



Structures and Links: Databases

Practical Notes

Contents

	1
Starting a New Database	3
Designing a New Database	4
Adding Records (Datasheet View)	5
Adding Records (Pasting from a spread sheet)	5
Adding Validation Rules	6
Presence Check	6
Restricted Choice	6
Length Check	7
Range Check	7
Adding a Picture Field	8
Creating a Form	9
Adding a Picture (to a Form)	10
Creating Queries (Searching)	11
Creating Queries (Calculations)	11
Creating Reports	13
Changing Report Layout	15
Counting Boolean (Yes/No) Fields	16
Creating a User Interface	17
Adding a Title	17
Inserting an Image	
Setting Switchboard as Start-up Form	
Adding Buttons	19
Creating Macros	21
Primary Key (Relational Databases)	22
Linking Tables (Relational Databases)	23

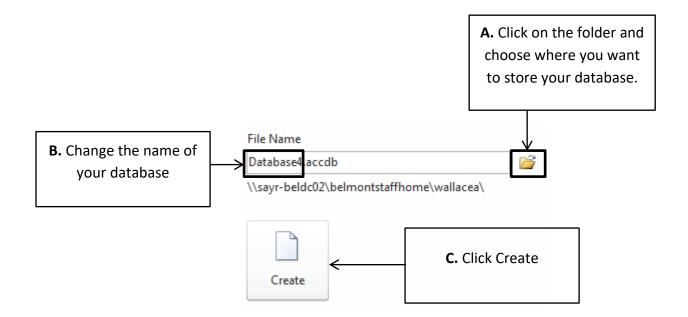
Starting a New Database

- 1. From the **Start** menu, open the **Microsoft Office** folder.
- 2. Choose Microsoft Access 2010



Blank database

- 3. Make sure Blank Database is highlighted
- 4. On the right hand side of the screen:



Designing a New Database

1. Click on the View option and select Design View



2. Give your new database table a *sensible name* then click **OK**.

Save As		? X
Table Name:		
Books		
	ОК	Cancel

3. Enter your field names and data types.

Type in your field	Choose the correct
names in the Field	data type from the
Name column.	Data Type column.

Fields can be re	emo	oved by right			Books	
clicking here an	nd s	electing Cut.			Field Name	Data Type
	P	Primary <u>K</u> ey		•	Title	Text
	¥	Cu <u>t</u>	\rightarrow	•	Quantity	Number
	b	<u>С</u> ору			Published	Date/Time
					Author	Text

4. When all fields have been added, click on the **View** option and select **Datasheet View**.



5. Click Yes to save your table.



Adding Records (Datasheet View)

In **datasheet view**, records can be added by simply typing the new details into the first available row (beside the *).

2	Title 👻	Quantity	-	Published 🚽	Author	Ŧ
	The Great Gatsby		53	10/04/1925	F. Scott Fitzgerald	
	Great Expectations		28	02/02/1861	Charles Dickens	
*						

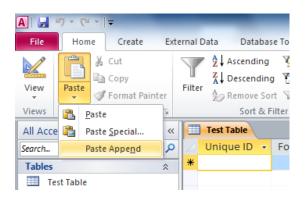
After you have finished entering a piece of information, it is **automatically saved** when you **exit the field**.

Adding Records (Pasting from a spread sheet)

Copy the record data from the spread sheet

[Do not include headings or blank rows, just the data you want to insert]

Go back to database and choose data sheet view.



Click on the first field in the first empty record and choose Paste Append.

Adding Validation Rules

- 1. Click on the View option and select Design View
- **2.** Click on the field to add a validation rule to.

	Books				
	Field Name	Data Type			
P	Title	Text			
	Quantity	Number			
	Published	Date/Time			
	Author	Text			
	Picture	OLE Object			
	Hardback	Number			
	Paperback	Number			
	Special Edition	Number			

Presence Check

1. In the General tab, set the **Required** option to **Yes**.

General Lookup	
Field Size	Long Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	Yes
Indexed	Yes
Smart Tags	No
Text Align	General

Restricted Choice

- 1. In the Lookup tab, set the **Display Control** option to **Combo Box**.
- 2. Set the Row Source Type option to Value List
- **3.** In the **Row Source** option, enter the values allowed (separated with a semi colon)
- 4. Set Limit To List to Yes

