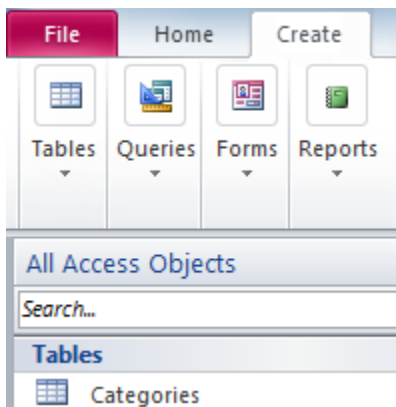# Introduction to Objects

Introduction

Databases in Access 2010 are composed of four objects: **tables**, **queries**, **forms**, and **reports**. Together, these objects allow you to enter, store, analyze, and compile your data as you wish.

In this lesson, you will learn about each of the four **objects** and come to understand how they interact with each other to create a fully functional relational database.

The Access Objects

Tables

By this point, you should already understand that a database is a collection of data organized into many connected **lists**. In Access, all data is stored in **tables**, which put tables at the heart of any database.

You might already know that tables are organized into vertical **columns** and horizontal **rows**.

Columns and rows in an Access table

In Access, rows and columns are referred to as **Records** and **Fields**. A **field** is more than just a column: it's a way of organizing information by the **type** of data it is. Every piece of information within a field is of the same **type**. For example, every entry in a field called "First Name" would be a name, and every entry in field called "Street Address" would be an address.

Fields and field names

Likewise, a **record** is more than just a row-- it's a unit of information. Every cell in a given row is part of that row's record.

A record

Notice how each record spans several fields. Even though the information in each record is organized into fields, it belongs with the other information in that record. See the **number** at the left of each row? That's the **ID number** that identifies each record. The ID number for a record refers to every piece of information contained on that row.

Record ID numbers

Tables are good for storing **closely related information**. Say that you own a bakery and have a database that includes a table with your customers' names and information like their phone numbers, home addresses, and email addresses. Since these pieces of information are all details about your customers, you'd include them all in the same **table**. Each customer would be represented by a unique **record**, and each type of information about those customers would be stored in its own field. If you decided to add any more information-- say, the customer's birthday-- you would simply create a new field within the same table.

Forms, Queries, and Reports

Although tables store all of your data, the other three objects offer you ways to work with it. They are: **forms**, **queries**, and **reports**. Each of these objects interacts with the **records** stored in your database's tables.

Forms

Forms are used for **entering**, **modifying**, and **viewing** records. You have probably had to fill out forms on many occasions, like when visiting a doctor's office, applying for a job, or registering for school. The reason forms are used so often is that they're an easy way to guide people into entering data correctly. When you enter information into a form in Access, that data goes exactly where the database designer wants it to go-- in one or more related tables.

A form

Forms make entering data easier. Working with extensive tables can be confusing, and when you have connected tables, you might need to work with more than one at once to enter a set of data. However, with forms, it's possible to enter data into multiple tables at once, all in one place. Database designers can even set restrictions on individual form components to ensure that all of the needed data is entered in the correct format. All in all, forms help keep data consistent and well-organized, which is essential for an accurate and powerful database.

Queries

Queries are a way of **searching** for and **compiling** data from one or more tables. Running a query is like asking a detailed **question** of your database. When you build a query in Access, you are **defining specific search conditions** to find exactly the data you want.

Queries are far more powerful than the simple searches you might carry out within a table. While a **search** would be able to help you find the name of one

