

Introduction to Databases

Introduction

Access 2010 is a **database creation and management** program. To understand Access, you must first understand **databases**.

In this lesson, you will learn about databases and how they are used. You will familiarize yourself with the differences between data management in **Access** and Microsoft Excel. Finally, you will get a look ahead at the rest of the Access course.

What is a Database?

A **database** is a collection of data that is stored in a computer system. Databases allow their users to **enter**, **access**, and **analyze** their data quickly and easily. They're such a useful tool that you see them all the time. Ever waited while a doctor's receptionist entered your personal information into a computer, or watched a store employee use a computer to see whether an item was in stock? Then you've seen a database in action.

The easiest way to understand a database is to think of it as a **collection of lists**. Think about one of the databases we mentioned above-- the database of patient information at a doctor's office. What lists are contained in a database like that? Well, to start with, there's a list of the customer names. Then, there's a list of past appointments, a list with medical history for each patient, a list of contact information... and so on, and so on.

This is true of all databases, from the simplest to the most complex. For instance, if you like to bake, you might decide to keep a database containing the types of cookies you know how to make and the friends you give those cookies to. This is one of the simplest databases imaginable. It contains two lists: a list of your friends, and a list of cookies.



However, if you were a professional baker, you would have many more lists to keep track of: a list of customers, a list of products sold, a list of prices, a list of orders... it goes on and on. The more lists you add, the more **complex** the database will be.



In Access, lists are a little more complex than the ones you write on paper. Access stores its lists of data in **tables**, which allow you to store even more detailed information. In the table below, the “People” list in the amateur baker’s database has been expanded to include other relevant information about the baker’s friends.

ID	Name	Cell Phone	Birthday	Nut Allergy?
1	Dad	555-0404	June 3	Yes
2	Aunt Aida	555-9890	July 8	No
3	Joakim	555-0462	September 19	No
4	Dwane	555-9975	January 5	No
5	Allegra	555-0099	January 14	Yes

A table in Access

If you are familiar with other programs in the Microsoft Office suite, this might remind you a lot of Excel, which allows you to organize data in a similar way. And in fact, you could build a very similar table in Excel.

Why Use a Database?

If a database is essentially a collection of lists stored in tables, and you can build tables in Excel, why do you need a real database in the first place? While Excel is great at storing and organizing numbers, Access is far stronger at handling non-numerical data like names and descriptions. Non-numerical data plays a big role in almost any database, and it's important to be able to sort and analyze it.

However, the thing that really sets databases apart from any other way of storing data is **connectivity**. We call a database like the ones you'll work with in Access a **relational database**. A relational database is able to understand how lists and the objects within them **relate** to one another. To explore this idea, let's go back to the simple database with two lists: names of your friends, and the types of cookies you know how to make. You decide to create a third list to keep track of the batches of cookies you make and who they're for. Since you're only making cookies you know the recipe for, and you're only going to give them to your friends, this new list will get all its information from the lists you made earlier.



See how the third list uses words that appeared in the first two lists? A database is capable of understanding that the "Dad" and "Oatmeal" cookies in the "Batches" list are the same things as the "Dad" and "Oatmeal" in the first two lists. This relationship seems obvious, and a person would understand it right away. However, an Excel workbook wouldn't.

Excel would treat all of those things as distinct and unrelated pieces of information. In Excel, you'd have to enter every single piece of information about a person or type of cookie all over again each time you mentioned it, because that database wouldn't be **relational** like an Access database is. Simply put, relational databases can recognize what a human can: that if the same words appear in multiple lists, they **refer** to the same thing.

The fact that relational databases can handle information this way allows you to **enter**, **search**, and **analyze** data in more than one table at a time. All of these things would be very difficult to do in Excel, but in Access, even complicated tasks can be simplified and made fairly user-friendly.



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