enabled = True
    End If

End Sub
```

After Update code of the Shipping option group:

```
Private Sub Shipping_AfterUpdate()

    Forms!frmOrders!fsubOrderLines!subShipping.Requery

End Sub
```

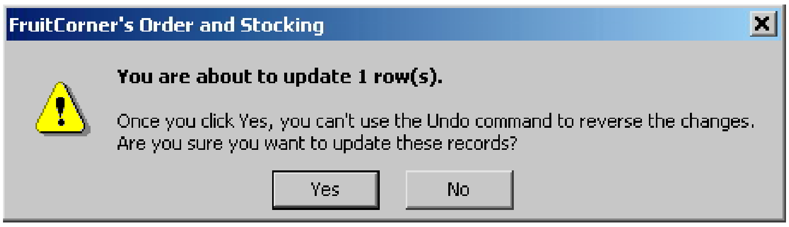
This is necessary to update the field in the orderlines subform. It will lock the orderliness and disallow changes should the save button have been pressed (and therefore the shipping option set to "Yes").



qryStockUpdate : Update Query

Field:	QuantityOnHand	OrderNo
Table:	tblProduct	tblOrderLine
Update To:	[forms]![frmOrders]![fsubOrderLines]![txtStockAvailable]	
Criteria:		[forms]![frmOrders]![txtOrderNo]
or:		

Upon saving the Order, stocklevels are updated to the new levels. The annoying warning messages could not be eliminated because the author could not find the place where queries store these. Preferably, it should say the new stock levels of the following items are now at “xyz”, should one be below a certain threshold a reordering option should be offered and negative stocklevels should not be executeable.



FruitCorner's Order and Stocking

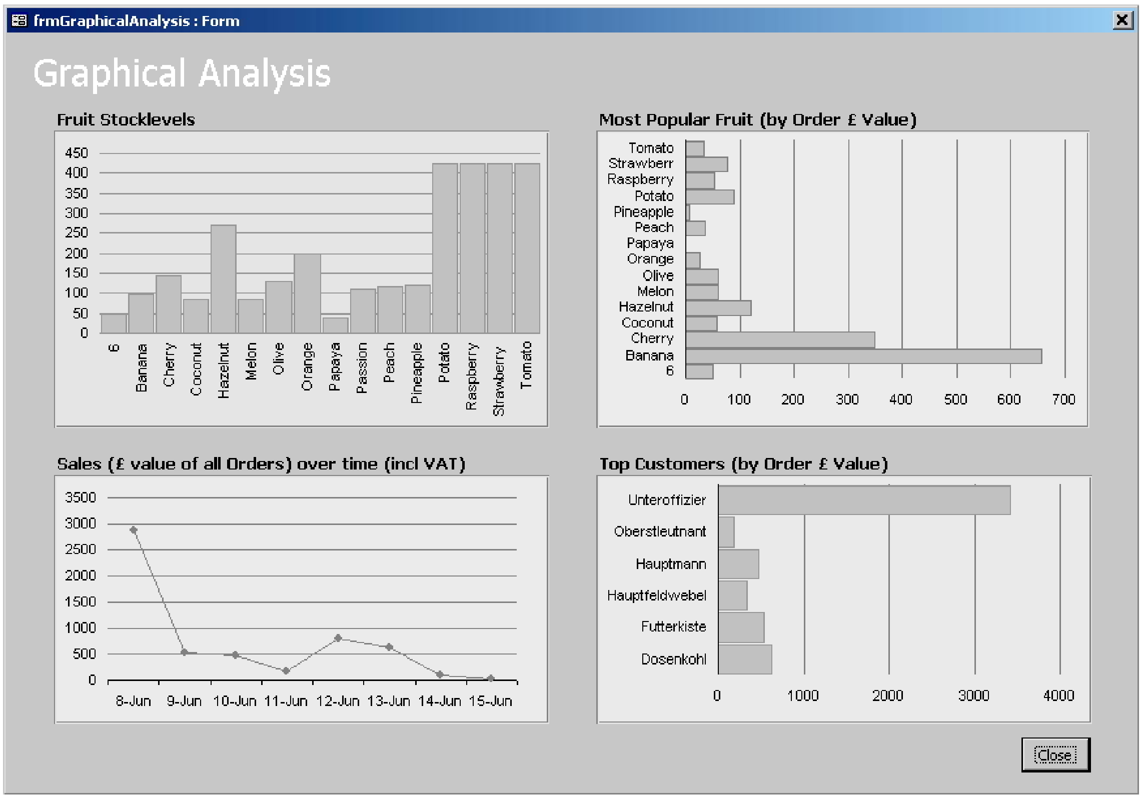
You are about to update 1 row(s).

Once you click Yes, you can't use the Undo command to reverse the changes.
Are you sure you want to update these records?

The problem of pressing “save” multiple times which would update the stocklevels several times has been addressed. Once “Save” has been pressed which sets “Shipping” to “Yes” (which cannot be change manually, because “locked”) the “Save” (& “Delete”) button will be disabled and therefore multiple update queries are not possible.

Graphical Analysis & Links with Excel

