Access 2

Queries, Pivot Tables and Charts

Office XP version

CAL People and Computer Training
University of California, Berkeley

For more information about the CAL PACT program, to sign up for courses, or to download course documentation, please visit our website at **http://calpact.berkeley.edu/**

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Use this space for notes

Introduction

Access 2 is a course created for CAL PACT participants to learn more about the features of Microsoft Access. The course covers intermediate material. This document serves as a future reference for you as you continue to gain experience on your own. Some topics may not be covered in as much detail during class as they are in this document. Documentation is available for previous versions of Access for Windows on the CAL PACT website: **http://calpact.berkeley.edu**.

Skills you need for this class

- How to use the mouse
- Familiarity with the Windows operating system
- Understanding of the material covered in the Access 1 class

Skills and concepts you will learn in this class

- Creating Filters
- Creating Queries
- Designing Advanced Queries
- Creating PivotTables
- Creating PivotCharts

Conventions used in this document

Menus and menu commands are separated by a vertical bar (**|**). In the document they will appear as **Menu|Command**. An example of this is: “Select **File|New...**.”

Last week we discussed the building blocks of the Access Database - tables! This week we will start pulling information back out of those tables by using filters and queries, and then take a new look at the data by using Pivot Tables and Pivot Charts.

Filters

Access allows users to use filters or queries to select or “pull out” records that meet specific criteria. Filters or queries can be used to search for data based upon specific values or data which contain partial values using modifiers, such as **<**, **>**, or *****. Filters function in a way similar to queries by allowing you to view data that matches certain criteria, but they require a little less “leg work.”

Filter by Selection

Filters can be used to view records that share common data in the same field. Highlight the data within one of the record’s fields you wish to filter for and click the **Filter By Selection** button or select **Records|Filter|Filter by Selection**.

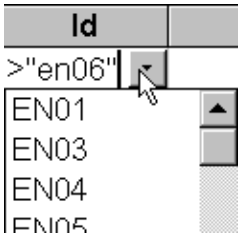
Once the records have been filtered, they can easily be sorted. Select data from one of the records in the desired field to be sorted and click on the **Ascending** or **Descending** button ( ), as appropriate.

If you wish to remove a filter, click on the **Apply/Remove Filter** button or select **Records|Remove Filter/Sort**. This will take you back to the original list of records.

Filter by Form

More specific filtering can be accomplished by selecting **Filter By Form** (or **Records|Filter|Filter by Form**) which will enable you to filter data by making a filter based upon the data within a given field. Once the filter by form function has been selected, field records appear blank. This allows you to specify the criteria for the filter. Clicking within any of the fields brings up a pull-down menu which allows you to create your filter based upon the data which was previously entered into your records.

Numeric values for fields may be altered to display data other than the specific entries from the records by including an **<** or **>** sign in front of the number. This will indicate that you wish to filter data that is greater than or less than the number entered.



You will also notice two tabs at the bottom of the screen labeled **Look for** and **Or**. The **Look for** tab contains the initial requirements for filtering while the **Or** tab allows you to include field data requirements from the same field as a secondary filtering option, if desired.

Once you have entered the desired criteria for the filter, select the **Apply Filter** button to apply the filter and view the results.

Saving Filters

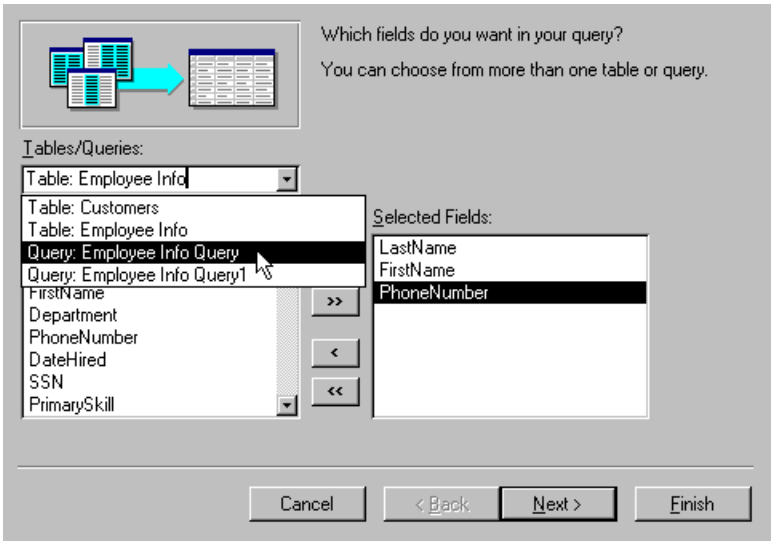
If you have created a filter that you believe you will want to use in the future, you can save it as a query. You cannot be looking at your filtered data to save the filter as a

