Guide A - Access Tutorial: Employees and Compensation

Purpose: To introduce you to databases and building your first Access database. Within a business, there can be a large amount of data that needs to be managed. This data needs to be managed consistently and in such a way that it can be easily accessed, updated, and reviewed as needed. Databases allow a company to collect data in one central location.

Databases consist of a collection of related objects. Typically, these objects are either tables, queries, forms, or reports. The following tutorial gives a brief introduction to each object and some of the characteristics and terminology for each. After completing this tutorial, you will have created your first database using Access.

In Access, all objects for a database are stored in one file. This file should end with an **.ACCDB extension**, which is reserved for Access Database files (after version 2007).

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A.1 Starting and Saving your First Database File

1. Refer to Guide #1 – Starting and Saving Access Files for assistance on creating your first Access project file on your own machine or if you do not have Access on your machine how to use Horizon (a cloud based solution) to build and complete your homework assignments for Access.

2. Name the database ***yourLastNameEmpCompensation*** as in ***AppleEmpCompensation***. Access will add the file type of .accdb to your file name.

3. **NOTE**: Access will ask you for a file name and a location to save the file before you add any data to the database. We recommend that you store the file in your OneDrive Cloud Storage area provided by UNCW.

A.2. Creating Tables in Access

Tables generally represent a group of similar items. For example, you may have an Employees table that provides data about employees at your company. Tables are comprised of **rows** and **columns**. Each **column** within a table represents a single **field** of data. For example, one field may represent an employee's first name. The collection of fields into a related group is called a **record**. Each **row** within a table represents a single **record**. For example, a record may represent one employee. This record will have many fields of data about a particular employee – employee id, first name, last name, date hired, etc. Tables will usually contain multiple records, each one containing data about individual items (employees in this example case).

In order to be stored correctly, each field of data must have a **data type**. Table A-1 shows the common data types you will be using in your Access databases.

Table A-1: Data Types in Access

Data type	Used for	Example data
Text (also Short Text)	Characters or words (letters, numbers, and symbols)	Thomas X60-MM
Number: Long Integer	Positive and negative whole numbers (with no decimal)	47 -23390
Number: Double	Positive and negative values with decimal parts	-739.4 9.2454
Date/Time	Valid date and time representations	3/2/2007 11/28/2003 9:00:00 AM
Currency	Positive and negative values with two decimal places, used to represent money (includes $-sign)	$516,541.12 ($456.51)
AutoNumber	Automated field value that counts starting at 1, each new record will have the next integer value (2, 3, 4, etc)	1 2
Yes/No	Yes or No (also interpreted as True or False)	Yes No

When creating a table, it is important to choose the correct data type for each field. If all data for a specific field will represent money, Currency will be a good choice for a data type for that field. If any of the data for a field will require letters or words, Text will be the appropriate data type.

With your Access database file open, notice the menu ribbon bar is displayed at the top of your Access window (Figure A-1). This is where many of the options will be displayed that will allow you to create and modify objects within the database. You will be using several different tabs within this menu ribbon.

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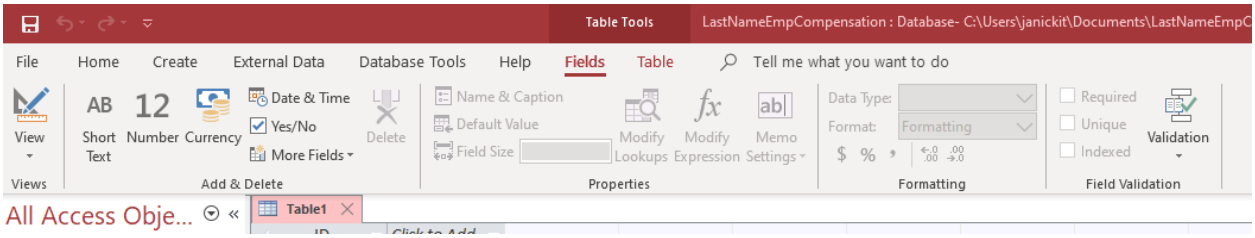

Figure A-1: The top menu ribbon within Access

Before you are introduced to the other objects within Access, you must choose the names and type of data you will be entering. Think of the name as being a column heading in Excel and the type will describe the data to be entered to prevent input errors (i.e. dates, numbers, characters).

Tables are created with several fields and data is entered into rows within the tables. Access contains two useful views for tables – **Datasheet View** and **Design View**. To start a new table, you should begin in Design View. This view allows you to see the field names you will be using and easily assign them an appropriate name and data type.

4. Start a new table in Design View by choosing the Create tab from the menu ribbon and selecting the Table Design icon in the Tables section of the Create menu ribbon (Figure A-2).

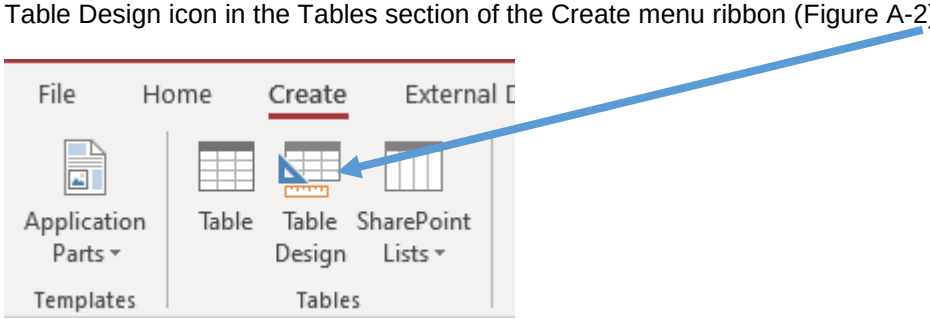

Figure A-2: Create a Table in Design View

A.2.1. Enter Field Names and Field Types

In Design View, each line will represent an individual field. Field names should be descriptive of the data that will be stored in the field. The data types are available via a drop down. For this tutorial, you will first create a table to store employee data. You will need to anticipate the possible data used for each field and determine what data type to use for each field. This table will have the following seven fields:

- **EmployeeID**
- **FirstName**
- **LastName**
- **DateHired**
- **BranchID**
- **BaseWeeklyPay**
- **CommissionPercent**

NOTE: As your project will be graded by a computer program, be sure to name the fields EXACTLY as indicated in these instructions.

Also note that the field names **do not have spaces** in them! **Do not add data until you build all tables and relationships**, these instructions are written in the order that you should perform the actions. This is important!

5. To add your first field (column) in Design View, type the field name EmployeeID under the Field Name Heading and choose Short Text (or Text) from the Data Type drop down. You do not need to add a Description. Figure A-3 shows the creation of the EmployeeID field. Sample EmployeeID's might be 0227, or C128 which indicates that the data type should be Short Text and size 4.

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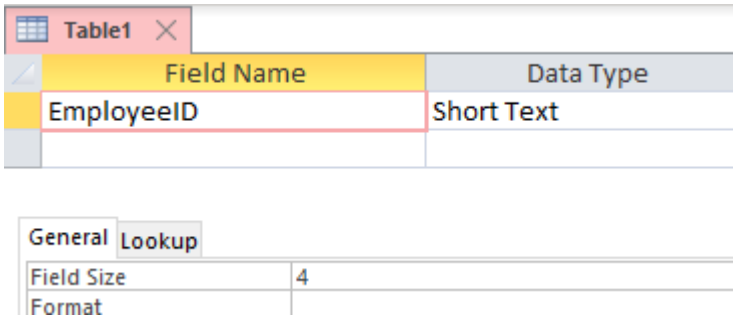


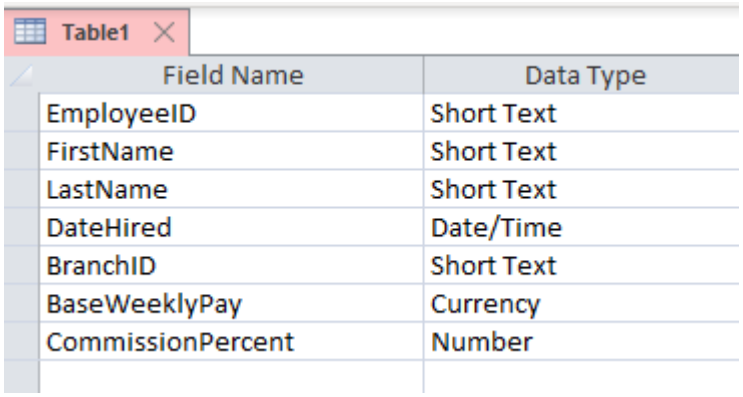
Figure A-3: Creating a field name called EmployeeID, Short Text and Field Size of 4

6. **Background for field type and field size decisions**: When you select a Data Type for a field, the bottom Field Properties panel will display several options. Depending on your data type, you may need to set a few options for the field. Text fields should have a Field Size set. The field size determines how many characters a field can use. The default is 255.
   For this tutorial, the following decisions have been made:

   - EmployeeID will always be 4 characters. (An example EmployeeID is 0227.)
   - FirstName can be restricted to no more than 30 characters.
   - LastName can be restricted to no more than 50 characters.
   - BranchID will always be 5 characters. (An example BranchID is WILNC.)

   Keep in mind that even though EmployeeID will be 4 digits, you should make the field ShortText instead of Number: Long Integer. The reasoning for this is two-fold. First, Text will store any leading zeros that may occur. For example, 0053 will be stored as 4 characters in a Text field, while the 00 will be dropped and only 53 will be stored in a Number: Long Integer field. Second, Number types should really only be used if arithmetic will be performed on the field values. You will never add or multiply EmployeeID values, so there is no need to store these as data type Number. Calculations will be discussed more in depth when queries are introduced.

7. Continue the setup for the fields of the table Employees using Figure A-4 as a guide. Don't forget to set appropriate field sizes for text fields as shown above. **Field sizes only have to be set for text fields**. Several of these fields require letters to represent the data; these should be of type Text. These fields are EmployeeID, FirstName, LastName, and BranchID.



Field Name	Data Type
EmployeeID	Short Text
FirstName	Short Text
LastName	Short Text
DateHired	Date/Time
BranchID	Short Text
BaseWeeklyPay	Currency
CommissionPercent	Number

Figure A-4: Setup for all fields in table <u>Employees</u>

As a final note on data types, when setting up a field of data type Number, pay attention to the Field Properties at the bottom of your screen. Depending on your desired data, you may need to configure the properties. The default size for a Number is Long Integer. Remember that integers are WHOLE numbers

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and CANNOT contain a decimal part. **For CommissionPercent in this setup, Double representation of the percentage is needed.** Figure A-5 shows the Field Properties for CommissionPercent.

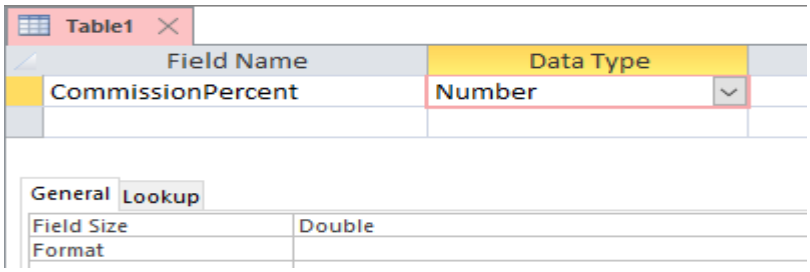

Figure A-5: Setup for field <u>CommissionPercent</u> (table <u>Employees</u>)

A.2.2. Establish a Primary Key or Keys for a Table

Before saving your table, you need to designate a primary key. A **primary key** is a field in the table whose value can distinguish a record from all other records. Primary keys must be UNIQUE. No two records can share the same primary key value. Primary keys also cannot be NULL (blank or empty). Primary key fields MUST contain a value before the record can be created. Some tables will have more than one Primary Key field. Think of a table that tracks club dues, it might have a field for the club member number and the date paid as members might make more than one payment per semester.

Looking at the table Employees, every field should be analyzed to determine the primary key. Immediately, some fields can be ruled out as NOT unique. DateHired, BranchID, BaseWeeklyPay, and CommissionPercent will most likely NOT be unique. Different employees can share these details. These cannot be the primary key. FirstName will most likely not be unique as well and should not be the primary key. Many people make the mistake of creating fields such as LastName as the primary key. This is not a good idea because once a value is used for a record, it cannot be reused. When you are entering data for employees, two employees may have the same last name – Smith for example. To be a primary key, the value MUST BE UNIQUE for every record. LastName is not a good primary key candidate. Sometimes selecting a primary key can require a bit of forethought – you must anticipate possible future data that "could" be used throughout the lifetime of a database.

8. In the table Employees that you just created, Employee ID is the only field that is guaranteed to be unique and not null. This will be the primary key.

   Create a primary key on the field EmployeeID in the table Employees. To do this, select the small gray square to the left of the field name EmployeeID. This will highlight this field. Now click the Design tab in the menu ribbon. Select the Primary Key button in the Tools section of the Design menu ribbon. A small key will be placed next to the highlighted field. Figure A-6 shows this process.

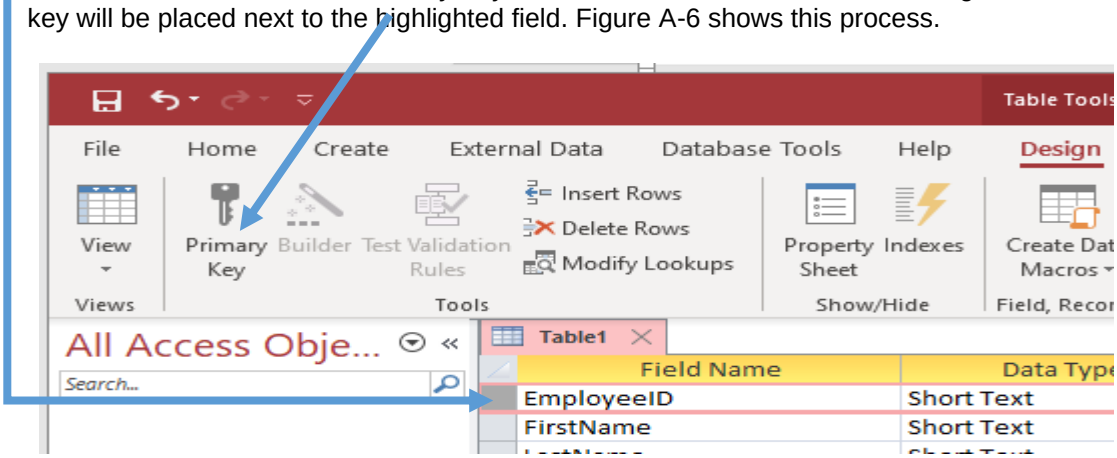

Figure A-6: Setting a primary key within a table

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Good to know: Some tables require more than one field as a primary key. This is known as a **compound key**. With a compound key, the combination of the data in all selected fields must be unique and not null. To create a compound key, you must select all fields of interest. To do this, you would first click the gray square to left of the first field. Then – on your keyboard – press and hold the CTRL key and click the gray square to the left of the second field. You can continue this process until all desired fields are highlighted. Then you can select the Primary Key button in the Design menu ribbon just as above. This tutorial does not require any compound keys, but you may see them in future cases and assignments.

A.2.3. Save your Table

9. After setting up your fields and designating a primary key, you can now save your table.

   Save your table by clicking the Save icon located in the extreme top left of your screen. You should get a popup asking for the name of the table. The table name should be descriptive of the types of record within the table. This is a table where every record represents an employee, so name it Employees. Figure A-7 shows the save dialog you will see.

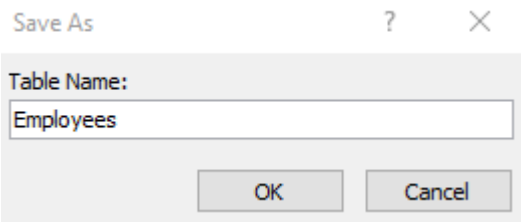

Figure A-7: Save dialog for table <u>Employees</u>

After saving the table, notice the left panel of Access that now shows Employees listed under the heading Tables. This panel lists all Access Objects (tables, queries, forms, and reports). As you create new objects, they become visible in this panel. Looking back to the table Design View on the right, you can right-click the Employees tab and choose Close to close the table. You have successfully created your first table.

2.4. Create Two Additional Tables (Branches, Sales)

10. Create a table named Branches with the following 3 fields:
    - **BranchID** will be 5 characters.
    - **City** should be no more than 100 characters.
    - **State** should be 2 characters.

    You should be able to determine the appropriate data types for each field given. Remember to set the appropriate Field Properties when needed. In addition, each table needs to have a primary key. You should be able to determine which field should be the primary key. Use Section 2.2 as a guide.

11. Using Figure A-8 as a guide, create a table named Sales with the following 4 fields:
    - **SaleID** should be automatically generated.
    - **EmployeeID** will be 4 characters.
    - **DateOfSale** (HINT: This is a date.)
    - **Amount** (HINT: This is money.)

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Branches

Field Name	Data Type
BranchID	Short Text
City	Short Text
State	Short Text

Sales

Field Name	Data Type
SaleID	AutoNumber
EmployeeID	Short Text
DateOfSale	Date/Time
Amount	Currency

Figure A-8 Setup for tables: Branches and Sales, (You need to select a Primary Key in each table)

Important: While creating your tables, notice that some fields are common between different tables. For example, the field BranchID exists in both tables Branches and Employees. This is a very important fact to notice. The field BranchID in the table Branches is a primary key, which means that it uniquely identifies a specific record. Inside the table Employees, however, the field BranchID is known as a **foreign key**. This means the field value of BranchID in a record in the table Employees helps to identify all of the data of one particular record in the table Branches (identified by the BranchID). For now, take note of this connection and make sure that the common fields in different tables have the same data type and size. BranchID should be of type Text and Field Size 5 in both tables: Branches and Employees. The same is true for the EmployeeID of tables Employees and Sales: both should be of type Text and Field Size 4. This information is essential in the next section when creating relationships.

After saving your tables, you should notice that you now have three tables listed in the left panel under Tables. These should be your tables Employees, Branches, and Sales. If you need to make changes to the setup of these tables, you can right-click the table you wish to modify and choose Design View. Figure A-9 shows this process.

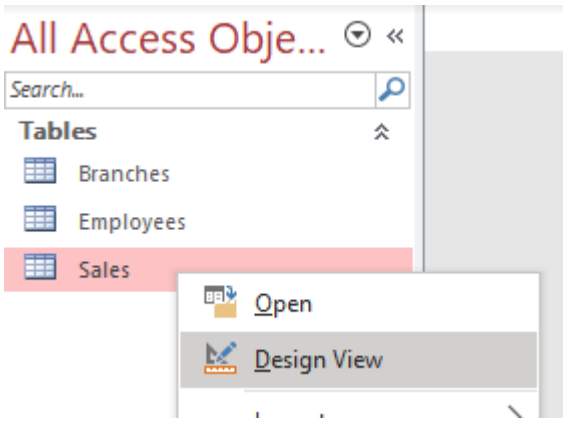

Figure A-9: Listing of all objects in your Database and to re-enter Design View

A.2.5. Create Relationships in Access

NOTE: It is important to build relationships between your tables BEFORE entering the data. This will reduce the number of errors you will see later on during your work. If you double-click the table, it will open in Datasheet View. You have not been introduced to Datasheet View yet – it will be used for data entry. Again, **you should not enter any data into your tables until you have created relationships**.