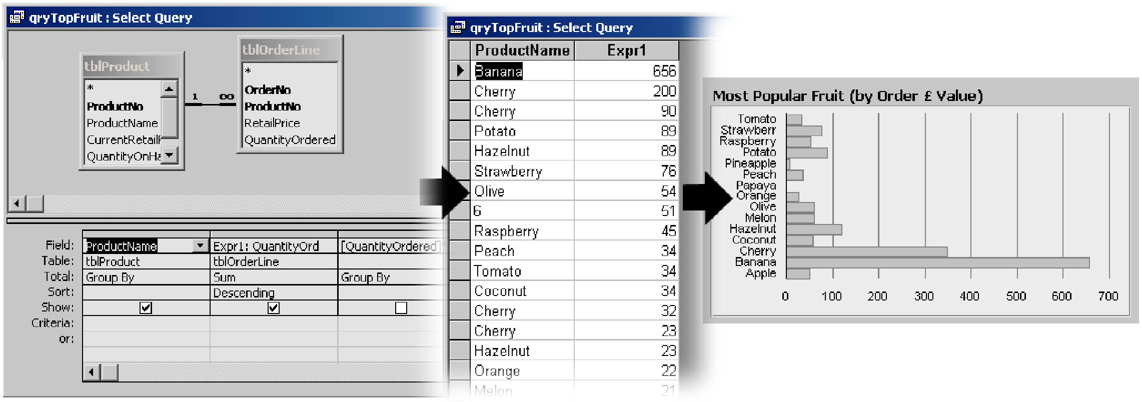
Access allows many links with other MS Office applications. Here a graphical representation of several key statistics has been attempted. The top-left graph simply shows the current stocklevels, it is fed directly by the tblProducts table. This is very useful because it very quickly shows which items have to be reordered. The top-right chart shows the most popular fruit, or the turn-over of each fruit. With Bananas and Cherries so popular they should be reordered immediately.



frmGraphicalAnalysis : Form

Graphical Analysis

While the Fruit Stocklevel chart was easy to create, all other tables required special queries to collect and display their data. These are shown in detail below.



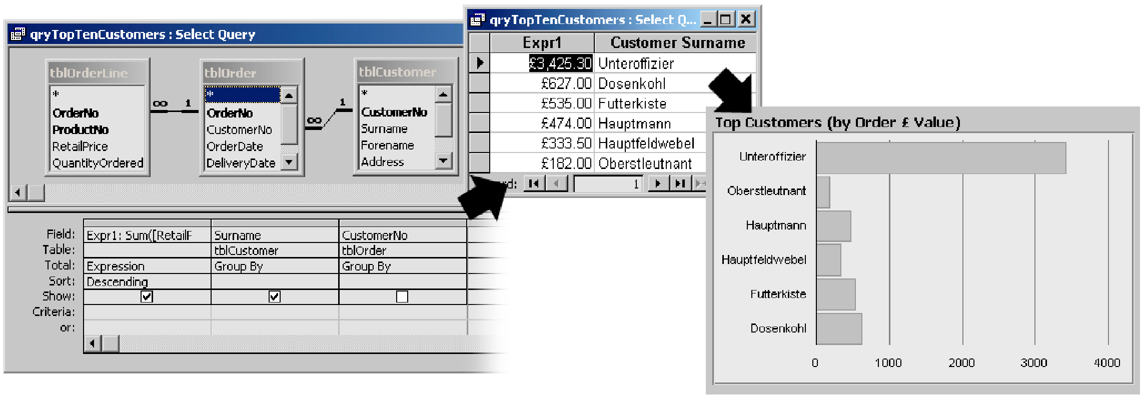
qryTopFruit : Select Query

Field:	ProductName	Expr1: QuantityOrd	[QuantityOrdered]*
Table:	tblProduct	tblOrderLine	
Total:	Group By	Sum	Group By
Sort:		Descending	
Show:	☑	☑	☐
Criteria:			
or:			

qryTopFruit : Select Query

ProductName	Expr1
Banana	656
Cherry	200
Cherry	90
Potato	89
Hazelnut	89
Strawberry	76
Olive	54
6	51
Raspberry	45
Peach	34
Tomato	34
Coconut	34
Cherry	32
Cherry	23
Hazelnut	23
Orange	22
Melon	21

Tracking the order value of individual customers can guide the organisation in determining which customers to give a discount and the size of it.



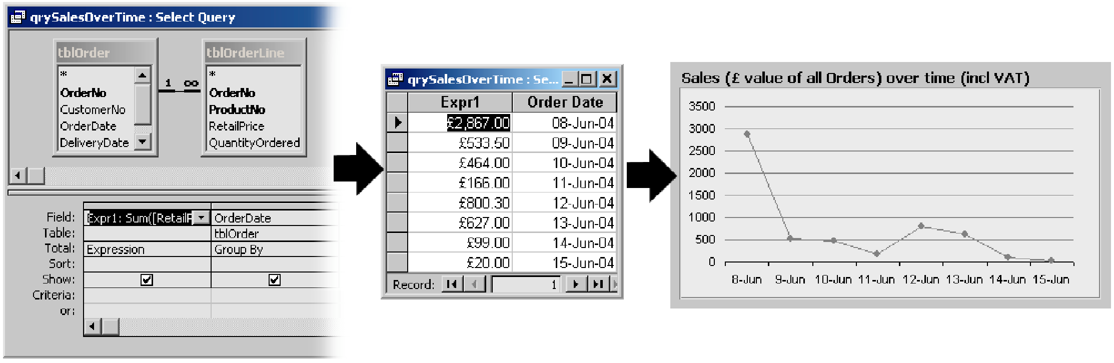
qryTopTenCustomers : Select Query

Field:	Expr1: Sum([RetailF	Surname	CustomerNo
Table:		tblCustomer	tblOrder
Total:	Expression	Group By	Group By
Sort:	Descending		
Show:	☑	☑	☐
Criteria:			
or:			

qryTopTenCustomers : Select Q...

Expr1	Customer Surname
£3,425.30	Unteroffizier
£627.00	Dosenkohl
£535.00	Futterkiste
