

# Information Systems and Technology

IENG372 / MANE372

Access LAB

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# Introduction

In the course IENG372/MANE372 :

The concepts of **information** technology and their importance within the framework of **management** of organizations and the ability to **exploit** continuous innovations in order to stay competitive in business.

- Information Technology.
- Basic **data** information concepts.
- Appropriate theoretical concepts of decision making.
- Systems Analysis, Structured analysis methodologies.
- Information systems development methodologies.
- **Database** management.
- Decision support systems.
- Expert systems.

# Data and Information

- ❑ **Data** (plural for "**datum**" ) are simply **facts or figures** — bits of information, but not information itself.
- ❑ When data are processed, interpreted, organized, structured or presented so as to make them meaningful or useful, they are called **information**.
- ❑ Information provides context for data.
- ❑ Information is data that has been processed in such a way as to be meaningful to the person who receives it. it is any thing that is communicated.

**How ???**

## >> Database

A database (DB) is an organized collection of data. More specifically, a database is an electronic system that allows data to be easily accessed, manipulated and updated.

It is used by an organization as a method of storing, managing and retrieving information.



ORACLE



# AN OVERVIEW OF THE DATABASE CONCEPT

- ❑ Microsoft Access is a Relational Database Management System (RDBMS), designed primarily for home or small business use.
- ❑ The database component of *MS Office* is designed to act as an intelligent electronic filing cabinet.
- ❑ Like a manual filing cabinet, it enables you to :
  - collect sets of related data and keep the data organized;
  - update the data once you've collected them, by adding or deleting records and by changing existing records;
- ❑ An *electronic* filing cabinet such as a database allows you also to easily and quickly *use* the data--sort them, create reports, merge the data with other documents, and so forth.

Within files, different terminology is used to describe the organization of data depending on the type of file in question.

- Word processed files tend to organize data in paragraphs and sentences;
- Spreadsheet files organize the data in rows and columns;
- Database files organize the data into records and fields.

# How is a database organized?

Access is an object-oriented relational database management system. The objects that make up any particular database that you create using Access are :



## **Tables**

- an object which represents the data in rows and columns, rather like a spreadsheet. For this reason, when you view a table in an Access database, you are in what Access refers to as a Datasheet View.

## **Queries**

- an object which makes a request to the database to find some set of data that is stored in the database.

## **Forms**

- an object which gives the user another view of the data in the database. Whereas a Table allows the user to view multiples records at once, a Form displays the contents of just one record at a time.

## **Reports**

- an object which is designed based on the data in the database and which is used to inform the user of the selected contents of the database.

## **Pages**

- a special type of web page designed for viewing and working with data from the Internet.

## **Macros**

- a sequence of instructions which can be carried out with a single click of the mouse button on a button in a toolbar or by pressing a key or keys on the keyboard.

## **Modules**

- a collection of programming procedures designed to give programmer control over the Access database look and feel.

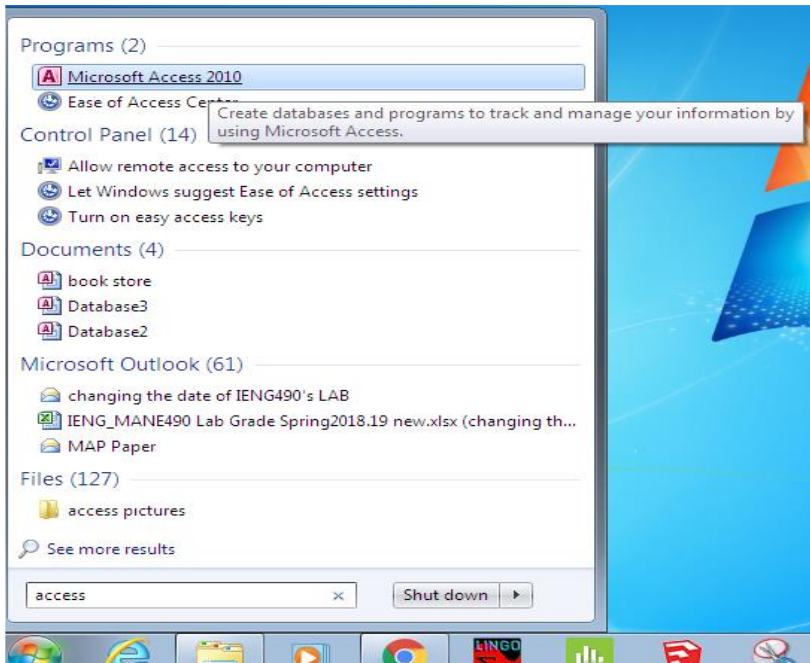


A hand holding a red marker is shown in the process of writing the words "LET'S START" on a white surface. The word "LET'S" is written in red, and "START" is written in black. The hand is positioned on the right side of the frame, with the marker tip touching the end of the word "START". The letters are thick and have a hand-drawn, slightly irregular appearance.

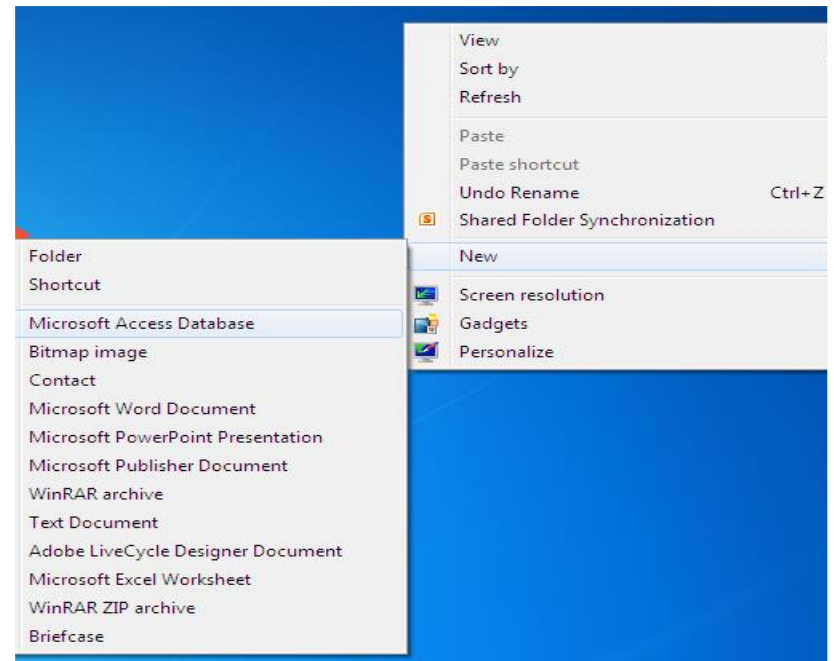
LET'S  
START

# Open access

## Way 1 : From start menu

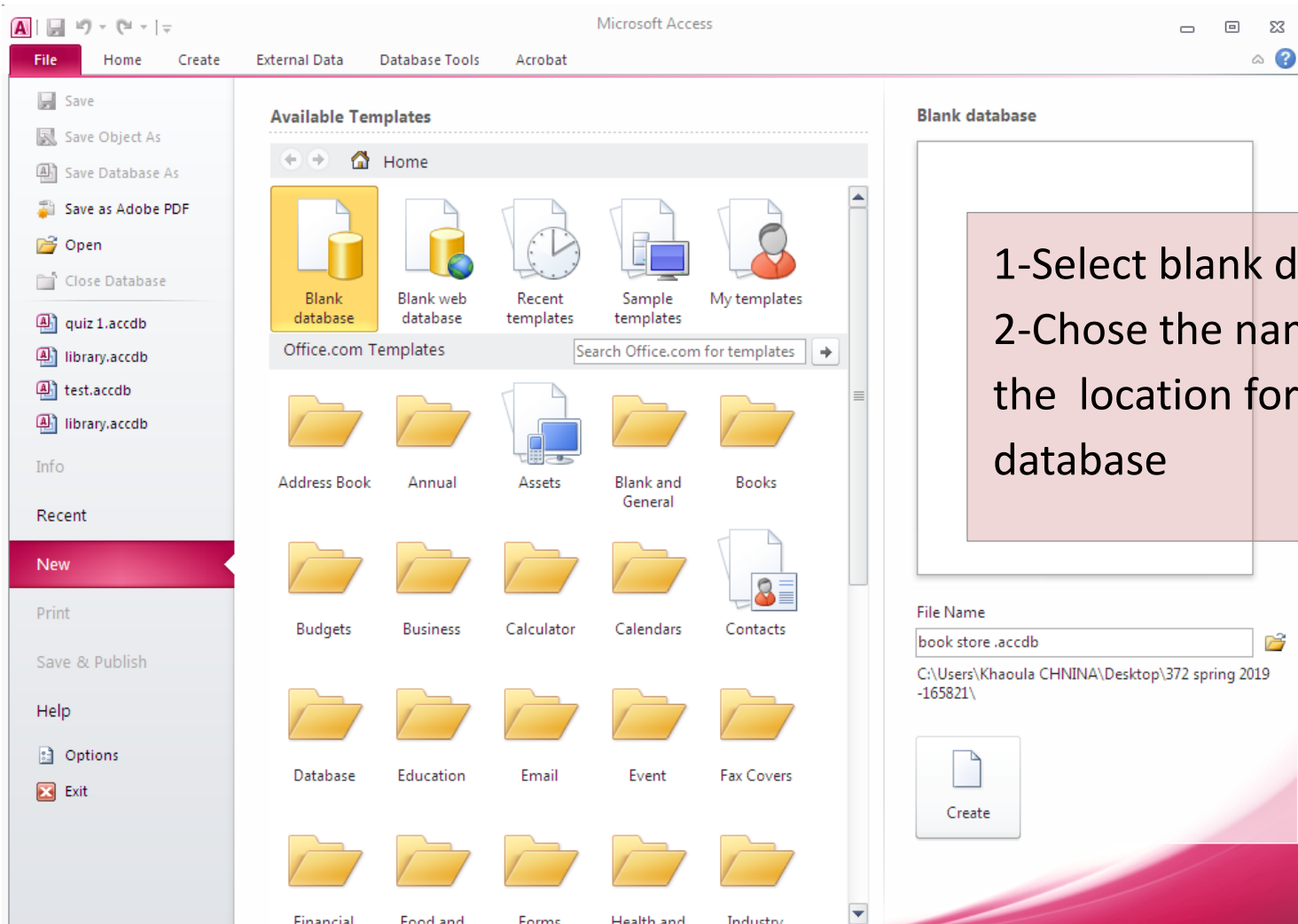


## Way 2 :Right click in the desired folder

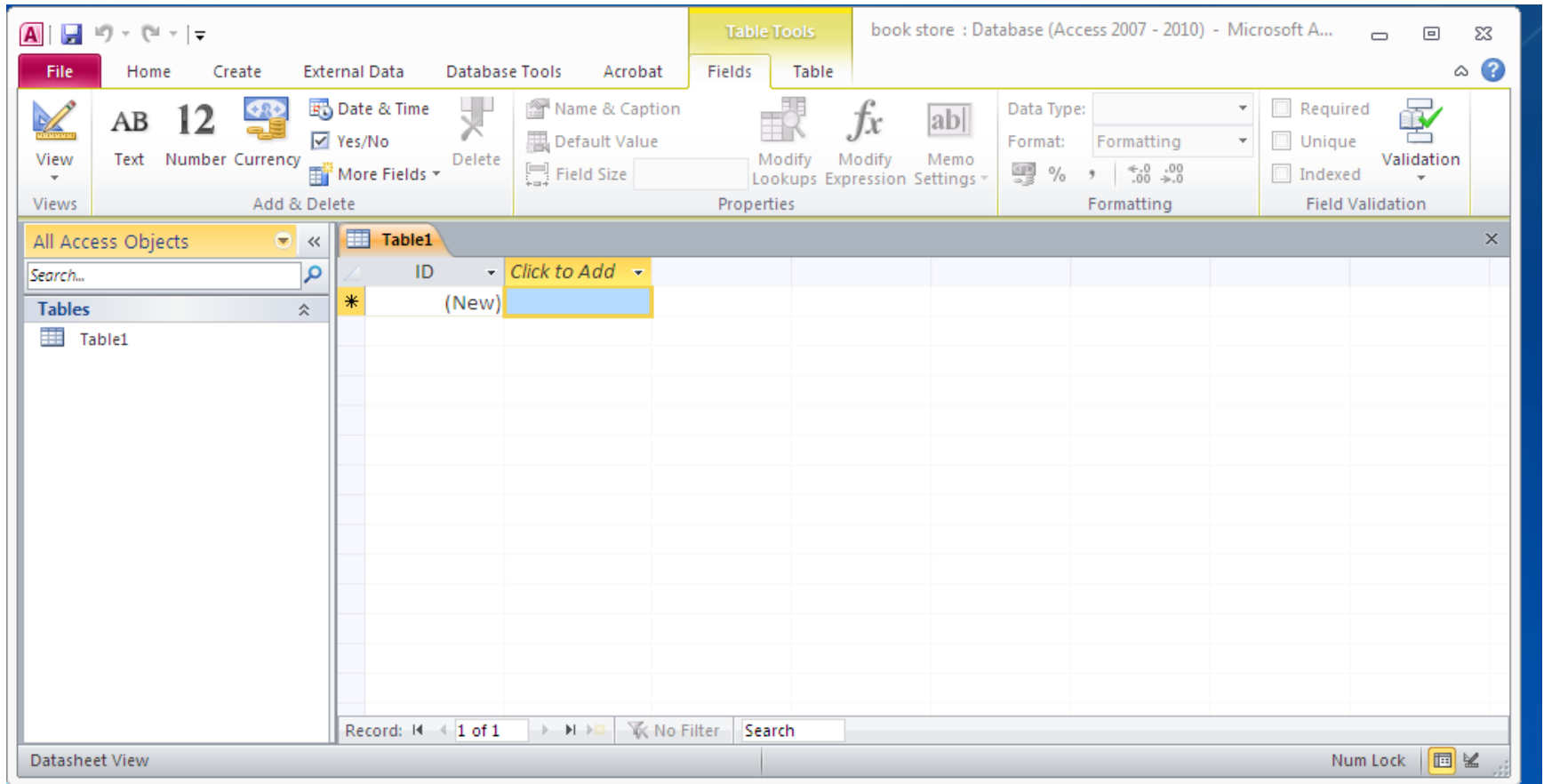


OR

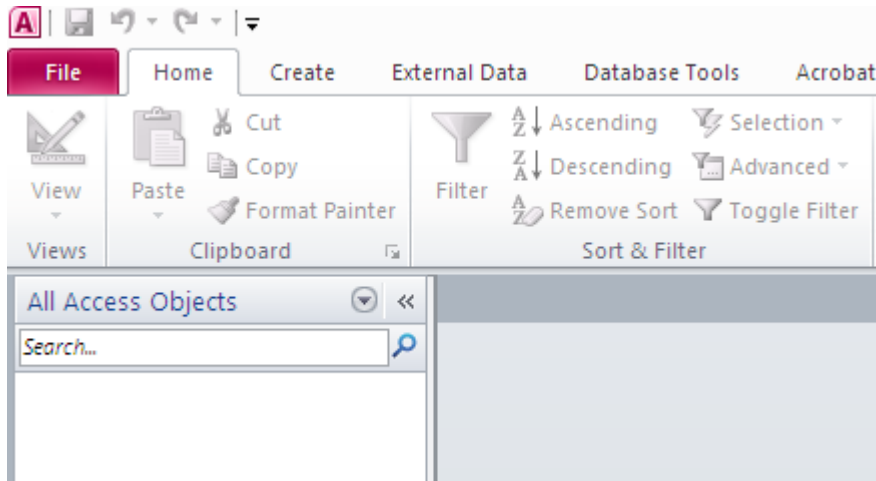
# If you had chosen Way 1 :



