



# *Chapter 5*

# *Database*



# Introduction

- A data base is a collection of data stored in a computer system in some organised manner to make the retrieval of the data easy.

# Database concepts 1

- Traditionally filling methods
  - This is the old way of organising files. This method is where data is stored within a single paper file or table.

# Database concept 2

- Computerised database
  - This database use database management system software to manipulate data.  
Examples of DataBase Management Software (DBMS) include:
    - MS-Access
    - Oracle
    - Fox Pro
    - Dbase IV

# Disadvantages of traditional methods

- Unnecessary duplication of data.
- Boredom and time wasting while searching for a record.
- Misleading reports due to poor data entry.
- Poor update of records.

# Functions of DBMS

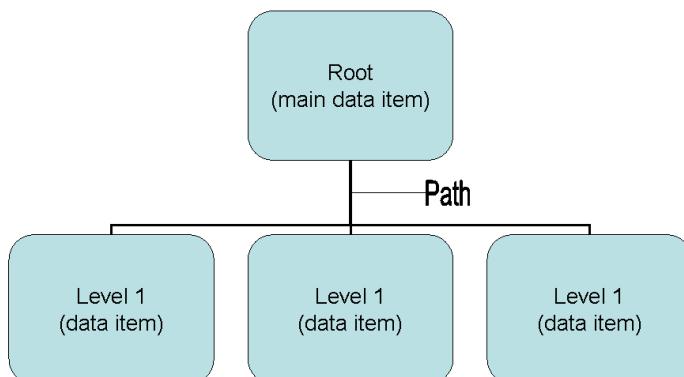
- Allow the user add or delete records.
- Update or modify existing records.
- Organise data for easy access, retrieval and manipulation.
- Ensure security for data in the database.
- Keeps statistic of data items in database.

# Database models 1

## Flat files

Name	Serah Seki
Admission number	649
Total marks	680
Number of subjects	10
Average	68
Position	4

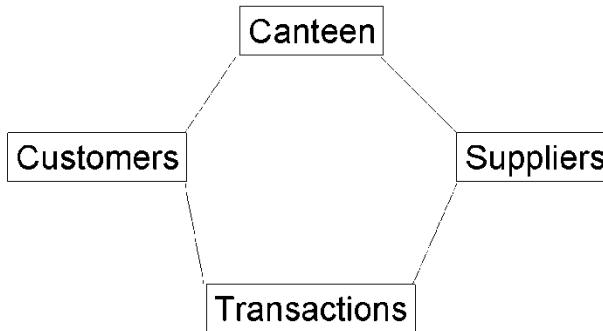
## Hierarchical data base model



- Flat files – this model of database holds only one set of data and is not any different from the manual files e.g. the library catalogue.
- Hierarchical model – in this model items are arranged in hierarchical (tree) form. To access level one data items, you have to first access main data item (Root). A specific single path leads to each item at lower levels.

# Database models 2

## Network database model



## Relational database model

Customer Number	Name	Telephone number
900	Mary Koech	02078907
230	Peter Karimi	0667896
450	Bat Hori	04456000

Customer ID	Order Number	Date	Amount (sh)
900	2380	2/3/2004	90 000
450	811	2/5/2004	5 000
450	234	3/5/2004	13 000
450	567	3/6/2004	13 000

- Network model – in this model, lines are used to express the relationship between different data items, forming a network of items. Access of one item can be through many paths and from any item.
- Relational model – in this model, related data items are stored together in structures called relations or tables. Relationship can be created between tables such that a record or records from one table relates to another in another table.



# Database models 3

- Object oriented model – in this model, database is a complete program built to hold a collection of objects, which have both properties and behaviour.

# Features of database 1

## Tables/file structure

FIRST NAME	MIDDLE NAME	LAST NAME	ADDRESS
MBUGUA	STEPHEN	KIMANI	250 KERUGOYA
ADERA	NELSON	ODUOR	396 HOMA BAY
MARGARET	JUDY	WEKESA	761 NAIROBI
GOTO	PATRICIA	MUILA	170 TALA
MWELU	LUCY	MWANI	390 KANGUNDO
KOECH	PETER	KORIR	605 KERICHO

## Queries

Select Farmer Number, Name, Month of Delivery  
Form

*Delivery Table*

Where

*Month of Delivery = "January"*

- Tables/file structure – this is database structure that is used to hold related records.
- Queries – this is a tool used to search for or question a database on specific records.

# Features of database 2

Sample form

The screenshot shows a Windows-style application window titled "Rent". Inside, there's a data entry form with five fields: "Tenant ID" containing "2019", "Tenant Name" containing "Akinyi", "House Number" containing "A1", "Month" containing "January", and "Amount (Ksh)" containing "3,000.00". At the bottom, there's a "Record" navigation bar with icons for previous/next record, first/last record, and a search icon. The text "1 of 12" is visible.

Sample report

The screenshot shows a Windows-style application window titled "Tenant Statement". It displays a table titled "Tenant Statement" with columns: Tenant ID, Tenant Name, House Number, Month, and Amount (Ksh). The data is as follows:

Tenant ID	Tenant Name	House Number	Month	Amount (Ksh)
2019 Akinyi	Akinyi	A1	January	3,000.00
2019 Mwala	Mwala	A2	January	4,000.00
2019 Yatta	Yatta	B1	January	4,000.00
2018 Ragi	Ragi	B2	January	4,000.00
2018 Mwala	Mwala	C1	January	4,000.00
2018 Akinyi	Akinyi	A1	February	4,000.00
2018 Yatta	Yatta	A2	February	4,000.00
2018 Mwala	Mwala	B1	February	4,000.00
2018 Ragi	Ragi	B2	February	4,000.00
2018 Akinyi	Akinyi	C1	February	4,000.00
2018 Yatta	Yatta	A2	March	4,000.00
2018 Mwala	Mwala	B1	March	4,000.00
2018 Ragi	Ragi	B2	March	4,000.00
2018 Akinyi	Akinyi	C1	March	4,000.00

- Form/Screen input – this is a graphical interface that resembles the ordinary paper form used to collect data. It enables the user to view and enter data into a table.
- Report – database provides the user with a tool for generating reports from a table or query.

# Features of database 3

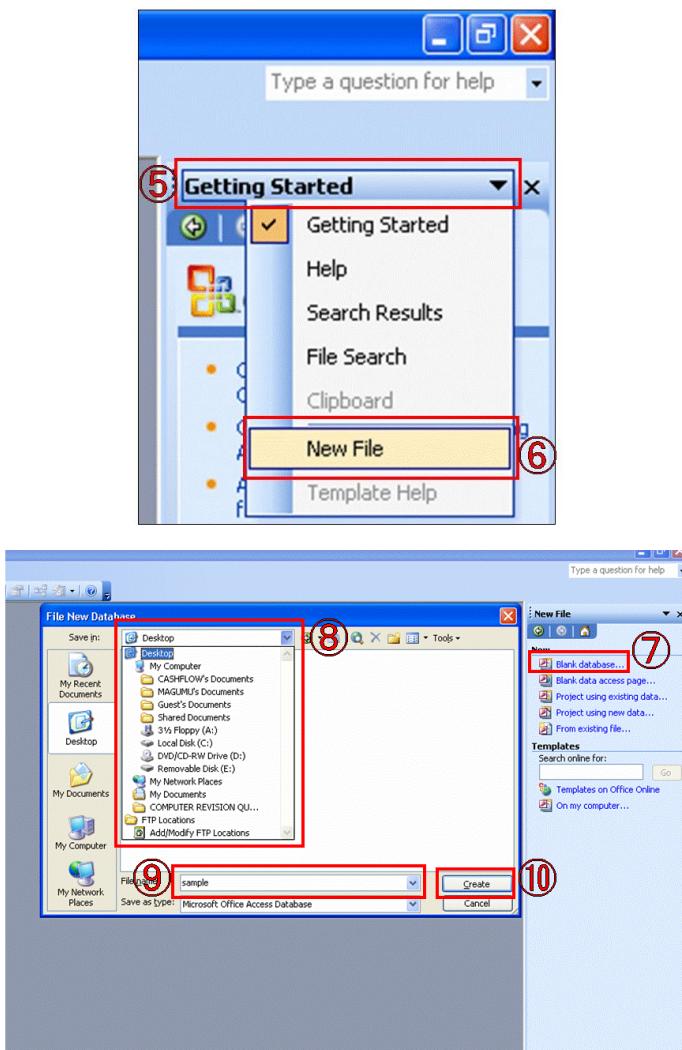
- Modules – this tool is like the macro but it's more precise in the sense that you have control over the actions taken.
- Macro – this tool enables the user to automate frequently performed procedures or tasks.



# Data organisation in a database

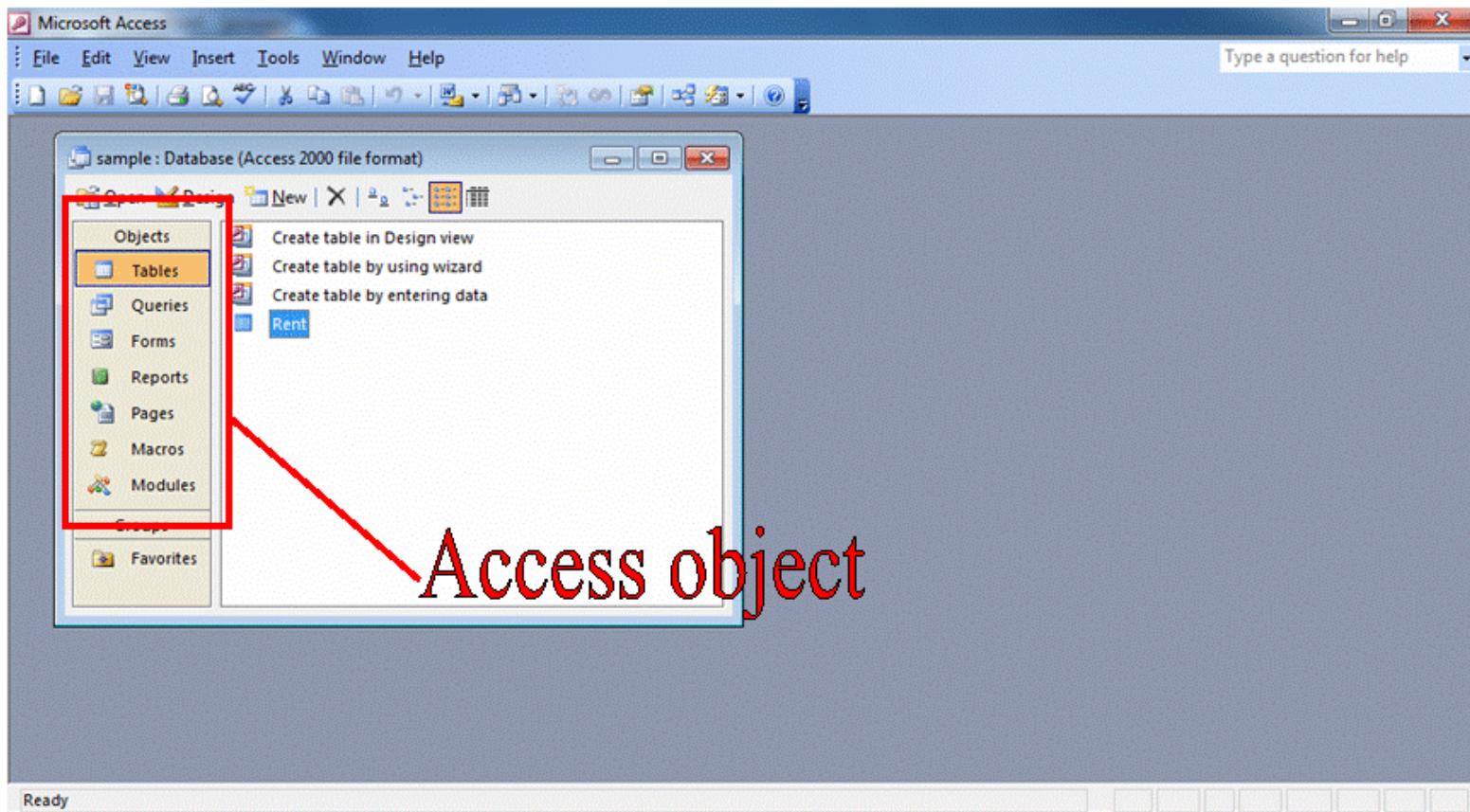
- Field – this is a character or a logical combination of characters that represent a data item e.g. in a class list the Admno is a field.
- Records – this is a collection of related fields that represents a single entity e.g. student name, sex, age, marks etc.
- File – this is a collection of related records.
- Database – this holds all related files or tables.

# Creating a database using MS-Access



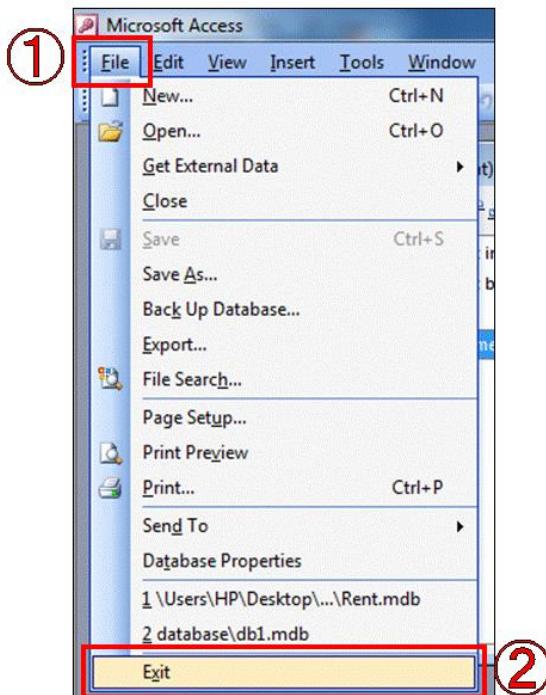
1. Click “Start”.
2. Point to “Programs/All Programs”.
3. Point to “Microsoft Office”.
4. Click “Access 2003” (application is opened).
5. On the task pane, click down arrow sign of click “Getting Started” (shortcut menu is displayed).
6. Select “New file”.
7. Click “Blank database” (File New Database dialog box is displayed).
8. Select the location where you want to create the database from the arrow down list.
9. Type the name of database in the file name box.
10. Click “Create” button.

# Microsoft Access screen layout



# Steps of “exiting from Access”

1. On the “File” menu.

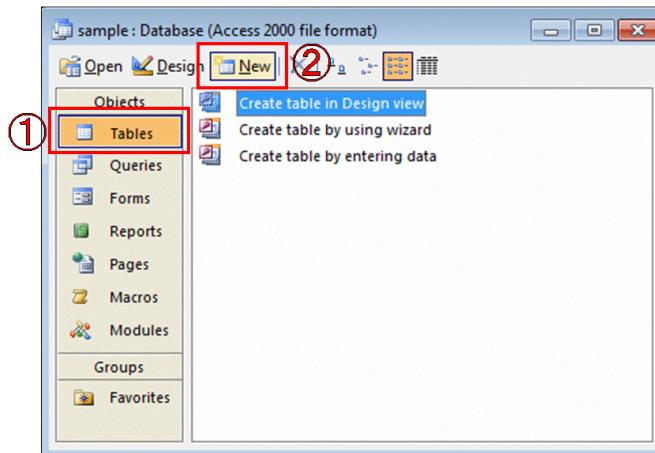


2. Click “Exit.”

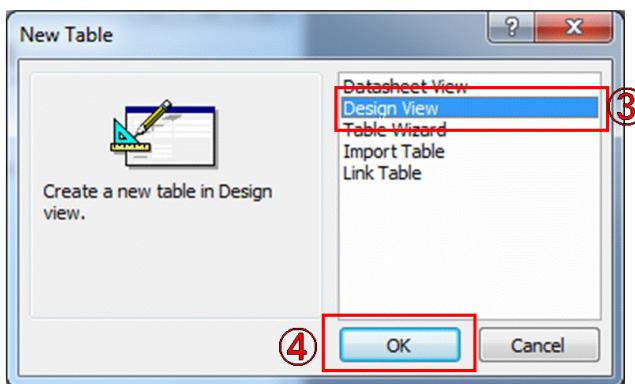
NB: shortcut key

Alt+F4

# Steps of “creating a table structure” 1

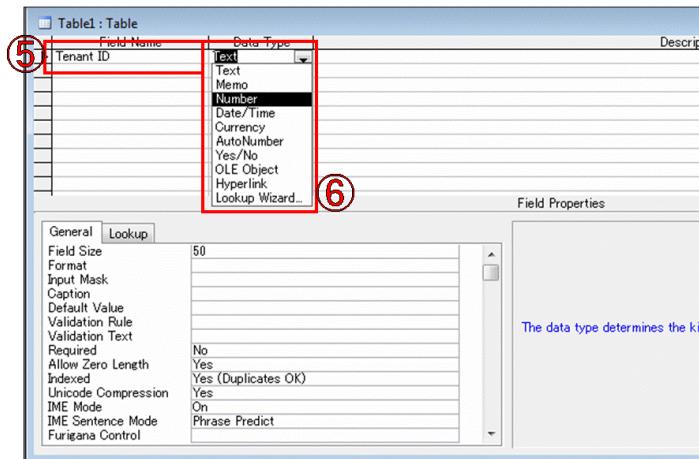


New Table dialog box

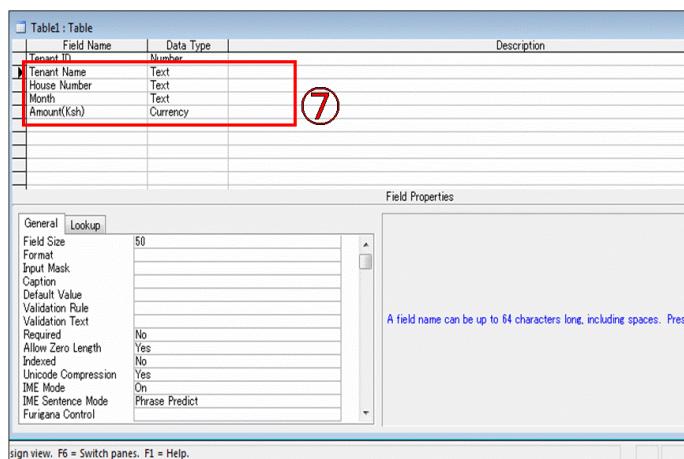


1. Click “Table” tab.
2. Click “New”. (New Table dialog box is displayed).
3. Select “Design View” from the list.
4. Click “OK” button. (Table is displayed).

# Steps of “creating a table structure” 2



5. Type a unique name for each field in the table.

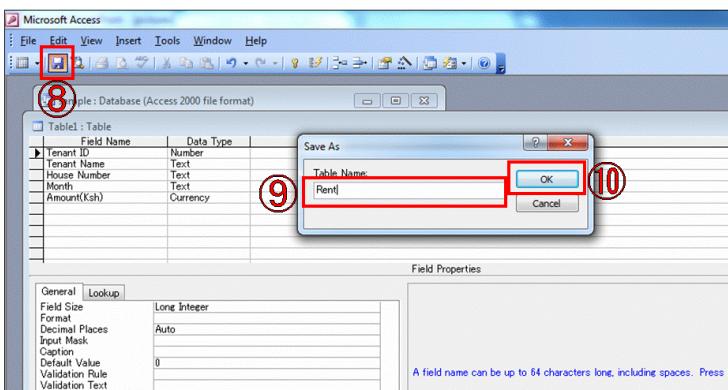


6. Select “Data Type” from the down arrow list.

7. Add the other fields.

# Steps of “creating a table structure” 3

Save As dialog box



Message dialog box



8. After you add in other fields, click “Save” button on the standard toolbar. (Save As dialog box is displayed).
9. Type the name of table in the “Table Name” box.
10. Click “OK” button. (Message box is displayed).
11. Access will ask you whether you want to create a “Primary Key”, click “Yes”.



# Rules of a file name in the table

- A field name must start with a letter and can be up to a maximum of 64 characters including letters, numbers, spaces and punctuation.

# Field data types 1

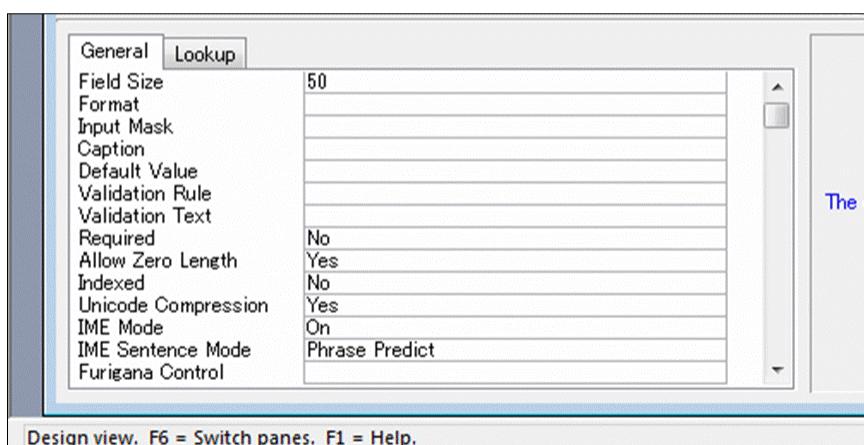
- Text – it includes alphabetic letters, numbers, spaces, punctuation etc. This data type is used in field that needs no calculations.
- Number – this field is made up of numeric numbers 0-9 that are to be manipulated mathematically.
- Memo – this is made up of alphanumeric data used if you need to enter several paragraphs of text.
- Data/Time – identify a field either as date or time.

# Field data types 2

- Currency – identify a numeric value that have decimals or fractions used when dealing with monetary values.
- Autonumber – it's a numeric value used if you want MS-Access to automatically increment the values in the field.
- Yes/No – it's a logical field where an entry is either a “Yes” or “No” “True” or “False”.
- Ole object – this data type is used with graphical user interface application for inserting graphical objects.

# Field properties settings

## Table properties settings



- As you create more and more complex tables, you will find a need to use field properties to specify finer details related to fields and table entries expected. Field properties depend on the type of field selected. For example, when you click on a “Text” field, then the “General” tab, you will see properties associated to text data type as shown in figure right.

# Field properties 1

- Field size – allow the user to set the number of characters in a field instead of the default 50 for text fields. For numeric fields integer, bytes, single, double or long integer is used.
- Format – determines how information appears on the screen and when printed e.g. you can format number to scientific, currency, % etc

# Field properties 2

- Decimal places – for number or currency fields you can specify the number of decimal place.
- Input mask – it automatically formats the field entry into specified format e.g. a number 02042426090 and the input mask is set as 000-(0000)-(0000) it will automatically display as 020-4242-6090.

# Field properties 3

- Caption – it's a more descriptive name for a field to be used in a table or a form display e.g. a caption Fname could be First name.
- Default value – this is a value that will appear automatically in the form if nothing is entered by the user to change it e.g. Date () automatically displays current date<sub>26</sub>

# Field properties 4

- Validation rule – it's a logical expression that restricts values to be entered in a field e.g. to restrict value entered in a field to be between 0 and 100 type  $> = 0$  and  $< = 100$ .
- Validation text – this is message that appears once the validation rule is violated e.g. you may enter a validation rule for the above rule to display “Enter a number between 1 and 100”

# Field properties 5

- Required – Determines if an entry must be made in the field before you proceed to the next field or record.
- Allow zero length – allows the user to proceed without making any entry in the field set as zero length.