General Lookup	
Display Control	Combo Box
Row Source Type	Value List
Row Source	Red;Green;Blue;Yellow
Bound Column	1
Column Count	1
Column Heads	No
Column Widths	
List Rows	16
List Width	Auto
Limit To List	Yes
Allow Multiple Values	No
Allow Value List Edits	No
List Items Edit Form	
Show Only Row Source \	Yes

Length Check

1. In the General tab, enter a LEN formula into the **Validation Rule** option.

(See the examples of length check rules in the table below)

General Lookup	
Field Size	255
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	Len([Title])<10
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	Yes (No Duplicates)
Indexed Unicode Compression	Yes (No Duplicates) Yes
	· · · ·
Unicode Compression	Yes

LEN([ISBN]) =17	Check that the ISBN field is exactly 17 characters long
LEN([Author]) <=20	Check that the Author field contains 20 characters or fewer .
LEN([Title]) >10	Check that the Title field contains more than 10 characters

Range Check

1. In the General tab, enter a formula into the Validation Rule option.

(See the examples of range check rules in the table below)

General Lookup		
Field Size	Long Integer	
Format		
Decimal Places	Auto	
Input Mask		
Caption		
Default Value		
Validation Rule	>10 AND <20	
Validation Text		
Required	No	
Indexed	No	
Smart Tags		
Text Align	General	

>=10 AND <=20	Check that the value entered is between 10 and 20
<20	Check that the value entered is below 20
>50	Check that the value entered is above 50

Adding a Picture Field

- 1. Make sure you have already created a table (page 4). 🗸
- 2. In the All Access Objects section (left hand side), double click on your table.

All Access Objects	⊗ «
Search	٩
Tables	\$
Books	
Forms	*
Books	

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 File
 Home
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 View
 Text
 Number Cu

 Datasheet View
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 Design View
 S

A

3. Click on the View option and select Design View

4. Add a new field called **Picture** and select **OLE Object** as its *Data Type*.

Ħ	Books					
	Field Name Data Type					
	Title	Text				
	Quantity	Number				
	Published	Date/Time				
	Author	Text				
	Picture	OLE Object				

5. Click on the View option and select Datasheet View.

6. Click Yes to save your table.





Creating a Form

- 1. Make sure you have already created a table containing some fields (page 4) \checkmark
- 2. Click on the Create tab and choose Form.

Create	Extern	al Data	Datab	ase is ols	: De	sign	Arrange	Form
				8			Form Wiz	
Table Sh Design	arePoint Lists ▼	Query Wizard	Query Design	Form	Form Design	Blank Form	The Navigation Navigat	
Tables		Que	eries			Forms		

I.

3. Click on the **Save** icon **J** and give your form a name.

Save As		Y X
Form Name:		
Books		
	ОК	Cancel

4. You can switch between forms and tables on the left hand side of the screen.

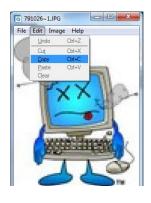
All Access Objects	⊗ «
Search	2
Tables	*
Books	
Forms	*
🖽 Books	

Adding a Picture (to a Form)

- 1. Make sure you have already created a table (page 4).
- 2. Make sure you have already created a picture field (page 8). \checkmark
- **3.** Make sure you have already created a **form** (page 9).
- 4. Find the picture file you want to include and right click on it.
- 5. Choose open with Picture Viewer

aken	Rating: 삶삶삶삶 Size: 15.0 K	E	7-Zip	Þ
	Microsoft Application Virtualization Client Tray		Open with	•
E	Microsoft Office 2010		Restore previous versions	
	Movie Maker		Send to	
I	Paint			
۲	Photo Gallery		Cut	
Q	PictureViewer		Сору	
	Mindow Made Casta			

6. From the Picture Viewer Edit menu, choose Copy.





7. Make sure your form is in Form View

8. In your database form, right click on the picture field and choose paste.

Creating Queries (Searching)

- 1. Make sure you have already created a table (page 4).
- 2. Click on the Create tab and choose Query Design.