12. Before moving on, you must close all open tables. If you have tables open, Click the X next to the Table Name in the Tab or right-click each table tab and select Close (depends on your version of Access).

13. Once you have built all three tables, you can now tell Access how to “share” data. Remember the concept of a foreign key. When a foreign key is provided, we can then “share” specific data between

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tables. This concept is known as a **relationship**. Relationships are created on common fields – fields that represent the same type of data. A relationship will exist on a field that is a primary key in one table and a foreign key in another table. To create the relationships between tables, you will create a **relationship diagram**. This diagram shows which tables are connected and on what fields. A relationship diagram is a graphical way to illustrate the relationships within a database.

Start building a relationship diagram in your database. To do this, select the Database Tools menu ribbon and click the Relationships icon in the Relationships section (Figure A-10).

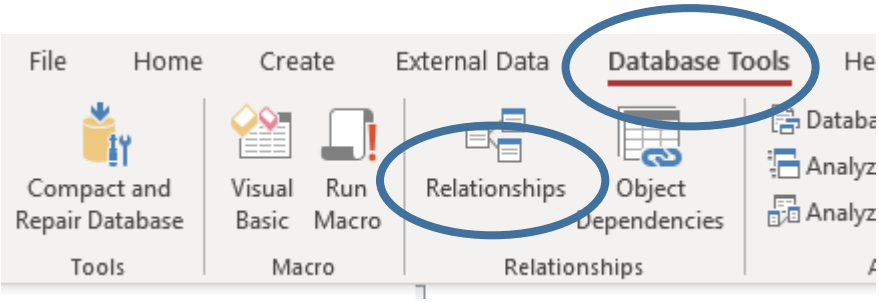

Figure A-10: How to open the relationship diagram to build relationships

14. After clicking the Relationships icon, you should see a popup labeled Show Table (Figure A-11). If you do not see this popup, click the Show Table icon in the Design menu ribbon. This popup lists all of the tables you have created (Branches, Employees, and Sales).

    Add all three tables to your diagram. Do so for each table by first clicking the table name to highlight it and then clicking the Add button. You may also double-click the table name to automatically add it to the diagram. As you add a table, you will see it in the background relationship diagram. If needed, move the popup in order to see the tables that you have already added.

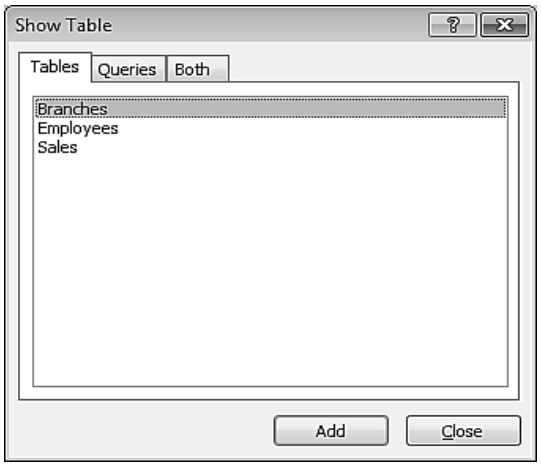

Figure A-11: Table dialog for relationships

Once you have added all three tables, click Close to view the diagram. Your screen should look like Figure A-12.

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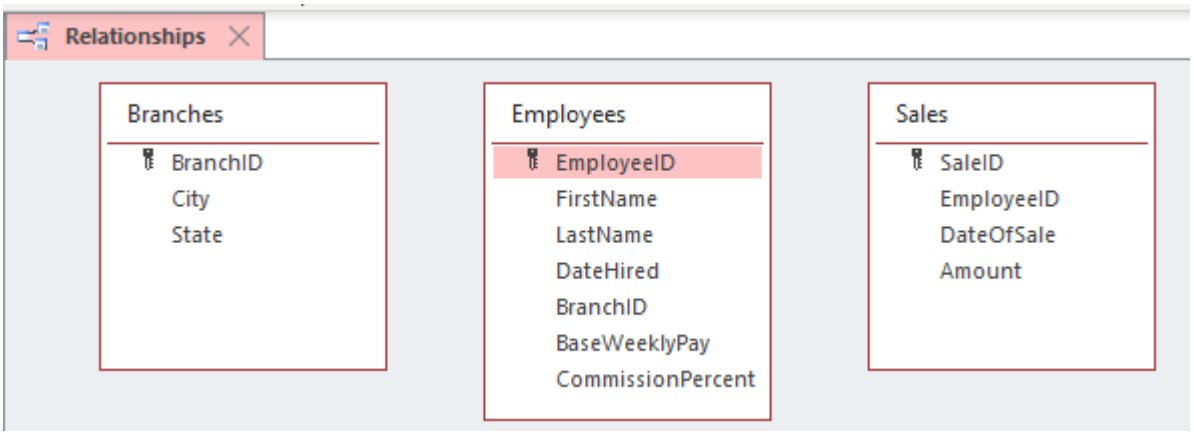

Figure A-12: Relationship diagram after adding all three tables

You should notice that the relationship diagram displays the tables and the field names you have created. In addition, you can see which fields you have selected as the primary keys. You can resize the tables individually in the diagram if you want to see more or less.

15. To create relationships, you need to determine which fields are in common between two tables. For example, the field BranchID exists in both the table Branches and the table Employees. This is a field where a relationship should exist. A relationship will exist on a field that is a primary key in one table and a foreign key in another table. If you create a relationship on the field BranchID, then the table Branches can "share" data with the table Employees via this common field.

    Create a relationship between the common field BranchID in the table Branches and in the table Employees. To do this, click and hold your mouse button above BranchID in the table Branches. Drag and release the mouse button on top of the field BranchID field in the table Employees. Note that it is very important to connect the COMMON fields. You should get a popup with settings like Figure A-13.

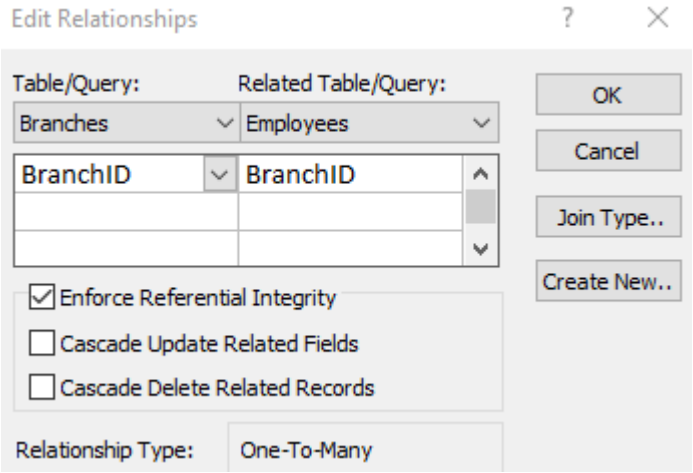

Figure A-13: Relationship settings between tables <u>Branches</u> and <u>Employees</u>

Notice that there are two columns in the settings popup. Verify that the two tables of interest (Branches and Employees) are listed. In addition, make sure that the Field selected in the drop downs is the common field (BranchID). If the data does not match what you expect, you may Cancel the popup and try again or manually change the drop down selections. From here, you also want to select Enforce Referential Integrity. **Referential integrity** means that a record must exist in the primary table (left column of the popup) BEFORE it can be used in the secondary table (right column of the popup). For this example, a record with a particular BranchID value (e.g., WILNC) must be created in the table

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Branches BEFORE that BranchID can be used in a record in the table Employees. **All of your relationships should enforce referential integrity** because this will prevent typos and other problems when entering data into the tables.

Also take note of the Relationship Type at the bottom of the popup. Based on your table setup, Access will automatically determine the relationship type for your relationships. This will be **One-To-Many**, **One-To-One**, or **Many-To-Many**.

NOTE: While creating relationships, you may encounter the popup shown in Figure A-14. If you get this error, Cancel all popups and go back to step 12 to close all open tables. You cannot create relationships unless all tables are closed first.

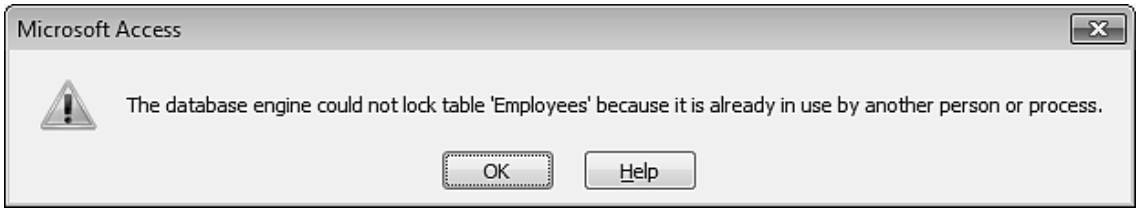

Figure A-14: Error received if tables are open when attempting to create relationships.

16. Once you have checked your data and selected Enforce Referential Integrity, you can click Create to create the relationship. Your diagram should now resemble Figure A-15.

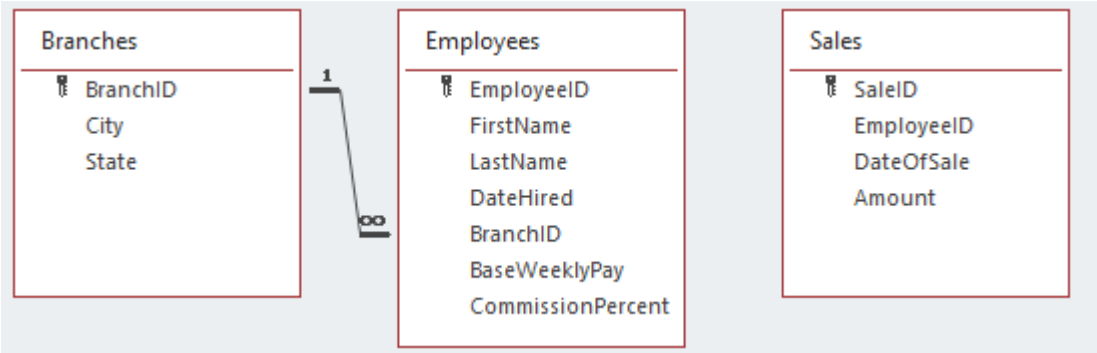

Figure A-15: Relationship diagram with relationship between tables <u>Branches</u> and <u>Employees</u>

Notice the line drawn between the tables Branches and Employees. The line should begin and end on the BranchID fields. Also notice the symbols used. These represent the **Relationship Type** for this specific relationship. If you do not see the symbols on your lines, go back to make sure you have checked Enforce Referential Integrity. To edit a relationship, right-click on the line created. It can be hard to get just on the line with your mouse cursor. Once you have selected the relationship, you see two options: Edit Relationship and Delete. Figure A-16 shows the proper options for altering a relationship that has already been created. To remove the selected relationship, chose Delete. To see the settings popup again (Figure A-13), choose Edit Relationship.

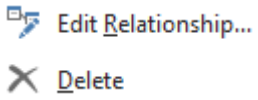

Figure A-16: Options displayed after right-clicking on an existing relationship

17. Create another relationship between the tables Employees and Sales. Remember to use the common field and to select Enforce Referential Integrity in the setup. Your finalized relationship diagram for this tutorial should look like Figure A-17.

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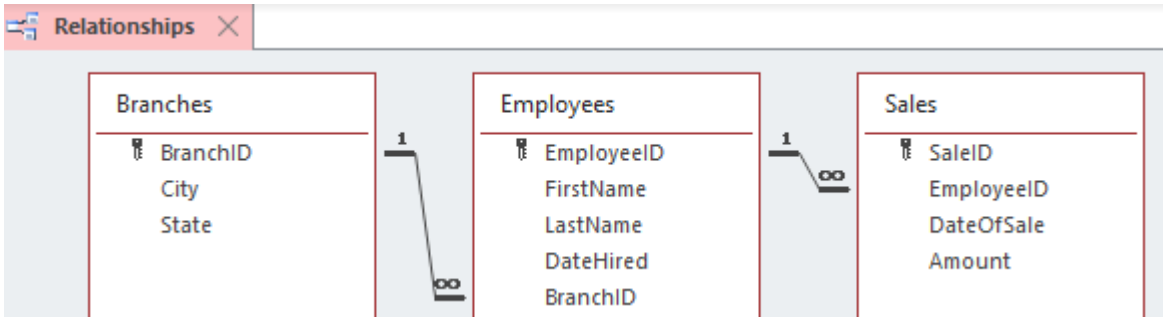

Figure A-17: Relationship diagram for this database

18. To finish, click the Close button in the Design menu ribbon. You should be prompted to save. Choose Yes. Only one relationship diagram can be created for a database – you do not have to name your relationship diagram. See Figure A-18.

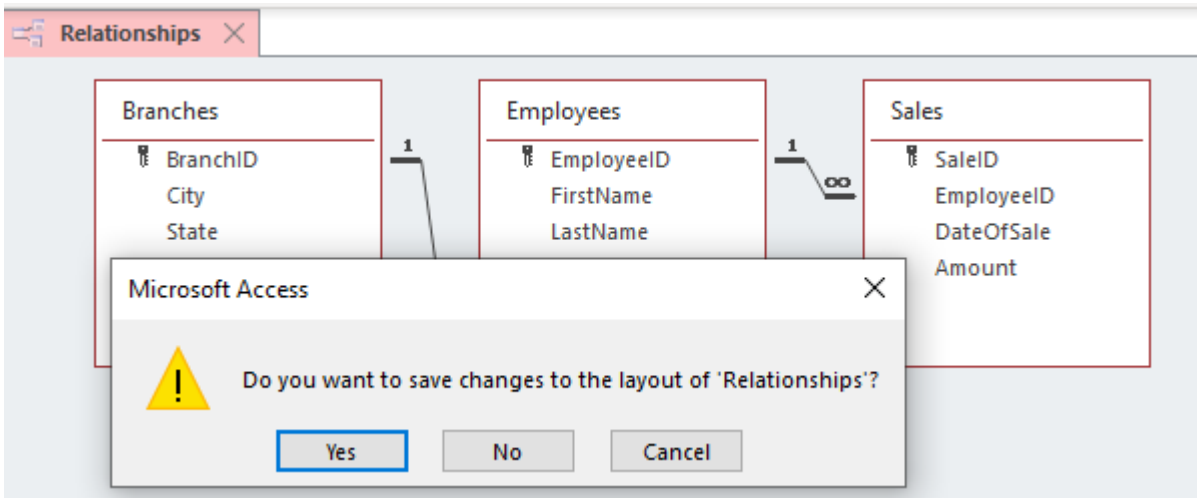

Figure A-18: Saving and closing the relationship diagram

A.2.6. Enter Data into your Tables

19. Remember that there are two useful views within Access for viewing your tables. For creating tables, Design View is used. Once a table has been created, you will generally want to view your table using Datasheet View. This is the default view when opening a table. If you locate a table on the left panel of Access and double-click the name, the table will open in Datasheet View. Open the table Branches in Datasheet View (Figure A-19).

    Notice that the field names you created are now listed as column headings in Datasheet View. Remember, each row within a table represents one record. In the table Branches, each row (=record) is designed to contain values for the fields BranchID, City, and State of one specific branch.

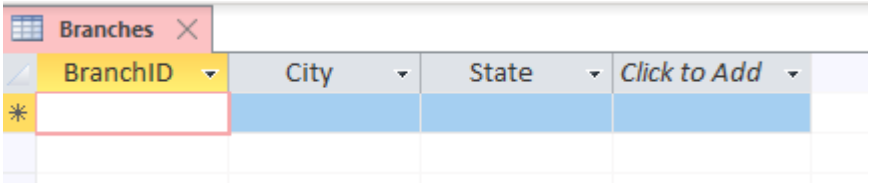

Figure A-19 Table <u>Branches</u> in Datasheet View

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Begin your data entry by typing the field values displayed in Figure A-20 for table Branches. To move between the different fields/columns, you can use the **Tab key** on your keyboard. Once you have reached the end of a record, you will be automatically moved to a new record.

NOTE: Changes made to the data in Datasheet View are AUTOMATICALLY saved once you move to another record. You do not have to continually click the Save icon. As long as the asterisk (*) appears to the left of the record, the record is in Edit mode. If you make a mistake in Edit mode, you can press the **ESC key** on your keyboard to cancel the current edits.

Branches

BranchID	City	State	Click to Add
CHANC	Charlotte	NC	
FAYNC	Fayetteville	NC	
RALNC	Raleigh	NC	
WILNC	Wilmington	NC	

Figure A-20: Data for the table <u>Branches</u>

20. Enter the data for the table Employees as shown in Figure A-21. Note that BranchID is a foreign key field in the table Employees that is related with the primary key field BranchID in the table Branches. Since you created the records in the table Branches first (in the previous step), you can now refer to them by entering appropriate values into the field BranchID in the table Employees. During data entry, you may notice that you can only enter values for BranchID in the table Employees that also exist in the table Branches. Any typos or unrecognized field values will trigger an error message and need to be corrected before you can move on to the next record. This is a direct result of checking *Enforcing Referential Integrity* during the relationship diagram stepup (Figure A-15).

    While entering data, notice also how the data type selections you made while creating your table designs come into play. EmployeeID will only allow you to enter 4 characters. DateHired is formatted as a date (2/5/2011), BaseWeeklyPay is formatted as Currency, BranchID will only allow you to enter 5 characters, and CommissionPercent allows decimal places. This is why it was important to spend time learning the different data types and their specific limitations and uses.

