

Using Microsoft Office 2003 Intermediate Access Handout

INFORMATION TECHNOLOGY SERVICES
California State University, Los Angeles

Version 1.1

Summer 2005

Contents

Intermediate Microsoft Access 2003	2
Downloading a Data File	2
Creating Relationships between Tables	3
Creating a Relationship	3
Setting Referential Integrity	5
Using a Subdatasheet	5
Adding Additional Tables to the Relationships	6
Analyzing Tables	8
Using the Table Analyzer Wizard	8
Action Queries	12
Creating an Action Query	12
Creating a Make-Table Query	12
Designing Advanced Queries	13
Creating a Function Query	13
Creating a Parameter Query	14
Creating a Concatenation in a Query	14
Advanced Query Wizard	15
Crosstab Query Wizard	15
Find Duplicates Wizard	16
Find Unmatched Wizard	17
Creating a Chart	17
Using the Chart Wizard	17
Importing and Exporting Data	21
Importing External Data	21
Importing an Excel File	21
Exporting a Database Object	25
Exporting Data to External Formats	25
Exporting Objects to Other Access Databases	26

For additional written instructional guides, visit us @ <http://www.calstatela.edu/handouts>

Intermediate Microsoft Access 2003

This handout is a continuation to the [Introduction to Access 2003](#) handout. The introduction handout covers the basics of the **Access** program including creating a *table*, setting *field properties*, and entering the *data* into the table. To obtain a copy of the handout, go online and visit <http://www.calstatela.edu/handouts>. Select the **Microsoft** menu followed by the **MS Office 2003** submenu. In this handout, users will learn how to relate tables, create advanced *query* features, analyze tables, and *import* and *export* data.

Downloading a Data File

A sample data file is available for the user to follow the illustrations provided in this handout. To download the file, follow the instructions below.

To download and access sample data files from the Internet:

1. Double-click the **Internet Explorer** icon on the desktop.
2. Type the following address in the website **Address bar** to download the file: [ftp://ftp.calstatela.edu/pub/its/Trng_Sample2003.exe]
3. Press **[Enter]** on the keyboard. The *File Download* dialog box opens (see Figure 1).

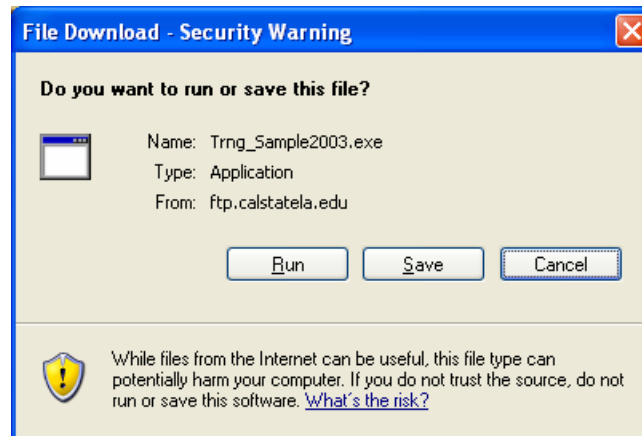


Figure 1 - File Download Dialog Box

4. Click the **Save** button. The *Save As* dialog box opens (see Figure 2).

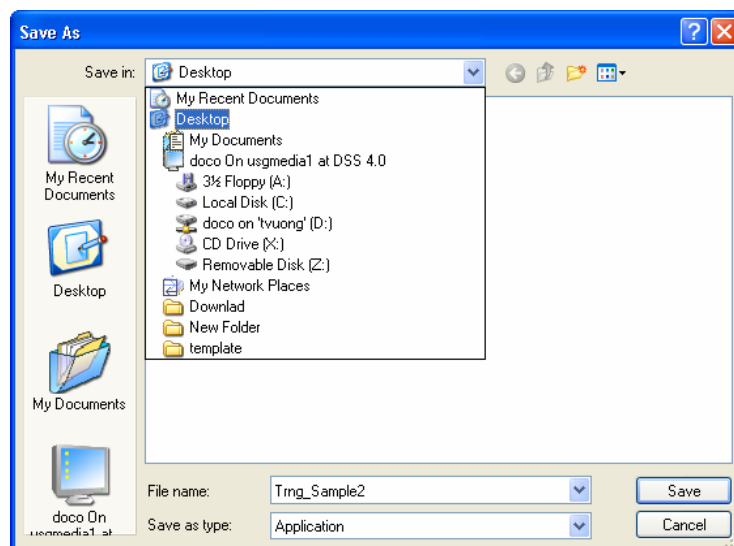


Figure 2 - Save As Dialog Box

5. Select a drive from the **Save in:** drop-down list.
6. In the **File name:** and **Save as type:** text boxes, keep the default file name.
7. Click the **Save** button.
8. Open the drive that contains the downloaded file.
9. Double-click the file. A *WinZip Self-Extractor* dialog box opens (see Figure 3).

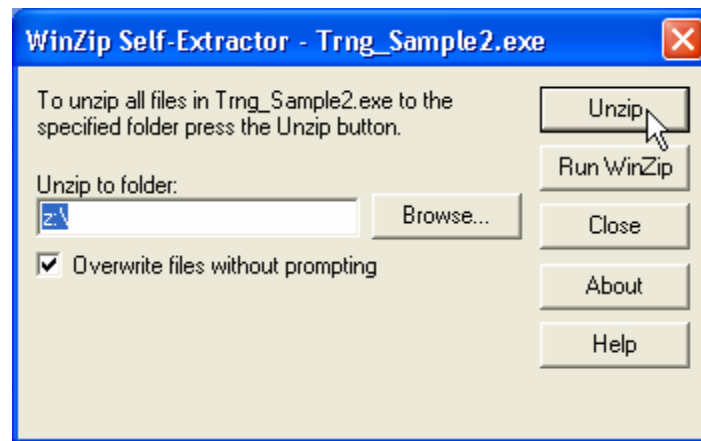


Figure 3 - WinZip Self-Extractor Dialog Box

10. Click the **Unzip** button.
11. Three files (“*Trng_Sample2003*,” “*sample2003*,” and “*Employee2003*”) will be extracted to the destination drive and a message box will open indicating that three files have been successfully unzipped.


Creating Relationships between Tables

Tables containing similar information can be related to improve accessibility and coordinate data more efficiently. By relating tables, users can avoid entering duplicate data in various tables and manage the data efficiently. For example, if a table is created consisting of student ID numbers, names, addresses, telephone numbers, class ID numbers, class times, and faculty names, duplicate students information will be entered whenever a student enrolls in a different class. However, if two different tables are created and related, the user can avoid entering duplicate student information whenever the students enroll.

CREATING A RELATIONSHIP

There are three types of relationships: one-to-one, one-to-many, and many-to-many. Because the one-to-many relationship is the most useful and popular relationship, a one-to-many relationship will be illustrated in this handout. Assume that two tables named “*Contacts*” and “*Enrollment*” are created. The “*Contacts*” table contains contact information for each student, and the “*Enrollment*” table contains the information about student “*Enrollment*” status. The user will need to relate these two tables to see individual student class information and contact information at the same time.

To create a relationship between tables:

1. Open the file “*Trng_Sample2003*.”
2. Click the **Relationships** button  on the toolbar. The **Relationships** window opens with the *Show Table* dialog box (see Figure 4).
3. Select the “*Contacts*” table ► **Add** button.
4. Select the “*Enrollment*” table ► **Add** button ► **Close** button. The “*Contacts*” and “*Enrollment*” table field lists open in the **Relationships** window (see Figure 5).

- Click the “*SSN*” field in the “*Contacts*” table field list, and drag it to the “*SSN*” field in the “*Enrollment*” table field list. The *Edit Relationships* dialog box opens (Figure 6).
- Click the **Create** button, the *Edit Relationships* dialog box closes, and the created relationship will be represented by a join line as shown in Figure 7 ► **Save** button.
- Close the **Relationships** window.

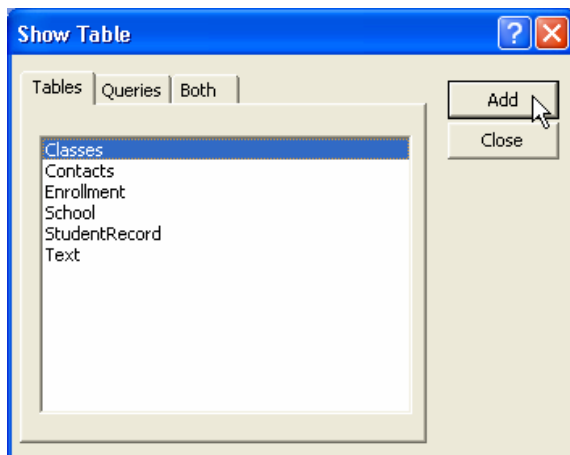


Figure 4 - Show Table Dialog Box

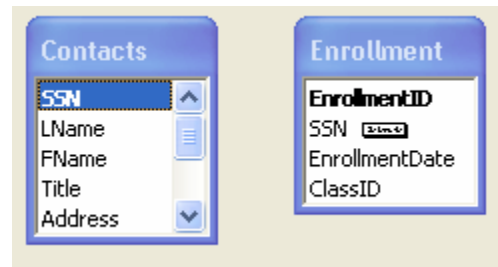


Figure 5 - Setting Relationships Between Tables

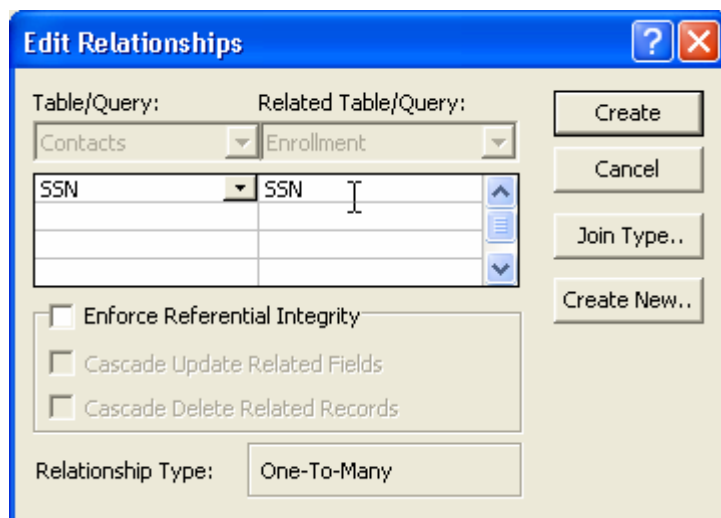


Figure 6 - Edit Relationships Dialog Box

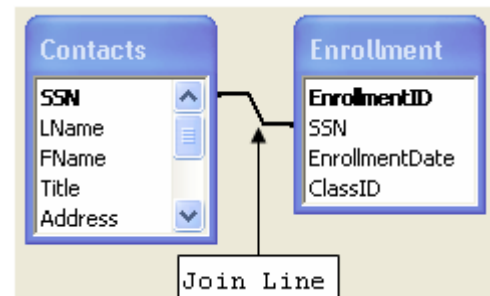


Figure 7 - After Setting a Relationship

!NOTE:

Tables are related by join fields. In this exercise, the “*SSN*” field in the “*Contacts*” table and the “*SSN*” field in the “*Enrollment*” table are the join fields. The join fields in both tables must have the same data types. For instance, if the “*SSN*” field in the “*Contacts*” table is a text data type, then the “*SSN*” field in the “*Enrollment*” table must be a text data type as well. It is not necessary that the join fields have the same field name.