	File Home Create External Data Stabase Tools Application Parts * Table SharePoint Design Users Users Users Form Form Templates Tables Tables Users Users Users Users Users	TestDB : Data
3.	Click Close without adding any tables	Show Table P Contract
4.	From the View menu, select SQL View	Datasheet View C SQL SQL View Design View

5. Type your query into the space provided.

Querys
SELECT [Title], [Quantity], [Author]
FROM Books
WHERE [Quantity] > 10;

6. Click on the **Run** button to view the results (check that they are correct).



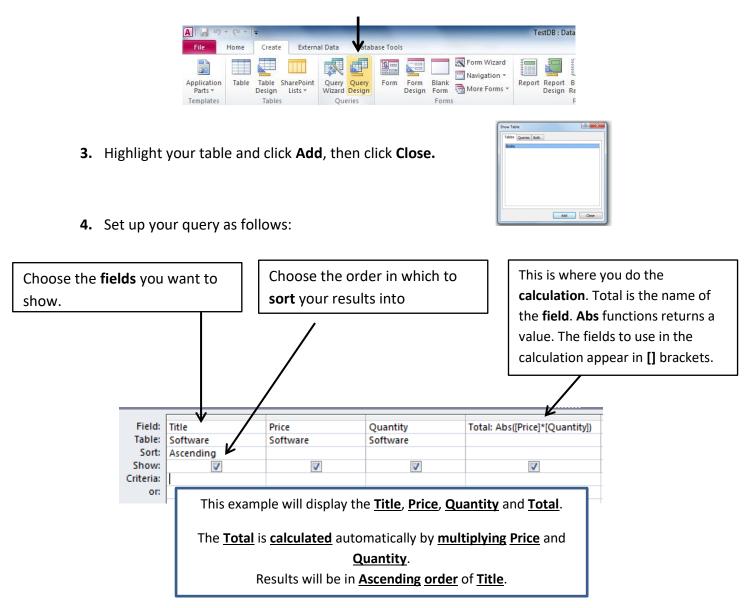
7. Click on the Save 🛛 🚽 👘 icon and give your query a

Save As		? <mark>x</mark>
Query Name:		
Over 28		
	ОК	Cancel

name.

Creating Queries (Calculations)

- 1. Make sure you have already created a table (page 4).
- 2. Click on the Create tab and choose Query Design.



5. Click on the **Run** button to view the results (check that they are correct).



ä

Click on the **Save** icon **J** and give your query a name.

Creating Reports

- 1. Make sure you have already created a table (page 4).
- 2. Click on the Create tab and choose Report Wizard.



- **3.** Choose the **table** or **query** you want to create the report from.
- Use the arrows to select the fields to be included in your report (double arrow selects all).

Report Wizard	
	Which fields do you want on your report? You can choose from more than one table or query.
Tables/Queries Table: Software Suppliers Table: Cd-roms Table: Software Suppliers	Fields:
SOFTWARE COMPANY Website PHONE NUMBER E-MAIL	←
Ca	ncel < Back <u>N</u> ext > <u>F</u> inish

- Click next twice then change the orientation to landscape (keep the layout as Tabular
- **6.** Click next and give your report a name, then click finish.

How would you like to lay out your report?		
-	Layout	Orientation
	Columnar	<u>Portrait</u>
	<u>Tabular</u>	Landscape
	Justified	
		A
	Adjust the field wi	ith so all fields fit on
	Adjust the field wight a page.	dth so all fields fit on
		ith so all fields fit on

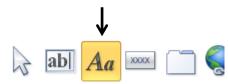
Changing Report Layout

1. Open the report you want to edit and click on **Design Layout**.

 The title can be changed by typing in the label in report header section.

3. Your name can be added by making space in the footer section by adjusting the width of the data label.

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SOFTWA	RE CON	NPAN	Y			W	/ebsi
	r						'
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=Now()			<+>	My N	lame		
E Papart Foo	tar						



Click on **label** and draw a label in the footer. You can then type your name into the label.

Software Suppliers1

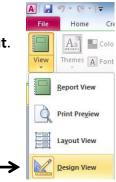
Report Header

Page Header

--1

4. You can adjust field widths and positions to allow everything to fit onto one page. - Check that all field boxes are big enough to completely fit the data.

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SOF	TWAR	E CO	MPAN	Y 🔶		W	ebsite						PHC
🗲 Detail	I i												
SOF	TWAR	E CO	MPAN	Y	•	W	ebsite/	2	1	ı	1	1	РНС
🗲 Page	Footer												



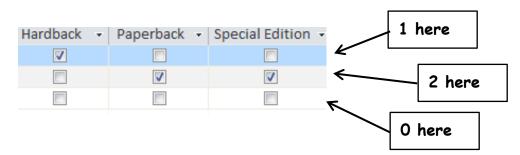
. . . 1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 .

