

## Microsoft Access

### Definition :

Microsoft Access is a relational database application. It is the perfect tool when you begin to outgrow your data collection in Excel. With Access, you can obtain better collection results by creating user-friendly forms with rules to protect the validity of your data. You can create queries to analyze and filter your data, and reports that can be regenerated anytime you need them. Topics for this workshop include database concepts, planning a database, and a hands-on introduction to tables, queries, forms, and reports.

### Basic database Objects:

**Tables :** Tables store data. The Tables are the true 'database' (base of data). These need to be created and properly linked (related) in order to effectively use the other Access tools. Tables are the core of your database, everything else in Access depends on the Tables.

The **Design View** of a Table allows you to create and modify:

- **Field Names** (the column headings)
- The type of data stored in a field (**Data Type**). In this workshop we use:

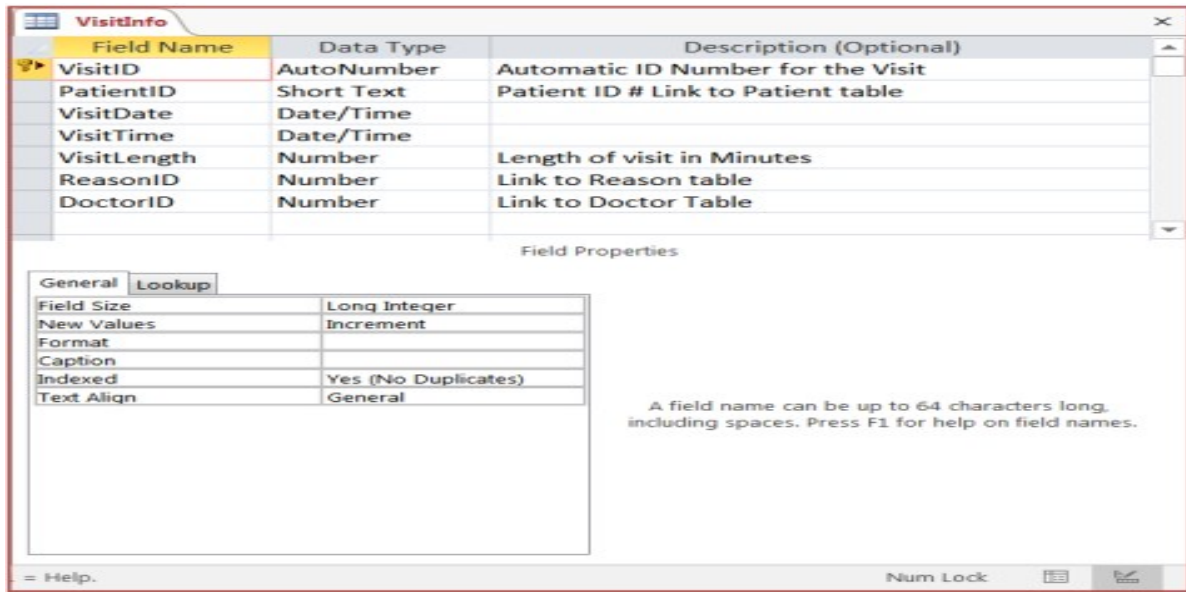
Data Type	Description
Short Text	Allows any alphanumeric characters, up to 255 characters. Stores text and numbers not used in calculations
Number	Numeric data used for storing mathematical calculations
Date/Time	Stores date and time information for a year range between 100 and 9999
AutoNumber	Creates a unique number for each record.
Yes/No	This is a binary field (only two answers, Yes/No, True/False)
Lookup Wizard...	The lookup wizard allows you to link the field to another Table or to type in a list of your own creation.
Attachment	Stores files like digital images
Currency	Stores currency values and numeric data featuring one to four decimal places
Hyperlink	Stores a combination of numbers and text, used as a hyperlink address
Long Text	Typically used for lengthy alphanumeric or text data, up to 63,999 characters
Memo	stores a large quantity of text information
OLE	holds graphics, sounds, and other object Linking & Embedding objects
Text	holds characters, numbers, punctuation marks, and special symbols
Calculated	Creates an expression that uses data from one or multiple field

- **Descriptions**, which will be displayed in the status bar in the Data view of Forms.

### Field Properties

The *properties* of fields vary depending upon the data type of the field. For example, you can't change the width of a numeric field, but you can for a text field.

