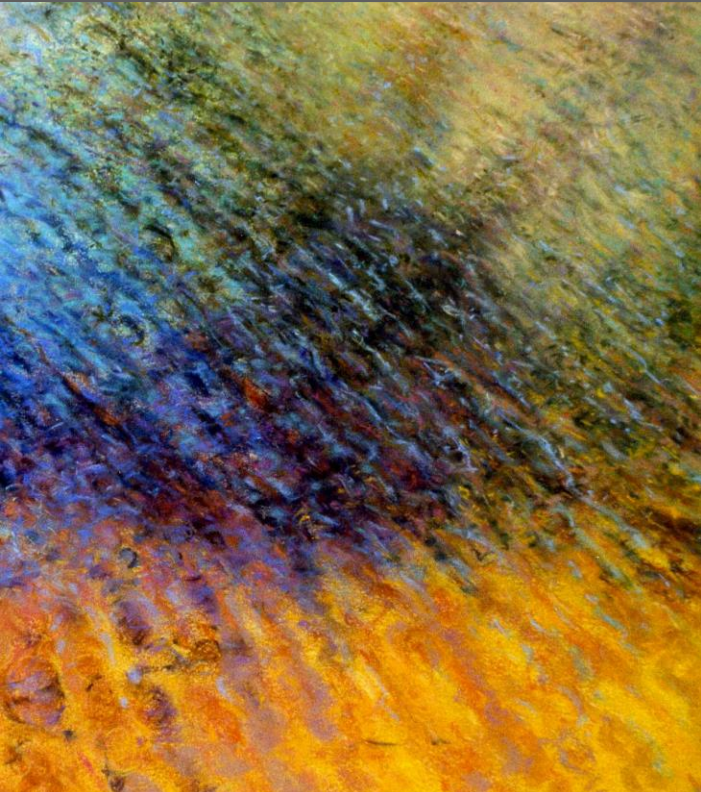


David M. Kroenke and David J. Auer

# Database Processing:

Fundamentals, Design, and Implementation



## Assignment 1

### Getting Started with Microsoft Access 2013

# Assignment Objectives

- To be able to create databases in Access 2013
- To be able to create tables in Access 2013
- To understand Access 2013 data types
- To be able to insert data into tables in Access 2013
- To be able to create relationships between tables in Access 2013
- To be able to create Query-by-Example (QBE) queries in Access 2013
- To understand the use of the Form Wizard in Access 2013
- To understand the use of the Report Wizard in Access 2013

# Create 3 Tables for Assign 1

Three tables: STUDENT, CLASS, and GRADE

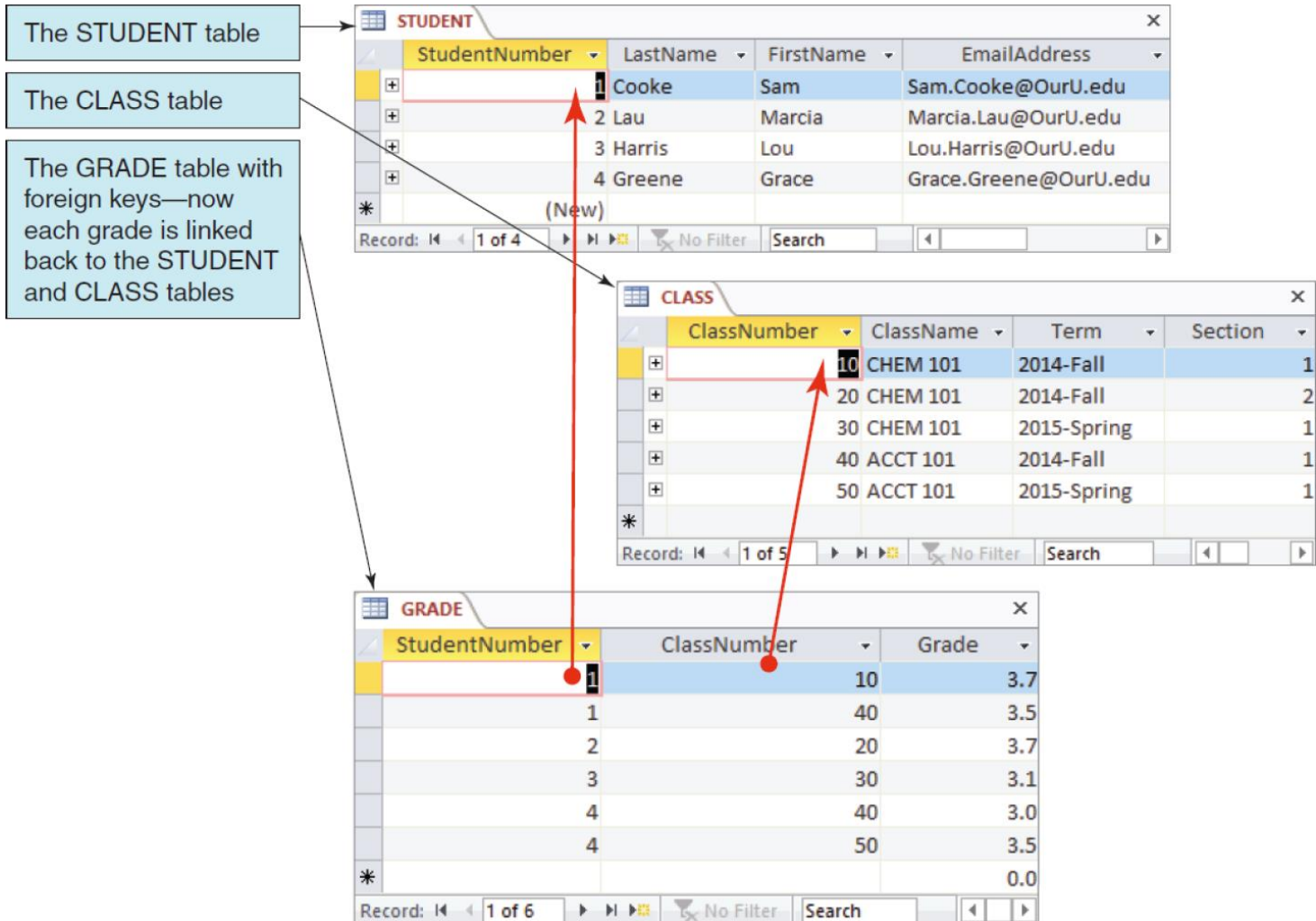
STUDENT (StudentNumber, LastName, FirstName, EmailAddress)

CLASS (ClassNumber, ClassName, Term, Section)

GRADE (StudentNumber, ClassNumber, Grade)

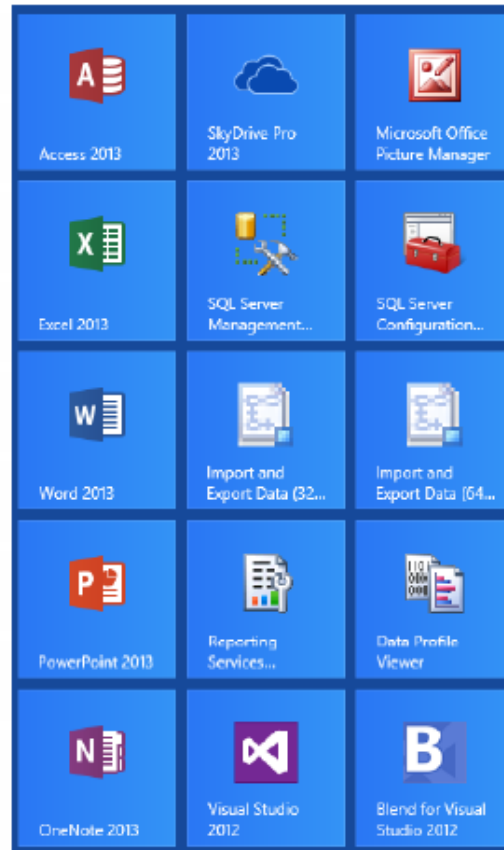
# Example Database Design

Three tables: STUDENT, CLASS, and GRADE



# The Microsoft Access 2013 App Tile

The **Access 2013**  
app tile



# Microsoft Access—Table Keys

- Each table has a key.
- A **key** is one or more columns that identify a row.
  - StudentNumber in STUDENT
  - ClassNumber in CLASS
- Keys composed of more than one column are called **composite keys**.
  - (StudentNumber, ClassNumber) in GRADE
- See Chapter Three for a complete discussion of keys.
- In this Appendix, the following keys are relevant:
  - **Primary key**—the key used to identify rows in a table
  - **Foreign key**—the key used to link to another table
  - **Surrogate key**—a short, numeric key added to the table as an ideal identifier when other fields don't work as well

# Microsoft Access 2013

## Basic Data Types

Data Type Name	Type of Data	Size
Short Text	Characters and numbers (Formerly "Text")	Maximum 255 characters
Long Text	Characters and numbers (Formerly "Memo")	Maximum 65,535 characters
Number	Numeric Data	Varies with number type
Date/Time	Dates and time from the year 100 to the year 9999	Stored as 8-byte double-precision integers
Currency	Numbers with decimal places	One to four decimal places
AutoNumber	A unique sequential number	Incremented by one each time
Yes/No	Fields that can only contain two values	Yes/No, On/Off, True/False
OLE Object	An object embedded in or linked to an Access table	Maximum 1 GB
Hyperlink	A hyperlink address	Maximum 2,048 characters in each of the three parts of the hyperlink address
Attachment	Any supported file type can be attached to a record	Independent of Access
Calculated	Calculates a values from data in other field	Dependent upon data used in calculation
Lookup Wizard	Creates a multivalued field based on an Access table or query	Dependent upon data used in lookup

# Example Database Design

## The STUDENT Table

Column Name	Type	Key	Required	Remarks
StudentNumber	AutoNumber	Primary Key	Yes	Surrogate Key
LastName	Text (25)	No	Yes	
FirstName	Text (25)	No	Yes	
EmailAddress	Text (100)	No	No	



# Example Database Design

## The CLASS Table

Column Name	Type	Key	Required	Remarks
ClassNumber	Number	Primary Key	Yes	Long Integer
ClassName	Text (25)	No	Yes	
Term	Text (12)	No	Yes	
Section	Number	No	Yes	Integer

# Example Database Design

## The GRADE Table

Column Name	Type	Key	Required	Remarks
StudentNumber	Number	Primary Key, Foreign Key	Yes	Long Integer
ClassNumber	Number	Primary Key, Foreign Key	Yes	Long Integer
Grade	Number	No	Yes	Decimal, Fixed, Scale = 2, Decimal Places = 1

# Microsoft Access—Relationships

- StudentNumber in GRADE creates a relationship to StudentNumber in STUDENT.
- ClassNumber in GRADE creates a relationship to ClassNumber in CLASS
- StudentNumber in GRADE and ClassNumber in GRADE are examples of foreign keys.

# Creating a Database I

The screenshot shows the Microsoft Access 2013 Backstage start screen. On the left, a dark red sidebar contains the 'Access' logo and a 'Recent' section with the text 'You haven't opened any files recently. To browse for a file, start by clicking on Open Other Files.' and an 'Open Other Files' button. The main area displays a grid of templates. The first row includes 'Custom web app' (highlighted with a pink border), 'Blank desktop database', and 'Asset tracking'. The second row includes 'Contacts', 'Issue tracking', and 'Project management'. The third row shows three more templates. At the top right, there is a search bar for online templates, suggested searches (Assets, Business, Contacts, Employee, Inventory, Project, Sales), and a user profile for David Auer with a 'Switch account' link.