£474.00	Hauptmann
£333.50	Hauptfeldwebel
£182.00	Oberstleutnant

Monitoring income is important for any organisation, a slightly larger timescale should be chosen (once operation has been in progress for long enough). Seasonal patterns can be detected and let the organisation have promotions in those periods/ for those products.



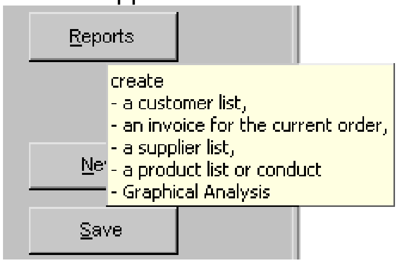
Field:	Expr1: Sum([RetailP	OrderDate
Table:		tblOrder
Total:	Expression	Group By
Sort:		
Show:	☑	☑
Criteria:		
or:		

Expr1	Order Date
£2,867.00	08-Jun-04
£533.50	09-Jun-04
£464.00	10-Jun-04
£166.00	11-Jun-04
£800.30	12-Jun-04
£627.00	13-Jun-04
£99.00	14-Jun-04
£20.00	15-Jun-04

Currently all queries show the data for the entire period of operation of Fruitcorner. It would be better to filter the data for several variables such as time, order above a certain value, the most popular fruit of certain customers, etc. Pivot tables offer this flexibility. Except FruitStocklevels, most of the charts offered here would benefit from a pivottable design.

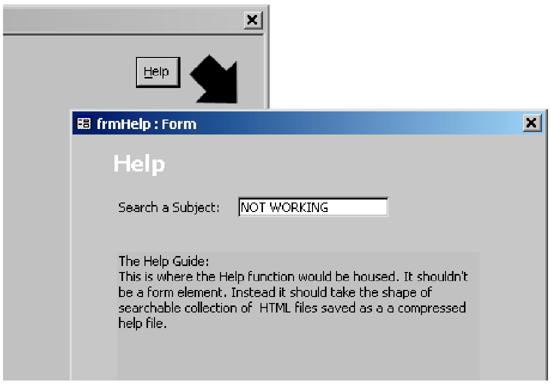
Help

A simple help function has been implemented via the ControlTip Text option provided by Access. Similar to the alt tag in HTML, a help text is displayed when the user rests his courser above an item for ~2 seconds. Here, the functions and options lying behind each button on the orderform are listed and explained. This method is preferred because user are likely to know this form of help from other Windows application or the internet.



create
- a customer list,
- an invoice for the current order,
- a supplier list,
- a product list or conduct
- Graphical Analysis

