Microsoft Access: Action Queries & Lookups

1.5 hours

This workshop requires completion of "Access: Basics", "Select Queries", and "Intro to Forms and Reports". Topics include counting occurrences; building queries from queries; working with One to One relationships; relationship join properties; action queries: Make Table, Append, Delete, and Update; and linking query values to forms and reports.

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**Query 1: Number of Employees**

**Counting Occurrences**
Access can be used to very quickly find how many times a value occurs on a list. For example, if we need to know how many employees work for each department we can do this using the **Totals** feature in a query design. The "trick" is to bring the same field down twice, grouping by one and counting the other.

1. From the Create Tab choose Query Design
2. Add the Employee Table and close the Show Table box
3. Bring Down Dept ID twice
4. From the Design Tab turn on Totals
5. Change Total under second Dept ID from **Group by** to **Count**

![Query Design Screenshot](image1)

**Providing More Information**
If we decide to see the Department name as well as the number we can pull from the Departments table as well. We still need the Employee table to find the proper count.

1. Add Table Departments
2. Drag Department field between the two Dept IDs in the bottom half of the query
3. Change the Second Dept ID to read **# of Emp: Dept ID**
4. Close and save as "Number of Employees"

![Query Design Screenshot](image2)
Query 2: First AN and Last LL
Consider this very simple example:

First - an: Find everything from Patients where the First name contains AN (seven records)
Last - ll: Find all records from Patients where the Last name contains LL (six records)

Query with Queries

We would like to find the records that are in both.
1. From the Create Tab choose Query Design
2. Add queries First - an and Last - ll
   a. Close the show table box
3. Bring down Last and First fields from both queries

Because there is no relationship between the two queries, Access provides us with every possible combination.

On a rare occasion you may want data repeated with every record, for example trying to calculate a percentage of a total where you would want the total to appear on each line. To avoid the repetition we need to create a relationship between the two or more data sources.
4. In the top half of the query design drag **Med Rec** from one query to another
   a. This will create a relationship line

5. Close and Save as "First an - Last II"

queries don't have primary keys, so at this point in your database development you need to *know* your data; you need to know how these two datasets should connect.

Since our Patient's Med Rec is the key in the table, it's our best match between these two queries.

**Setting Default Query Relationship**

If you plan to use these queries as the source for other database objects (queries, forms, and reports) you should create a permanent relationship from the Relationship window.

1. From the Database Tools tab choose Relationships

2. Drag the queries **First - an** and **Last - II** from the navigation pane into the relationship window

3. Drag Med Rec field from one query to the next
   a. Click Create in the Edit Relationship Window

This sets a 'default' relationship between the two queries. Anytime you pull the two of them into a database object, Access will know to join them along the Med Rec field.
**Query 3: Patient Home Phone Numbers**

*One-to-One Relationship*

One to one relationships are less common than one to many, but they do occur. Our Patients table contains names and addresses; Patient Info contains their phone numbers and email address. These are data sets that can be combined into one table, so it’s a One-to-One relationship.

1. From the Create tab choose Query Design

2. Add tables Patients and Patient Info

3. From Patients add fields **First** and **Last**

4. From Patient Info add field **Home Phone**

5. Move to the Datasheet view

   Resultant query shows all 15 patients in the Patient Info table. The query shows the records where the matching fields exist in both tables, whether the fields you add to the query have data in them or not.

6. Move to the Design view
   a. On the Criteria line for the Home Phone type Is Not Null

7. Move to the Datasheet view

   Resultant query shows the 12 patients that are in both tables AND have phone numbers.

8. In Design view, delete the criteria

9. Double-click on the slope (thin portion) of the relationship line
   a. If double-clicking doesn’t work, try right-clicking and choosing Join Properties

10. Choose option 2 – include ALL records from 'Patients' and only those records from 'Patient Info' where the joined fields are equal
   a. If you create the relationships the way I taught you, 99% of the time this will be option 2
11. Move to the Datasheet view

Resultant query shows all 76 patients in the Patients table.

12. In the Design view, notice the arrow pointing toward Patient Info

13. Add the Med Rec field from both tables

We only see the Patient Info Med Rec for the records that exist in that table. Notice Kerry Katz has a Med Rec, but no phone number.

14. Create a Home Phone number for Orville Owns
   a. When you move out of the field you will see the Patient Info.Med Rec field fill in

**Setting Default Join Type**

When you are working with a one-to-one relationship you will almost always want to set the data to join with everything from the Primary table, and the data that matches in the secondary table. We can set the default so the join type is already created in the relationships window.

1. From the Database Tools tab choose Relationships

2. Double-click on the slope (thin portion) of the relationship line
   a. If double-clicking doesn’t work, try right-clicking and choosing Edit Relationship

3. Click on the Join type button

4. Choose Option 2 and click OK
   a. Click OK again to close the Edit Relationship window
**Action Queries**

By default queries are Select Queries. We have seen one other type, a Crosstab query. The next few pages are dedicated to Action Queries. There are four types of action queries: Make-Table, Append, Update, and Delete. You can change a query type from the Query Design Tab.

