MICROSOFT ACCESS

Introduction to Objects

Contents

Introduction

- Databases in Access are composed of four objects: **tables**, **queries**, **forms**, and **reports**. Together, these objects allow you to enter, store, analyze, and compile data however you want.
- 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.

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 puts tables at the heart of any database.
- You might already know that tables are organized into vertical **columns** and horizontal **rows**.

Customers

ID	First Name	Last Name	Street Address	City	State
1	Tracey	Beckham	7 East Walker Dr.	Raleigh	NC
2	Lucinda	George	789 Brewer St.	Cary	NC
3	Jerrod	Smith	211 St. George Ave.	Raleigh	NC
4	Brett	Newkirk	47 Hillsborough St.	Raleigh	NC
5	Chloe	Jones	23 Solo Ln.	Raleigh	NC
6	Quinton	Boyd	4 Cypress Cr.	Durham	NC
7	Alex	Hinton	1011 Hodge Ln.	Cary	NC
8	Nisha	Hall	123 Huntington St.	Raleigh	NC
9	Hillary	Clayton	2516 Newman	Raleigh	NC
10	Kiara	Williams	9014 Miller Ln.	Durham	NC
11	Katy	Jones	456 Denver Rd.	Cary	NC
12	Beatrix	Joslin	85 North West St.	Raleigh	NC
13	Mariah	Allen	12 Jupe	Raleigh	NC
14	Jennifer	Hill	2100 Field Ave.	Raleigh	NC
15	Jaleel	Smith	123 Hill Top Drive	Garner	NC

Tables

- 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.

Customers

ID	First Name	Last Name	Street Address
1	Tracey	Beckham	7 East Walker Dr.
2	Lucinda	George	789 Brewer St.
3	Jerrod	Smith	211 St. George Ave.
4	Brett	Newkirk	47 Hillsborough St.
5	Chloe	Jones	23 Solo Ln.
6	Quinton	Boyd	4 Cypress Cr.
7	Alex	Hinton	1011 Hodge Ln.
8	Nisha	Hall	123 Huntington St.
9	Hillary	Clayton	2516 Newman
10	Kiara	Williams	9014 Miller Ln.
11	Katy	Jones	456 Denver Rd.
12	Beatrix	Joslin	85 North West St.

Tables

- 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.

Customers

ID	First Name	Last Name	Street Address	City	State
1	Tracey	Beckham	7 East Walker Dr.	Raleigh	NC
2	Lucinda	George	789 Brewer St.	Cary	NC
3	Jerrod	Smith	211 St. George Ave.	Raleigh	NC
4	Brett	Newkirk	47 Hillsborough St.	Raleigh	NC
5	Chloe	Jones	23 Solo Ln.	Raleigh	NC
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10	Kiara	Williams	9014 Miller Ln.	Durham	NC
11	Katy	Jones	456 Denver Rd.	Cary	NC
12	Beatrix	Joslin	85 North West St.	Raleigh	NC

Tables

- 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? It's the **ID number** that identifies each record. The ID number for a record refers to every piece of information contained on that row.

Customers

ID	First Name	Last Name
40	Vig	Aurelio
41	Jeffery	Bergman
42	William	Bittiman
43	Megan	Draper
44	Dick	Whitman
45	Marjan	Jameson
46	Colin	Hopkins
47	Hakim	Auden
48	Pilar	Semana
49	Eliza	Harris
50	Chloe	Ford
51	Juanita	Harris

Tables

- Tables are good for storing **closely related information**.
- Let's say 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. Because these pieces of information are all details on 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 these customers would be stored in its own field. If you decided to add any more information—say, a 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—**forms**, **queries**, and **reports**—offer you ways to work with it. 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 likely have 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 toward entering data correctly.
- When you enter information into a form in Access, the data goes exactly where the database designer wants it to go: **in one or more related tables**.