The Access 2013 Backstage start screen

The **Recent** file list—there are currently no files listed because this is the first time Access has been opened

The **Open Other Files** button—use this to open an existing file

The **New** pane showing available templates for a new diagram document

Select the **Blank desktop database** template

# Creating a Database II

The **Blank desktop database** template is selected

The **Blank desktop database** dialog box

Type the database name **Student\_Class\_Grade.accdb** here

The **Browse** button

The **Create** button

The screenshot shows the Microsoft Access interface. The 'Blank desktop database' dialog box is open, displaying the 'File Name' field with the text 'Database1.accdb'. The 'Create' button is visible at the bottom right of the dialog box. Arrows indicate the following interactions: 1. From the 'Blank desktop database template is selected' box to the 'Blank desktop database' template in the background. 2. From the 'Blank desktop database dialog box' box to the dialog box itself. 3. From the 'Type the database name Student\_Class\_Grade.accdb here' box to the 'File Name' field. 4. From the 'The Browse button' box to the folder icon button next to the 'File Name' field. 5. From the 'The Create button' box to the 'Create' button in the dialog box.

# Creating a Database III

The database name  
**Student\_**  
**Class\_Grade :**  
**Database**

The Document Window using the tabbed documents interface

The **Close** button

Student\_Class\_Grade: Database - C:\Users\Auer\Documents\Student\_Class\_...

David Auer

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS FIELDS TABLE

AB 12 View Short Number Currency Text Add & Delete Date & Time Yes/No More Fields Delete Name & Caption Default Value Field Size Modify Lookups Modify Expression Memo Settings Data Type: Formatting Format: \$ % \* + - 0.00 -0.00 Required Unique Indexed Validation Field Validation

All Access Objects

Search...

Tables

Table1

Table1

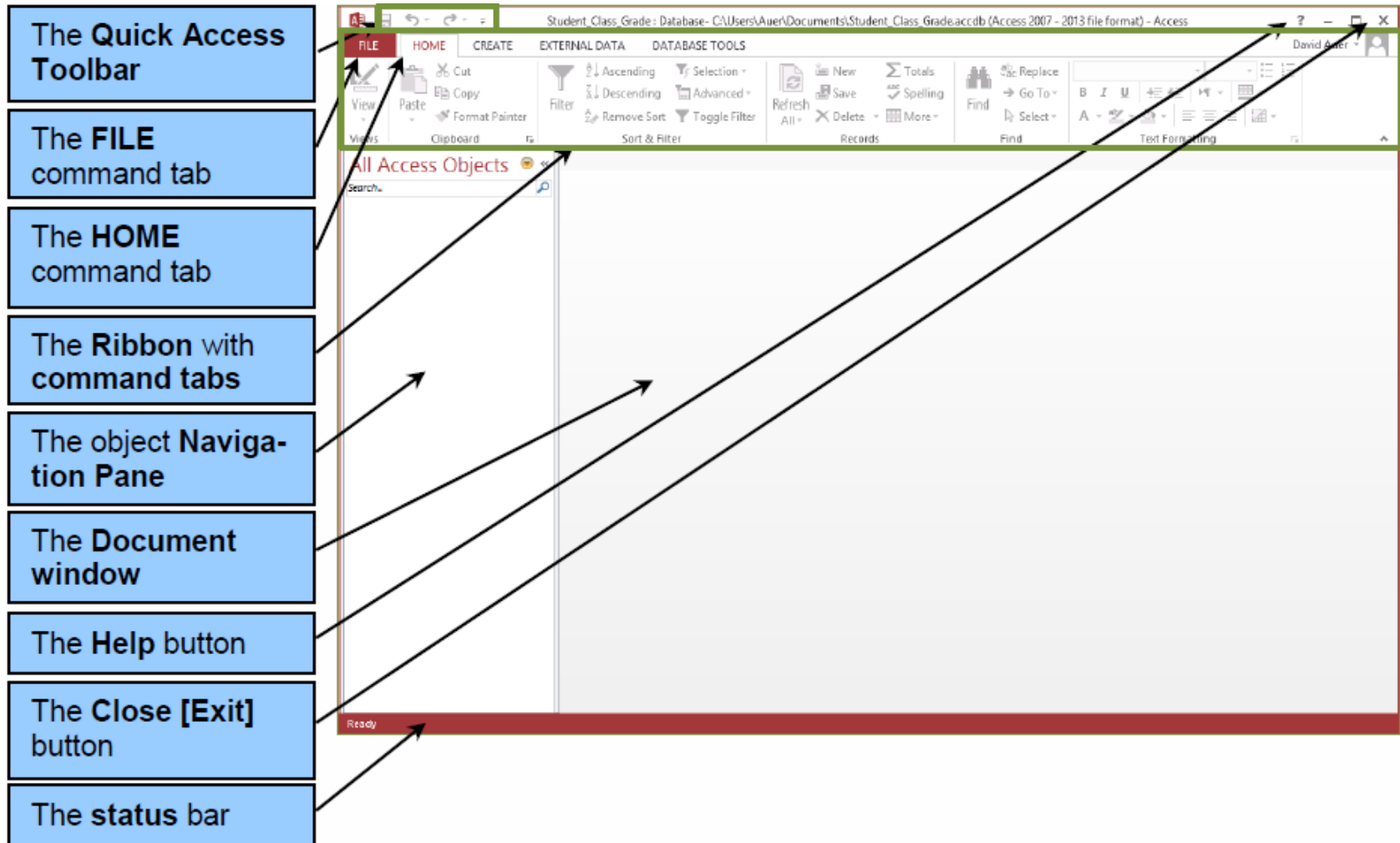
ID Click to Add

(New)

Records: 14 of 1 No Filter Search

Datasheet View

# The Microsoft Office Fluent User Interface

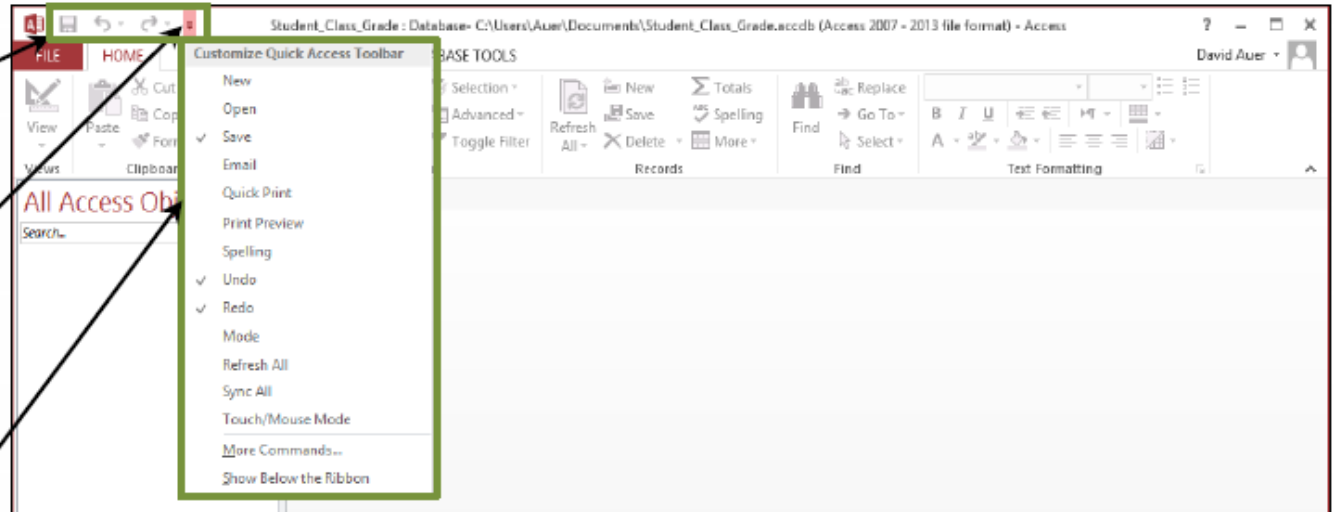


# The Quick Access Toolbar

**The Quick Access Toolbar**

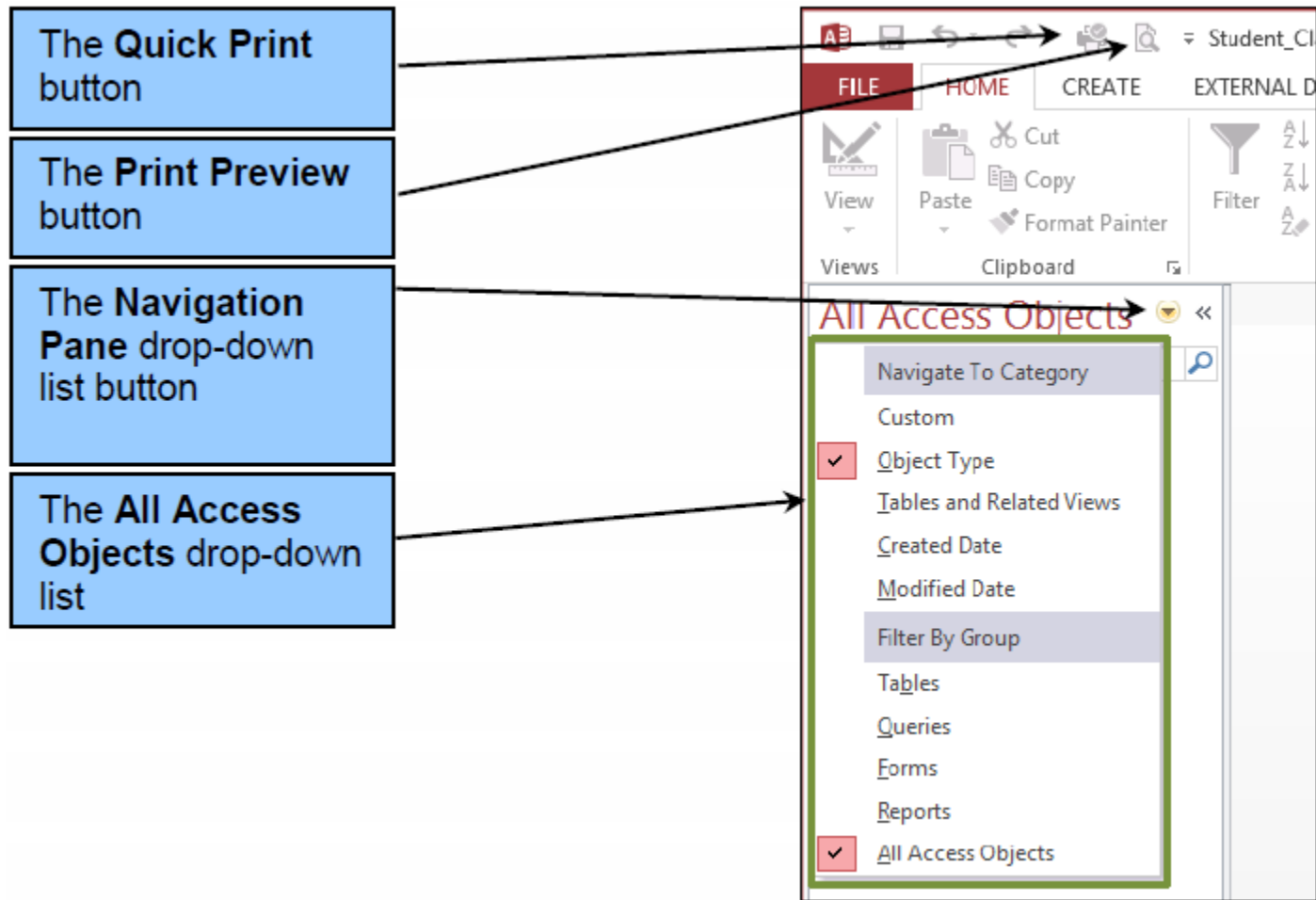
**The Customize Quick Access Toolbar drop-down list button**