query! Instead, with the filter displayed in the *Filter by Form* window or the *Advanced Filter/Sort* window, select **File|Save as Query** or select the toolbar button to save the filter as a query and have the ability to easily access this data again -- without recreating the filter!

Creating Queries

Queries allow the user to view specified fields from multiple tables and queries. New queries can contain only the information you would like to use for a specific purpose. (Ex.: Using a query to create an employee phone list from an existing table instead of printing the table, which may contain more data than is necessary.)

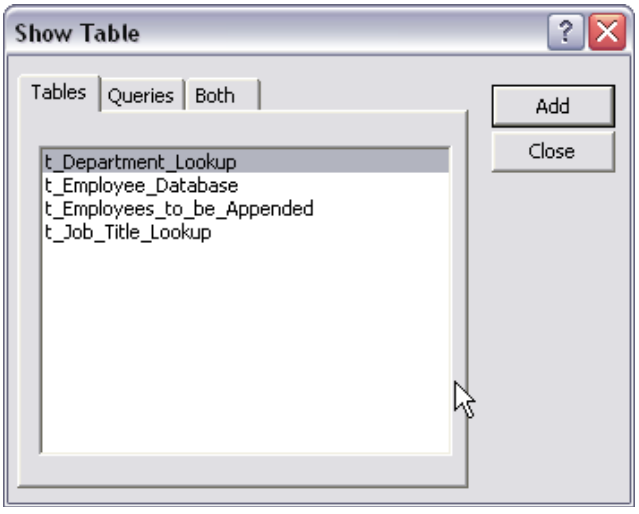
The easiest way to create a query is to use the **Simple Query Wizard** by clicking on the **New** button in the **Query** window. From the database window, select the **Queries** object from the left panel. Select **New** from the toolbar in the database window, then select **Simple Query Wizard** and click **OK**. Choose the table or query from the dropdown menu, and all their available fields are shown in the left panel. Select the fields you would like to add by double clicking on the field name, or selecting the field and then clicking the **>** button.



Using Design View With Queries

New Queries

Queries can also be created manually by selecting the **Design View** option in the **New Query** window. Once this option has been selected, choose the desired tables and queries you would like to include within the new query and click on the **Add** button. Once you have selected all the tables/ queries to be included, click on the **Close** button to begin working with the new query in Design View.



Within Design View, a field can

be added to the query in the following ways:

1) Double-click the field to be added from within the appropriate table/query.
2) Click and drag the desired field into an empty Field cell.
3) Use the drop down menu within the Field cell to select the desired field to be added.

To include fields from other queries, click on the **Shown Table** icon on the toolbar  and then select the table to add, just like when you began your query.

Queries can be created using many of the same requirements as a filter. Once the desired fields have been selected for the query, additional requirements may be set in **Design View**. Design View displays each field and how they will function for the query. By clicking within the sort cell for any given field, data can be arranged in ascending or descending order. Similar to the Filter by Form function, requirements within the **Criteria/Or** cells can be modified to create a more narrow search within the query by entering specific data to be included. Letters, numbers, and **<** or **>** modifiers may be used within each field's **Criteria** cell depending upon the data type of each field.

Once all information has been customized for the query, click on the **Run** button () to run the newly modified query.

More Options for Specifying Criteria

By including the wildcard modifier (*) in your Criteria settings, data can be organized in a broader fashion. (For example, **S***) This criteria setting will grab all data from the specified field that begins with S. Using the wildcard along with the S tells the query to grab all relevant records that have any word beginning with S.