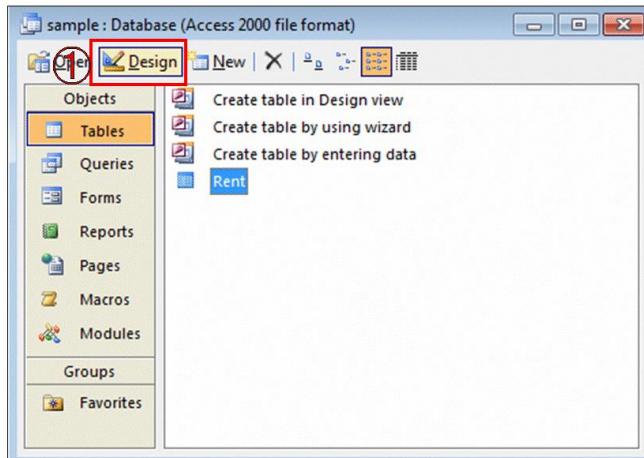
# Field properties 6

- Indexed – it facilitates the organisation of records for easy search.
- Primary key – it's a field that enforces uniqueness in a table so that one record is not entered twice.
- Index – this is a feature used to speed up search and sort operations in a table.

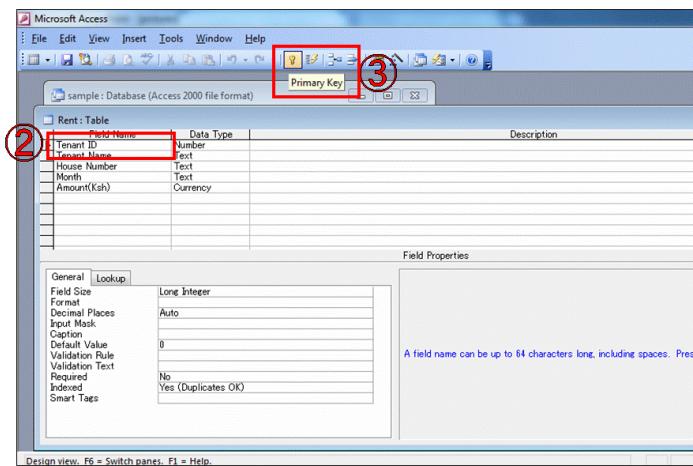
# Primary key and indexes.

- An index is a key(s) used to speed up searching and sorting records in a table, while a primary key is an index that uniquely identifies each record stored in the table. A primary key prevents the user from making null or double entries into a table. Access uses the primary key to order records, and control redundancy. Once a field is set as primary key, the datasheet is automatically indexed or sorted using the primary key.

# Steps of “set a primary key”

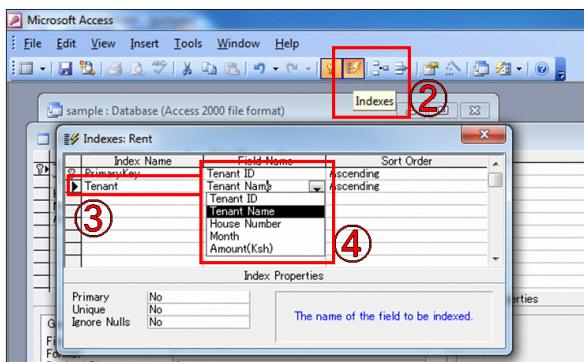


1. Open the table in design view.
2. Select the field you want to set as the primary key by clicking in the row header to the left the "Field Name".
3. Click "Set Primary Key" button on the tools bar.

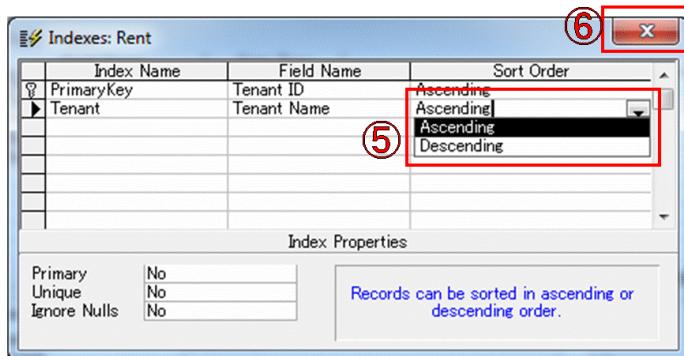


# Steps of “set another field as an index other than the primary key”

Indexes dialog box

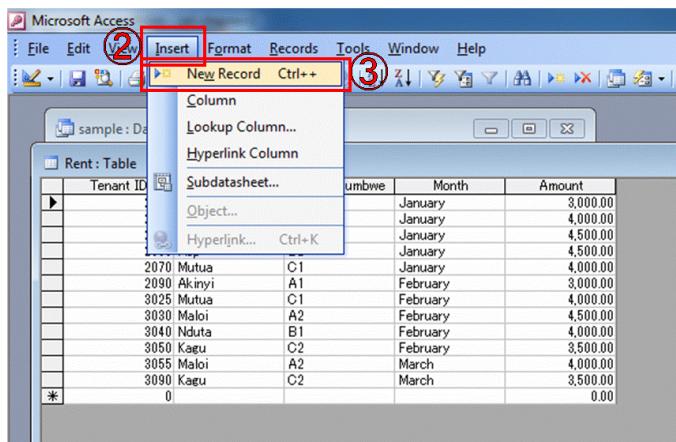
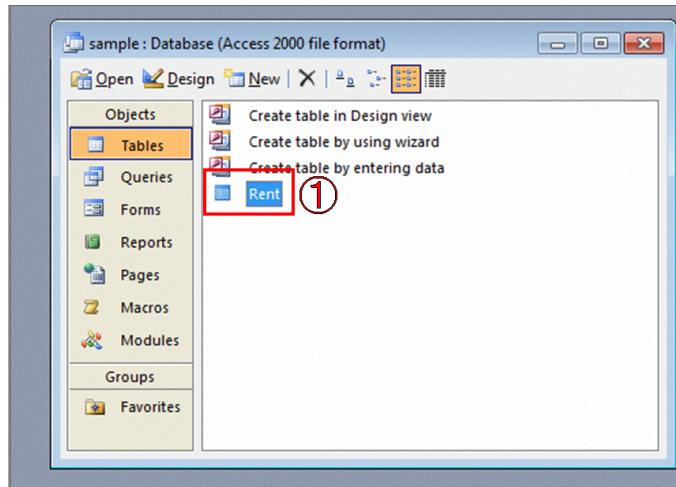


Indexes dialog box



1. Open the table in design view.
2. Click “Indexes” button next to the primary key. (Indexes dialog box is displayed on the screen as shown in figure right above.)
3. In the “Index Name” column, type the name of the index.
4. In the “Filed Name” column, select the corresponding fieldname.
5. In the “Sort Order” column, select “Ascending” or “Descending”.
6. “Close” dialog box.

# Steps of “adding new records”



1. Double click the table icon. (the table is displayed in datasheet view).
2. On the “Insert” menu.
3. Click “New Record”.

# Symbols of row header.

The screenshot shows two Microsoft Access database windows. Both windows display a table named 'Rent' with the following schema:

Tenant ID	Tenant Name	House Numbwe	Month	Amount
2019	Akinyi	A1	January	3,000.00
2022	Maloi	A2	January	4,000.00
2038	Nduta	B1	January	4,500.00
2059	Rop	B2	January	4,500.00
2070	Mutua	C1	January	4,000.00
2090	Akinyi	A1	February	3,000.00
3025	Mutua	C1	February	4,000.00
3030	Maloi	A2	February	4,500.00
3040	Nduta	B1	February	4,000.00
3050	Kagu	C2	February	3,500.00
3055	Maloi	A2	March	4,000.00
3060	Kagu	C2	March	3,500.00
				0.00

The first window has three rows highlighted with red circles and arrows pointing to them:

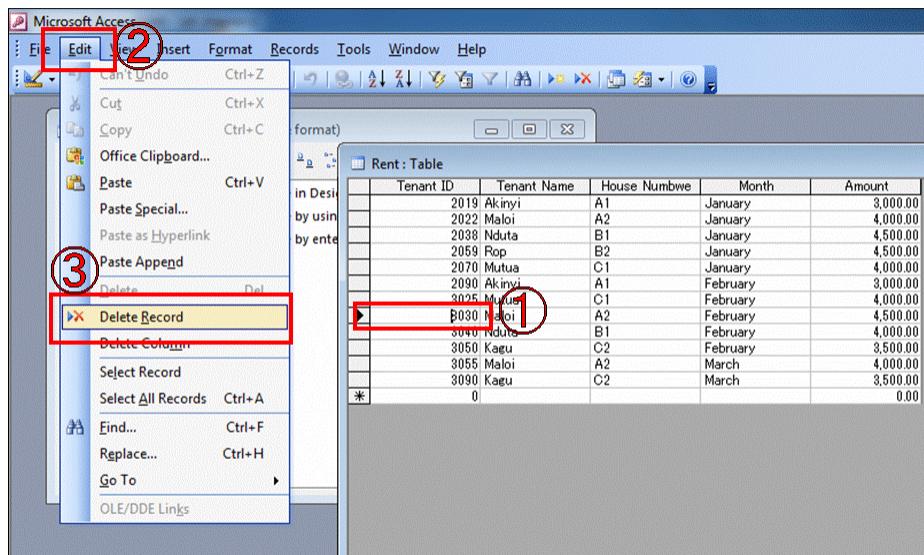
- An arrowhead symbol points to the first row (highlighted in blue).
- An asterisk symbol points to the second row (highlighted in green).
- A pencil symbol points to the third row (highlighted in yellow).

The second window shows the same data but with no rows highlighted.

- An arrowhead indicates that no new data entry or edit is pending.
- Asterisk symbol marks a blank record below the current entry.
- Pencil symbol indicates that the current record entry is not yet saved.
- Record locked indicates that the current record is being edited by another user in a multi-user or networked environment.

# Steps of “deleting records”

1. Click the record you want to delete.
2. On the “Edit” menu.
3. Click “Delete”.



# Steps of “editing fields”

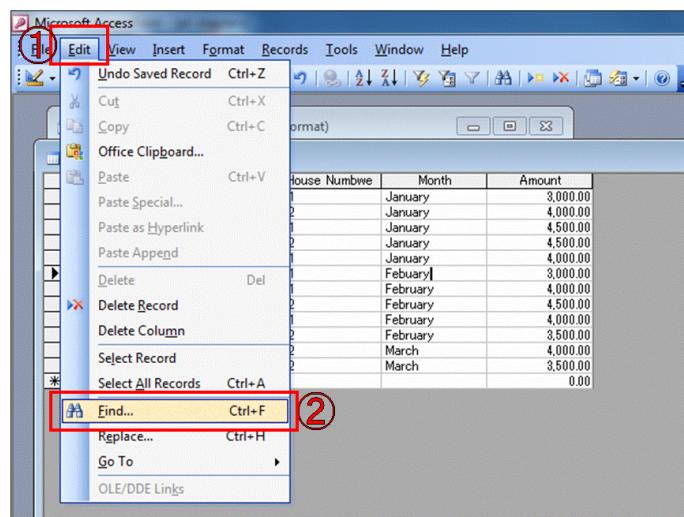
Tenant ID	Tenant Name	House Numbwre	Month	Amount
2019	Akinyi	A1	January	3,000.00
2022	Maloi	A2	January	4,000.00
2038	Nduta	B1	January	4,500.00
2059	Rop	B2	January	4,500.00
2070	Mutua	C1	January	4,000.00
2090	Akinyi	A1	February	3,000.00
3025	Mutua	C1	February	4,000.00
3030	Maloi	A2	February	4,500.00
3040	Nduta	B1	February	4,000.00
3050	Kagu	C2	February	3,500.00
3055	Maloi	A2	March	4,000.00
3090	Kagu	C2	March	3,500.00
*		0		0.00

1. Double click the field you want to edit.

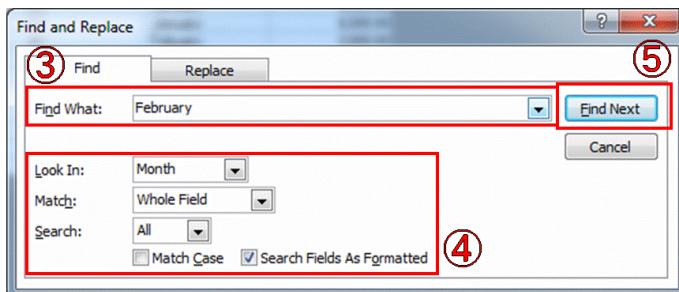
Tenant ID	Tenant Name	House Numbwre	Month	Amount
2019	Akinyi	A1	January	3,000.00
2022	Maloi	A2	January	4,000.00
2038	Nduta	B1	January	4,500.00
2059	Rop	B2	January	4,500.00
2070	Mutua	C1	January	4,000.00
2090	Akinyi	A1	January	3,000.00
3025	Mutua	C1	February	4,000.00
3030	Maloi	A2	February	4,500.00
3040	Nduta	B1	February	4,000.00
3050	Kagu	C2	February	3,500.00
3055	Maloi	A2	March	4,000.00
3090	Kagu	C2	March	3,500.00
*		0		0.00

2. Replace the cell content.

# Steps of “searching for records”



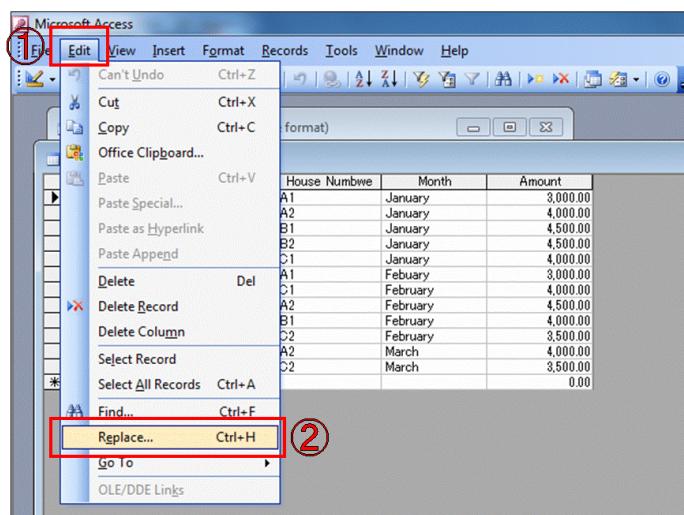
Find and Replace dialog box



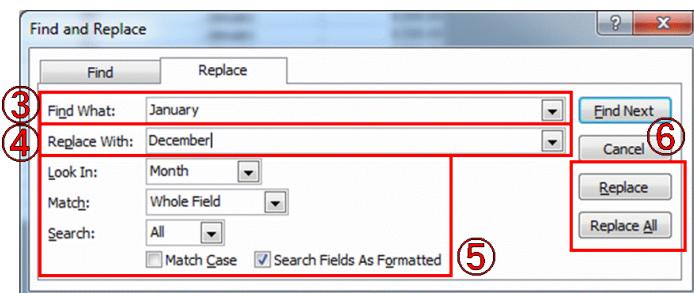
1. On the “Edit” menu.
2. Click “Find”.
3. In the “Find What” box, type the field to search.
4. Select other options for find “Look In”, Match or etc.
5. Click “Find Next” button.

NB; shortcut key  
Ctrl + F

# Steps of “Replace a records”

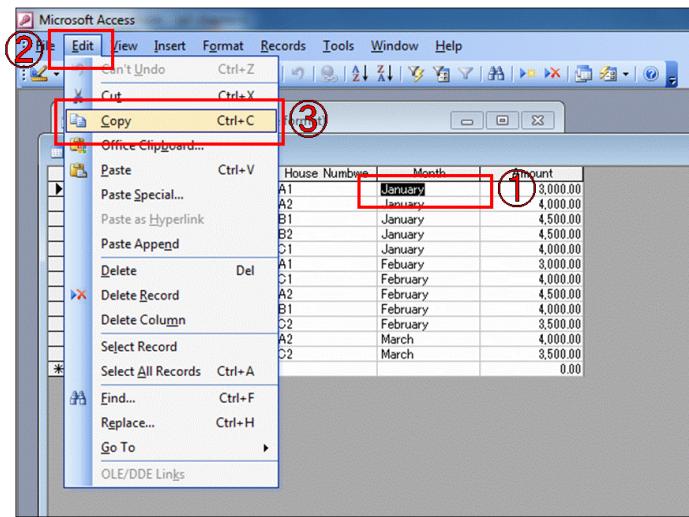


Find and Replace dialog box

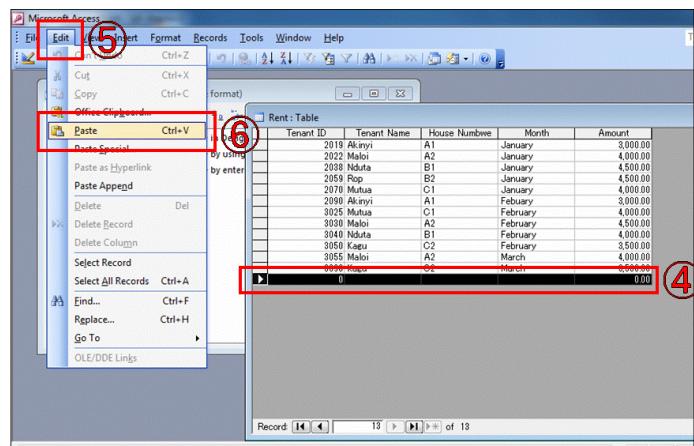


1. On the “Edit” menu.
2. Click “Replace” (Find and Replace dialog box is displayed).
3. In the “Find What” box, type the name of field to replace.
4. In the “Replace with” box, type field to replace with respectively.
5. Select other options for find “Look In”, Match or etc.
6. Click “Replace” or “Replace All” button.

# Steps of “copying records”

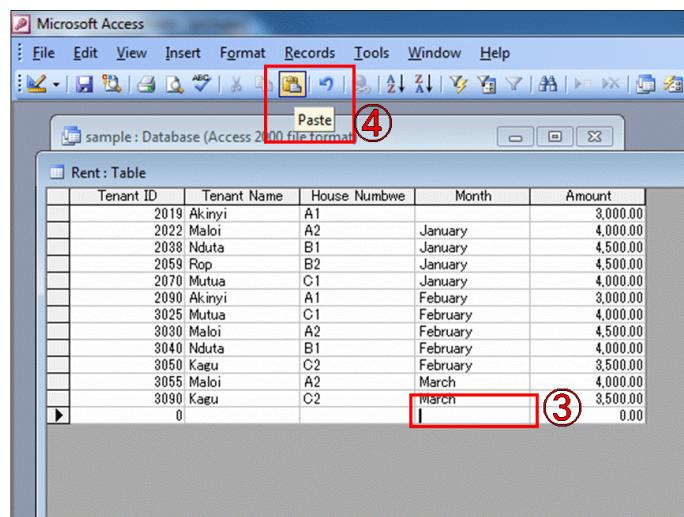
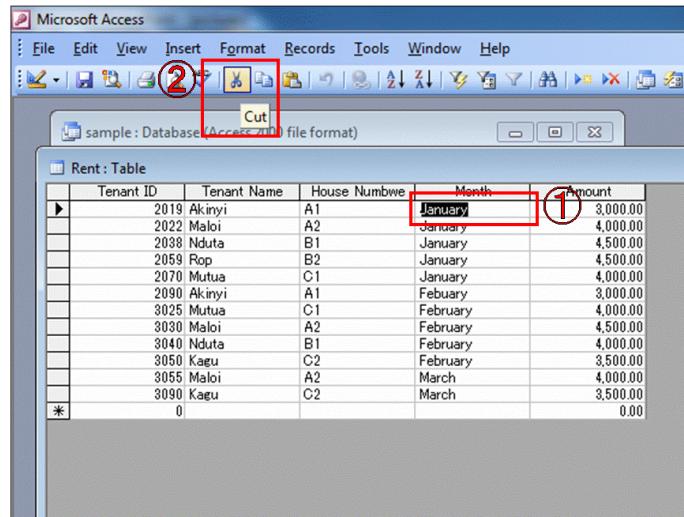


1. Select the record(s) to be copied.
2. On the “Edit” menu.
3. Click “Copy”.
4. Select the target datasheet to copy.
5. On the “Edit” menu.
6. Click “Paste”.



NB: shortcut key for “Copy”  
Ctrl + C  
shortcut key for “Paste”  
Ctrl + V

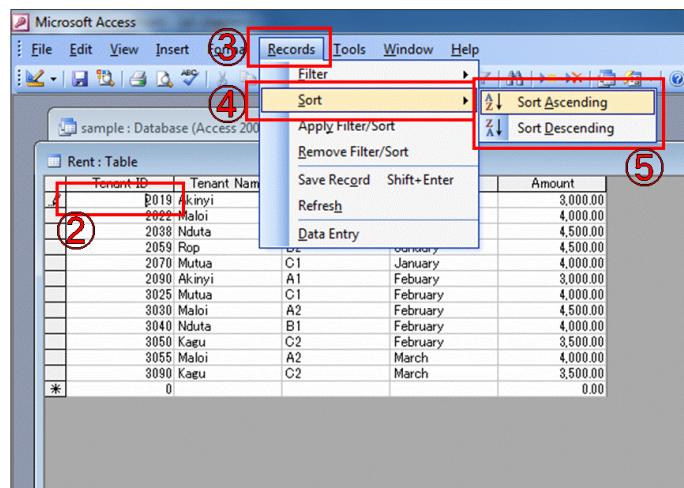
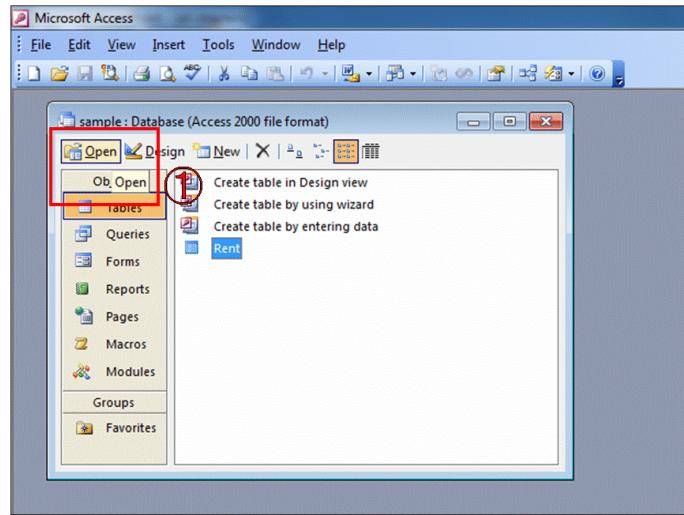
# Steps of “moving records”



1. Select the record(s) to be moved.
2. Click “Cut command on the standard toolbar.
3. Select the target datasheet to move.
4. Click “Paste” command on the standard toolbar.