**The Customize Quick Access Toolbar drop-down list—click an item to add it to the toolbar**





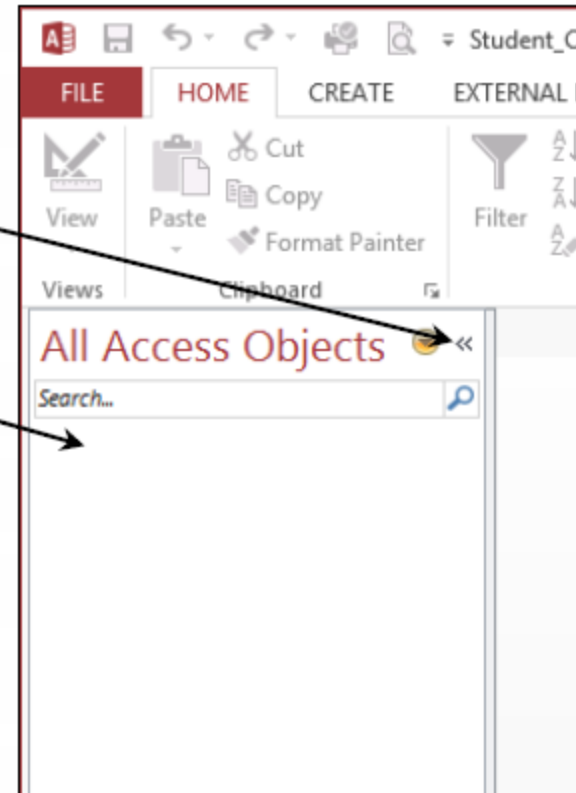
# Database Objects and the Navigation Pane



# Database Objects and the Navigation Pane II

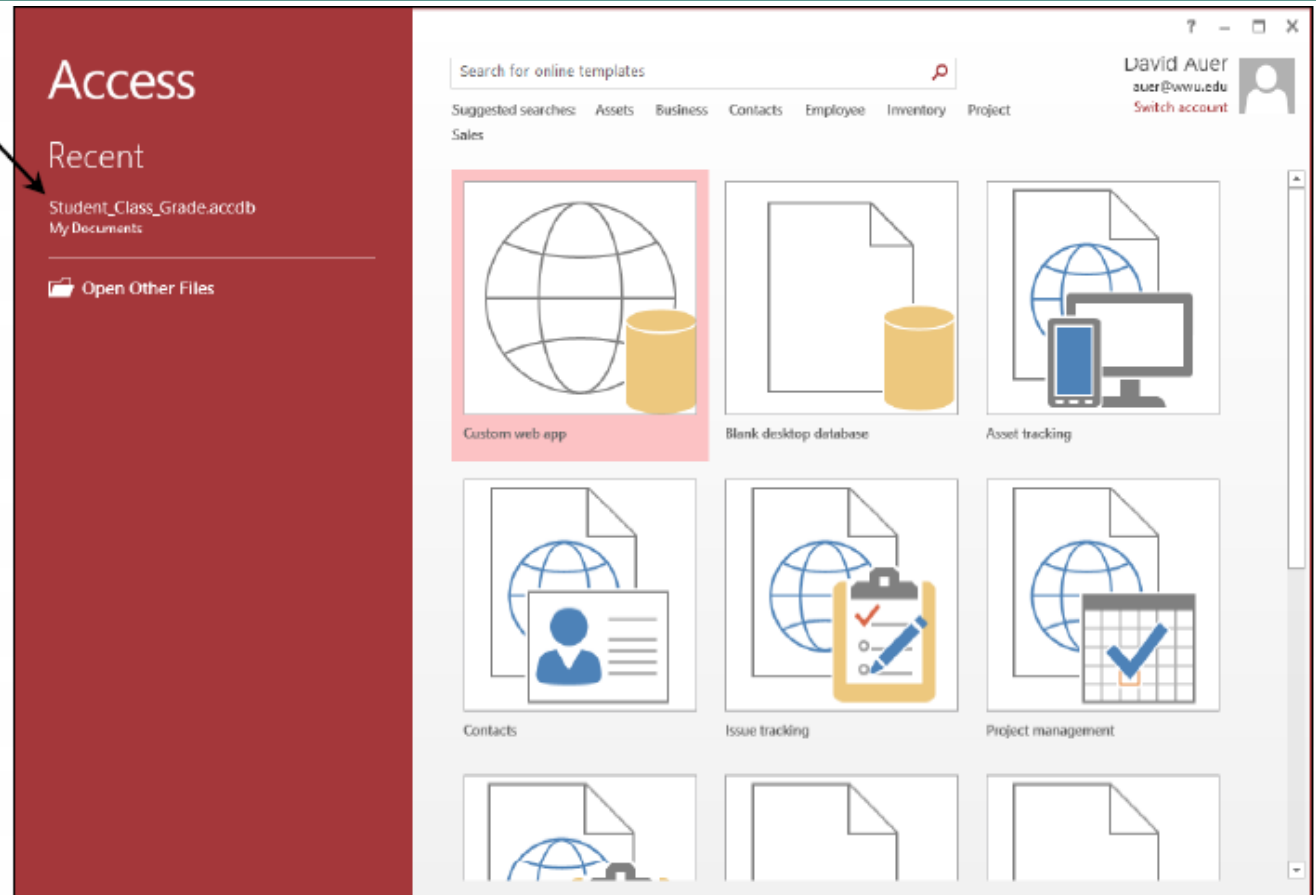
Use the **Shutter Bar Open/Close** button to hide or display the Navigation Pane

The Navigation Pane is empty because we have not created any objects for this database

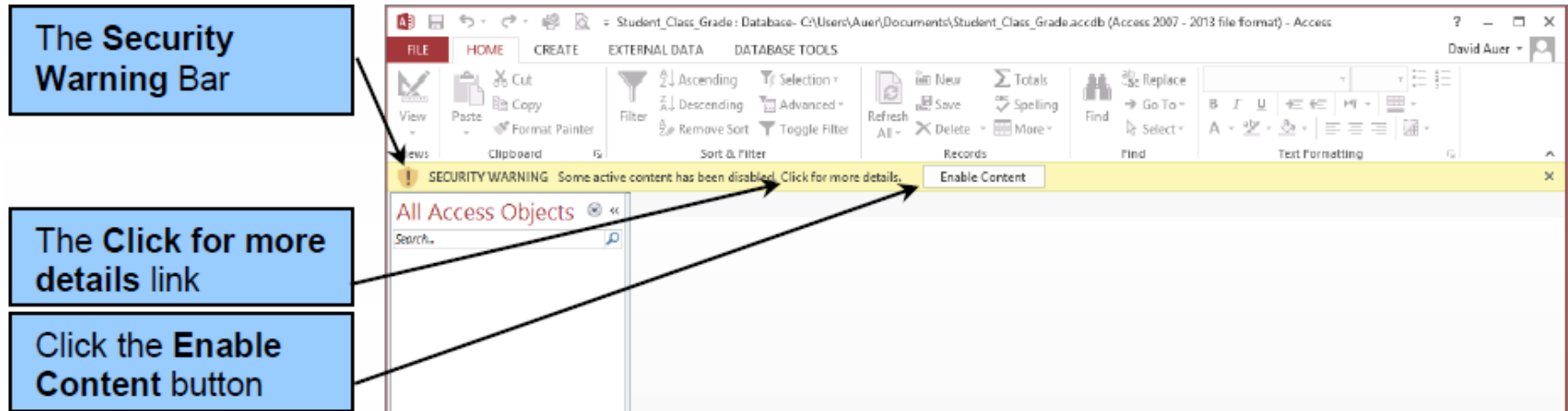


# Opening an Existing Database: The Backstage View

The **Student\_Class\_Grade**  
**.accdb** database in  
the Recent data-  
bases list



# The Security Warning Bar

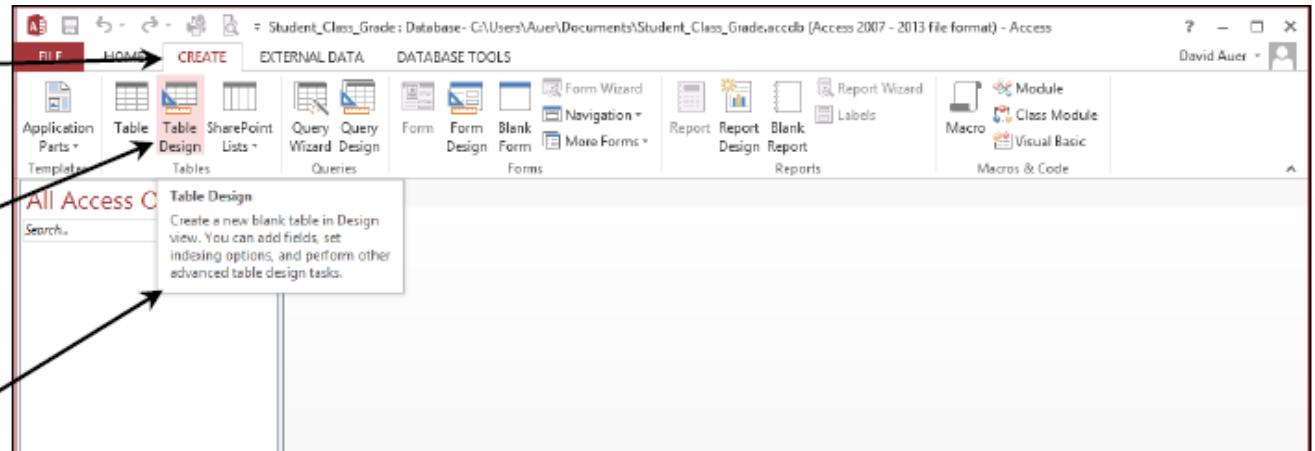


# Creating a Table I

The **CREATE**  
command tab

The **Table Design**  
button

The **tool tip** for the  
button shows that  
new table object  
will be created