Forms

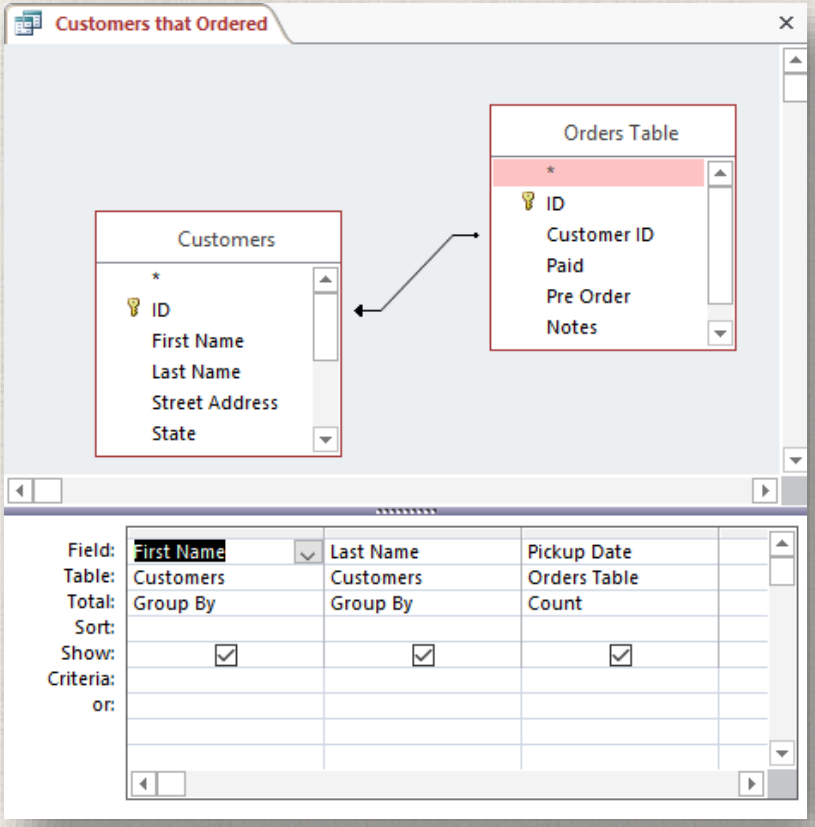

Customers
Customers
Search
New Record
First Name
Tracey
Last Name
Beckham
Street Address
7 East Walker Dr.
City
Raleigh
State
NC
Zip Code
27612
Email
beck@email.com
Add to Mailing List?
Yes-- Weekly & Events
Phone Number
919-555-2314
Record:
1 of 200
No Filter
Search

Forms

- 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 a time 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 all of the needed data is entered in the correct format.
- All in all, forms help keep data consistent and organized, which is essential for an accurate and powerful database.

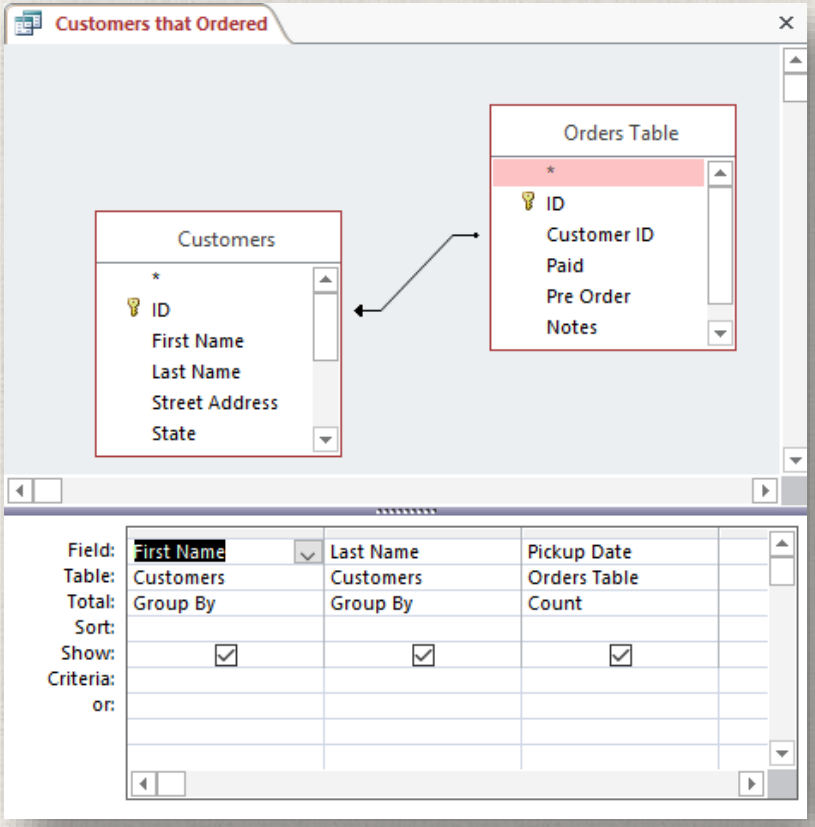
Queries

- **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

- 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 you might not be able to find just by looking through the data in your tables.



