

Microsoft Access: Database Basics

Understanding how databases, like Microsoft Access, work will allow you to use their powerful features to make your work easier.

Let's start by discussing how databases are organized and their various parts.

Tables

Databases are organized in tables. The tables in Microsoft Access look a lot like a Microsoft Excel spreadsheet, because the information is organized into columns and rows. You would normally have more than one table in your database. The tables are organized according to subject matter. For example, one table in your database might be an employee list, another table might be a customer list, and a third table might be a product inventory list.

The same data could be in more than one table. Microsoft Access can create a relationship among the tables, allowing a lot of flexibility in how you sort, manage, and extract the information in your database.

Records and Fields

Data is organized into *records* and *fields*, and it's important to know the difference.

A **record** is a collection of data relating to a single unit. For example, each student has his or her own record in a college database. Each **row** in a database table is a record.

A **field** is a single characteristic *of a record*. For example, your first name may be a field and your last name may be another field in your student record. Other fields in your student record could include: address, city, state, zip code, student number, grades, etc. Your record is composed of all of these fields. Each **column** in a database table holds a separate field.

Forms

You can enter records directly into an Access database table, or you can simplify the process by using a form. Forms can speed up data entry because they allow you to take a simple fill-in-the-blank approach to entering data. Forms are also helpful in reducing the chances of tables being accidentally or deliberately corrupted, because you can give someone access to a form for data entry, without giving them access to the entire table, itself.

Using a Database

What can you do with a database? As soon as you create a database, you can begin to manipulate its data in useful ways.

You can use the **Report** function to summarize data in your tables and make printouts. For example, you could run a report that lists the names of all students who made the honor roll for any given term and then print it.

Queries allow you to sort and filter your data. To *query* something means to ask it a *question*. You can choose which table fields you want to include in your query and then have the database search those fields for data matching the criteria that you set up. An example of a query might be: “Which students live in Bloomfield?” To answer this, you would search the “city” field for all entries that match “Bloomfield.”

Planning a Database

You will want to create a database that will serve your needs for a long period of time. So the first, and most important step, is to carefully plan what sort of data you will want to store and manage. Think about your needs today, but also what you might need in the future. What types of information will you need to extract? How will you organize the data? It might be helpful to sketch out your approach on paper, considering the topic overall, the individual pieces of information, how the information might need to be grouped, etc. This can give you a good basis from which to design your tables.

The other important factor in creating a useful database is establishing some database rules or “**properties**,” as they are called in Microsoft Access.

Consistency in data entry is critical. If your data is not entered consistently, you can have problems when you attempt to query the database, resulting in inaccurate results. For example, if one of the fields in your business database refers to the college an employee attended and you sometimes refer to Indian Hills Community College as “Indian Hills,” but at other times simply put “IHCC,” then you may have trouble when you attempt a query for employees at your company who graduated from Indian Hills Community College. Another vital element in data entry is **accuracy**. Be sure your data entry is correct – be careful to avoid errors. If an entry isn’t correct, then you will have inaccurate reports and query results. **Inaccurate data is useless data.**

Now that you have a basic understanding of what databases are, let’s look more closely at Microsoft Access and its many helpful features.