Larger application should utilize a context driven (like Access) help system, where upon pressing F1 the right help topic of a .chm or .hlp file is automatically brought up. Searching for topics is essential as well. A help button has been placed in the top right of the orderform, rather as a space holder for demonstration than as an actual working function. There is clearly room for improvement here.



Search a Subject: NOT WORKING

The Help Guide:
This is where the Help function would be housed. It shouldn't be a form element. Instead it should take the shape of searchable collection of HTML files saved as a a compressed help file.

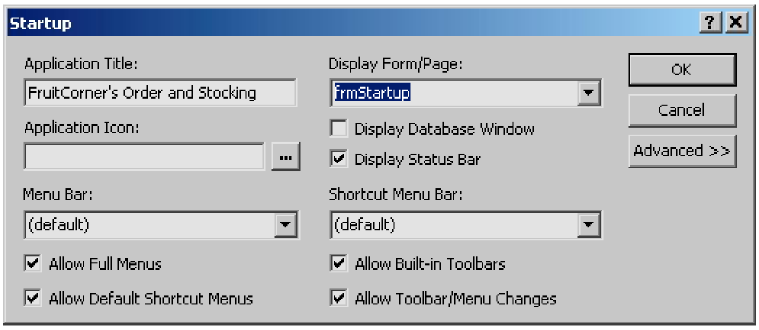
The best help is to make the whole application easy (intuitive) to use and making it impossible to make mistakes. Training cost and mistakes will be reduced, and many people are not willing to read any manuals. And thinner manuals will reduce production cost. But of course, creating such an application affords more time, research and experience.

Password System

A simple password was previously installed, but has been removed because of its annoying nature and little use. More appropriate would be the implementation of proper user-level security. This allows assigning specific rights to certain users and/or user groups (such as technical, sales, etc.).

Startup

A little “SplashScreen” is shown for 2 seconds when the database is opened:



Application Title: FruitCorner's Order and Stocking

Application Icon:

Display Form/Page: frmStartup

□ Display Database Window

☑ Display Status Bar

Menu Bar: (default)

Shortcut Menu Bar: (default)

☑ Allow Full Menus

☑ Allow Default Shortcut Menus

☑ Allow Built-in Toolbars

☑ Allow Toolbar/Menu Changes