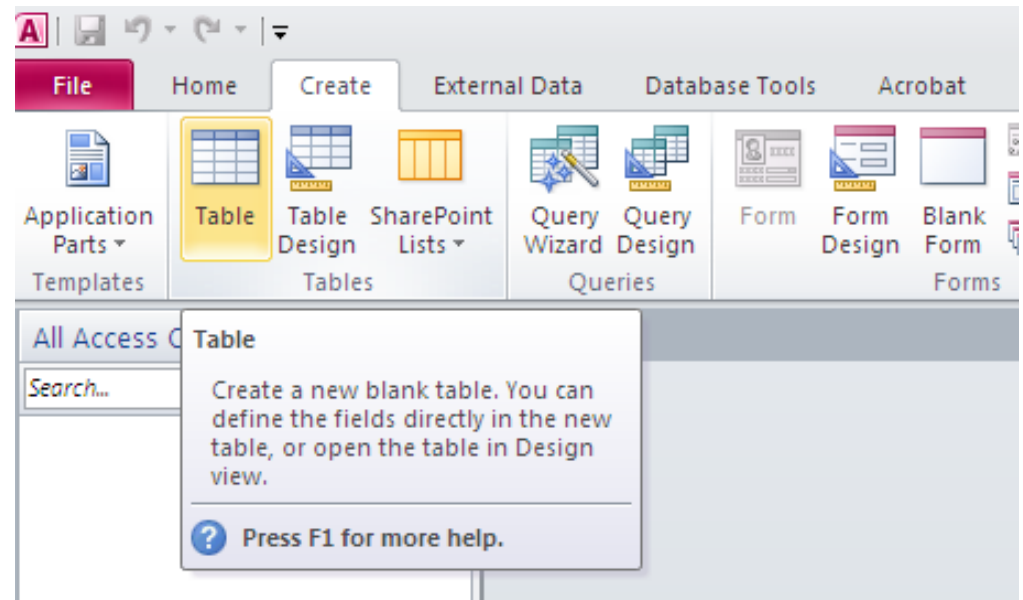
# >> The first table created automatically



## If you had chosen Way 2 :



Create your table manually by selecting Table Or table design



# Now the first table is created (way 1 or 2)

The screenshot displays the Microsoft Access interface with the 'Table Tools' ribbon active. The 'Fields' tab is selected, showing the 'Click to Add' list. A green arrow points from the 'Records (rows)' label to the first row of the table, which contains a single record with a blue background. Another green arrow points from the 'Fields (columns)' label to the 'ID' field in the first column. A red arrow points from the 'AutoNumber' data type in the Properties pane to the 'ID' field in the 'Click to Add' list. A red arrow also points from the 'AutoNumber' data type to the 'ID' field in the table grid. A red arrow points from the 'AutoNumber' data type to the 'ID' field in the 'Click to Add' list.

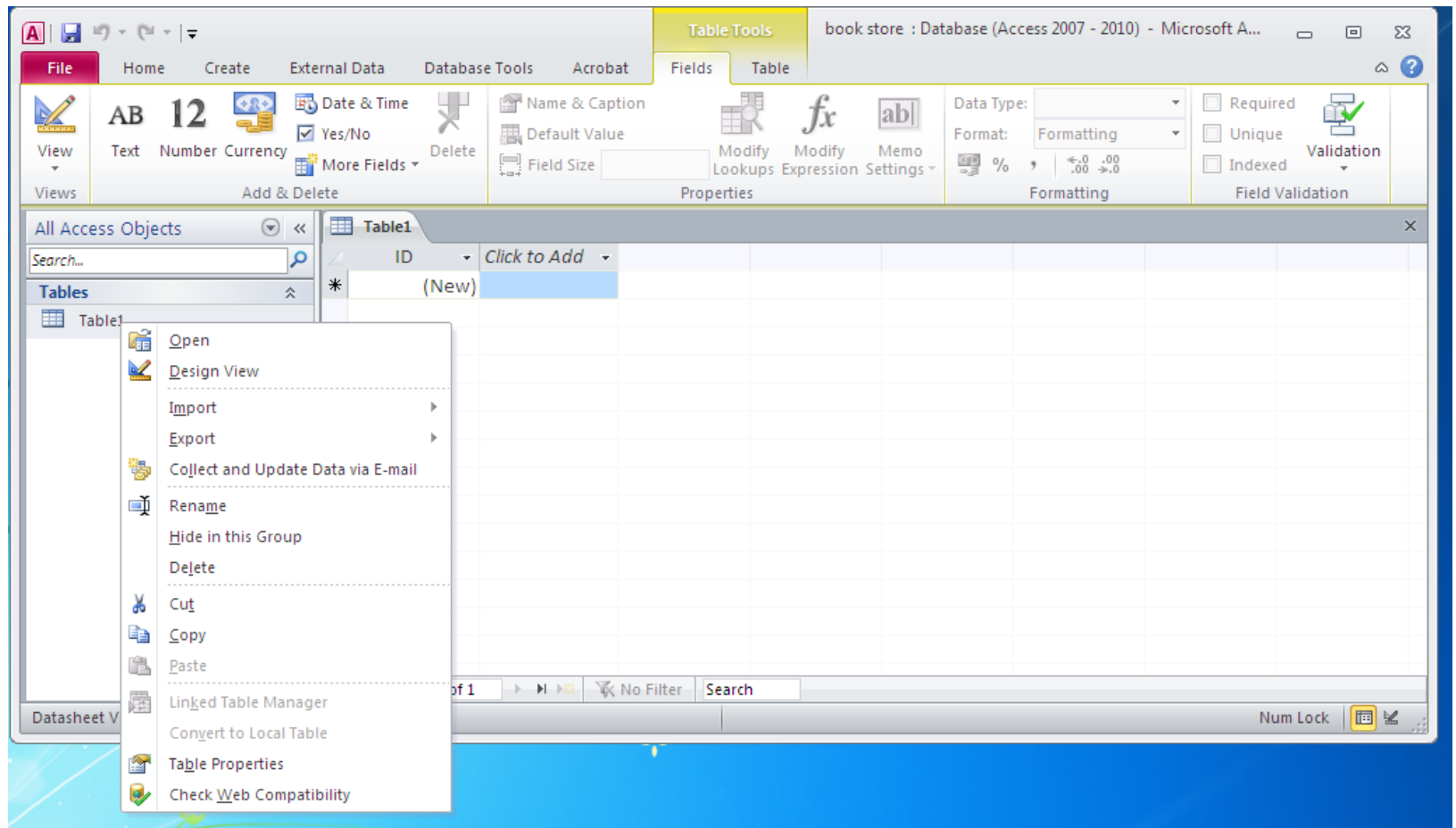
**Records (rows)**

**Fields (columns)**

**The first field is created automatically.  
Name : ID  
Type : Autonumber**

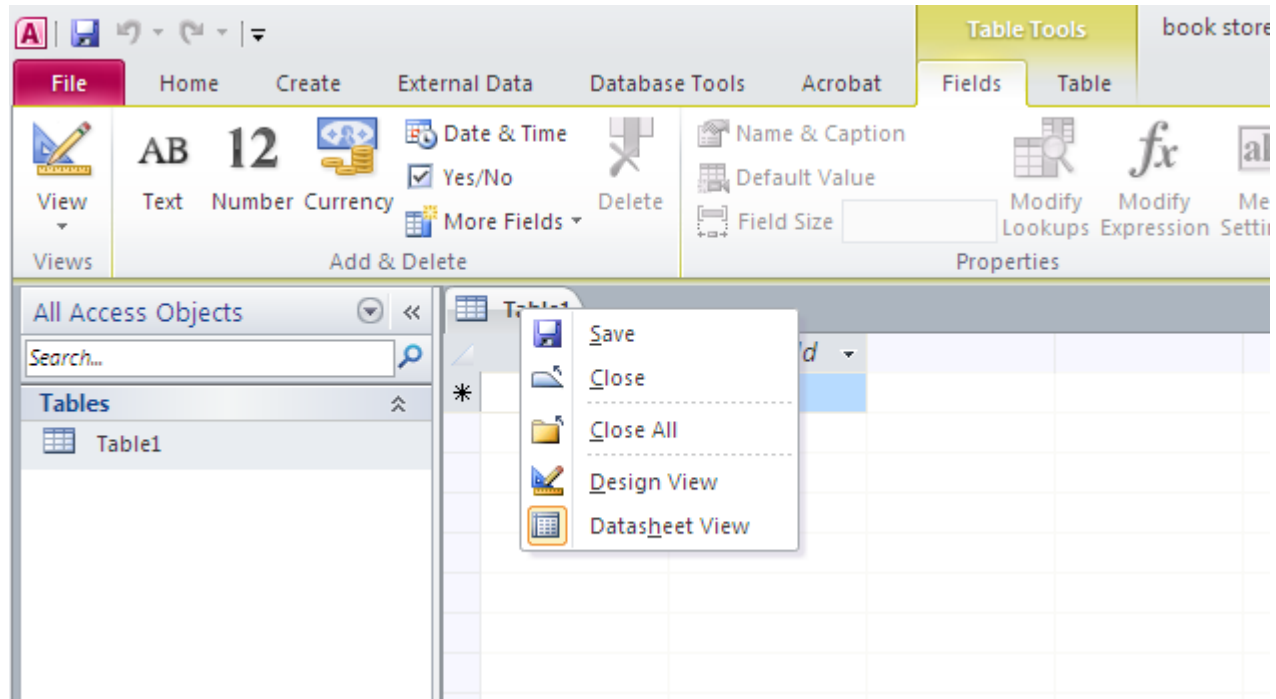
# Tables

If we right click on table name, we have many options :

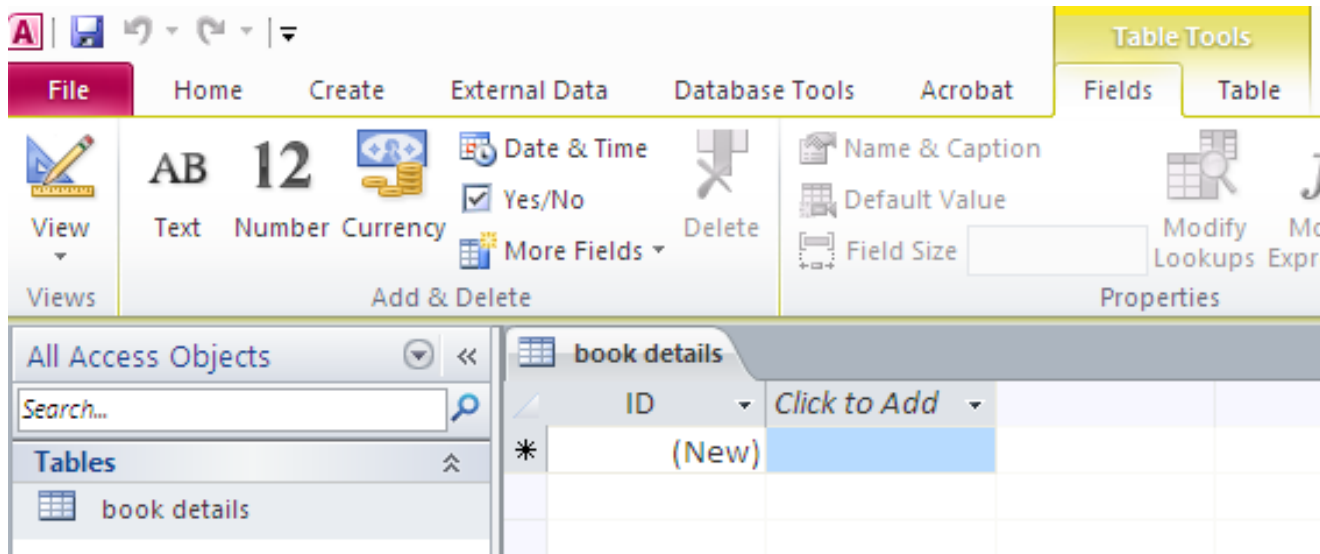
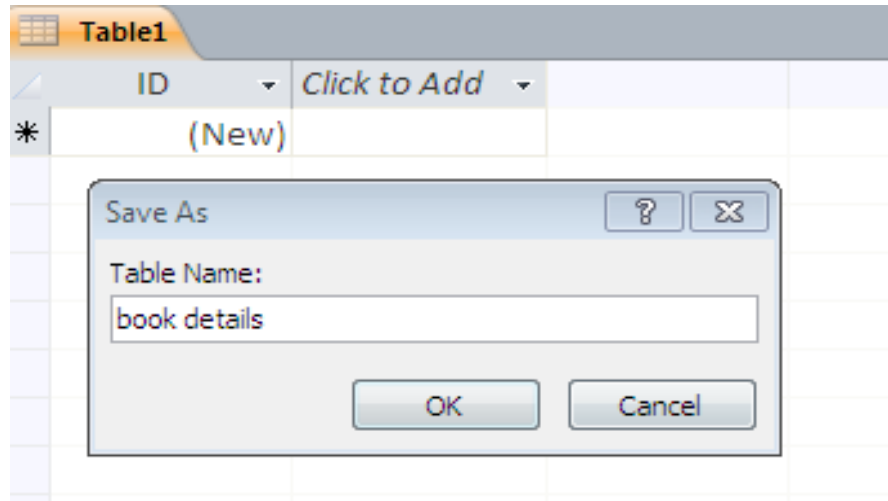