![Query icons]

**Running Action Queries**

All four of the action query icons have the exclamation point in common. Once you have set the query you can view the datasheet, but if you want it to take 'action' the query must be **RUN**. When you **Run** a select query it will "select" the data for you, when you run an "action" query, it will perform the query action. Double-clicking on a closed query will "run" the query.

**Delete query**

Delete a group of records from a table. For example, you could use a delete query to remove products that are discontinued, patients that have been inactive for more than three years, drugs that have been discontinued, or imported data that you don't need. Delete queries remove entire records, not just selected fields within records. Access will not delete the records if they are related to other tables unless you have set the relationship to Cascade Delete. If the cascade delete option is turned on in the relationship the delete query will erase the related records from the child table as well.

**Update query**

Makes changes to fields in a set of records within a table. For example, you can raise prices by ten percent for all dairy products, change the area code for everyone living in Alachua, or change all of Dr. Smith's Patients to now be Dr. Jones's Patients. With an update query, you can change data in the individual fields of your existing tables.

**Append query**

Add a set of records from one table/query to the end of an existing table. For example, you hire a new doctor and transfer all her existing patients into your clinic. Instead of typing in all the new data, you can append it into your existing tables. The new data doesn't need to have the same field names, nor be in the same order, but it does need to be the same field types (text/date/number).

**Make-table query**

Create a new table from all or part of the data in one or more tables. Make-table queries can be useful to create tables to export to other databases, for example, you may want to create a table based on your employees for another database that doesn't contain *all* the fields that you are storing in this database. Make-table queries are also very useful for creating backup and history tables that contain old records. For example, you could create a table that stores all your old orders before deleting them from your current Orders table.

**Action Query Exercises**

The following exercises will take you through each of the four action queries.

1. **Make Table Query** – Make a table of people whose last name starts with the letter "M"
2. **Delete Query** – Delete the "M" people from the original Patient Table
3. **Update Query** – Move everyone in the new M-people table from Florida to Georgia
4. **Append Query** – Add everyone in the M-people table to the original Patient Table
**Action Query 1: Make Table Query**

1. From the Create tab, choose Query Design

2. Add the Patients table and close the Show Table window

3. Add all the fields to the query

4. From the Query Design tab, in the Query Type group, click **Make Table**

5. In the Table Name: type *M-People* and click OK

6. On the Criteria line for the **Last** field type **M**
   a. Access will change it to **Like “M*”**
   b. This will give us only the patients with a last names that begins with an M
7. The Datasheet view shows the five records that will be put into our new M-People Table

![Datasheet view showing five records](image)

8. In the Design view, click on the Run button

9. Click Yes to make the new table

![Run button](image)

10. Close and save as "1 - Make M-People"

11. Open Tables Patients and M-People
   a. M-People has the five new records
   b. Patients still has 76 records, the M-People were copied to the new table

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**Action Query 2: Delete Query**

1. From the Create tab, choose Query Design

2. Add the Patients table and close the Show Table window

3. Add all the fields to the query

![Query Design window](image)

4. On the Criteria line for the Last field type M*
   a. Access will change it to Like "M*"

5. From the Query Design tab, in the Query Type group, click Delete
   a. Notice the changes at the bottom of the query

![Query Design with Delete option](image)
6. The Datasheet view shows the five records that will be deleted from table **Patients**

7. In the Design view, click on the Run button

8. Click Yes to make the delete the records (rows)

9. View datasheet, there should be no records because there are no longer any records in the Patient table that match our criteria

10. Close and save as "2 - Delete M-People"

11. Open Tables **Patients** and **M-People**
    a. **M-People** still has the five records
    b. **Patients** now has 71 records, the M-People were deleted from this table
       i. Because the cascade delete was on, we have also deleted any Patient Info records for those M-People

**Action Query 3: Update Query**

1. From the Create tab, choose Query Design

2. Add the M-People table and close the Show Table window

3. Add all the fields to the query

4. From the Query Design tab, in the Query Type group, click **Update**

5. Set **Update To** line to move everyone to **PO Box 555, Macon, GA, 55555**
6. The Datasheet view shows only the fields being updated

![Datasheet View]

7. In the Design view, click on the Run button

8. Click Yes to make the update the records (rows)

![Run Button]

9. View datasheet, all the addresses are the same

![Datasheet View]

10. Close and save as "3 – Update M-People to GA"

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**Action Query 4: Append Query**
When we use an append query we can use different field names, but the data types and field sizes need to be the same.

