

Welcome!

Before we can start working with a database application like Microsoft Access, we need to understand specifically what a database is and what it can do for you. Microsoft defines a database as “a collection of interrelated tables, queries, forms, reports, macros, and modules.” That definition tells us that **a database is not really a single entity, but a collection of many different interrelated components**. Once you understand the function of each component that makes up a database, you will be better able to understand the capabilities of a database program like Microsoft Access. I would like to begin, then, by briefly describing each of these important database components

## Tables

**Tables are used to store all of the information in your database.** This information is arranged into columns and rows. One row of information is known as a ‘record.’ One column of information is known as a ‘field.’

For example, if you’d like to track customer names and addresses in your database, you’d need to set up a table to hold this information. You would want to set up one column (field) in your table to hold nothing but customer names. Another column might be created to store the cities in which each of your customers live. A third field might hold customer phone numbers. Additional columns could be added to store street addresses, states, zip codes, job titles, and any other types of relevant information.

Each row (record) in your table would hold all of the fields for one specific customer. The first row would hold the name, street address, city, state, zip, phone number, e-mail address, and job title for customer number one. The second record would contain information for customer number two, and so on.

## Queries

Queries are used to extract or rearrange information in your tables. For example, suppose you have a table of customer names, addresses, and other contact information. You can use queries to obtain any of the following lists:

- a list of customer names and addresses, sorted by zip code
- a list of customer names and phone numbers, sorted by last name
- a list of all customer names and phone numbers, if the phone number is in the 212 area code.
- a list of all customer names and addresses, if they live in South Dakota
- a list of all customer names and e-mail addresses, if they have an e-mail address

These are just a few examples of the types of queries that you could perform on such a table. In reality, **queries can be used to filter and sort your tables in an almost infinite number of**

## ways.

Examples of queries abound:

If you've ever shopped for a home, you probably remember asking a real estate agent to show you a list of homes within a certain price range, in a community with good schools, and with a certain number of bedrooms and bathrooms. The real estate agent was able to quickly provide you with this information because all he or she had to do was perform a query on his or her table of homes for sale.

When you dial 411 and ask the operator to give you a phone number for a certain person or business in a certain city, the operator simply performs a query on a table of names, cities, and phone numbers to extract the information you need.

When you make reservations for tickets with a certain airline on a certain date between a certain pair of cities, the agent simply performs a query on a table containing airline schedules.

**Computer databases are ideal repositories for information because they can help us sort and locate the information we need far more quickly and efficiently than a box, a bulletin board, a desk drawer, a filing cabinet, or any other storage device.** Queries are the primary tool we use to find and extract information from a database.

## Forms

**Forms are used to simplify and enhance the data entry experience.** While it is possible to type information directly into a table, it isn't pleasant. When working with tables, it can be difficult to see all of the fields you're working with at once. You usually have to do a lot of back and forth scrolling in order to move from column to column. This scrolling activity can slow data entry down significantly.

Tables also tend to show you several records at a time, and they make it far too easy for you to accidentally slip from one record to the next. This can lead to serious errors. I can't count the number of times I've caught myself entering information on the wrong row of my table!

Unlike tables, forms provide you with a delightful data entry environment. A data entry form can be asked to display all of your table fields on one screen, totally eliminating the need to scroll. Most forms will also display only one record at a time, reducing the risk that you'll inadvertently make changes to the wrong record.

## Reports

In general, reports contain the same information you'd find in your tables and queries. However, while tables and queries are generally optimized for display on a screen, **reports are made to be printed on paper.** Any time you need a summary of table or query data custom formatted for your printer, you'll want to create a report. Most reports also come with mathematical capabilities, which gives you the opportunity to include subtotals, totals, and other calculations on your hard copy.

## Macros

Macros are used to automate tedious tasks that you frequently perform. You can create macros that will allow you to add records to a form, run a query, or create a report with little more than a click of your mouse!

#### Modules

Modules are sophisticated routines you can write to add decision-making capabilities to your database. Modules can also carry out complicated and repetitive procedures that would take us a long time to perform manually. Modules are essentially computer programs written in a language called 'Visual Basic.'