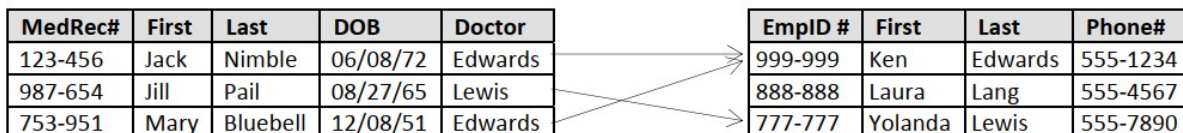
<b>Field Size</b>	Limits the size of <i>Short Text</i> fields. It can be set from 1 to 255. Be careful changing the size of fields if records have already been entered into the table.
<b>New Values</b>	Appears only for <i>AutoNumber</i> fields and allows you to specify the increment value between new numbers.
<b>Format</b>	Allows you to change how numbers and dates are displayed. If you have formatted numbers in Microsoft Excel, then the formats used here will be familiar to you.
<b>Input Mask</b>	Allows you to force data entry into predefined formats, such as phone numbers (e.g. (03) 9851 4000) where brackets, spaces, dashes etc are used for the data.
<b>Caption</b>	Captions are used in forms and reports in lieu of the normal field name. Captions are handy when you have used truncated or abbreviated field names (e.g. <i>EmpNo</i> can be made to appear as <i>Employee Number</i> ).
<b>Decimal Places</b>	Allows you to specify the number of decimal places for numeric fields.
<b>Default Value</b>	Allows you to specify a default value that will appear in the field whenever a new record is created. This can be standard text or, in the case of dates, can be an <i>expression</i> (i.e. a formula) that displays the current date.
<b>Validation Rule</b>	Allows you to specify a rule for the data to ensure that data is entered correctly. For example, you can specify a rule that a number has to be greater than 1,000 or that the date must be today or later etc.
<b>Validation Text</b>	Displays a message to the user when data entered into a field with a validation rule doesn't match what the validation rule requires.
<b>Required</b>	Ensures that data is entered into the field. Access will not move off the record until data has been entered into the field.
<b>Allow Zero Length</b>	If nothing is entered into a text field it is deemed to be of <i>null</i> length. If you wish to enter an empty string (“ ”) you must select this property. Note that this is an advanced concept.
<b>Indexed</b>	Indexes are used to list data in a specific order, speed up searching, and/or restrict the entry of duplicate values. They will be explained in greater detail later.
<b>Smart Tags</b>	<i>Smart Tags</i> are used to obtain specific data for the field. They can be used to obtain stock quotes, exchange rates, etc. Again, they are an advanced concept.
<b>Text Align</b>	Allows you to determine where in a column (left, centre or right) data will appear.



The **Datasheet View** of a Table allows you to create and modify the data within a grid structure based on the settings in the Design View.



**Queries** show the data in a Table format. A Query can pull from multiple Tables and allow you to limit the records (rows) display by using criteria and showing only the fields (columns) you want. We can find the phone number for Jill Pail's Doctor, and provide Ken Edwards with a list of his patients.



Queries show a selection of data based on criteria (limitations) you provide. Queries can pull from one or more related Tables and/or other Queries.

The **Datasheet View** of a Query looks like a Table. All data added or modified in a Query, will be saved in the Table. The **Design View** is where the structure of the Query is created. This is where we choose the record sources and fields, and set the sort order and criteria.

**Record Sources** – Tables and/or Queries containing the data

**Fields** – Field names from the above record source and expressions to build new fields

**Sort Order** – Order of the result, in order of position

**Criteria** – Limitations applied to the final result

Types of query can be **SELECT ,INSERT ,UPATE ,DELETE.**

**Forms** can be created to provide a "user-friendly" side to your database. They are used to view and enter your data in an interactive formatted structure. Forms are also used to make menus and search windows that turn a simple data collection tool into a more interactive user-friendly application.

**Reports** are created to print out your data in a formatted structure. They allow you to group and organize your data. They can be used to create Form letters and mailing labels. Access works beautifully with Word for mail merges, but the Reports tool allows for the multi-level summaries.

Patients				
LAST by 1s	LAST	FIRST	ADDRESS	CITY
A	Adams	Annie	6831 NW 4th Ave	Gainesville
	Appleton	April	PO Box 456	Starke
	Arlington	Arnold	234 SE 45th Road	Gainesville
B	Brown	Bobbie	234 Peter Pan Terrace	Gainesville
	Bruce	Butch	3243 SE 4th Terrace	Gainesville
C	Cappers	Cathy	RR 2 Box 659	Waldo
	Carlson	Carly	1943 NW Main Street	Gainesville
	Clark	Carl	9213 Kiwi Road	Gainesville
D	Dawson	Debbie	832 Hook Place	Gainesville
E	Edwards	Edgar	5233 NW 232nd Drive	Gainesville
	Ellis	Emily	PO Box 5544	Gainesville
	Engle	Elizabeth	9420 Zucchini Street	Gainesville

**NOTE:** You **MUST** be able to determine the difference between a query and a report in this task. In short:

- Any tasks which sound like you need to **search for information** are tackled within the **query**.
- Any tasks which sound like they are talking about the **display of the information** should be tackled within the **report**.

### Macro

This object is a structured definition of one or more actions that you want Access to perform in response to a defined event. An Access Macro is a script for doing some job. For example, to create a button which opens a report, you could use a macro which will fire Open Report action.

- You can include simple conditions in macros to specify when one or more actions in the macro should be performed or skipped.
- You can use it to open and execute queries, to open tables, or to print or view reports.
- You can also run other macros or Visual Basic procedures from within a macro.
- Data macros can be attached directly to table events such as inserting new records, editing existing records, or deleting records.
- Data macros in web apps can also be stand-alone objects that can be called from other data macros or macro objects.