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.

December Orders

Orders Query

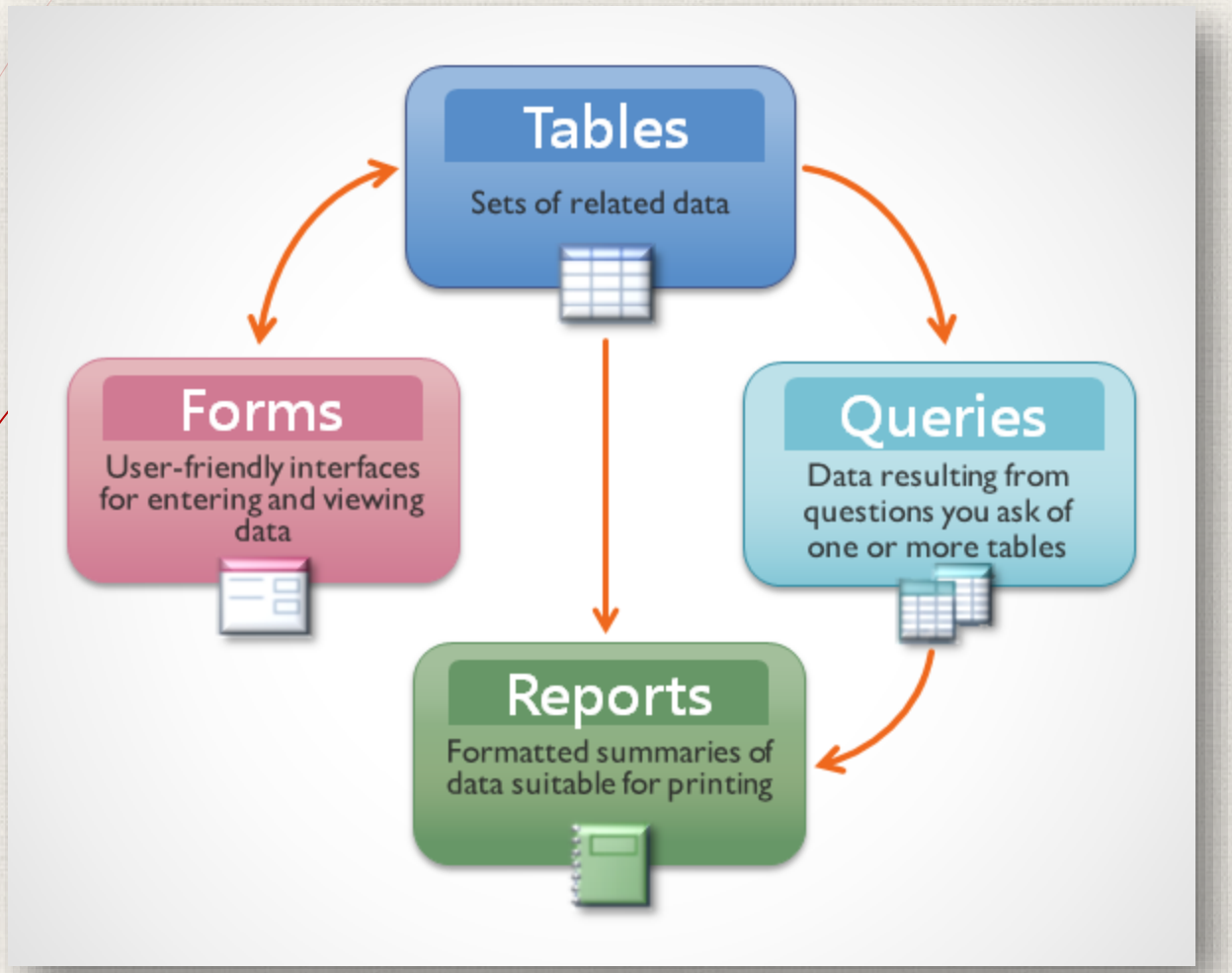
First Name	Last Name	Phone Number	Pickup Date
Nathan	Albee	919-555-7010	1/4/13
Esther	Yaron	919-555-3000	1/18/13
Brigit	Sigrudsdatter	919-555-0089	3/2/13
Derek	MacDonald	919-555-7025	3/2/13
Alex	Yuen	919-555-8080	3/3/13
Jacek	Slobodowski	919-555-3021	3/4/13
Katharine	Kellerman	919-555-4526	3/10/13
Regina	Olivera	919-555-7070	3/11/13

Reports

- 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**.