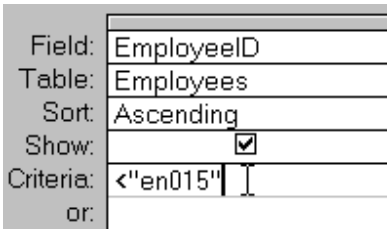
Caution

Using * from the table's field list will not work if one of the fields has an Auto Number data type. The append will also not be able to process correctly if the Field Name(s) do not match up with the table you are trying to append to.

Sort

The Sort option allows you to sort data according to the field(s) you specify, in ascending or descending order. This command is accessed by clicking within the the **Sort** cell of the desired field and selecting the appropriate sort command from the pull down menu.

Show



The Show check box allows you to include fields within the query, but gives you the option of not viewing the field when in Datasheet View. Each field within the query can be individually chosen to appear or not appear by clicking on the check box for each fields.

Copying Queries

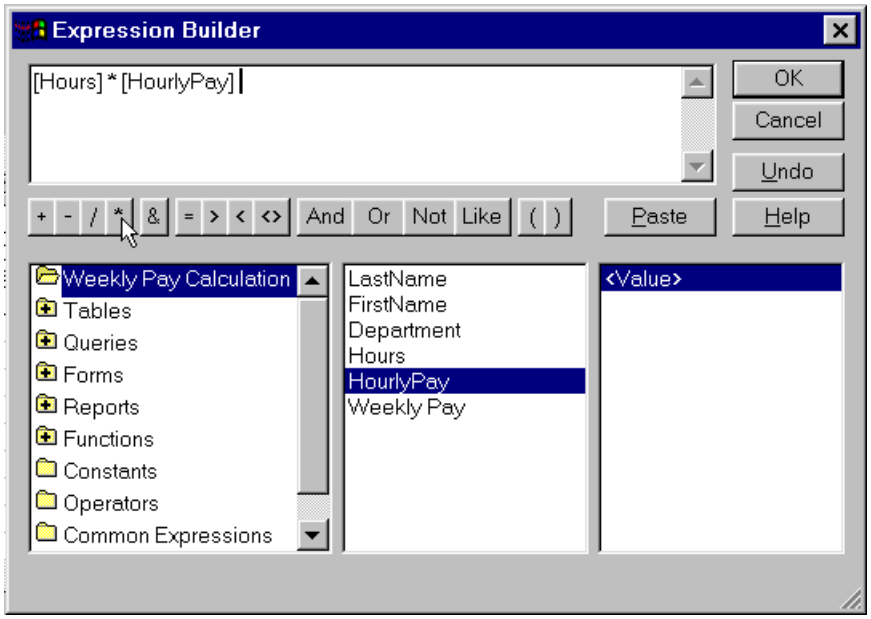
To save time and avoid making new queries, Access allows queries to be copied

and modified to suit new needs without remaking or replacing existing queries. Select the desired query from within the **Database** window and select **Edit|Copy** and then **Edit|Paste**. The new copy of the query will then need to be given a different name to distinguish it from the original query.

Using Calculations in Queries

Queries can also allow you to make calculations, such as tabulating an employee's weekly pay by using the **Expression Builder** ( ). While in **Design View**, select the desired field you wish to perform a calculation on and click within the field cell. Then click on the **Expression Builder** button and select the fields and expressions for the calculation.

Renaming / Modifying Expression Labels



Fields created from calculations can be renamed by editing the text within the field cell, although only the text before the colon (:) can be altered without modifying the calculated expression.

Field labels can be changed to express your calculations by modifying the displayed data to include various formats, like % or $. This can be done by clicking within the desired field cell and selecting **View|Properties**. Then select the appropriate option from the **Format** pull-down menu.

Designing Advanced Queries

Parameter Queries

Parameter queries can be created to query databases interactively. Instead of

having to create multiple queries for various values within a field (such as creating separate queries for individual departments) a parameter query can be created to allow the user to search for a specific value.

***Important Note*:** While this option allows a more dynamic way to query values within a field, you must know the value to enter because a pull-down menu/list is not available in **Query View**. The value entered can be in upper or lower case letters, as it is not case sensitive.