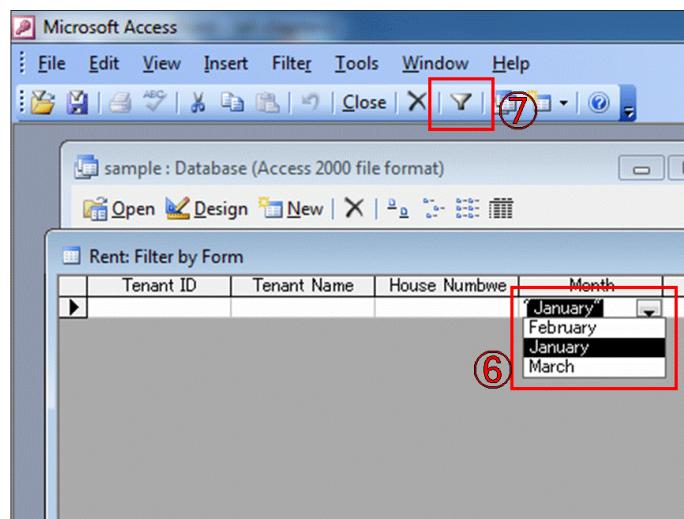
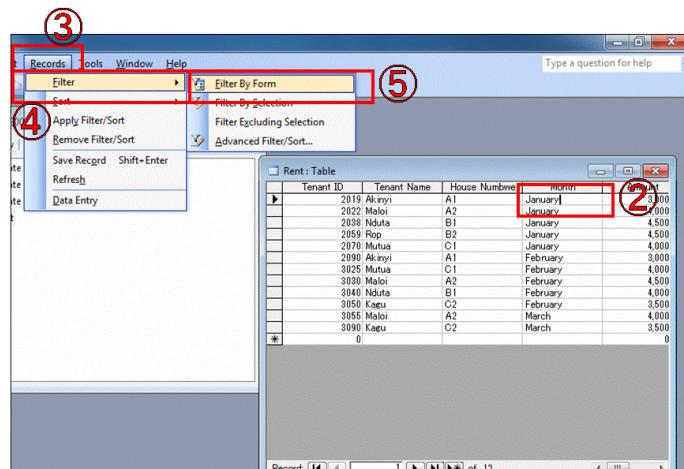
NB; shortcut key for move.  
Ctrl + X

# Steps of “Sorting records”



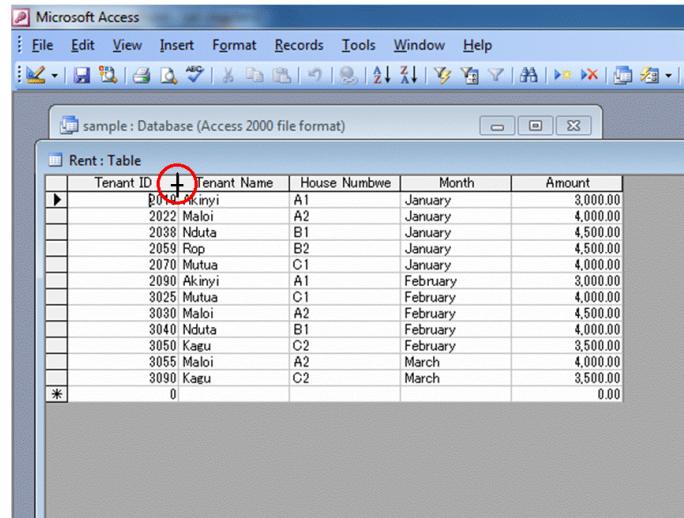
1. Open the table in datasheet view.
2. Select the records to be sorted.
3. On the “Record” menu.
4. Point to “Sort”.
5. Click “Ascending” or “Descending”.

# Steps of “Filtering records”



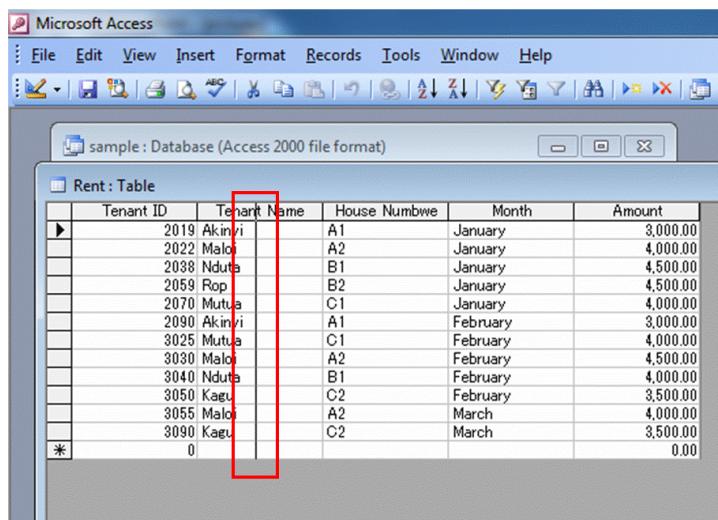
1. Open the table in datasheet view.
2. Select the records to be filtered.
3. On the “Record” menu.
4. Point to “Filter”.
5. Select the type of filter you want to apply.
6. In the datasheet, click a down arrow of the field to set the filter option.
7. Click “Apply Filter” button on the toolbar.

# Steps of “adjust the column size”



A screenshot of the Microsoft Access application window titled "sample : Database (Access 2000 file format)". The window shows a table named "Rent : Table". The first column, "Tenant ID", has its header cell selected, indicated by a red circle around the black crosshair cursor at the top-left corner of the cell. The table data includes columns for Tenant ID, Tenant Name, House Number, Month, and Amount.

Tenant ID	Tenant Name	House Numbwre	Month	Amount
2019 Akinyi	A1	January	3,000.00	
2022 Maloi	A2	January	4,000.00	
2038 Nduta	B1	January	4,500.00	
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3025 Mutua	C1	February	4,000.00	
3030 Maloi	A2	February	4,500.00	
3040 Nduta	B1	February	4,000.00	
3050 Kagu	C2	February	3,500.00	
3055 Maloi	A2	March	4,000.00	
3090 Kagu	C2	March	3,500.00	
*	0			0.00

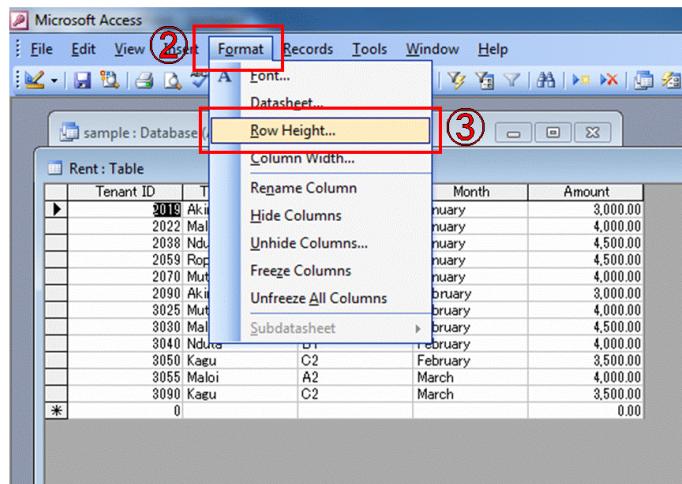


A screenshot of the Microsoft Access application window titled "sample : Database (Access 2000 file format)". The window shows the same "Rent : Table" data as the previous screenshot. In this version, both the first and second columns have their header cells selected, indicated by red rectangles around the black crosshair cursors at the top-left corners of those cells.

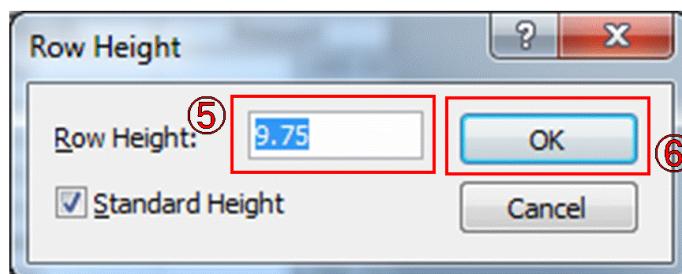
Tenant ID	Tenant Name	House Numbwre	Month	Amount
2019 Akinyi	A1	January	3,000.00	
2022 Maloi	A2	January	4,000.00	
2038 Nduta	B1	January	4,500.00	
2059 Rop	B2	January	4,500.00	
2070 Mutua	C1	January	4,000.00	
2090 Akinyi	A1	February	3,000.00	
3025 Mutua	C1	February	4,000.00	
3030 Maloi	A2	February	4,500.00	
3040 Nduta	B1	February	4,000.00	
3050 Kagu	C2	February	3,500.00	
3055 Maloi	A2	March	4,000.00	
3090 Kagu	C2	March	3,500.00	
*	0			0.00

1. Point to the column border between the field's header.  
(mouse pointer sign will be changed to black cross sign).
2. Change the column size up to where you require using drag and drop.

# Steps of “adjust the row height”

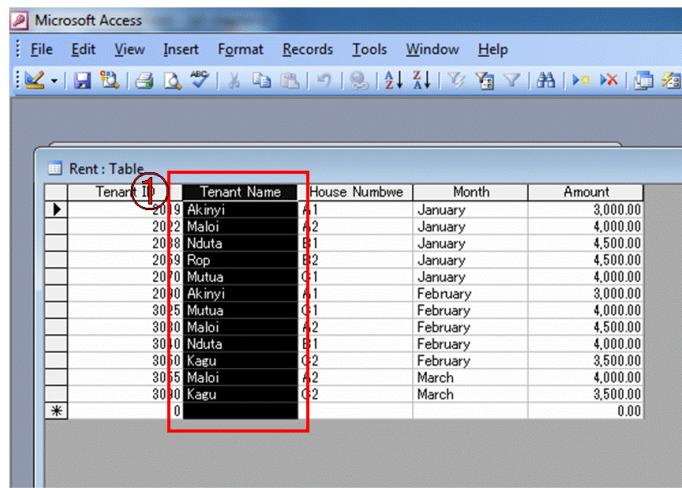


Row Height dialog box



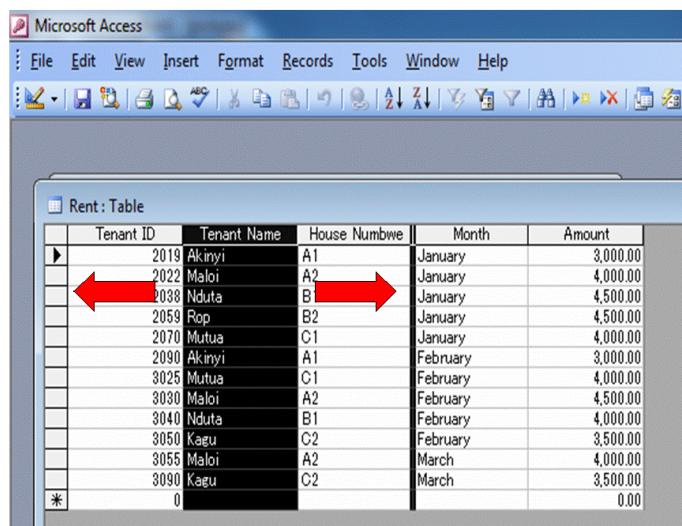
1. Point to the border between two rows in the row header. (mouse pointer sign will be changed to black cross sign).
2. On the “Format” menu.
3. Click “Row height”. (Row Height dialog box is displayed).
4. Delete current row height and type the new row height which you want to adjust.
5. Click “OK” button.

# Steps of “reorder fields”



A screenshot of the Microsoft Access application showing a table named 'Rent'. The table has columns: Tenant ID, Tenant Name, House Numbe, Month, and Amount. The 'House Numbe' column is highlighted with a red border. The data includes entries like 2019 Akinyi, 2022 Maloi, 2038 Nduta, etc.

Tenant ID	Tenant Name	House Numbe	Month	Amount
2019	Akinyi	A1	January	3,000.00
2022	Maloi	A2	January	4,000.00
2038	Nduta	B1	January	4,500.00
2059	Rop	B2	January	4,500.00
2070	Mutua	C1	January	4,000.00
2090	Akinyi	A1	February	3,000.00
3025	Mutua	C1	February	4,000.00
3030	Maloi	A2	February	4,500.00
3040	Nduta	B1	February	4,000.00
3050	Kagu	C2	February	3,500.00
3055	Maloi	A2	March	4,000.00
3090	Kagu	C2	March	3,500.00
*		0		0.00



A screenshot of the Microsoft Access application showing the same 'Rent' table. The 'House Numbe' column has been moved to the top of the table structure. A red arrow points from the original position of the column to its new position at the top, and another red arrow points from the top of the table to the new column header.

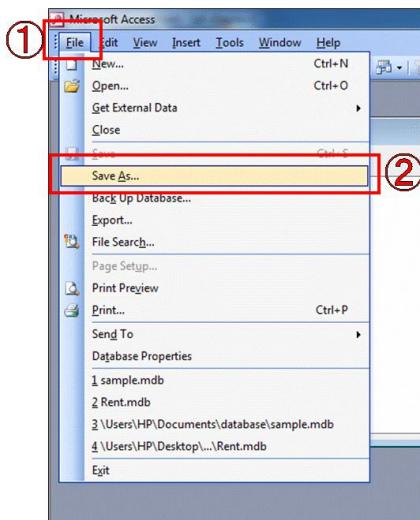
Tenant ID	Tenant Name	House Numbe	Month	Amount
2019	Akinyi	A1	January	3,000.00
2022	Maloi	A2	January	4,000.00
2038	Nduta	B1	January	4,500.00
2059	Rop	B2	January	4,500.00
2070	Mutua	C1	January	4,000.00
2090	Akinyi	A1	February	3,000.00
3025	Mutua	C1	February	4,000.00
3030	Maloi	A2	February	4,500.00
3040	Nduta	B1	February	4,000.00
3050	Kagu	C2	February	3,500.00
3055	Maloi	A2	March	4,000.00
3090	Kagu	C2	March	3,500.00
*		0		0.00

1. Select the column of the field you wish to move by pointing to the desired file name.
2. Drag the column right or left to the top of the field where you want your field to appear and then drop.

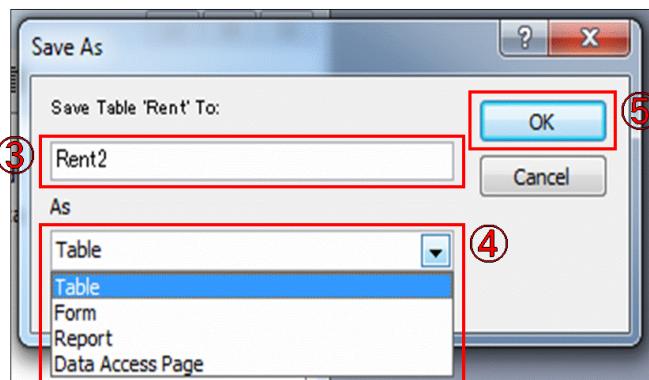
# Modifying table structure

- Once you create a table, you may need to add more fields, remove some fields, reorder the fields or change fields data types and properties. Before you modify the table it is important to save a copy to avoid losing everything in case you make a mistake.
- If a table contains data and you make changes to the field data type, MS-Access may refuse to implement the changes. To avoid this problem, exit without saving and delete all the records from the table then return to the design view. You can then import a copy or copies of tables you backed up.

# Steps of “make a copy of your table”

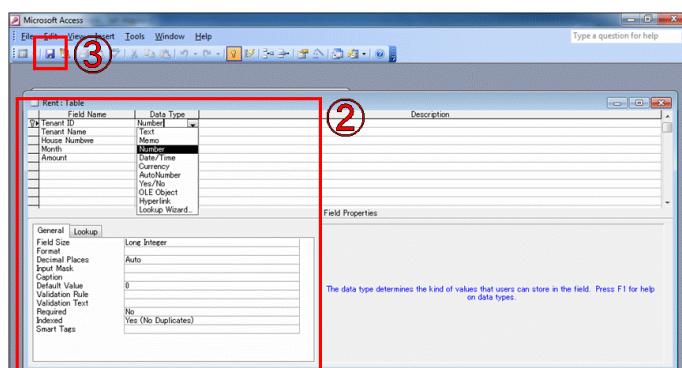
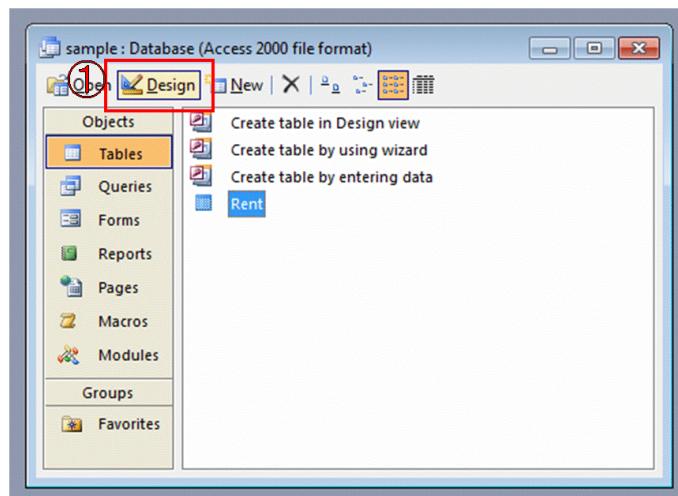


Save As dialog box (copy)



1. On the “File” menu.
2. Click “Save As/Export. (dialog box is displayed).
3. Choose whether to save to another (external) database or the current database.
4. Type a new name for your table.
5. Click “OK” button.

# Steps of “modify the original table”



1. Open the table in design view.
2. Select the field or fields to be modified and make the necessary changes.
3. Click the “Save” button to save the changes.

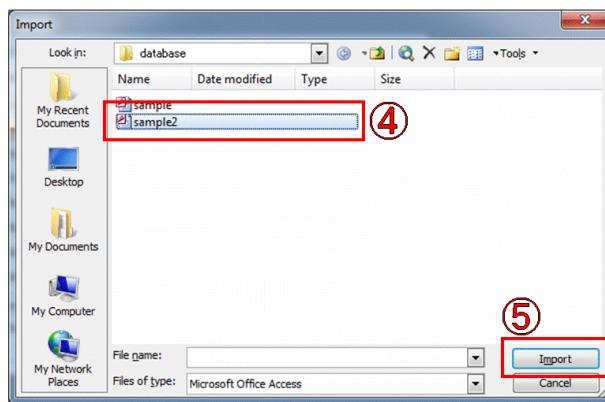


# Importing tables

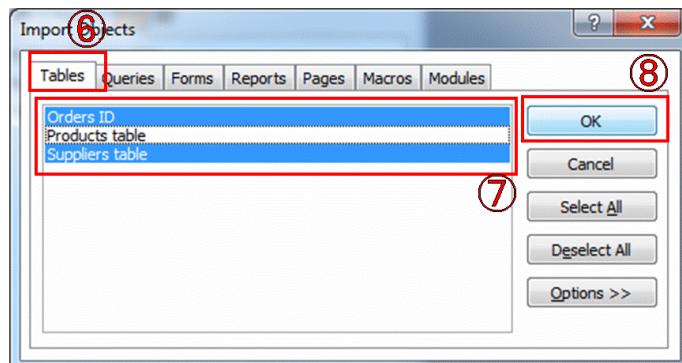
- You can import a table from another database or a spreadsheet into your database.

# Steps of “import a table or a worksheet”

Import dialog box



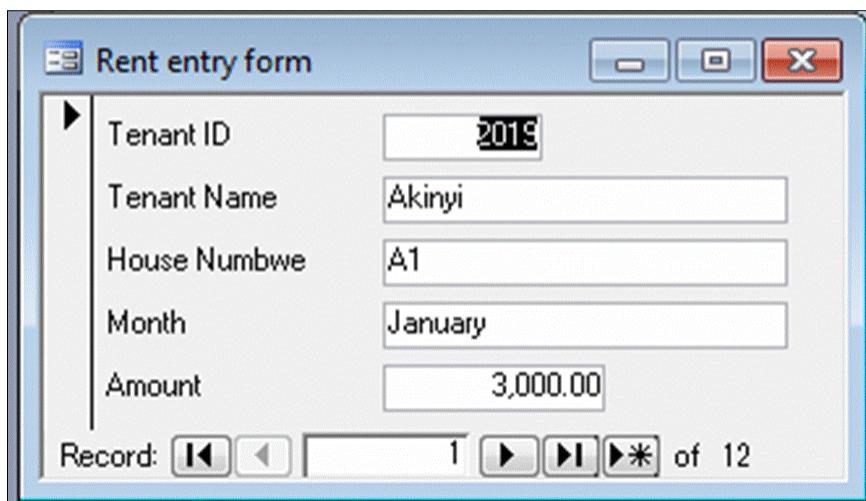
Import Object dialog box



1. On the “File” menu.
2. Point to “Get External Data”.
3. Click “Import”. (Import dialog box is displayed).
4. Select the database you wish to import data from.
5. Click “Import” button. (Object dialog box is displayed as shown in figure below).
6. Click “Table” tab.
7. Select the table(s) you wish to import.
8. Click “OK” button.

# Form designs

A sample form



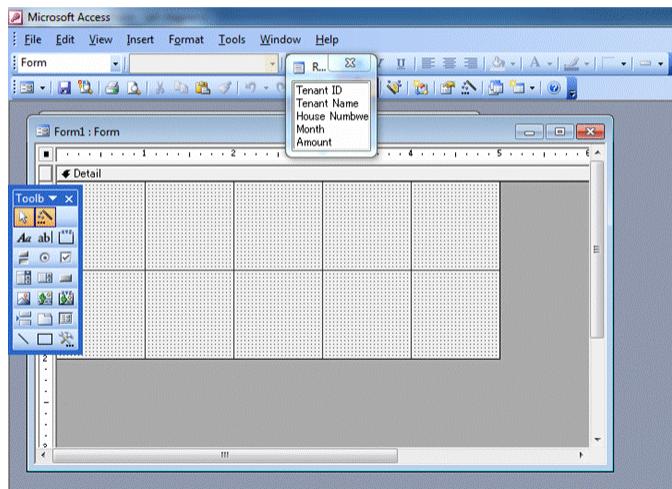
- A form is an interface that enables the user to view and make data entries into an underlying table more easily.
  - A **form** is designed using graphical objects called controls.
  - A **control** is an object such as textbox, checkbox, command button or shapes placed on form design grid to display data or perform actions.

# Types of controls

- Bound – in this the source of data is a field in a table or query.
- Unbound – this control is not connected to any data source.

# Form designer

## Form designer

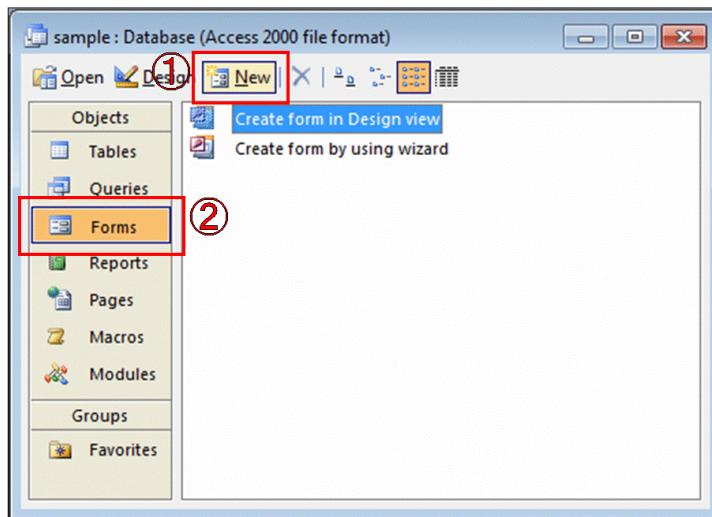


- You design or modify a form layout by dragging these controls to the required position.  
Figure right shows a form designer for a table called exam entry.