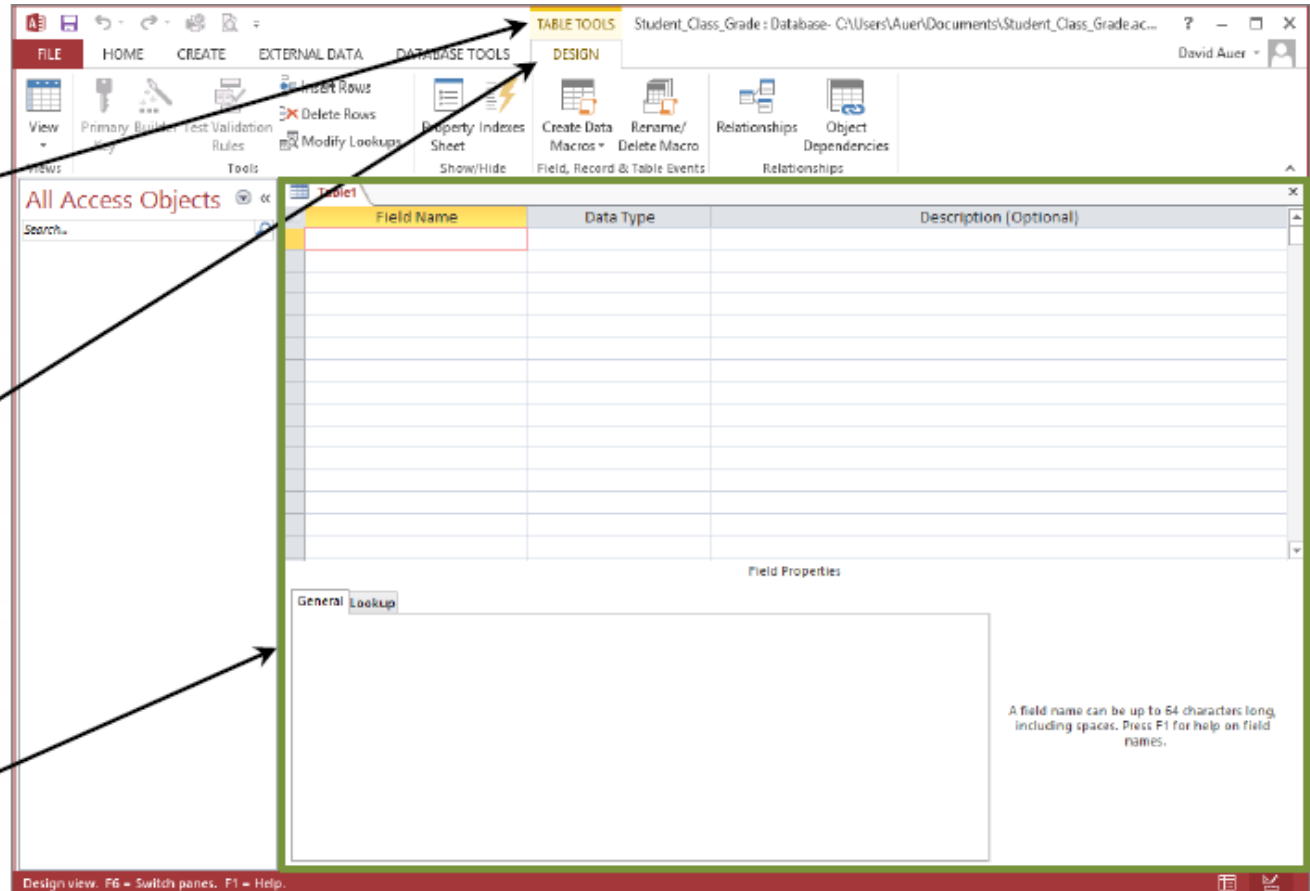


# Creating a Table II

The **TABLE TOOLS** contextual command tab is displayed along with the set of command tabs that comprise Table Tools

The **DESIGN** command tab and its command groups are displayed

The **Table1** tabbed document window in Design view

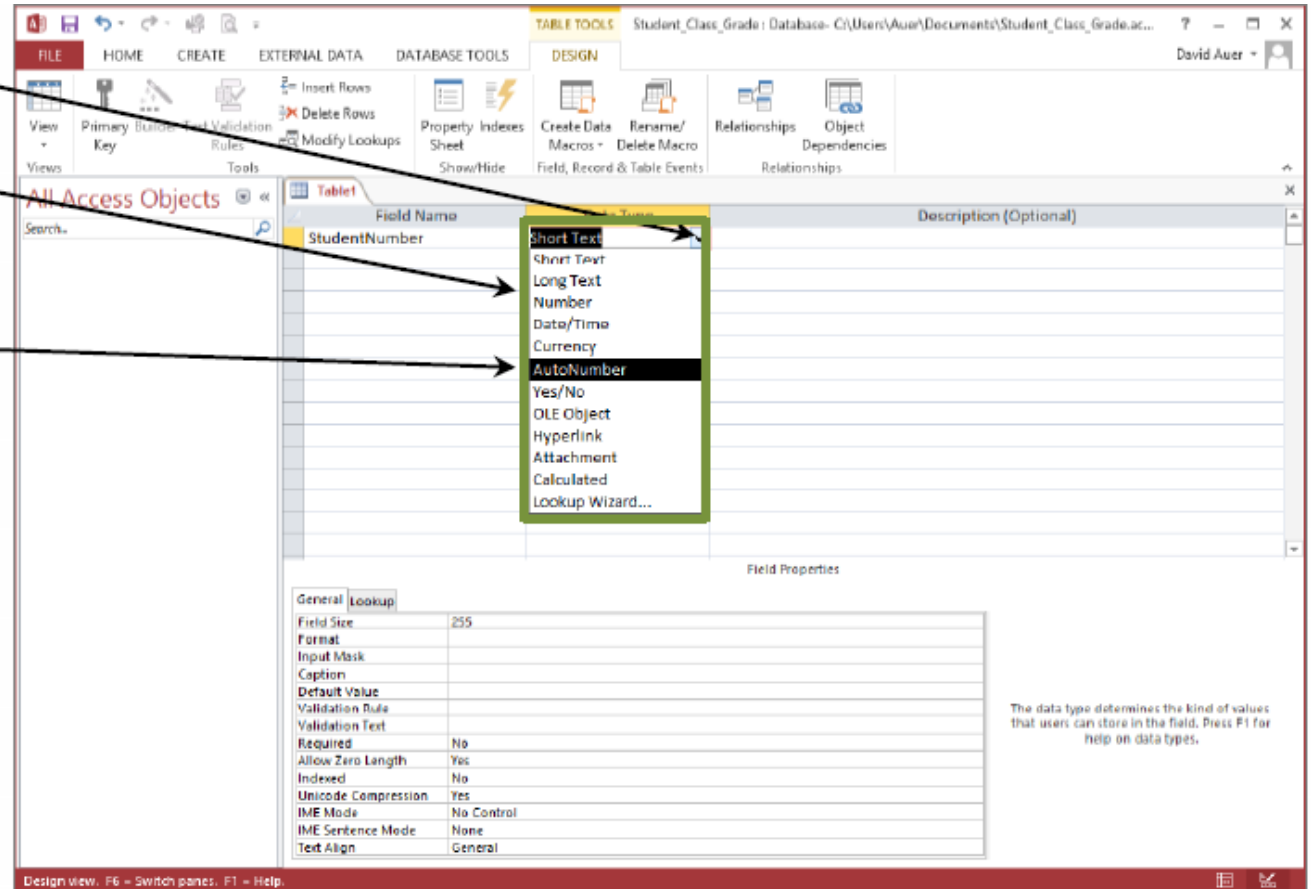


# Creating Columns (Fields) I

The Data Type drop-down list arrow

The Data Type drop-down list

Select AutoNumber



# Creating Columns (Fields) II

The completed **StudentNumber** column definition

The screenshot shows the Microsoft Access interface. At the top, a tab labeled "Table1" is active. Below it, a table grid is displayed with three columns: "Field Name", "Data Type", and "Description (Optional)". The first row of the table contains the following data:

Field Name	Data Type	Description (Optional)
StudentNumber	AutoNumber	Surrogate key for STUDENT

Below the table grid, the "Field Properties" section is visible. It has two tabs: "General" and "Lookup". The "General" tab is currently selected.

A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.



# Creating Columns (Fields) III

Edit this number to set the number of characters

The screenshot shows the Microsoft Access Table Design view for a table named 'Table1'. The table has two fields: 'StudentNumber' (AutoNumber) and 'LastName' (Short Text). The 'LastName' field is selected, and its properties are shown in the 'Field Properties' pane. The 'Field Size' property is set to 25. A text box on the left says 'Edit this number to set the number of characters', with an arrow pointing to the 'Field Size' property.

Field Name	Data Type	Description (Optional)
StudentNumber	AutoNumber	Surrogate key for STUDENT
LastName	Short Text	

Field Properties	
General	Lookup
Field Size	25
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

The maximum number of characters you can enter in the field. The largest maximum you can set is 255. Press F1 for help on field size.

# Creating Columns (Fields) IV

Click anywhere in the Required text box to display the Required property drop-down list arrow

Select Yes from the Required property drop-down list

The screenshot shows the Microsoft Access Table Design view for a table named 'Table1'. The table has two fields: 'StudentNumber' (AutoNumber, Surrogate key for STUDENT) and 'LastName' (Short Text). The 'Required' property for 'LastName' is being set to 'Yes'.

Field Name	Data Type	Description (Optional)
StudentNumber	AutoNumber	Surrogate key for STUDENT
LastName	Short Text	

Field Properties

General

Field Size	25
Format	
Input Mask	
Caption	
Default Value	
Validation Rule	
Validation Text	
Required	No
Allow Zero Length	Yes
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

Require data entry in this field?

# Setting the Primary Key I

The row selector column—move the mouse pointer into this column to select a specific row

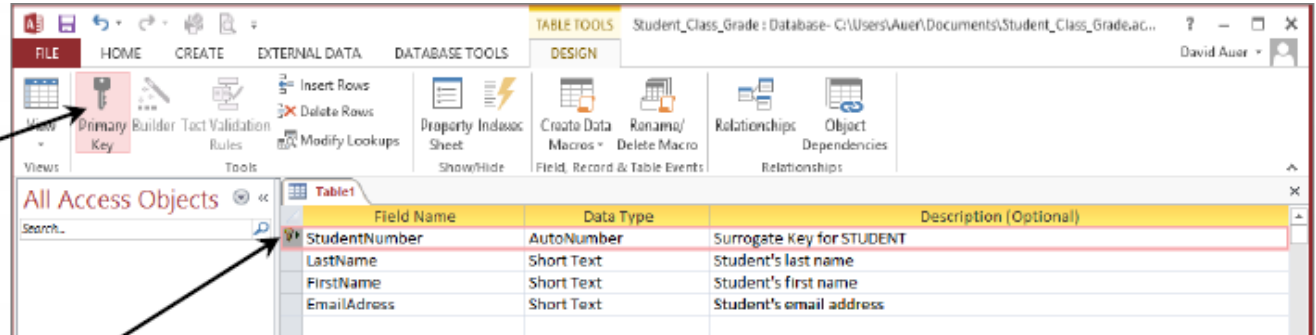
Move the mouse pointer here and click to select the **StudentNumber** row

[illegible]

# Setting the Primary Key II

Click the **Primary Key** button in the Tools group of the Design tab to set StudentNumber as the primary key

A *key symbol* here indicates that StudentNumber is the primary key of the table



# Saving the Table Structure I

Click the **Save** button in the Quick Access Toolbar to display the **Save As** dialog box

Type the table name **STUDENT** in the Table Name text box

Save As ? x

Table Name:

STUDENT

OK Cancel

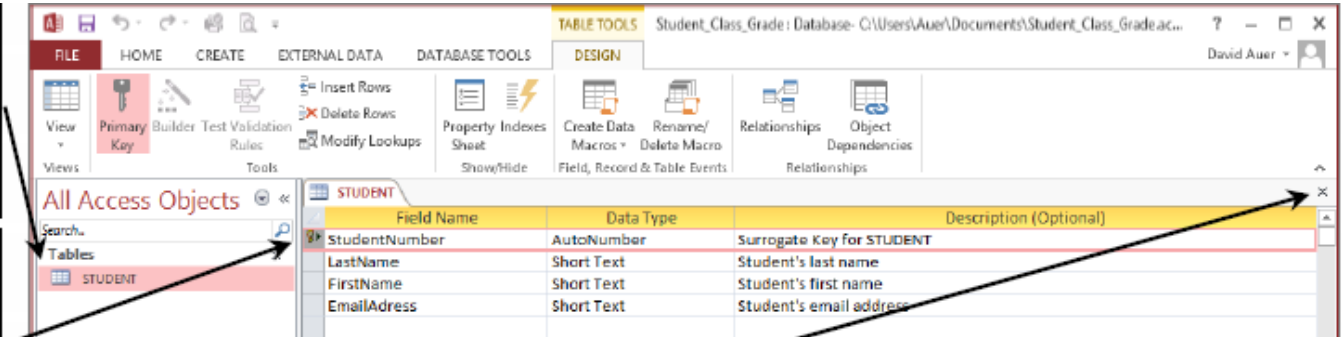
The **OK** button

# Saving the Table Structure II

The table object *STUDENT* is displayed in the Navigation Pane

The table is now named *STUDENT*, and the table name now appears on the document tab