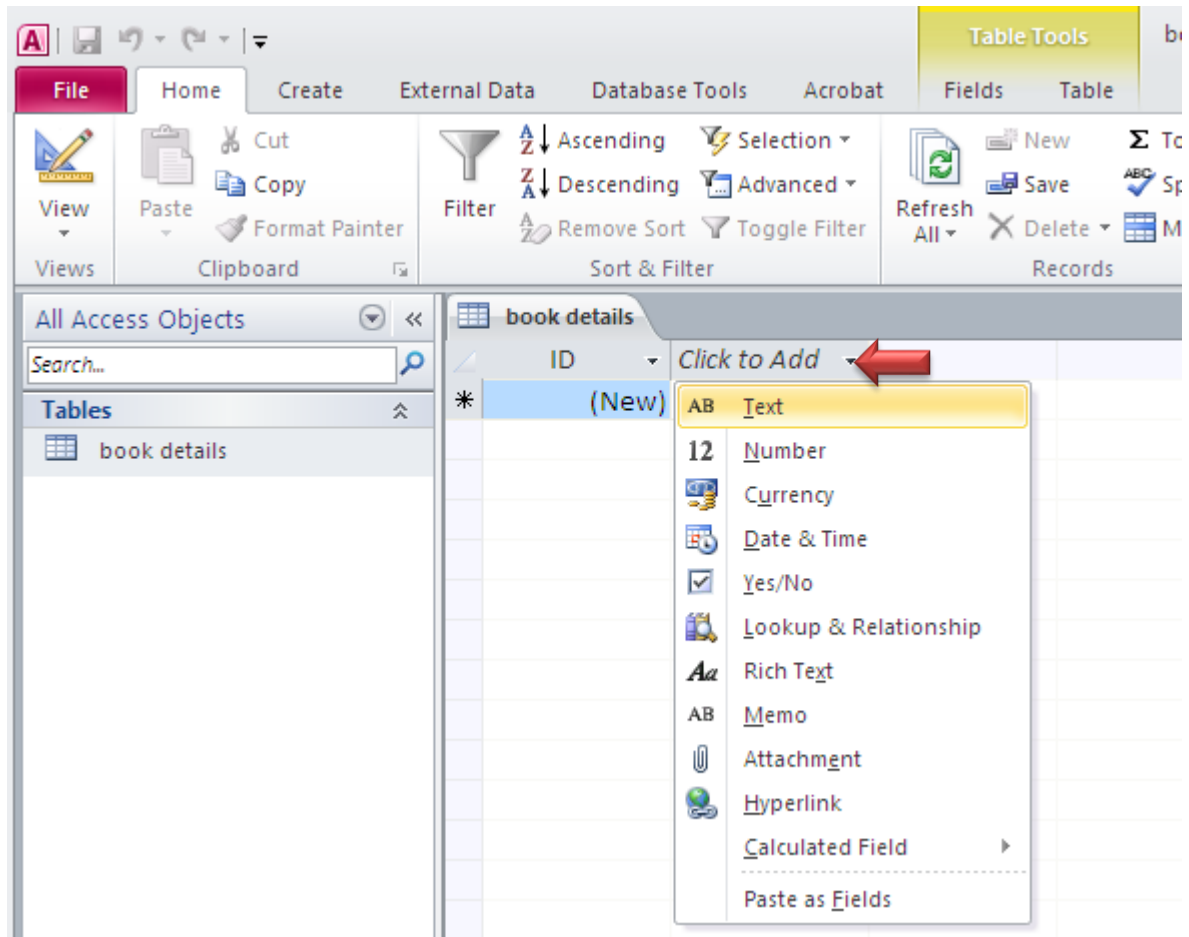
# And also



# Save as : book details



# New field



**Option 1 :**  
**Click on**  
**« click to add »**

## Option 2:

Click on « Fields », different types of fields will appear select the desired type.

The screenshot shows the Microsoft Access interface with the Table Tools ribbon active. The Fields group is selected, displaying various field types: Text, Number (highlighted), Currency, Date & Time, Yes/No, More Fields, Name & Caption, Default Value, and Field Size (set to 255). The Properties group is also visible, including Modify and Lookups. The main window shows a table named 'book details' with columns for ID, book title, and Click to Add. A new record is being added, indicated by an asterisk and '(New)' in the ID column.

ID	book title	Click to Add
* (New)		

File Home Create External Data Database Tools Acrobat Fields Table

View AB 12 Date & Time Yes/No More Fields Delete Name & Caption Default Value Field Size Modify Lookups Modify Expression Memo Settings Data Type: Number Format: % , <-0 .00 >.0

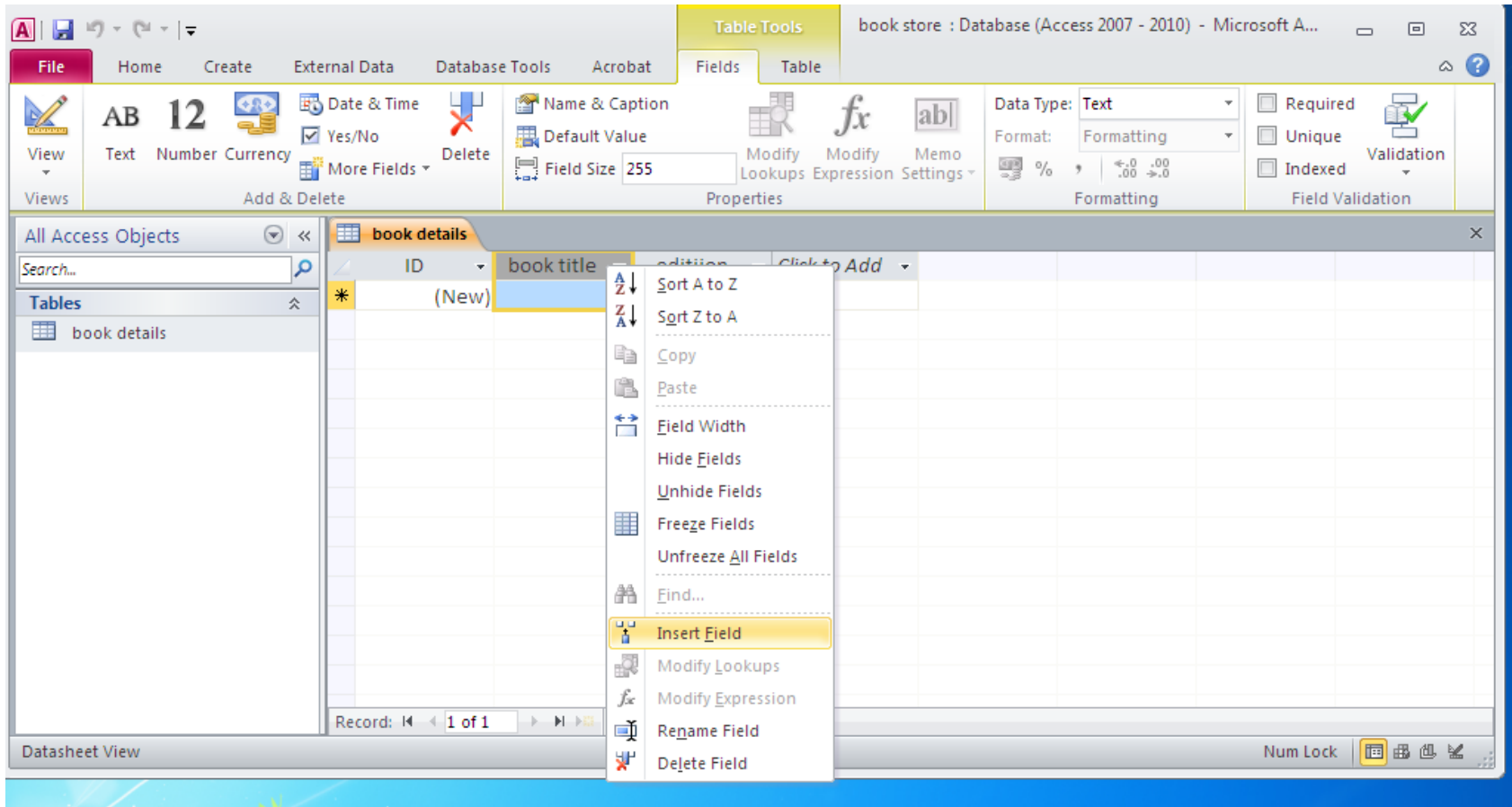
Views Add & Delete Properties Formatting

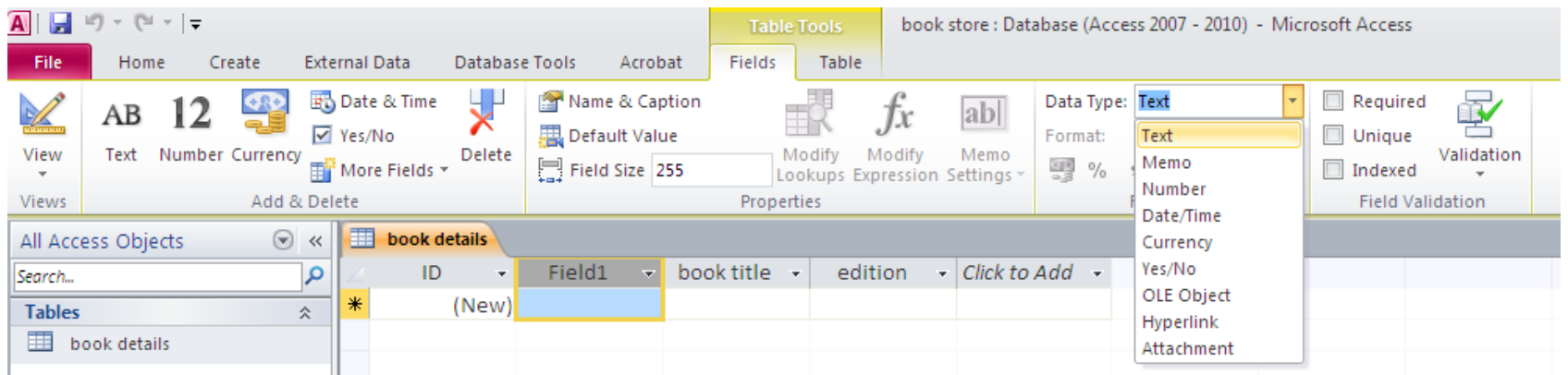
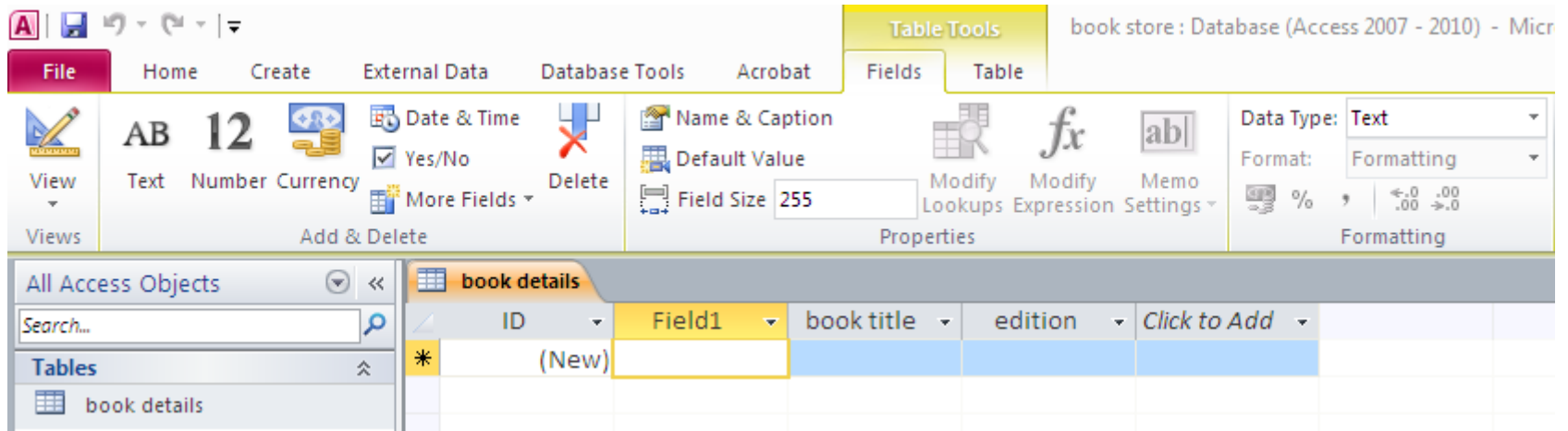
All Access Objects Search... Tables book details

ID	book title	edition	Click to Add
*	(New)		

### Option 3 :

Right Click on a given field and select «insert field» , A new field is created before ( in the left of) the selected one.





**Then you chose its type and rename it.**

# Basic data types

Format	Use to display
<b>Text</b>	Short, alphanumeric values, such as a last name or a street address. Note, beginning in Access 2013, Text data types have been renamed to <b>Short Text</b> .
<b>Number, Large Number</b>	Numeric values, such as distances. Note that there is a separate data type for currency.
<b>Currency</b>	Monetary values.
<b>Yes/No</b>	Yes and No values and fields that contain only one of two values.
<b>Date/Time</b>	Date and Time values for the years 100 through 9999.
<b>Rich Text</b>	Text or combinations of text and numbers that can be formatted using color and font controls.



<b>Calculated Field</b>	Results of a calculation. The calculation must refer to other fields in the same table. You would use the Expression Builder to create the calculation. Note, Calculated fields were first introduced in Access 2010.
<b>Attachment</b>	Attached images, spreadsheet files, documents, charts, and other types of supported files to the records in your database, similar to attaching files to e-mail messages.
<b>Hyperlink</b>	Text or combinations of text and numbers stored as text and used as a hyperlink address.
<b>Memo</b>	Long blocks of text. A typical use of a Memo field would be a detailed product description. Note, beginning in Access 2013, Memo data types have been renamed to Long Text.
<b>Lookup</b>	<p>Displays either a list of values that is retrieved from a table or query, or a set of values that you specified when you created the field. The Lookup Wizard starts and you can create a Lookup field. The data type of a Lookup field is either Text or Number, depending on the choices that you make in the wizard.</p> <p>Lookup fields have an additional set of field properties, which are located on the <b>Lookup</b> tab in the <b>Field Properties</b> pane.</p>

# Number

<b>Format</b>	<b>Use to display</b>
<b>General</b>	Numbers without additional formatting exactly as it is stored.
<b>Currency</b>	General monetary values.
<b>Euro</b>	General monetary values stored in the EU format.
<b>Fixed</b>	Numeric data.
<b>Standard</b>	Numeric data with decimal.
<b>Percentage</b>	Percentages.
<b>Scientific</b>	Calculations.