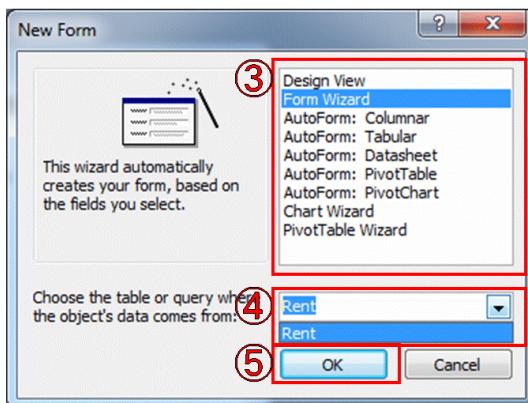
# Creating a form layout using form wizard

- To create a form layout, you can either use the form wizard or start from scratch. Using the form wizard you can create either a columnar, a tabular a datasheet or a justified form layout.
  - Columnar form: the fields for each record are displayed down a column i.e. each value displays on a separate line with field labels to the left.
  - Tabular: records are displayed from left to right across the page and labels appear at the top of each column. Each row represents a new record.
  - Datasheet: the form resembles a table datasheet view.
  - Justified: one record occupies the whole form.

# Steps of “create a form using the wizard” 1



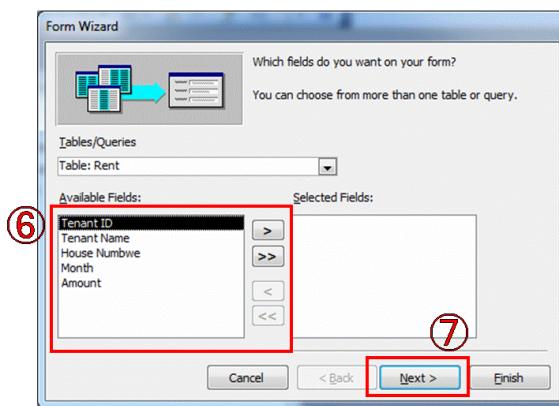
New Form dialog box (Form Wizard)



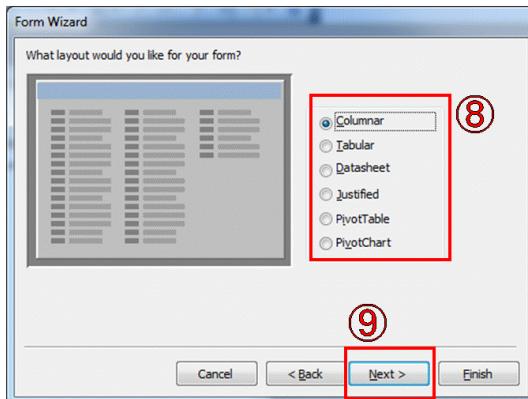
1. Click “Form” tab.
2. Click “New”. (New Form dialog box is displayed).
3. Select “Form Wizard”.
4. Select the name of the table or query that includes the data you want to add into the form from down arrow list.
5. Click “OK” button.

# Steps of “crating a form layout using form wizard” 2.

Form Wizard dialog box (step 1)



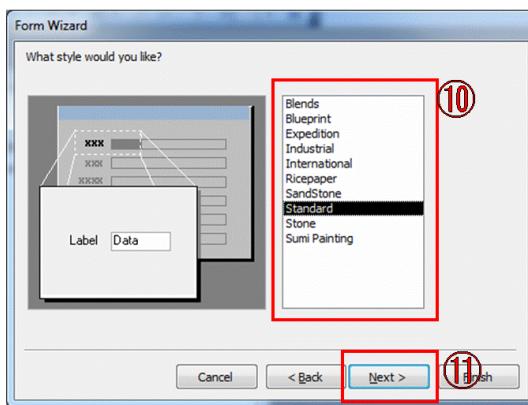
Form Wizard dialog box (step 2)



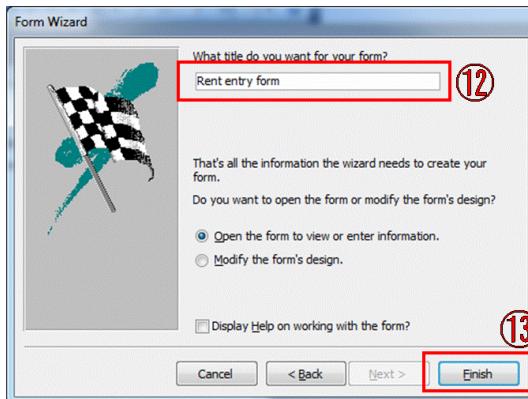
6. Select the fields to add into the form by clicking the “>” button or click “>>” to add all fields.
7. Click “Next” button.
8. Select the layout you wish to use “Columnar”, Tabular” or etc.
9. Click “Next” button.

# Steps of “crating a form layout using form wizard” 3

Form Wizard dialog box (step 3)



Form wizard dialog box (step 4)



10. Select the style you wish to use “Blends”, “Blueprint” or etc.
11. Click “Next” button.
12. Type the name of the form title in the box.
13. Click “Finish” button.  
(MS-Access will automatically display the form on the screen).

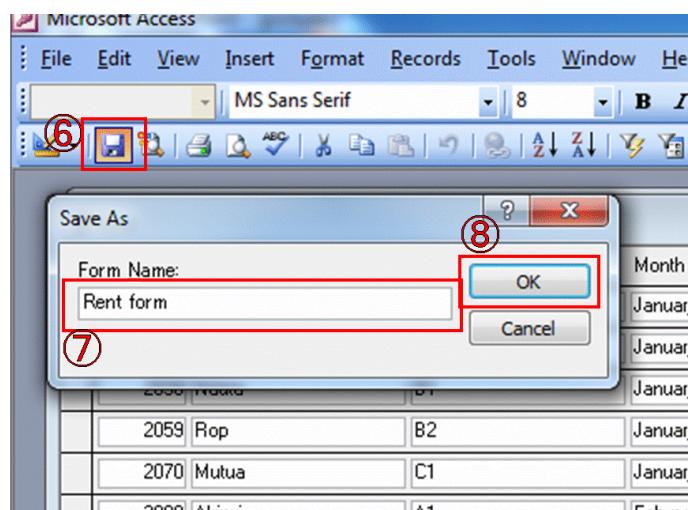
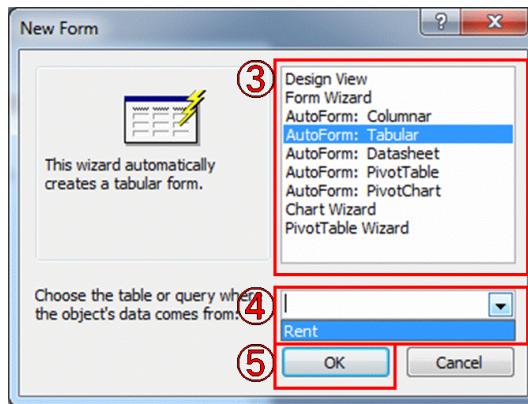


# Creating a form using autoform wizard

- You can easily create a form using the “Autoform wizard”. This wizard creates a form for you automatically by asking you very minimal questions. The form includes all the fields from the selected table.

# Steps of “construct an autoform”

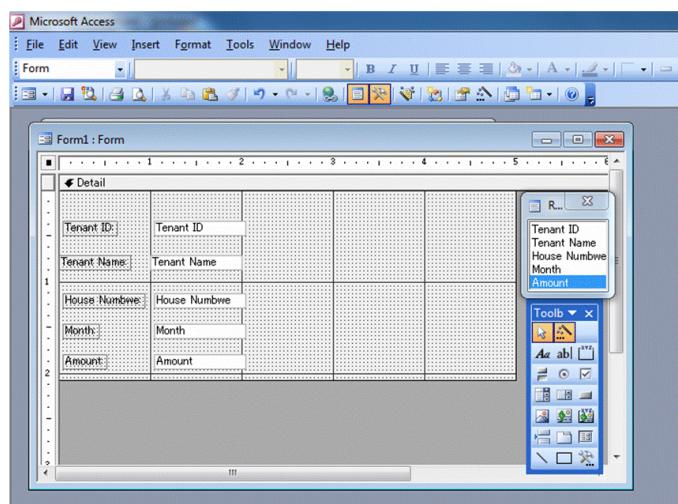
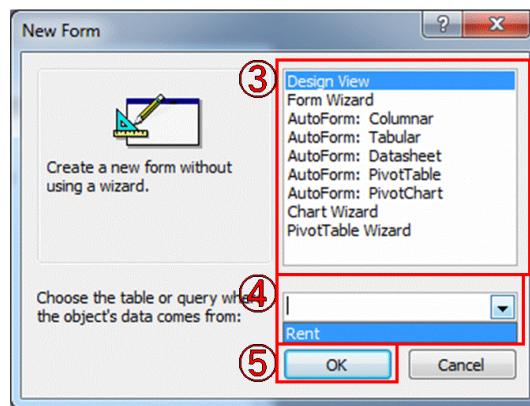
New Form dialog box (AutoFrom)



1. Click “Form” tab.
2. Click “New”. (“New Form dialog box is displayed).
3. Select autoform layout “Columnar”, “Tabular” or etc.
4. In “Choose the table or query where the object data comes”, select the table or query form from down arrow list you wish to create a form for.
5. Click “OK” button.
6. Click “Save” button on the toolbar. (Save As dialog box is displayed).
7. Type the name of the form.
8. Click “OK” button.

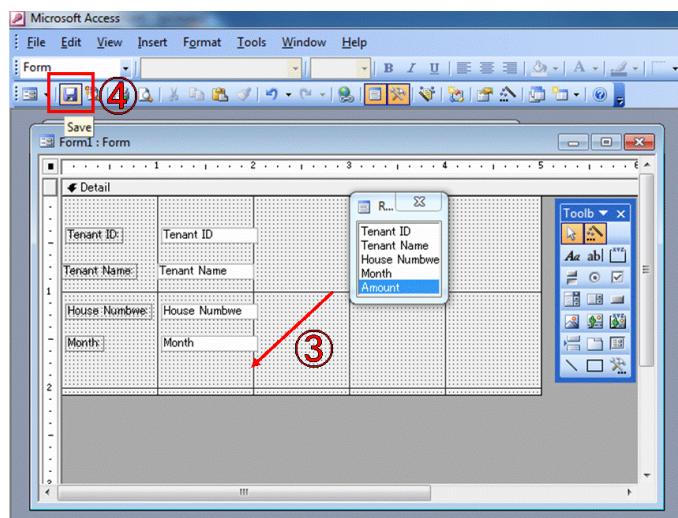
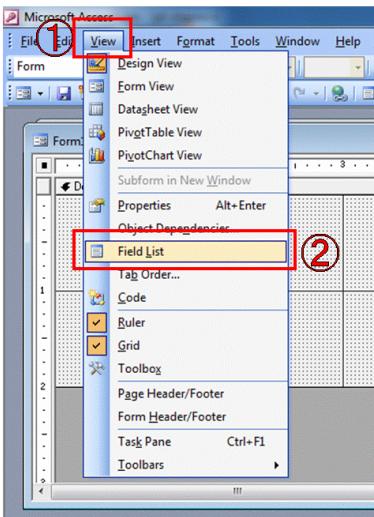
# Steps of “creating a form from scratch”

New Form dialog box (Design View)



1. Click “From” tab.
2. Click “New”. (New Form dialog box is displayed).
3. Select the “Design view” from the list.
4. In “Choose the table or query where the object data comes”, select the table or query form from down arrow list you wish to create a form for.
5. Click “OK” button. (a form with controls for all fields is displayed).
6. Arrange the form as you want.

# Steps of “add controls onto a form”



1. On the “View” menu.
2. Click “Field list”. (the field of the table you selected is displayed).
3. Drag and drop each field and arrange them on the grid.
4. Click “Save” command on the toolbar.

# Adding and displaying records

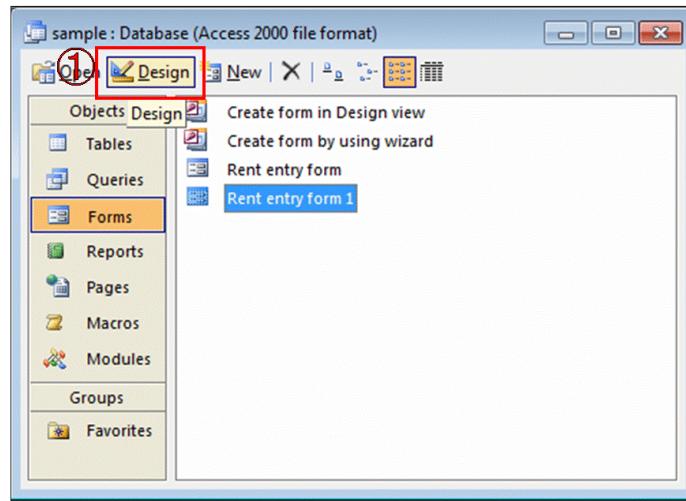
## Navigation buttons

The screenshot shows a Windows-style application window titled "Rent entry form". Inside, there are five text input fields: "Tenant ID" (2019), "Tenant Name" (Akinyi), "House Number" (A1), "Month" (January), and "Amount" (2000.00). At the bottom left, there is a vertical toolbar with a right-pointing arrow icon. Below the toolbar, the text "Record:" is followed by five numbered navigation buttons: ① (left arrow), ② (down arrow), ③ (right arrow), ④ (up arrow), and ⑤ (asterisk).

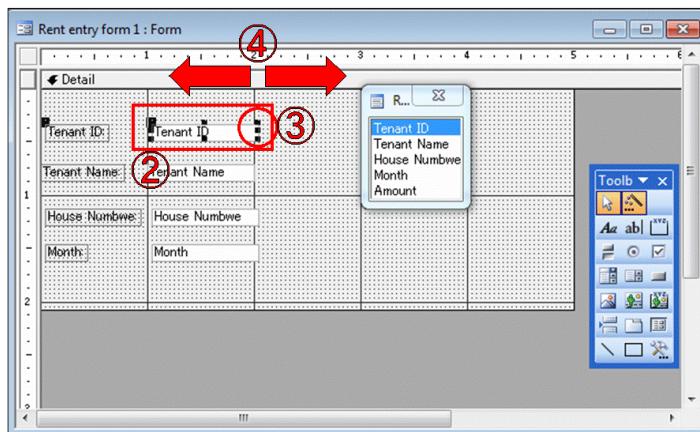
- The form provides the user with navigation buttons located at the bottom that can be used to navigate the form as shown in figure below. The functions of the buttons can be summarized from left to right as follows:

1. Displays the first record in the table.
2. Displays the previous record.
3. Displays the next record.
4. Displays the last record.
5. Used to add a new record.

# Steps of “format controls on a form” (resize)



1. Open the form in design view.
2. Select the field which you want to resize. (place holders are displayed around field).
3. Place the mouse pointer on the place holder. (mouse pointer sign will be changed to a double-sided arrow sign).
4. Resize using drag and drop.



# Using queries

- Queries are the fastest way to search for information in a database. It also enables the user display specific records and also perform calculations on field from tables.

# Types of queries

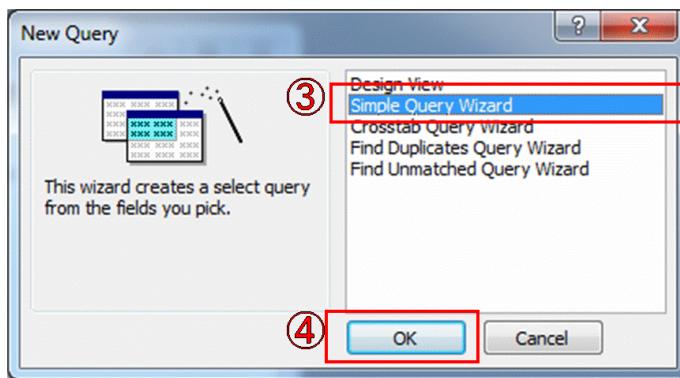
- Select query – most commonly used, it is used for searching and analysing data in one or more tables. It lets the user specify the search criteria.
- Action query – these are used to make changes to many records once.

# Types of action queries

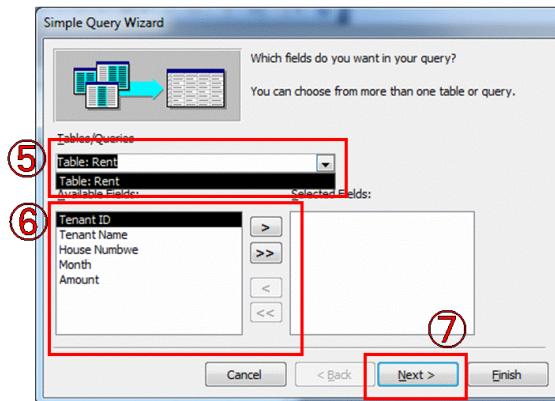
- Update – updates data in table.
- Append query – adds data in a table from one or more tables.
- Make table query – creates a new table from a dynast.
- Delete query – deletes specified records from one or more tables.

# Steps of “creating a select query using wizard” 1

New Query dialog box



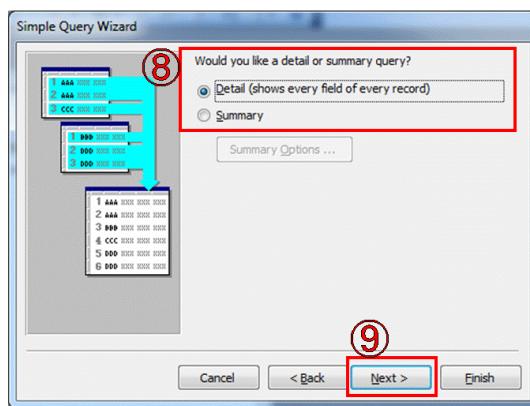
Simple Query Wizard dialog box (step 1)



1. Click “Queries” tab.
2. Click “New”. (New query dialog box is displayed).
3. Click “Simple Query Wizard”.
4. Click “OK” button.
5. Select the name of the table or query that includes the data you want to add into the query from down arrow list.
6. Select the fields to add into the query by clicking the “>” button or click “>>” to add all fields.
7. Click “Next” button.

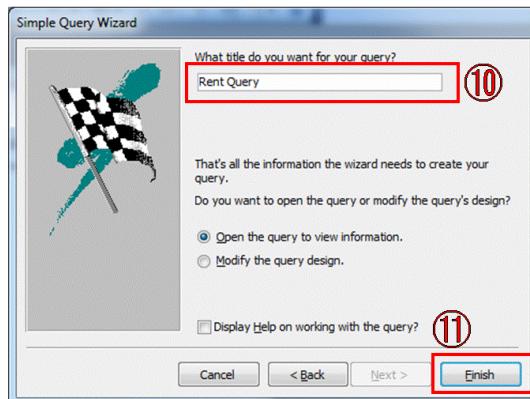
# Steps of “creating a select query wizard 2”

## Simple Query Wizard (step 2)



7. Select “Detail” or “Summary”.

## Simple Query Wizard (step 3)



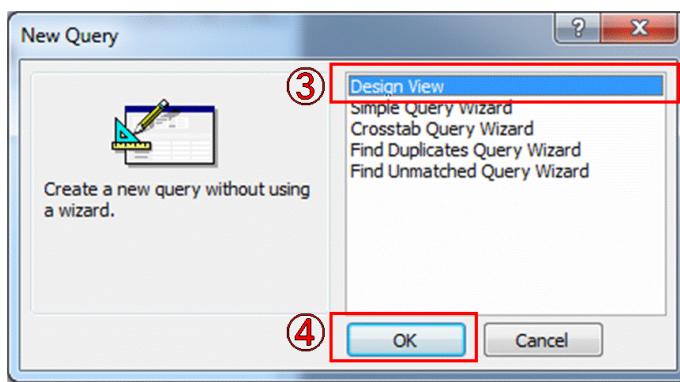
8. Click “Next” button.

9. Type the title name of query in the box.

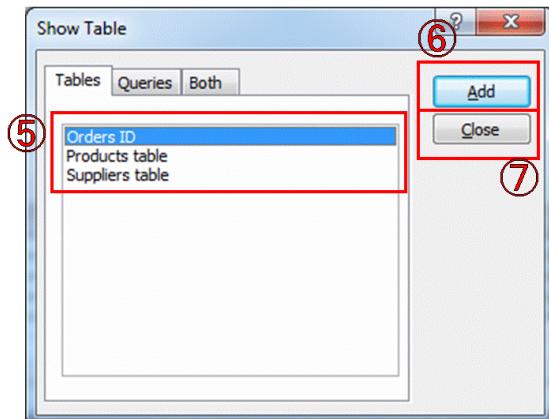
10. Click “Finish” button.

# Steps of “creating a select query from in design view” 1

New Query dialog box (Design view)



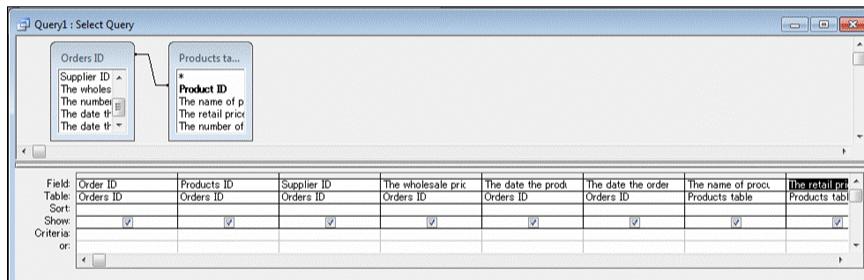
Show Table dialog box (design view)



1. Click “Queries” tab.
2. Click “New”. (New query dialog box is displayed).
3. Select “Design View”.
4. Click “OK” button. (Show Table dialog box is displayed).
5. Select table, query or both which you want to add into the query from each tab.
6. Click “Add” button.
7. After you add, click “Close” button.

# Steps of “creating a select query from in design view” 2

## Query By Example design grid



- The query design grid opens. In MS-Access it is called “*Query-By-Example*” (QBE). This lets the user to design a query. Figure right is QBE grid for a table called *Exam*.

# Parts of the query grid

- *Field row* – fields from a table or tables to be used are arranged in this row. Each field should occupy its column.
- *Table row* – indicates the table providing the fields.
- *Sort row* – by clicking the down arrow in the sort cell, you can specify the sort order i.e. *ascending*, *descending* or *not sort*.
- *Show row* – by clicking the Show box, you specify whether to display the field in the query results. When the box is not checked, the field will not be displayed.
- *Criteria row* – this is where you type conditional statement that will be used by the query to display specific records.
- *Or row* – used to specify an alternative condition e.g. if you want to display records with a field called *City*, with items *Nairobi* or *Embu*, type *Nairobi* in criteria cell and *Embu* in the Or cell.

# Specifying the criteria search

- To search for a particular set of records, the users have to enter a conditional statement in the criteria row. For example if you have a table called employees with one of the fields as *salary*, you can display all the employees earning more than Shs. 5,000 by typing >5000 in the criteria row, salary column.