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Employees

EmployeeID	FirstName	LastName	DateHired	BranchID	BaseWeekly	Commission
1227	Kim	Stevens	2/5/2011	WILNC	$1,000.00	0.02
1584	Wanda	Smith	1/24/2008	RALNC	$750.00	0.02
1600	Hyatt	Padilla	11/15/2016	WILNC	$2,000.00	0.02
2020	Kyle	Smith	10/10/2018	WILNC	$1,000.00	0.03
2299	Wayne	Gordon	6/4/2008	CHANC	$2,500.00	0.02
2493	Becky	Chan	6/22/2008	FAYNC	$1,500.00	0.03
4263	Debra	Cash	3/9/2006	FAYNC	$2,500.00	0.02
4377	Alma	Smith	7/17/2017	CHANC	$1,500.00	0.03
4591	Jane	Noel	1/14/2020	FAYNC	$1,000.00	0.03
5179	Omar	Gray	9/25/2020	RALNC	$2,000.00	0.02
5273	Grady	Marks	12/30/2014	RALNC	$750.00	0.02
5401	Brody	Luna	9/16/2002	WILNC	$2,500.00	0.03
5449	Jade	Barber	4/6/2001	RALNC	$1,000.00	0.02
7052	Kylan	Cole	7/31/2000	FAYNC	$2,000.00	0.03
7925	William	Johns	4/7/2001	WILNC	$1,500.00	0.02
8511	Jerry	Kirby	7/23/2014	RALNC	$2,500.00	0.03
8944	Gabe	Conner	10/12/2017	WILNC	$1,000.00	0.02
9799	Susan	Stein	2/4/2011	CHANC	$1,500.00	0.02
9806	James	Jordan	8/22/2020	FAYNC	$2,000.00	0.03
9947	Scott	Haynes	6/22/2019	CHANC	$2,500.00	0.03

Figure A-21: Data for the table <u>Employees</u>

21. Finally, enter the data for the table Sales as shown in Figure A-22. Notice that you do not have to (and actually cannot) enter any values into the field SaleID. The data type of this field is set to be AutoNumber, which automatically increments field values starting with 1. If you make an error and delete a record, AutoNumber may skip a number in the sequence, which you can do nothing about. **So, please do not worry if the values in your field SaleID differ from Figure A-22.** Everything else should match, however.

Sales

SaleID	EmployeeID	DateOfSale	Amount	Click
1	2020	4/2/2021	$1,280.00	
2	4377	4/2/2021	$915.00	
3	9799	4/2/2021	$1,751.00	
4	7052	4/3/2021	$2,841.00	
5	4591	4/3/2021	$2,157.00	
6	1227	4/4/2021	$2,106.00	
7	1600	4/4/2021	$789.00	
8	5179	4/4/2021	$2,513.00	
9	1584	4/5/2021	$1,600.00	
10	2299	4/5/2021	$1,631.00	
11	8511	4/6/2021	$1,165.00	
12	2493	4/6/2021	$2,533.00	
13	4591	4/6/2021	$1,974.00	
14	5179	4/6/2021	$2,915.00	
15	9799	4/6/2021	$1,306.00	

Figure A-22: Data for the table <u>Sales</u> (values in the field SaleID are auto generated by the system and may vary)

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A.3. Basic Queries

Data stored in tables is often relatively useless on its own. The power of a database lies in its ability to share this data (through relationships), and answer questions or show information based on the data. The way to answer a question with a database is by creating a **query** (pronounced “kweer-ee”). A query is basically a repeated question: once a query is set up, it can be executed over and over. Each execution collects and manipulates the most recent data from the tables in the database and supplies a set of result records.

From the tables Branches, Employees, and Sales that you have already created, possible questions a company may be interested are:

- Which employees are at the Wilmington branch?
- Who in the company has worked here for over 10 years?
- Which employees make a commission rate above 3%?
- What are the total overall sales for each branch?
- How many sales are made each day?
- What are the full details of a specific sale?

As you can see, the answers to these questions may be different today than they will be tomorrow, next week, or next month. Every time you run a query, it supplies you with the most recent answers.

Queries are created by using existing fields and tables. In a query you can reorganize the data, perform arithmetic calculations, and determine totals, such as Sum, Average, etc. In Access, you can build queries with an interactive system known as **query by example** (QBE). QBE makes it easy to manipulate existing tables and extract the data needed to answer particular questions.

22. Like for tables, Access also contains two useful views for queries – **Datasheet View** and **Design View**. To start a new query, you should begin in Design View. This view allows easy manipulation of existing tables and fields. Design View provides the QBE method to build queries.

    Start a new query by choosing the Create tab from the menu ribbon and selecting the Query Design button within the Queries section of the Create menu ribbon (Figure A-23).

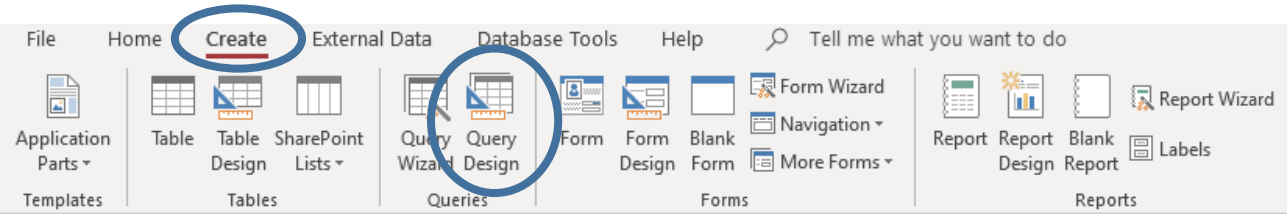

Figure A-23: How to create a new query in Design View

Once you have created the query, you should immediately see a prompt labeled Show Table. This is the same prompt that you used when creating your relationships (Figure A-11). The prompt should list all tables within the database (Branches, Employees, and Sales). Unlike for the relationships, however, **you SHOULD NOT add all tables for every query**. Before you can determine which tables to use, you must think about what data you need. In the next part of this tutorial, we present you with a series of example queries to help you get familiar with the query Design View in Access.

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A.3.1. SelectEmployees

Query -SelectEmployees: What are the names and employee IDs of all employees?

23. To answer this question, we will create a query that displays the values for EmployeeID, LastName, and FirstName of all employees. This data should be sorted in alphabetical order by last name. Keep reading for details on how to create this query.

    This is a **simple select query**. In a simple select query, you are not manipulating data; you are just displaying the data in a specific order or view.

    The first step in creating a query is to determine what tables are needed to answer the question. We note that the fields LastName and FirstName only appear in the table Employees, so we will definitely need the table Employees for the query. Add the table Employees using the Show Table popup.

    EmployeeID is a field in both tables Employees and Branches. A good rule when adding tables to the query designer is to include the FEWEST tables that still provide all the fields needed. We note that all 3 fields needed for this query are available in JUST the one table Employees. As a result, we do not need to add the other tables Branches or Sales to the query, and after adding the Employees table to the query, you can close the Show Table popup. You should see a screen similar to Figure A-24. This is where you will manipulate your query fields.

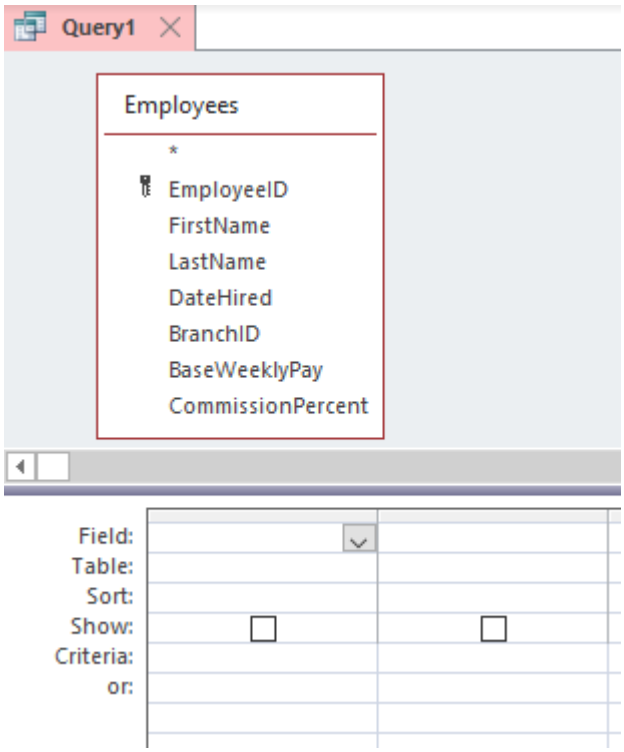

Figure A-24: Design View for first query <u>SelectEmployees</u> with table <u>Employees</u> added

24. The next step is to add the desired fields to your query. In the top half of the Design View, find the fields you are interested in and double-click them. This will add each field – in order – to the bottom panel. This bottom panel determines what data will be output when this query is executed.

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Add EmployeeID, LastName, and FirstName to the query to be displayed. Each field should display in its own column in the bottom panel of the Design View. When you are finished, your bottom panel will look like Figure A-25.

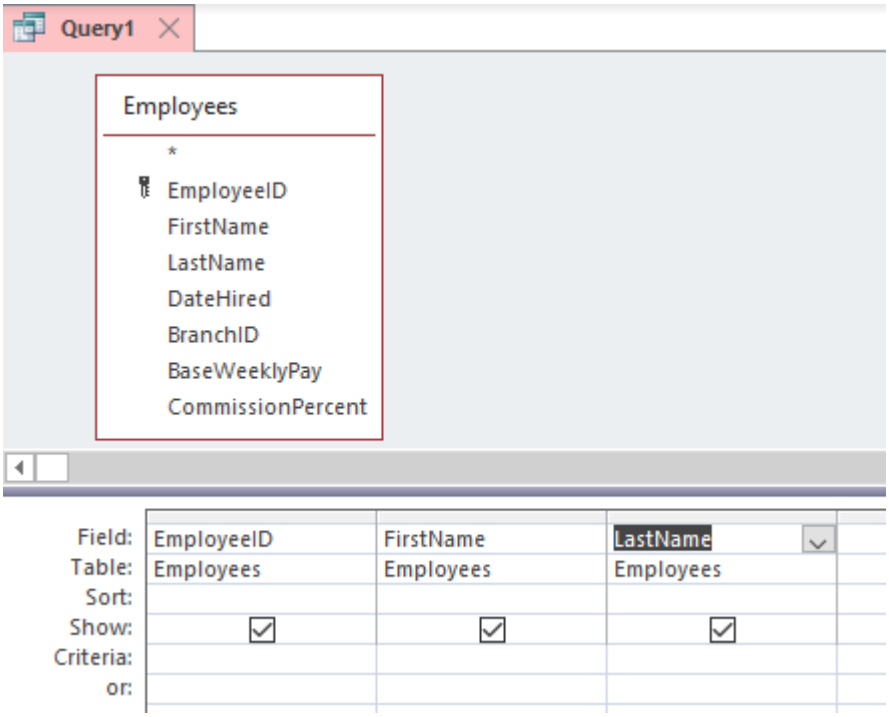

Figure A-25: Design View for first query <u>SelectEmployees</u> after adding desired fields

Only the fields displayed at the bottom of the Design View can be displayed when the query is executed. If you wish to hide a selected field, please uncheck the Show box for that particular field. In addition, you can use the drop down available to change Field and Table selections in the bottom panel.

25. During execution, query results are sorted by default in ascending order (smaller to larger) from left to right. This means our query will be sorted ascending by EmployeeID (low numbers to high numbers). For this query, however, we want to sort by LastName and we want the sort to be alphabetical. To change the default sort, we use the Sort line in the Design View. Alphabetical (A-Z) is considered ascending order (A is LOWER than Z).

    Change the sort for LastName to be Ascending. Leave the other sort values blank. Your completed Design should look like Figure A-26.

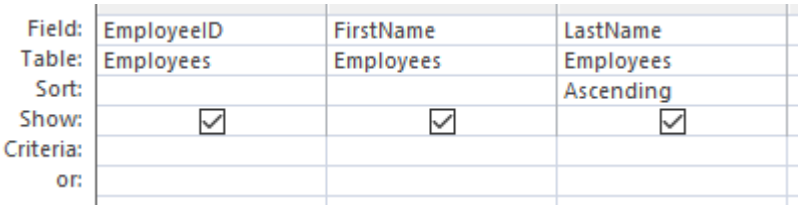

Figure A-26: Design View for first query <u>SelectEmployees</u> after adding sort

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View the results that this query will display. To do so, click the Run icon in the Results section of the Design menu ribbon. This is shown in Figure A-27. Once you RUN the Query, you should see the results shown in Figure A-28.

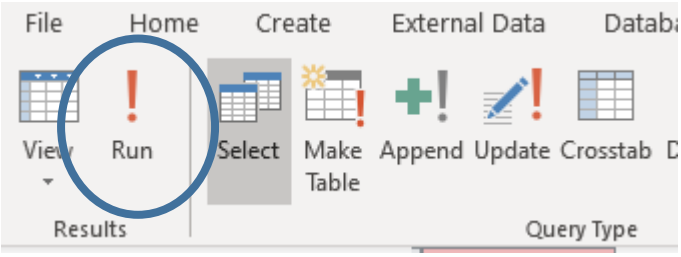

Figure A-27: Use the Run icon to execute a query

Query1

EmployeeID	FirstName	LastName
5449	Jade	Barber
4263	Debra	Cash
2493	Becky	Chan
7052	Kylan	Cole
8944	Gabe	Conner
2299	Wayne	Gordon
5179	Omar	Gray
9947	Scott	Haynes
7925	William	Johns
9806	James	Jordan
8511	Jerry	Kirby
5401	Brody	Luna
5273	Grady	Marks
4591	Jane	Noel
1600	Hyatt	Padilla
4377	Alma	Smith
2020	Kyle	Smith
1584	Wanda	Smith
9799	Susan	Stein
1227	Kim	Stevens

Figure A-28: Results of query <u>SelectEmployees</u>

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26. Save your query now as **SelectEmployees (note: no space).**. To save, use the Save icon in the extreme top left of Access or right-click the Query1 tab and choose Save. You will see a prompt asking for a Query name. Type SelectEmployees (Figure A-29). After saving, you should see SelectEmployees in the left panel under the heading Queries. When saved, your queries will be listed in this objects panel. You can double-click existing queries to execute them.

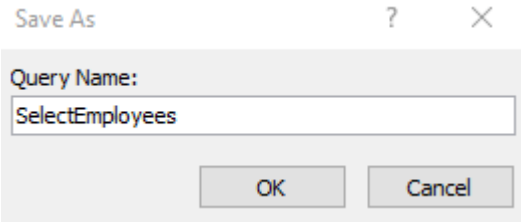

Figure A-29: Save dialog for query SelectEmployees

A.3.2. SelectWilNC

Query - SelectWilNC: Which employees work in the Wilmington, NC branch?

27. Create a query that displays the values in the fields EmployeeID, FirstName, LastName, BranchID, City, and State of all employees at the Wilmington, NC branch (WILNC). Keep reading for details on how to create this query.

    This is a **criteria select query**. A simple select query (e.g., SelectEmployees) displays all records for the tables selected. A criteria select query only displays specific records. The records displayed must match given criteria on certain fields. For this query, you will show values ONLY for employees at the Wilmington branch. To accomplish this, you can set up the query to select only the records where WILNC is listed as the value in the BranchID field.

    Create a new query in Design Mode. Determine which tables are required and add them to this query.

    EmployeeID, FirstName, and LastName exist as field names in the table Employees. BranchID is a field in both tables Employees and Branches. City and State are fields only contained in the table Branches. So, this query requires the two tables Employees and Branches. Once you have added these two tables through the Show Table popup and have closed the popup, you see a screen similar to Figure A-30. If you have set up your relationships as described earlier in this tutorial, you can see a line connecting the field BranchID in the table Employees with the field BranchID in the table Branches.

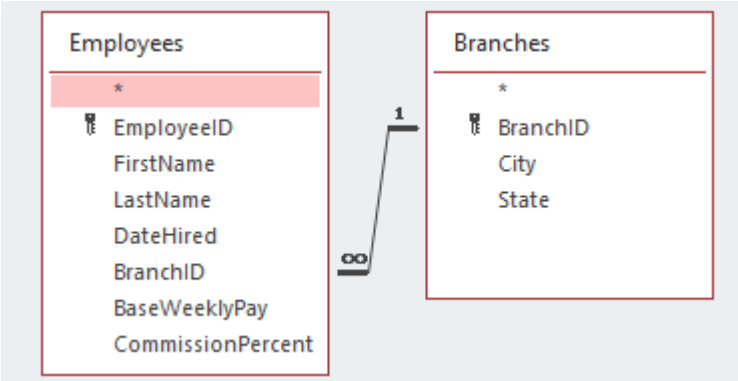

Figure A-30: Design View for second query SelectWilNC after adding required tables

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28. Add the required fields from the tables to the query Design View. Remember, you can double-click each field to do this. You should select the fields in the order you wish them to be displayed. Choose EmployeeID, FirstName, LastName, BranchID (doesn't matter which one, but typically you should choose the "root" table: Branches), City, and State. Your bottom panel should look like Figure A-31.

Field:	EmployeeID	FirstName	LastName	BranchID	City	State
Table:	Employees	Employees	Employees	Branches	Branches	Branches
Sort:						
Show:	☑	☑	☑	☑	☑	☑

Figure A-31: Design View for second query <u>SelectWilNC</u> after adding required fields

To create a criteria select query, you utilize the Criteria option in the bottom panel of the query Design View. Typically, you use a **comparison** for your criteria. Comparisons can come in many different forms. The simplest forms are equal, not equal, greater than, less than, greater than or equal to, or less than or equal to. The symbols used for each of these comparisons are shown in Table A-2. **If no comparison symbol is used, equality is assumed**.

NOTE: When doing comparisons with Text (i.e., characters like letters), you should surround the phrase with quotes (Example: "Bob"). When using Dates, you should surround the date with hash tags (Example: #1/21/2014#).

Table A-2: Symbols used for comparisons in Access

Comparison	Symbol	Example Usage
Equal to	=	= 47 = "Bob" = Yes = #1/21/2004#
Not equal to	<>	<> -1 <> "Blue" <> No <> #12/31/2012#
Greater than After (with dates)	>	> 0 > 50000 > #1/1/2012#
Less than Before (with dates)	<	< 0 < 100 < #1/1/2000#
Greater than or equal to On or after (with dates)	>=	>= 0 >= 500 >= #1/1/2012#
Less than or equal to On or before (with dates)	<=	<= 0 <= 250000 <= #12/31/1999#

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29. Add criteria under the field BranchID to require it to be equal to WILNC. Your Design View will look like Figure A-32.

Field:	EmployeeID	FirstName	LastName	BranchID	City	State
Table:	Employees	Employees	Employees	Branches	Branches	Branches
Sort:						
Show:	☑	☑	☑	☑	☑	☑
Criteria:				"WILNC"		
or:						

Figure A-32: Design View for second query <u>SelectWilNC</u> after adding criteria

30. Run your query. Your results should match Figure A-33. **Save this query as SelectWilNC**.

SelectWilNC

EmployeeID	FirstName	LastName	BranchID	City	State
1227	Kim	Stevens	WILNC	Wilmington	NC
1600	Hyatt	Padilla	WILNC	Wilmington	NC
2020	Kyle	Smith	WILNC	Wilmington	NC
5401	Brody	Luna	WILNC	Wilmington	NC
7925	William	Johns	WILNC	Wilmington	NC
8944	Gabe	Conner	WILNC	Wilmington	NC

Figure A-33: Results of query <u>SelectWilNC</u>

A.3.3. CalcFieldCommission

Query - CalcFieldCommission: What is the commission value for each sale?