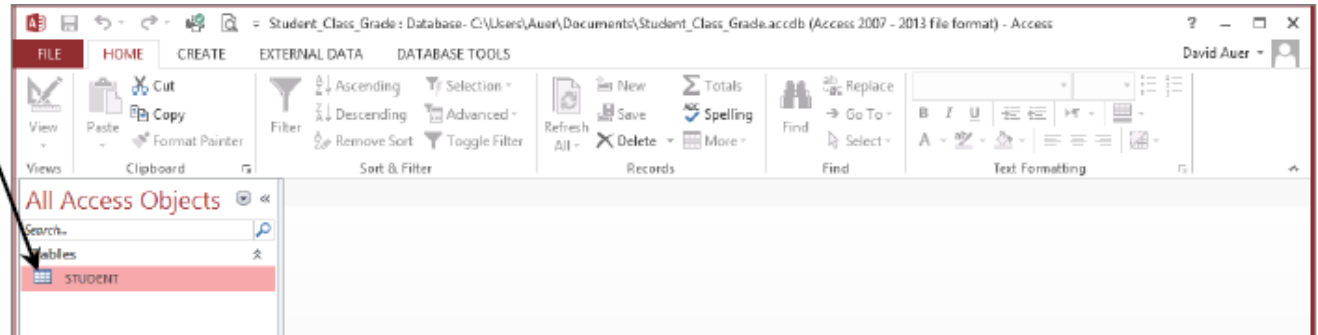
Click the **Close** button to close the *CUSTOMER* table



Field Name	Data Type	Description (Optional)
StudentNumber	AutoNumber	Surrogate Key for STUDENT
LastName	Short Text	Student's last name
FirstName	Short Text	Student's first name
EmailAddress	Short Text	Student's email address

# Saving the Table Structure III

The table object *STUDENT* is displayed in the Navigation Pane



# Adding Data to Tables

- We can add data to a table by:
  - Using the datasheet view
  - Using a form



# STUDENT Data

StudentNumber	LastName	FirstName	EmailAddress
1	Cooke	Sam	Sam.Cooke@OurU.edu
2	Lau	Marcia	Marcia.Lau@OurU.edu
3	Harris	Lou	Lou.Harris@OurU.edu
4	Greene	Grace	Grace.Greene@OurU.edu

# CLASS Data

ClassNumber	ClassName	Term	Section
10	CHEM 101	2014-Fall	1
20	CHEM 101	2014-Fall	2
30	CHEM 101	2015-Spring	1
40	ACCT 101	2014-Fall	1
50	ACCT 102	2015-Spring	1

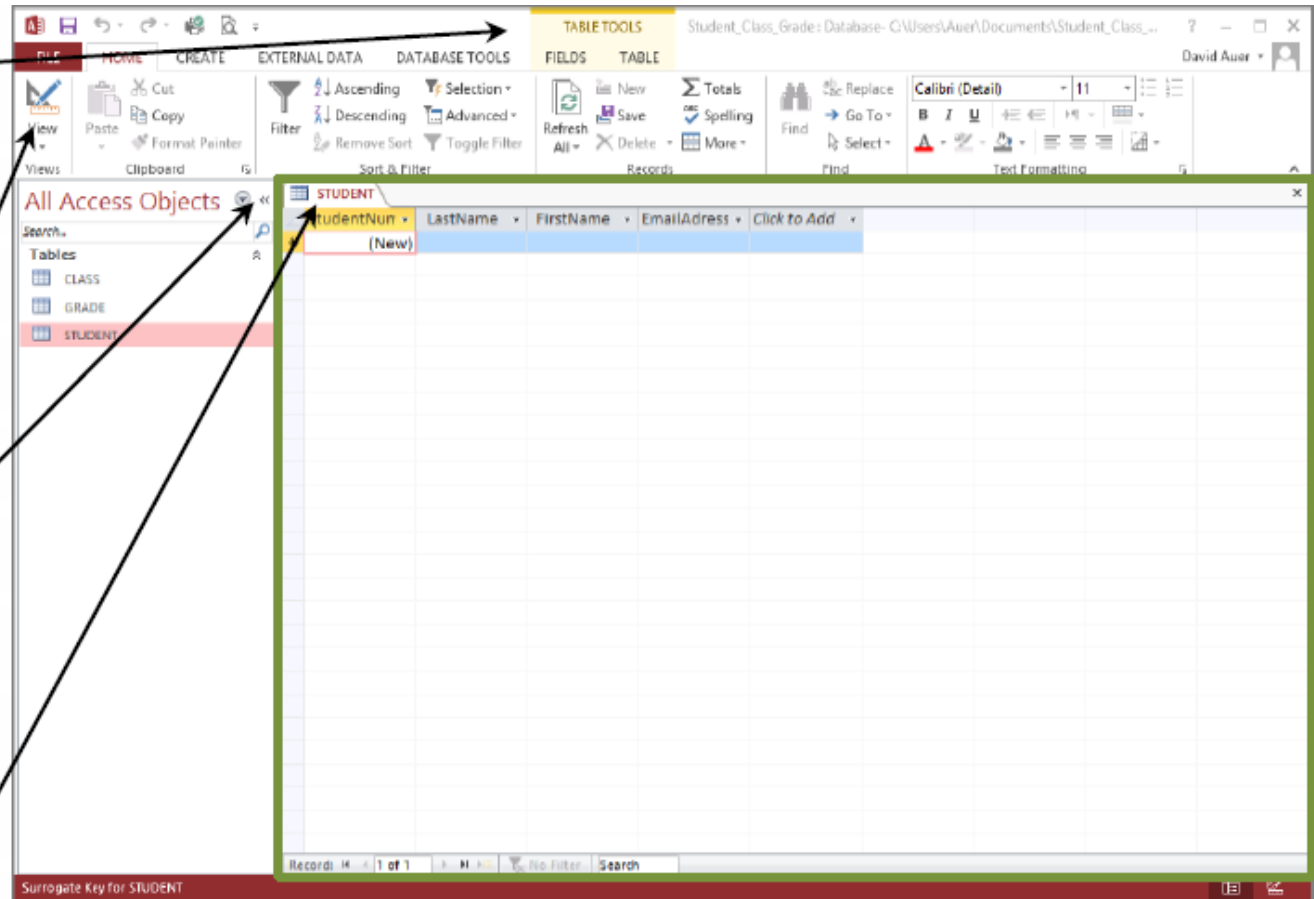
# Adding Data to Tables: Using the Datasheet View I

The **TABLE TOOLS** tab

If you need to switch between Datasheet view and Design view use the **Design View** button

The **Shutter Bar Open/Close** button

The **STUDENT** tabbed document window with the table in Datasheet view



# Adding Data to Tables: Using the Datasheet View II

This row has been auto-numbered as StudentNumber 1

A new, blank row is added to the datasheet

The screenshot shows the Microsoft Access interface for a table named 'STUDENT'. The table structure is as follows:

StudentNum	LastName	FirstName	EmailAddress	Click to Add
1	Cooke			
(New)				

Two arrows are present: one points to the '1' in the 'StudentNum' column of the first data row, and another points to the '(New)' text in the first column of the second data row.

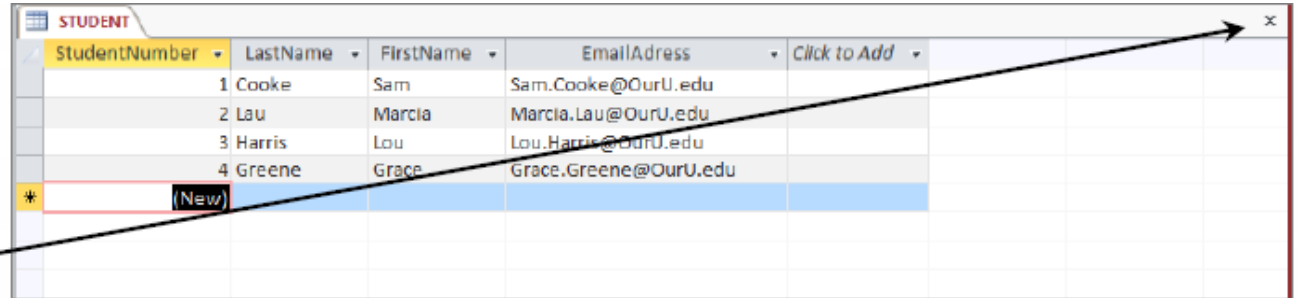
# Adding Data to Tables: Using the Datasheet View III

Column widths can be adjusted by using the mouse to drag the column border to the desired width

StudentNumber	LastName	FirstName	EmailAddress	Click to Add
1	Cooke	Sam	Sam.Cooke@DurU.edu	
*(New)				

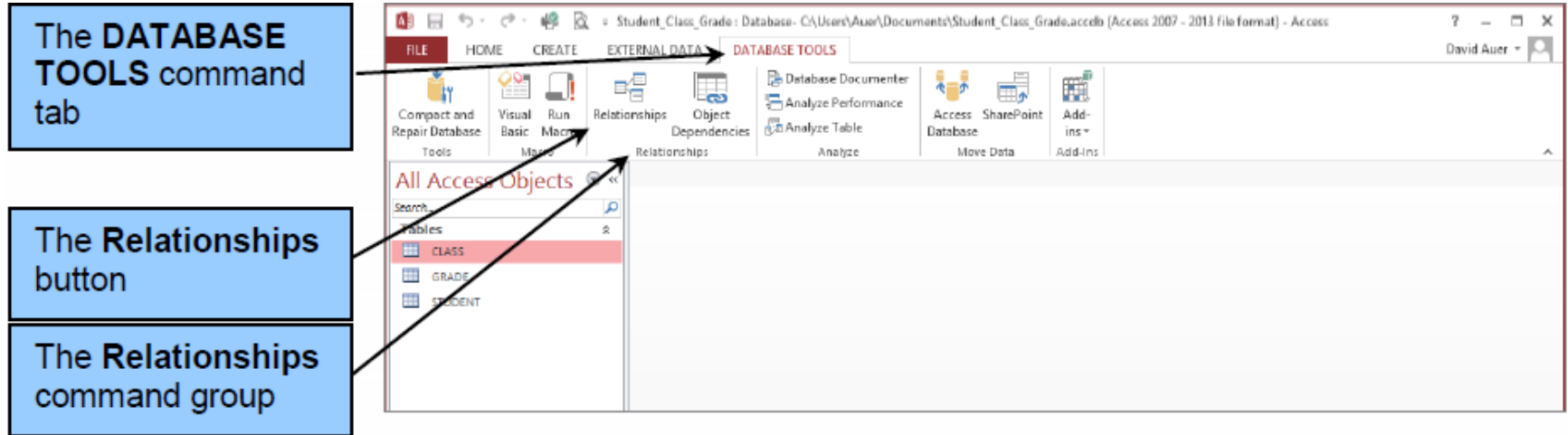
# Adding Data to Tables: Using the Datasheet View IV

Click the **Close** button to close the STUDENT datasheet



StudentNumber	LastName	FirstName	EmailAddress	Click to Add
1	Cooke	Sam	Sam.Cooke@OurU.edu	
2	Lau	Marcia	Marcia.Lau@OurU.edu	
3	Harris	Lou	Lou.Harris@OurU.edu	
4	Greene	Grace	Grace.Greene@OurU.edu	
*	(New)			

# Creating Relationships I



# Creating Relationships II

The screenshot shows the Microsoft Access interface with the following components highlighted by callouts:

- The **RELATIONSHIP TOOLS** tab**: Located in the top ribbon, it is the active tab for the Relationships window.
- The **DESIGN** command tab**: Located in the top ribbon, it is the active sub-tab for the Relationships window.
- The **Relationships** tabbed document window**: The main window for managing relationships, showing the 'All Access Objects' list on the left and the 'Relationships' tab.
- The **Show Table** dialog box**: A small window that appears when adding a table to the Relationships window. It contains a list of tables (CLASS, GRADE, STUDENT) and an 'Add' button.
- Select a table name and click the **Add** button to add the table to the Relationships window**: This callout points to the 'Add' button in the 'Show Table' dialog box.

