

INTRODUCTION TO ACCESS

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COURSE OBJECTIVE: TO GET A BASIC UNDERSTANDING OF ACCESS DATABASES; USING TABLES, QUERIES, FORMS, REPORTS AND RELATIONSHIPS

Outline:

- What is a Database used for?
- Microsoft Access, What Is It?
- Create a New (Blank) Database (Follow-Along)
- Tables, Backbone of a Database
 - Data-Types
 - Create a Table(s) (Follow-Along)
- Relationships, How objects Interact
 - Define Relationships between Tables (Follow-Along)
- Queries, Find what your looking for!
 - Create a Simple Query (Follow-Along)
 - Using Query Criteria
- Forms, User Interactions
 - Create a Form (Follow-Along)
- Reports, Show me what You Got
 - Create a Report (Follow-Along)



WHAT IS A DATABASE USED FOR?

Databases are used to keep track of large sums of information (data) in an easy to retrieve manner. Essentially it is a tool for storing and interacting with information. These Databases are generally Relational Databases, because they work on tables and data objects stored within based on how they relate to each other. This makes them fast, efficient ways for the storage and retrieval of data.

Think of something you do fairly often, such as shopping online. This is all done in a database. When you log in to your account, your information is checked against criteria in the database and you are either logged in if it is correct or you are asked to try again. All the items in the store are stored in a backend database, when you click on an item (submitting) you are guided to the store page for that item (retrieval).

Essentially almost any situation that involves submitting information and receiving information in return is working with a database

Microsoft Access is among the most commonly used database programs, especially for small to medium businesses, and is generally much more intuitive than other database systems. This is due to the GUI (Graphical User Interface) that makes it very easy to interact with Database Objects.

MICROSOFT ACCESS, WHAT IS IT?

Access is referred to as a Relational Database, meaning that it works on how objects might relate to each other. It is commonly used by small/medium business to keep track of relevant information such as: Customer Information (Phone, Address, etc.), Inventory, Employee Data, among many other things.

Access Follows four basic steps:

1. Database Creation
2. Database Input
3. Retrieval of Information
4. Presentation of Information (Optional)

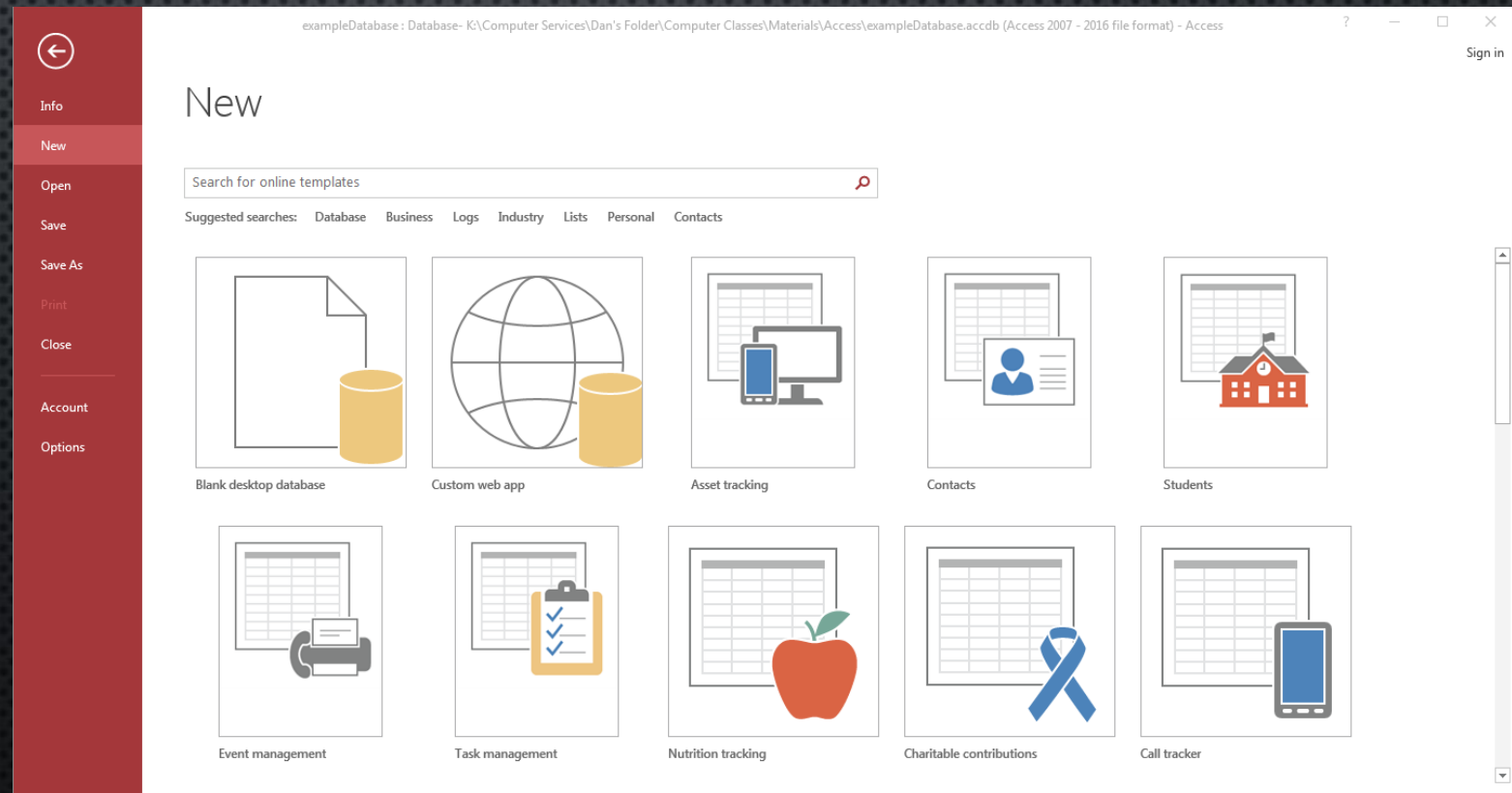
Anything that can be named is called an object, and Access works with 7 main data objects:

1. Tables
2. Queries
3. Forms
4. Reports
5. Macros
6. Data-Macros
7. Modules

CREATE A NEW (BLANK) DATABASE: FOLLOW ALONG

1. Open the Access Shortcut on the Desktop OR Navigate to it using the Start Menu and then searching for it in the Windows Search Bar.
2. When Access starts you will find yourself in a menu like this. This offers us **TEMPLATES** that we can use as frameworks to cut down on project time, and **BLANK DATABASES** we can use to create custom databases.
3. Click on the “Blank Database” option. This will ask you to NAME AND SAVE the database.