Sometimes, the questions you wish to answer require more than just reading data values from tables. For example, in our case, employees are paid a commission for each sale. The dollar amount of each commission payment depends on the commission percent that each employee is entitled to and the amount of the sale (in $). Yet, there is no field in any of our tables that shows the dollar amount of each commission payment. So, in order to answer the question about what commission is paid out for each sale we can manipulate the data by defining a new field as part of a query1. In other words, we use the values in one or more data fields that do exist in the tables (namely commission percent and amount of sale) to determine the values of a new field (namely the commission value in $ for each sale). The new field is called a calculated field; the query that includes it is called a query with a calculated field or calculated query.

To calculate new field values in a query, you can perform various arithmetic operations on existing field values. The simplest arithmetic operations are add, subtract, multiply, and divide. Table A-3 shows the operation symbols that you can use to construct a formula that calculates the needed values for a query.

Please, note that the standard order of operations used in mathematics principles applies. Therefore, you may need to use parenthesis to ensure that you build a formula correctly.

[1] Manipulation in the context of a calculated field does NOT mean that we change any data values in the tables in our database. It merely refers to the data values that we use and display in our QUERIES and that may now be different from the data values that are in the tables.

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Table A-3: Symbols used for simple arithmetic operations in Access

Operation	Symbol	Example Usage
Add	+	[BaseWeeklyPay] + 500
Subtract	-	[HourlyPay] - 1.25
Multiply	*	[CommissionPercent] * [Amount]
Divide	/	[AnnualSalary] / 52

Operations can be performed with numbers or with field references. Notice in the examples that if you are using a field reference in a formula, **the field name should be surrounded by square brackets (e.g., [BaseWeeklyPay]) but the numeric value to add or multiply is NOT in brackets**. In addition, the field name used in the calculation MUST match the spelling in the table. If you misspell a field reference, Access will not be able to find the field you need and produce an error message when running the query.

31. Create a query that shows SaleID, Amount, and Commission for all sales records. Commission should be a calculated field: it is calculated by multiplying the CommissionPercent of the employee who made the sale by the Amount of the sale. Sort the results in Ascending order by SaleID. Keep reading for details on how to create this query.

    To begin, let's determine the formula for the calculation. To calculate the commission value, we take the value CommissionPercent in the table Employees and multiply it by the value Amount in the table Sales. So, we already know that we need those two tables. In addition, SaleID and Amount are both in the table Sales. It turns out that for this query we will not need the table Branches, just the tables Employees and Sales.

    Create a new query in Design Mode. Add the two required tables for this query.

32. Access requires you to type the formula for the calculated field manually, which we will do shortly. For now, add the first two NON-calculated fields as you normally would by double-clicking the field names in the table. You can also add the sorting as required. To create more room for the upcoming calculated field, please expand the third column. Your Design View should look like Figure A-34.

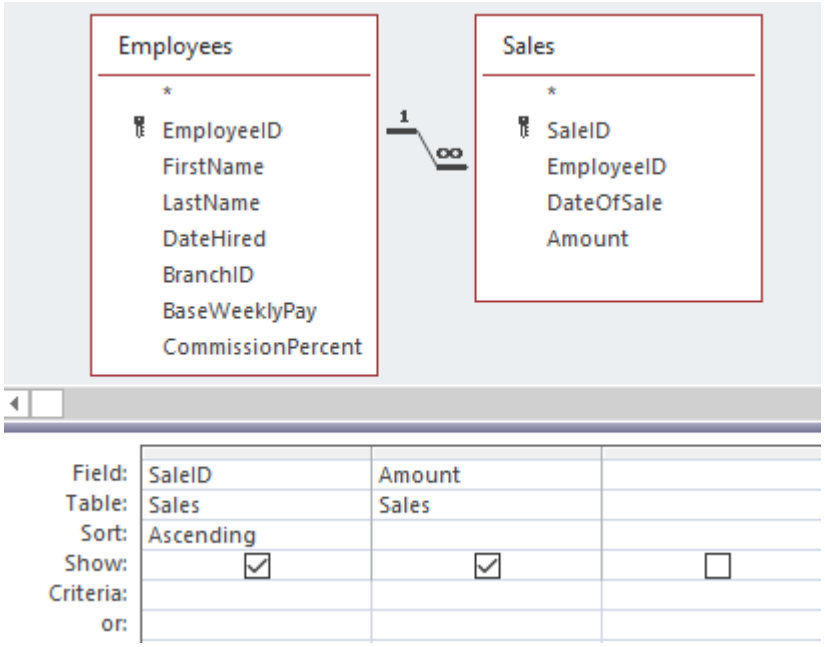

Figure A-34: Design View for query <u>CalcFieldCommission</u> after adding required tables, fields, and sorting

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33. The formula for the calculated query is **[CommissionPercent] * [Amount].** Remember: Field Names should be surrounded by square brackets[2] and MUST be spelled correctly.

    Manually type the formula for Commission into the third column of the Design View. After typing the formula, press the Enter key on your keyboard.
    You should notice that the column is now filled with the following:

    Expr1: [CommissionPercent] * [Amount]

    Every column must have a name. Since this field is not recognized as an already existing field name, it must be given a name. If you do not designate a name to your field, Access will assign a random name, e.g., Expr1.

34. Rename the column that you created to read Commission. To do this, replace Expr1: with Commission. You **MUST keep the colon** in order for the renaming to work correctly. Your Design View should look like Figure A-35.

Field:	SaleID	Amount	Commission: [CommissionPercent]*[Amount]
Table:	Sales	Sales	
Sort:	Ascending		
Show:	☑	☑	☑
Criteria:			
or:			

Figure A-35: Design View for third query <u>CalcFieldCommission</u> after adding the calculated field and renaming it

35. Figure A-36 shows part of the query results after you click the Run button. Notice that the field Commission is not yet formatted as currency.

Query1

SaleID	Amount	Commission
1	$1,280.00	38.4
2	$915.00	27.45
3	$1,751.00	35.02
4	$2,841.00	85.23
5	$2,157.00	64.71

Figure A-36: Results from running query <u>CalcFieldCommission</u> before formatting Commission field

To format the query field Commission, go back to Design View and then alter the field properties as follows: Right click on the column you wish to format and select Properties. You should notice a panel named Property Sheet on the right of your screen (Figure A-37). Under the General tab, locate the Format option and choose Currency from the drop down. This will add the $ symbol and 2 decimal places to the selected field. This must be done in Design View.

[2] Square brackets are <u>mandatory</u> for field names that contain blanks (spaces).

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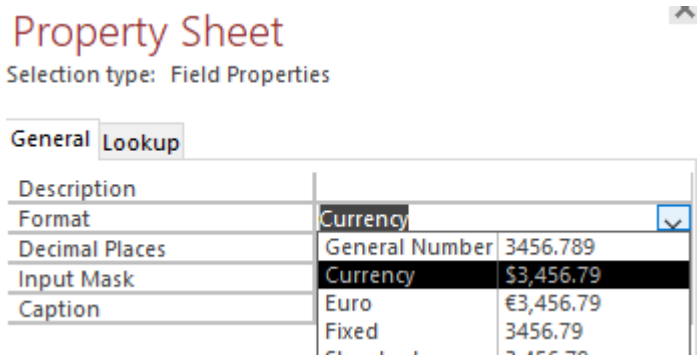

Figure A-37: Property Sheet panel for query Design View

After changing the Field Properties, you can leave the Property Sheet panel open or you may close it by clicking the small X in the top right corner of the panel.

36. Run your query. Your results should match Figure A-38. Save this query as **CalcFieldCommission**.

Query1

SaleID	Amount	Commission
1	$1,280.00	$38.40
2	$915.00	$27.45
3	$1,751.00	$35.02
4	$2,841.00	$85.23
5	$2,157.00	$64.71
6	$2,106.00	$42.12
7	$789.00	$15.78
8	$2,513.00	$50.26
9	$1,600.00	$32.00
10	$1,631.00	$32.62
11	$1,165.00	$34.95
12	$2,533.00	$75.99
13	$1,974.00	$59.22
14	$2,915.00	$58.30
15	$1,306.00	$26.12
(New)		

Figure A-38: Results of query <u>CalcFieldCommission</u>

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A.3.4. TotalsBranchSales

Query - TotalsBranchSales: What are the total sales for each branch?

Some queries require more than a calculation for each record. Many questions related to data within a database require some type of aggregation. In other words, it may be necessary to summarize the data from multiple records into a group. This type of query is known as a **totals query**. The common functions of totals queries include: Sum, Average, Minimum, Maximum, and Count.

You may be able to identify the need for a totals query by the phrasing of the question you are trying to answer. Table A-4 gives examples of common phrases for each type of totals query. Please, note that totals queries group a collection of similar records together and display one total or summary value for the entire group, rather than providing individual values for each record.

Table A-4: Common phrases for totals queries

Function	Example Phrases
Sum	What is the total…? How much…?
Average	What is the average…? On average, how much…?
Minimum	What is the least…? Identify the lowest…
Maximum	What is the highest…? Identify the most…
Count	How many…? Determine the number of…

37. Create a query that shows BranchID, City, State, and TotalSales. TotalSales will need to be a summary field based on the collection of sales records at each branch. In order to answer this question, you will need to create a totals query. Keep reading for details on how to create this query.

    To determine TotalSales, you will want to add together the Amount value of each sale at a particular branch. You need to group records by their branch in order to perform this accumulation. To begin, create a new query in Design Mode.

    First, you must determine what tables are required for the query: BranchID, City, and State are in the table Branches; Amount (to be used for TotalSales) is in the table Sales. When you add these two tables, you should notice that they are NOT connected, meaning that there are no common fields or defined relationships. So, before setting up the query details, these tables need to be linked in some way: Remember that each record in the table Sales includes an EmployeeID. Also, each record in the table Employees includes a BranchID. This means that if we add the Employees table, there will be a link from Branches to Sales (via Employees). You may want to reorder your tables in the Design View to better see the flow of data. After adding all tables, your Design View should look like Figure A-39.

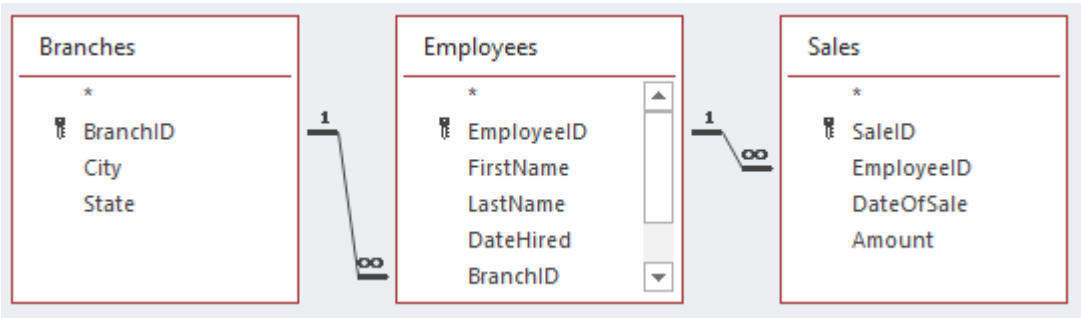

Figure A-39: Design View for query <u>TotalsBranchSales</u> after adding required tables

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NOTE: If you have already closed the Show Table popup and need to add additional tables, you can click the Show Table icon in the Query Setup section of the Design menu ribbon.

38. Add the fields required for the query to the Design View by double-clicking them: include BranchID, City, State, and Amount. Your Design View should look like Figure A-40. Next you will be modifying the query to allow totals, which will alter the Amount field.

Field:	BranchID	City	State	Amount
Table:	Branches	Branches	Branches	Sales
Sort:				
Show:	☑	☑	☑	☑
Criteria:				
or:				

Figure A-40: Design View for query <u>TotalsBranchSales</u> after adding required fields

39. Before you can get the total of the sales amounts for each branch, you need to provide some grouping of records. To designate this query as a totals query, click the Totals icon in the Show/Hide section of the Design menu ribbon (Figure A-41).

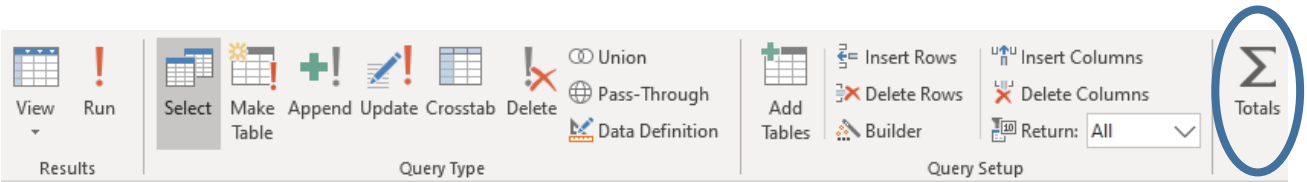

Figure A-41: The Totals icon in the Design menu ribbon

Notice that you have a new line available in the bottom panel of the Design View. This line is labeled **Total**. The new Query Design panel is shown in Figure A-42.

Field:	BranchID	City	State	Amount
Table:	Branches	Branches	Branches	Sales
Total:	Group By	Group By	Group By	Group By
Sort:				
Show:	☑	☑	☑	☑
Criteria:				

Figure A-42: Design View for query <u>TotalsBranchSales</u> after designating the query as a totals query

Notice that every field chosen in the Design View now says Group By as the selection for the Total line. The power of the totals query comes from the ability to group based on records with the same value for designated fields. For this query, you will want to group all sales that have the same BranchID, City, and State, so these 3 fields should remain as Group By for the Total selection.

The field that is “different” is Amount where we want to obtain the sum of all the sales. Figure A-43 shows the drop down selections for the Total line of the query designer. To get the Total Sales, you need to ADD all of the Amounts of the sales. This is a **Sum**.

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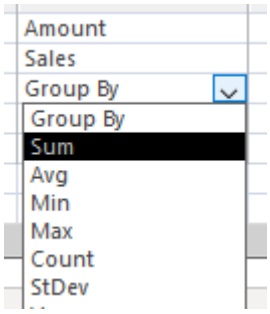

Figure A-43: Selections provided for Total option in Design View

40. Create a Sum on the field Amount by choosing Sum from the drop down that is provided in the Total-row. Your Design View should look like Figure A-44.

Field:	BranchID	City	State	Amount
Table:	Branches	Branches	Branches	Sales
Total:	Group By	Group By	Group By	Sum
Sort:				
Show:	☑	☑	☑	☑
Criteria:				

Figure A-44: Design View for fourth query <u>TotalsBranchSales</u> after setting the appropriate Total selection for the field Amount

41. If you run the query as is, notice the column headings (Figure A-45). Like with calculated field names, Access gives totals fields a new name. For the fourth field here, Access has named it SumOfAmount. Instead of this, we want to rename the field to TotalSales.

BranchID	City	State	SumOfAmount
CHANC	Charlotte	NC	$5,603.00
FAYNC	Fayetteville	NC	$9,505.00
RALNC	Raleigh	NC	$8,193.00
WILNC	Wilmington	NC	$4,175.00

Figure A-45: Field names before renaming the Totals-field

To rename a field, follow the same procedure you did in the prior query, place the name you desire, followed by a : (colon) and leave the field name that already exists in the Design View:

DesiredName: [FieldName]

There are several key notes about this format.

- The desired column name comes first. In this query, our desired name is TotalSales.
- After the desired field name, you MUST include a colon (:). Without this colon, Access will not know that you want to rename the field.
- All previously existing field names MUST be spelled exactly the same way as in the tables. A misspelling will result in error messages during query execution.

In Design View, add a column heading in the fourth field of TotalSales. You may need to extend the width of the column to see its entire contents. When finished, your Design View should look like Figure A-46

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Field:	BranchID	City	State	TotalSales: Amount
Table:	Branches	Branches	Branches	Sales
Total:	Group By	Group By	Group By	Sum
Sort:				
Show:	☑	☑	☑	☑
Criteria:				

Figure A-46: Design View for fourth query <u>TotalsBranchSales</u> after renaming fourth column

42. Run your query. Your results should match Figure A-47. Save this query as **TotalsBranchSales** .

BranchID	City	State	TotalSales
CHANC	Charlotte	NC	$5,603.00
FAYNC	Fayetteville	NC	$9,505.00
RALNC	Raleigh	NC	$8,193.00
WILNC	Wilmington	NC	$4,175.00

Figure A-47: Results of query <u>TotalsBranchSales</u>

A.3.5. ParameterSalesOnDate

Query - ParameterSalesOnDate: What are the details for sales that occurred on - mm/dd/yyyy-?

If the answer to a question depends on input provided by the user who runs the query, you can create a **parameter query**. A parameter query allows new data to be included in the query when it is executed. For example, you may want to know the details of all sales on a specific date. Instead of creating a query for every conceivable date up-front, you can create a parameter query that allows looking up sales records "on the fly".

43. Create a new query in Design Mode. Add the required tables for this query. Also select the fields as shown. Your Design View should look like Figure A-48.

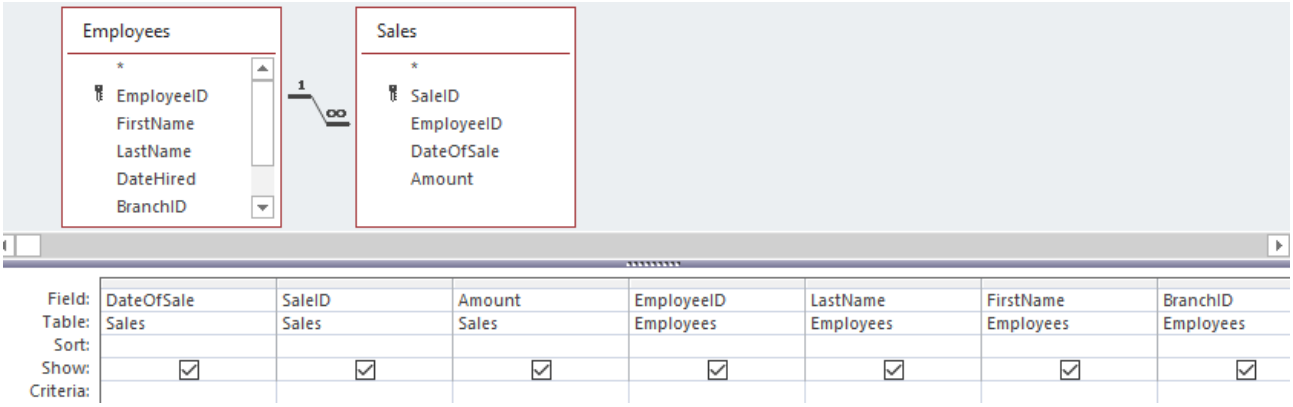

Figure A-48: Design View for fifth query <u>ParameterSalesOnDate</u> after adding required fields

44. If you were to run the query at this point, you would see ALL sales records. You need to restrict the DateOfSale to a specific date. If this value were known, you could create a criteria select query that used the value given. Since the value will be given DURING execution of the query, you must provide a parameter. This will pause the query during execution and wait for the user to enter in a value. Keep reading for details on how to create a parameter.