The 'Show Table' dialog box contains the following table:

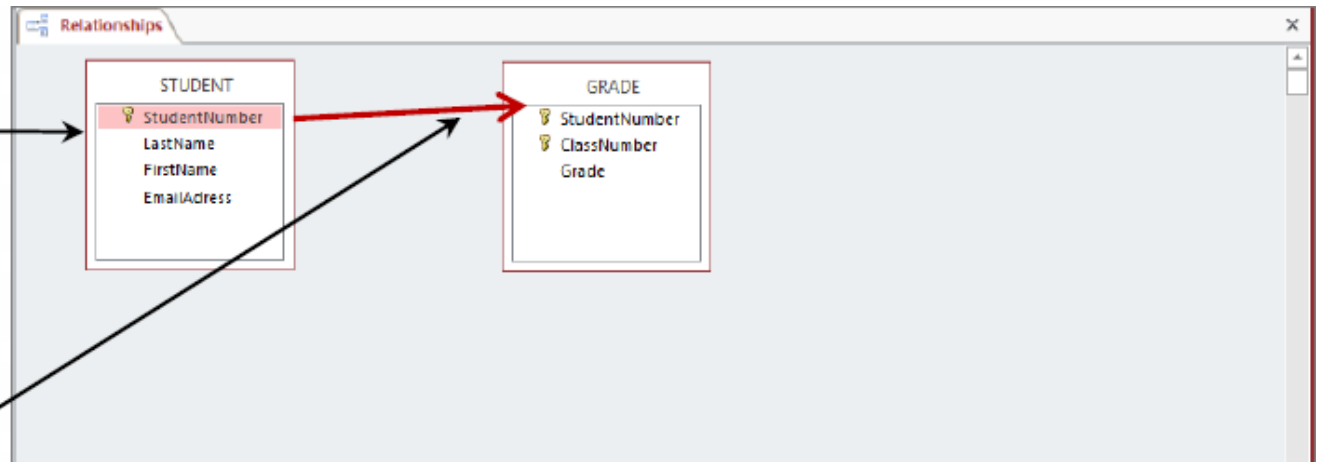
Tables
CLASS
GRADE
STUDENT



# Creating Relationships III

The table objects have been rearranged into the arrangement shown here

Click, drag, and drop the **STUDENT** StudentNumber field onto the **GRADE** StudentNumber field

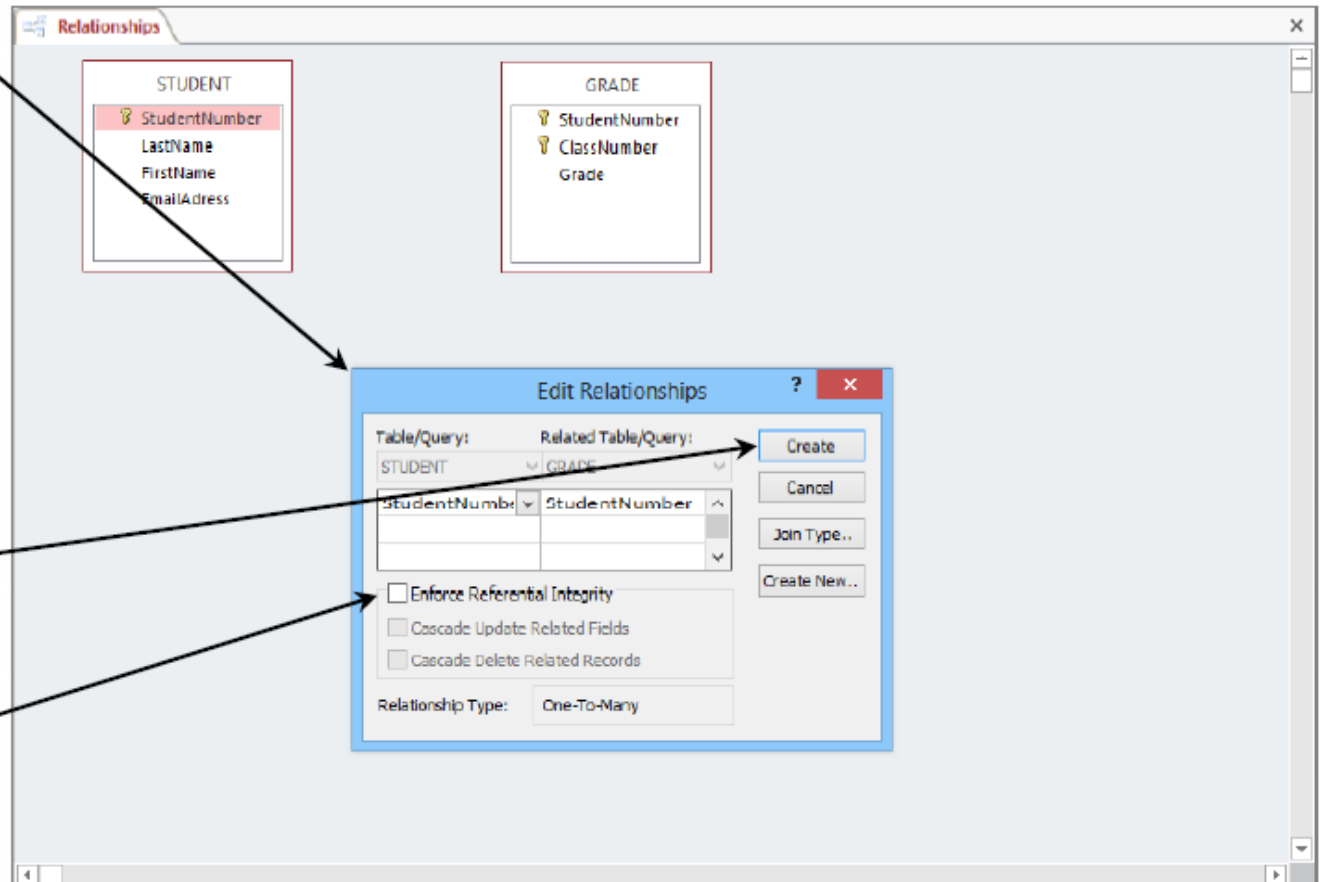


# Creating Relationships IV

The **Edit Relationships** dialog box

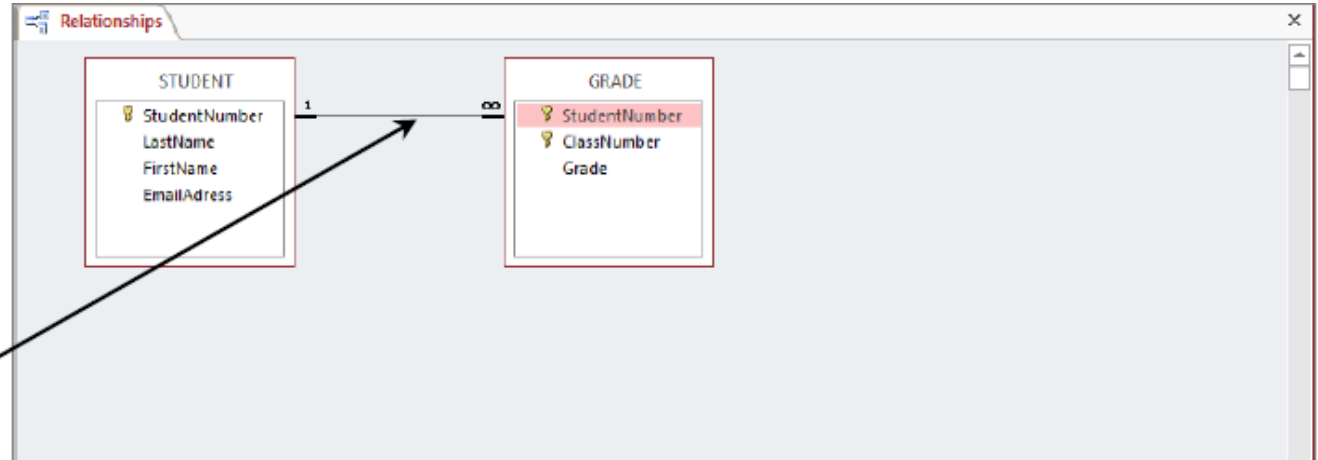
The **Create** button

Click the **Enforce Referential Integrity** check box and then click the **Create** button to create the relationship



# Creating Relationships V

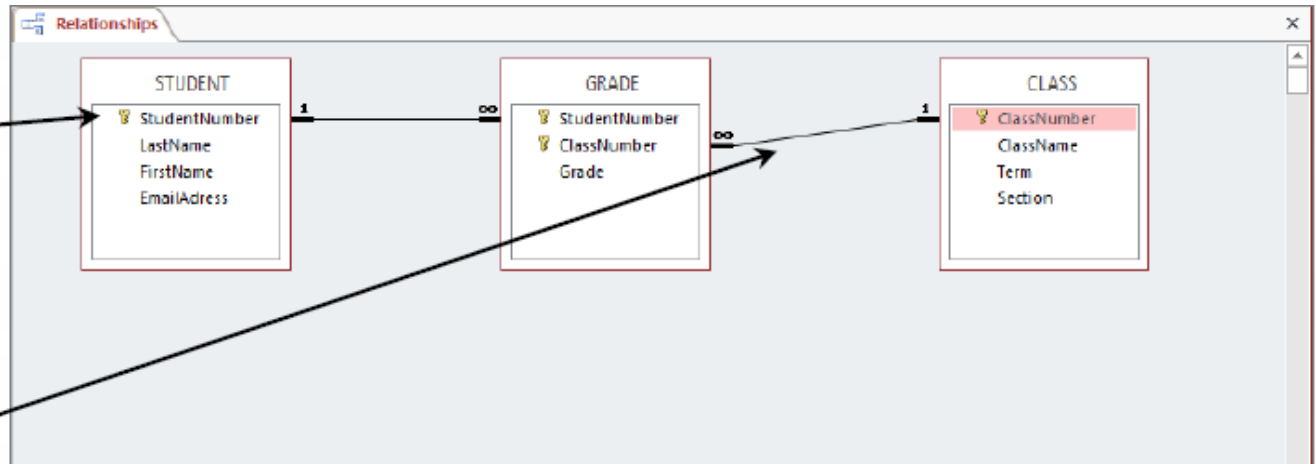
The new relationship now appears in the Relationships window diagram—note that the line connects the related fields



# Creating Relationships VI

The key symbols show the primary key in each table

The second relationship now appears in the Relationships window diagram—note that the line connects the related fields