**Modify Table**

1. Open M-People Table in Design View

![Modify Table]

2. Change Field names
   a. **FIRST to FIRST NAME**
   b. **LAST to LAST NAME**
   c. **ST to STATE**

3. Close and save the table
Append Query

1. From the Create tab, choose Query Design
2. Add the M-People table and close the Show Table window
3. Add all the fields to the query
4. From the Query Design tab, in the Query Type group, click Append

5. On the Append To: line, match the missing fields
   a. If we had not changed the field names they would have all been perfect matches and everything would have filled in.

6. In the Design view, click on the Run button
7. Click Yes to append the records (rows)
8. Try to run the Action Query again
   a. Confirm the append
   b. View Error message

This error message tells us that it cannot append these five records due to Key violations. The Patients table is using the Med Rec as the key, so we try to add these five people again, it violates the "no duplicates" rule of the Primary Key Field.

9. Close and Save the query as "4 - Append M-People"

10. Open the Patients and M-People Tables
    a. Patients again has 76 records (Some that live in Macon GA)
    b. M-People still has its five records

**Navigation Pane**

1. Close all database objects

2. Notice the sort order of the Query list
   a. It's sorted by Object Type
      i. Append Queries
      ii. Delete Queries
      iii. Make Table Queries
      iv. Select Queries
      v. Update Queries

3. Right-click on All Access Objects at the top of the navigation pane
   a. Choose Sort by -> Name

4. Right-click on All Access Objects at the top of the navigation pane
   a. Select Search Bar

5. In the search bar type M-People
   a. View the filtered list

6. Click on the Clear Filter button at the end of the line, or erase "M-people" to clear the filter
Creating an Active Lookup

We have created lookup lists in our tables and forms using the Lookup Wizard and Combo boxes. We have created them by typing in our own values and by looking them up from another table.

In this exercise we are going to learn how to have the combo box provide a list of values from the current table. Not from another table, not from a stagnant list we provide, but from the data already in the field. If we do this right, as we change our data in this field, the list will update.

In the Basics Queries workshop we created a query with a missing parameter value to prompt us for criteria. Any database object dependent upon this query will request this data.

We can modify the criteria by adding asterisks (*) so that we only have to enter in a few letters (i.e. Like "*" & [Which City?] & "*"). But we still have to be careful with our spelling, and we have to know our data very well. Creating an Active Lookup will help us find the exact value.

Active Lookup Steps

- Create unique list of values
- Create form with combo linked to unique list of values
- Create query that has a criteria to match the form combo

If you want a report, you'll need to add these steps...

- Create a report to print out second query
- Create a button on the form to preview the report

Step 1 - Create a unique list of values

1. From the Create tab, choose Query Design
2. Add the Patients table and close the Show Table window
3. Bring down the City Field
4. Turn on the Totals
   a. From the Show/Hide group on the Design tab
5. Close and Save as "City List"
Step 2 – Create a Form with a Combo box for "City List"
1. Create a **Combo box** from the controls on the Design tab

![Image of combo box]

2. Follow the steps of the wizard
   a. "I want the combo box to get the values from another table or query"
   b. Choose Queries, select **Query: City List**
   c. Include the City Field (it’s the only one...)
   d. No Sorting
   e. The width of the column is ok
   f. Label the Combo Box **Which City**?

![Image showing combo box and field]

3. Adjust the size and placement of the box
4. Close and save as "Which City"

Step 3 – Create a query from table, with criteria from form
1. From the Create tab, choose Query Design

![Image of query design window]

2. Add the Patients table and close the Show Table window
3. Add all the fields to the query
4. Right-click on the Criteria line for the **City** field and choose **Build...**

![Image showing build criteria window]

5. Choose the Combo Box on the Form
   a. Double-click to open each level
      i. 8-Access Queries II
      ii. Forms
      iii. All Forms
      iv. Which City
   b. From the second column double-click on the combo box (Combo0)
6. Click OK
7. Close and Save as "Patients by City"
Step 4 – Create the report
1. From the Create tab, choose Report Wizard

2. Follow the steps of the wizard
   a. If necessary choose "Query: Patients by City" and bring over all the fields
   b. No Grouping
   c. No Sorting
   d. Tabular, Portrait
   e. Save as “Patients by City"

3. If the form is not open, enter a city name

4. Close and Save

Step 5 – Create button to Open Report
1. Open "Which City" Form in Design view

2. Create a **Command Button** by using the controls on the Design tab
   a. Report Operation, Preview Report

3. Test the button

4. Save Changes
Step 6 – Test by adding new data

1. Open the Patients table in Datasheet view

2. Add a record to the Patient table
   a. Use **Med Rec 123-456**
   b. Use a **City** that's not on the list
      i. Not Gainesville, Macon, Micanopy, Starke, or Waldo
         - Suggestions: Alachua, Jacksonville, ...

3. Open the "Which City" Form

4. Find new city in the **Which City?** combo box and click on the **Preview Report** button