4. Hit Create!



TABLES, BACKBONE OF THE DATABASE

TABLES are the only REQUIRED object in Access. This is where we store all of the actual data. For any other object to work correctly, we need data to be stored in the database. This is why tables are the backbone of the entire database.

Without tables the whole database would collapse. Table Design should always be done first!

Tables are created by either going into the Table Design or selecting "Create New >> Table" I recommend always using Table Design. This makes it easier to set fields and data-types.

You can interact with tables in two ways, Datasheet View and Design View. Datasheet view is used to input data, while design view is used to design the Table layout.

Table layout is rather quite simple, we have Fields, which are the columns in a table. Records are the rows that collect all the information about a particular Field.

Each Field must have a unique identifier within the table. So you couldn't have two first name fields. Make sure your Field names are easy to understand. (ID vs Employee ID)

Each table will have a Primary Key to ensure that records in that particular table are unique (No duplicate values), and is also a means of linking records in one table to the records in another. (Relationships) (Primary Key and Foreign Key)

DATA TYPES

“When creating tables in Access, you need to select a data type for each column of data. The Short Text data type is a popular choice since it lets you enter almost any character (letter, symbol, or number). However, careful selection of data types can help you take advantage of more Access features (such as data validation and functions), and improves the accuracy of the information you’re storing.”

Data Type	Usage
Short Text	Alphanumeric data (names, titles, etc.)
Long Text	Large amounts of alphanumeric data: sentences and paragraphs
Number	Numeric data
Date/Time	Dates and times
Currency	Monetary data, stored with 4 decimal places of precision.
AutoNumber	Unique value generated by Access for each new record.
Yes/No	Boolean (true/false) data
OLE Object	Pictures, graphs, or other ActiveX objects from another Windows-based application
Hyperlink	A link address to a document or file on the Internet, on an intranet, on a local area network (LAN), or on your local computer
Attachment	You can attach files such as pictures, documents, spreadsheets, or charts
Calculated	You can create an expression that uses data from one or more fields. You can designate different result data types from the expression.
Lookup Wizard	The Lookup Wizard entry in the Data Type column in Design view is not actually a data type. When you choose this entry, a wizard starts to help you define either a simple or complex lookup field.