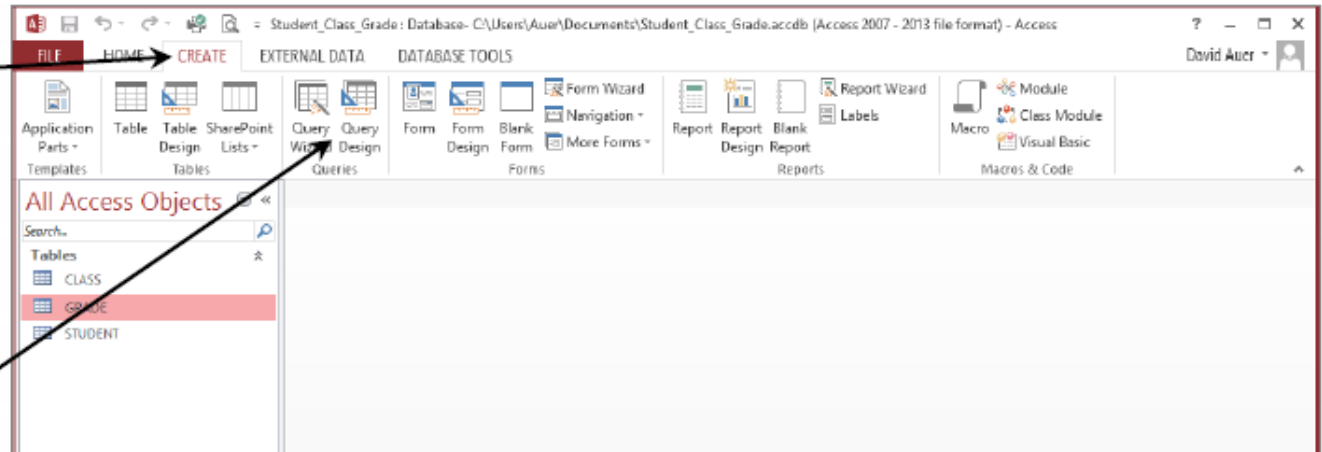
# GRADE Data

StudentNumber	ClassNumber	Grade
1	10	3.7
1	40	3.5
2	20	3.7
3	30	3.1
4	40	3.0
4	50	3.5

# Creating QBE Queries I

The **CREATE**  
command tab

The **Query Design**  
button



# Creating QBE Queries II

The **Query1** tabbed document window

The **Show Table** dialog box

Click a table name to select it and then click the **Add** button to add the table to the query

The **Close** button

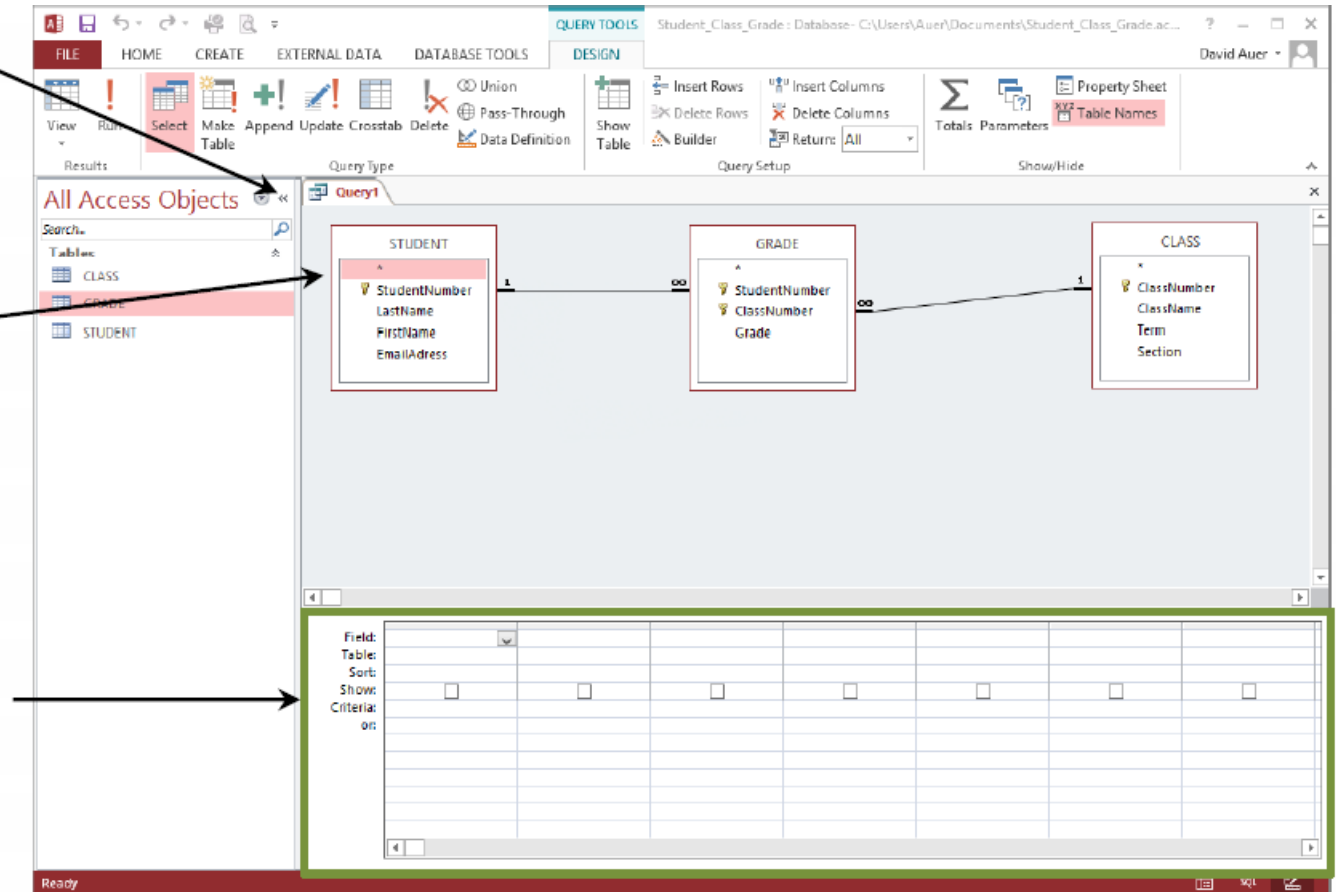
The screenshot shows the Microsoft Access interface. The 'Query1' tab is selected in the 'All Access Objects' pane. The 'Show Table' dialog box is open, showing a list of tables: CLASS, GRADE, and STUDENT. The 'Add' button is highlighted. The 'Close' button is also visible. The 'Query Design' view is active, showing a grid for adding fields, tables, and criteria.

# Creating QBE Queries III

The **Shutter Bar**  
Open/Close button

Tables in the query appear in the top pane, together with a list of their columns (the *field list*) and an asterisk (\*), meaning “all columns”

Columns in the query are called fields and appear in the bottom pane, together with related property values



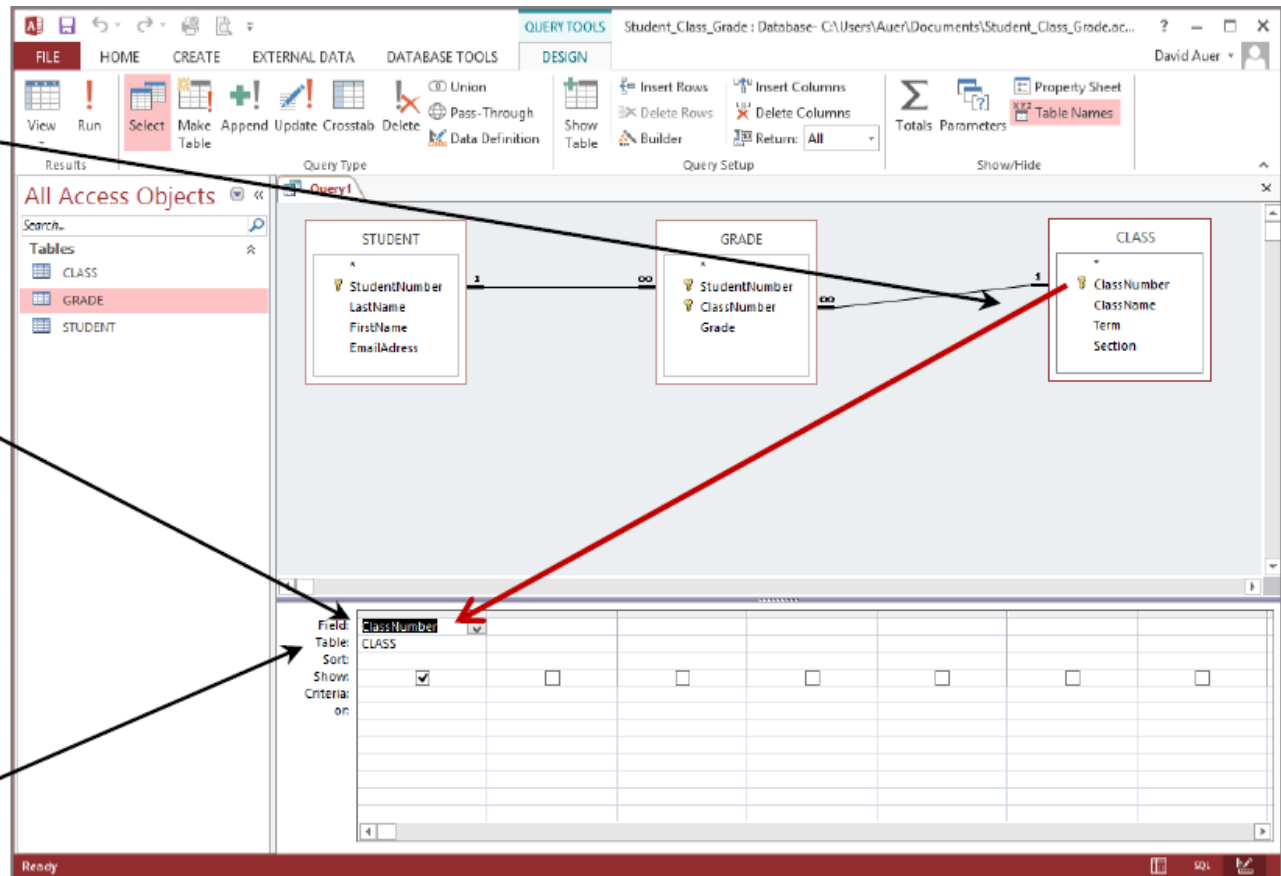


# Creating QBE Queries IV

To add a column to the query, click the column name and drag it to a cell in the Field: row in the lower pane

The ClassNumber field name is dropped here to add the **ClassNumber** field to the query

The table name is automatically added to the query to specify the source of the column—this is important if there is more than one table in the query with the same col-