Parameter Queries are created in the **Design View** of an existing query. By entering a dialog parameter into the **Criteria** field, a pop-up window is created and will be initiated every time you open the query in **Datasheet View**. In the **Criteria** field, begin and end the text to be seen using the **[** and **]** characters to set up your parameter. For example, entering [Please Enter an Employee #] will create an "Enter Parameter Value" dialog window every time you open the query that says "Please Enter an Employee #." Then the user would enter the value he wanted to look for and click **OK**. Any records found to match would be returned to the user. While in design view, you can test the parameter query by clicking the **Run** button. A second and third value can be added to the search by again creating a parameter with the **[** and **]** in the **Or** cell within the same field. This prompts a second and third dialog window to appear once the initial value has been entered.

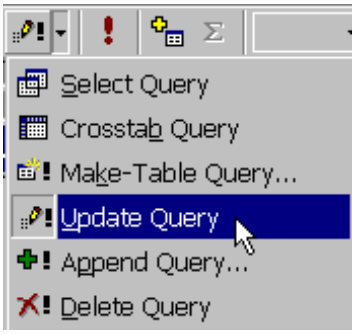
If you wish to use a parameter query, but only prompt for part of an entry, you can use a wildcard. For example, if you wanted your users to enter the first letter of the name they are looking for, the criteria would be:

Like [Enter the first letter of the last name] & "*"

The parameter comes first, and then anything after that can be found, which is why the parameter is first and the wildcard (*) comes at the end.

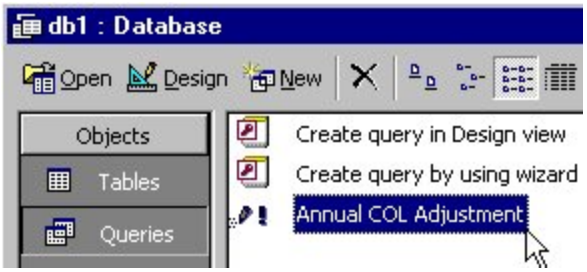
Action Queries

Action Queries can be created to update multiple records. This type of query allows the user to quickly modify multiple records in a database. Once an existing query has been opened in **Design View**, select **Update Query** from the Query Type button pull-down menu. You will notice that a new row (**Update To:**) has been added to the design grid. This property allows you to update records by using the **Expression Buider** (). Select the field you wish to modify, click inside the **Update To:** cell, then click the **Expression Builder** button. From the list of parts displayed in the columns and the appropriate arithmetic operators, select the fields you wish to modify and the type of operation. After you have finished the expression, click on the **Run** button to execute the expression. For example, you might use an action query to modify the hourly pay of all employees.



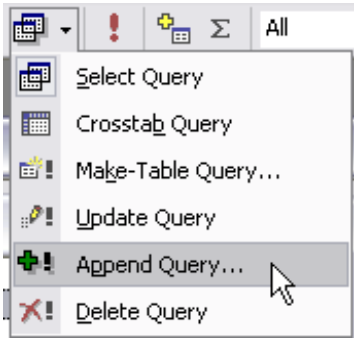
Note: Once the Action Query is closed, it will appear with an exclamation for its icon within the **Query** tab of the Database window. If you double-click the query, it

will modify the records a second time, so it is helpful to delete the query once it has been run to prevent data from being modified again.



Append Queries

Append Queries are useful for copying information from one table to another without having to enter the data manually. This is accomplished by opening the table with the information to be added in **Datasheet View** and then selecting **New Query** from the **New Object** pull-down menu. Next, select **Design View** from the **New Query** display window and click **OK**. After the Design View of a new query appears, select the (*) from the table's field list. This will append ALL fields to the new table. Then select **Append Query** from the **Query Type** button's pull-down menu and choose the table to be appended in the **Append** window. Click **OK** and run the query using the **Run** button from the toolbar.



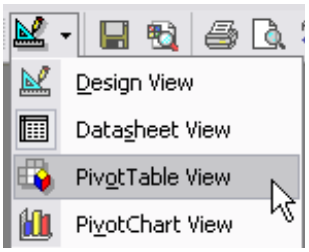
Pivot Tables and Pivot Charts

Pivot tables and pivot charts give you another way to view your data. In these views, you can compare different records against each other and perform analysis on the data. By allowing you to change how you view the data, Access allows you to learn more about the information stored in your table.