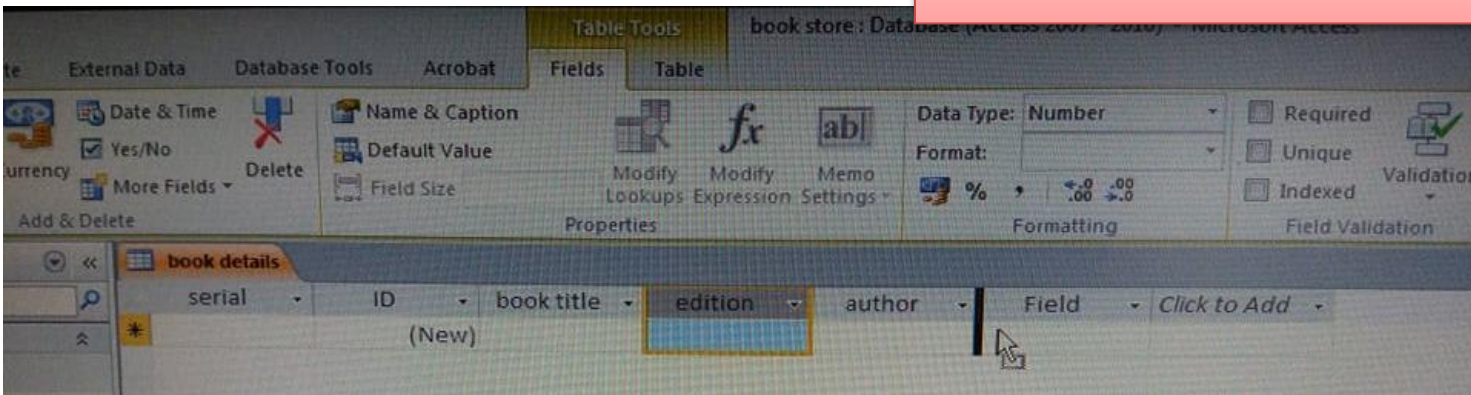
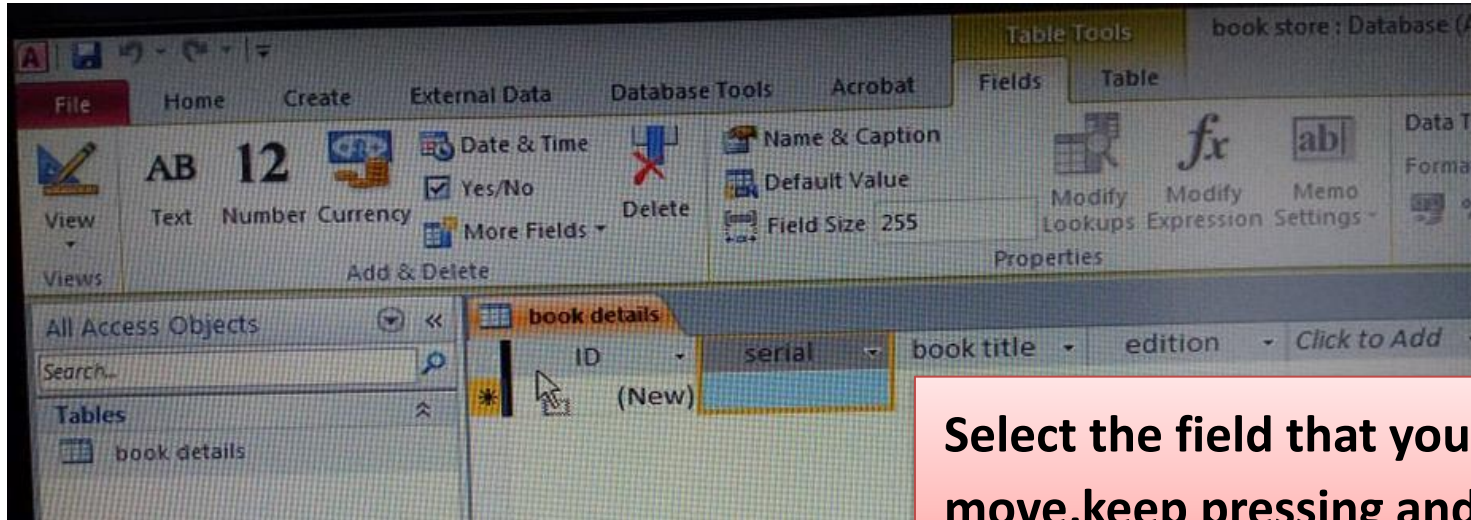
## Date and Time

<b>Format</b>	<b>Use to display</b>
<b>Short Date</b>	Display the date in a short format. Depends on your regional date and time settings. For example, 3/14/2001 for USA.
<b>Medium Date</b>	Display the date in medium format. For example, 3-Apr-09 for USA.
<b>Long Date</b>	Display the date in a long format. Depends on you're the regional date and time settings. For example, Wednesday, March 14, 2001 for USA.
<b>Time am/pm</b>	Display the time only using a 12 hour format that will respond to changes in the regional date and time settings.
<b>Medium Time</b>	Display the time followed by AM/PM.
<b>Time 24hour</b>	Display the time only using a 24 hour format that will respond to changes in the regional date and time settings

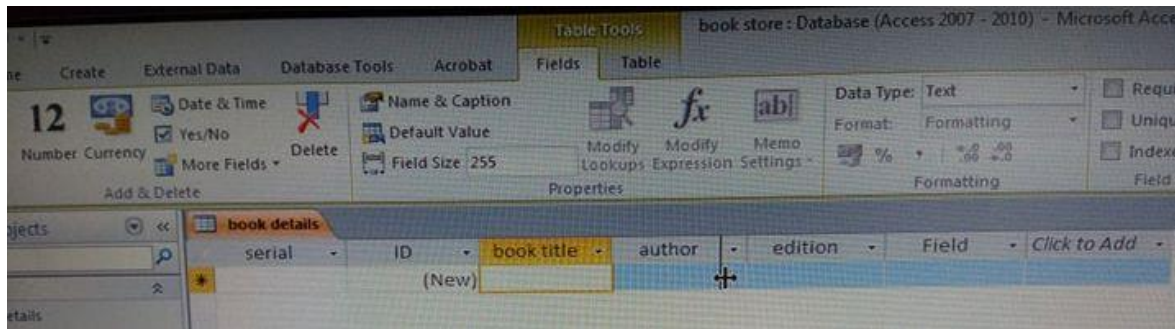
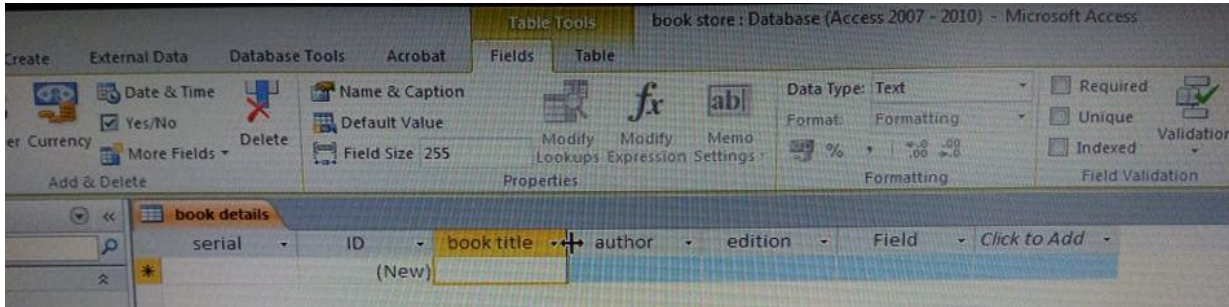


[Click here For more details](#)