# Other examples of specifying the criteria search 1

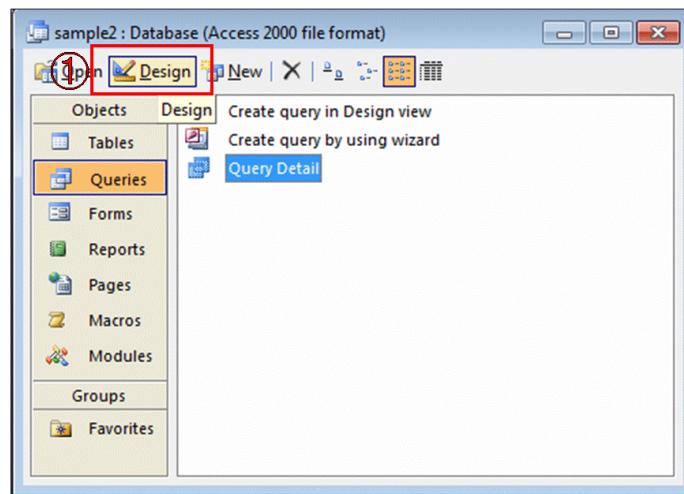
- To define criteria, use either relational or logical operators. Relational operators include less than (<), greater than (>), greater than or equal to (>=), less than or equal to (<=), not equal to (<>) and equal to (=). Logical operators include AND, OR and NOT.
- Use **AND** to display values in a specific range. For example, to display records from the employees table with salaries above 4000 but less than 6000, type, **>4000 AND <6000** on the criteria row in the salary column. All the employees who meet this condition will be displayed.
- Use **OR** if you wish to get either one of two values. For example, if you wish to get those employees either in Nairobi **OR** Embu.



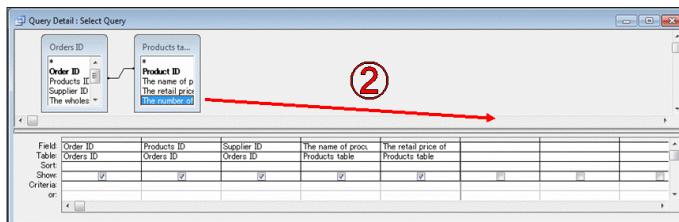
# Other examples of specifying the criteria search 2

- If you want to display data in a particular range, use the word *Between*. For example, instead of typing, `>4000 AND <6000`, type Between 4000 And 6000.
- If you want to list all records except those that you do not want to see, use *NOT*. For example, if you type NOT 6000 in the salary column of the employees table, all employees records will be displayed except those with their salary as 6000.
- To display records you are not sure of the field name but at least you can remember a few characters, use *LIKE* and the *wildcards*. *Wildcards* are special symbols mostly an asterisk and a question mark used in place of other characters. For example, to display all names starting with “Sm” followed by any other character, type Like Sm? Like /\*/1993 lists records created in 1993 regardless of the day or month.

# Steps of “add fields into the query grid”

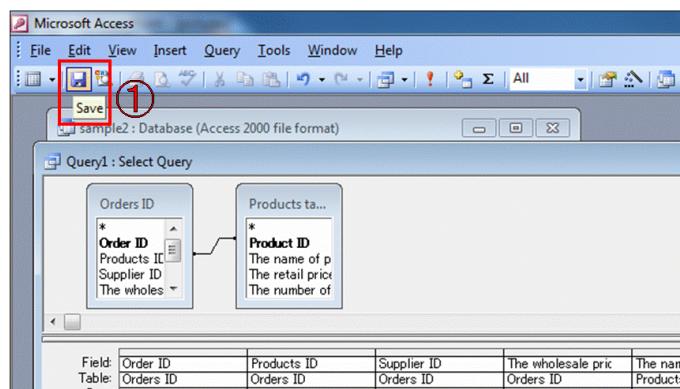


1. Open the query in design view.
2. From the field list of the underlying table, drag each field and place it in the field row.



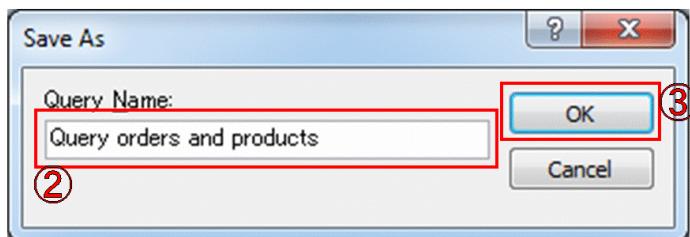
# Steps of “saving the query”

Save command on the toolbar



1. Click “Save” button on the toolbar or from the “File” menu. (Save As dialog box is displayed).

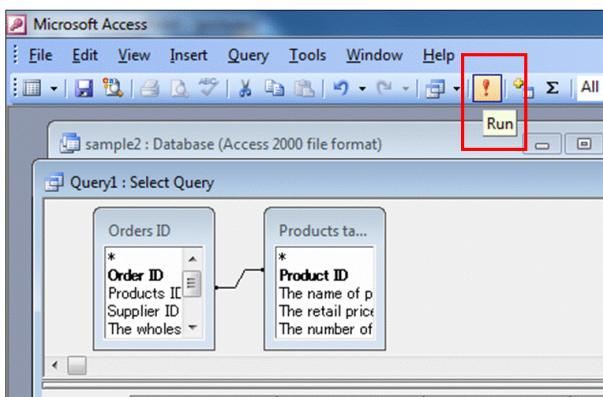
Save As dialog box (query)



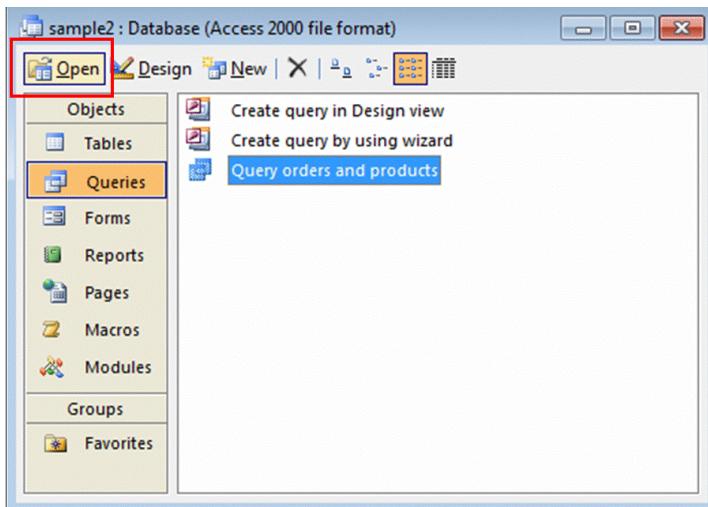
2. Type name of the query in the box.
3. Click “OK” button.

# Steps of “running the query”

Run a query

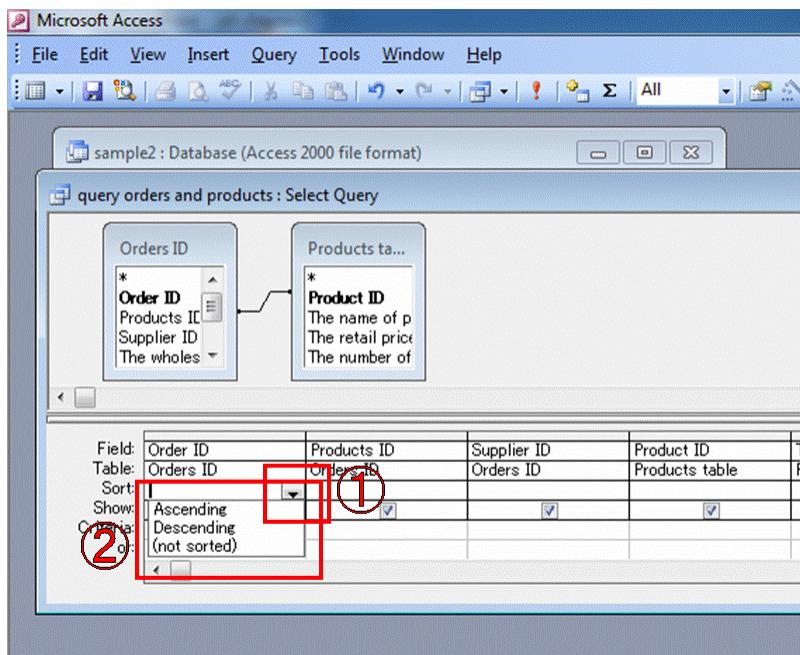


- Click “Run” button on the toolbar as shown in figure right above or “Run” command from the “Query” menu. (results of the query is displayed).



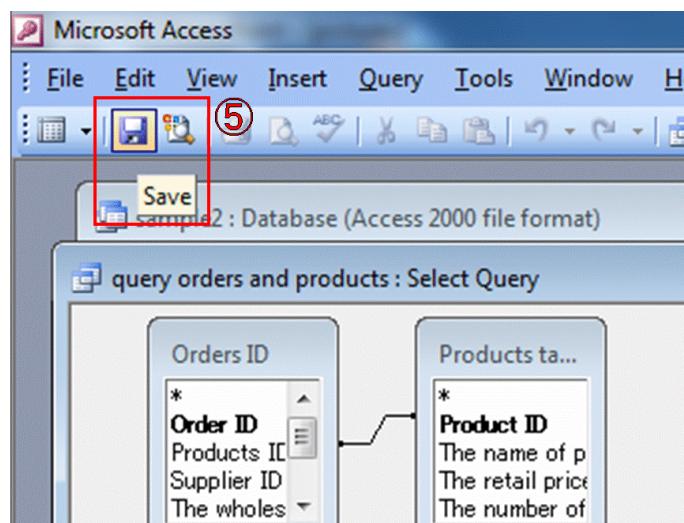
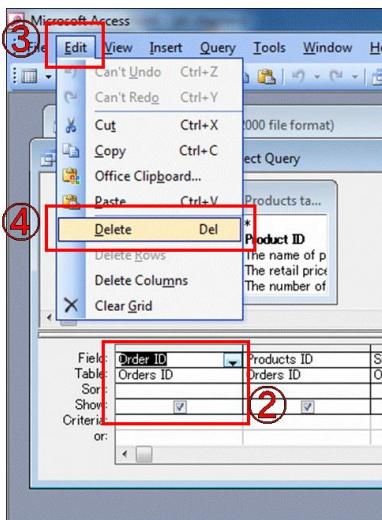
NB: you can also view the results of your query any other time by selecting the query, then click “Open” button from the database window.

# Steps of “sorting the dynaset”



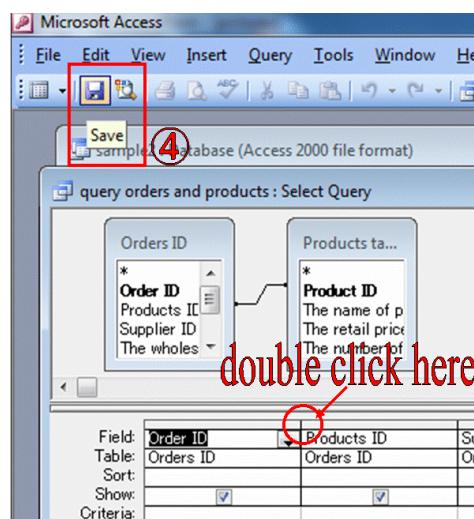
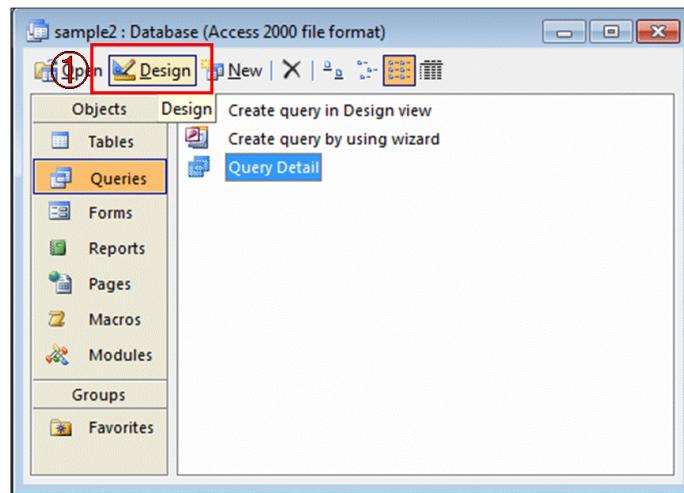
1. Click the down arrow button of the “Sort”.  
(list is displayed).
2. Select “*ascending*” or “*descending*”.

# Steps of “delete fields from the query grid”



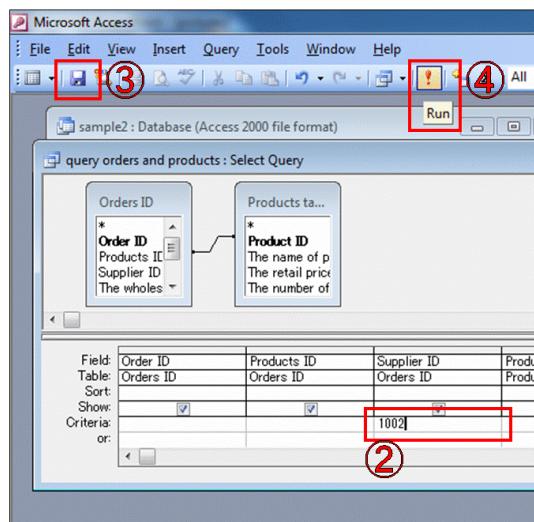
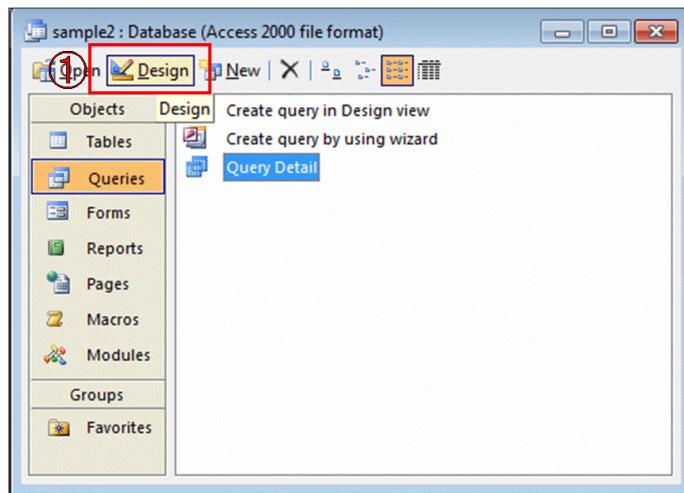
1. Open the query in design view.
2. Select the field column you wish to delete.
3. On the “Edit” menu.
4. Click “Delete”.
5. After you delete, click “Save” command on the toolbar to save the changes.

# Steps of “adjust the column size in a query”



1. Open the query in design view.
2. Position the mouse pointer at the boundary that separates columns. (mouse pointer sign will be changed block cross sign).
3. Double click on the boundary to autofit cell content.
4. Click “Save” command on the toolbar to save the changes.

# Steps of “modify a criteria statement, select query”



1. Open the query in design view.
2. Select the field of criteria which you want to modify, then change the criteria statement as you desire.
3. Click “Save” command on the toolbar to save changes.
4. Click “Run” command to display the results of the query for test whether the changes have been effected.

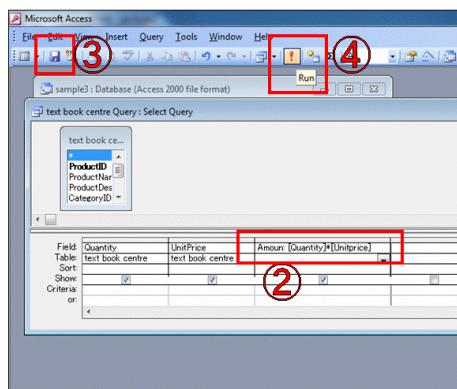


# Performing calculations in a query.

- Unlike tables, queries let the user perform mathematical calculations on numeric data. You can perform calculations in a query by;
  - A) Creating basic formulae – to create a formula that calculates the total marks in an underlying table e.g. *Exams* table.
  - B) Using Total functions – with a query, you can analyze all record fields using the inbuilt functions such as *Sum*, *Average*, *Minimum* and *Maximum* etc.

# Steps of “creating basic formulae”

Creating a calculated field

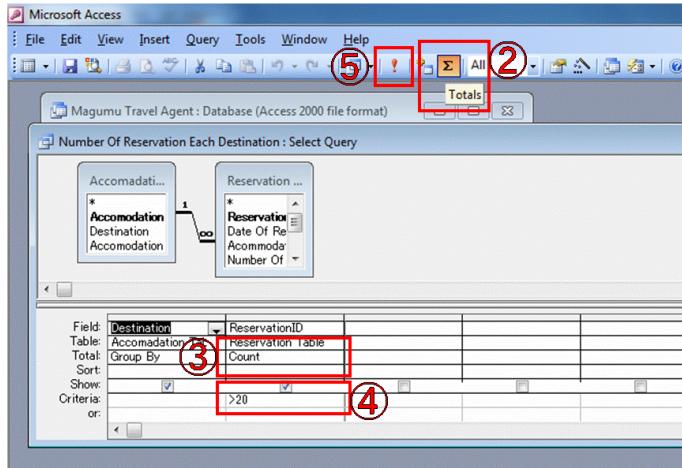


results of a calculated field

Product ID	Product Name	Product Description	Category ID	Units In Stock	Order Date	Quantity	Unit Price	Amount
1	form one text	computer studies	400	100	6/22/2012	10	600.00	\$6,000.00
2	form two text	English	100	300	6/22/2012	30	600.00	\$18,000.00
3	form three text	mathematics	200	300	6/22/2012	30	600.00	\$18,000.00
4	form four text	O.R.E	300	200	6/22/2012	20	600.00	\$12,000.00
*	(AutoNumber)							

1. Open the query in design view.
2. In an empty cell, type an expression that includes a field name of each as "*Amount: [Quantity] \* [Unit Price]*" as shown in figure right above.
3. Click "Save" command on the toolbar.
4. Click "Run" command on the toolbar. (the results of the calculations is displayed).

# Steps of “use the total functions”



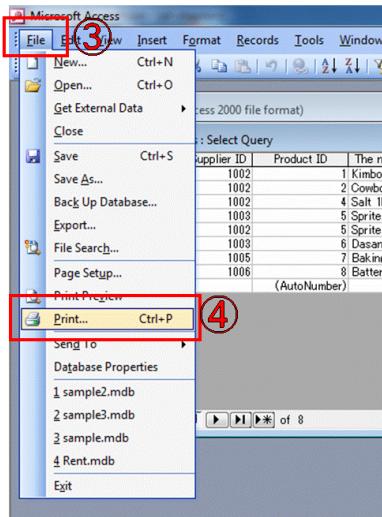
Sample of use total function

This screenshot shows the Microsoft Access Query Results View. The results grid displays the following data:

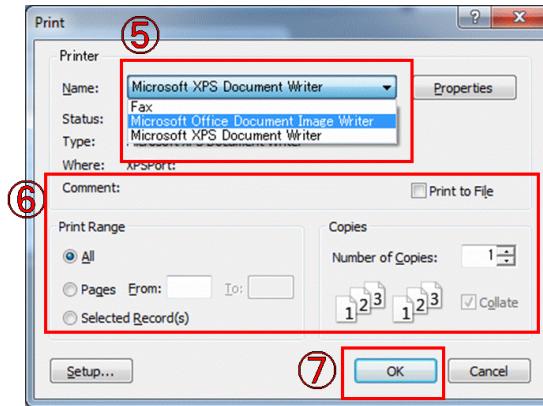
Destination	ReservationIDCount
Cismasi	27
Mombasa	36
Nairobi	32

1. Open the query in design view.
2. Click “Totals” command on the toolbar. (Totals row is displayed which is located between “Table” row and “Sort” row).
3. For each field to be analyzed, click its cell in the “Total” row, and then select any of the functions from arrow down list of “Total” row.
4. Set criteria and other options.
5. Click “Run” command on the toolbar to preview the results.
6. Click “Save” command to save the changes.

# Steps of “printing a query”



Print dialog box



1. Click “Queries” tab.
2. Open the query in datasheet view you want to print.
3. On the “File” menu.
4. Click “Print”.
5. Select the printer from arrow down list.
6. Set the other printing options.
7. Click “OK” button.

# Relationship in tables

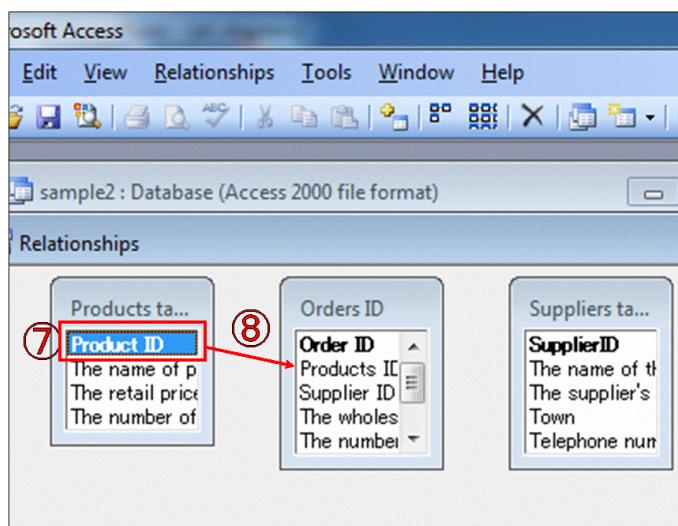
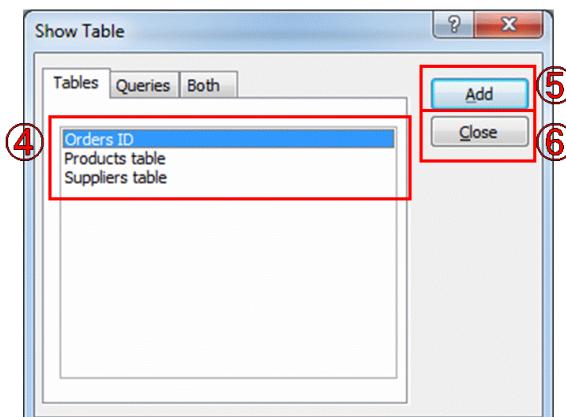
- Entity – an entity is a thing or object of significance, whether real or imagined, about which information needs to be known or held.
- Attribute – an attribute is any detail that serves to qualify, identify, classify, quantify or express the state of an entity.
- Candidate key – it's any attribute or set of attributes can be used to uniquely identify a row in a table.

# Types of relationships

- One-to-one relationship – for a particular field in one table there is only one matching record in the related table.
- One-to-many relationship – for a particular field in one table there are several matching records in another table.
- Many-to-many relationship – for particular records in one table there are several matching records in the other table.