To remove a relationship between tables:

- Right click the join line to activate the shortcut menu
- Select **Delete** command

SETTING REFERENTIAL INTEGRITY

When a relationship is created between two tables, *Referential Integrity* can be set. Setting Referential Integrity is not mandatory, but it is strongly recommended when creating a relationship. Referential Integrity makes sure that the relationship is valid. It checks: 1) if the joined field in the primary table is the primary key; 2) if the joined fields in both tables are related; and 3) if they have the same data type and belong to the same database. When the relationship is verified, Access displays the type of relationship on the join line (see Figure 8). Referential Integrity also prevents accidental deletion or editing of data.

To set Referential Integrity:

1. Click the **Relationships** button  on the **Database** toolbar to open the **Relationships** window.
2. Double-click the join line between the table field lists (see Figure 7). The *Edit Relationships* dialog box opens (see Figure 6).
3. Click the **Enforce Referential Integrity** check box ► **OK** button.

!NOTE:

When Referential Integrity is set, Access displays symbols above the join line in the **Relationships** window to indicate the type of relationship: one-to-one or one-to-many. The number “1” above the joined line indicates “one,” while the mathematical symbol for infinity “∞” indicates “many” (see Figure 8).

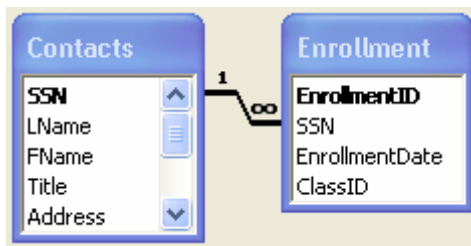


Figure 8 - Relationships with Referential Integrity


USING A SUB-DATASHEET

After two tables are related in a one-to-many relationship, a sub-datasheet can be used that allows the user to view, edit, and enter records that are related to a record in one table instead of performing the manipulation in two individual tables.

To use a sub-datasheet:



1. From the **Database** window, double-click the “**Contacts**” table icon. The table opens in datasheet view (see Figure 9).

!NOTE:

When the “**Contacts**” table opens in datasheet view, plus signs  are displayed on the left side of each record. These plus signs indicate that the datasheet has a sub-datasheet. Because the “**Contacts**” table is related to the “**Enrollment**” table, the sub-datasheet is taken from “**Enrollment**” table.

Contacts : Table						
		SSN	LName	FName	Title	Ad
▶	+	100-25-9487	Kim	David	Second Trainer	1245 C
	+	102-56-6985	Smith	John	Supervisor	1407 S
	+	123-65-9879	Gonzales	Helen	Trainer	154 N.
	+	126-56-9100	Suchimoto	Philip	Intern	235 S.
	+	156-98-5874	Alfarrouh	Mohamad		
	+	209-53-4781	Lee	Mary		

Figure 9 - Student Datasheet with Sub-datasheet

- Click the plus sign  to expand the sub-datasheet. The contents of sub-datasheet from the “**Enrollment**” table will appear (Figure 10), and the plus sign will turn into a minus sign . click the minus sign will collapse the sub-datasheet.

Contacts : Table						
		SSN	LName	FName	Title	Ad
▶	-	100-25-9487	Kim	David	Second Trainer	1245 C
			EnrollmentID	EnrollmentDate	ClassID	
	▶	1268	Fall 2002	15364		
		1973	Fall 2002	14789		
		3544	Fall 2002	11254		
		6587	Fall 2002	13795		
	*					
	+	102-56-6985	Smith	John	Supervisor	1407 S
	+	123-65-9879	Gonzales	Helen	Trainer	154 N.
	+	126-56-9100	Suchimoto	Philip	Intern	235 S.
	-	156-98-5874	Alfarrouh	Mohamad		
			EnrollmentID	EnrollmentDate	ClassID	
	*					
	+	209-53-4781	Lee	Mary		

Figure 10 – Sub-datasheet View

!NOTE:


Figure 10 shows that David Kim has four records, meaning he is enrolled four “**Classes**” in the Fall 2002 period. Mohamad Alfarrouh has no class record, meaning he is not enrolled. The advantage of establishing relationships between tables is that new data can be entered directly into a sub-datasheet. For instance, if the student enrolls in a new class, the sub-datasheet (“**Enrollment**” table) of the student can be opened and information such as **EnrollmentID**, **EnrollmentDate**, and **ClassID** can be entered. Student information does not have to be entered (such as student name, address, and phone number) into the “**Enrollment**” table.

ADDING ADDITIONAL TABLES TO THE RELATIONSHIPS

Once a relationship is established between two tables, additional tables can be added to the relationship. For example, the “**Classes**” table contains the information about each class, such as course title, date, time, location, etc. The “**Enrollment**” table can be related to the “**Classes**” table so that a user can easily get detailed information of each class from the “**Enrollment**” table (Figure 11). The relationships between more than two tables work in a cascade. From the

“*Contacts*” table the “*Enrollment*” table can be opened; from the “*Enrollment*” table the “*Classes*” table can be opened (Figure 12).

To add additional tables:

1. Open the **Relationships** window.
2. Click the **Show Table** button  on the **Relationship** toolbar.
3. Select the “*Classes*” table ► **Add** button ► **Close** button.
4. Select the *Enrollment ID* field in the “*Enrollment*” table field list and drag it to the *Current Enrollment* field in the “*Classes*” table field list. The *Edit Relationships* dialog box will open.
5. Click the **Create** button. The **Relationships** window will display the relationships between the tables as shown in Figure 11.
6. Save the relationship and close the **Relationships** window.

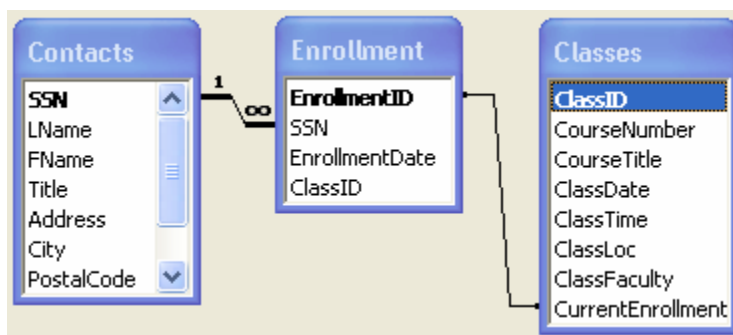


Figure 11 -Adding Additional Table(s) to the Relationship

To run the Multiple Relationships:

1. Open the “*Contacts*” table in **Datasheet** view.
2. Click the plus sign on the left of the first student’s record to view his “*Enrollment*” status (Figure 12).
3. Click the plus sign on the left of the first *Enrollment ID* to view the information for that particular class.

Contacts : Table						
	SSN	LName	FName	Title	Address	City
▶	100-25-9487	Kim	David	Second Trainer	1245 Common	Alhambra
		EnrollmentID	EnrollmentDate	ClassID		
▶		1268	Fall 2002	15364		
			ClassID	CourseNumber	CourseTitle	ClassDate
▶		15364	KPE 110	Intramural Sport		TBA
*						
		1973	Fall 2002	14789		
		3544	Fall 2002	11254		
		6587	Fall 2002	13795		
*						
+	102-56-6985	Smith	John	Supervisor	1407 San Gabri	San Gabriel
+	123-65-9879	Gonzales	Helen	Trainer	154 N. Atlantic	Alhambra

Figure 12 - Multiple Sub-datasheet View

!NOTE:

As shown in Figure 12, David Kim has enrolled four classes in Fall 2002. Of the four classes, the first class is KPE 110, which is Intramural Sport and meets at a date to be announced.

Analyzing Tables

In most cases, the user can create many tables and create relationships among these tables when designing a database. However, sometimes users may find that the tables are not created in the most efficient way. For example, there might be duplicate information in the same field. In that case, the table needs to be split into two or more related tables. Access has a set of tools available to analyze various objects and design aspects of a database.

USING THE TABLE ANALYZER WIZARD


Before a table is split, it should be analyzed to see if it is designed in the most efficient way. The **Table Analyzer Wizard** checks to see if information is duplicated in the fields across many records. If the table needs to be split, the **Table Analyzer Wizard** splits the table creates new tables, and leaves the original table intact. For example, in Figure 13, the “**School**” table has duplicate information in the “**Class ID**,” “**Course Title**,” “**Day**,” and “**Time**” fields. This table should be split into two tables.

Duplicate Fields

School : Table								
	SSN	LName	GPA	PhoneNumber	ClassID	Course Title	Day	Time
▶	100259487	Kim	3	(626) 967-8959	ANTHRO 250	Cultural Anthro	MW	9:00 - 10:40
	102566985	Smith	4	(213) 456-7878	ANTHRO 250	Cultural Anthro	MW	9:00 - 10:40
	123659879	Gonzales	4	(626) 248-6363	ANTHRO 250	Cultural Anthro	MW	9:00 - 10:40
	126561001	Suchimoto	3	(818) 924-5665	ANTHRO 250	Cultural Anthro	MW	9:00 - 10:40
	156985874	Alfarrouh	2	(562) 373-7595	ANTHRO 250	Cultural Anthro	MW	9:00 - 10:40
	174484837	Smith	4	(310) 544-4939	ANTHRO 250	Cultural Anthro	MW	9:00 - 10:40
	209536486	Wong	4	(310) 185-5795	BUS 101	Intro to Business	T	4:20 - 6:00
	209536781	Lee	4	(909) 092-5478	BUS 101	Intro to Business	T	4:20 - 6:00
	256581254	Nakamoto	4	(213) 895-7865	BUS 101	Intro to Business	T	4:20 - 6:00
	256689543	Rodriguez	2	(626) 345-6548	BUS 101	Intro to Business	T	4:20 - 6:00
	256859512	Meira	4	(626) 334-5789	BUS 101	Intro to Business	T	4:20 - 6:00
	365569851	Gonzalez	3	(714) 568-5241	CIS 410	Hardware & Software	MW	10:50 - 12:30
	455933934	Baker	4	(626) 534-9388	CIS 410	Hardware & Software	MW	10:50 - 12:30
	568128564	Kaufman	2	(323) 564-8987	ART 180A	Intro to Comp Graph	MW	8:10 - 9:00
	773948927	Snow	4	(626) 134-2965	ART 180A	Intro to Comp Graph	MW	8:10 - 9:00
*								

Figure 13 - Table with Duplicate Information

To use the Table Analyzer Wizard:

1. Select the table to be analyzed (“**School**”) in the **Database** window.
2. Click the **Analyze** button  on the **Database** toolbar. The **Table Analyzer Wizard: Looking at the Problem** dialog box opens (see Figure 14).