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Parameters are created using square brackets in the Criteria line of the Design View. This will signal Access to provide a popup prompt to the user with a message that you supply. The format of your parameter is as follows:

=[Message user will see during execution]

Modify the message within the square brackets to fit the query that you are building. Remember, **this parameter should be placed in the Criteria line of the field that you want to restrict**. Also, keep in mind that parameters – like any criteria – can use any of the comparison symbols listed in Table A-2. In this case, we use equal to. Also remember that if no comparison symbol is used, equality is assumed.

NOTE: Since parameters are formed with square brackets AND field references are also formed with square brackets, you CANNOT use a parameter that has a message that is the same as an existing field name. It's good practice to format your parameter message as a question. At minimum, you could just add a question mark to an existing field name for your parameter. Example: =[DateOfSale?]. While this will work, a better parameter would be =[What date?].

To facilitate grading, DO NOT use the Parameter Icon in the Ribbon Bar at the top of Access (Figure A-49). Create your parameters by adding the Criteria Row like Figure A-50.

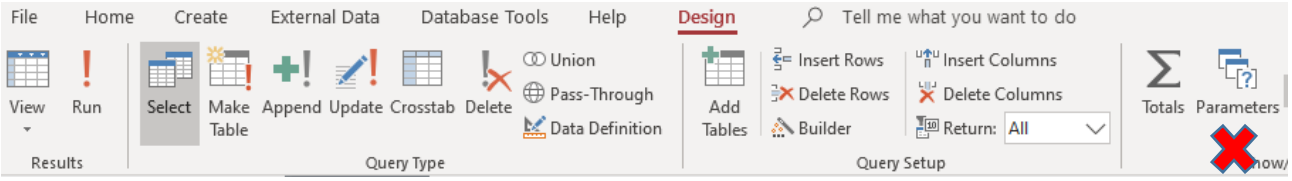

Figure A-49: Please do not use the Parameter Icon to enter your question for the user (parameter)

Add a parameter to restrict the records displayed to a specific DateOfSale. To do this, enter criteria for DateOfSale to prompt the user for a date. Your Design View will look like Figure A-50.

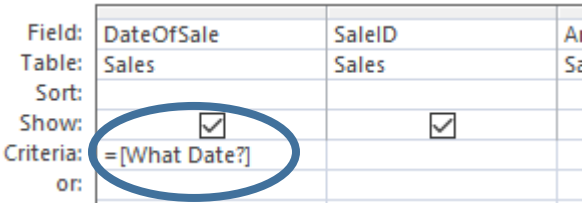

Figure A-50: Design View for fifth query <u>ParameterSalesOnDate</u> after adding parameter

Every time you run this query, you will notice a prompt that displays the message you typed in your parameter (Figure A-51). The results of the query depend on the date that is supplied by the user.

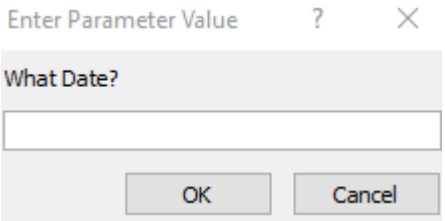

Figure A-51: Prompt displayed when executing query <u>ParameterSalesOnDate</u>

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45. Run your query. If you type in 4/2/2021 when prompted for the date, your results should match Figure A-52. If you type in 4/4/2021 when prompted for the date, your results should match Figure A-53. Save this query as **ParameterSalesOnDate**. **NOTE:** This is **ONE** query – NOT two separate queries! The output depends on the value given for the parameter which changes each time the query is executed.

ParameterSalesOnDate

DateOfSale	SaleID	Amount	EmployeeID	LastName	FirstName	BranchID
4/2/2021	1	$1,280.00	2020	Smith	Kyle	WILNC
4/2/2021	2	$915.00	4377	Smith	Alma	CHANC
4/2/2021	3	$1,751.00	9799	Stein	Susan	CHANC

Figure A-52: Results of fifth query <u>ParameterSalesOnDate</u> (when given 4/2/2021 as the parameter value)

ParameterSalesOnDate

DateOfSale	SaleID	Amount	EmployeeID	LastName	FirstName	BranchID
4/4/2021	6	$2,106.00	1227	Stevens	Kim	WILNC
4/4/2021	7	$789.00	1600	Padilla	Hyatt	WILNC
4/4/2021	8	$2,513.00	5179	Gray	Omar	RALNC

Figure A-53: Results of fifth query <u>ParameterSalesOnDate</u> (when given 4/4/2021 as the parameter value)

Please check with your instructor, as for most classes, this ends this project and now you should upload to Entropy -- . Please see https://csbapp.uncw.edu/MIS213CasePDF/Guide1-Horizon.pdf - the guide for uploading files, see page 1-9 for those on your own PC, or for Horizon users, see page 1-10.

In addition, please see page 1-13 on how to make a copy of this homework and save it to your CLOUD – One Drive area. This is important as periodically ITS clears all files in Horizon's document/download folders.

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A.4. Advanced Queries

For the Advanced Queries you will not be shown the Design View Screen, but you will see the results of the queries. This will help you to determine which table(s) you will need to pull the appropriate fields to display. Only add those tables that you need to retrieve a field or to provide a relationship needed between your table(s).

A.4.1. SelectSales

Query - SelectSales: What are the full details of all sales made

46. Create a query that shows SaleID, DateOfSale, Amount, EmployeeID, FirstName, LastName, and BranchID for all sales. Sort by DateOfSale and then LastName.

    HINT: For future use in a later query, select the EmployeeID column from the Employees table and NOT from the Sales table .If the EmployeeID is chosen from the Sales table, the grouping requested in Item 80, Figure 81 cannot be performed correctly. Once complete, compare your results with Figure A-54 below and save your query as **SelectSales**.

SelectSales

SaleID	DateOfSale	Amount	EmployeeID	FirstName	LastName	BranchID
2	4/2/2021	$915.00	4377	Alma	Smith	CHANC
1	4/2/2021	$1,280.00	2020	Kyle	Smith	WILNC
3	4/2/2021	$1,751.00	9799	Susan	Stein	CHANC
4	4/3/2021	$2,841.00	7052	Kylan	Cole	FAYNC
5	4/3/2021	$2,157.00	4591	Jane	Noel	FAYNC
8	4/4/2021	$2,513.00	5179	Omar	Gray	RALNC
7	4/4/2021	$789.00	1600	Hyatt	Padilla	WILNC
6	4/4/2021	$2,106.00	1227	Kim	Stevens	WILNC
10	4/5/2021	$1,631.00	2299	Wayne	Gordon	CHANC
9	4/5/2021	$1,600.00	1584	Wanda	Smith	RALNC
12	4/6/2021	$2,533.00	2493	Becky	Chan	FAYNC
14	4/6/2021	$2,915.00	5179	Omar	Gray	RALNC
11	4/6/2021	$1,165.00	8511	Jerry	Kirby	RALNC
13	4/6/2021	$1,974.00	4591	Jane	Noel	FAYNC
15	4/6/2021	$1,306.00	9799	Susan	Stein	CHANC

Figure A-54: Results for query <u>SelectSales</u> (show 7 fields, 15 records, values for SaleID may vary)

A.4.2. SelectDateHired

Query - SelectDateHired: At the end of 2020, which employees will have been with the company for 10 years or more?

47. Create a query that shows EmployeeID, FirstName, LastName, BranchID, and DateHired for employees that were hired on or before 12/31/2010.

48. Sort the results ascending by DateHired. The employee hired first should be at the top of your results.

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NOTE: When referencing dates in criteria, you need to surround the date with hash tags. Example: #3/17/1989# - keep in mind that this is NOT the same date you need to use in this query.
HINT: *For help with criteria please refer to Section A.3.2.*
Compare your results with Figure A-55 and save your query as **SelectDateHired**.

SelectDateHired

EmployeeID	FirstName	LastName	BranchID	DateHired
7052	Kylan	Cole	FAYNC	7/31/2000
5449	Jade	Barber	RALNC	4/6/2001
7925	William	Johns	WILNC	4/7/2001
5401	Brody	Luna	WILNC	9/16/2002
4263	Debra	Cash	FAYNC	3/9/2006
1584	Wanda	Smith	RALNC	1/24/2008
2299	Wayne	Gordon	CHANC	6/4/2008
2493	Becky	Chan	FAYNC	6/22/2008

Figure A-55: Results of query <u>SelectDateHired</u> (show 5 fields, 8 records)

A.4.3. SelectCharlotteSales

Query - SelectCharlotteSales: What sales were made by employees from the Charlotte branch on April 2, 2021?

49. Create a query that shows SaleID, Amount, EmployeeID, and LastName for any sales that were made on 4/2/2021 AND by employees from branch CHANC.

50. You need to put criteria restrictions on DateOfSale AND BranchID but you DO NOT want to show these columns. **Uncheck the Show option to restrict without displaying in the output of the query.**

    NOTE: Remember to put the criteria entries in the same column as the field you wish to restrict. For Example, you will want to put =#4/2/2021# underneath the DateOfSale field. When you want multiple restrictions to be required, you will place the criteria on the SAME row (Criteria) in your Design View. If you wanted one criteria OR the other, you would place the criteria on SEPARATE rows (one on Criteria, and one on the OR line).

    Compare your results with Figure A-56 and save your query as **SelectCharlotteSales**

SelectCharlotteSales

SaleID	Amount	EmployeeID	LastName
2	$915.00	4377	Smith
3	$1,751.00	9799	Stein
(New)			

Figure A-56: Results of query <u>SelectCharlotteSales</u>(show 4 fields, 2 records, values for SaleID may vary)

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A.4.4. CalcFieldBonus

Query - CalcFieldBonus: Management of the Raleigh branch is going to give a 5% bonus on sales. What is the bonus for each sale at the Raleigh branch?

Create a query that shows SaleID, Amount, Bonus, and EmployeeID for any sales that were made at the Raleigh branch. Bonus will be a calculated field that calculates 5% (0.05) of the Amount.

HINTS: Refer to Section A.3.3 to help you with a calculated field and currency; remember field names in calculations must be in [ ] but values such as .05 should not be placed in brackets [ ]. You will have one 'hidden' field in this query.

51.

NOTE: Don't forget to format the Bonus calculated field to currency. In addition, you should rename the calculated field to read Bonus when the query is executed.

Compare your results with Figure A-57 below and save your query as **CalcFieldBonus**.

CalcFieldBonus

SaleID	Amount	Bonus	EmployeeID
9	$1,600.00	$80.00	1584
8	$2,513.00	$125.65	5179
14	$2,915.00	$145.75	5179
11	$1,165.00	$58.25	8511

Figure A-57: Results of query <u>CalcFieldBonus</u> (shows 4 fields, 4 records, values for SaleID may vary)

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A.4.5. CalcFieldNewBasePay

Query - CalcFieldNewBasePay: All employees will receive an increase of $115 on their weekly base pay. What will the new weekly base pay be for each employee?

52. Create a query that shows EmployeeID, BranchID, FirstName, LastName, and NewWeeklyBasePay. NewWeeklyBasePay will be a calculated field that increases the current BaseWeeklyPay by 115.

53. Sort the results ascending by BranchID.

    HINT: you will want to add 115 to their current base pay.

    Compare your results with Figure A-58 and save your query as **CalcFieldNewBasePay**.

CalcFieldNewBasePay

EmployeeID	BranchID	FirstName	LastName	NewWeeklyBasePay
2299	CHANC	Wayne	Gordon	$2,615.00
4377	CHANC	Alma	Smith	$1,615.00
9799	CHANC	Susan	Stein	$1,615.00
9947	CHANC	Scott	Haynes	$2,615.00
2493	FAYNC	Becky	Chan	$1,615.00
4263	FAYNC	Debra	Cash	$2,615.00
4591	FAYNC	Jane	Noel	$1,115.00
7052	FAYNC	Kylan	Cole	$2,115.00
9806	FAYNC	James	Jordan	$2,115.00
1584	RALNC	Wanda	Smith	$865.00
5179	RALNC	Omar	Gray	$2,115.00
5273	RALNC	Grady	Marks	$865.00
5449	RALNC	Jade	Barber	$1,115.00
8511	RALNC	Jerry	Kirby	$2,615.00
1227	WILNC	Kim	Stevens	$1,115.00
1600	WILNC	Hyatt	Padilla	$2,115.00
2020	WILNC	Kyle	Smith	$1,115.00
5401	WILNC	Brody	Luna	$2,615.00
7925	WILNC	William	Johns	$1,615.00
8944	WILNC	Gabe	Conner	$1,115.00

Figure A-58: Results of query <u>CalcFieldNewBasePay</u> (shows 5 fields, 20 records)

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A.4.6. CountNumberEmployees

Query - CountNumberEmployees: How many employees do we have?

54. Create a query that shows NumberOfEmployees. You will need to Count the EmployeeID within the Employees table.

    HINT: Refer to Section A/3.4 to help you find the ∑, which will assist you to COUNT the # of employees.

    NOTE: This will require only ONE field and there will be ONE row in output. Don't forget to rename the field to NumberOfEmployees.

    Compare your results with Figure A-59 and save your query as **CountNumberEmployees**.

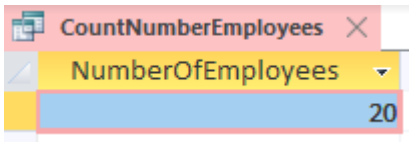

Figure A-59 Results of query <u>CountNumberEmployees</u> (show 1 field, 1 record)

A.4.7. AverageBasePay

Query - AverageBasePay: What is the average weekly base pay of all employees at the Wilmington branch?

55. Create a query that shows AverageBasePay for employees at the WILNC branch.

    HINT: You will also need to use the ∑ icon in this query.

    NOTE: This will require TWO fields in your Design View, but only ONE will show in the results. Your output will have ONE row and ONE column in it. Don't forget to rename the field to AverageBasePay and format to currency.

    Compare your results with Figure A-60 below and save your query as **AverageBasePay.**

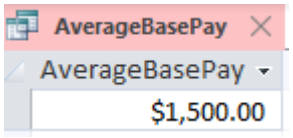

Figure A-60: Results of query <u>AverageBasePay</u> (shows 1 field, 1 record)

A.4.8. TotalSalesByEmployee

Query – TotalSalesByEmployee: What are the total sales for each employee?

56. Create a query that shows EmployeeID, LastName, FirstName, and TotalSales for each employee. You will need to group the employees and add the Amount of each sales record in the database.

57. Sort the results alphabetical by last name and first name.

    HINT: Again you will need to use the ∑ icon in this query

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Compare your results with Figure A-61 and save your query as **TotalSalesByEmployee**.

TotalSalesByEmployee

EmployeeID	LastName	FirstName	TotalSales
2493	Chan	Becky	$2,533.00
7052	Cole	Kylan	$2,841.00
2299	Gordon	Wayne	$1,631.00
5179	Gray	Omar	$5,428.00
8511	Kirby	Jerry	$1,165.00
4591	Noel	Jane	$4,131.00
1600	Padilla	Hyatt	$789.00
4377	Smith	Alma	$915.00
2020	Smith	Kyle	$1,280.00
1584	Smith	Wanda	$1,600.00
9799	Stein	Susan	$3,057.00
1227	Stevens	Kim	$2,106.00

Figure A-61: Results for query TotalSalesByEmployee (shows 4 fields, 12 records)

A.4.9. ParameterEmployeeLookup

Query - ParameterEmployeeLookup: What are the details of the employee for a specific Employee #

58. Create a query that shows EmployeeID, FirstName, LastName, DateHired, BranchID, BaseWeeklyPay, and CommissionPercent for a specific employee. You will need to prompt the user for the EmployeeID to use when showing details. This will require a parameter query.

    HINT: See Section A.3.5 for help building a Parameter in a Query.

    NOTES: Your output should be only ONE record! Remember that you cannot use existing field names as a parameter. Your message to the user should read "What EmployeeID?" Also this should be **ONE** query – not two separate queries

    Compare your results with Figure A-62 when given Employee ID 2020 and Figure A-63 below when given Employee ID 9799. Save your query as **ParameterEmployeeLookup**.

ParameterEmployeeLookup

EmployeeID	FirstName	LastName	DateHired	BranchID	BaseWeekly	Commission
2020	Kyle	Smith	10/10/2018	WILNC	$1,000.00	0.03

Figure A-62: Results for query <u>ParameterEmployeeLookup</u> (when given 2020 as parameter value) (show 7 fields, 1 record)

ParameterEmployeeLookup

EmployeeID	FirstName	LastName	DateHired	BranchID	BaseWeekly	Commission
9799	Susan	Stein	2/4/2011	CHANC	$1,500.00	0.02

Figure A-63: Results for query <u>ParameterEmployeeLookup</u> (when given 9799 as parameter value) (show 7 fields, 1 record)

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A.5.0 Input Forms

So far, the only method for data entry has been via the Datasheet View of each table. Some users, especially those without database experience, however, may not understand the concept of tables or the Datasheet View method of data entry. In this section, we introduce Forms to provide an easier and more intuitive way to input data into tables in your database.

Once you have your table design and relationships set up, forms are relatively easy to create. Access has great built-in tools for creating forms literally "with the click of a button." This is only useful IF you have a good table design and have set up the proper relationships based on common fields within your tables.

A.5.1 BranchEmployees

59. Every form must be based on a table because the form needs to know where to store the data. To create a form, look on the left side of your Access window for the object panel, then highlight (click) the table on which you wish to base your form. Once highlighted, choose the Create menu ribbon and click the Form icon in the Forms section (Figure A-64). **Note that for forms, we WILL NOT use the Design View.**

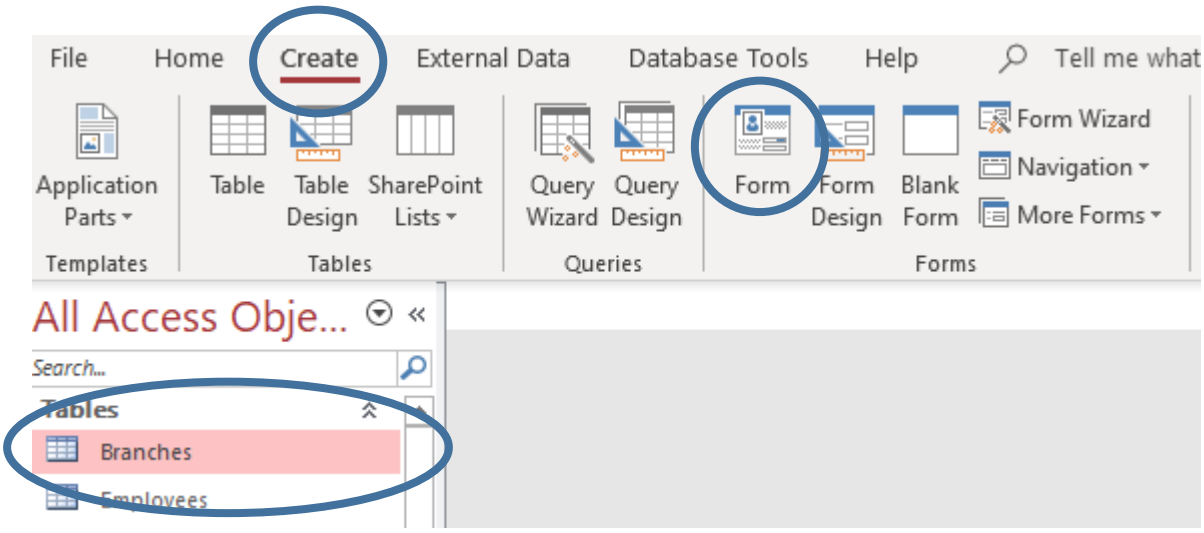

Figure A-64: With a table highlighted, create a form by clicking the Form icon in the Create menu ribbon

Once you click FORM, ACCESS will create an INPUT FORM for the USER. Since you have created a relationship between the tables Branches and Employees, the sub-form will be created automatically for you. This sub-form allows managing employee records directly from the Branches form. This can be very useful.