Source: Microsoft Office Support Website

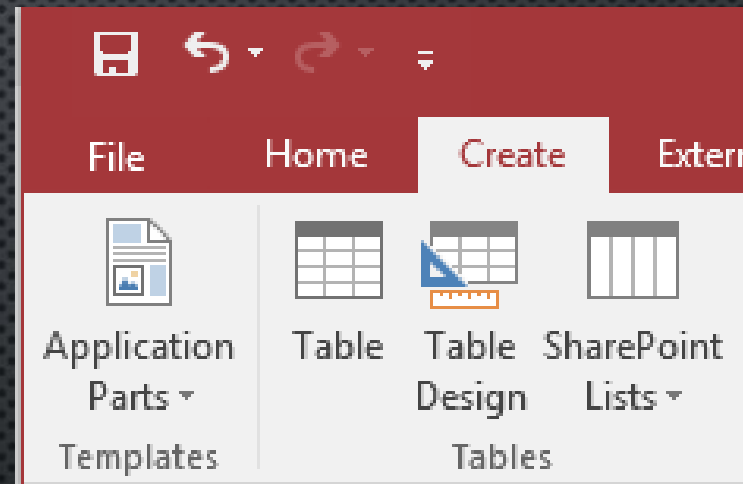
CREATE A TABLE: FOLLOW ALONG

1. Find the Create Ribbon
2. Click Create >> Table Design
3. Enter the Design View of the Table

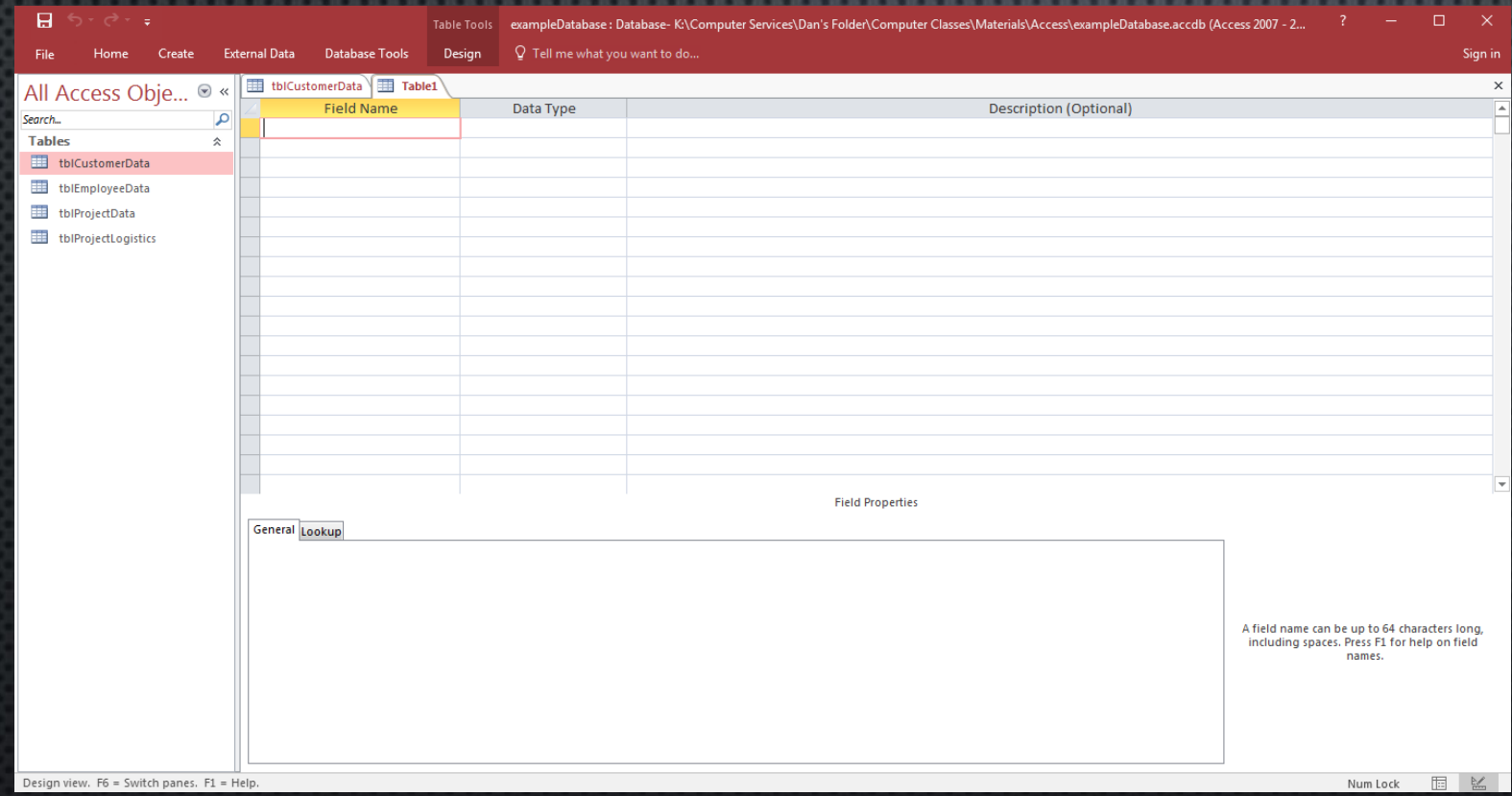
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2.



3.



RELATIONSHIPS, HOW OBJECTS INTERACT

Relationships are based on Normalization.

“Database normalization, or simply normalization, is the process of organizing columns (attributes) and tables (relations) of a relational database to minimize data redundancy. It is the process of splitting data across multiple tables to improve overall performance, integrity and longevity.” Source: [TutorialsPoint.com/ms_access](https://www.tutorialspoint.com/ms_access/)

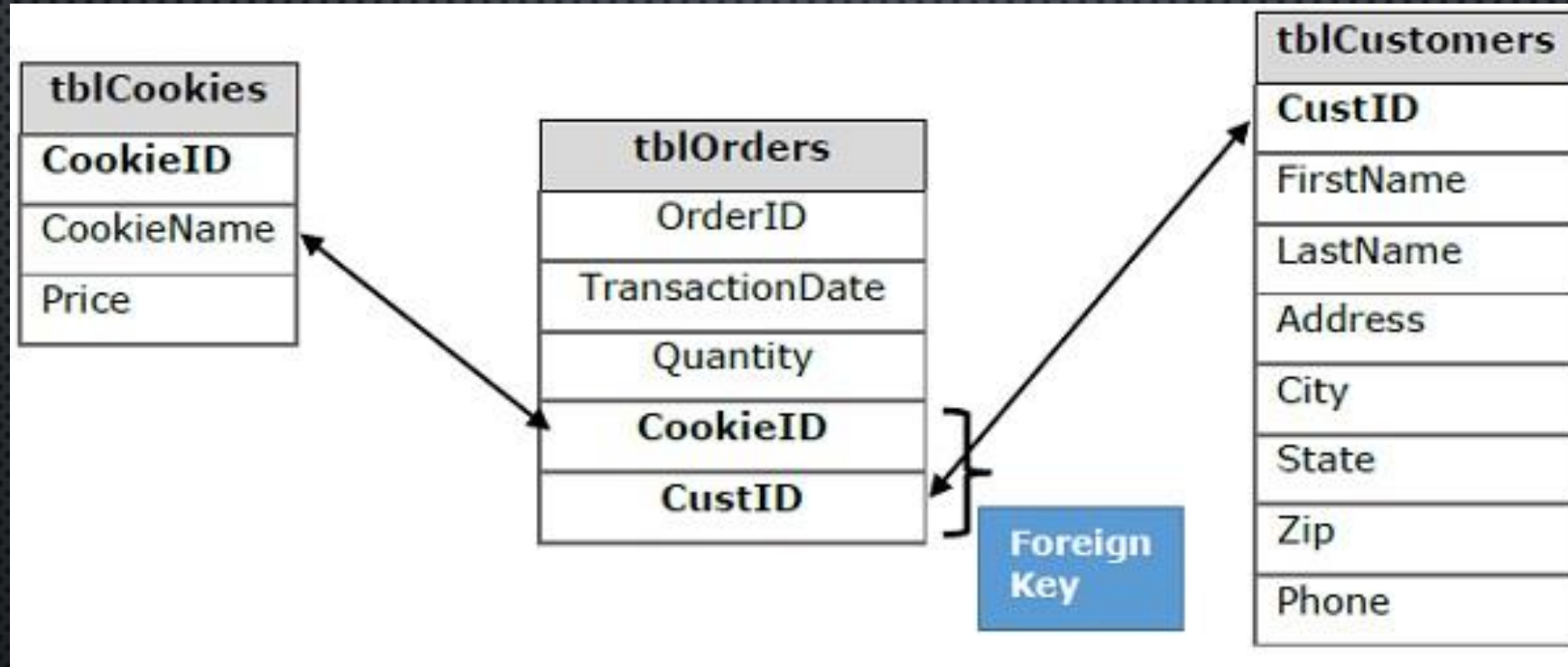
There are three different types of Relationships: One-to-Many, Many-to-Many, and One-to-One.