!NOTE:

The **Table Analyzer Wizard** cannot be used with the target object opened. Close the object(s) being analyzed before clicking the **Table Analyzer** button.

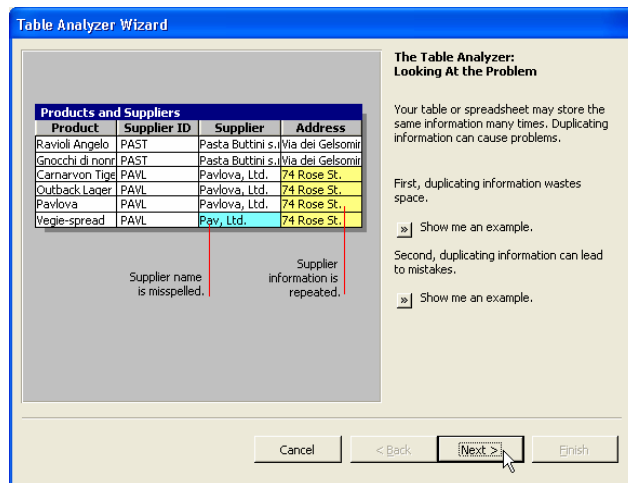


Figure 14 - Table Analyzer Wizard: Looking at the Problem

- Click the **Next>** Button. The *Table Analyzer Wizard: Solving the Problem* dialog box opens (see Figure 15).

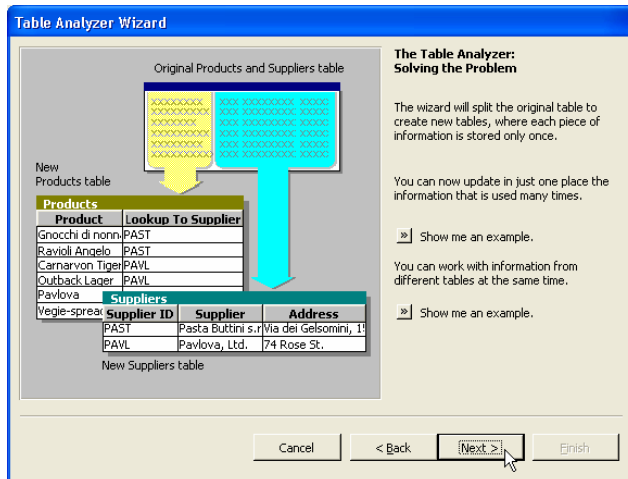


Figure 15 - Table Analyzer Wizard: Solving the Problem

- Click the **Next>** button. The *Table Analyzer Wizard* dialog box redraws allowing the user to select the table to be analyzed (see Figure 16).

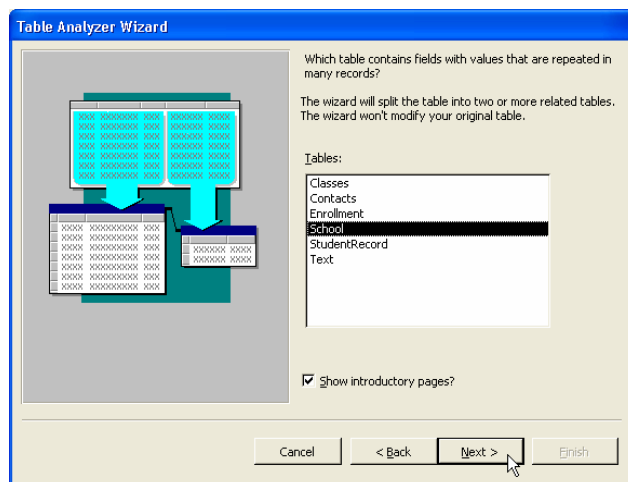


Figure 16 - Table Analyzer Wizard: Selecting Table

5. Select the table to analyze (“*School*”) ► **Next>** button. The *Table Analyzer Wizard* dialog box redraws (see Figure 17) to decide if the user wants the wizard to select what fields go in what tables.

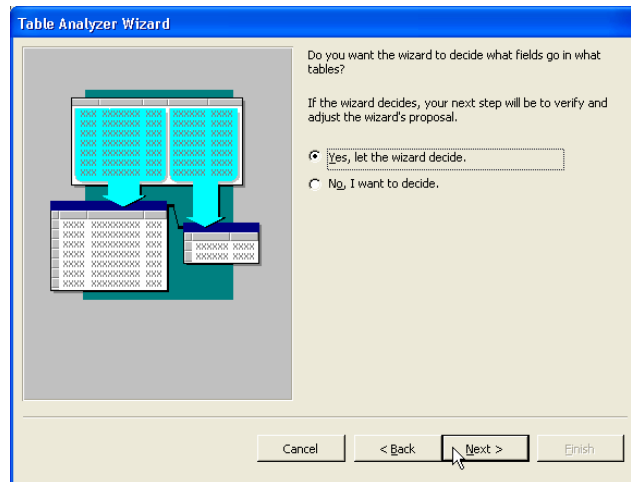


Figure 17 - Table Analyzer Wizard: Deciding What Fields go in What Tables

6. Select the Yes, let the wizard decide option button, if necessary ► **Next>** button. The next *Table Analyzer Wizard* dialog box opens (see Figure 18).

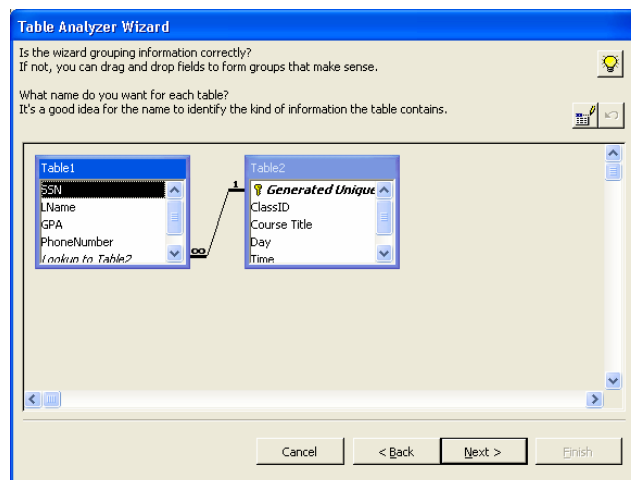


Figure 18 - Table Analyzer Wizard: Naming New Tables

7. Rename “*Table1*” and “*Table2*”.
 - a. Double-click the “*Table1*” title bar. The *Table Analyzer Wizard - Table Name:* dialog box opens (see Figure 19).

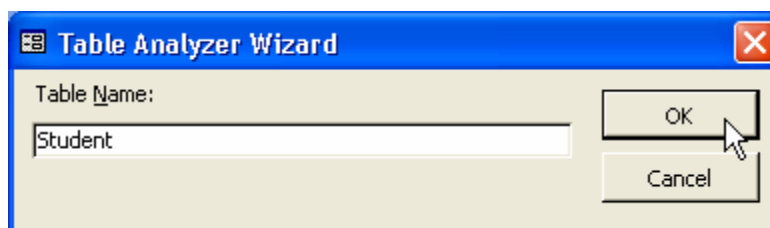


Figure 19 - Table Analyzer Wizard: Naming Table1

- b. Enter [Student] for the new “*Table1*” name ► **OK** button.
 - c. Enter [Class] for the new “*Table2*” name ► **OK** button

8. Click the **Next>** button. The next *Table Analyzer Wizard – Selecting Primary Key* dialog box opens (see Figure 20).

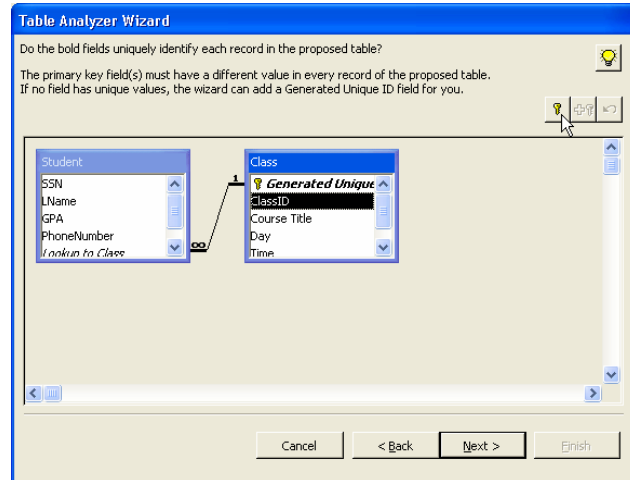



Figure 20 - Table Analyzer Wizard: Selecting Primary Key

9. Select the field (“*Class ID*” in the *Class* table) that will be set as the primary key ► **Next>** button.
10. Click the **Set Unique Identifier** button  at the top of the *Table Analyzer Wizard* dialog box ► **Next>** button. The dialog box redraws (see Figure 21).

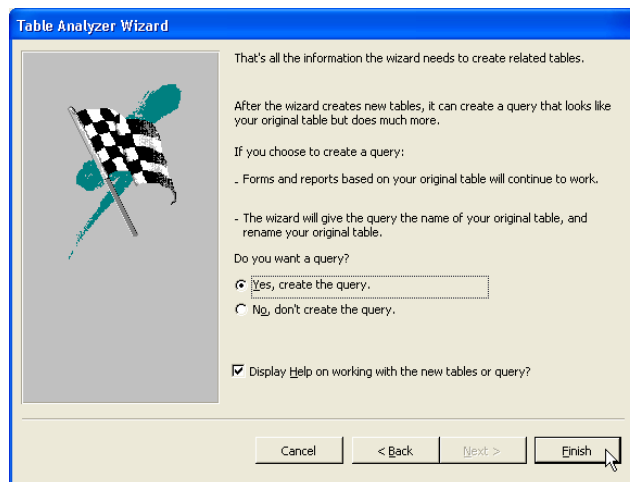


Figure 21 - Table Analyzer Wizard: Finishing Table Analyzer wizard

11. Select the Yes, create the query option if necessary ► **Finish** button. The *Table Analyzer Wizard* creates two new tables (“*Class*” and “*Student*”) from the “*School*” table.