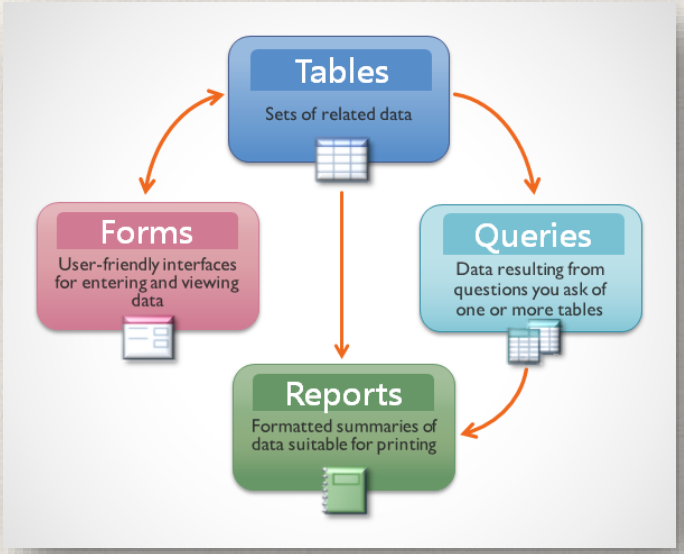
First Name	Last Name	Phone Number	Pickup Date
Nathan	Albee	919-555-7010	1/4/13
Esther	Yaron	919-555-3000	1/18/13
Brigit	Sigrudsdatter	919-555-0089	3/2/13
Derek	MacDonald	919-555-7025	3/2/13
Alex	Yuen	919-555-8080	3/3/13
Jacek	Slobodowski	919-555-3021	3/4/13
Katharine	Kellerman	919-555-4526	3/10/13
Regina	Olivera	919-555-7070	3/11/13

Putting it all together



Putting it all together

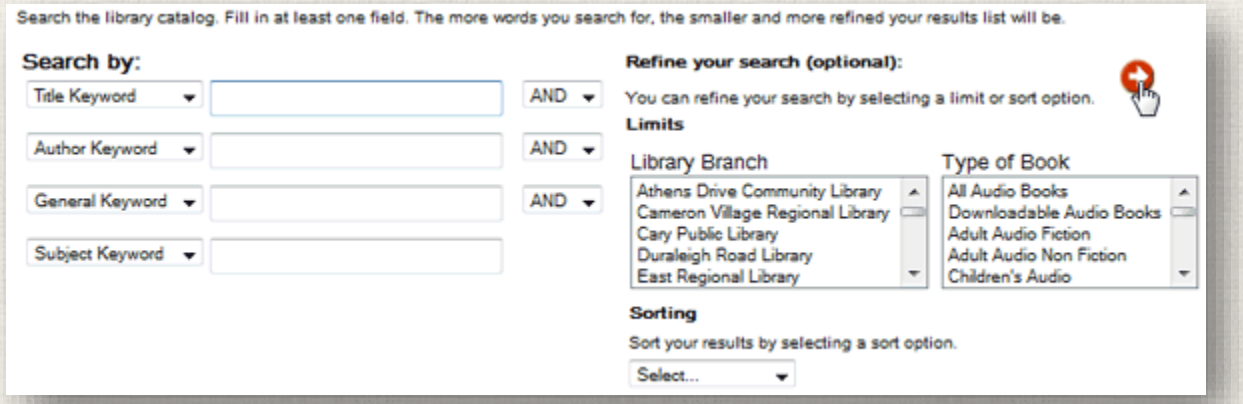
- Even if you have a good idea of how each object can be used, it can initially be difficult to understand how they all work together.
- It helps to remember that they all work with the same data. Every piece of data a **query**, **form**, or **report** uses is stored in one of your database **tables**.



- 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 then **search for** and **analyze** data within these same tables.