customer at your business, you could run a **query** to find the name and phone number of every customer who's made a purchase within the past week. A well-designed query can give information that you might not be able to find out just by looking through the data in your tables.
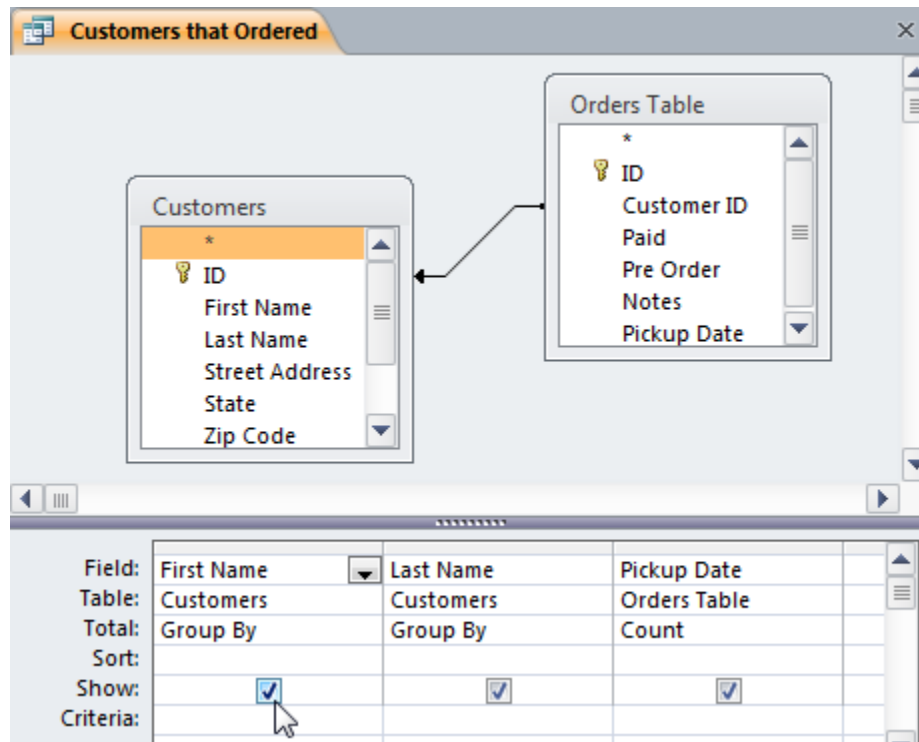
A query design

Reports

Reports offer you the ability to **present** your data **in print**. If you've ever received a computer printout of a class schedule or a printed invoice of a purchase, you've seen a database report. Reports are useful, because they allow you to present components of your database in an easy-to-read format. You can even customize a report's appearance to make it visually appealing. Access offers you the ability to create a report from any **table** or **query**.