# Steps of “defining relationship between tables” 1

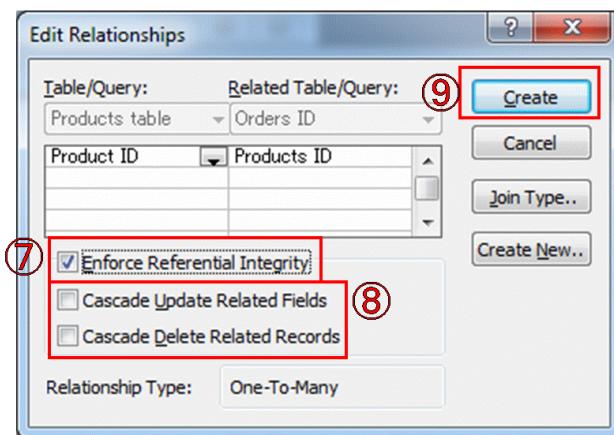
Show Table dialog box (relationship)



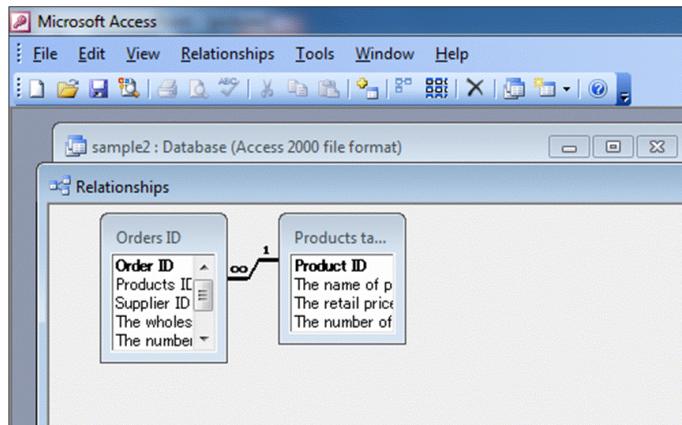
1. Open the database.
2. On the “Tools” menu.
3. Click “Relationship. (Show Table dialog box in Relationship is displayed).
4. Select the table from Table tab.
5. Click “Add” button.
6. After you add, click “Close” button.
7. Click the field of first table which you want to create relationship.
8. Drag it to the second table then drop. (Edit Relationship dialog box is displayed).

# Steps of “defining relationship between tables” 2

Edit Relationships dialog box



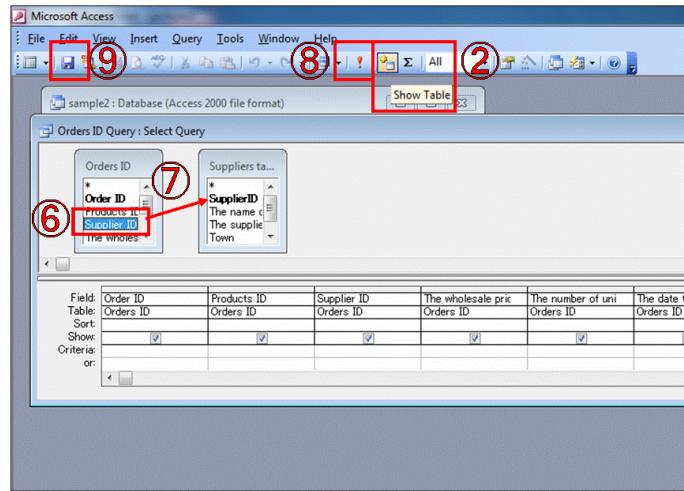
Relationship between two tables



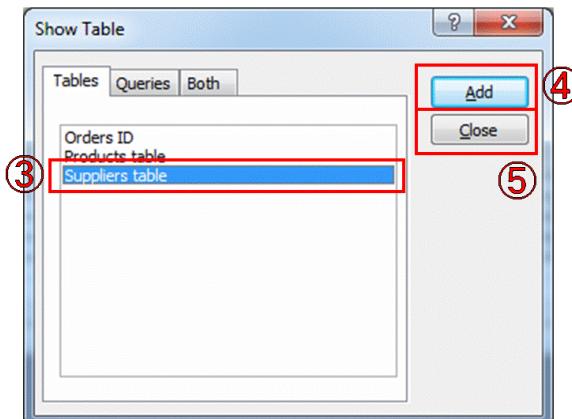
7. Make sure “*Enforce Referential Integrity*” is checked to ensure that all records entered in the related table exist in the primary table.
8. Set other options if you want.
9. Click “Create” button.  
(Black line is displayed between two tables).

NB; the field used to create the relationship must be of the same type and properties.

# Steps of “create a query based on related tables”



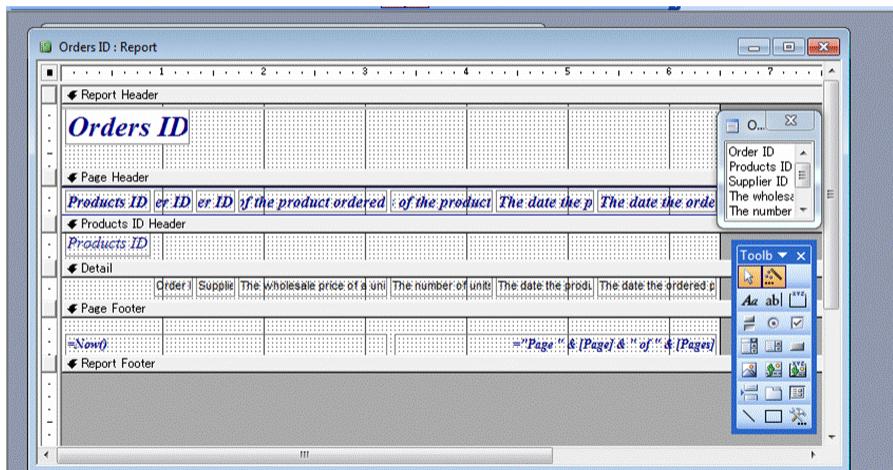
Show Table dialog box (query based)



1. Open the query in design view.
2. Click “Show Table” command on the toolbar. (Show Table dialog box is displayed).
3. Select the tables you want to base your query on.
4. Click “Add” button. (query is displayed).
5. After you add, click “Close” button.
6. Click the field of first table which you want to create relationship.
7. Drag it to the second table then drop. (Edit Relationship dialog box is displayed).
8. Click “Run” command to run.
9. Click “Save” command to save.

# Creating reports

## Report layout designer



- Like in forms, a report layout is also designed by placing controls on to the report designer as shown in figure right.

# Parts of a report

- Report header – this contains unbound controls that displays title of the report.
- Page header – contains heading or labels data items to be displayed in every column.  
Detail – holds bound controls that display data items for the table or query it was created from.
- Detail – holds bound controls that display data items for the table or query it was created from.
- Page footer – holds a control that is to be displayed on every page such as the page number and date. For example =Now() displays the current date and time as set in the system clock.
- Report footer – used to display summary from a report such as the grand total for numerical data in a particular field column.

# Creating a report

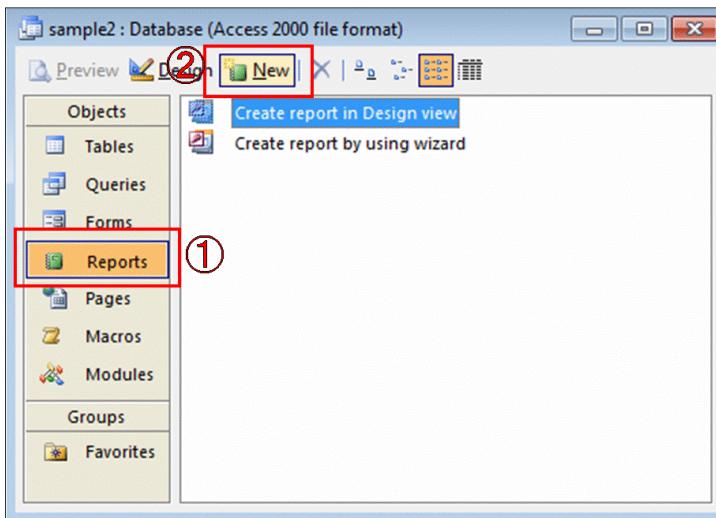
## ■ Using wizard

□ Just like the form wizard, report wizard takes the user through a number of steps by answering a few questions and MS-Access automatically does the rest.

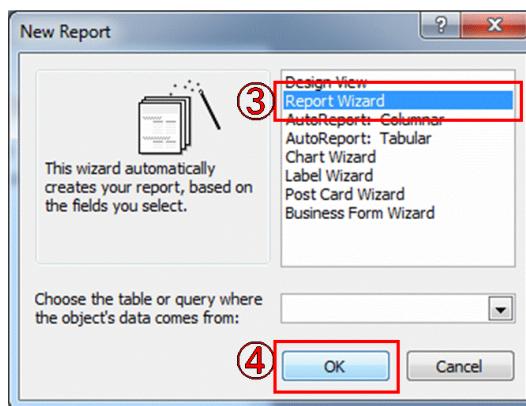
## ■ In design view

□ Just like with forms, you can create a report in design view by placing control on the report design grid.

# Steps of “create a report layout using wizard” 1



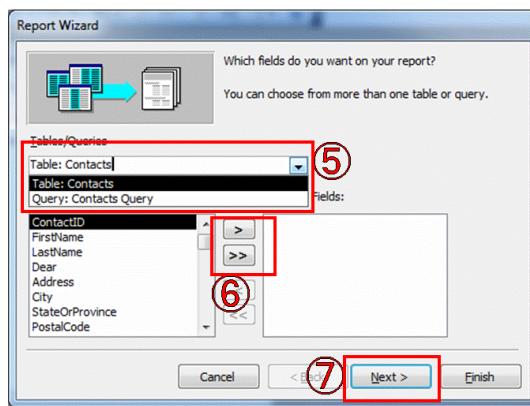
New Report dialog box (wizard)



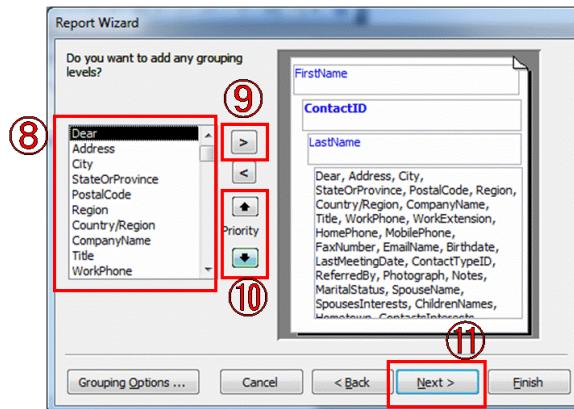
1. Click “Report” tab.
2. Click “New”. (New Report dialog box is displayed).
3. Select “Report Wizard”.
4. Click “OK” button.

# Steps of “create a report layout using wizard” 2

Report Wizard dialog box (step 1)



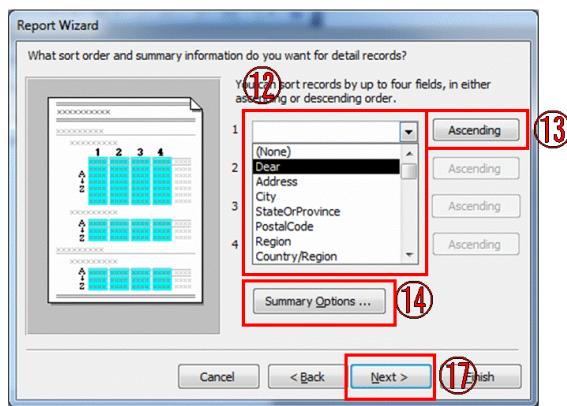
Report Wizard dialog box (step 2)



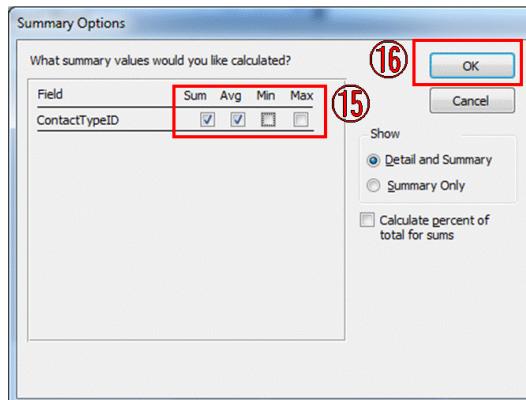
5. Select the name of the table or query that includes the data you want to add into the report from down arrow list.
6. Select the fields to add into the report by clicking the “>” button or click “>>” to add all fields.
7. Click “Next” button.
8. Select the field If you want to add grouping.
9. Click “>” button to add.
10. Change the priority using arrow sign button if you want.
11. Click “Next” button.

# Steps of “create a report layout using wizard” 3

Report Wizard dialog box step 3



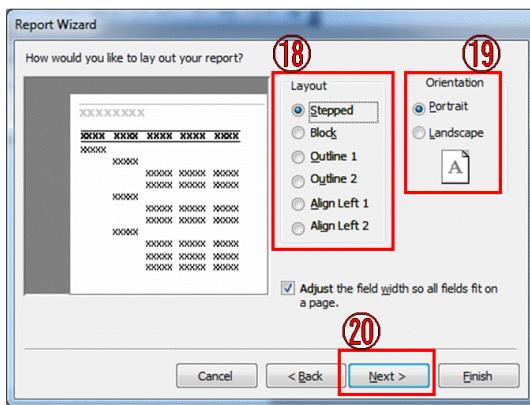
Summary Options dialog box



12. Select the field from down arrow list if you want to sort the records.
13. Select “Ascending” or “Descending”.
14. Click “Summary Options” button.
15. Click the check box if you want to perform calculations on numerical fields e.g. Sum, Average or etc.
16. Click “OK” button.
17. Click “Next” button.

# Steps of “create a report layout using wizard” 4

Report Wizard dialog box (step 4)



Report Wizard dialog box (step 5)



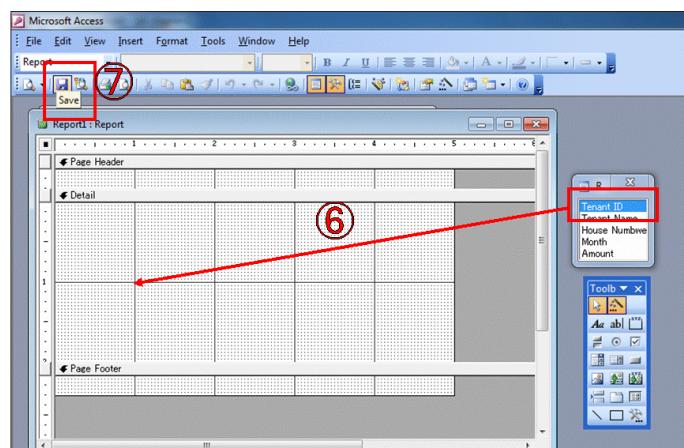
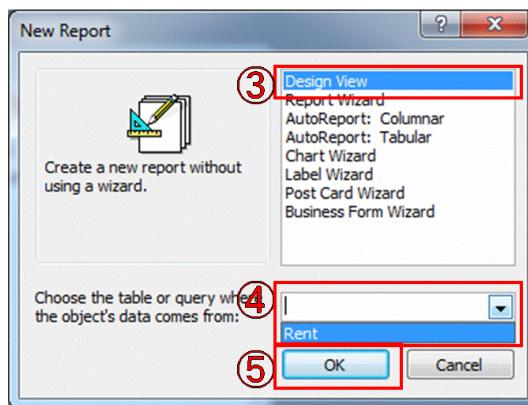
Report Wizard dialog box (step 6)



18. Select the type of layout from the list.
19. Select orientation “Portrait” or “Landscape”.
20. Click “Next” button.
21. Select the type of style form the list.
22. Click “Next” button.
23. Type the name of report title in the box.
24. Click "Finish" button.

# Steps of “creating a report in design view” 1

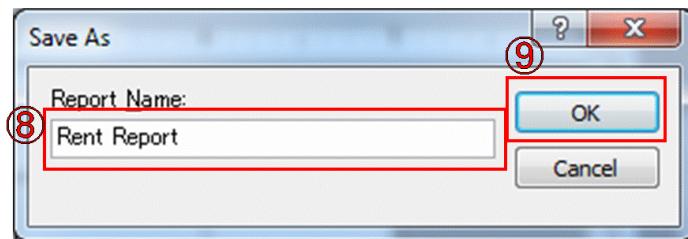
New Report dialog box (design view)



1. Click “Report” tab.
2. Click “New”. (New Report dialog box is displayed).
3. Select “Design View”.
4. In “Choose the table or query where the object data comes”, select the table or query form from down arrow list you wish to create a form for..
5. Click “OK” button. (Report design grid is displayed).
6. Drag each field from the field list to the layout grid and drop it where you want the data column to appear.
7. After you place, click “Save” command on the toolbar. (Save As dialog box is displayed).

# Steps of “creating a report in design view” 2

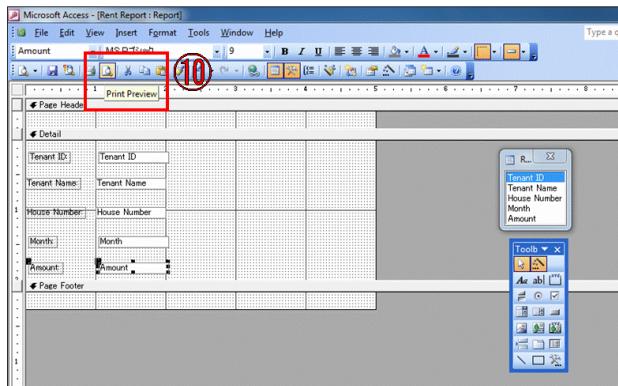
Save As dialog box (report)



8. Type the name of the report.

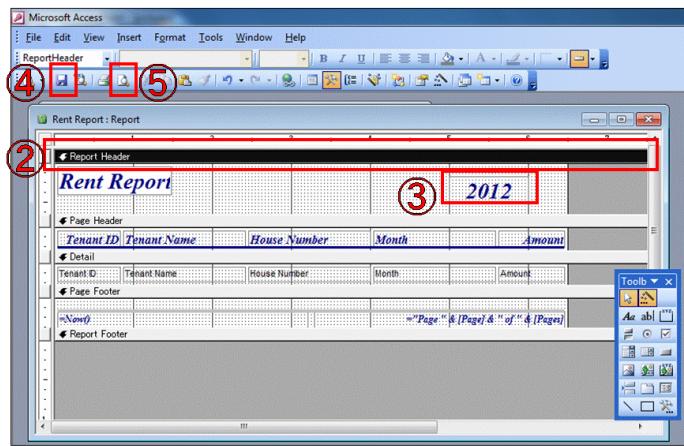
9. Click “OK” button.

Print Preview command on the toolbar



10. Click “Print Preview” button to view the report.

# Steps of “modifying a report layout”

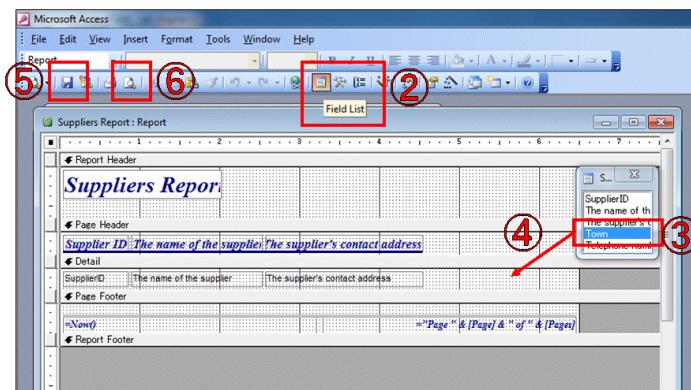


Print Preview window (report)

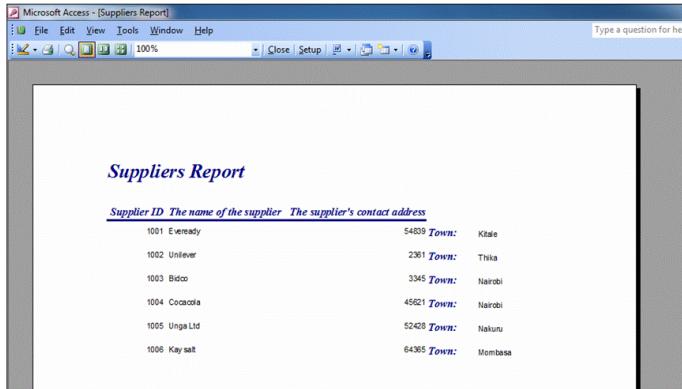
Rent Report		2012		
Tenant ID	Tenant Name	House Number	Month	Amount
2019	Akiyli	A1	January	3,000.00
2022	Maloi	A2	January	4,000.00
2038	Nduta	B1	January	4,500.00
2059	Rop	B2	January	4,500.00
2070	Mutua	C1	January	4,000.00
2090	Akiyli	A1	February	3,000.00
3030	Maloi	A2	February	4,500.00
3040	Nduta	B1	February	4,000.00
3056	Mutua	C1	February	4,000.00

1. Open the report in design view.
2. Click report header or footer you want to modify.
3. Make the necessary changes.
4. Click “Save” command on the toolbar to save the changes.
5. Click “Print Preview” command on the toolbar to view the changes.

# Steps of “add more controls onto the report layout”

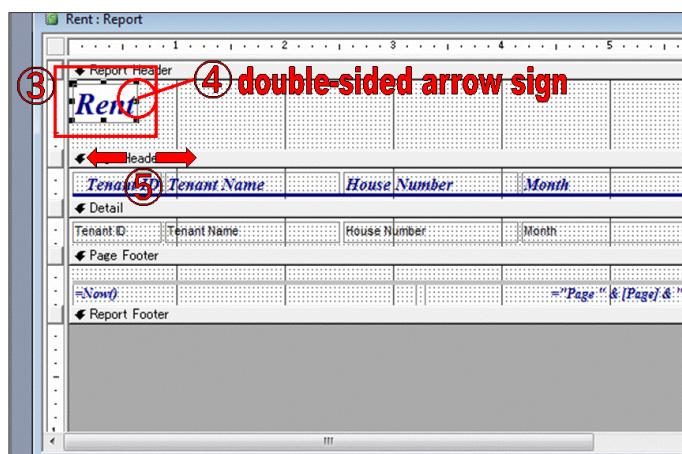
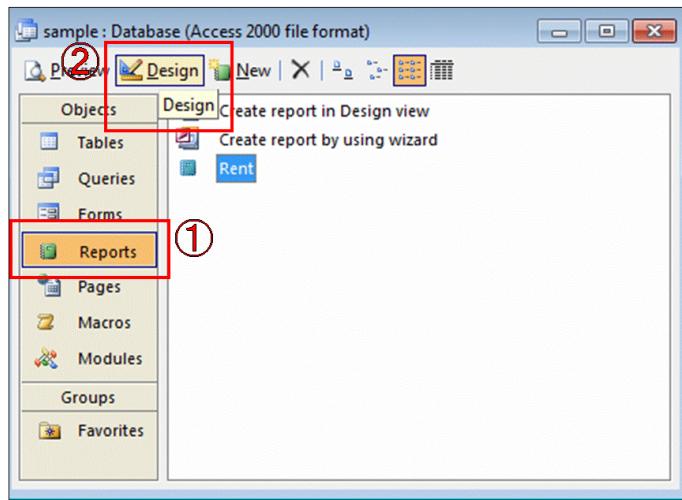


Sample of added control report



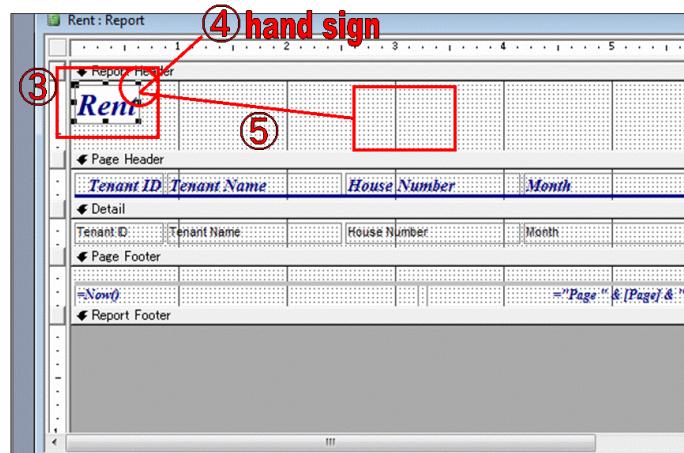
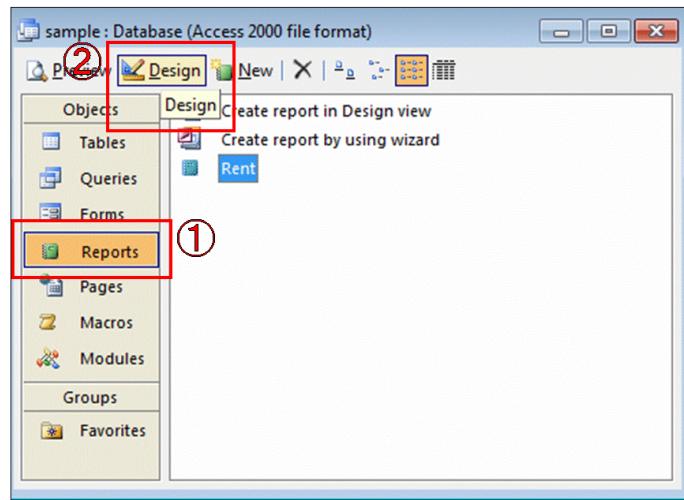
1. Open the report in design view.
2. Click “Field List” command on the toolbar. (field list is displayed).
3. Select one or more fields in the field list.
4. Add field to design grid using drag and drop and adjust the field as you wish.
5. Click “Save” command on the toolbar to save the changes.
6. Click “Print Preview” command on the toolbar to view the changes.