Software Suppliers1

Counting Boolean (Yes/No) Fields

A calculated field can be used to count the number of checkboxes that have been checked for each record.

e.g.



A boolean **YES** (or checked) counts as **-1** and a boolean **NO** (not checked) counts as **0** using the following formula:

[Hardback]+[Paperback]+[Special Edition]

This would produce the following results:

Hardback	Ŧ	Paperback	Ŧ	Special Editi 👻	Total	*
V						-1
		V		V		-2
						0

To make a YES count a **1** instead of **-1** then the **Abs** (absolute) function should be used as follows:

Abs([Hardback]+[Paperback]+[Special Edition])

Creating a User Interface

1. Click on the Create tab and choose Blank Form.

								•	
						8			式 Form Wizard
		MMMM1		the of	Manager 1	1111	Margan P		🛅 Navigation 👻
Application	Table	Table	SharePoint	Query	Query	Form	Form	Blank	
Parts *		Design	Lists 🔻	Wizard	Design		Design	Form	🖶 More Forms 🔻

2. Click on the View option and select Design View



3. Click on the **Save** icon **and give your switchboard** form a name.

Form Name:			
Switchboard 1			
	_		
		OK	Cancel

Adding a Title

1. Select the Label tool from the Design menu



		Fo	rm Design To	ools	TestDB : Data	base (Acce	ess 2007) - Mic
Data Databa	ise Tools	Design	Arrange	Format			
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				Controls			
Over 28 🔳 I	Books \Xi	Books =	Form1				
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🗲 Detail					1		
	M	Book I	Databas	e			

- 2. Draw the label onto the blank form
- **3.** Type the title of your switchboard into the label.

Inserting an Image

1. Select the Image control from the Design menu

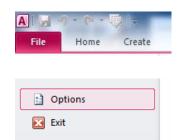


- 2. Draw the picture frame onto your form
- **3.** Select a picture from file and click **Open**.

					Form	Design	Tools		TestD	B : Data	base (Ac
Data	Datab	ase Too	ls	Desig	n	Arrange	F	ormat			
b A	a	× (9		XYZ	H	Ň	1	$\overline{\ }$
							Co	ntrols			
Over 2	18 🔳	Books		Books		Form1					
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							I				

Setting Switchboard as Start-up Form

1. From the File menu, choose **Options**.



2. In the Current Database section, change Display Form to your switchboard name.

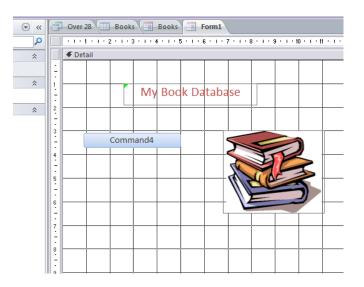
General	Options for the current database.	
Current Database		
Datasheet	Application Options	
Object Designers	Application Itle:	
Proofing	Application Icon: Browse	
	Use as Form and Report Icon	

Adding Buttons

1. Select the **Button** tool from the **Design** menu



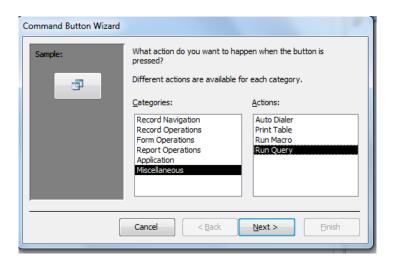
2. Draw the button onto your form



3. Next, choose the Category and Action to perform.

Mostly, you will be selecting the Miscellaneous category and either:

- Run Macro
- Run Query



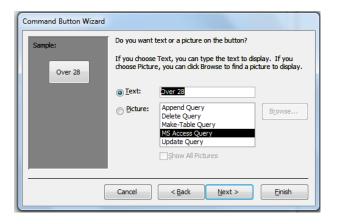
4. Click Next

5. Choose the query or macro from the list that you want to attach to the button.



6. Click Next

7. Select the **Text** option and type in the text you would like displayed on the button.



8. Click Next

9. Give the button a meaningful name

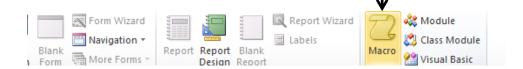


10. Click Finish

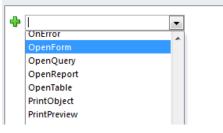
Creating Macros

Macros are attached to buttons (page 12). They are used to automatically carry out a task when the button is clicked.