A report

Putting it All Together

Even if you have a good idea of how each object can be used, it can initially be hard to understand how they all work together. It helps to remember that they all work with the same data. Every piece of data a **query**, **form**, or**report** uses is stored in one of your database **tables**.
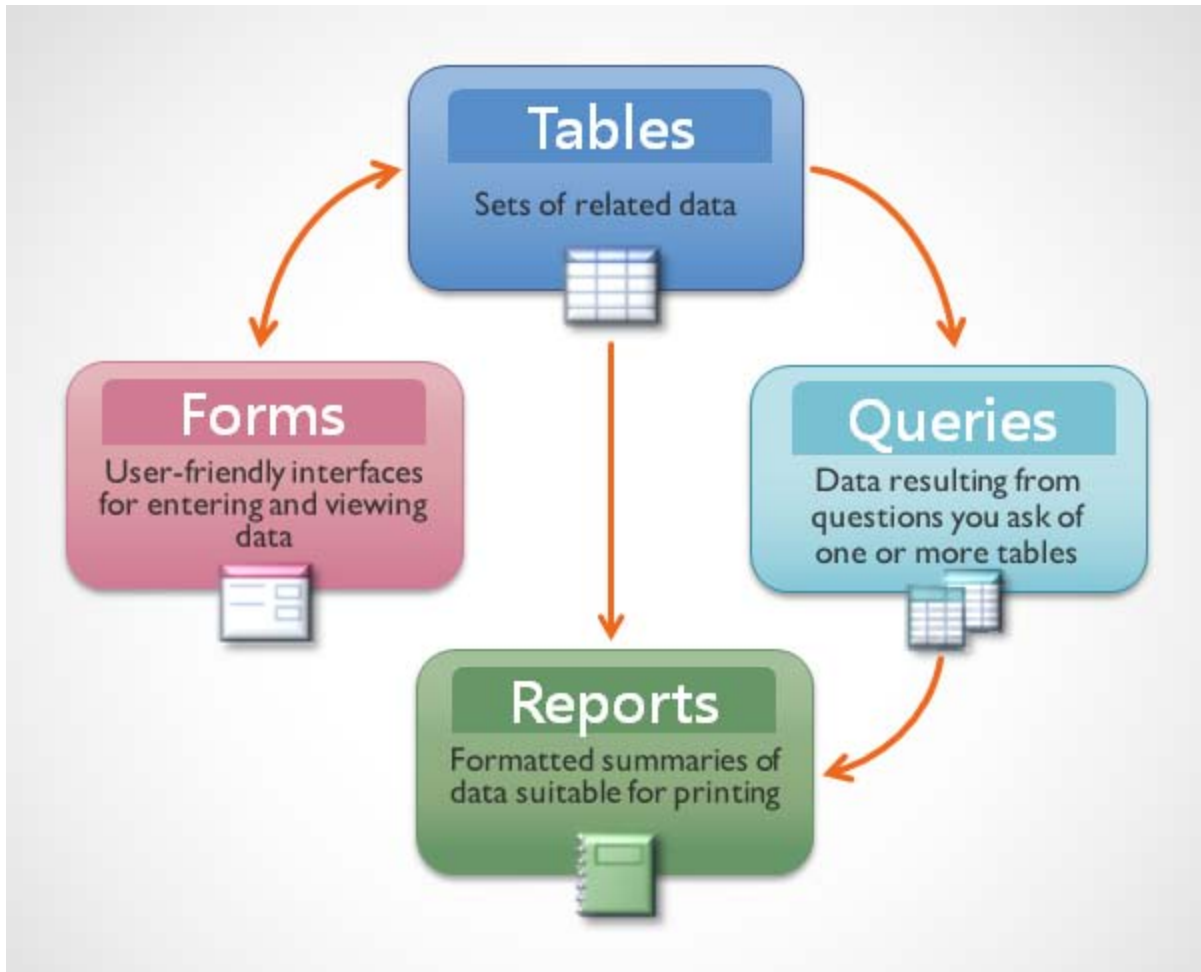
The four Access 2010 objects

Forms allow you to both **add** data to tables and **view** data that already exists. Reports **present** data from tables and also from queries which, in turn, **search for** and **analyze** data within those same tables.

These relationships sound complicated, but in fact, they work together so well and naturally that we often don't even notice when we're using connected database objects. Have you ever used an electronic card catalog to search for a book at the library? Chances are, you entered your search in something that looks like this:

Search the library catalog. Fill in at least one field. The more words you search for, the smaller and more refined your results list will be.

Search by:

Title Keyword ▼	[ ]	AND ▼
Author Keyword ▼	[ ]	AND ▼
General Keyword ▼	[ ]	AND ▼
Subject Keyword ▼	[ ]	

Refine your search (optional):

You can refine your search by selecting a limit or sort option.

Limits

Library Branch
- Athens Drive Community Library
- Cameron Village Regional Library
- Cary Public Library
- Duraleigh Road Library
- East Regional Library

Type of Book
- All Audio Books
- Downloadable Audio Books
- Adult Audio Fiction
- Adult Audio Non Fiction
- Children's Audio

Sorting

Sort your results by selecting a sort option.