!NOTE:





The existing table “*School*” has been changed to “*School_Old*” in the database window, and a new query named “*School*” opens with the field, “*Lookup to class*”. This particular field works to relate two different tables “*Student*” and “*Class*” into one table (or query).

Action Queries

An *Action Query* defines a query that does more than retrieve specific information from selected object(s). An action query modifies or creates a table and can be used when a large amount of data in an existing table must be changed.

There are four types of action queries in Access: *Make-table Query*, *Update Query*, *Append Query*, and *Delete Query* (see Table 1 for descriptions).

Table 1 - Action Query Description

Action Query Type	Description
 Make-table Query	Creates a new table containing the selected records.
 Update Query	Updates the selected records in one or more tables.
 Append Query	Adds the selected records to the end of one or more tables.
 Delete Query	Deletes the selected records from one or more tables.

CREATING AN ACTION QUERY

Creating an *Action Query* is very similar to creating a selection query. The fields and criteria to create a new query are specified and then one of the action queries is selected before running the query (see Figure 22).

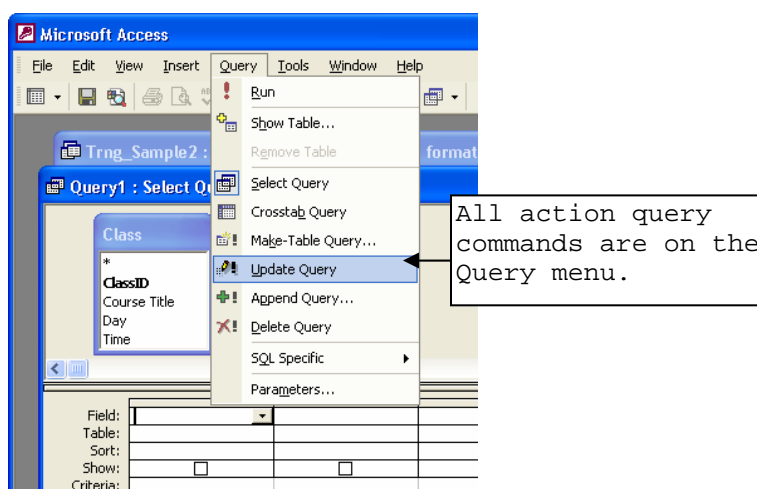





Figure 22 - Query Menu

CREATING A MAKE-TABLE QUERY

A *Make-table Query* creates a new table from data in existing tables and queries. The new table can be a duplicate of an existing table to serve as data backup.

To create a make-table query:

1. Click **Queries** on the object list ► **New** button .
2. Click **Design View** ► **OK** button.
3. Double-click "**Classes**" ► **Close** button.
4. Add the following fields to the query by double-clicking them: "**ClassID**," "**CourseNumber**," "**CourseTitle**," and "**ClassDate**".
5. Scroll as necessary and click in the "**Criteria**" row under the **ClassDate** field.
6. Type "**MW**" ► **Query Type** button  ► **Make-Table Query**.
7. Type "**Select Class**" ► **OK** button.

8. Run the query by clicking the **Run Query** button .
9. Click the **Yes** button.
10. Close the query, saving it as “*MW_Class*”.
11. Open the “*Select_Class*” table in Datasheet view to verify that it was created with the selected records.

Other types of action queries (*Update Query*, *Append Query*, and *Delete Query*), are created in a similar manner.

Designing Advanced Queries

Although the most basic and important feature of queries is to select specific records or fields from a table(s) and display them, there are more advanced features of queries, such as creating a *Function Query* or a *Parameter Query*.

CREATING A FUNCTION QUERY

Access allows the user to group records by a selected field, including applying a function that calculates values in other fields in the query. For example, records can be grouped in a record set based on student grade “*ClassStanding*.” The “*Avg*” function is then applied to calculate the average *GPA* scores for each “*ClassStanding*” (see Figure 23).

To run a Function Query:

1. Display the **Queries** object list ► **New** button ► **Design View** ► **OK** button.
2. Double-click “*StudentRecord*” ► **Close** button.
3. Add the “*ClassStanding*” and “*GPA*” fields to the query by double-clicking them.
4. Select the **View** menu ► **Totals** command. A “*Total:*” row is added to the design grid (see Figure 23).
5. Click in **Group By** drop-down arrow in the “*GPA*” column and select “*Avg*” from the “*Group By Function*” list.
6. Run the query. The “*Select Query*” will be as shown in Figure 24.

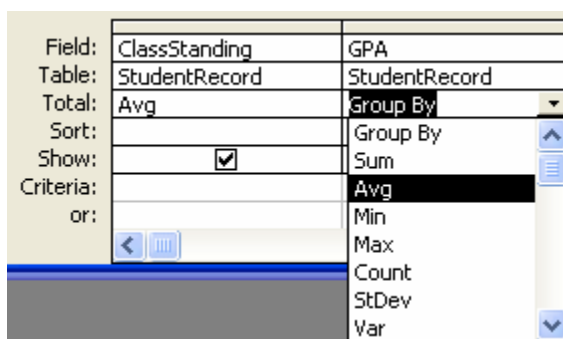


Figure 23 - Function Query Design Grid

ClassStanding	AvgOfGPA
Freshman	3
Junior	3
Senior	3.2
Sophomore	3.2

Figure 24 - Function Query Design Grid

Table 2 displays the different types of functions and description of each.

Table 2 -Types of Functions

Function	Description
Group By	Organizes query results.
Sum	Sums the values in the calculated field.
Avg	Finds the average value of the calculated field.

Function	Description
Min	Finds the lowest value in the calculated field.
Max	Finds the highest value in the calculated field.
Count	Counts the number of records in the calculated field.
StDev	Calculates the standard deviation in the selected field.
Var	Calculates the variance in selected field.

CREATING A PARAMETER QUERY

A **Parameter Query** is used to add a different criterion value each time the query is run. It is designed to prompt the user for input each time it is run and then Access processes the query based on the criterion (parameter) entered. A **Parameter Query** allows the user to quickly and easily change the query criteria without having to redesign the query (see Figure 25).

To design a parameter query:

1. Display the **Queries** object list ► **New** button ► **Design View** ► **OK** button.
2. Double-click “**StudentRecord**” ► **Close** button.
3. Add the following fields to the query by double-clicking them: “**SSN**,” “**Class Standing**,” “**GPA**,” and “**Major**.”
4. Scroll as necessary and click the “**Criteria**” row of the **GPA** field.
5. Type **[Enter the GPA:]** ► press the **[Enter]** key.
6. Run the parameter query. At the prompt, type “**2**” ► **OK** button. Notice that only the records matching the criteria appear in the record set.
7. Close and save the query.

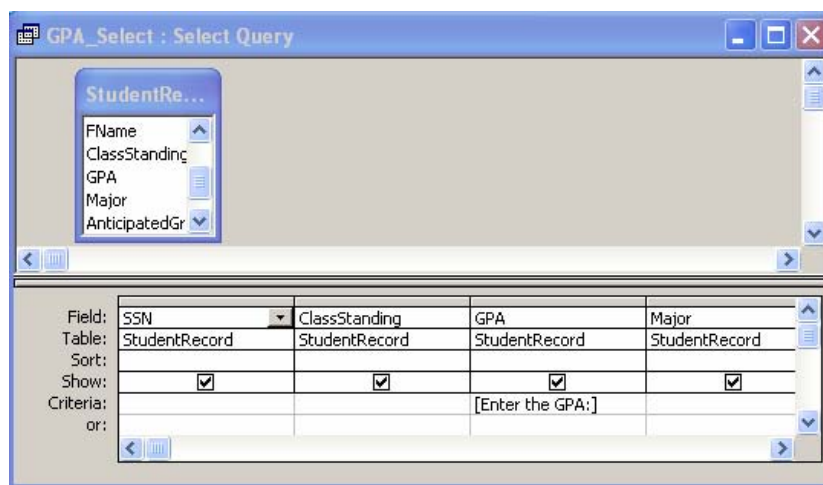


Figure 25 - Creating a Parameter Query

CREATING A CONCATENATION IN A QUERY

A **Concatenation Query** allows the user to combine two or more text fields into one field. In addition, characters can be inserted between text strings as needed. When typing a concatenation expression, the first part of the expression defines the name of the new field and the second part of the expression defines the fields which are to be concatenated. All field names must be surrounded by brackets. The concatenation character (the ampersand – “&”) appears between field names. Any additional characters can be enclosed in double quotes (see Figure 26).

To create a Concatenation Query:

1. Display the **Queries** object list ► **New** button ► **Design View** ► **OK** button.
2. Double-click “**StudentRecord**” ► **Close** button.

3. Add the following field to the query by double-clicking it: “SSN.”
4. Click in the blank field row to the right of “SSN.”
5. Type “Name: [FName]&” “&[LName]” ► press the [Enter] key.
6. Run the query. Notice that the “Name” column displays the first and last name, separated by a space.
7. Close and save the query.

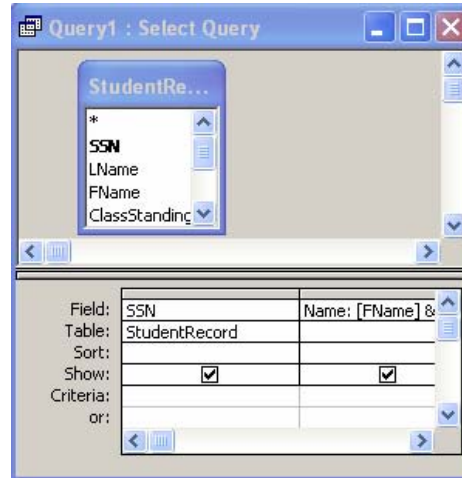


Figure 26 - Concatenation in a Query

Advanced Query Wizard

Access 2003 employs three advanced query wizards: *Crosstab Query Wizard*, *Find Duplicates Query Wizard*, and *Find Unmatched Query Wizard*. The advanced query wizards can be started from the *New Query* dialog box (see Figure 27).

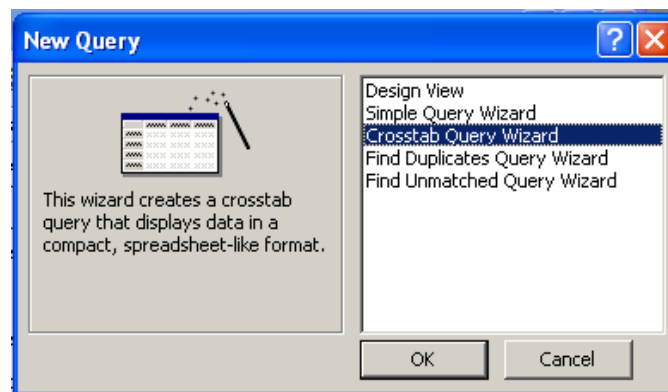


Figure 27 - New Query Window

CROSSTAB QUERY WIZARD

By using the *Crosstab Query Wizard*, the user can 1) calculate a sum, average, count, or other types of value for data 2) group the value of data and 3) display it in a spreadsheet format. Three fields are needed to create a *Crosstab Query*. The first field displays its values as row headings. The second field displays its values as column headings. Calculations are performed on the third field.