For forms, you should become familiar with two views: **Layout View** and **Form View**. Currently you should be viewing your form in Layout View. Layout View allows you to easily alter the form appearance by dragging and dropping elements.

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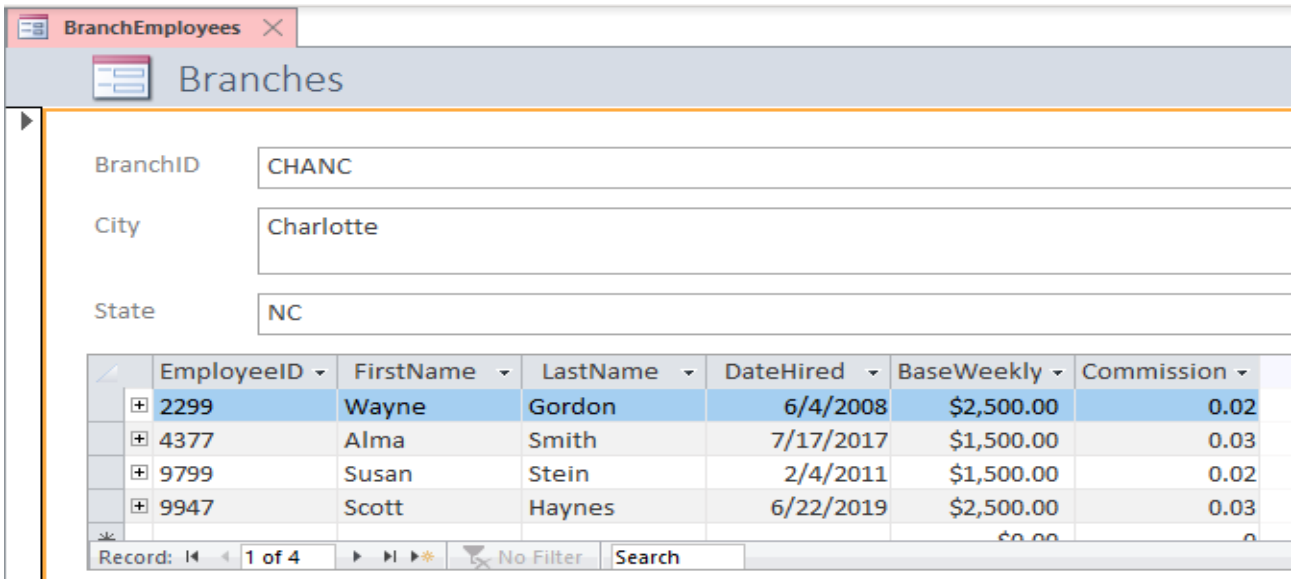

Figure A-65: Form created from table Branches (save the form as <u>BranchEmployees</u>)

60. Switch to Form View by right clicking the Branches tab above the form and choosing Form View.

    Form View allows you to actually USE the form. This view allows data entry directly into the tables through the form.

    Notice that the form created shows several things:
    - The fields contained in the table Branches (Branch ID, City, and State). Arrow #1 in Figure A-66.
    - A sub-form with Employee details for all employees at this branch. Arrow #2 in Figure A-66.
    - A panel for moving through the records that are displayed. Arrow #3 in Figure A-66.

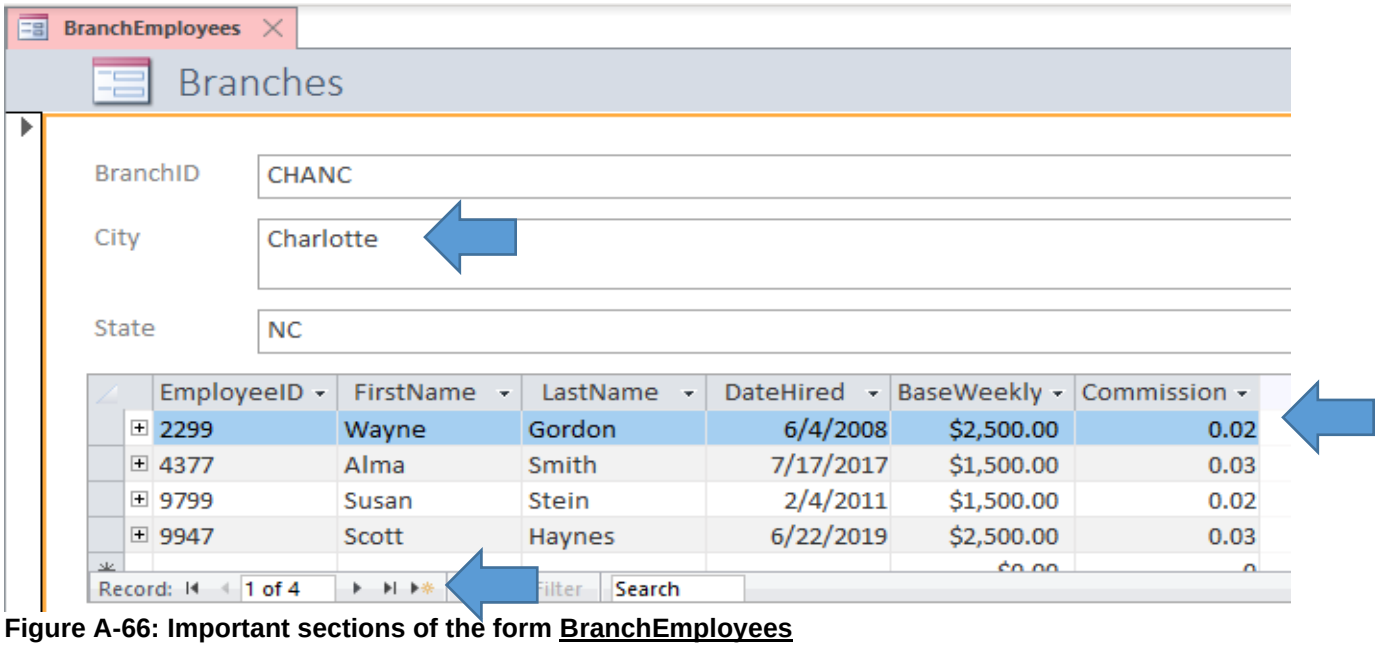

Figure A-66: Important sections of the form <u>BranchEmployees</u>

To move between records in the table Branches, use the bottom panel. The arrows move forward and back through branch records. There is also an icon to create a new record and ability to search for content within the existing records.

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61. Save the form as **BranchEmployees**.

A.5.2 EmployeeSales

62. Create a second form based on the existing fields and relationships for the table Employees. Your form should look like Figure A-67

    Notice that this form includes a sub-form for the sales records that exist for each employee. Like for the form BranchEmployees, this sub-form exists because of the relationships that you created earlier.

63. Save the current form as **EmployeeSales**.

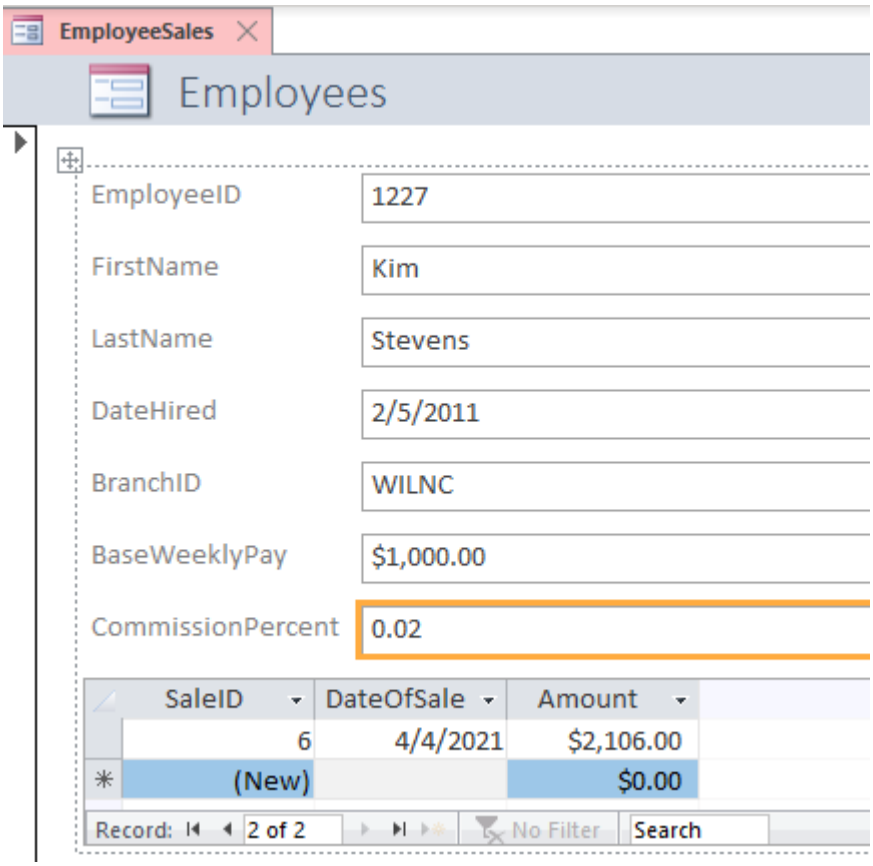

Figure A-67: Form <u>EmployeeSales</u>

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A.6.0 Reports

If you want to create formatted output instead of the “spreadsheet style” output that you get from queries, you should build a report. Reports allow formatting data in a much more readable and attractive manner, and can be passed out to stakeholders, management, or team members for review and decision making. Some people find it difficult to extract data from query output, so reports can provide an easier way to understand data quickly. This can be a great benefit within an organization.

Reports should be based on a query in your database. When you run a report, the query is first executed behind the scenes and the records that result from the query’s execution are then used to generate the report. Access applies the formatting specifications that you defined in your report layout. Besides the fields defined in the underlying query, you can display additional totals and groupings in the report.

A.6.1 Sales by Branch

64. To create a report, you begin by highlighting the query in the object panel to the left of your Access window on which you wish to base your report. Once highlighted, choose the Create menu ribbon and click the REPORT. (Figure A-68) **Note that for reports you WILL NOT use the Design View.**

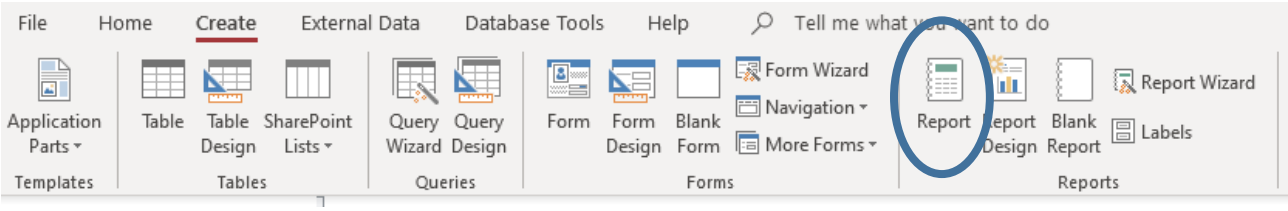
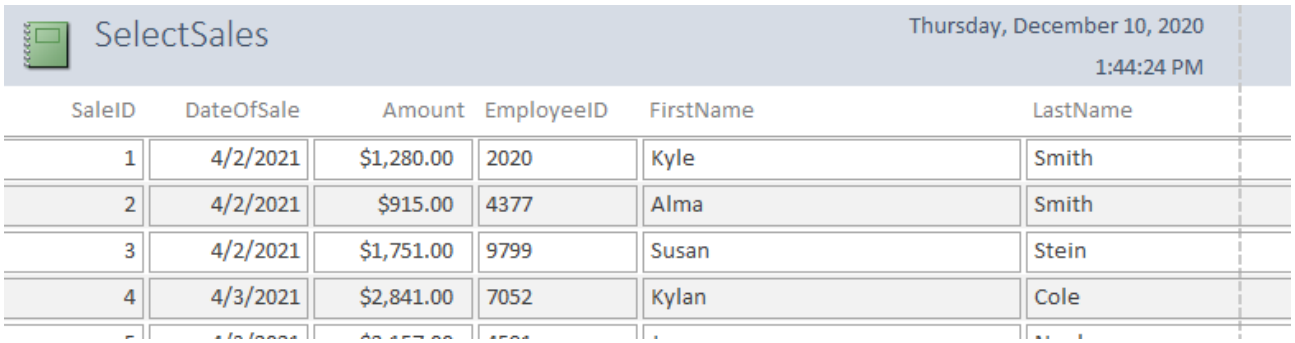


Figure A-68: With a query highlighted (from the objects panel), create a report by clicking the Report icon in the Create menu ribbon

Create a new report based on the query **SelectSales** that was created previously in Section A.4.1. To start the report, highlight the query SelectSales and click the Report button in the Reports section of the Create menu ribbon. Your report will appear in Layout View and should look like Figure A-69. (For now, ignore the Group & Sorting panel if it appears at the bottom of your screen.)



SelectSales

Thursday, December 10, 2020
1:44:24 PM

SaleID	DateOfSale	Amount	EmployeeID	FirstName	LastName
1	4/2/2021	$1,280.00	2020	Kyle	Smith
2	4/2/2021	$915.00	4377	Alma	Smith
3	4/2/2021	$1,751.00	9799	Susan	Stein
4	4/3/2021	$2,841.00	7052	Kylan	Cole

Figure A-69: Initial Layout View for Report <u>SalesByBranch</u>, created from query <u>SelectSales</u>

65. First, notice the gray dotted lines around Layout View. These are the designated page margins. If you were to print this report right now, parts of it would be cut off. In order to fit the contents to one page, you need to resize some columns. To resize a column, click the field title you wish to resize. Once highlighted, move your mouse to the left or right side of the highlighted box. When your cursor turns to a double sided arrow, click and drag to change the width of a column. You could also use the same process to change row height of the report.

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66. Resize FirstName and LastName so that the full contents of the report fit within the page margins. Your report Layout View should resemble Figure A-70.

SelectSales Thursday, Decemb

SaleID	DateOfSale	Amount	EmployeeID	FirstName	LastName	BranchID
1	4/2/2021	$1,280.00	2020	Kyle	Smith	WILNC
2	4/2/2021	$915.00	4377	Alma	Smith	CHANC
3	4/2/2021	$1,751.00	9799	Susan	Stein	CHANC
4	4/3/2021	$2,841.00	7052	Kylan	Cole	FAYNC

Figure A-70: Layout View for Report <u>SalesByBranch</u> after resizing column widths

NOTE: When making changes, remember you can use the UNDO option. The Undo icon is located near the Save icon in the extreme top left of your Access window. Also, you can use **Ctrl+Z** to activate an UNDO.

67. Next, notice the date and time that are printed in the top right to indicate when the report was generated. In addition, a title is created on the top left. By default, the title of the report is the same as the name of the query on which the report is based. To change the title, double-click the existing title in Layout View and edit the text.

Change the title of the report to be Sales by Branch. Your title should now match Figure A-71.

Sales by Branch Thursday, December 1
1:44

SaleID	DateOfSale	Amount	EmployeeID	FirstName	LastName	BranchID
1	4/2/2021	$1,280.00	2020	Kyle	Smith	WILNC
2	4/2/2021	$915.00	4377	Alma	Smith	CHANC

Figure A-71: Layout View for Report <u>SalesByBranch</u> after changing the title

68. While in Layout View, you can also rearrange fields or remove fields. Before you perform either of these actions, select the entire column you wish to manipulate. To select an entire column, click within the column and select the Arrange menu ribbon on top of your screen. Click the Select Column button in the Rows & Columns section of the Arrange menu ribbon (Figure A-72).

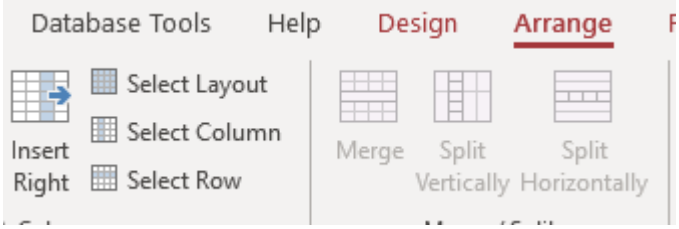

Figure A-72: Highlight an entire column by selecting the Select Column icon in the Rows & Columns section of the Arrange menu ribbon.

To delete a column once highlighted, hit the delete key on your keyboard. You may also right click the highlighted column and choose Delete Column.

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To move a column once highlighted, click and hold on the column and drag the column left or right. The cursor will show a notification of where the column will be placed. Release the mouse button to move the column to the selected location.

69. Rearrange the fields of the report so that they appear in this order: BranchID, DateOfSale, EmployeeID, LastName, FirstName, SaleID, and then Amount. After rearranging the fields, your report Layout View should look like Figure A-73.