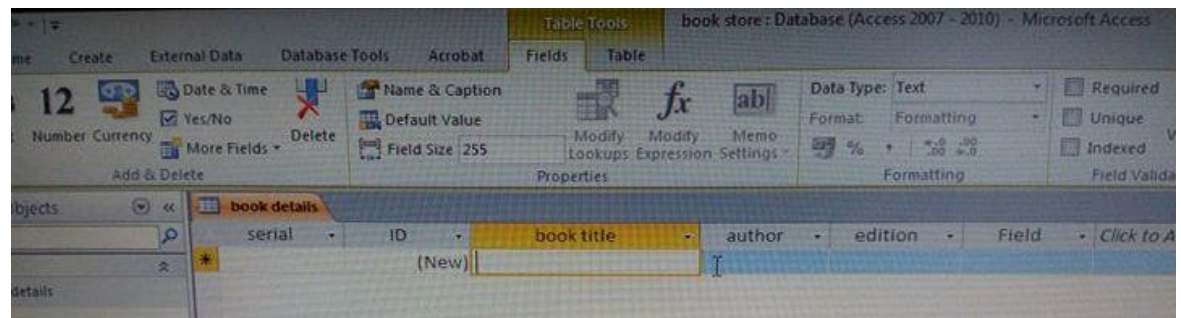
# Rearrange the place of the fields

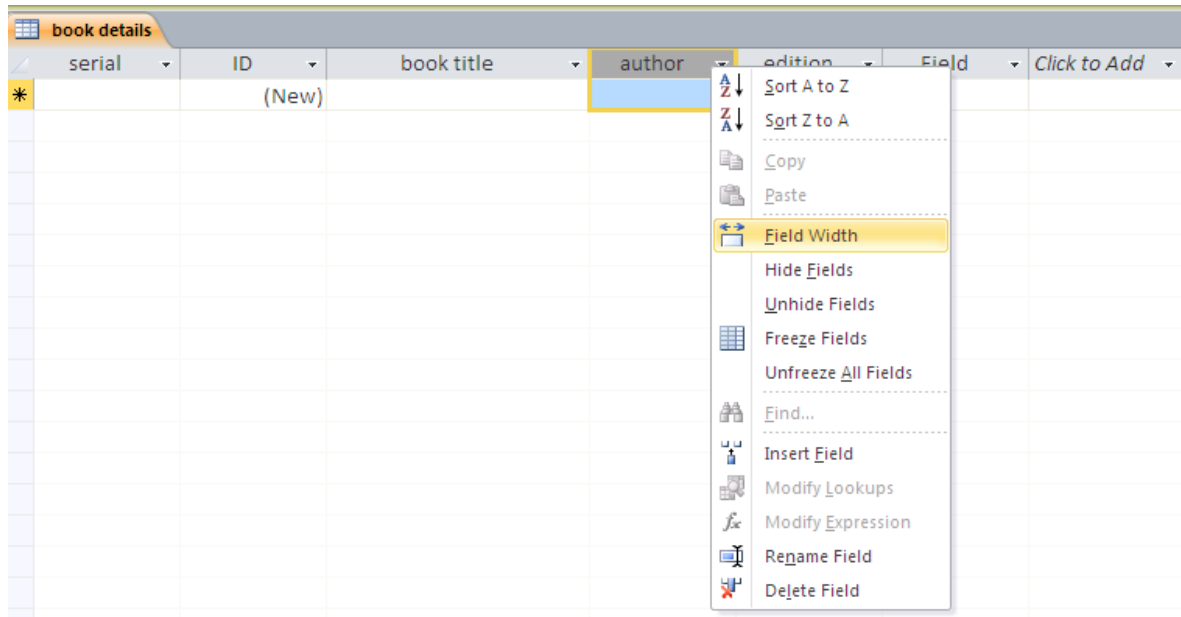


# Change the width of the field

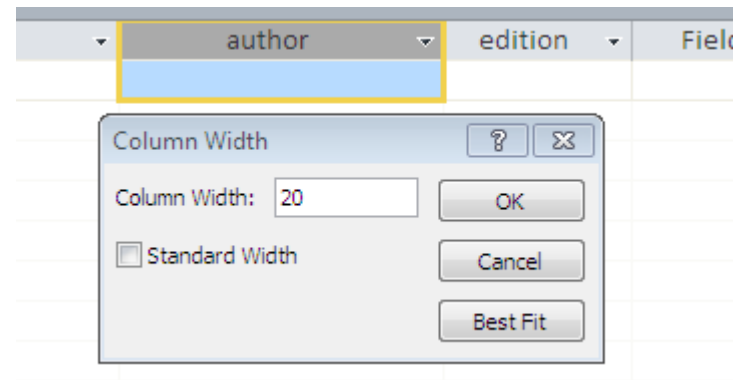


**Method 1 :  
Drag**

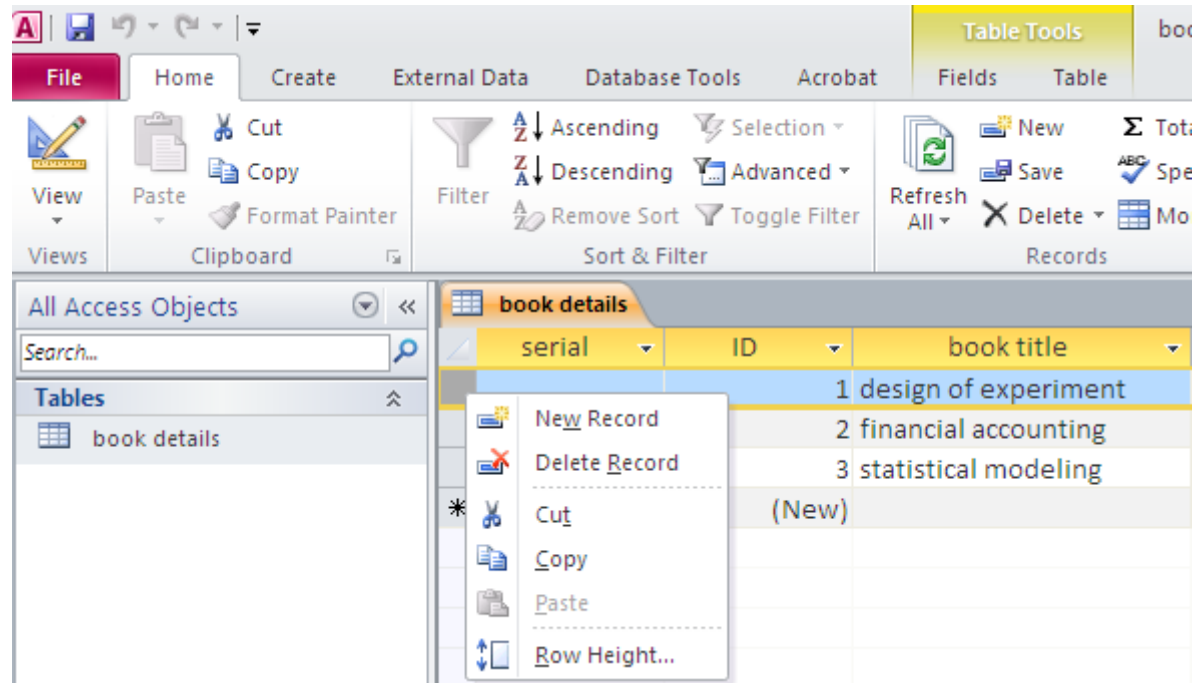




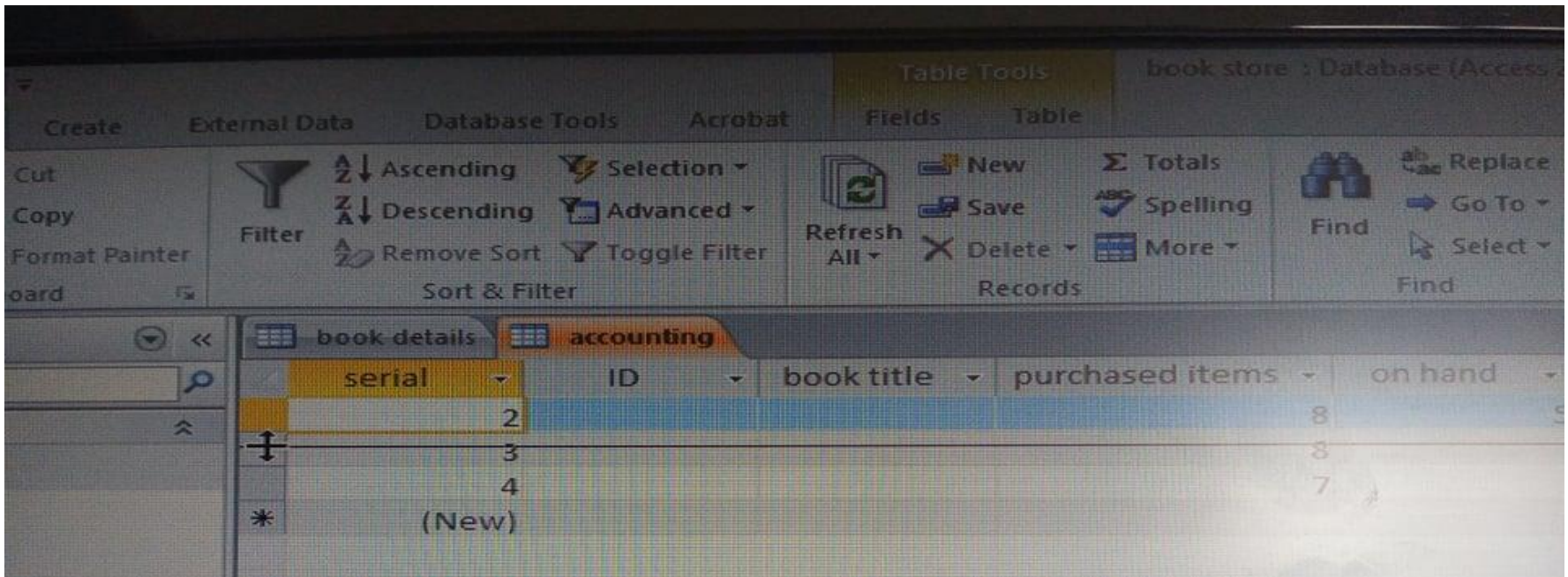
**Method 2 :**  
**Right click on the**  
**field name**



# Change the High of the rows



**Method 1 :**  
**Right click on a record**



**Method 2 :  
Drag**



# Add more fields – date –

The screenshot shows the Microsoft Access interface for a database named 'book store : Database (Access 2007 - 2010)'. The 'Table Tools' ribbon is active, and the 'Fields' tab is selected. A table named 'book details' is open in Datasheet View. The table has columns for 'serial', 'ID', 'book title', 'author', 'edition', and 'Field'. The 'Field' column contains 'statistics' for row 1 and '(New)' for row 2. A context menu is open over the '(New)' row, showing options for adding fields: Text, Number, Currency, Date & Time, Yes/No, Lookup & Relationship, Rich Text, Memo, and Attachment. The 'Date & Time' option is highlighted. Below this, a zoomed-in view of the 'Date & Time' dropdown menu is shown, with 'General Date' selected. The 'Data Type' dropdown is set to 'Date/Time', and the 'Format' dropdown is set to 'General Date'. The 'Field Validation' section shows 'Required', 'Unique', and 'Indexed' checkboxes are unchecked.

serial	ID	book title	author	edition	Field
1		design of experiment	john lawson		statistics
2		financial accounting	ruchi goyal		
3					
*					(New)

book title	author	edition	Field
design of experiment	john lawson		statistics
financial accounting	ruchi goyal		

Table Tools    book store : Database (Access 2007 - 2010) - Microsoft Access

Fields    Table

Data Type: **Date/Time**     Required    Validation  
 Format: **General Date**     Unique     Indexed    Field Validation  
 %    <-0    .00    >.0

Properties    Formatting    Field Validation

book title	author	editiion	Field	purchased	Click to Add
esign of experiment	john lawson		5 statistics	12.03.1987	
nancial accounting	ruchi goyal			01.03.2019	

Mayıs 2017

Pt	Sa	Ça	Pe	Cu	Ct	Pz
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4
5	6	7	8	9	10	11

Today

# Add more fields – yes/no –

Table Tools book store : Database (Access 2007 - 2010) - Microsoft Access

Fields Table

Modify Lookups Modify Expression Memo Settings

Data Type: Format: % , <-0 .00 ->.0

Required Unique Indexed Validation

Properties Formatting Field Validation

book title	author	edition	Field	purchased	Click to Add
sign of experiment	john lawson	5	statistics	12.03.1987	
nancial accounting	ruchi goyal			01.03.2019	

Data Type: Yes/No  
Format: True/False  
Required Unique Indexed Validation

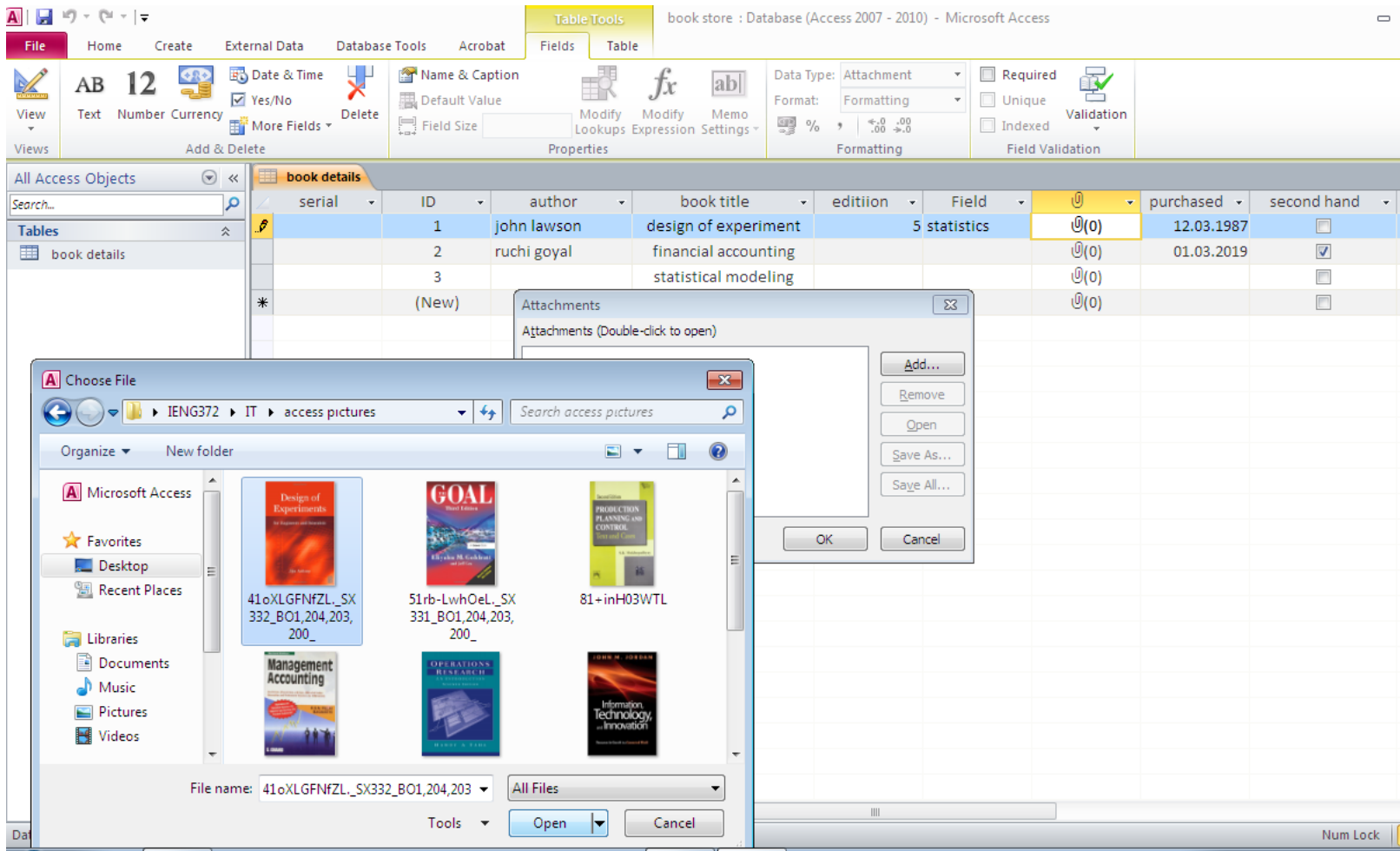
- Text
- Number
- Currency
- Date & Time
- Yes/No**
- Lookup & Relationship
- Rich Text
- Memo
- Attachment
- Hyperlink
- Calculated Field
- Paste as Fields

edition	Field	purchased	second hand
5	statistics	12.03.1987	<input type="checkbox"/>
		01.03.2019	<input checked="" type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

# Add more fields – Attachment –

The screenshot shows the Microsoft Access interface for a table named 'book store'. The 'Table Tools' ribbon is active, with the 'Fields' tab selected. The 'Data Type' dropdown menu is open, showing various options: Text, Memo, Number, Date/Time, Currency, Yes/No, OLE Object, Hyperlink, and Attachment. The 'Attachment' option is highlighted. The table data is visible below the ribbon, showing columns for author, book title, cover, and purchased.

author	book title	cover	purchased
1 lawson	design of experiment		12.03.1987
ni goyal	financial accounting		01.03.2019
	statistical modeling		



Microsoft Access interface showing a table named "book details" with columns: serial, ID, book title, author, edition, Field, and Attachments. The table contains three rows of data and a "(New)" row. A "Choose File" dialog box is open, displaying the "Documents library" with files like "Khaoula CHNINA - Shortcut", "kolmogorov test and Linear regression", "linear regression", and "Linear regression". The "File name" field is set to "Information Systems and Technol" and the file type is "All Files". An "Attachments" dialog box is also visible, showing a list of attachments with buttons for "Add...", "Remove", "Open", "Save As...", "Save All...", "OK", and "Cancel".

serial	ID	book title	author	edition	Field	Attachments
1		design of experiment	john lawson		5 statistics	📎(1)
2		financial accounting	ruchi goyal			📎(0)
3		statistical modeling				📎(0)
*		(New)				📎(0)

# Field Validation rule

You can use the **Validation Rule** property to require specific values, and the **Validation Text** property to alert your users to any mistakes.

For example, entering a rule such as **>100 And <1000** in the **Validation Rule** property forces users to enter values between 100 and 1,000.

A rule such as **[EndDate]>=[StartDate]** forces users to enter an ending date that occurs on or after a starting date.

The screenshot shows the Microsoft Access interface. The 'Table Tools' ribbon is active, with the 'Fields' tab selected. The 'Validation' group on the ribbon is highlighted, showing a dropdown menu with the following options:

- Field Validation Rule**: Create an expression that restricts the values that can be entered in the field.
- Field Validation Message**: Set the error message for the Field Validation Rule.
- Record Validation Rule**: Create an expression that restricts the values that can be entered into a record. For example, [StartDate] < [EndDate].
- Record Validation Message**: Set the error message for the Record Validation Rule.

The 'book details' table is visible in the background, with the following data:

serial	ID	book title	author	edition	Field
	1	design of experiment	john lawson	5	
	2	financial accounting	ruchi goyal		
*	(New)				

Microsoft Access interface showing the 'Table Tools' ribbon and the 'book details' table. The 'Table' tab is active, displaying options for Name & Caption, Default Value, Field Size, Properties, Data Type, Format, Field Validation, and Validation. The 'book details' table is displayed with columns: serial, ID, book title, author, edition, Field, and Click to Add. The 'edition' column is highlighted, and the 'Expression Builder' dialog box is open, showing the expression '<10'.

The 'Table Tools' ribbon includes the following sections:

- Fields:** Name & Caption, Default Value, Field Size, Properties (Modify Lookups, Modify Expression, Memo Settings).
- Table:** Data Type (Number), Format (%), Formatting (0.00, .00), Field Validation (Required, Unique, Indexed), Validation (Validation).

The 'book details' table data:

serial	ID	book title	author	edition	Field	Click to Add
	1	design of experiment	john lawson	5		
	2	financial accounting	ruchi goyal			
*	(New)					

The 'Expression Builder' dialog box contains the following text:

Enter an Expression to validate the data in this field:  
 (Examples of expressions include [field1] + [field2] and [field1] < 5)

The expression entered is: <10

The dialog box also features three panes: Expression Elements (Functions, Constants, Operators), Expression Categories, and Expression Values.