# Steps of “resize a control”



1. Click “Report” tab.
2. Open the report in design view.
3. Select the control you want to resize. (place holders are displayed around control).
4. Place the mouse pointer on the place holder. (mouse pointer sign will be changed to a double-sided arrow sign).
5. Drag the mouse pointer to resize the control.

# Steps of “move a control”



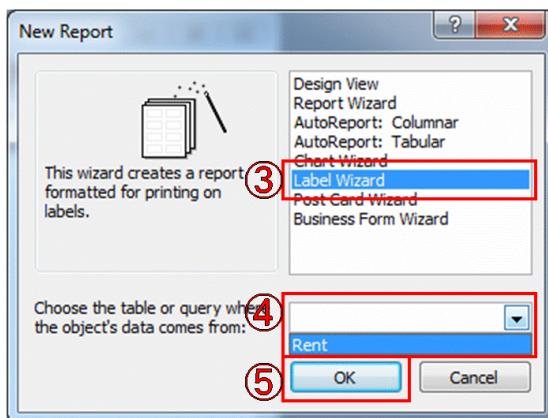
1. Click “Report” tab.
2. Open the report in design view.
3. Select the control you want to resize. (place holders are displayed around control).
4. Place the mouse pointer on the place holder until its sign is changed to a hand sign.
5. Drag the mouse pointer to move the control.

# Creating labels

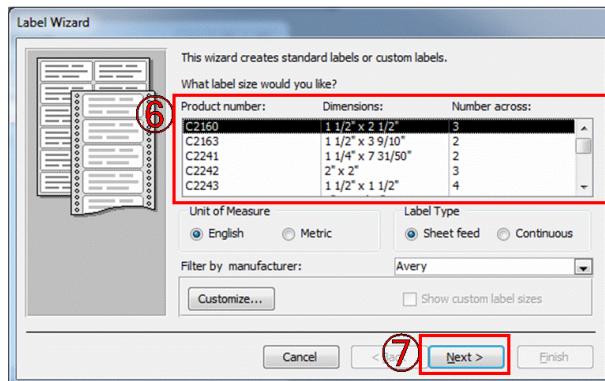
- A label is a sticker or piece of paper put on an item for the purpose of identification. Examples of stickers are mailing labels, label on the floppy disk where you write your name etc. Using the report label wizard, MS-Access lets you easily create labels of different sizes.

# Steps of “create a label using the report wizard”

New Report dialog box (Label wizard)



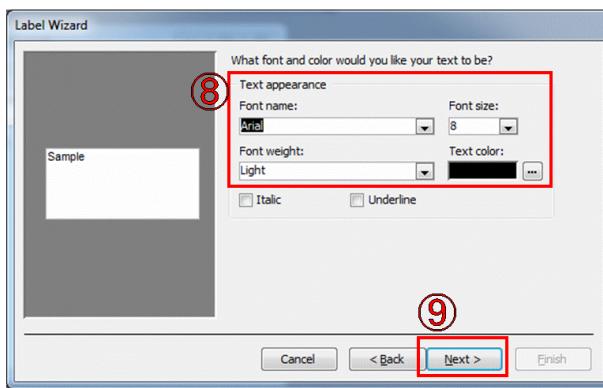
Label Wizard dialog box (step 1)



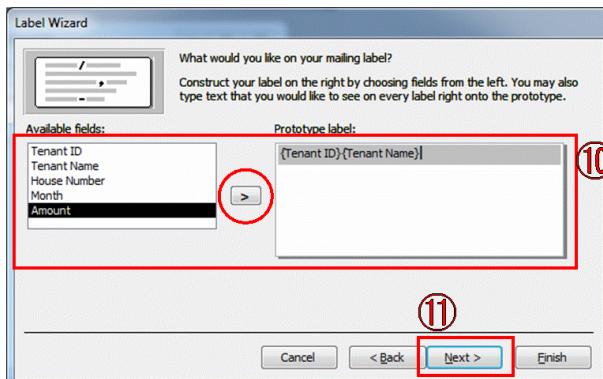
1. Click the “Report” tab.
2. Click “New”. (New Report dialog box is displayed).
3. Select “Label Wizard” from the list.
4. In “Choose the table or query where the object data comes”, select the table or query form from down arrow list you wish to create a form for.
5. Click “OK” button. (Report design grid is displayed).
6. Select the size of label you want to create.
7. Click “Next” button.

# Steps of “creating a label using the report wizard” 2

Label Wizard dialog box (step 2)



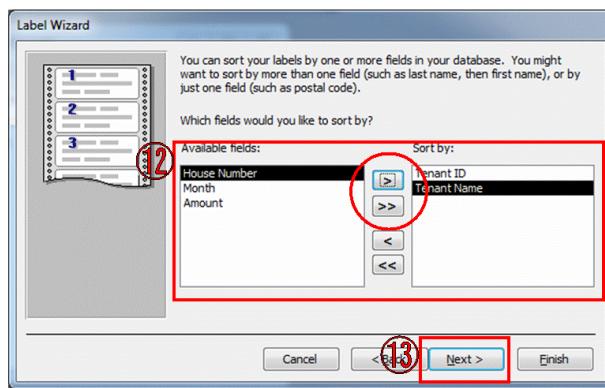
Label Wizard dialog box (step 3)



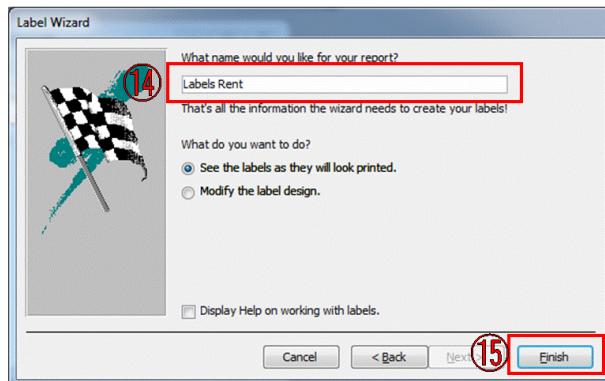
8. Select font type, size, weight and color.
9. Click “Next” button.
10. Select mailing labels from available field by clicking “>” button.
11. Click “Next” button.

# Steps of “creating a label using the report wizard” 3

Label Wizard dialog box (step 4)



Label Wizard dialog box (step 5)



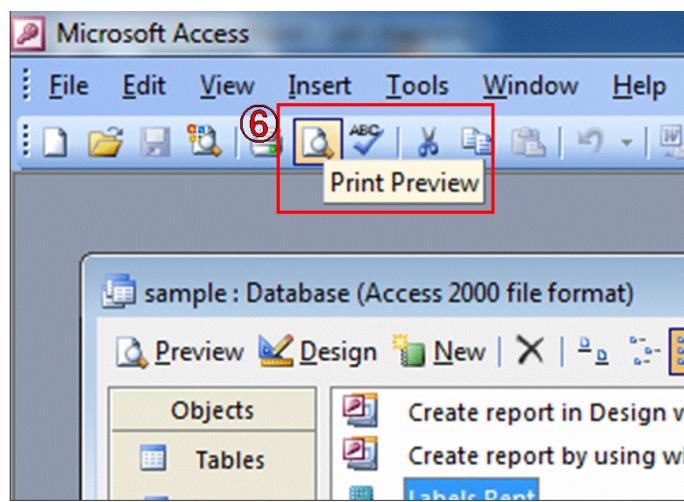
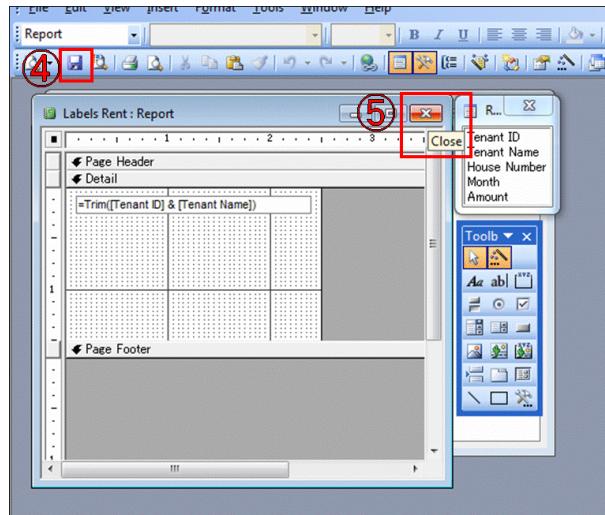
12. Sort labels if you want by clicking “>” button or click “>>” button.
13. Click “Next” button.
14. Type the name of the label in the box.
15. Click “Finish” button.



# Modifying labels

- Just as you can modify a report or a form, you can also modify a label by manipulating the layout controls

# Steps of “modify a label”



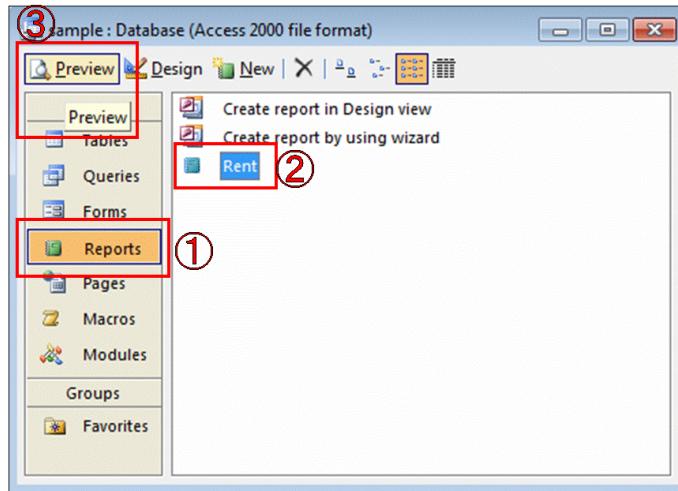
1. Click “Report” tab.
2. Click “Design” button. (the label is displayed in design view).
3. Edit the layout as desired
4. After you modify, click “Save” command on the toolbar.
5. Close the design grid.
6. Click “Print Preview” command on the toolbar to view.



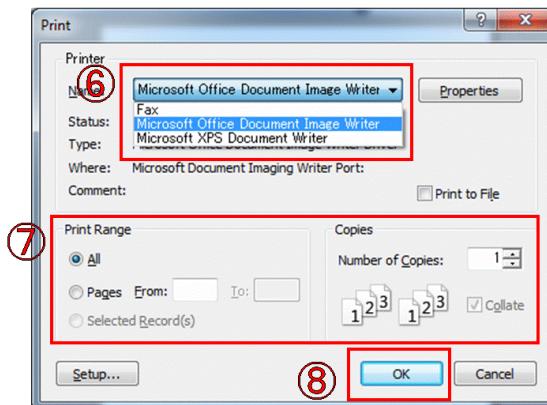
# Printing the reports and labels

- Before you print a report or a label, you should first set the page options i.e. the margins, paper size and orientation.

# Steps of “printing the reports and labels”



Print dialog box (reports and labels)

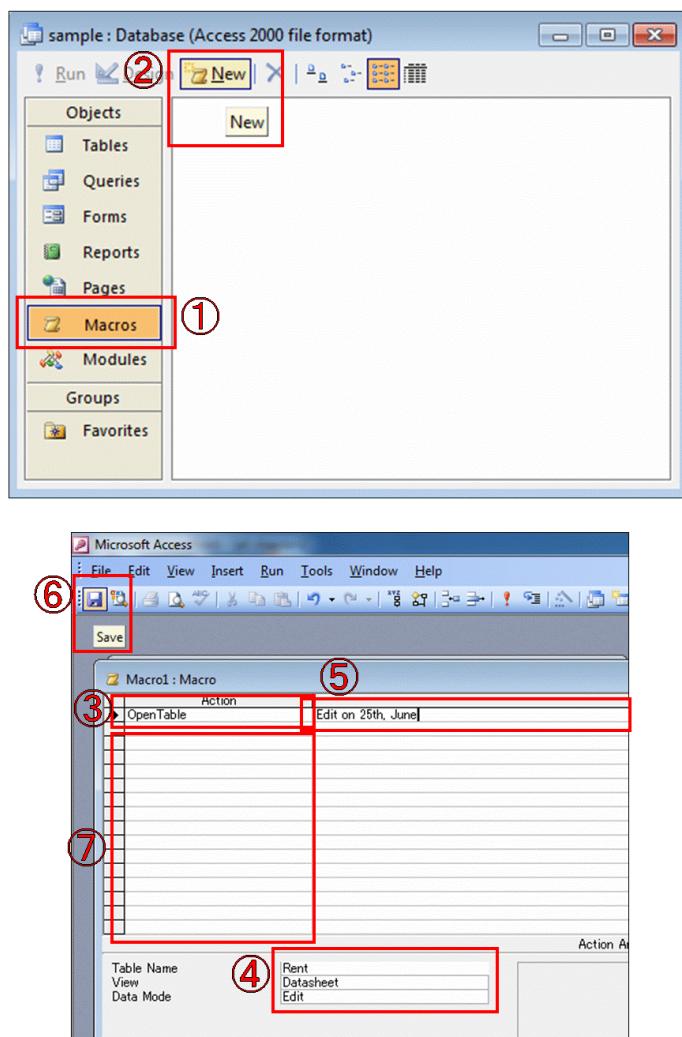


1. Click “Report” tab.
2. Select the report you want to print.
3. Click “Preview” button. (Print Preview window is displayed).
4. On the “File” menu.
5. Click “Print” (Print dialog box is displayed).
6. Select the printer from down arrow list.
7. Set other options i.e. print range and number of copies.
8. Click “OK” button.

# Creating macros

- A macro is a set of one or more actions used to automatically perform particular operations such as opening a form or printing and a report. Macros are used to automate database applications.

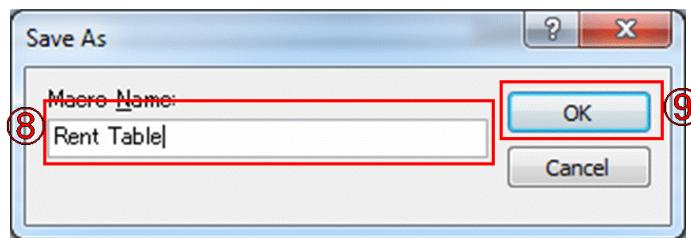
# Steps of “creating macros” 1



1. Click “Macros” tab.
2. Click “New” button. (Macro window is displayed).
3. Add an action e.g. OpenTable into action column from down arrow list.
4. In the lower part, specify arguments for the action in Action Argument box.
5. Type optional comment for the action if you need.
6. Add more actions to the macro if you want. Actions are executed in the order you list them.
7. Click “Save” command on the toolbar to save the macro.

# Steps of “creating macros” 2

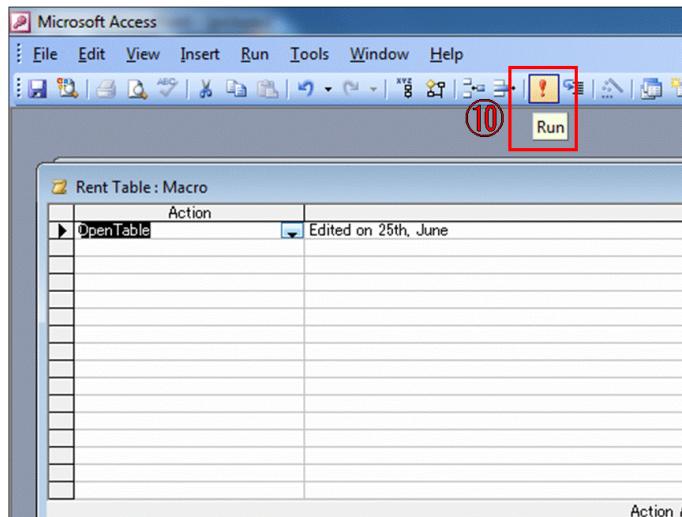
Save As dialog box (Macros)



8. Type the name of macro in the box.

9. Click “OK” button.

10. Click “Run” command on the toolbar to open the macro.

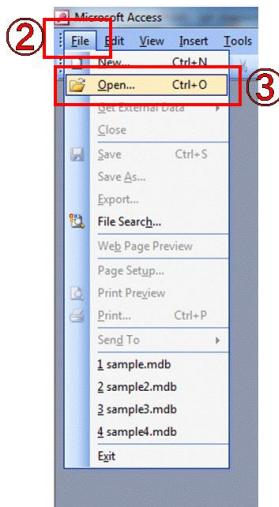




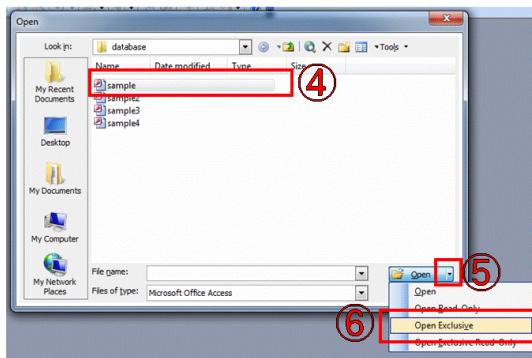
# Enforcing database security

- MS-Access provides the user with several data security tools.
  - A) Password protection – requests the password for opening.
  - B) Encryption – compacts a database file and makes it indecipherable by a utility program or a word processor especially on a networked environment. Encrypting a database doesn't restrict access to objects by users.
  - C) Hiding database object – hide tables, queries, forms and reports and macros from casual users. This method of protection is the least secure because it is possible to unhide the objects.
  - D) User-level security – this is the most extensive security method especially on a multi-user environment. A database administrator can grant specific users or groups specific permissions and privileges to tables, queries, forms, Reports and macros.

# Steps of “setup a password in MS-Access” 1

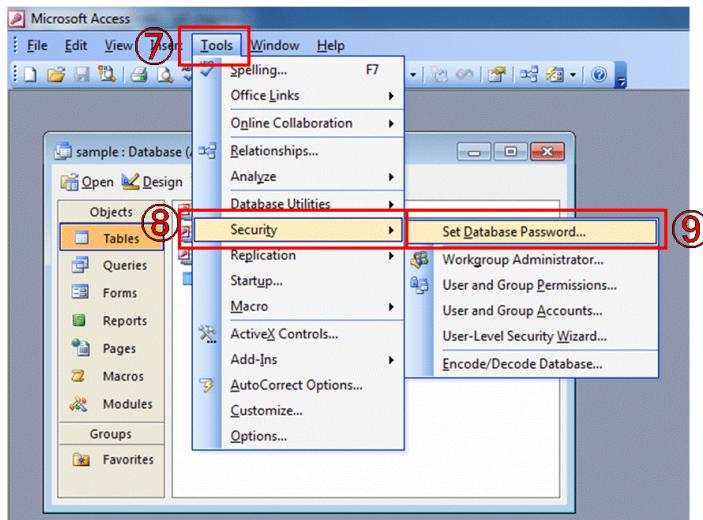


Open dialog box

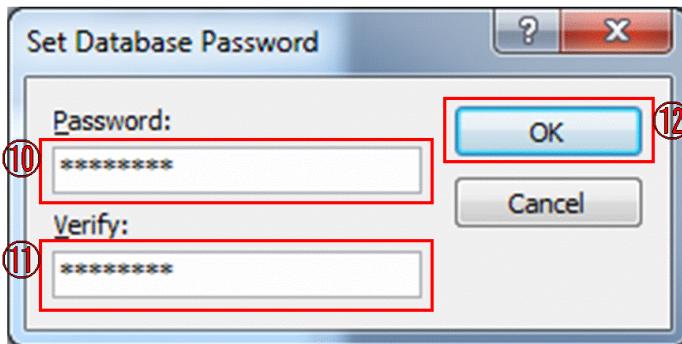


1. Open MS-Access.
2. On the “File” menu.
3. Click “Open” (Open dialog box is displayed).
4. Click arrow down sign of “Open” button. (open menu is displayed).
5. Open the database in exclusive mode which you want to set a password. (Security Warning dialog box is displayed).
6. Click “Open” button.

# Steps of “setup a password in MS-Access” 2



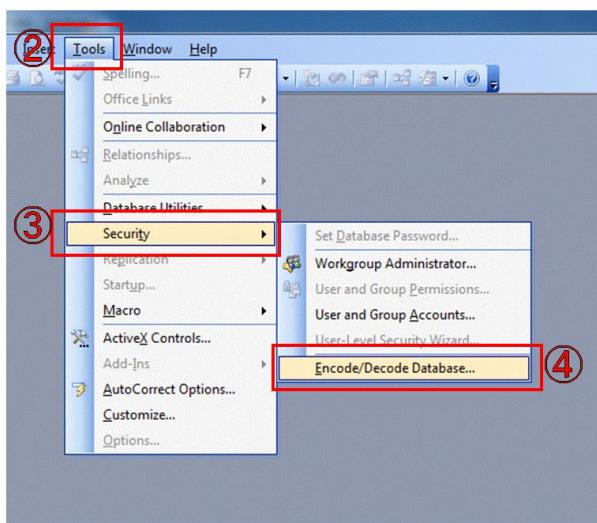
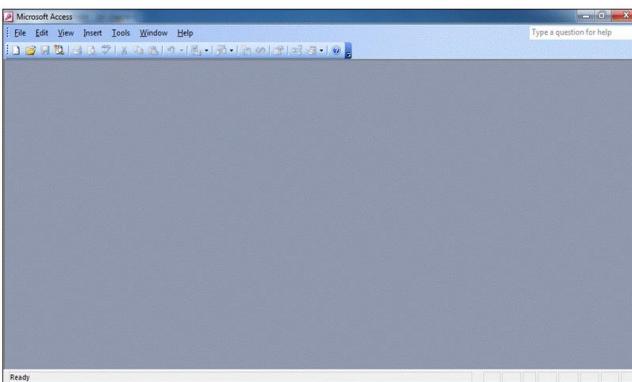
Set Database Password dialog box



7. On the “Tool” menu.
8. Point to “Security”.
9. Click “Set Database Password”. (Set a Password dialog box is displayed).
10. Type the unique password in the box.
11. Re-type the unique password in the “Verify” box.
12. Click “OK” button.