SalesByBranch

Sales by Branch

Thursday, Dece

BranchID	DateOfSale	EmployeeID	LastName	FirstName	SaleID	Amount
WILNC	4/2/2021	2020	Smith	Kyle	1	$1,280.00
CHANC	4/2/2021	4377	Smith	Alma	2	$915.00
CHANC	4/2/2021	9799	Stein	Susan	3	$1,751.00
FAYNC	4/3/2021	7052	Cole	Kylan	4	$2,841.00
FAYNC	4/3/2021	4591	Noel	Jane	5	$2,157.00
WILNC	4/4/2021	1227	Stevens	Kim	6	$2,106.00
WILNC	4/4/2021	1600	Padilla	Hyatt	7	$789.00
RALNC	4/4/2021	5179	Gray	Omar	8	$2,513.00
RALNC	4/5/2021	1584	Smith	Wanda	9	$1,600.00
CHANC	4/5/2021	2299	Gordon	Wayne	10	$1,631.00
RALNC	4/6/2021	8511	Kirby	Jerry	11	$1,165.00
FAYNC	4/6/2021	2493	Chan	Becky	12	$2,533.00
FAYNC	4/6/2021	4591	Noel	Jane	13	$1,974.00
RALNC	4/6/2021	5179	Gray	Omar	14	$2,915.00
CHANC	4/6/2021	9799	Stein	Susan	15	$1,306.00
						$27,476.00

Figure A-73: Layout View for Report <u>SalesByBranch</u> after rearranging fields

70. Before moving on to make some additional changes, make sure that all contents of the report are within the page margins. If they are not, click to highlight each object and resize or move it into the page boundaries. Also make sure the contents of all rows can be seen. If they cannot, resize their height accordingly. For example, take note of the bottom of the report. Page 1 of 1 is displayed but it may be outside of the page margins. Anything outside the gray dotted line should be moved inside the margins. Also, there is an automated total at the bottom of the amount column. Notice how the contents of this field cannot be fully seen, so the height of this field has to be changed.

71. Save the report as **SalesByBranch**.

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A.6.2 Report Grouping and Totaling

For this report, we want to highlight the sales for each individual branch. In addition, we want to total the sales for each branch and display the totals on the report. All of these additions to the query can be done in report Layout View.

72. One of the great additions you can apply with reports is grouping and sorting. Click the Design option in the menu tool bar and then Group and Sort (Figures A-74 and A-75).

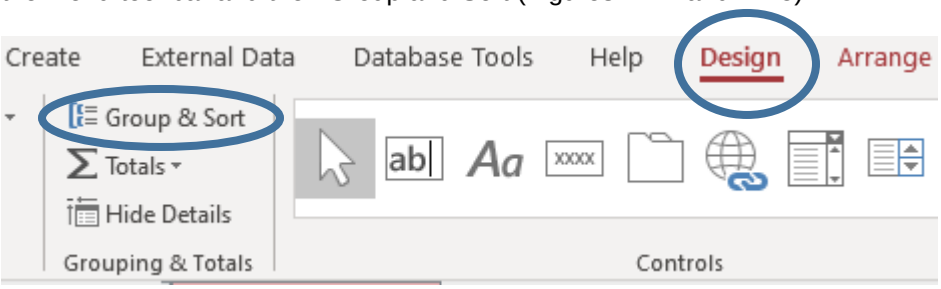

Figure A-74: Selecting Design and then Group and Sort

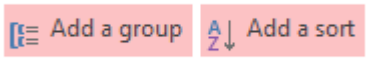

Figure A-75: Options once you select Group and Sort

73. When you click Add a group or Add a sort, you will be asked to choose a field. Grouping will pull all records with the same value for the selected field and display them together in the report. Sorting will reorder the records based on the values of the selected field.

74. Group this report by BranchID and sort the records by DateOfSale. After adding a group and a sort, the Layout View of your report should look like Figure A-76.

BranchID	DateOfSale	EmployeeID	LastName	FirstName	SaleID	Amount
CHANC						
	4/2/2021	9799	Stein	Susan	3	$1,751.00
	4/2/2021	4377	Smith	Alma	2	$915.00
	4/5/2021	2299	Gordon	Wayne	10	$1,631.00
	4/6/2021	9799	Stein	Susan	15	$1,306.00
FAYNC						
	4/3/2021	4591	Noel	Jane	5	$2,157.00
	4/3/2021	7052	Cole	Kylan	4	$2,841.00
	4/6/2021	4591	Noel	Jane	13	$1,974.00

Figure A-76: Layout View for Report <u>SalesByBranch</u> after adding a group and a sort

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75. When a report has a grouping, you may wish to add up the values from a certain column, count the records within a group, or perform other functions. To do so, select the column **(Amount),** then click the Totals icon in the Grouping & Totals section in the Design menu ribbon and finally SUM. Refer to Figure A-77

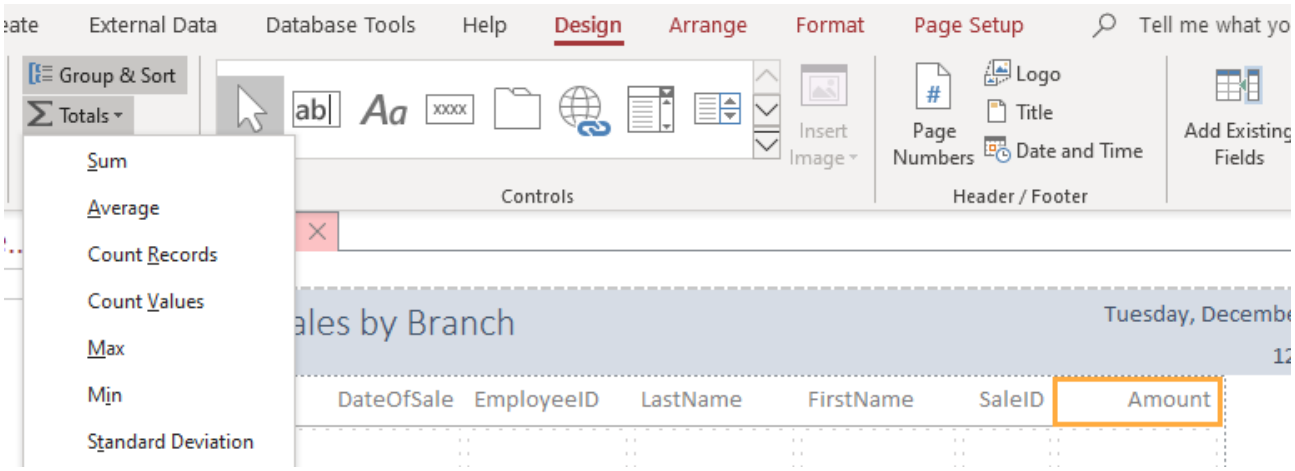
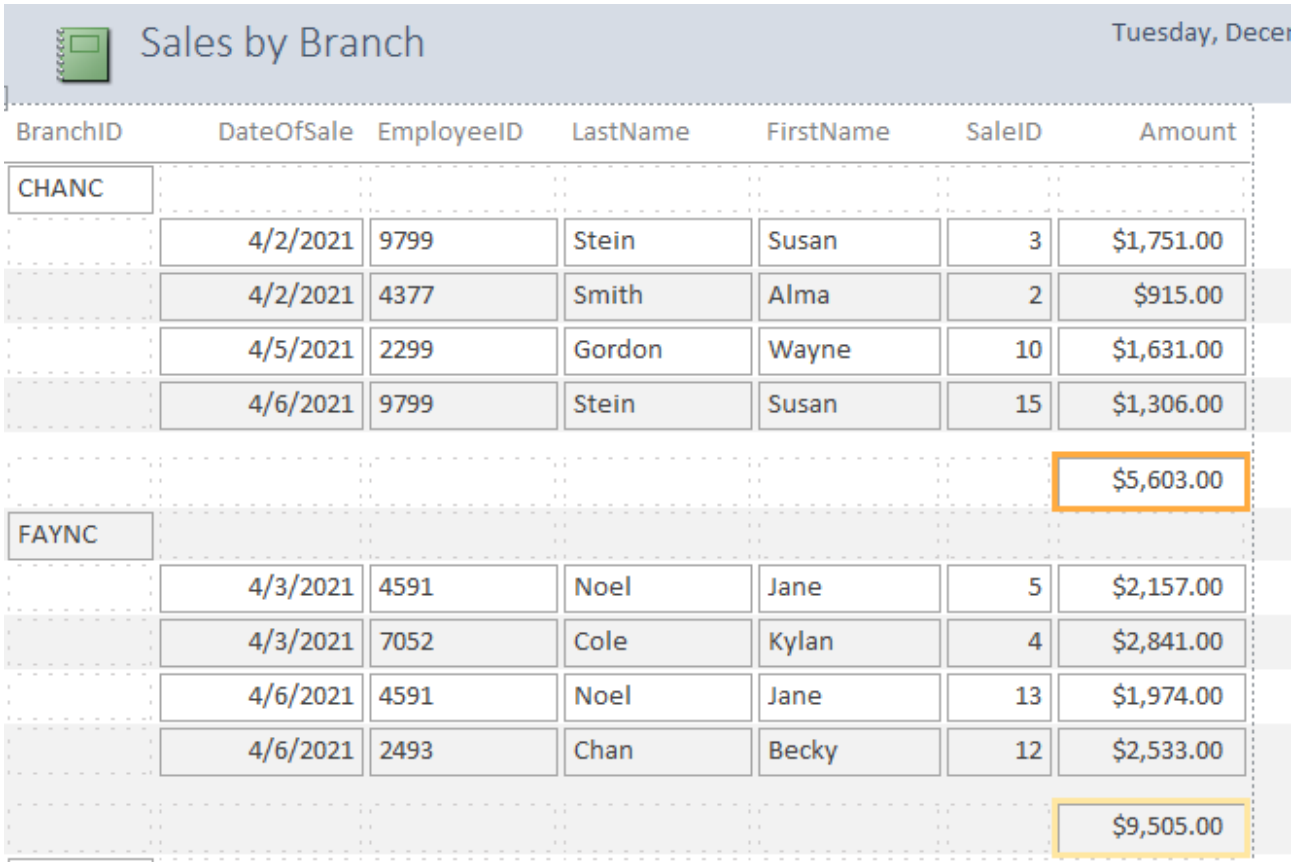


Figure A-77: Totals options within report Layout View

76. Resize the height for the total so that the entire content is displayed. Your Layout View should look like Figure A-78.



Sales by Branch — Tuesday, Decer

BranchID	DateOfSale	EmployeeID	LastName	FirstName	SaleID	Amount
CHANC						
	4/2/2021	9799	Stein	Susan	3	$1,751.00
	4/2/2021	4377	Smith	Alma	2	$915.00
	4/5/2021	2299	Gordon	Wayne	10	$1,631.00
	4/6/2021	9799	Stein	Susan	15	$1,306.00
						$5,603.00
FAYNC						
	4/3/2021	4591	Noel	Jane	5	$2,157.00
	4/3/2021	7052	Cole	Kylan	4	$2,841.00
	4/6/2021	4591	Noel	Jane	13	$1,974.00
	4/6/2021	2493	Chan	Becky	12	$2,533.00
						$9,505.00

Figure A-78: Layout View for Report <u>SalesByBranch</u> after adding a total to Amount

77. Make sure to save the report often.

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6 A.3 SalesByEmployee

Generate a second report based on the query SelectSales. For this report we will use the Report Wizard option to help us with sorting and totaling.

78. Click the CREATE and then the REPORT WIZARD in the Toolbar, you will then be presented to select the query (SelectSales) and which fields you desire to display. See Figure A-79.

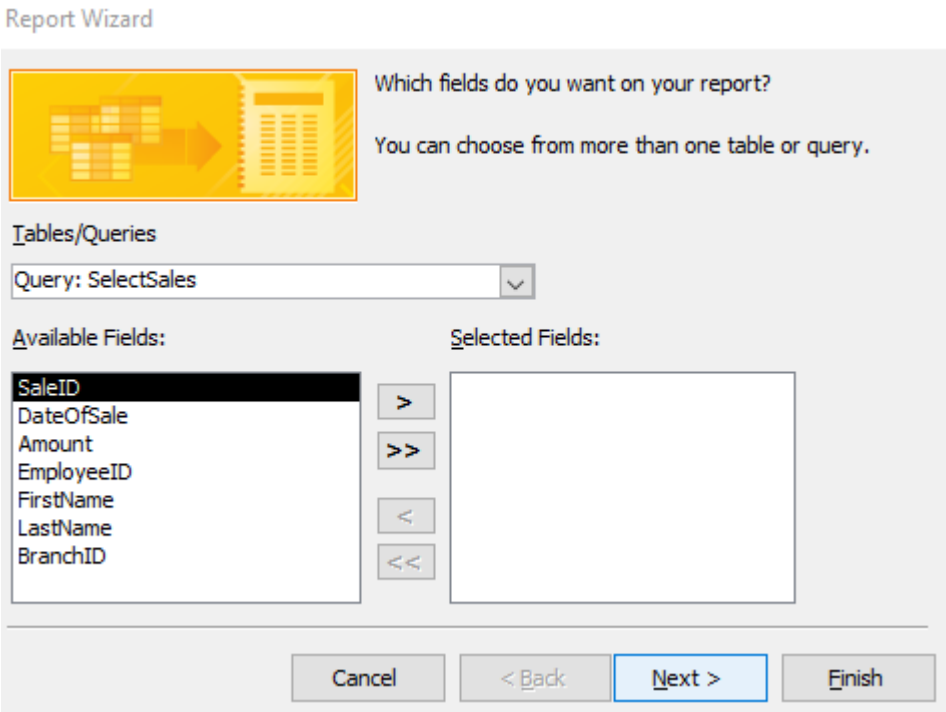

Figure A-79: Using the Report Wizard option to build a Report.

79. To save the effort of rearranging columns, select the columns in the following order (one by one) and then hit the right arrow to move them to the Selected Fields box in this order
    a. EmployeeID, FirstName, LastName, BranchID, Amount, DateOfSale
    b. Once complete your Selected Fields should look like Figure A-80
    c. Finally click Next

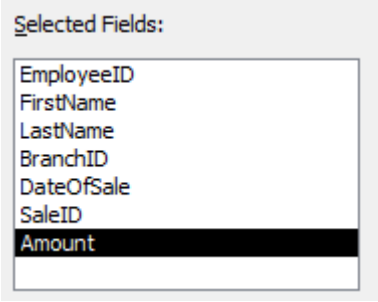

Figure A-80: Selected fields in order of display.

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80. The Report Wizard will provide a guess at the grouping you desire, see Figure A-81. Accept the view options it has provided (by Employees). Click Next. *Note: if you do not see EmployeeID in the top row, the error is generally caused by an error in the SelectSales Query. Return to that query and in design view, ensure that the EmployeeID column is coming from the Employee Table and not the Sales Table.*

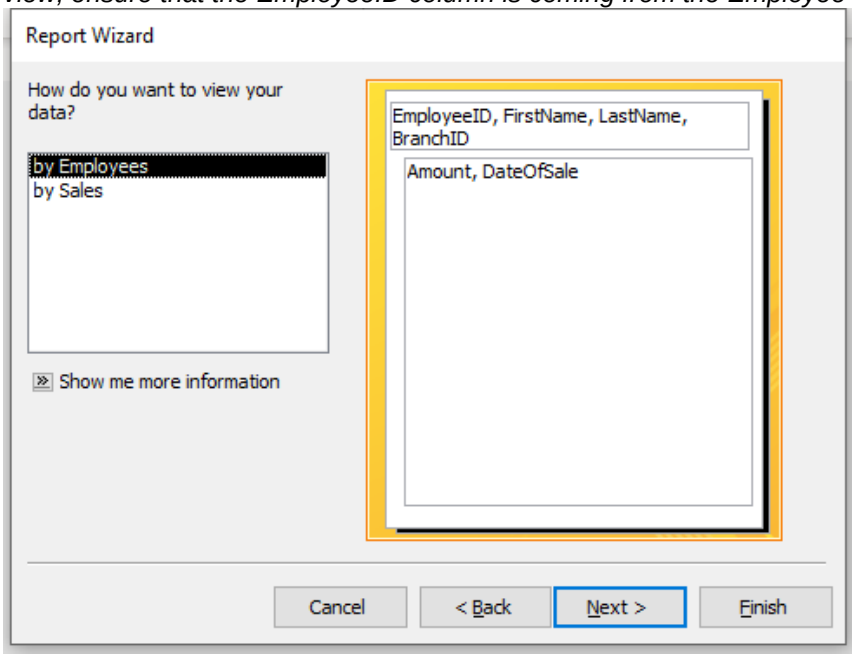

Figure A-81: Report Wizard Option: How to View Your Data

81. The third wizard screen will ask for any additional grouping, accept the default.

82. The fourth wizard screen will ask for Sorting and Summary Options, select DateOfSale for the sort and then click the Summary Options. Figure A-82.

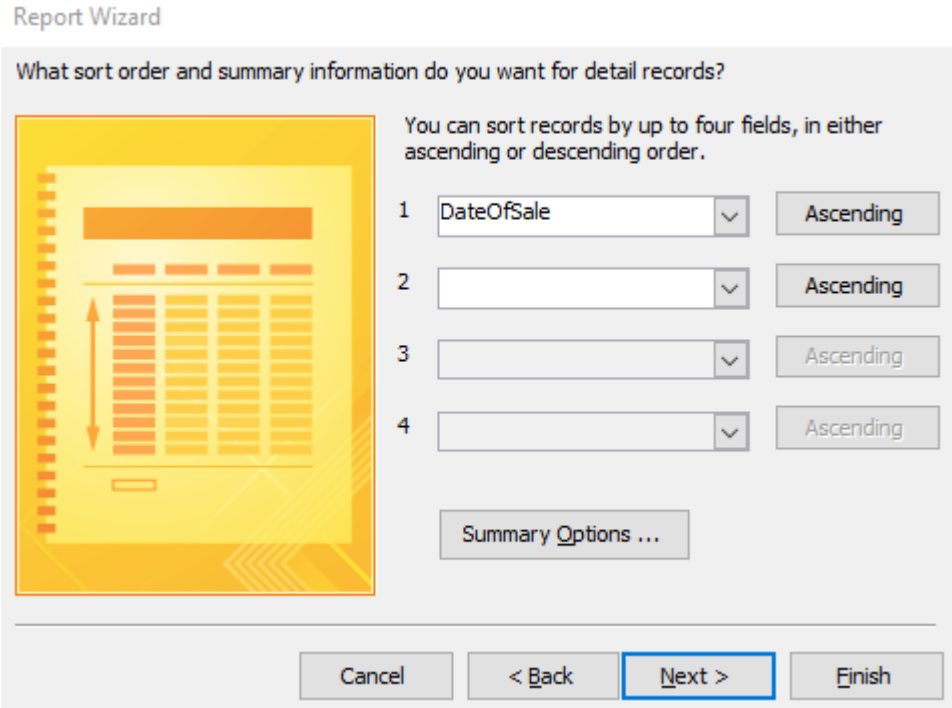

Figure A-82: Report Wizard Option: Sorting and Summary Options

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83. Finally, we want to have the Amount field to be summed for us. The Detail & Summary will provide a subtotal for each employee, while if you selected the Summary Only option you would only get a Grand Total at the bottom of the report. Select the SUM option for the Amount field and the Detail and Summary Option. Figure A-83. Once you have the options below click OK and then Next.