```
Private Sub Form_Open(Cancel As Integer)

    ' Set the TimerInterval so the form will close
    ' after 2 seconds.
    Me.TimerInterval = 2000

End Sub
```

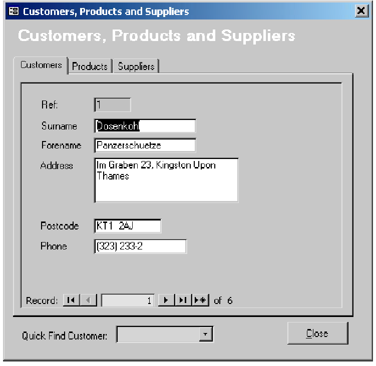
After two seconds the orderform is opened:

```
Private Sub Form_Timer()

    ' Reset the TimerInterval property.
    If Me.TimerInterval <> 0 Then
        Me.TimerInterval = 0
    End If

    ' Show the Startup form.
    DoCmd.OpenForm "frmOrders"
    DoCmd.Close acForm, "frmStartup"
End Sub
```

…and maximised. OnOpen of the main orderform:

```
Private Sub Form_Open(Cancel As Integer)

    DoCmd.GoToRecord , , acNewRec
    Forms!frmOrders!cboCustomerNo.SetFocus

    DoCmd.Maximize
End Sub
```

Another minor detail, which has been added, is the postcode field in the Customer tab.


Customers, Products and Suppliers
Customers, Products and Suppliers
Customers
Products
Suppliers
Close

Ref: 1

Surname: Dosenkohl

Forename: Panzerschuetze

Address: Im Graben 23, Kingston Upon Thames

Postcode: KT1 2AJ

Phone: (323) 233-2

Record: 1 of 6

Quick Find Customer:

Discussion

The improvements that have been made to the system have been outlined above. Some limitations and deficiencies have already been pointed out. The remaining part of the report should evaluate the current system and discuss further area of improvement.

First of all, the submitted system is by no means complete. Rather it represents a system constructed under time pressure. Hence features have been implemented in the sequence of priority with the most important features implemented first, and so on. This has

a) led to the most important functions being not as well implemented as if the assignment would be started from scratch again today, as experience was built up during the process, and
b) once a desired function was working, there was a considerable reluctance to look for further improvements, or to spend more time on this while more features were waiting to be implemented. Not the best, but the first-working solution was used.

A real system should be designed more systematic along certain guidelines (waterfall model, etc) and include planning, design, programming and testing.

The input masks facilitate input and limit input errors but at the same time limit the input to a certain format and therefore are only valid for UK data. If this is not acceptable then changes have to be made. A script could be devised which changes the input mask to a different pre defined country or a general non-UK mask if an input, which does not correspond to the default mask, is attempted.

Currently a fruit can only be bought from a single supplier. As mentioned previously this is unrealistic. The fruit reordering facility needs improvement to allow the ordering of several fruits at the same time.

A working stockcontrol system has been implemented. The user is well informed about the actual stocklevels and stocklevels are automatically updated. However, the possible area of human error could be reduced. Usage could be optimised by eliminating the unnecessary error and warning messages that couldn’t have been suppressed.

Having previously worked with SAP R/3 on a work placement, SAP handles the saved - no more editing function - similarly as implemented here. However this company then sent the order to the packaging department where goods were prepared for shipping. It was possible through a special procedure to change the order details if the goods were still in the packaging department or if packaging had not yet started. Of course in the submitted application “save” more or less equals a state of “having been sent”. The in-between stage of packaging is ignored, but this simplification might not be too great for a small organisation.

Tabbing has been tried to keep as logical as possible in all screens. Every button has been given the option to be operated via keyboard (alt+k) commands as well. The submitted application still has scope for more ‘intelligent’ formelements such as entering the customer number or order number directly so that the full customer or order details are brought up. An option for a different billing and delivery address are very common features and could be implemented by extending the customer table by a second address (and postcode) field which would capture this information. On the orderform the billing and delivery address could be arranged with a checkbox. If ticked it would display a second address box for the delivery, otherwise bill and delivery go to the same address.

Discount for large orders (e.g. >10.000 items) could be implemented automatically or alternatively a new table could save specific discount profiles which could then be assigned to different customers.

A company could easily update its online price lists by outputting its product list as an HTML document and then uploading this on their webserver. This process could be automated and repeated at set intervals if the ftp access details were stored in access.
As websites can be split up into HTML, CSS and JavaScript (etc.) files, the database can be split up into front-end and back-end files (Tools, Add-Ins, Database Splitter). There are several advantages of this. Changes are easier to make. In a multi-user environment each client can

have a copy of the interface on a thin-client pc and save to the same database and therefore reduce network traffic.

Unfortunately, because “getting things to work” has been set as the highest priority, the design (GUI) of the system has evolved very little. However for its purpose the system does seem to offer a workable interface. Given the currently limited functionality a switchboard would not offer an greater advantage. For a real application there might be different layouts for different departments and those will be loaded automatically when they log into the system.

The current system offers only the bare necessities, and is not as comfortable to use as it could be. It’s functions are also limited to orders and stockcontrol. The organisation would have to use different application for other tasks such as human resource management. SAP offers an *integrated* solution for each task, of course it also costs several hundred thousand dollars and business processes have to be changed if SAP is used. SAP ~~shouldn’t~~ cannot be used by small organisations, but can serve as a best-in-class benchmark when designing applications in Access. Access applications are limited to 256 users and this alone limits it to small organisations. Therefore a system such as the one submitted are for starting point small organisations, but would require considerable improvements in many areas, fitted to company needs, if it were actually to be used.

Bibliography

Harkins, Susan, et al. 1998. Using Mircosoft Access 97. Indiana, USA: Que, Macmillan Publishing.

Rowe, Dave. 2004. Lecture Handouts. Kingston University.

Several other books which I forget to note down.