From the “*StudentRecord*” table, a *Crosstab Query* can be created to display how many students in each grade are planning to graduate in a particular term. Therefore, two fields can be used (e.g., “*ClassStanding*” and “*AnticipatedGradDat*”) to display the values in rows and columns.

The “SSN” field is used to count the number of students in each class standing who plan to graduate (see Figure 28).

StudentRecord_Crosstab : Crosstab Query						
	ClassStanding	Total Of SS	Fall 2004	Spring 2002	Spring 2003	Spring 2004
	Freshman	7		1		
	Junior	3			1	
	Senior	5				
	Sophomore	5				

The field “AnticipatedGradDat” displays its values as column headings.

The summary value field “SSN” displays its value in each cell intersected by each column and each row. For example, 2 is the number of students who plan to graduate in Spring 2002 among five Senior students.

Figure 28 - Crosstab Query

To create a Crosstab Query:

1. Display the **Queries** object list ► **New** button ► **Crosstab Query Wizard** ► **OK** button.
2. Click “**Table: StudentRecord**” ► **Next>** button.
3. Double-click “**ClassStanding**” to make it the row heading ► **Next>** button.
4. Click **AnticipatedGradDat** to make it the column heading ► **Next>** button.
5. Click **SSN** ► click the “**Count**” function ► **Next>** button.
6. Name the query “**StudentRecord_Crosstab**” ► **Finish** button.

FIND DUPLICATES WIZARD

The *Find Duplicates Query Wizard* assists in designing a query that displays duplicate records in tables. The unnecessary duplicate records can then be deleted from the table. This query can be used to group records with the same field values.

For instance, from the “*StudentRecord*” table, the records for students that have the same names in a particular grade can be displayed (see Figure 29).

StudentRecord_duplicate					
	LName	FName	ClassStanding	Major	EmergencyNumber
	Kim	David	Sophomore	Computer Inform	(626) 967-8959
	Kim	David	Sophomore	Computer Inform	(626) 967-8959
	Smith	John	Senior	English	(310) 544-4939
	Smith	John	Freshman	English	(213) 456-7878

These two students are duplicate records, and one of them needs to be deleted.

Although these two students have the same name, they may not be the same person because they are in different grades and have different phone numbers.

Figure 29 - Find Duplicates Query

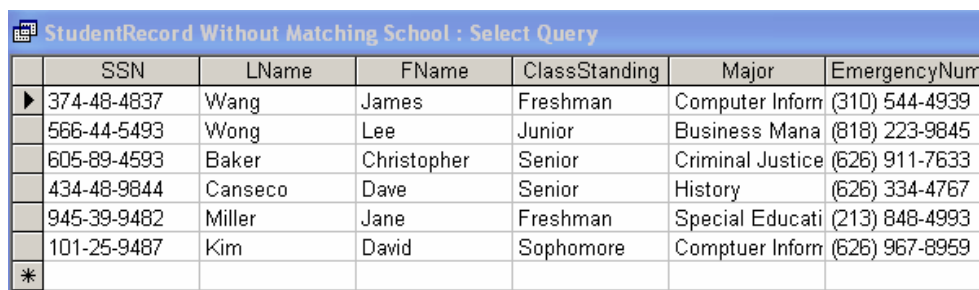
To use the Find Duplicates Query Wizard:

1. Display the **Queries** object list ► **New** button.
2. Select **Find Duplicates Query Wizard** ► **OK** button.
3. Select “**Table: StudentRecord**” ► **Next>** button.
4. Double-click “**LName**” and “**FName**” ► **Next>** button.
5. Add the following fields to the query: “**ClassStanding**,” “**Major**,” and “**EmergencyNumber**” ► **Next>** button.
6. Name the query “**StudentRecord_duplicate**” ► **Finish** button.
7. Notice that four records appear in the recordset (Figure 29); there are two duplicate records in the “*StudentRecord*” table.

FIND UNMATCHED WIZARD

If relationships are created between tables, there may be records that do not match any records in a table that it is related to. The ***Find Unmatched Query Wizard*** assists the user in designing a query that finds these unmatched, or orphan, records.

As an example, when comparing two tables, six records are found unmatched between the “***StudentRecord***” and “***School***” tables. This means that these six records exist in one table (e.g. “***School***” table) but not in the other table (e.g. “***StudentRecord***” table) (see Figure 30).



	SSN	LName	FName	ClassStanding	Major	EmergencyNum
▶	374-48-4837	Wang	James	Freshman	Computer Inform	(310) 544-4939
	566-44-5493	Wong	Lee	Junior	Business Mana	(818) 223-9845
	605-89-4593	Baker	Christopher	Senior	Criminal Justice	(626) 911-7633
	434-48-9844	Canseco	Dave	Senior	History	(626) 334-4767
	945-39-9482	Miller	Jane	Freshman	Special Educati	(213) 848-4993
	101-25-9487	Kim	David	Sophomore	Comptuer Inform	(626) 967-8959
*						

Figure 30 - Find Unmatched Query

To use the Find Unmatched Query Wizard:

1. Display the **Queries** object list ▶ **New** button.
2. Select ***Find Unmatched Query Wizard*** ▶ **OK** button.
3. Select “***Table: StudentRecord***” ▶ **Next>** button.
4. Select “***Table: School***” ▶ **Next** button.
5. Select **SSN** in both the lists (if necessary) ▶ **<=>** button ▶ **Next>** button.
6. Add the following fields to the query: “**SSN**,” “**LName**,” “**FName**,” “**ClassStanding**,” “**Major**,” and “**EmergencyNumber**” ▶ **Next>** button.
7. Name the query “***StudentRecord Without Matching School.***” ▶ **Finish** button.

The records that appear in this query (Figure 30) would need to be corrected to ensure database integrity.

Creating a Chart

Charts allow the user to present information in a database graphically. **Forms** and **Reports** can be enhanced by adding graphics (charts), pictures, and other objects. The easiest way to create a chart is to use the ***Chart Wizard***. The ***Chart Wizard*** assists the user in creating charts by following a series of steps that select options for the chart.

USING THE CHART WIZARD

The ***Chart Wizard*** can be started from either the **Forms** object or the **Reports** object. For instance, in order to display average GPA for each grade (freshman, sophomore ...), a bar chart can be created using two fields (“***ClassStanding***” & “***GPA***”) in the “***StudentRecord***” table by following the steps of the ***Chart Wizard***.

To create a chart:

1. Select either the **Forms** or **Reports** object list ▶ **New** button. The *New Form or Report* dialog box opens.
2. Select ***Chart Wizard*** then select an object that the chart is to be based on (e.g., “***StudentRecord***” table) from the “***Choose the table or query where the object’s data comes from:***” drop-down arrow (see Figure 31).

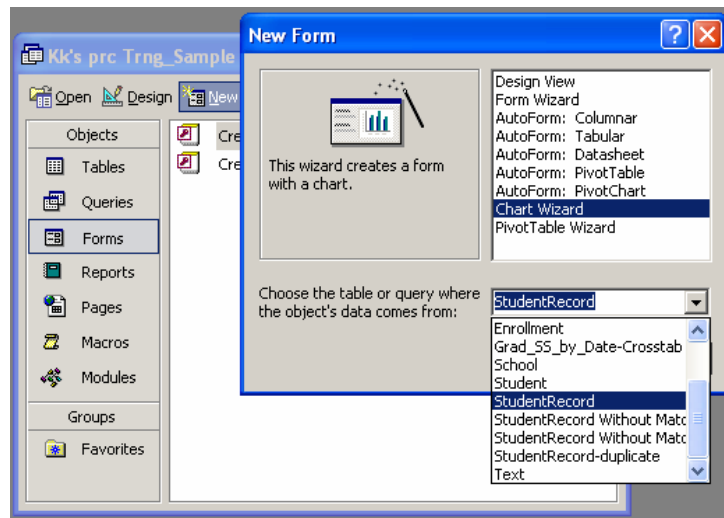


Figure 31 - Creating a New Form

3. Click the **OK** button. The *Chart Wizard* starts (see Figure 32).

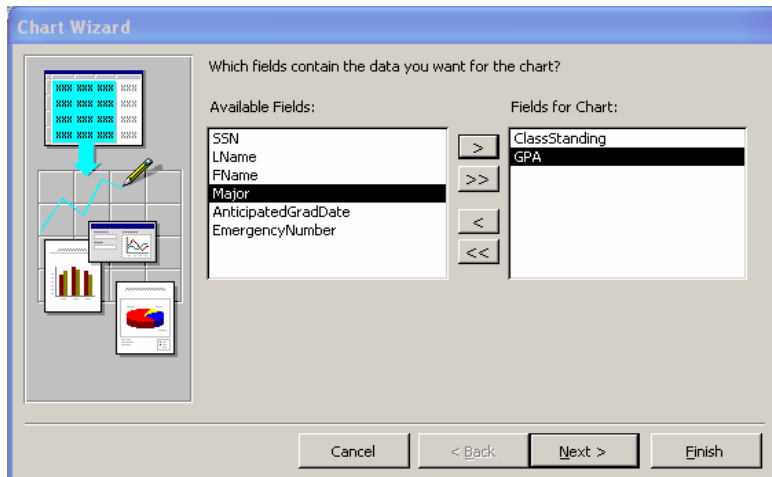


Figure 32 - Chart Wizard: Selecting Fields

4. Select the fields (e.g. “*ClassStanding*” and “*GPA*”) from the “*Available Fields:*” list box and move them to the “*Fields for Chart:*” list box by clicking the right-pointing single arrow. These are the two fields used for displaying the data information in the chart.
5. Click the **N**ext> button. The *Chart Wizard* dialog box opens (see Figure 33) to select the chart type.

!NOTE:

The descriptions for each chart type can be seen at the right side of the dialog box.