Select... ▼

An electronic card catalog

When you did that search, you were entering your search terms into a **form** that, in turn, created and ran a **query** based on your request. When the query finished searching the database's **tables** for records that matched your search, you were shown a **report** that drew information from the query and the related tables-- in this case, a list of books matching your search terms. You could represent the connections between the objects like this:
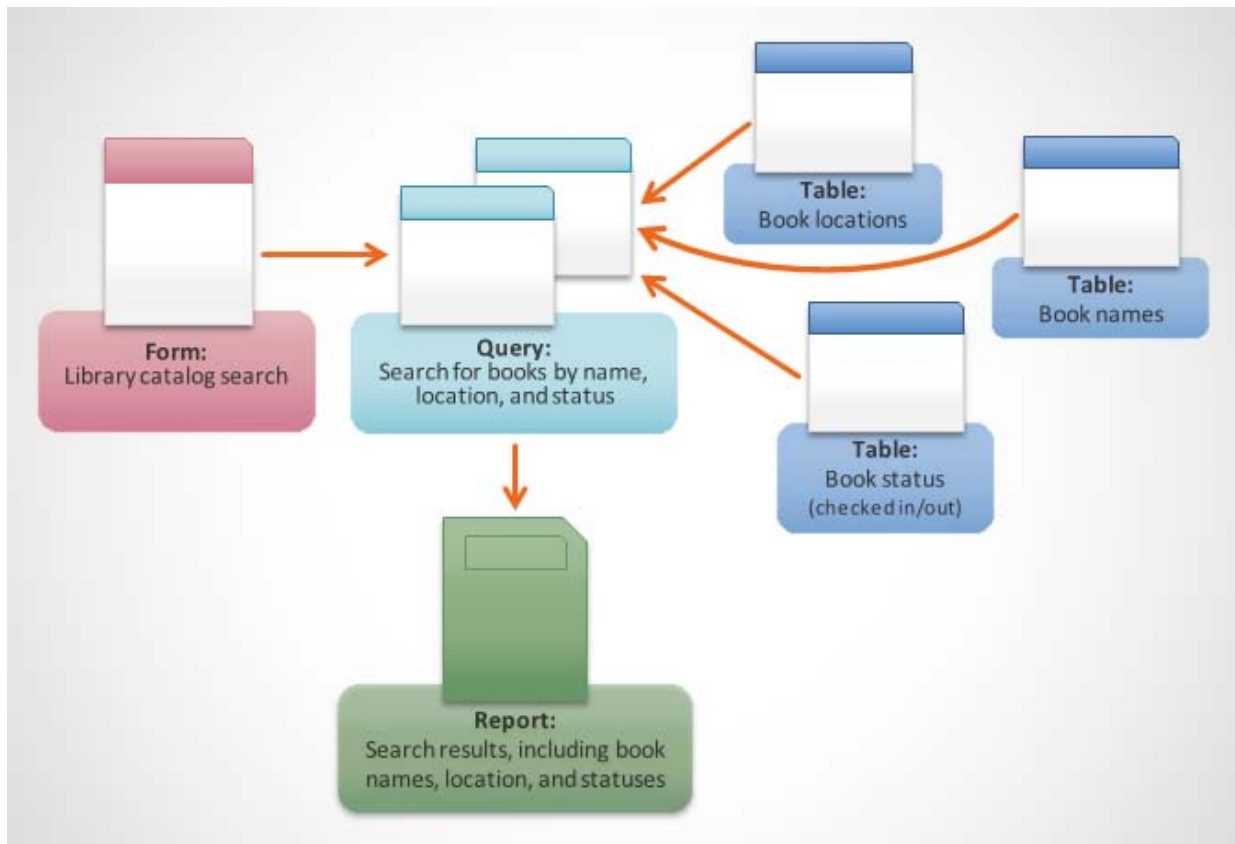
A search for a book

The data submitted in the form is used in a database query, which draws its data from relevant tables. The results of the query are presented in a report.

Imagine if, instead of using these tools, you'd had to search within a giant table containing every book in the library system. The relevant records would likely be spread out across many tables: a table for book titles and descriptions, a table containing information about which books are checked in or out, and a table with each branch of the library, just to name a few.

You'd have to search at least three tables just to find a book, learn its location, and see whether it's checked in! It's easy to imagine how difficult it could get to find the right book. If you weren't careful, you might even mess something up by accidentally deleting or editing a record. It's easy to see how the database objects make this search much more manageable.

In Lesson 1, we discussed the concept of a **relational database**, which is a database that is able to understand how different sets of data **relate** to one another. Situations like the example above are exactly why people find relational databases so useful. Without a relational database, what should be a simple task-- searching for a book and seeing if it's checked in and where-- becomes incredibly complicated and time-consuming. Knowing how to use the four Access objects can make even complicated tasks fairly user-friendly.

*(Originally Created By *GCFLearnFree.org*)