But if there are already some records which violate the new setting ( new validation rule) we will have to chose :

**YES** : access will keep these records and will start testing from the future one,

**NO** : the nes validation rule will be deleted ,and we will continue without testing

The screenshot shows the Microsoft Access interface with the 'Table Tools' ribbon active. The 'book details' table is open in Datasheet view. The 'edition' field is highlighted in blue. A dialog box titled 'Microsoft Access' is displayed, warning that existing data violates the new validation rule for the 'edition' field. The dialog asks if the user wants to keep testing with the new setting and provides three options: Yes, No, and Cancel. The 'Yes' button is highlighted.

serial	ID	book title	author	edition	Field	
	1	design of experiment	john lawson	5	statistics	0(1)
	2	financial accounting	ruchi goyal	11		0(0)
	3	statistical modeling				0(0)
						0(0)

Expression Builder

Enter an Expression to validate the data in this field:  
(Examples of expressions: <10, <=5, <10, <=5, <10, <=5)

<10

Expression Elements

- Functions
- Constants
- Operators

Microsoft Access

**Existing data violates the new setting for the 'Validation Rule' property for field 'edition.'**

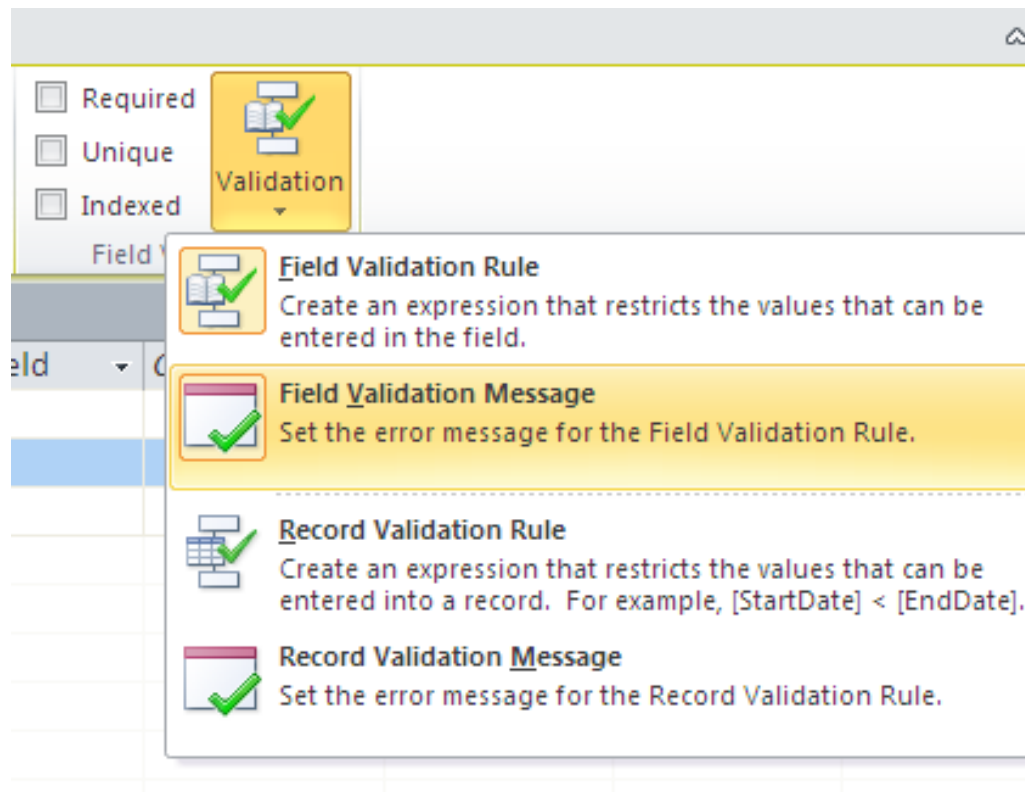
Do you want to keep testing with the new setting?  
\* To keep the new setting and continue testing, click Yes.  
\* To revert to the old setting and continue testing, click No.  
\* To stop testing, click Cancel.

Yes No Cancel

[Was this information helpful?](#)

# Field Validation message

Entering text such as "Enter values between 100 and 1,000" or "Enter an ending date on or after the start date" in the **Validation Text** property tells users when they have made a mistake and how to fix the error.



book store : Database (Access 2007 - 2010) - Microsoft Access

File Home Create External Data Database Tools Acrobat

Table Tools Fields Table

View AB 12 Date & Time Yes/No More Fields Delete

Name & Caption Default Value Field Size Modify Lookups Modify Expression Memo Settings Validation

Data Type: Number Format: % .00 .00

Required Unique Indexed Field Validation

All Access Objects

Search...

Tables

book details

serial	ID	book title	author	edition	Field	Click to Add
	1	design of experiment	john lawson	5		
	2	financial accounting	ruchi goyal			
*	(New)					

Enter Validation Message

the edition is less than 10

OK Cancel

# Required field :



Microsoft Access ribbon: Properties, Formatting, Field Validation

Field Validation settings:  Required,  Unique,  Indexed

ID	book title	author	edition	Field	
1	design of experiment	john lawson	5	statistics	🔒(1)
2	financial accounting	ruchi goyal			🔒(0)
3	statistical modeling				🔒(0)
4					🔒(0)
(New)					🔒(0)

Microsoft Access dialog box:

**Existing data violates the new setting for the 'Required' property for field 'Field.'**

Do you want to keep testing with the new setting?

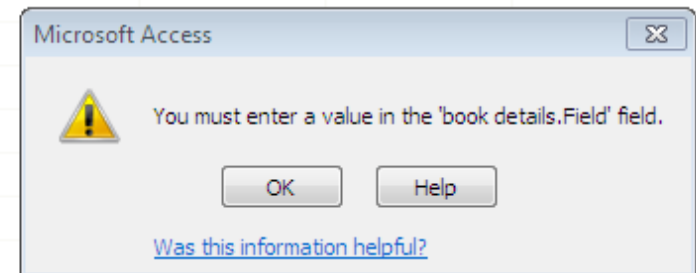
- \* To keep the new setting and continue testing, click Yes.
- \* To revert to the old setting and continue testing, click No.
- \* To stop testing, click Cancel.

Buttons: Yes, No, Cancel

[Was this information helpful?](#)

The field «Field» is now required , it is impossible to add a new record ( 5th) unless we fill that field

serial	ID	author	book title	editiion	Field		purchased
	1	john lawson	design of experiment	5	statistics	🔒(1)	12.03.1987
	2	ruchi goyal	financial accounting			🔒(0)	01.03.2019
	3		statistical modeling			🔒(0)	
✎	4		the goal			🔒(0)	
*	(New)					🔒(0)	



# Design View

The screenshot displays the Microsoft Access interface for a database named 'book store : Database (A)'. The ribbon is set to 'Table Tools' with the 'Table' tab selected. The ribbon includes sections for 'Fields' (with options like Text, Number, Currency, Date & Time, Yes/No, More Fields) and 'Properties' (with options like Name & Caption, Default Value, Field Size, Modify Lookups, Modify Expression, Memo Settings). The 'All Access Objects' pane on the left shows the 'Tables' section with 'book details' selected. A context menu is open over the 'book details' table, listing options: Save, Close, Close All, Design View (highlighted), Datasheet View, PivotTable View, and PivotChart View. The main window shows the 'book details' table in Design View, with columns 'author' and 'book title'. The data rows are:

author	book title
john lawson	design of experiment
ruchi goyal	financial accounting
	statistical modeling
	the goal

Microsoft Access window: book store : Database (Access 2007 - 2010) - Microsoft Access

Table Tools Design ribbon:

- Views: View, Primary Key, Builder, Test Rules, Validation Rules, Modify Lookups
- Tools: Insert Rows, Delete Rows
- Property Sheet: Show/Hide
- Indexes: Indexes
- Create Data Macros: Create Data Macros, Rename/Delete Macro
- Relationships: Relationships, Object Dependencies

All Access Objects: Tables > book details

Field Name	Data Type	Description
ID	AutoNumber	
serial	Text	
book title	Text	
edition	Number	
author	Text	
Field	Text	
cover	Attachment	
purchased	Date/Time	
second hand	Yes/No	

Field Properties (selected field: serial):

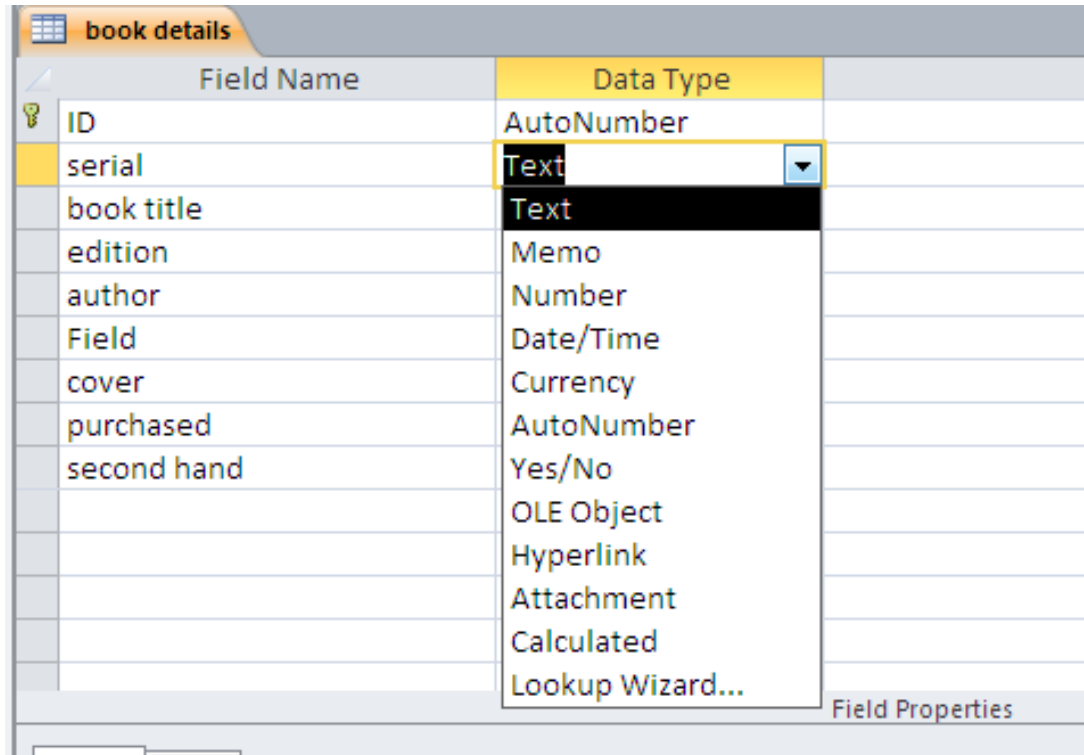
Property	Value
Field Size	255
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Smart Tags	

Field Properties Note: A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.

Property Sheet (Table Properties):

Property	Value
Read Only When Disconnected	No
Subdatasheet Expanded	No
Subdatasheet Height	0cm
Orientation	Left-to-Right
Description	
Default View	Datasheet
Validation Rule	
Validation Text	
Filter	
Order By	
Subdatasheet Name	[Auto]
Link Child Fields	
Link Master Fields	
Filter On Load	No
Order By On Load	Yes

# We can rename and modify our fields :





We want to set the field ID as a text and serial as an autonumber

The screenshot shows the Microsoft Access interface. At the top, a window titled 'book details' displays a table design view with three fields: 'ID' (AutoNumber), 'serial' (Text), and 'book title' (Text). The 'ID' field is marked as a primary key. An information dialog box is overlaid on the table design view, containing the following text:

**Once you enter data in a table, you can't change the data type of any field to AutoNumber, even if you haven't yet added data to that field.**

Add a new field to the table, and define its data type as AutoNumber. Microsoft Access then enters data in the AutoNumber field automatically, numbering the records consecutively starting with 1.

Was this information helpful?

OK

So , we will rename the field «ID» to «serial» and vice versa.  
We can permutate the order of our fields by drag.

	Field Name	Data Type	Des
🔑	Serial	AutoNumber	
	ID	Text	
	book title	Text	
	edition	Number	
	author	Text	
	Field	Text	
	cover	Attachment	
	purchased	Date/Time	
	second hand	Yes/No	

Field Properties

# primary key

The screenshot shows the Microsoft Access interface in Design view. The ribbon is set to 'Design', and the 'Primary Key' button is highlighted. The table structure is as follows:

Field Name	Data Type	Descr
ID	Text	
Serial	AutoNumber	
book title	Text	
edition	Number	
author	Text	
Field	Text	
cover	Attachment	
purchased	Date/Time	
second hand	Yes/No	

## **PRIMARY KEY (PRIMARY KEYWORD)**

A primary key, also called a primary keyword, is a special relational database table column (or combination of columns) designated to uniquely identify all table records.

It is a unique identifier, such as a driver license number, telephone number (including area code), or vehicle identification number (VIN).

A relational database must always have one and only one primary key.

A primary key's main features are:

- It must contain a unique value for each row of data (record).
- It cannot contain null values.
- A primary key is either an existing table column or a column that is specifically generated by the database according to a defined sequence.

# Input masks

Field Name	Data Type
ID	Text
Serial	AutoNumber
book title	Text
edition	Number
author	Text
Field	Text
cover	Attachment
purchased	Date/Time
second hand	Yes/No

**To Change the field size**

Property	Value
Field Size	255
Format	
Input Mask	...
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Smart Tags	

You can use an input mask to validate data by forcing users to enter values in a specific way. For example, an input mask can force users to enter dates in a European format, such as 2007.04.14.

Or to enter a text containing 2 capital letter and 2 numbers....

**First click on «input mask»  
Then click on the «...» that appear**

Microsoft Access 2010 interface showing the 'Table Tools' ribbon and the 'Input Mask Wizard' dialog box. The background window displays the 'book details' table structure and the 'Property Sheet' for the 'ID' field.

**Table Structure:**

Field Name	Data Type	Description
ID	Text	
serial	AutoNumber	
author	Text	
book title	Text	
editiion	Number	
Field	Text	
cover	Attachment	
purchased	Date/Time	
second hand	Yes/No	

**Property Sheet (Table Properties):**

Property	Value
Read Only When Disconnected	No
Subdatasheet Expanded	No
Subdatasheet Height	0cm
Orientation	Left-to-Right
Default View	Datasheet
Validation Rule	
Validation Text	
Order By	
Subdatasheet Name	[Auto]
Link Child Fields	
Link Master Fields	
Order On Load	No
Order By On Load	Yes

**Input Mask Wizard Dialog:**

Which input mask matches how you want data to look?