6. Select the desired type of chart (e.g., “*Column Chart*”) ► **N**ext> button.

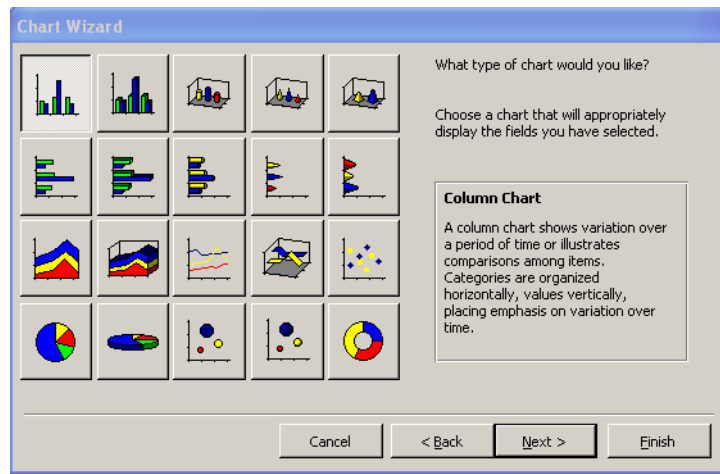


Figure 33 - Chart Wizard: Selecting Chart Type

7. The *Chart Wizard* dialog box opens. Select and drag **GPA** to the “**Data**” area and **ClassStanding** to the “**Axis**” area (see Figure 34).

!NOTE:

When a chart is created using the *Chart Wizard*, the *Chart Wizard* decides the field(s) for the “**Data**,” “**Series**,” and “**Axis**” according to the chart type selected. The “**Data**” and “**Series**” can be switched by dragging the field button to the “**Data**” box, “**Series**” box, or “**Axis**” box (see Figure 34). “**Data**” will display the sum value of “**GPA**”, which is not relevant in this case. The value that is to be displayed in the chart can also be displayed. To change it, double-click the “**Data**” box and select “**Avg**” to summarize the values by average.

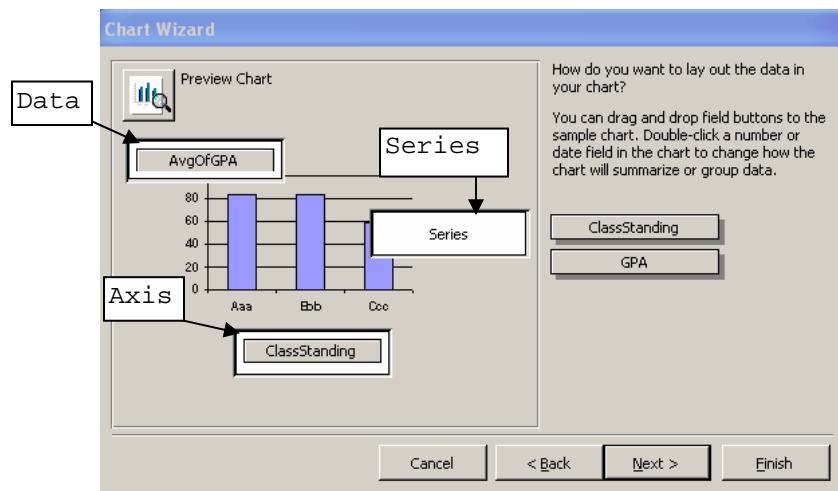


Figure 34 - Chart Wizard: Selecting Data Source and Data Series

7. Click the **Next>** button. The next *Chart Wizard* dialog box redraws (see Figure 35).
8. Enter a name for the chart ► **Finish** button.

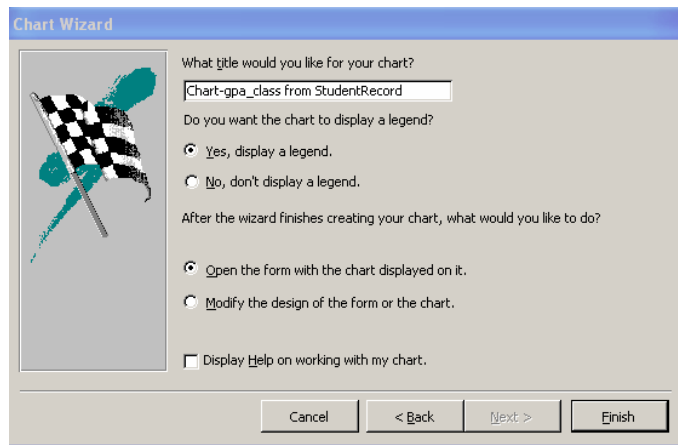


Figure 35 - Chart Wizard: Naming Chart

10. The chart created by the *Chart Wizard* will be displayed in a *Form* view as shown in Figure 36.

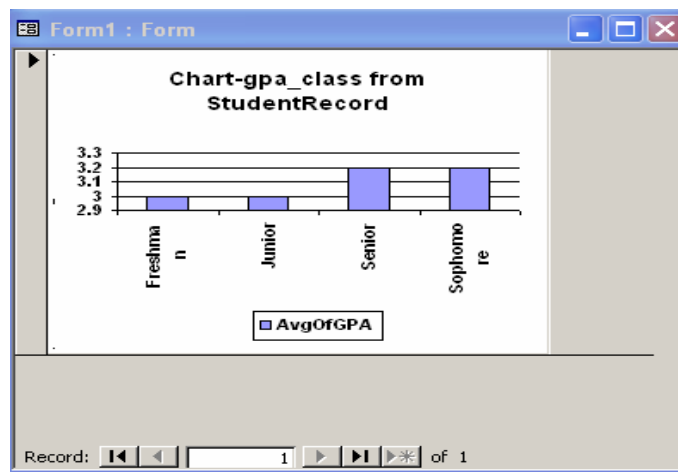


Figure 36 - Chart Made Using Chart Wizard

!NOTE:

After a chart is created, it can be edited by opening the **Chart Object** menu. Open the chart in *Form View*, select the chart and right click the mouse ► **Chart Object** ► **Open**. The chart will open the chart in editing mode (see Figure 37). From the **Chart** menu, the chart type (e.g., pie, bar, or column) can be changed by selecting the **Chart Type** command and chart titles, legend, or data labels from the **Chart Options** command.

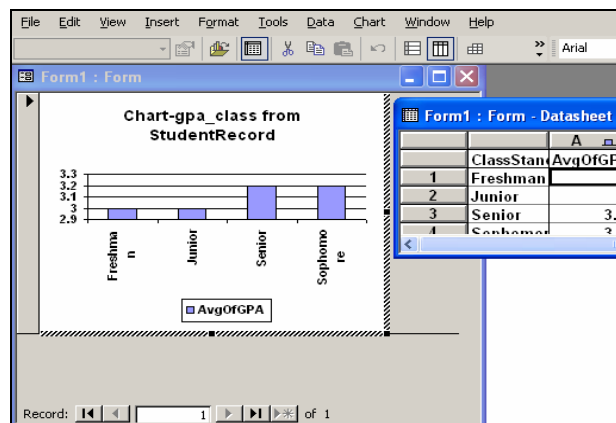


Figure 37 - Chart Editing Mode

Importing and Exporting Data

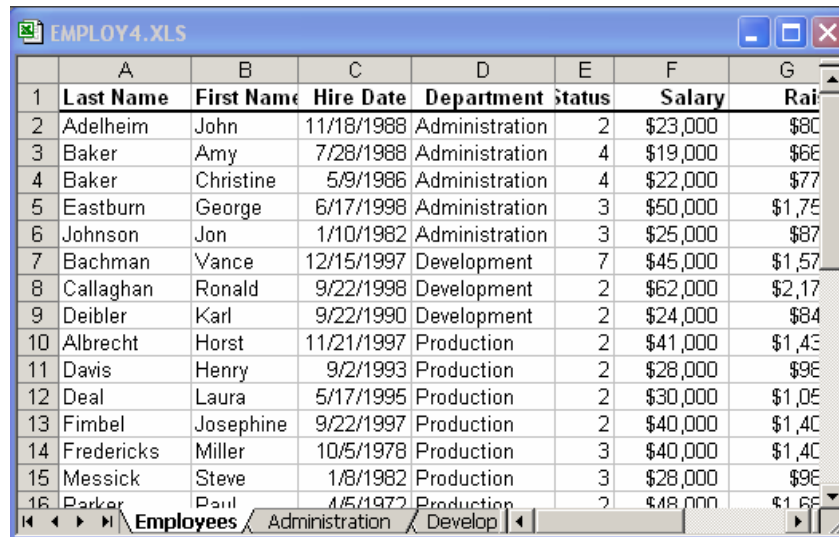
For a user new to Access, it may seem somewhat difficult to open or save files in different locations or file types because Access contains commands like **Import...** and **Export...**. For example, if a spreadsheet file is to be opened in Access, the **Import...** command must be used, not the **Open...** command.

IMPORTING EXTERNAL DATA

When working with a database in Access, the need may arise to use another Access database or a different data file, such as a text file, spreadsheet file, or a data file from a different database application. The content of an external file can be copied into an Access table by importing it. When importing an external file, a **Wizard** opens to provide step-by-step instructions to modify the external file if the external file is not an Access database file.

IMPORTING AN EXCEL FILE

Data files from other programs can be imported into an Access database. For example, the user may want to import data from an Excel worksheet (see Figure 38) into a new table in the Access database.



	A	B	C	D	E	F	G
1	Last Name	First Name	Hire Date	Department	Status	Salary	Rate
2	Adelheim	John	11/18/1988	Administration	2	\$23,000	\$80
3	Baker	Amy	7/28/1988	Administration	4	\$19,000	\$66
4	Baker	Christine	5/9/1986	Administration	4	\$22,000	\$77
5	Eastburn	George	6/17/1998	Administration	3	\$50,000	\$1,75
6	Johnson	Jon	1/10/1982	Administration	3	\$25,000	\$87
7	Bachman	Vance	12/15/1997	Development	7	\$45,000	\$1,57
8	Callaghan	Ronald	9/22/1998	Development	2	\$62,000	\$2,17
9	Deibler	Karl	9/22/1990	Development	2	\$24,000	\$84
10	Albrecht	Horst	11/21/1997	Production	2	\$41,000	\$1,43
11	Davis	Henry	9/2/1993	Production	2	\$28,000	\$96
12	Deal	Laura	5/17/1995	Production	2	\$30,000	\$1,06
13	Fimbel	Josephine	9/22/1997	Production	2	\$40,000	\$1,40
14	Fredericks	Miller	10/5/1978	Production	3	\$40,000	\$1,40
15	Messick	Steve	1/8/1982	Production	3	\$28,000	\$96
16	Parker	Paul	4/5/1977	Production	2	\$48,000	\$1,65

Figure 38 - Excel Worksheet

To import data to Access:

(Before processing the following steps, the user should have at least one external file.).

1. Select the **File** menu ► **Get External Data** ► **Import...** (see Figure 39). The *Import* dialog box opens (see Figure 40).
2. Select the file type to be imported. For example, select **Microsoft Excel** from the *Files of type:* drop-down list (see Figure 40).