Putting it all together

- 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 into something that looks like this:

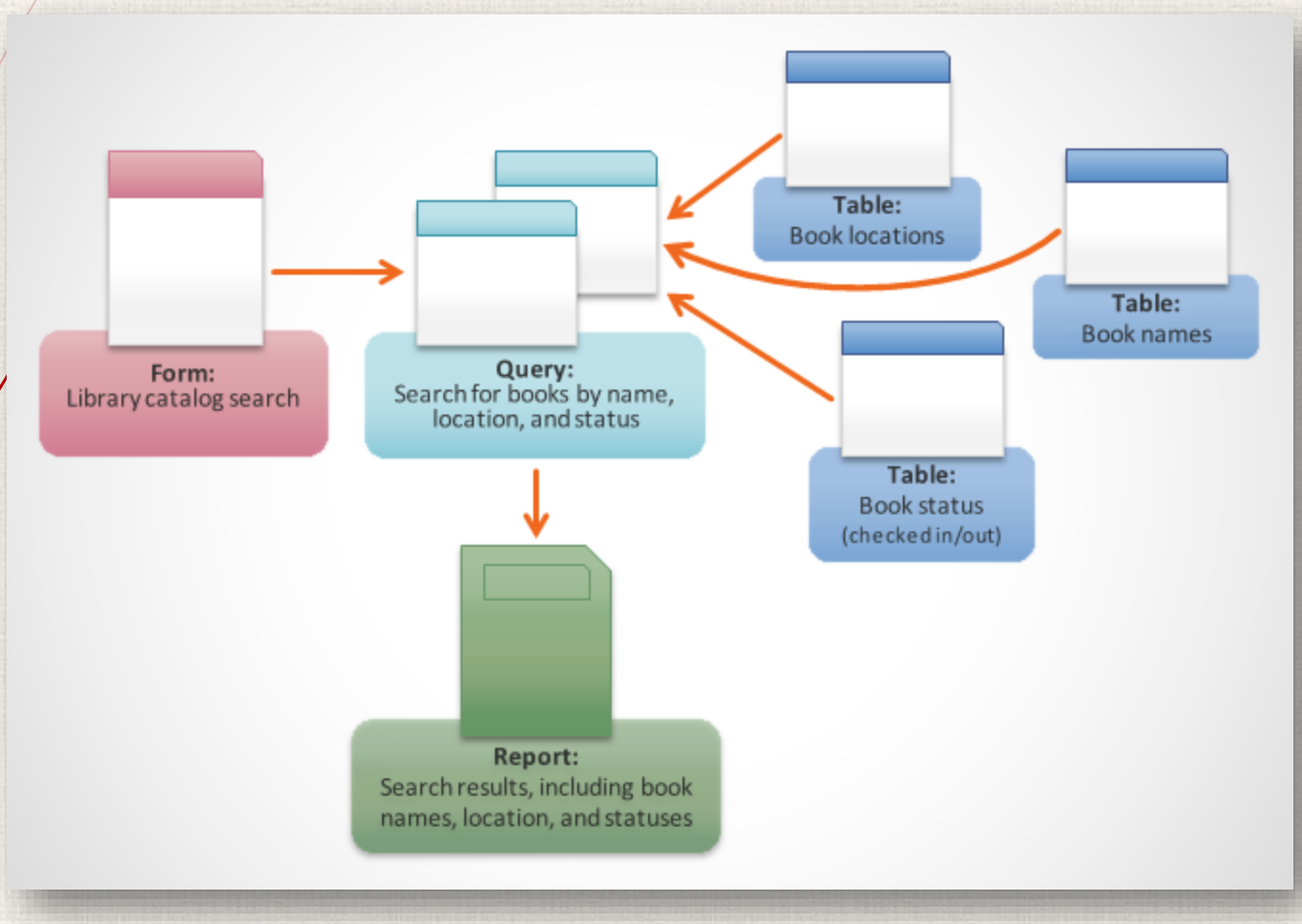


Putting it all together

- When you performed your search, you were entering your search terms into a **form** that then 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.

Putting it all together

- You could represent the connections between the objects like this:



Putting it all together

- Let's say instead of using these tools you 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 on which books are checked in or out, and a table with each branch of the library, just to name a few.

Putting it all together

- 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 become 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.

THE END