One-to-Many is the most common and is what we will be focusing on tonight.

A one-to-many relationship is the most common type of relationship. In this type of relationship, a row in table A can have many matching rows in table B, but a row in table B can have only one matching row in table A.

RELATIONSHIPS, HOW OBJECTS INTERACT: CONT

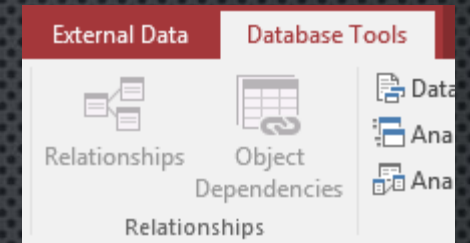
A basic relationship outlined, this is a Many-to-Many relationship that is defined by two One-to-Many relationships.



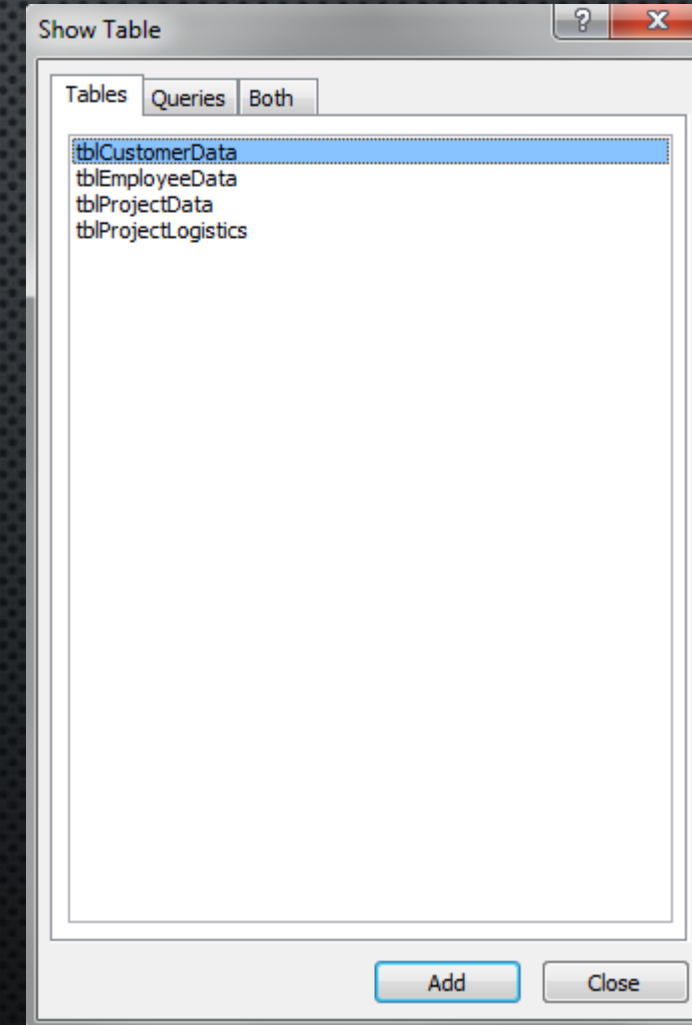
DEFINING RELATIONSHIPS: FOLLOW ALONG

1. Find the “Database Tools” ribbon.
2. Select Relationships
3. In the empty Relationship Field, right-click, and select “Show Table”
4. In the “Show Table” dialog box select the tables you would like to define relationships for.
5. Choose the field that both have in common, and drag on to the other (doesn’t matter which one you actually do).
6. In the dialog box choose the two check boxes: “Enforce Referential Integrity” and “Cascade Updated Related Fields.” This will make sure that our relationships update with the tables as we add more records.
7. Select Create.