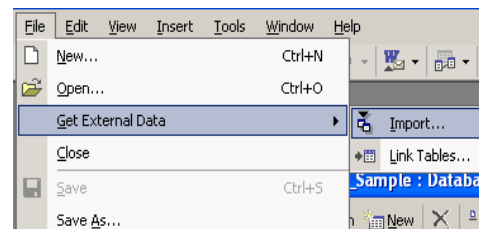


Figure 39 - Opening Import Dialog Box

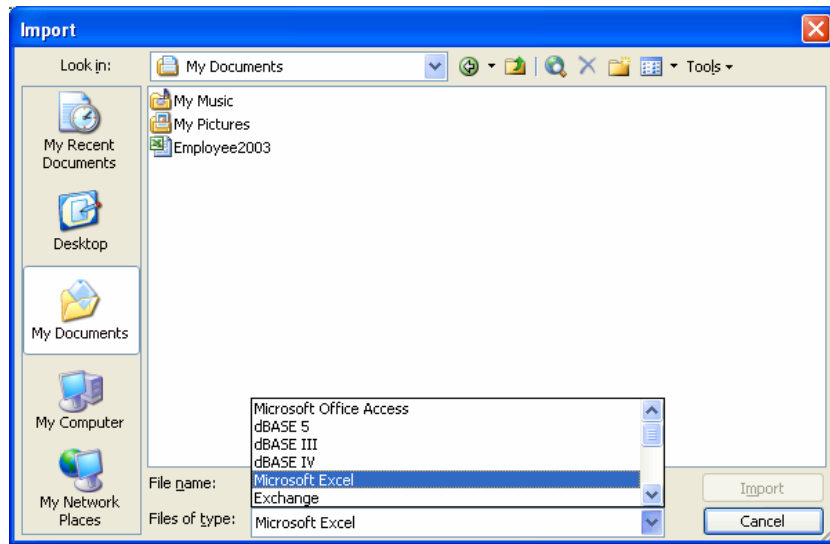


Figure 40 - Import Dialog Box

3. Select the file to be imported (e.g., “*Employee.xls*”) and click the **Import** button. The *Import Spreadsheet Wizard* opens (see Figure 41).
4. Click the *Show Worksheets* option button (if necessary) and select the name of the worksheet to be imported (e.g., “*Employees*”) ► **Next>** button.

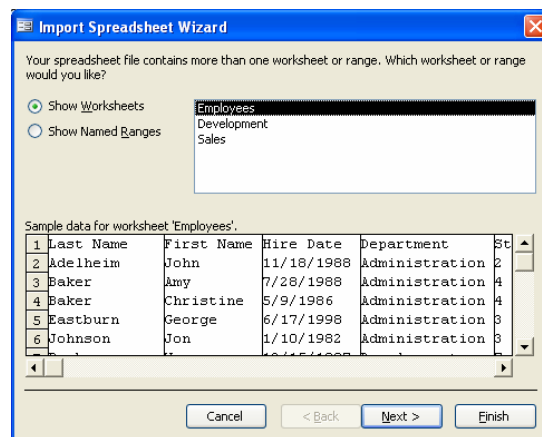


Figure 41 - Import Spreadsheet Dialog Box: Selecting Worksheets

5. The *Import Spreadsheet Wizard* dialog box redraws (see Figure 42). Click the *First Row Contains Column Headings* check box (if necessary) ► **Next>** button.

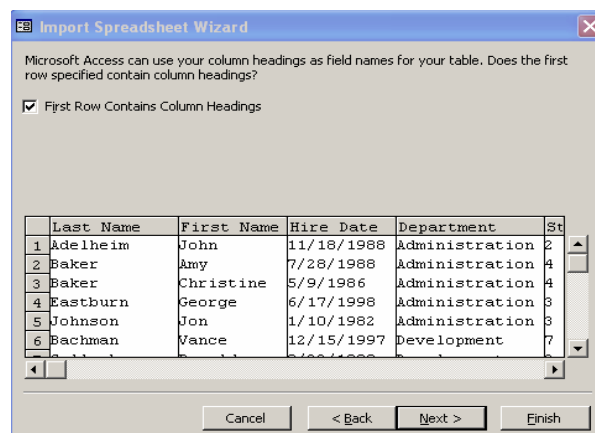


Figure 42 - Import Spreadsheet Wizard: Assigning Column Headings

!NOTE:

The **Import Wizard** automatically assigns the format of a new table according to the format of the external file imported. For example, if data is imported from an Excel file, the **Import Wizard** changes the columns of the Excel file into the fields of the new table and the rows of the Excel file into the records of the new table. In addition, the **Import Wizard** automatically changes the first row of an Excel file into the field names of the new table. Some external files are not compatible with Access files in terms of formatting. If such a file is encountered when importing the user will have one more step to fix the format of external files (follow the steps offered by **Import Wizard**).

6. On the next page of the **Import Wizard** (see Figure 43) click the **In a New Table** option button to decide where the data is to be stored ► **Next>** button.

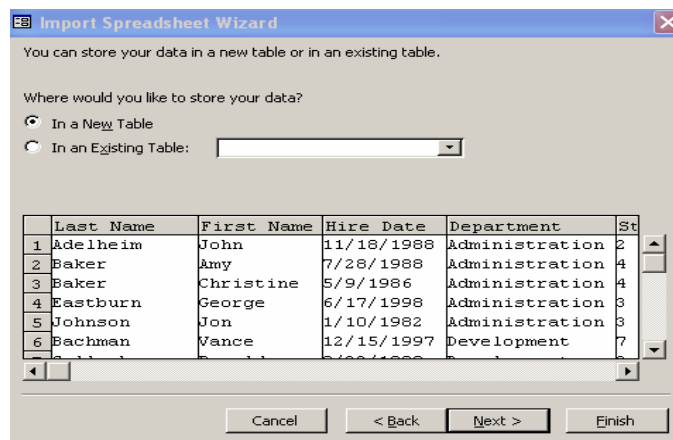


Figure 43 - Import Spreadsheet Wizard Window: Storing Data

7. The **Import Spreadsheet Wizard** dialog box redraws (see Figure 44). Field options can be edited, such as field name, indexing, or skipping specific fields. For example, if a field name is to be changed, select that field, type a new field name in the **Field Name:** text box in the **Field Options** section ► **Next>** button.



Figure 44 - Import Spreadsheet Wizard: Changing Fields Options

8. The **Import Spreadsheet Wizard** dialog box redraws. Select the **Let Access add primary key** option button ► **Next>** button (see Figure 45). The **Import Spreadsheet Wizard** dialog box redraws (see Figure 46) requesting to name the table.

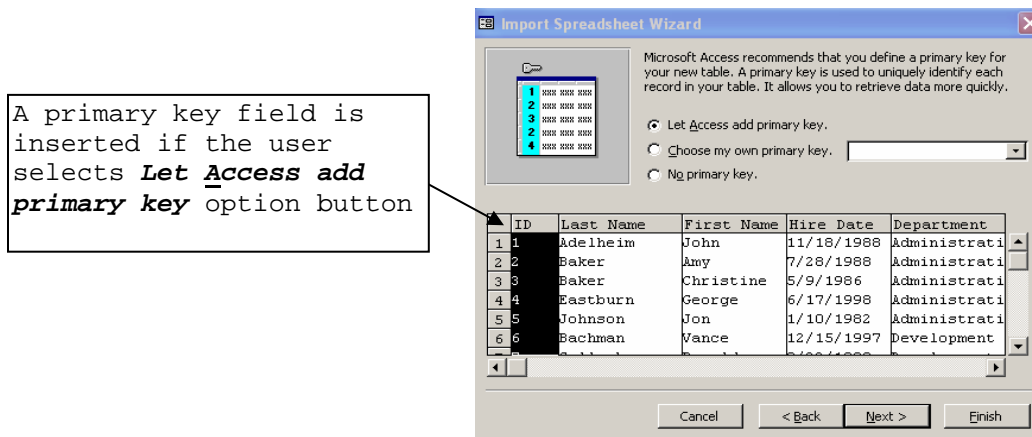


Figure 45 - Import Spreadsheet Wizard Window: Assigning Primary Key

9. Enter a name for the table in the **Import to Table:** text box ► **Finish** button.

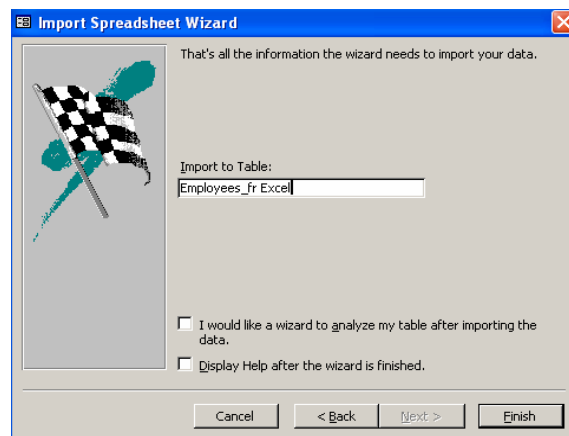


Figure 46 - Import Spreadsheet Wizard Window: Naming Table

10. A message box appears saying “**Finished importing file...**” (see Figure 47) ► **OK** button.

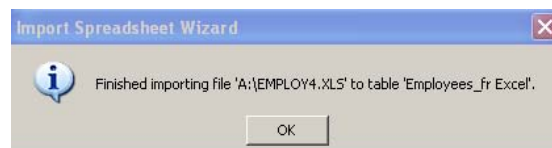


Figure 47 - Import Spreadsheet Wizard Completion

11. Open the new table in **Datasheet View** as shown in Figure 48 to confirm the import.

ID	Last Name	First Name	Hire Date	Department
1	Adelheim	John	11/18/1988	Administration
2	Baker	Amy	7/28/1988	Administration
3	Baker	Christine	5/9/1986	Administration
4	Eastburn	George	6/17/1998	Administration
5	Johnson	Jon	1/10/1982	Administration
6	Bachman	Vance	12/15/1997	Development
7	Callaghan	Ronald	9/22/1998	Development
8	Deibler	Karl	9/22/1990	Development
9	Albrecht	Horst	11/21/1997	Production
10	Davis	Henry	9/2/1993	Production
11	Deal	Laura	5/17/1995	Production
12	Fimbel	Josephine	9/22/1997	Production
13	Fredericks	Miller	10/5/1978	Production
14	Messick	Steve	1/8/1982	Production

Figure 48 - New Table Imported from an Excel File

EXPORTING A DATABASE OBJECT

In other Microsoft programs such as Excel or Word, the **Save As...** command can be used when the active file needs to be saved with a different file name, location, or file type. In Access the **Save As...** command is used only when an object is to be saved with a different name in the current database. If the database objects need to be saved with a different location or file type, the **Export...** command must be used. When Access exports data from an Access object to an external file or to other Access database files it does not move the data. Instead it copies the target object to the external file and leaves the original object intact.