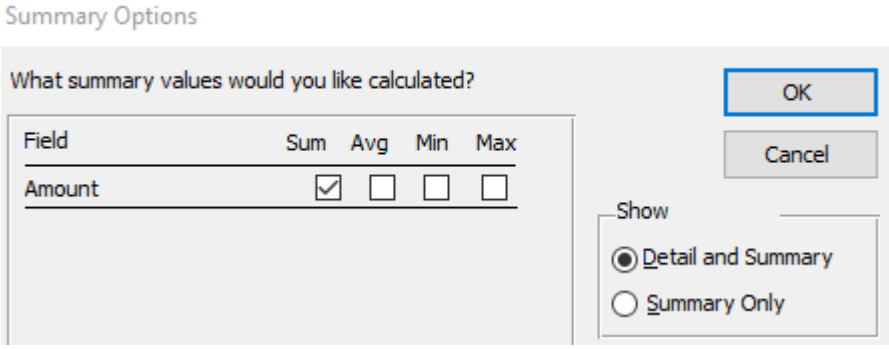

Figure A-83: Report Wizard Option: Sum and Total Options

84. Accept the default layout (Figure A-84).

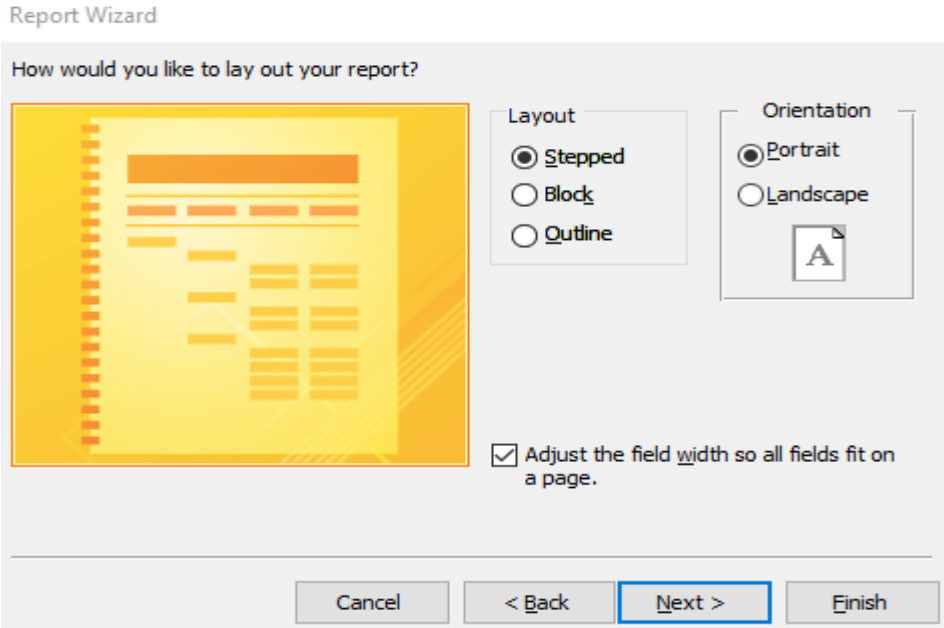

Figure A-84: Report Wizard Option: Layout

85. The final option is to provide a report heading and then move to modifying the design. See Figure A-85.

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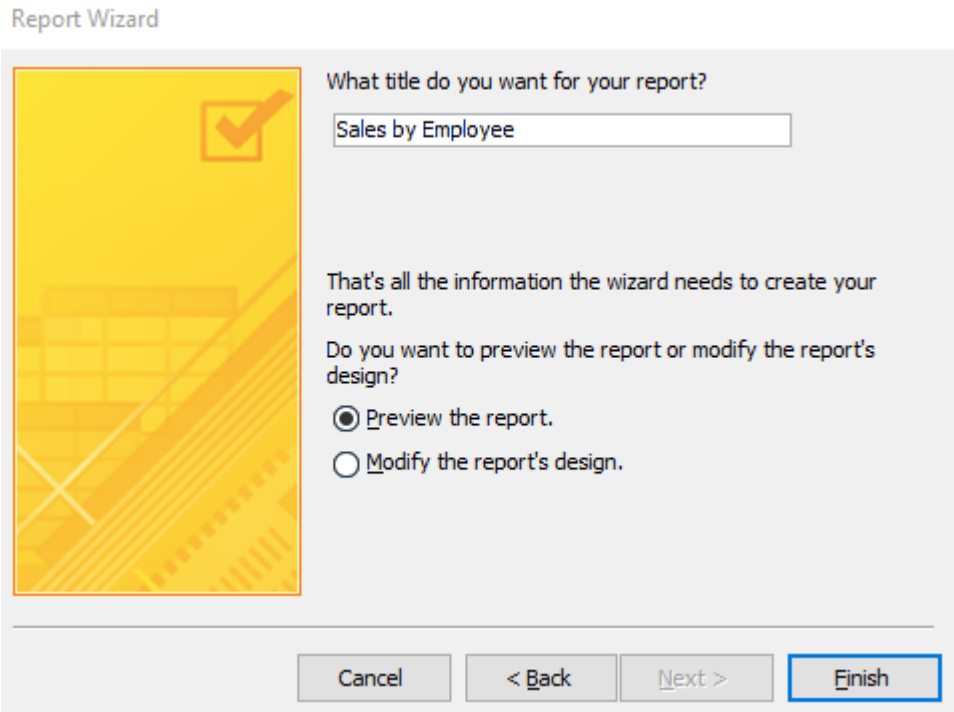

Figure A-85: Report Wizard Option: Layout

86. A report will be generated for you to modify. As can be seen in Figure A-86, columns widths will need to be adjusted to make the report readable.

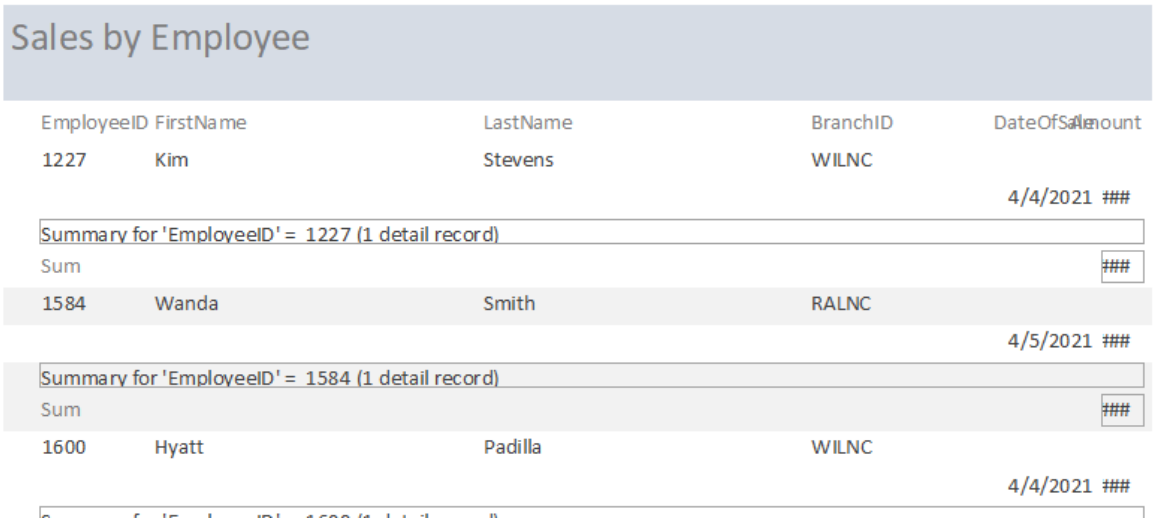

Figure A-86: Report before modifying column widths

87. Make sure you are in Layout Mode (top left). Carefully move the FirstName and Kim to the right

    HINT: To select them both at the same time, hold the control key down while clicking on FirstName and Kim.

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88. **Slowly move all the other columns to the left**.

89. If you get the #'s signs as shown in Figure A-87, you will need to expand the size(width) of the Amount Column. In Design or Layout view, click on the Amount Box and widen. If done property you will look like Figure A-88. Also delete the 'Summary for 'EmployeeID' box.

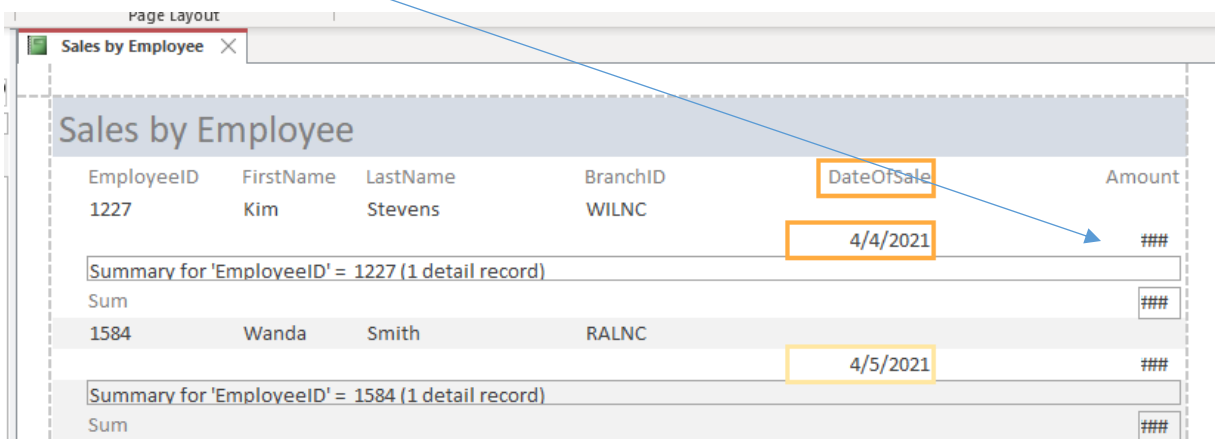

Figure A-87 Report after modifying column widths

90. Modify the column headings by clicking on each one and modifying as shown in Figure A-88.

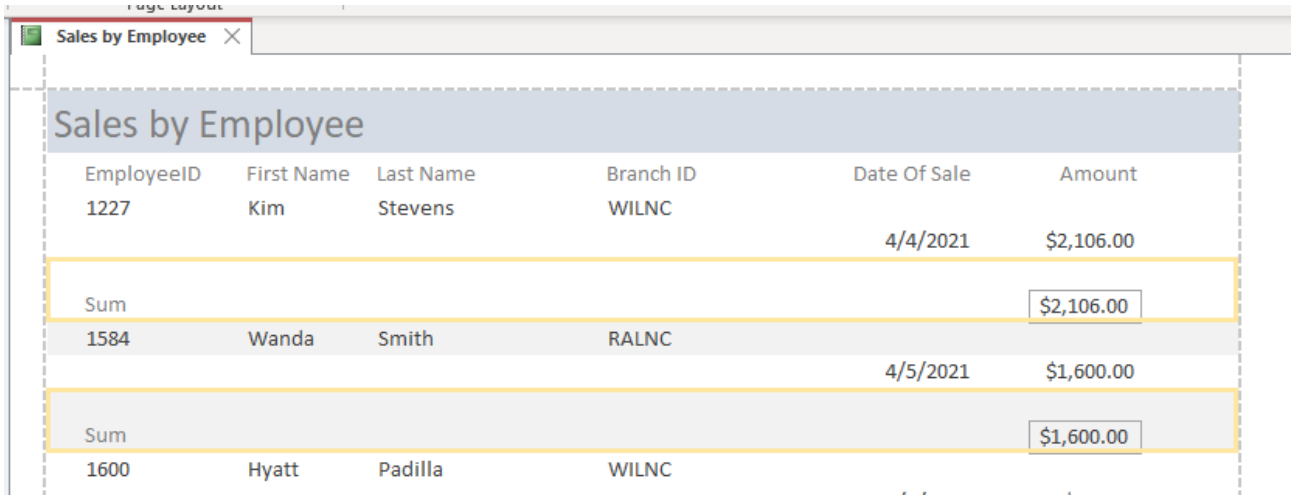

Figure A-88 Report after modifying column headings.

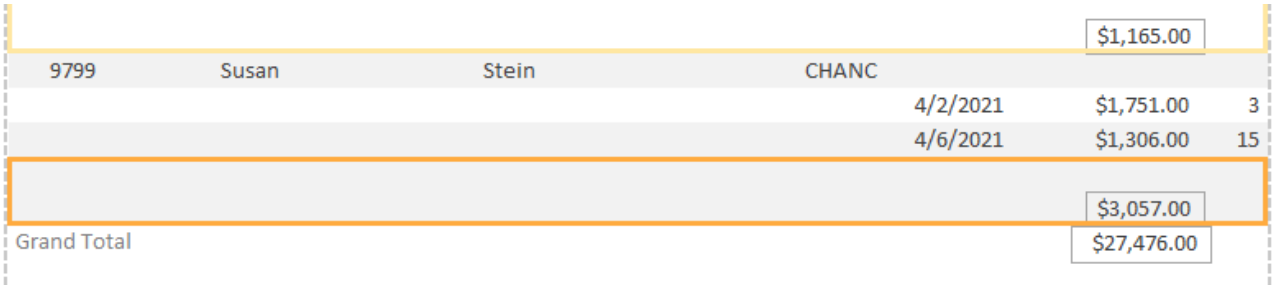

Figure A-89 Finished bottom of the report with Grand Total

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91. Save your report

92. Rename the report (only the object name, not the report heading) to SalesByEmployee

A.6.4 Additional Formatting for Reports

The following steps may be optional, please check with your instructor if these steps are required or optional. Jump ahead to step A.6.5 if you are not required to do the additional formatting.

Usually you will want to modify the formatting of a report. This could be as simple as bolding a particular field, changing the fonts, or modifying the borders. Each column has its own set of formatting in a report. Similar to what we did so far, you can make formatting changes in the Layout View of the report.

93. Reopen the **SalesByBranch** Report

94. The most common formatting options are available in the Format menu ribbon (Figure A-90). You can modify Font attributes, Borders, Backgrounds, and Number Formatting.

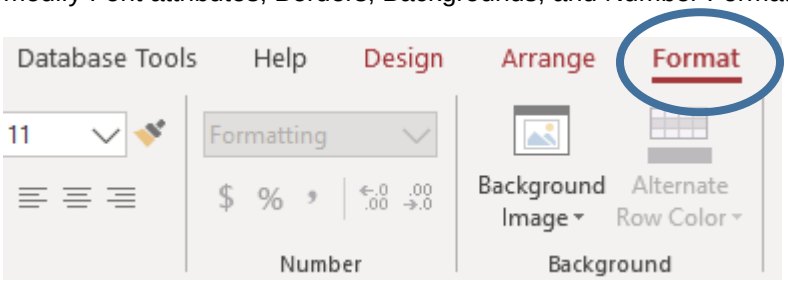

Figure A-90: Formatting options for reports are located in the Format menu ribbon

95. Change the columns headings to make them more used friendly. Change the Headings to Read: Branch ID, Date of Sale, Employee ID, etc. Notice the space in the headings. In addition, revise the headings to be bolded and in italics (see Figure A-92).

96. **Remove the alternating gray backround**. In Layout View, highlight all columns (but not the headings), this will highlight all cells in the detail rows in yellow. Once you highlight all the rows, right click on Properties and then select the Detail view from the Top Drop Down List. Finally find the Alternate Back Color Property and change the property value to Background 1 (eliminating the 5% darker). See Figure A-91.

97. Do the same for Group Footer 1 (from the top Drop Down List)

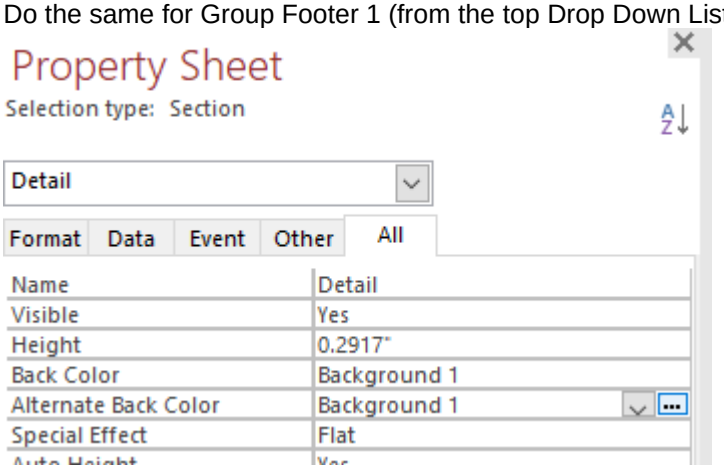

Figure A-91: Eliminating the alternating gray backgrounds

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98. Getting familiar with these controls should be intuitive but it may take some time to get the desired results. Remember that you can always use the Undo icon and you should save your report often! Your final result should look like Figure A-92.

Sales by Branch

Monday, Decer

Branch ID	Date Of Sale	Employee ID	Last Name	First Name	# Sales	Amount
CHANC						
	4/2/2021	9799	Stein	Susan	3	$1,751.00
	4/2/2021	4377	Smith	Alma	2	$915.00
	4/5/2021	2299	Gordon	Wayne	10	$1,631.00
	4/6/2021	9799	Stein	Susan	15	$1,306.00
						$5,603.00
FAYNC						
	4/3/2021	4591	Noel	Jane	5	$2,157.00
	4/3/2021	7052	Cole	Kylan	4	$2,841.00
	4/6/2021	4591	Noel	Jane	13	$1,974.00
	4/6/2021	2493	Chan	Becky	12	$2,533.00
						$9,505.00
RALNC						

Figure A-92. Formatted SalesByBranch Report

A.7.0 Uploading your file to Entropy for Grading and to One Drive

1. ***Make sure your database is closed. Access should not be open when you upload it to Entropy.***

2. Open a web browser.

3. Go to Entropy (https://csbapp.uncw.edu/Entropy/). Enter your Entropy UserID and Password and select the appropriate class.

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4. Click the **Upload Assignment** option.

Figure 12: Entropy, starting the process to upload an assignment

5. Find the correct assignment you wish to upload. The name may vary based on your instructor. Your file will most likely be in your OneDrive Cloud Storage Area..

6. Click **Upload Now** beside the appropriate assignment.

The following projects are available for upload/download

Assignment Name	Due	Due Time	Late Acceptance Until	File Type	Upload	Download
Project 2 - Access Tutorial	12/20/2020	11:59 AM	12/20/2020	ACCDB	Upload Now	

Figure 12: Entropy, upload an assignment

7. Entropy will respond with a listing of all files uploaded and their date/time. ***If you upload a file for the same assignment more than once, you will see both uploads listed but only the most recent upload will be kept and graded.***

Assignment Name	Due Date	Upload Date	File Size	Unique Upload ID
Project 3 - Access Queries	09/10/2020 11:00 PM	09/11/2020 03:24 PM	950272	196972
Project 3 - Access Queries	09/10/2020 11:00 PM	09/11/2020 03:09 PM	819200	196973

Figure 13: Summary of files uploaded

NOTES: You should check your file size: If it is small (under 500KB or zero), there's a good chance that you either left the database open when you attempted to upload it or you uploaded a shortcut link to your database.. Make sure that you have closed the file and then attempt your upload again.

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