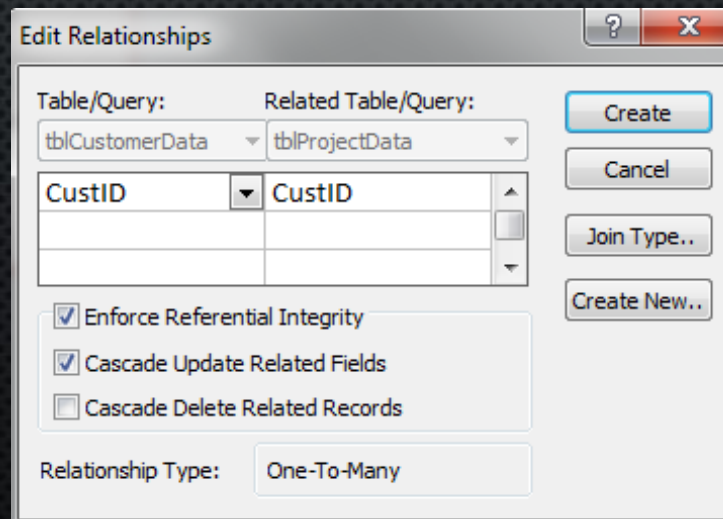
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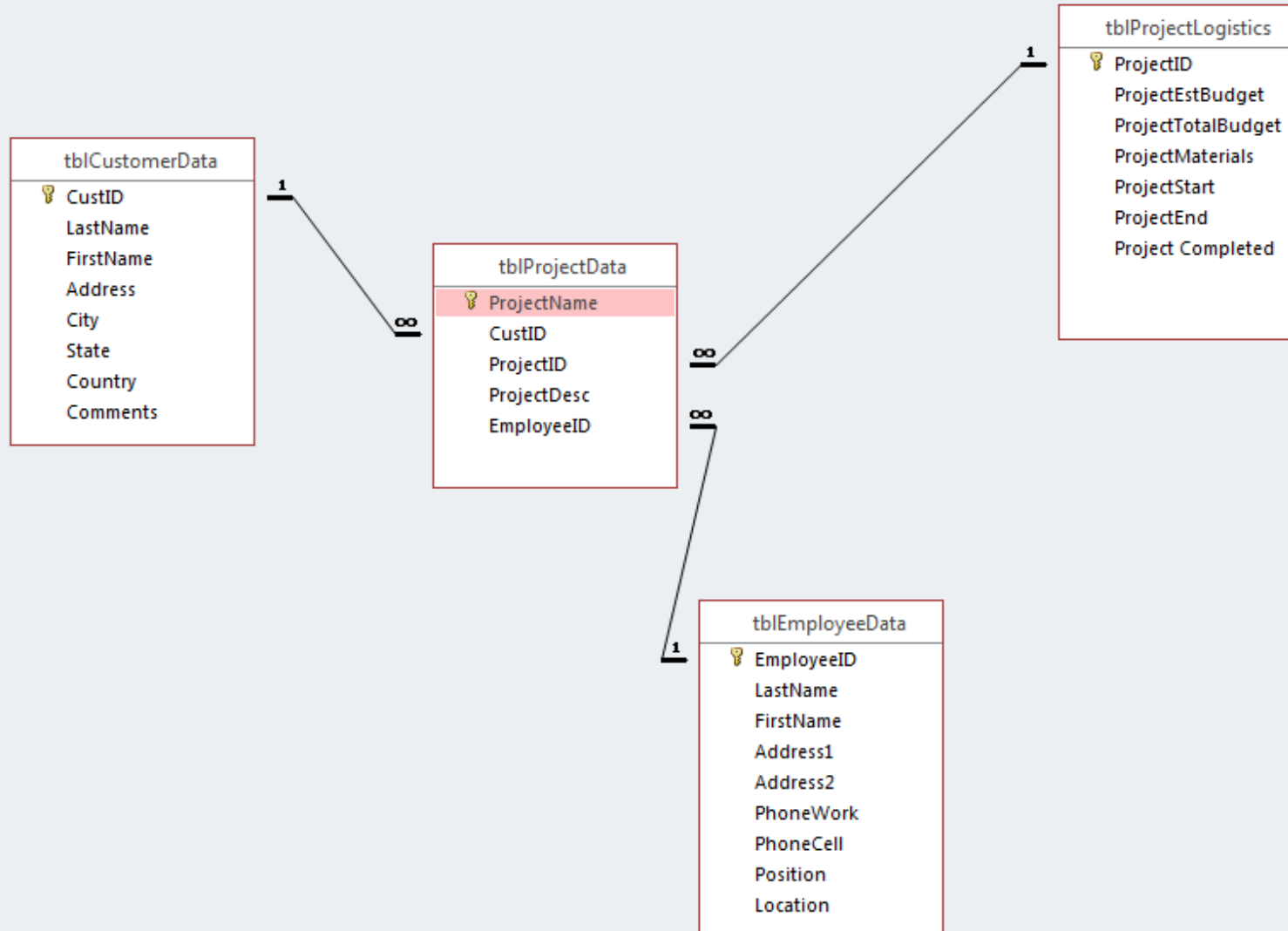


3.



DEFINING RELATIONSHIPS: FINAL PRODUCT

Relationships



QUERIES, FIND WHAT YOU'RE LOOKING FOR!

Queries are used to request data results, and actions on that data. They are used to answer questions, perform calculations, combine data from different tables (Select Queries), or even add, change and delete table data (Action Queries).

Think of a Query in its most basic form as a Filter. The hardest part about Queries is setting them up, but once you get the hang for all the different variables to look for you will think it a cake walk.

Within a Query you can use Criteria to retrieve specific data. If an item matches the Criteria you set, then it will appear as a result.

A Query Criteria is an expression that Access compares to field values to determine whether to include the record in the results. Some Criteria are simple (basic operators and constants), while some are more complex (functions, special operators, field references).

Query Criteria can be thought of as AND | OR



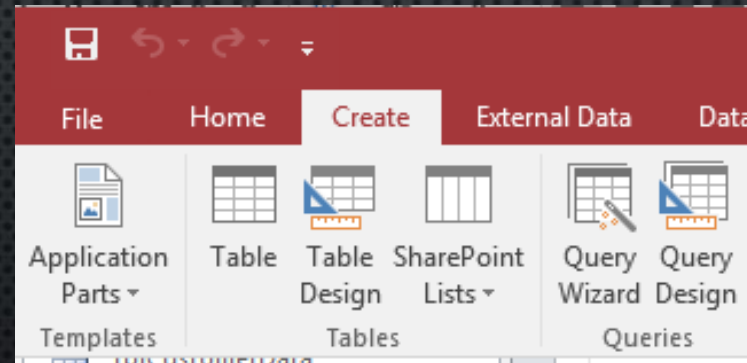
CREATE A SIMPLE QUERY: FOLLOW ALONG

1. Navigate to the Create Ribbon
2. Create >> Query Wizard
3. The "New Query" dialog box will appear, this is where you choose what type of query you want, select a "Simple Query".