When you opened a table or a query, you used both Design View and Datasheet View. You can also view these objects by PivotTable View and PivotChart View.

Pivot Tables

After opening a table, select PivotTable View. You will be presented with a blank pivot table and a list of fields. Drag and drop fields to the Row, Column, Filter, and Detail Area. The Filter area allows you to create a filter that will apply to the whole table. The Fields taken to the Row and Column area will form the basis of your table. These fields display the unique items of data within a field down rows or across columns. These Fields will further filter which fields fall in the table. The detail area is the data that we want to compare. On the next page you will see a sample PivotTable, with Job Title in the Row fields, Department in the Column Fields, and Salary in the Totals/ Detail Fields section.

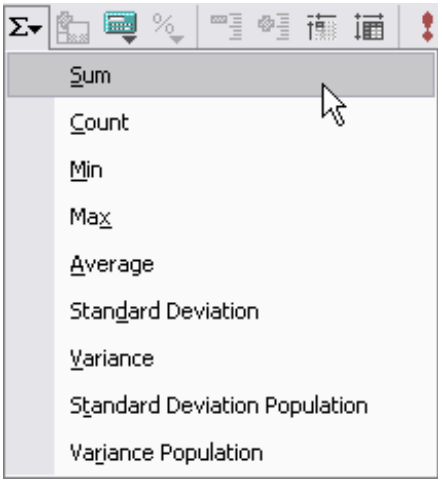


Once a field is already part of the pivot table, it will appear bolded in the field list and cannot be added a second time. If you lose the field list, select **View|Field List**. The plus next to the field names apply to complex field types that have multiple

Location				
All				
	Department	Asian American Studies		Economics
JobTitle	Salary		Salary	
CRMI - Computer Resource Manager I				$83,000.00
				$83,000.00
CRSI - Computer Resouce Specialist I		$18,000.00		
		$18,000.00		
CRSII - Computer Resouce Specialist II				
PAI - Programmer Analyst I				
PAII - Programmer Analyst II				$46,000.00
				$46,000.00
PAIV - Programmer Analyst IV				
Grand Total		$18,000.00		$129,000.00

fields that make up a single field. For most tables, this feature will not have any application.

You can do more calculations on your data by adding “total fields.” These fields allow you to summarize data by taking totals, averages, counts, and variances. By right clicking a field that is in the detail area (or by selecting a column in the detail area) and clicking the summation button , you are given the option to choose which summarization function you want to use.



By clicking on the “-” and “+” sign next to each field column and row header, you will Hide and Show detail, respectively. This allows you to hide or show all of the data that appears in the detail area. If you only want to see the bottom line, using the Hide view would be more beneficial. However, if you want to see how all the data is calculated, you should show all the data possible.

To remove fields, simply right click the Row or column header and select **Remove**. All changes to the pivot table view are automatically saved in the object. However, if you make changes to the data sheet, in any view, Access will prompt you to save your changes.

PivotCharts

If you have already designed a PivotTable, the layout of the the PivotChart will

mimick that of the pivot table. However, if you start your PivotChart from scratch, you will be given the same options as a PivotTable. The filter area is still located in the top left corner. The detailed area is now located in the top center of the page. Depending on the type of chart that you will be using, different areas will appear. Such areas include Category Fields and Series Fields.

There are many options in PivotCharts that can be customized. You can select to see only parts of the data. For example, clicking on the dropdown arrow next to location (shown to the right) allows you to specify only those locations which you are interested in viewing as part of your PivotChart.

If you decide you want a radically different view of your data, you might want to switch the views of the rows and columns. Select **PivotChart|By Row/By Column** and the data that was shown in the Row will be shown in the Column, and vice versa.

Legends

You can select to show a legend for your PivotChart by selecting **PivotChart|Show Legend**.

Chart Type

It may be that the default chart which is shown is not the best way to view your data, or you'd like to view your data another way. The easiest way to change this is to select **PivotChart|Chart Type**. This will allow you to select a different subtype of the current chart, or a completely different chart altogether.

There are lots of other ways to customize your PivotChart, but exactly how you want it customized often depends on the data you have to present. So, the mantra continues: Practice makes perfect! Practice, practice, practice, and we'll see you next week!