EXPORTING DATA TO EXTERNAL FORMATS

Data can be copied from an Access object into a new external file. For example, the “*StudentRecord*” table (Figure 49) can be exported into a new Excel spreadsheet.



	SSN	LName	FName	ClassStanding	GPA	Major
▶	156-98-5874	Alfarrouh	Mohamed	Junior	2	Social Work
	605-89-4593	Baker	Christopher	Senior	3	Criminal Justi
	434-48-9844	Canseco	Dave	Senior	2	History
	123-65-9879	Gonzales	Helen	Junior	4	Business Ma
	365-56-9851	Gonzalez	Maria	Sophomore	3	Comptuer Inf
	455-93-3934	Kang	Goerge	Sophomore	3	English
	568-12-8564	Kaufman	Sue	Freshman	2	Undeclared
	100-25-9487	Kim	David	Sophomore	3	Computer Inf
	101-25-9487	Kim	David	Sophomore	3	Comptuer Inf
	209-53-6781	Lee	Mary	Senior	4	Special Educ
	256-85-9512	Meira	Joe	Sophomore	4	History
	945-39-9482	Miller	Jane	Freshman	3	Special Educ
	355-50-1254	Nikamata	Yoshi	Senior	4	Teaching Edu

Figure 49 - Table to be Exported

To export data:

1. Display the **Tables** object list, then double-click the appropriate table.
2. Select the **File** menu ► **Export...** command. The *Export Table* dialog box opens.
3. Select the file type (the type of file that the object will be saved as) from the *Save as type:* drop-down list ► **Export All** button (see Figure 50).

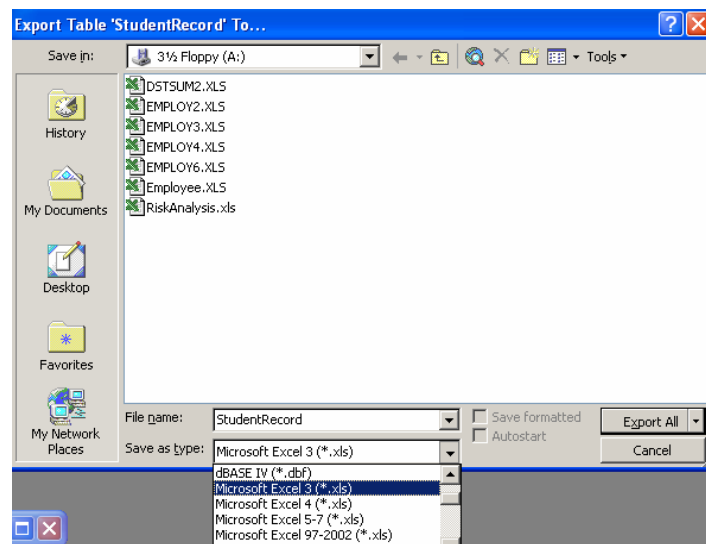
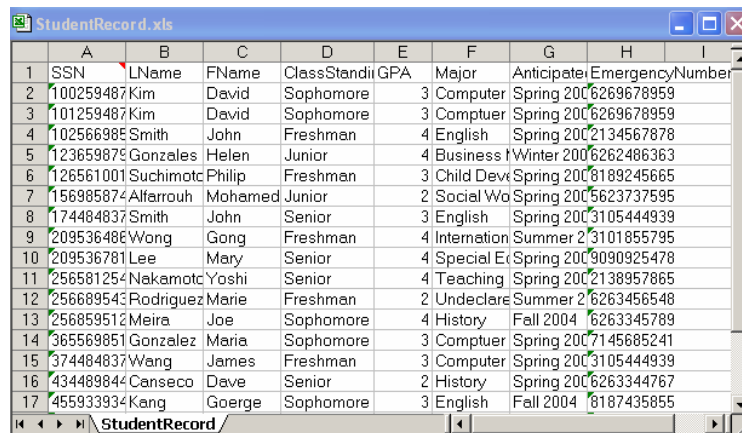


Figure 50 - Export Window

!NOTE:

If the **Save as type:** drop-down list is clicked, the user will find the compatible file types which can be used to export Access objects. Although Access allows the user to export the data to external files, it does not support all possible types or versions of external files. What can be done if the formats or versions of the external files to which the user needs to export cannot be found? As an example, suppose that a table in Access needs to be exported as an **SPSS** (Statistical Packages for Social Science) files type “*.sav” that Access does not support. The user can export the table to an Excel or text file and open the Excel or text file in the SPSS program. Excel and text files are the most flexible formats; the user can open them using almost any type of program.

Figure 51 shows an Excel spreadsheet exported from an Access table.



	A	B	C	D	E	F	G	H	I
1	SSN	LName	FName	ClassStand	GPA	Major	Anticipate	EmergencyNumber	
2	100259487	Kim	David	Sophomore	3	Computer	Spring 2006	6269678959	
3	101259487	Kim	David	Sophomore	3	Computer	Spring 2006	6269678959	
4	102566898	Smith	John	Freshman	4	English	Spring 2006	2134567878	
5	123659879	Gonzales	Helen	Junior	4	Business	Winter 2006	6262486363	
6	126561001	Suchimoto	Philip	Freshman	3	Child Dev	Spring 2006	8189245665	
7	156985874	Alfarrouh	Mohamed	Junior	2	Social Wo	Spring 2006	5623737595	
8	174484837	Smith	John	Senior	3	English	Spring 2006	3105444939	
9	209536486	Wong	Gong	Freshman	4	Internation	Summer 2006	3101855795	
10	209536781	Lee	Mary	Senior	4	Special E	Spring 2006	9090925478	
11	256581254	Nakamoto	Yoshi	Senior	4	Teaching	Spring 2006	2138957865	
12	256689543	Rodriguez	Marie	Freshman	2	Undeclare	Summer 2006	6263456548	
13	256859512	Meira	Joe	Sophomore	4	History	Fall 2004	6263345789	
14	365569851	Gonzalez	Maria	Sophomore	3	Computer	Spring 2006	7145685241	
15	374484837	Wang	James	Freshman	3	Computer	Spring 2006	3105444939	
16	434489844	Canseco	Dave	Senior	2	History	Spring 2006	6263344767	
17	455933934	Kang	Goerge	Sophomore	3	English	Fall 2004	8187435855	

Figure 51 - Excel Spreadsheet from Access Table

EXPORTING OBJECTS TO OTHER ACCESS DATABASES

Objects can be exported from the current database to another Access database. In most cases, users export the objects to another database when there is a need to save the objects in different locations. For example, if the user is working with a database located in the **C:** drive, but needs to save a table in a database on a different drive, the user will need to export the table to the database file on the other drive.

To export a table from one database to another:

1. Display the **Tables** object list ► double-click the appropriate table.
2. Select the **File** menu ► **Export...** command.
3. The *Export table* '(table name)' to: dialog box opens (see Figure 52). Select the destination database file ► **Export** button. The *Export* dialog box opens (see Figure 53).

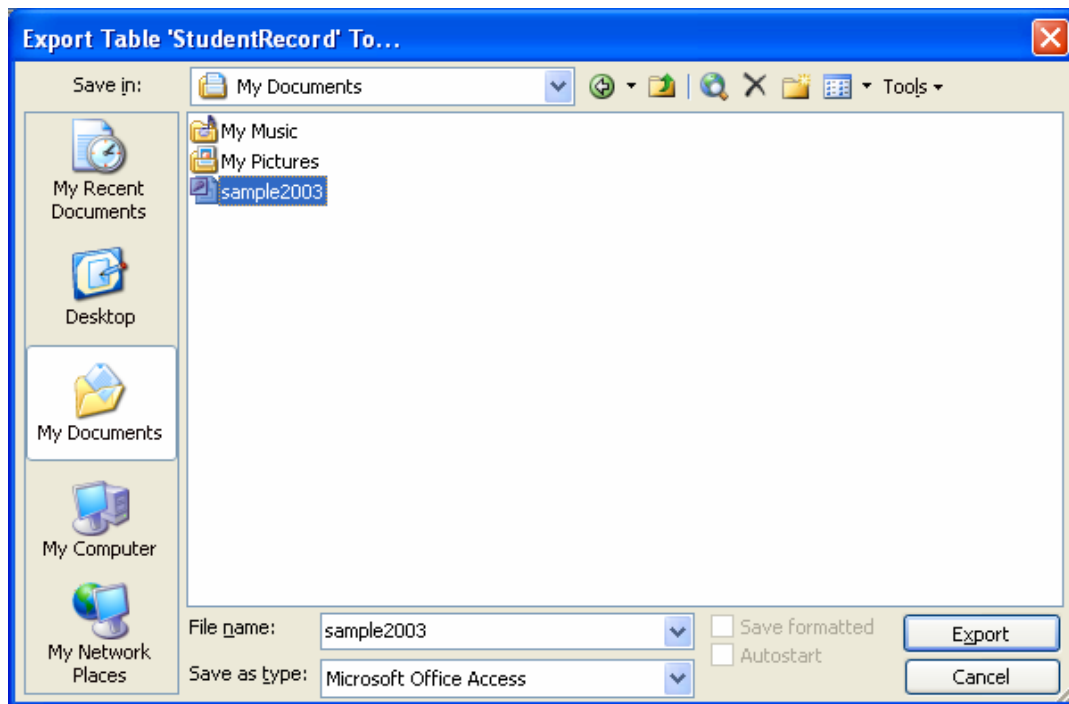


Figure 52 - Export Table to Dialog Box

4. Enter a new name for the exported table or keep the same one if desired.
5. Select the desired option button in the *Export Tables* section ► **OK** button.

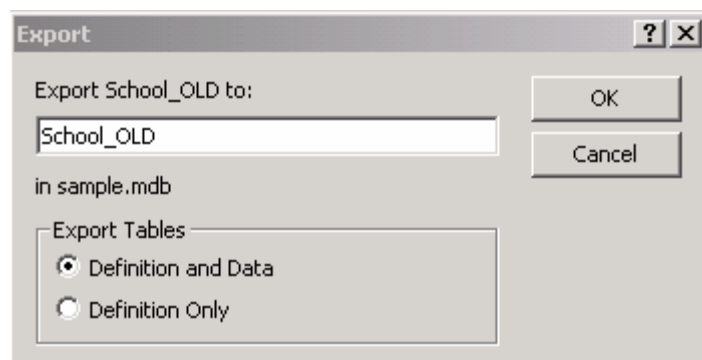


Figure 53 - Export Dialog Box

!NOTE:

The database on the destination drive will contain the table exported from the database on the C:\ drive.