To see how a selected mask works, use the Try It box.  
To change the Input Mask list, click the Edit List button.

Input Mask	Data Look
phone	(0124)-142-147-45-89
Vergi Dairesi ve No	Beylerbeyi / 621 002 0498
Posta Kodu	80700
Sosyal Sigorta Numarası	34.07.1995 36591
Sigorta Kod Numarası	0702.0500.044
Password	*****

Try It:

Buttons: Edit List, Cancel, < Back, Next >, Finish

A pattern for all data to be entered in this field

Press «Help» to see how to input your mask

The screenshot displays the Microsoft Access interface with three overlapping windows:

- Access Help:** A window showing a list of input mask characters and their descriptions. The list includes: # (digit, space, plus or minus sign), L (letter), ? (letter), A (letter or digit), a (letter or digit), & (character or space), C (characters or spaces), ., :, -, / (decimal and thousands placeholders), > (uppercase conversion), and < (lowercase conversion).
- Customize Input Mask Wizard:** A dialog box for editing or adding input masks. It includes fields for Description, Input Mask, Placeholder, Sample Data, and Mask Type. A "Help" button is visible. Below the fields is a table with "Input Mask" and "Data Look" columns, and a "Try It:" field.
- Table Properties:** A window showing properties for a table, including "Sheet Expanded", "Sheet Height", "Sheet Width", "Sheet Tab Color", "Sheet Tab Text", "Subdatasheet Name", "Link Child Fields", "Filter On Load", and "Order By On Load".

Input Mask	Data Look
phone	(0124)-142-147-45-89
Vergi Dairesi ve No	Beylerbeyi / 621 002 0498
Posta Kodu	80700
Sosyal Sigorta Numarası	34.07.1995 36591
Sigorta Kod Numarası	0702.0500.044
Password	*****

Character	Explanation
0	User must enter a digit (0 to 9).
9	User can enter a digit (0 to 9).
#	User can enter a digit, space, plus or minus sign. If skipped, Access enters a blank space.
L	User must enter a letter.
?	User can enter a letter.
A	User must enter a letter or a digit.
a	User can enter a letter or a digit.
&	User must enter either a character or a space.



C	User can enter characters or spaces.
.,:;- /	Decimal and thousands placeholders, date and time separators. The character you select depends on your Microsoft Windows regional settings.
>	Converts all characters that follow to uppercase.
<	Converts all characters that follow to lowercase.
!	Causes the input mask to fill from left to right instead of from right to left.
\	Characters immediately following will be displayed literally.
""	Characters enclosed in double quotation marks will be displayed literally.

Customize Input Mask Wizard

Do you want to edit or add input masks for the Input Ma

Description:

Input Mask:

Placeholder:

Sample Data:

Mask Type:  ▼

Record: 1 of 9 No Filter Search

phone	(0124)-142-147-45-89
Vergi Dairesi ve No	Beylerbeyi / 621 002 0498
Posta Kodu	80700
Sosyal Sigorta Numarası	34.07.1995 36591
Sigorta Kod Numarası	0702.0500.044
Password	*****

Try It:

> : the following characters are capital.  
 L : The user must enter a letter  
 0: The user must enter a number

When you input your mask press close and finish

book store : Database (Access 2007 - 2010) - Microsoft Access

File Home Create External Data Database Tools Acrobat Table Tools Design

View Primary Key Builder Test Validation Rules Tools Insert Rows Delete Rows Modify Lookups Property Sheet Indexes Show/Hide Create Data Macros Rename/Delete Macro Relationships Object Dependencies Relationships

All Access Objects search... Tables book details

Field	Data Type	Description
ID	Text	
serial	AutoNumber	
autho	Text	
book	Text	
editio	Number	
cover	Text	
purchased	Date/Time	
second hand	Yes/No	

Property Sheet Selection type: Table Properties

Property	Value
Read Only When Disconnected	No
Subdatasheet Expanded	No
Subdatasheet Height	0cm
Orientation	Left-to-Right
Description	
Default View	Datasheet
Validation Rule	
Validation Text	
Filter	
Order By	
Subdatasheet Name	[Auto]
Link Child Fields	
Link Master Fields	
Filter On Load	No
Order By On Load	Yes

General Lookup

Format	General Date
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Indexed	No
IME Mode	No Control
IME Sentence Mode	None
Smart Tags	
Text Align	General
Show Date Picker	For dates

After you design your table, go to «datasheet view» in order to enter your data.

book details								
serial	ID	author	book title	edition	Field	📎	purchased	second hand
1	_____	john lawson	design of experiment	5	statistics	📎(1)	12.03.1987	<input type="checkbox"/>
2		ruchi goyal	financial accounting			📎(0)	01.03.2019	<input checked="" type="checkbox"/>
3			statistical modeling			📎(0)		<input type="checkbox"/>
4			the goal		novel	📎(0)		<input type="checkbox"/>
*(New)						📎(0)		<input type="checkbox"/>

# Format

The screenshot shows the Microsoft Access interface with the 'book details' table open. The ribbon includes 'Fields' and 'Table' tabs. The 'Table' ribbon has options for 'Filter', 'Sort & Filter', 'Records', and 'Find'. The 'Fields' ribbon has options for 'Text Formatting'. A color palette is open over the table, showing 'Automatic', 'Theme', 'Standard Colors', and 'Recent Colors' options.

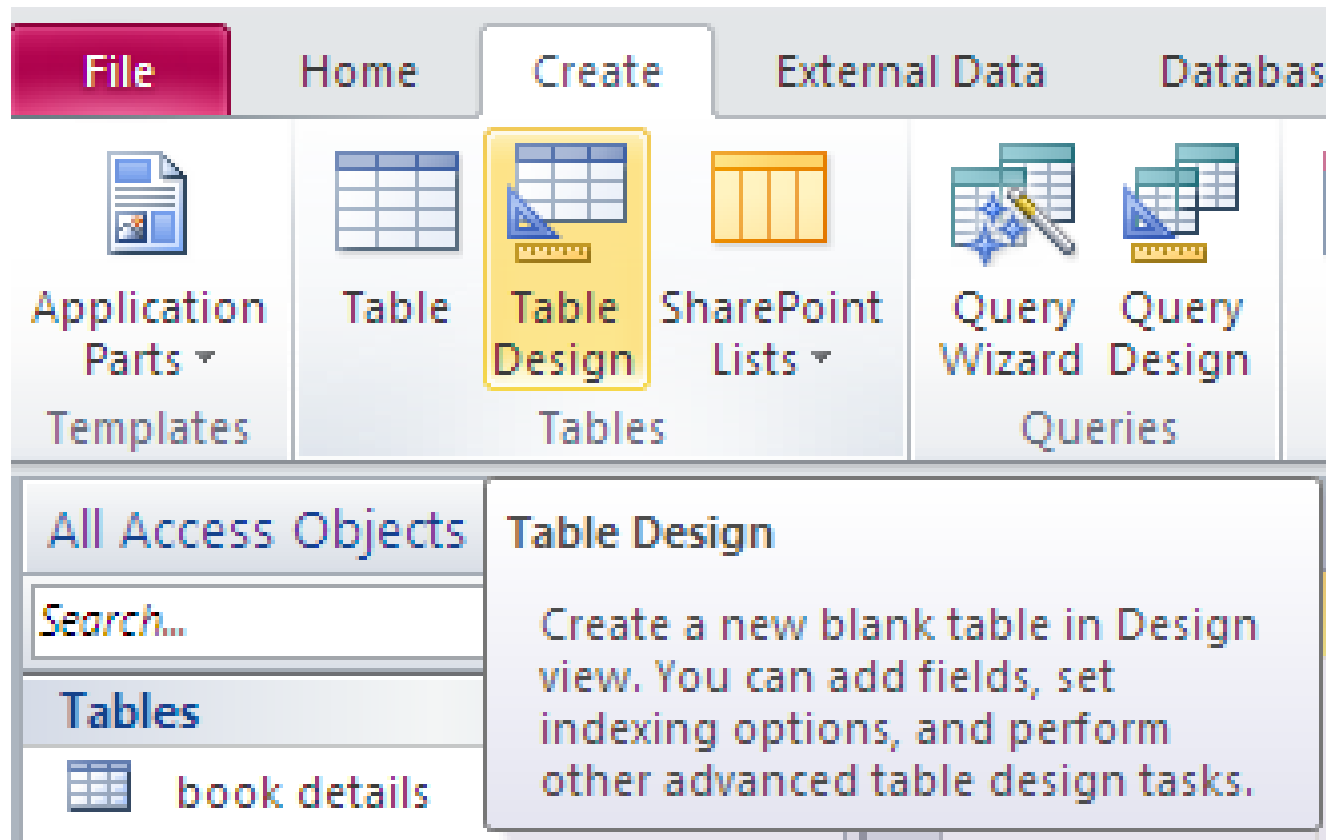
serial	ID	book title	author	edition	Field	purchase		
1	DA06	design and analysis of experiments	Douglas C.Montgomery	8	statistics	22.01.20	<input type="checkbox"/>	
2	FA23	financial accounting	ruchi goyal	4	economics	01.03.20	<input type="checkbox"/>	
3	SM34	statistical modeling	Daniel T.Kaplan	5	economics	20.02.20	<input type="checkbox"/>	
4	GO01	the goal	Eliyahu M.Goldratt	3	novel	19.11.20	<input type="checkbox"/>	
5	DE05	Design of experiments	Jiju antony	1	statistics	20.03.20	<input type="checkbox"/>	
6	PP02	Production planning and control	s.k mukhopadhyay	2	industrial engineering	30.04.20	<input type="checkbox"/>	
7	MA09	Management Accounting	R.S.N pillai bagavati	2	economics	17.03.2015	<input type="checkbox"/>	
8	OR01	Operations Research	hamdy A.taha	7	industrial engineering	21.10.2014	<input type="checkbox"/>	
9	IT37	Information thechnology and	John M.jordan	1	computer	14.06.2013	<input checked="" type="checkbox"/>	

# We continue filling the table

The screenshot shows the Microsoft Access interface with the 'Table Tools' ribbon active. The table 'book details' is displayed in Datasheet view. The table has the following data:

serial	ID	book title	author	edition	Field		purchased	second hand	Click to Add
1	DA06	design and analysis of experiments	Douglas C.Montgomery	8	statistics	🔒(1)	22.01.2018	<input checked="" type="checkbox"/>	
2	FA23	financial accounting	ruchi goyal	4	economics	🔒(1)	01.03.2019	<input type="checkbox"/>	
3	SM34	statistical modeling	Daniel T.Kaplan	5	economics	🔒(1)	20.02.2018	<input type="checkbox"/>	
4	GO01	the goal	Eliyahu M.Goldratt	3	novel	🔒(1)	19.11.2015	<input checked="" type="checkbox"/>	
5	DE05	Design of experiments	Jiju antony	1	statistics	🔒(1)	20.03.2017	<input checked="" type="checkbox"/>	
6	PP02	Production planning and control	s.k mukhopadhyay	2	industrial engineering	🔒(1)	30.04.2016	<input checked="" type="checkbox"/>	
7	MA09	Management Accounting	R.S.N pillai bagavati	2	economics	🔒(1)	17.03.2015	<input type="checkbox"/>	
8	OR01	Operations Research	hamdy A.taha	7	industrial engineering	🔒(1)	21.10.2014	<input type="checkbox"/>	
9	IT37	Information technology and	John M.jordan	1	computer	🔒(1)	14.06.2013	<input checked="" type="checkbox"/>	
*	(New)					🔒(0)		<input type="checkbox"/>	

# Now ,let's create a new table: suppliers



book details Table1

Field Name	Data Type	Description
supplier code	Text	
name	Text	
surname	Text	
birth day	Text	
tel	Text	
email	Hyperlink	
website	Hyperlink	

Save As

Table Name:

suppliers

OK Cancel



# And chose its primary key

The screenshot shows the Microsoft Access interface. At the top, there are tabs for 'book details' and 'Table1'. Below the tabs is a table with the following fields:

Field Name	Data Type	Description
supplier code	Text	
name	Text	
surname	Text	
birth day	Text	
tel	Text	
email	Hyperlink	
website	Hyperlink	

On the right side, there is a 'Property Sheet' pane with the 'General' tab selected. It shows various properties like 'Selection type', 'Read Only When', 'Subdatasheet', 'Orientation', 'Description', 'Default View', 'Validation Rule', and 'Validation Text'.

In the foreground, a dialog box titled 'Microsoft Access' is displayed. It contains a warning icon and the following text:

**There is no primary key defined.**  
Although a primary key isn't required, it's highly recommended. A table must have a primary key for you to define a relationship between this table and other tables in the database.  
Do you want to create a primary key now?

At the bottom of the dialog box, there are three buttons: 'Yes', 'No', and 'Cancel'.

# The primary key is : supplier code

The screenshot shows the Microsoft Access interface in Design view for the 'suppliers' table. The ribbon includes the 'Design' tab, which has the 'Primary Key' icon highlighted. The table design grid shows the following fields and data types:

Field Name	Data Type	Description
ID	AutoNumber	
supplier code	Text	
name	Text	
surname	Text	
birth day	Text	
tel	Text	
email	Hyperlink	
website	Hyperlink	

# Mask for birthday

Input Mask Wizard

Customize Input Mask Wizard

Do you want to edit or add input masks for the Input Mask Wizard to display?

Description: birthday

Input Mask: 00/00/0000

Placeholder:

Sample Data: \_.\_.\_.