# Steps of “encrypt a database” 1

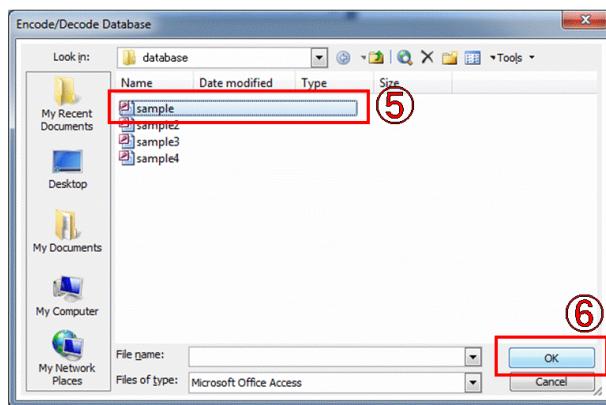
Start MS-Access without opening



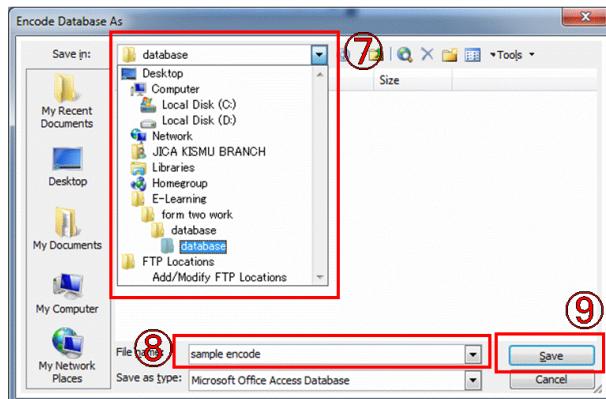
1. Start MS-Access without opening a database because you can't encrypt or decrypt a database when it is open.
2. On the “Tools” menu.
3. Point to “Security”.
4. Click “Encode/Decode Database”  
(Encode/Decode Database dialog box is displayed).

# Steps of “Encrypt a database” 2

Encode/Decode Database dialog box

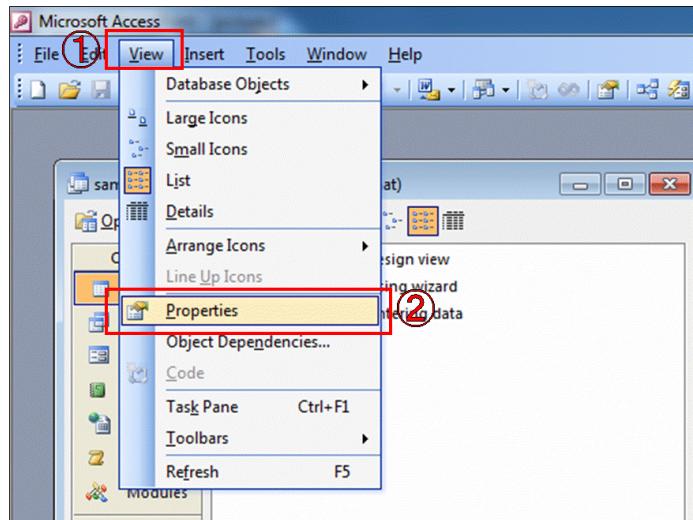


Encode Database As dialog box

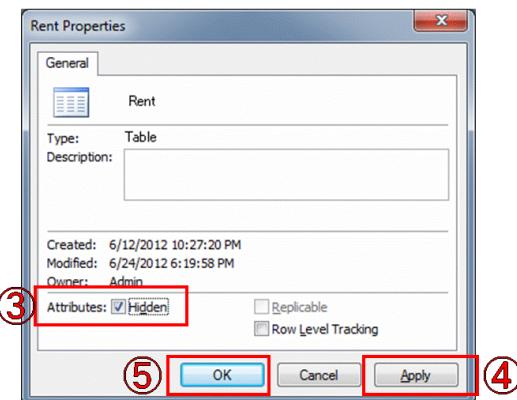


5. Select the database you want to encode or decode.
6. Click “OK” button.  
(Encode Database dialog box is displayed).
7. Select the location from down arrow list to save.
8. Type the file name in the “Name box.
9. Click “OK” button.

# Steps of “hide object”

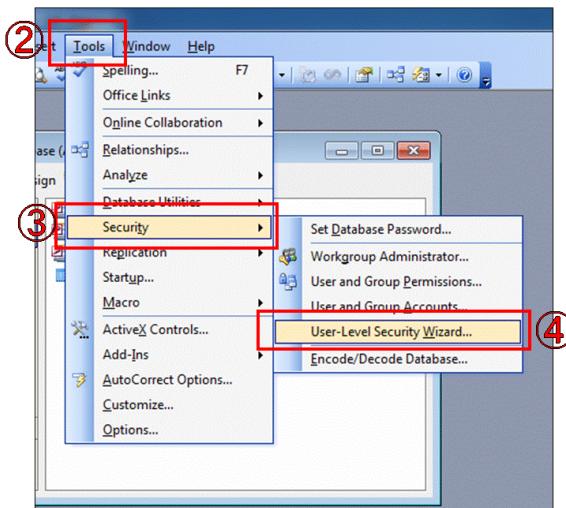


Properties dialog box

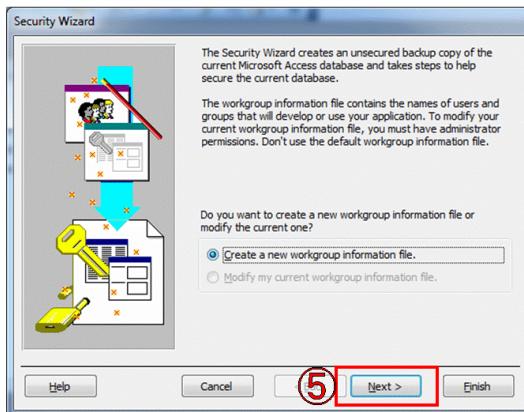


1. On the “View” menu.
2. Click “Properties”.  
(Properties dialog box is displayed).
3. Check in the  
“Hidden” box.
4. Click “Apply” button.
5. Click “OK” button.

# Steps of “assign user rights and privileges” 1



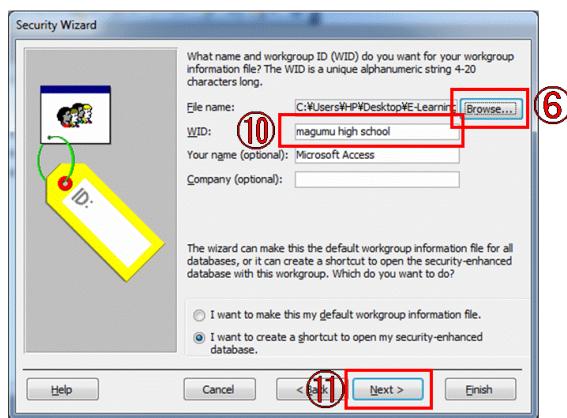
Security Wizard dialog box (step 1)



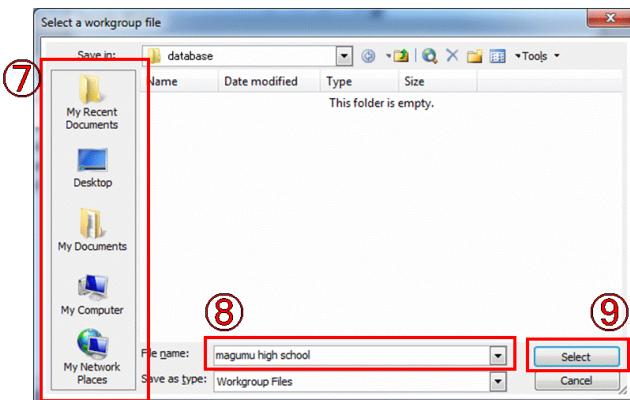
1. Open the database.
2. On the “Tools” menu.
3. Point to “Security”.
4. Click “User-Level Security Wizard”.  
**(Security Wizard dialog box is displayed).**
5. Click “Next” button.

# Steps of “assign user rights and privileges” 2

Security Wizard dialog box (step 2)



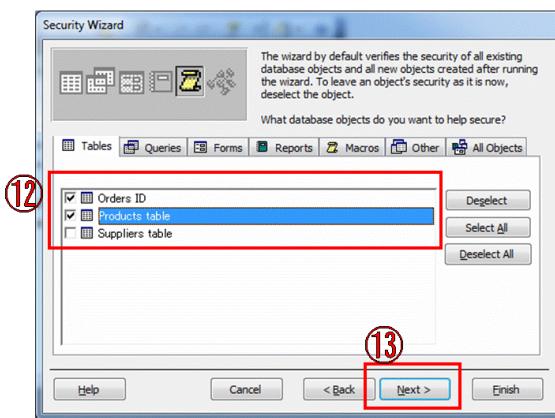
Select a workgroup file dialog box



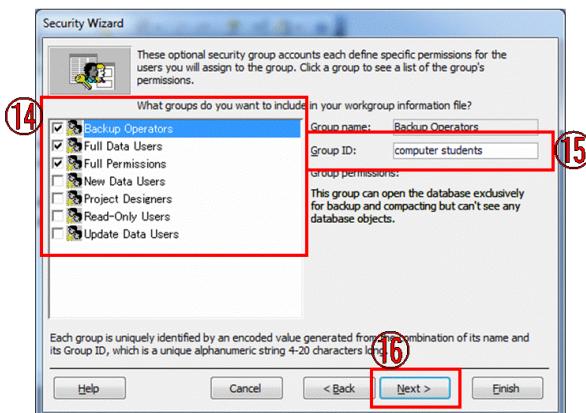
6. Click “Browse” button.  
(Select a workgroup file dialog box is displayed).
7. Select the location from shortcut keys.
8. Type the name of file in the box.
9. Click “Select” button.
10. Type the unique “WID” (workgroup ID) in the box.
11. Click “Next” button.

# Steps of “assign user rights and privileges” 2

Security Wizard dialog box (step 3)



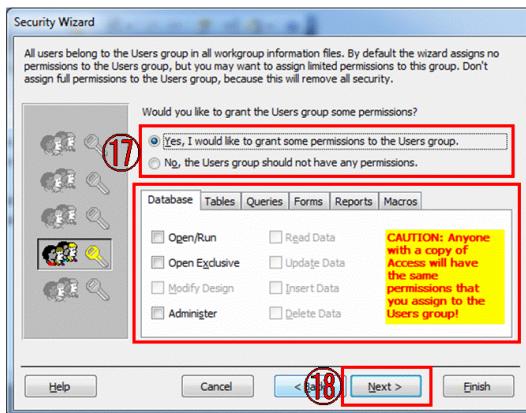
Security Wizard dialog box (step 4)



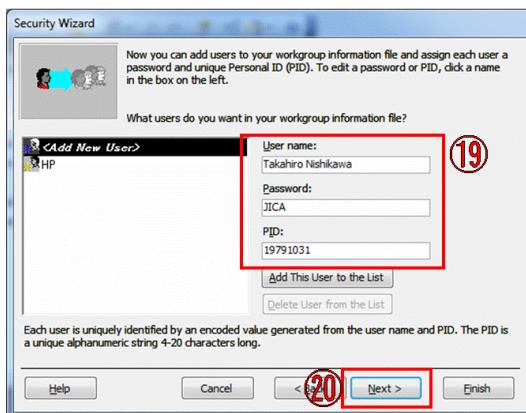
12. Check in the boxes which you want to select the database to help source from each tab.
13. Click “Next” button.
14. Check in the box which you want to include in your workgroup information file.
15. Type “Group ID” in the box each groups.
16. Click “Next” button.

# Steps of “assign user rights and privileges” 3

Security Wizard dialog box (step 5)



Security Wizard dialog box (step 6)



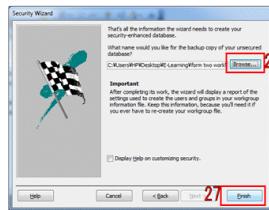
17. Select “Yes” or “No” to grant the users group some permission. If you select “Yes”, you can set some option from each tab.
18. Click “Next” button.
19. You can add users to your workgroup information file. If you want to add, type “User name”, “Password” and “PID” (personal ID) in the each box.
20. Click “Next” button.

# Steps of “assign user rights and privileges” 3

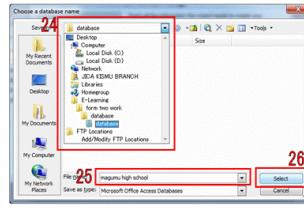
Security Wizard dialog box (step 7)



Security Wizard dialog box (step 8)



Choose a database name dialog box



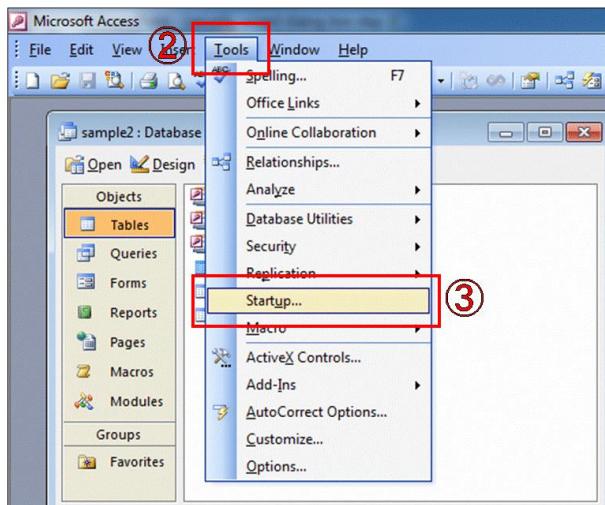
21. Select “Select a user and assign the user to groups” or “Select a group and assign users to the group”.
22. Click “Next” button.
23. Click “Browse” button.  
(Choose a database name dialog box is displayed).
24. Select the location from down arrow list to save.
25. Type the “File name” in the box.
26. Click “Select” button.
27. Click “OK” button.



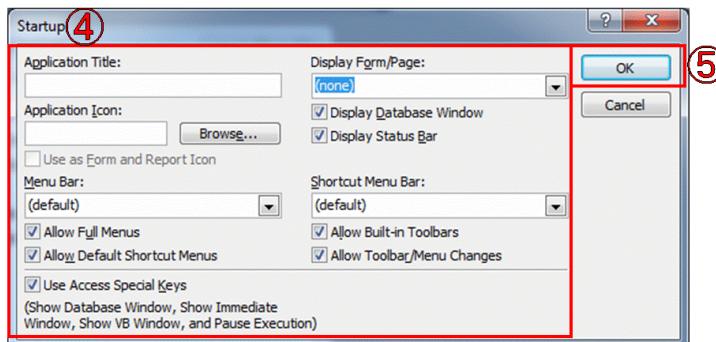
# Setting up startup options

- To customize your database application workplace, there is need to specify how the database is to be loaded.

# Steps of “set the startup options”



Startup dialog box



1. On the “Tools” menu.
2. Click “Startup”.  
(Startup dialog box is displayed).
3. Set startup options e.g. “Application Title”, “Application Icon” or etc.
4. Click “OK” button.

# Review questions 1

1. What is a relational database management system?
2. Define the following terms: table, records and field as used in databases.
3. State six major objects used to manipulate data in MS-Access.
4. Explain how you can start and exit MS-Access.
5. In MS-Access, what do the following terms refer to: query, macro, module.

# Answer of review questions 1

1. A relational database is a model where information is stored in related structures called tables or relations.
2. **Table: a structure used to store related records.**  
Records: related field that represents a single item or entity.  
Field: logical combination of characters that can be manipulated as a unit.
3. Objects which help the user easily manipulate and manage data in a database include:
  - **Tables, forms, queries, reports, macros, modules.**
4. To start MS-Access, click start, point to programs then click MS-Access. To exit, click file then exit or simply click the close button on the title bar.
5. **Query: a database feature used to analyse data in a table.**  
Macro: a feature used to automate database operations.  
**Module: a programming environment embedded in MS-Access used to automate database operations.**

# Review questions 2

1. Differentiate between a primary key and an index.
2. What is normalization in reference to tables?
3. Describe various data types used in MS-Access.
4. Explain how you would set a validation rule when designing tables.
5. What are field properties?
6. What is the difference between a field name and a caption?

# Answer of review questions 2

1. Primary key – unique field used to identify each record uniquely for easy access and manipulation.  
An index – a key not necessarily unique used to arrange data in a table.
2. Normalisation – a technique used to make a complex database more efficient by breaking one large table into smaller related tables.
3. Text, number, date/time, logical (yes/no), etc.
4. Setting validation rule:
  - A) Select the field you want to set validation rule to.
  - B) In the field properties section, click the insertion pointer in the validation rule cell.
  - C) Type in the validation rule e.g. BETWEEN 0 AND 100.
5. Field properties – characteristics of a field such as size, format, etc.
6. Field name is a combination of characters that identifies a data item whereas a caption is a full desc

# Review questions 3

1. Define the following terms:
  - A) Form;
  - B) Bound and unbound control;
2. Differentiate between tabular and columnar form layout.
3. Explain how you would create a form without using a form wizard.
4. Why would one prefer to use a form for data input rather than entering directly into a table?
5. Explain how you would move from one record to another in a form.
6. Draw a simple sketch of a form that can be used to enter all subjects marks in an examination database.

# Answer of review questions 3

1. Form – user interface that helps the user view records and easily make entries into a table.  
Bound controls – data field in a form layout grid that is used to display data from the underlying table query.  
Unbound control – data field in a form layout grid that is not based on any data source.
2. Columnar form – display one record at a time with the fields arranged downwards.  
Tabular form – records are displayed across the screen from right to left.
3. Click the design view from new form dialog box to display the form design grid.
4. To provide an interface that let the user enter and view data easily.
5. Using the navigation button.
6. Student to use a word processor to sketch the form layout.

# Review questions 4

1. Explain two tools you can use to search for data in a database.
2. What is Referential Integrity?
3. Differentiate between a table and a query.
4. Write down the criteria you would use to display employees' details from a payroll database who earn between 90,000 and 240,000.
5. Explain how you would sort data in a query.
6. What is the difference between an action query and a select query?
7. Explain what happens when you try to enter invalid data into a related table for which referential integrity has been reinforced.
8. Explain how you would create a select query that would be used to calculate your total score and average in ten subjects.

# Answer of review questions 4

1. Query and find command.
2. A feature used to eliminate chances of entering non existing data into child table., that do not exist in the primary table.
3. A table is a structure used to store related records while a query is a component used to analyse data in a table.
4. Between 90,000 and 240,000.
5. 1). Click the cell that you want to use to sort a query in the sort row.  
2). From the drop down list, select the sort order, i.e. descending or ascending order.
6. Select query is used to search and analyse data in a table while action query is used to make changes to underlying query or table.
7. Access gives a warning message and denies the user from entering the next record.
8. Insert the totals function in a query then select SUM and AVG.

# Revision questions

1. What is the importance of a report generated from a database?
2. What is the difference between a report and a label?
3. Explain how you would create a report that displays subtotals and grand totals.
4. Dr. Garaya is a pharmacist. She wants to generate labels that she can use to stick to medicine bottles. Explain to her how she can generate labels of different sizes using MS-Access database.
5. Assuming you have been appointed as the sales representative of an insurance company, explain how you would create annual reports that would include the company logo at the top of every page.

# Answer of revision questions

1. Report – used to give a summarised information for the purpose of presentation.
2. A report gives a summarised information for the purpose of presentation while a label is a sticker placed on an item for the purpose of identification or description.
3. To create a report that displays subtotals and grand totals, click summary options button in the report wizard or create calculated controls in the report design grid in the grouping field footer and report footer respectively.
4. Macros and modules.
5. See creating reports. To insert logo and drop it in the page header in the report design grid.

# Practical activity 1

Field Name	Data Type
ID Number	Text
Last name	Text
First name	Text
Address	Text
Town	Text
Company	Text
Date	Dates/Time
Salary	Currency
Married?	Yes/No

- Create a database called Employees and in it create a table called customers with the right fields:
  - a. **Save the Table as CUSTOMER.**
  - b. In the description column, which is optional, describe what each field is for, e.g. ID Number is the number that identifies each employee uniquely.138

# Practical activity 2

Field	Data type	Size
DVD_Code	Alphanumeric	8
Title	Text	20
PurchasePrice	Currency	Fixed
SalePrice		Fixed
Quantity	Number	
Datebought		Medium

- A) In the database, create a table called **DVDs** with the right attributes:
- B) Determine the following in A above.
  - i. The primary key;
  - ii. The missing data types and properties;
  - iii. Field captions.
- C) Enter **ten** records into the table.

# Practical activity 3-1

Field name	Data type
Student number	Text
First name	Text
Last name	Text
Maths	Number
Physics	Number
Chemistry	Number
Computer Science	Number
Total	Number
Position	Number
Reporting Date	Date/Time

- Create a table named *Exams* in a **COLLEGE** database with the fields:

# Practical activity 3-2

- Set the Student number as the primary key.  
Using a data form, enter data for five students as follows.

Student No.	MATHS	PHY	CHEM	COMPUTER
2001	40	50	40	90
1983	60	70	57	30
2002	80	30	37	70
1513	30	63	80	70

# Practical activity 3-3

- Without using the form wizard, create a form for the exams table such that the format is displayed as below:

Student Name ..... Student Name ..... Total .....

Position .....

Reporting Date .....

Subject	Average Marks
---------	---------------

Maths	.....
-------	-------

Physics	.....
---------	-------

Chemistry	.....
-----------	-------

Computer	.....
----------	-------

# Practical activity 4-1

- You Are the database manager, Riceland SACCO society and you are expected to create a database called Riceland.
1. Design two tables in the database, employees and bill with the following fields:

Employees table:
PNo (primary key)
National ID
First Name
Last Name
Date Employed
Salary
Sex

Bill table:
PNo (foreign key)
Bill No (primary key)
Bill Date
Bill Amount

# Practical activity 4-2

- Enter the following records in the employees' table:

PNo	National ID	First Name	Last Name	Date Employed	Salary	Sex
201	12234	Ali	Mohamed	16-3-2002	40000	M
203	22734	Alice	Korir	16-5-2002	37000	F
207	22734	Daniel	Karimi	16-3-2003	60000	M
208	12234	Pateicia	Atieno	16-3-2004	38000	F

# Practical activity 4-3

- Enter the following records in the bills table

PNo	Bill No	Date Employed	Salary
201	1100	9-7-2004	3,000
203	1200	16-7-2004	7,000
201	2000	24-7-2004	2,000
208	1340	16-6-2004	800
204	1430	18-7-2004	1,700

Explain why duplicate PNo is acceptable in Bills table and not in the employees' table

# Practical activity 4-4

- Create a calculated query based on the two tables that will calculate and display the following:
  - A) The total bill for Joe in the month of January
  - B) The total bill for all the employees.

# Practical activity 5

1. Open the Riceland database and generate a report that displays the following:
  1. Employee name, the gross salary, allowances and the net pay.
  2. Subtotals and grand totals for all the employees.
  3. The current date and time.
2. You have been requested by the School Principal to create a school database that includes the following:
  1. Four departments (Maths, Science, Humanities and Technical subjects);
  2. Members of staff in each department;
  3. Subjects offered in a department.
    1. From the database, generate a grouped report for all members of staff in each department.
    2. Create labels to be placed at the door of every head of department's office.