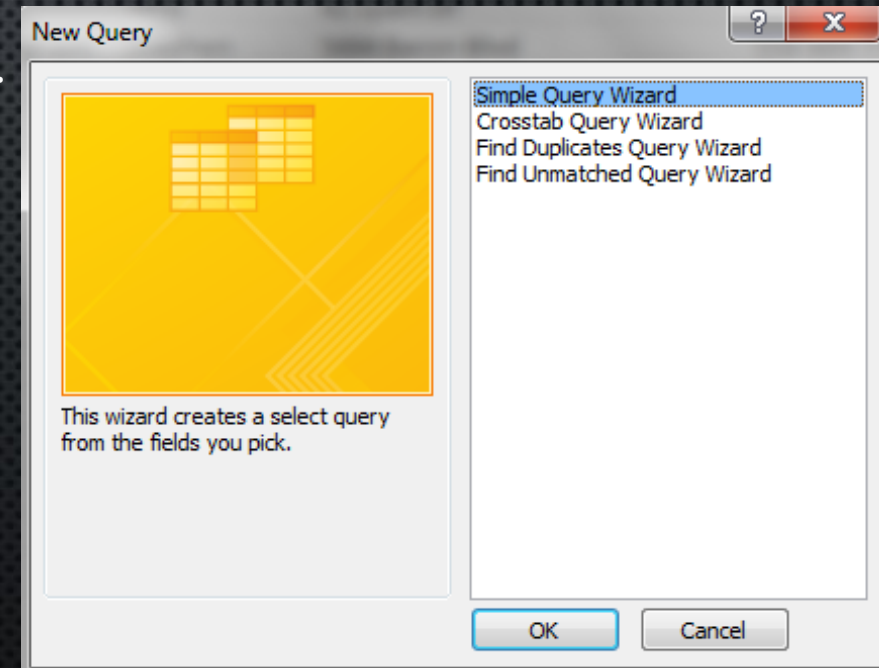
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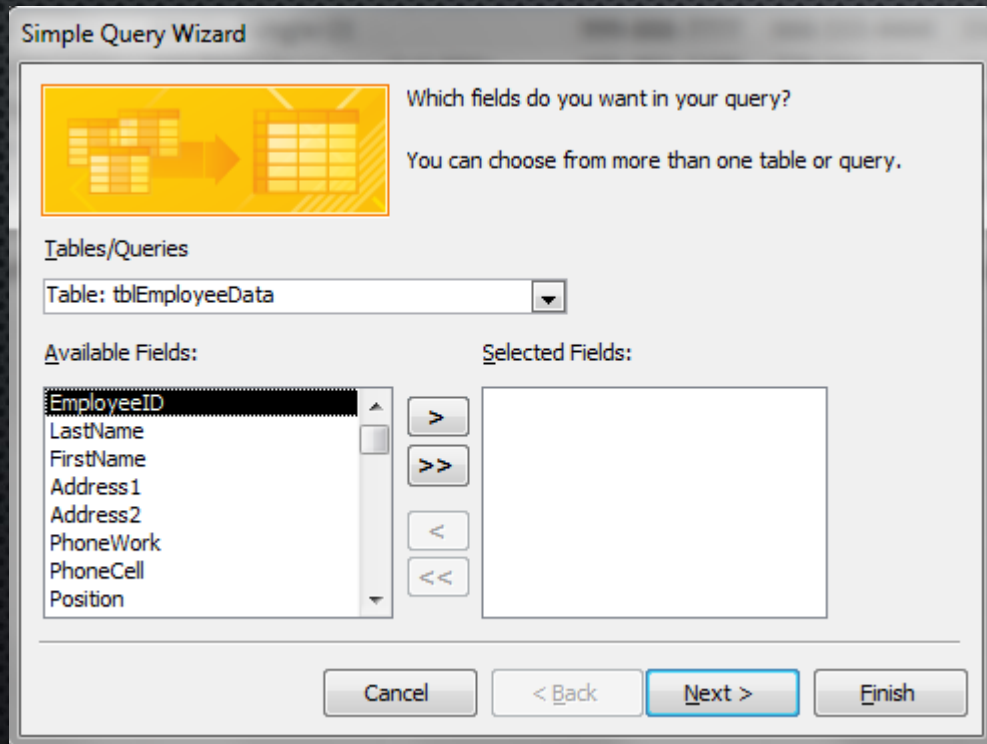
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CREATE A SIMPLE QUERY: FOLLOW ALONG

- Next you will enter the “Simple Query Wizard” dialog box, this is where you can choose what tables and corresponding fields you would like the query to reference. “>” will select one field, while “>>” will select all fields in the table.
- Name your Query, select the radial button that says “Open the query to view information.”
- Finish
- Query will open with the results.

4.



Simple Query Wizard

Which fields do you want in your query?
You can choose from more than one table or query.

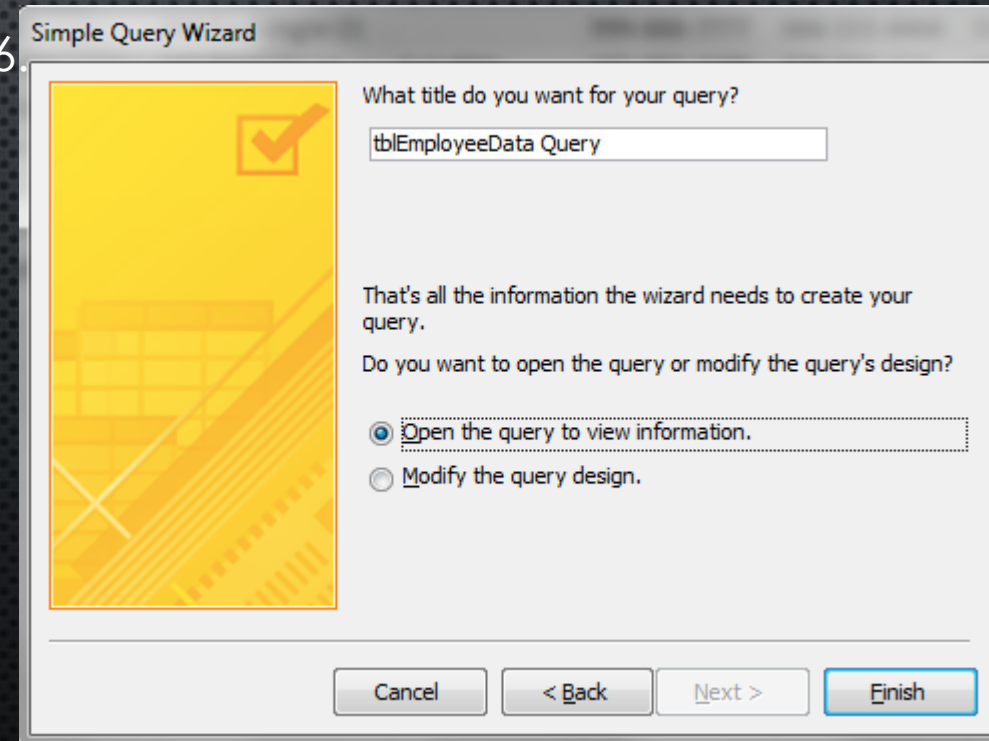
Tables/Queries
Table: tblEmployeeData

Available Fields: Selected Fields:

EmployeeID	>	
LastName	>>	
FirstName		
Address1		
Address2		
PhoneWork	<	
PhoneCell	<<	
Position		

Cancel < Back Next > Finish

5/6



Simple Query Wizard

What title do you want for your query?
tblEmployeeData Query

That's all the information the wizard needs to create your query.

Do you want to open the query or modify the query's design?

Open the query to view information.
 Modify the query design.

Cancel < Back Next > Finish

FORMS, USER INTERACTION

FORMS are used to view or get data that you want. This is an object that you (Designer) and others (User) can edit and are used to add or display data that is stored in the database.

If Tables are behind-the-scenes, then Forms are the on-stage component.

Design wise there are two types of Forms; Bound and Unbound.

Bound forms are connected to some underlying data source (tables and queries) or an SQL statement. This is typically the most common type of form. Bound forms are filled out to enter or edit data in a database. Within the Bound Form family there are three child forms; Single-Item, Multiple-Item, Split.

Tonight we will focus on Single-Item Forms.

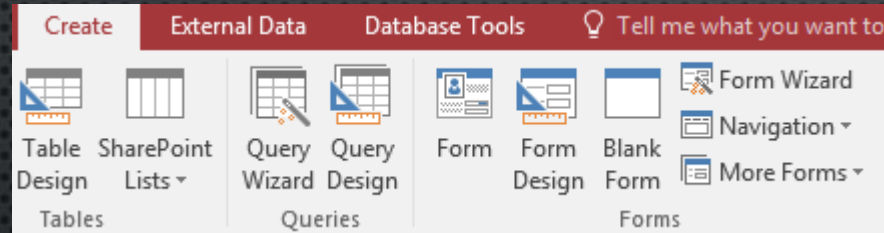
Unbound Forms are not connected to underlying data source, typically; Dialog boxes, switch-boards or navigation forms. If a Bound Form is used to interact with the data itself, then an Unbound Form is used to interact with the database at large.

CREATE A FORM: FOLLOW ALONG



File Home Create

1. Navigate to the Create Ribbon
2. Form >> Form Wizard
3. Select Fields to be displayed in the Form.
4. Next through all defaults
5. Finish



Form Wizard

Which fields do you want on your form?
You can choose from more than one table or query.

Tables/Queries
Table: tblEmployeeData

Available Fields: Selected Fields:

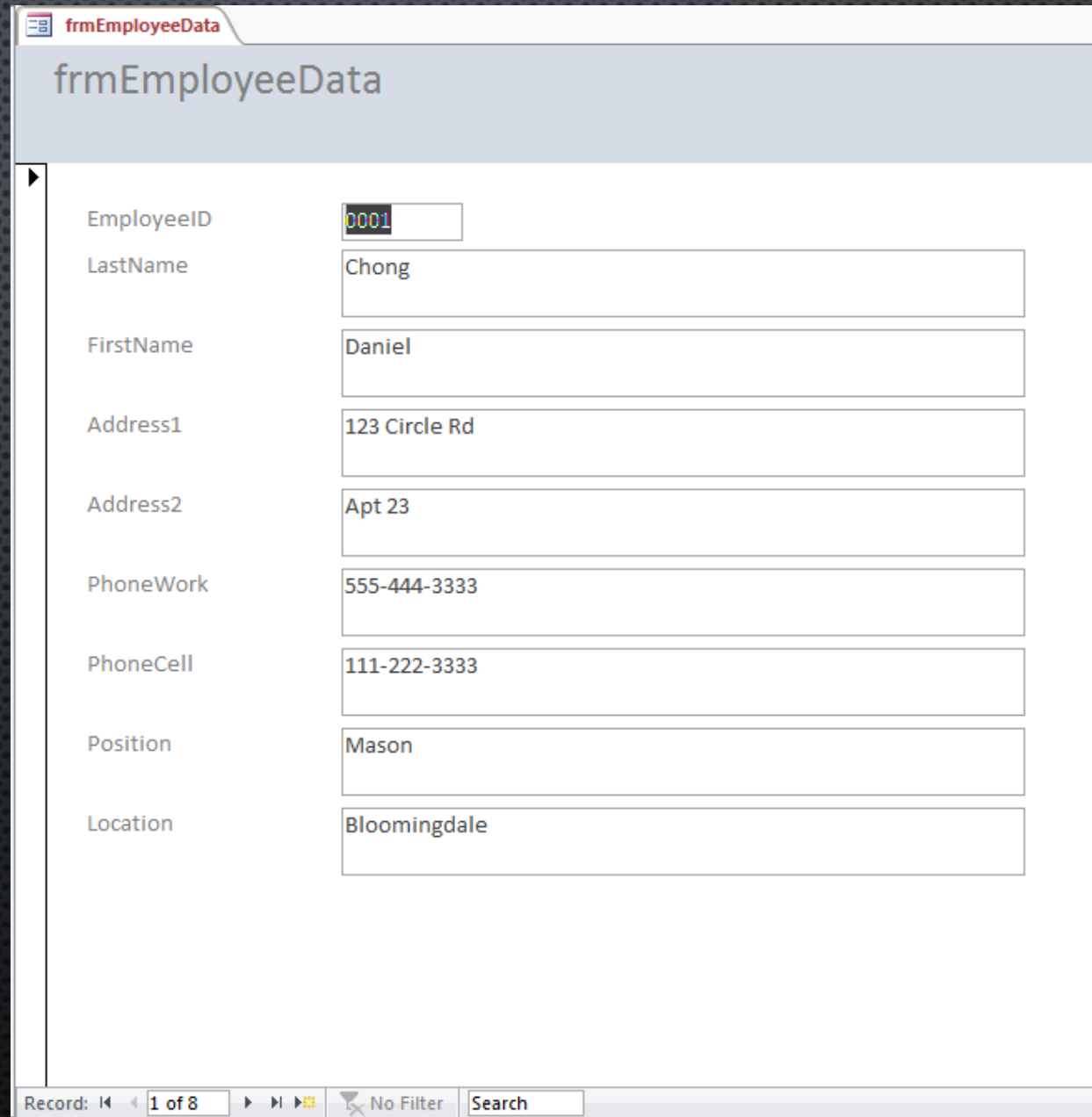
EmployeeID	>	
LastName	>>	
FirstName	<	
Address1	<<	
Address2		
PhoneWork		
PhoneCell		
Position		