1. Click on the Create tab and choose Macro.



2. From the first drop-down, choose OpenForm.



3. Under **Form Name**, select the form you would like to be opened.

OpenForm	
Form Nam	e
Viev	W Books
Filter Nam	e Switchboard 1
Where Conditio	n =
Data Mod	ie 🗌
Window Mod	e Normal

- OpenForm Form Name Required 4. Under Data Mode, choose Add or View Form Read Only. Filter Name Where Condition Data Mode Add will allow the user to add a Window Mode ۵dd new record Edit Read Only Add New Action Read Only will only allow the • user to view records.
- 5. Click on the Save icon 🛛 🚽 🖕 and give your macro a name.

Primary Key (Relational Databases)

Firstly, you must identify a field that will contain a unique entry for each record. This is the **Primary Key** field.

In this Books database, each book will have a **different name** so the **Title** field can be set as the key field.

- 1. Open the table in **Design View**.
- Right click on the field you want to set as a primary key field.
- 3. Choose Primary Key.

	Books		
\angle	F	ield Name	Data Type
	Title		Text
8	Primary <u>K</u> ey		Number
¥	Cu <u>t</u>		Date/Time
Þ	<u>С</u> ору		Text
	<u>P</u> aste		OLE Object
-	Insert Rows		
×	Delete Rows		
2	<u>P</u> roperties		

 A small key should now appear beside the selected field to indicate that it is a Primary Key.

Books	
Field Name	Data Type
Title	Text
Quantity	Number
Published	Date/Time
Author	Text
Picture	OLE Object
	Field Name Title Quantity Published Author

5. Click on the save icon to save your changes.

Note:

The primary key field must now be filled in for **every** record and each record must contain a **different** value in the field.

Linking Tables (Relational Databases)

Firstly you must identify the **primary key** in the main table and the **foreign key** in the other table.

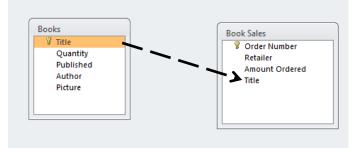
- **1.** Make sure the both tables are **not** currently open.
- 2. From the Database Tools section, choose Relationships.

A	- 🗊 -		TestDB : Dat
File Hom	e Create	External Data	Database Tools
Compact and Repair Database Tools	Visual Run Basic Macro Macro	Relationships Relationships	Object Dependencies
🤨 Security Wa	rning Some act	ive content has	been disabled. Click fo
All Access Obje	ects 💿	«	
Search		م	
Tables		*	
Book Sales	5		
Books			
Queries		*	
Over 28			

Show Table
Tables Queries Both
Book Sales Books
DUOKS
Add Close

3. Add **both** tables then click **Close**.

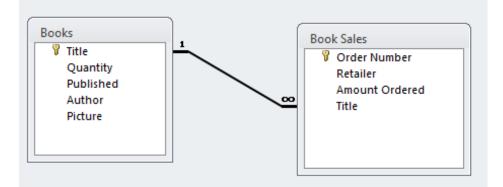
 Click on the primary key in the main table and drag your mouse over to the foreign key in the other table.



- 5. Tick the box to Enforce Referential Integrity.
- 6. Click Create.

Edit Relationships	teres and the second	? <mark>X</mark>
Table/Query: Books Title	Related Table/Query:	Create Cancel Join Type
Cascade Update Related Fields Cascade Delete Related Records Relationship Type: One-To-Many		Create New

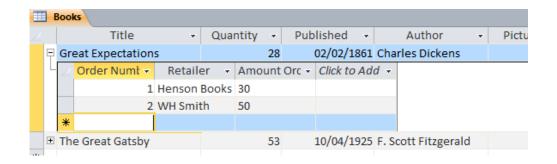
7. A line will now indicate the relationship between the tables (1 to Many).



Note:

The above example means that every **book** can have many **book sales**.

8. Click Save.



The main table will now have a + sign next to each record that links to corresponding records in the linked table.