### Designing a Database:

The key to understanding database design is to understand the way data is stored. Access needs to store information regarding different subjects in separate tables. When you retrieve your data, you can combine specific information from one or more of your tables for reports.

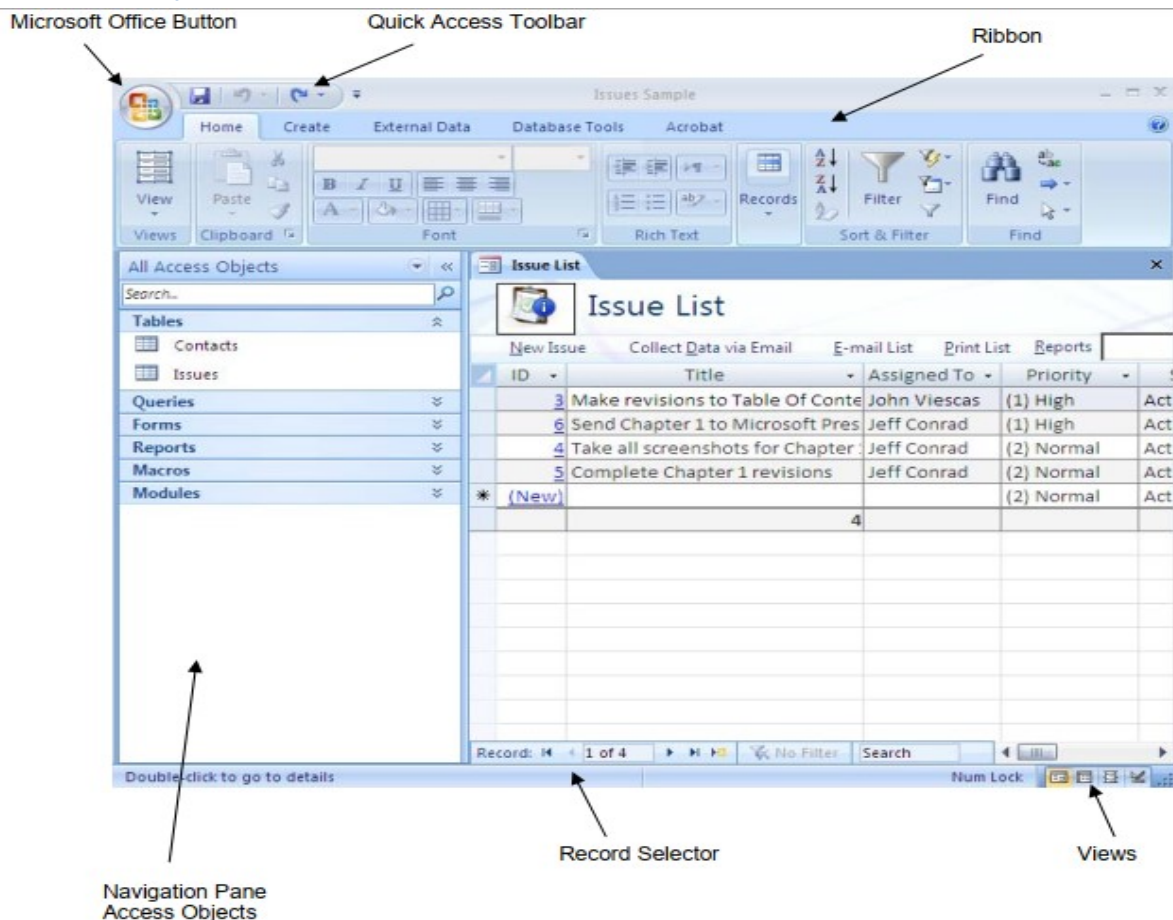
Helpful Steps in designing a database

1. Determine the purpose of your database
2. Determine the tables you need
3. Determine the fields you need
4. Determine the relationships
5. Refine your design

Don't worry if you make a mistake or leave items out of your initial design, think of it as a rough draft that you will refine after reviewing the database. Enter sample data into your design; create queries, forms, and reports.

Evaluate your database to make sure it fits your needs? This allows you to make sure you have a good design foundation before continuing ahead. It is more difficult to make changes after you have all your data in tables.

### Access Layout :



### Access program functions :

- Store amount of data in one or more databases, without affecting the performance and effectiveness of the database.
- Add new information or statement to the file.
- Delete old data that is no longer needed.
- Changing existing data based on newly created information.
- Searching and inquiring about specific piece of information.
- Arranging and organizing data within files.
- Display data in the form of structured reports or forms.
- Calculate the final sum, subtotal, or arithmetic mean of required data.

### Access program features:

- Ability to create large number of tables and link them.
- Ease of adding and entering data into the database.
- The ability to search for any information in the database in many ways and print it.
- Ability to create data entry forms as needed.
- Ability to create and print formatted reports.
- Ability to incorporate images and graphics into forms and reports.