Cancel < Back **Next >** Finish

CREATE A FORM: FINISHED PRODUCT

All the data from the selected Table(s) will be presented in an easy to digest format.

You can use the “<>” keys at the bottom (look for “Record”) to cycle by one, “<>|” to go to the end or beginning, and use the “>*” to create a new record in the table,



The screenshot displays a web form titled "frmEmployeeData". The form contains several input fields with the following data:

Field Name	Value
EmployeeID	0001
LastName	Chong
FirstName	Daniel
Address1	123 Circle Rd
Address2	Apt 23
PhoneWork	555-444-3333
PhoneCell	111-222-3333
Position	Mason
Location	Bloomington

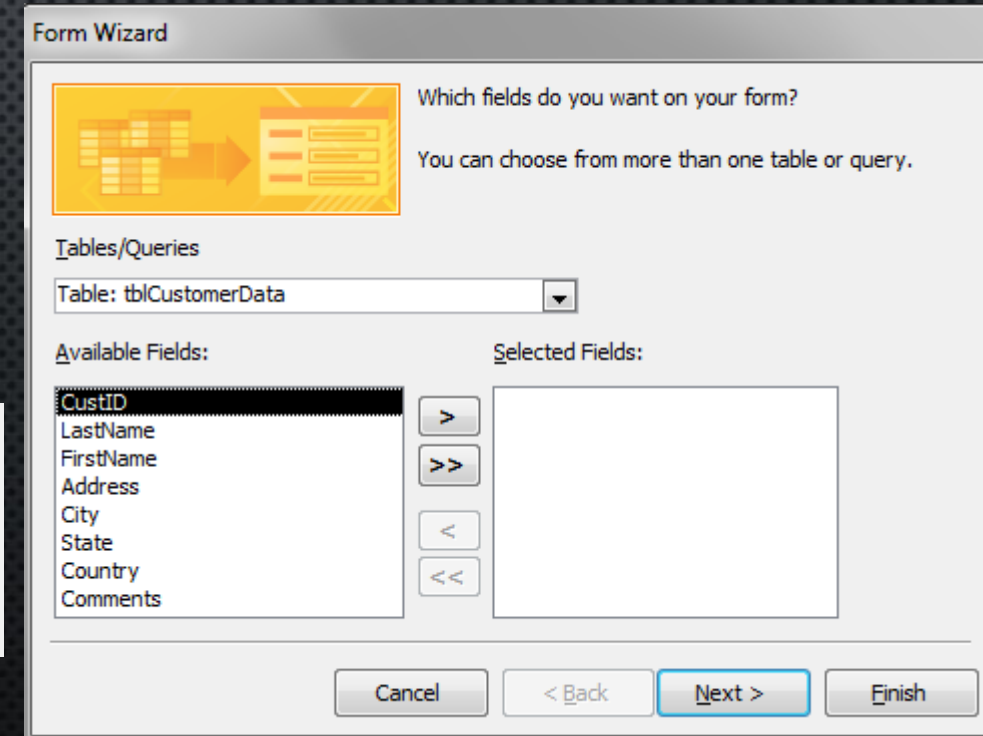
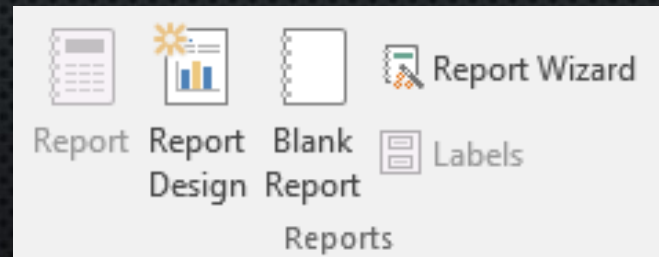
At the bottom of the form, there is a status bar with the following elements: "Record: 1 of 8", navigation arrows, "No Filter", and a "Search" input field.

REPORTS, SHOW ME WHAT YOU GOT

Reports, are not unlike forms, except they are not interactive. Reports are meant to be exported to other types of documents or printed. This allows us to effectively show others important aspects of the database, without having them actually interact with the database.

CREATE A REPORT: FOLLOW ALONG

1. Navigate to the Create Ribbon
2. Create >> Report Wizard
3. Select Tables and Fields you want in the Report
4. Select you Style Choices
5. Name and Save your Report
6. Finish and View Report



1.

2.

3.

CREATE A REPORT: FINISHED PRODUCT

tblEmployeeData

Empl	LastName	FirstName	Position
0001	Chong	Daniel	Mason
0002	Luster	Sean	Electricion
0003	Wilson	Charlie	Carpenter
0004	Behles	Michael	Plumber
0011	Smith	John	Plumber
0012	Smith	Jane	Metal Worker
0013	Cunningham	Stephen	Electricion
0014	Bisk	Stephanie	Carpenter