Mask Type: Text/Unbound

Record: 1 of 9

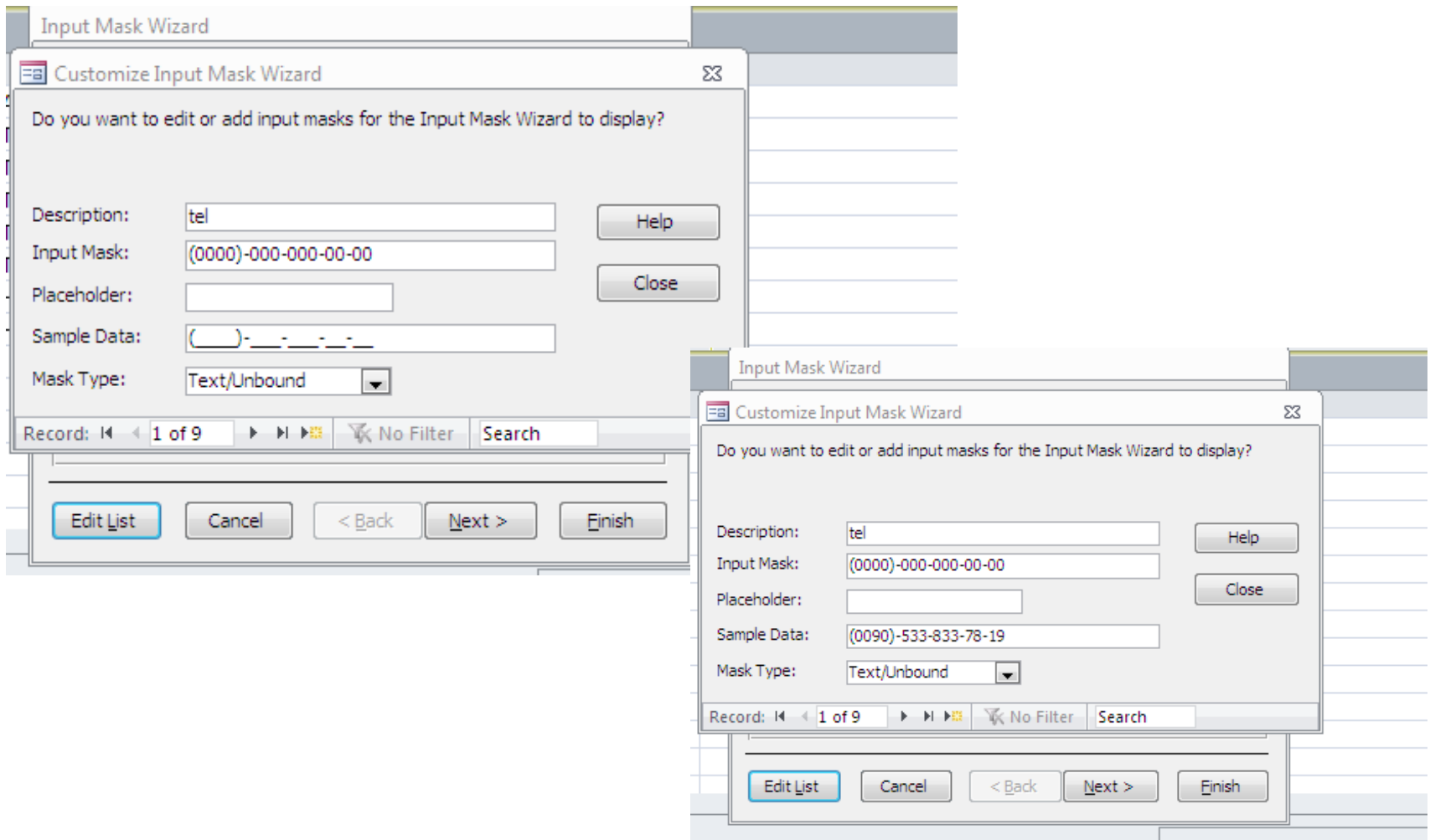
No Filter

Search

Edit List Cancel < Back Next > Finish

But it is recommended to use the type «date» for dates .  
(This is just an example to make you familiarized with masks)

# Mask for telephone



# And input data

book details		suppliers							
ID	supplier code	name	surname	birth day	tel	email	website	Click to Ad	
1	AA01	ahmad	alawi	16.04.1980	(0212)-661-145-84-24	<a href="mailto:alawi@hotmail.com">alawi@hotmail.com</a>	<a href="http://ketab.ma">ketab.ma</a>		
2	AP	antonio	patino	30.06.1988	(0090)-588-352-14-45	<a href="mailto:anto@yahoo.fr">anto@yahoo.fr</a>	<a href="http://book.com">book.com</a>		
3	BH	Bernard	hugo	05.10.1978	(0232)-661-457-85-12	<a href="mailto:bernardo@gmail.com">bernardo@gmail.com</a>	<a href="http://lire.com">lire.com</a>		
4	TB	Tessa	blair	18.09.1981	(0475)-842-158-96-31	<a href="mailto:tessa@yahoo.fr">tessa@yahoo.fr</a>	<a href="http://read.com">read.com</a>		
5	SG	serena	gonza	03.12.1995	(0852)-147-963-15-78	<a href="mailto:serena@gmail.com">serena@gmail.com</a>	<a href="http://knowledge.fr">knowledge.fr</a>		
*	(New)								

# Sort records

The image shows a database application interface with a 'suppliers' table. The table has columns: ID, supplier code, name, surname, birth day, tel, email, website, and Click to Ad. The 'birth day' column is selected, and a sorting menu is open. The menu options are 'Sort A to Z', 'Sort Z to A', and 'Clear filter from birth day'. Below the table, a list of filters for the 'birth day' column is shown, including '(Select All)', '(Blanks)', and several specific dates: 03121995, 05101978, 16041980, 18091981, and 30061988.

ID	supplier code	name	surname	birth day	tel	email	website	Click to Ad
1	AA01	ahmad	alawi	16.04.1980		@hotmail.com	ketab.ma	
2	AP	antonio	patino	30.06.1988		@yahoo.fr	book.com	
3	BH	Bernard	hugo	05.10.1978		do@gmail.com	lire.com	
4	TB	Tessa	blair	18.09.1981		a@yahoo.fr	read.com	
5	SG	serena	gonza	03.12.1995		a@gmail.com	knowledge.fr	
*	(New)							

ID	supplier code	name	surname	birth day	tel	email	website	Click to Ad
5	SG	serena	gonza	03.12.1995	(0852)-147-963-15-78	serena@gmail.com	knowledge.fr	
3	BH	Bernard	hugo	05.10.1978	(0232)-661-457-85-12	bernardo@gmail.com	lire.com	
1	AA01	ahmad	alawi	16.04.1980	(0212)-661-145-84-24	alawi@hotmail.com	ketab.ma	
4	TB	Tessa	blair	18.09.1981	(0475)-842-158-96-31	tessa@yahoo.fr	read.com	
2	AP	antonio	patino	30.06.1988	(0090)-588-352-14-45	anto@yahoo.fr	book.com	
6	op							
*	(New)							

# New Table : accounting

The screenshot displays the Microsoft Access interface. The ribbon is set to 'Table', showing options for adding fields like 'Date & Time', 'Yes/No', and 'More Fields', as well as properties like 'Name & Caption', 'Default Value', and 'Field Size'. The 'Table1' tab is active in the main workspace, showing a table with a primary key 'ID' and a new record '(New)'. A 'Save As' dialog box is open, with the 'Table Name' field containing the text 'accounting'. The dialog box also includes 'OK' and 'Cancel' buttons.

accounting		
Field Name	Data Type	Description
serial	AutoNumber	
ID	Text	
book title	Text	
purchased items	Number	
on hand	Number	
cost	Number	
selling price	Number	
promotion %	Number	
supplier	Text	
Field Properties		



# Record validation rule and message

The screenshot shows the Microsoft Access interface with the 'Table Tools' ribbon selected. The 'Table' tab is active, displaying various options for field and record validation. The 'Validation' group on the right side of the ribbon includes a 'Validation' button with a dropdown arrow. Below the ribbon, the 'Accounting' table is open in Datasheet view, showing columns for serial, ID, book title, purchased it, on hand, cost, and selling price. A new record is being added, indicated by a yellow asterisk in the first row. A context menu is open over the 'on hand' field, listing the following options:

- Field Validation Rule**  
Create an expression that restricts the values that can be entered in the field.
- Field Validation Message**  
Set the error message for the Field Validation Rule.
- Record Validation Rule**  
Create an expression that restricts the values that can be entered into a record. For example, [StartDate] < [EndDate].
- Record Validation Message**  
Set the error message for the Record Validation Rule.

Microsoft Access interface showing the 'Table Tools' ribbon and the 'Expression Builder' dialog box.

The ribbon includes the following groups and options:

- Fields:** Name & Caption, Default Value, Field Size, Modify Lookups, Modify Expression, Memo Settings.
- Table:** Data Type (Number), Format, Formatting (%, .00, +.00), Required, Unique, Indexed, Validation.

The 'All Access Objects' pane shows the following tables:

- accounting
- book details
- suppliers

The 'Table Tools' ribbon is currently set to 'Table' and the 'Table' tab is selected. The 'Table' tab shows the following fields:

serial	ID	book title	purchased it	on hand	cost	selling price	supplier	Click to Add
(New)								

The 'Expression Builder' dialog box is open, showing the following expression:

```
[purchased items] >=[on hand] And [selling price] >[cost]
```

The dialog box also shows the following expression elements:

- Expression Elements: accounting, Functions, Constants, Operators
- Expression Categories: serial, ID, book title, purchased items, on hand, cost, selling price, supplier
- Expression Values: <Value>

External Data Database Tools Acrobat Fields Table

Date & Time Yes/No More Fields Delete

Name & Caption Default Value Field Size Properties

Modify Lookups Modify Expression Memo Settings

Data Type: Number Format: % Formatting

Required Unique Indexed Validation Field Validation

book details suppliers **accounting**

serial	ID	book title	purchased it	on hand	cost	selling price	supplier	Click to Ac
*	(New)							

Enter Validation Message

the selling price is greater than the cost & the purchased items are more th

OK Cancel

# When a record violates the validation rule

Microsoft Access

the selling price is greater than the cost & the purchased items are more than on hand

OK Help

[Was this information helpful?](#)

serial	ID	book title	purchased it	on hand	cost	selling price	supplier	Click to Add
2			8	10				
(New)								

Microsoft Access

the selling price is greater than the cost & the purchased items are more than on hand

OK Help

[Was this information helpful?](#)

serial	ID	book title	purchased it	on hand	cost	selling price	supplier	Click to Add
2			8	5	50	45		
(New)								

# Difference between Field validation rule and Record validation rule ???

Let's insert a new field « sold items », we want to be sure that the total of purchased items is equal to the sold items and on hand ones.  
Let's put this condition in the Field validation rule

The screenshot shows the Microsoft Access interface with a table named 'accounting'. The table has columns: serial, ID, book title, purchased items, on hand, sold items, cost, selling price, and promotion. A new record is being added, indicated by an asterisk and '(New)' in the serial column. An 'Expression Builder' dialog box is open, showing the expression: `[sold items]=[purchased items]-[on hand]`. Below it, a 'Microsoft Access' error message dialog box is displayed, stating: 'Invalid SQL syntax - cannot use multiple columns in a column-level CHECK constraint.' The error message dialog box has an 'OK' button and a link that says 'Was this information helpful?'. The 'Expression Builder' dialog box has 'OK', 'Cancel', 'Help', and '<< Less' buttons.

- In the Field validation rule we can set a condition for the current field only.
- If we want to impose a rule using more than one field ,we use the Record validation rule.

 In the Record validation rule, we add our new condition

serial	ID	book title	purchased items	on hand	sold items	cost	selling price	promotion %
2			8	5	3	50	60	
3			8					
*	(New)							

**Expression Builder** ✖

Enter an Expression to [validate](#) the data in this field:  
 (Examples of expressions include [field1] + [field2] and [field1] < 5)

[purchased items] >=[on hand] And [selling price] >[cost] And [sold items]=[purchased items]-[on hand]

Expression Elements	Expression Categories	Expression Values
<ul style="list-style-type: none"> <li>accounting</li> <li>Functions</li> <li>Constants</li> <li>Operators</li> </ul>	<ul style="list-style-type: none"> <li>&lt;All&gt;</li> <li>Arithmetic</li> <li>Comparison</li> <li>Logical</li> <li>String</li> </ul>	<ul style="list-style-type: none"> <li>And</li> <li>Eqv</li> <li>Imp</li> <li>Not</li> <li>Or</li> <li>Xor</li> </ul>

# We can add other restrictions :

The screenshot shows an accounting application interface. At the top, there is a tab labeled "accounting". Below it is a table with the following columns: serial, ID, book title, purchased items, on hand, sold items, cost, and selling price. The table contains three rows of data:

serial	ID	book title	purchased items	on hand	sold items	cost	selling price
2			8	5	3	50	60
3			8				
*	(New)						

An "Expression Builder" dialog box is open in the foreground. It has a title bar "Expression Builder" and a close button. The main text says: "Enter an Expression to validate the data in this field: (Examples of expressions include [field1] + [field2] and [field1] < 5)". Below this is a text input field containing ">". To the right of the input field are four buttons: "OK", "Cancel", "Help", and "<< Less". At the bottom of the dialog, there are three panes: "Expression Elements" containing a tree view with "Functions", "Constants", and "Operators"; "Expression Categories" which is empty; and "Expression Values" which is also empty.



# Add a default value

- Add a new field « promotion » with default value , chose the value desired .
- when we create a new record ,the value of «promotion» is automatically insered

The screenshot shows the Microsoft Access interface. The 'Fields' tab is active, and the 'Default Value' property is highlighted for a new field named 'promotion'. The 'Data Type' is set to 'Number'. The 'Field Validation' section shows 'Required', 'Unique', and 'Indexed' options, with 'Required' checked. The 'Table' tab is also visible, showing a table named 'accounting' with columns: serial, ID, book title, purchased it, on hand, cost, selling price, promotion, and supplier. A new record is being added, indicated by an asterisk in the 'serial' column. The 'promotion' field in the new record is highlighted in blue.

serial	ID	book title	purchased it	on hand	cost	selling price	promotion	supplier
2			8	5	50	60		
*(New)								

Name & Caption  
 Default Value  
 Field Size

Properties  
 Modify Lookups  
*fx* Modify Expression  
**ab|** Memo Settings

Data Type: **Number**  
 Format:   
 %    ←.0    .00    →.0

Formatting  
 Field Validation  
 Required  
 Unique  
 Indexed  
 Validation

ID	book title	purchased items	on hand	sold items	cost	selling price	promotion %	supplier
			8					
			8					
			7					

Expression Builder

Enter an Expression to return the default value of the field:  
 (Examples of expressions include [field1] + [field2] and [field1] < 5)

=10%

OK  
Cancel  
Help  
<< Less

Expression Elements    Expression Categories    Expression Values

- Functions
- Constants
- Operators

book details suppliers <b>accounting</b>								
serial	ID	book title	purchased it	on hand	cost	selling price	promotion %	supplier
2			8	5	50	60		
3			8				10	
* (New)							10	