# Creating QBE Queries V

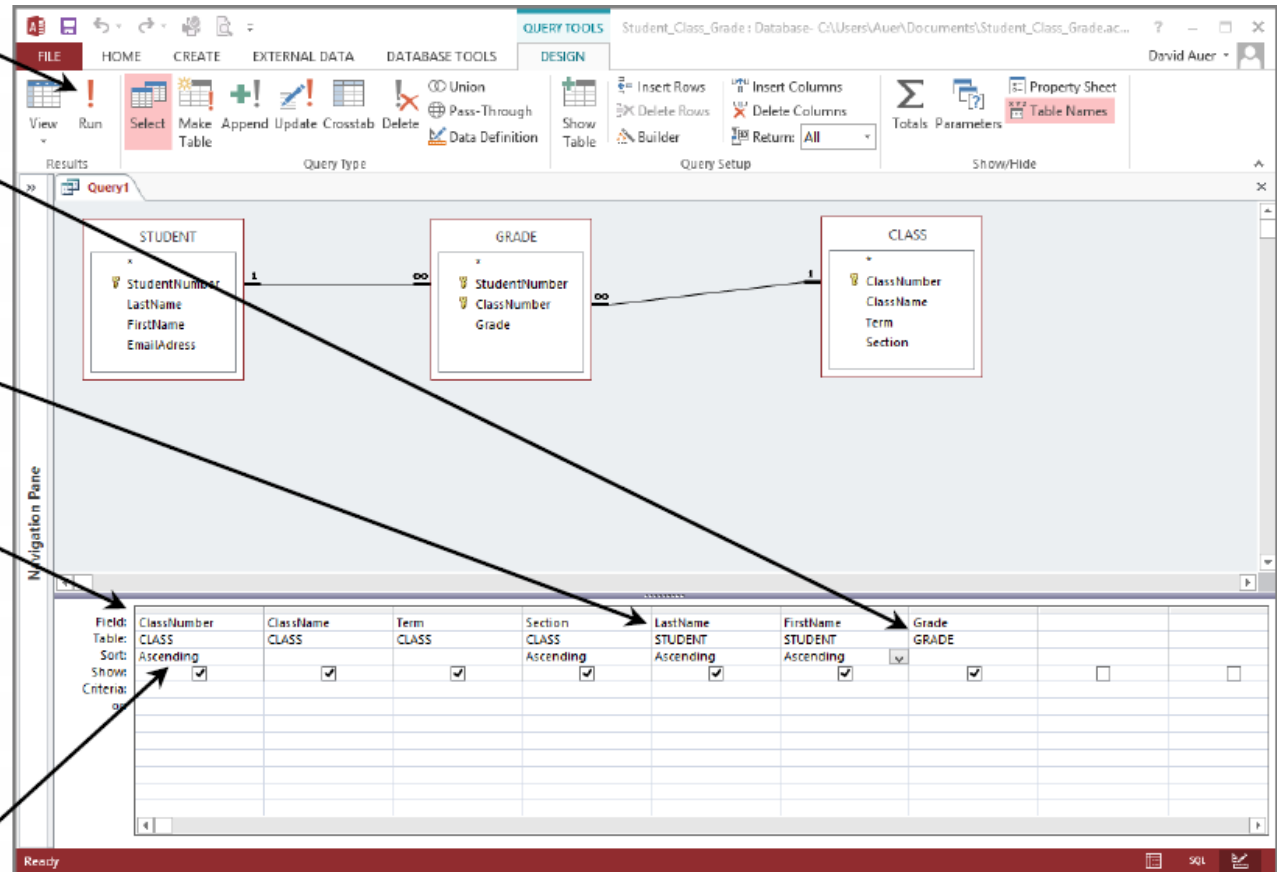
The **Run** button

From **GRADE**, the **Grade** column is in the query

From **STUDENT**, the **LastName** and **FirstName** columns are in the query

From **CLASS**, the **ClassNumber**, **ClassName**, **Term**, and **Section** columns are in the query

The results will be sorted by **ClassNumber**, **Section**, **LastName** and **Firstname** in ascending order



# Creating QBE Queries VI

The **Save** button

The results show the course grade for each student in each section of each class

The results are sorted by ClassNumber, Section, LastName, and FirstName in ascending order

ClassNumber	ClassName	Term	Section	LastName	FirstName	Grade
10	CHEM 101	2014-Fall	1	Cooke	Sam	3.7
20	CHEM 101	2014-Fall	2	Lau	Marcia	3.7
30	CHEM 101	2015-Spring	1	Harris	Lou	3.1
40	ACCT 101	2014-Fall	1	Cooke	Sam	3.5
40	ACCT 101	2014-Fall	1	Greene	Grace	3.0
50	ACCT 101	2015-Spring	1	Greene	Grace	3.5

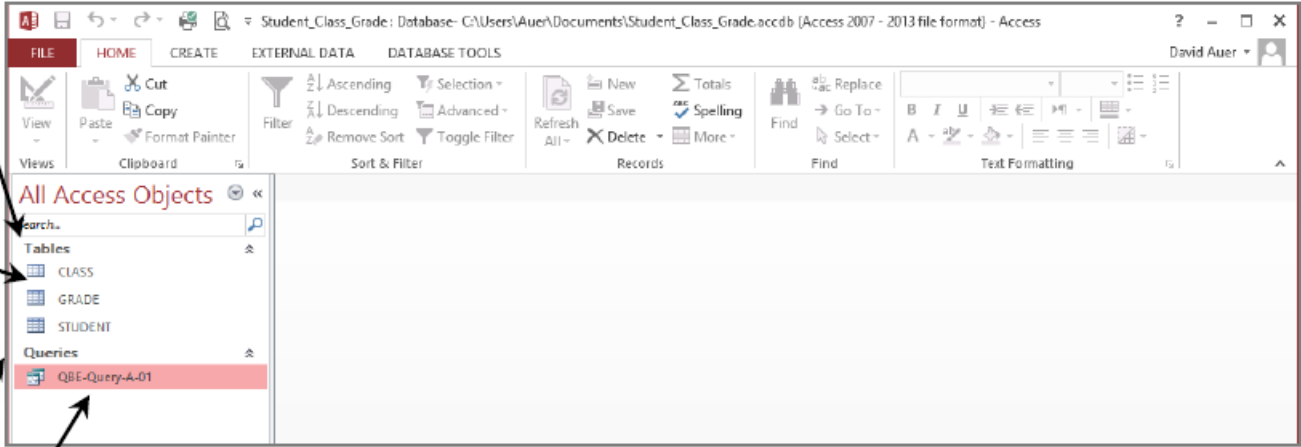
# Creating QBE Queries VII

The **Tables** section of the Navigation Pane

The **CLASS**, **GRADE** and **STUDENT** table objects

The **Queries** section of the Navigation Pane

The **QBE-Query-A-01** query object



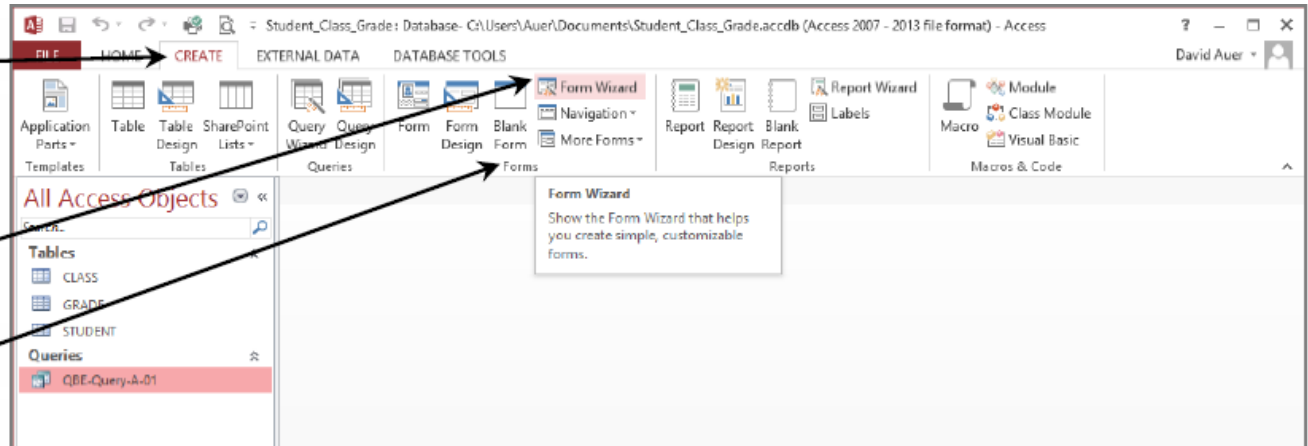
The screenshot shows the Microsoft Access interface. The title bar indicates the file is 'Student\_Class\_Grade: Database - C:\Users\Auer\Documents\Student\_Class\_Grade.accdb (Access 2007 - 2013 file format) - Access'. The ribbon includes 'FILE', 'HOME', 'CREATE', 'EXTERNAL DATA', and 'DATABASE TOOLS'. The 'HOME' ribbon is active, showing options like 'View', 'Paste', 'Copy', 'Format Painter', 'Filter', 'Sort & Filter', 'Records', 'Find', and 'Text Formatting'. The Navigation Pane on the left is titled 'All Access Objects' and contains a search bar. It lists 'Tables' (CLASS, GRADE, STUDENT) and 'Queries' (QBE-Query-A-01). The 'QBE-Query-A-01' query is highlighted in red. Arrows point from the text boxes on the left to the 'Tables' section, the three table objects, the 'Queries' section, and the 'QBE-Query-A-01' query object.

# Access 2013 Forms

The **CREATE**  
command tab

The **Form Wizard**  
button

The **Forms** com-  
mand group

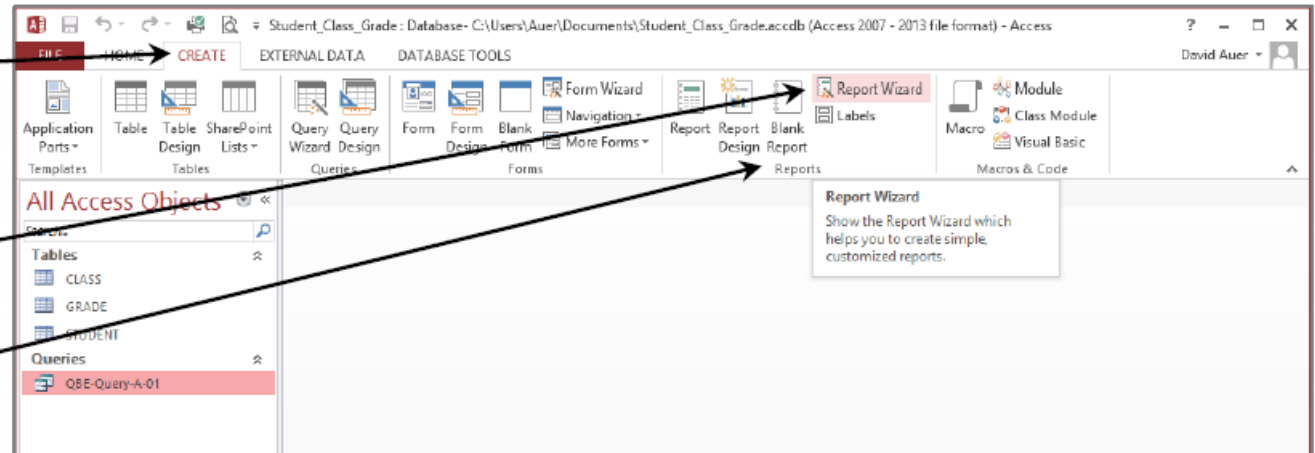


# Access 2013 Reports

The **CREATE**  
command tab

The **Report Wizard** button

The **Reports** command group



## ❖ PART 1 REVIEW QUESTIONS

A.1. Part 1 – Using the Student-Class-Grade database that you created answer the following:

A. Create and run an Access QBE query to duplicate the results in Figure 1-10. Save the query as QBE-Query-A-02.

The screenshot shows the Microsoft Access interface with the QBE-Query-A-02 query in Design View. The 'All Access Objects' pane on the left shows the 'STUDENT' table and the 'QBE-Query-A-02' query. The design grid below shows the following fields and criteria:

Field:	LastName	FirstName	EmailAddress	StudentNumber
Table:	STUDENT	STUDENT	STUDENT	STUDENT
Sort:				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Criteria:				>2
or:				

The screenshot shows the results of the QBE-Query-A-02 query in Datasheet View. The results are as follows:

LastName	FirstName	EmailAddress
Harris	Lou	Lou.Harris@OurU.edu
Greene	Grace	Grace.Green@OurU.edu

Record: 1 of 2

- B. Use the Form Wizard to create a data input form for the STUDENT table. Name the form **Student Data Input Form**. Using the student data shown in Figure A-49, add the new students to the STUDENT table.

StudentNumber	LastName	FirstName	EmailAddress
5	Davis	Bruce	Bruce.Davis@OurU.edu
6	Kelly	Mary	Mary.Kelly@OurU.edu
7	Taylor	Larry	Larry.Taylor@OurU.edu

Figure A-49 — Additional STUDENT Data



- C. Use the Form Wizard to create a data input form for the CLASS table. Name the form **Class Data Input Form**. Using the class data shown in Figure A-50, add the new classes to the CLASS table.

ClassNumber	ClassName	Term	Section
60	MATH 105	2014-Fall	1
70	MATH 105	2014-Fall	2
80	MATH 105	2014-Fall	3
90	MATH 110	2014-Spring	1

Figure A-50 — Additional CLASS Data

StudentNumber	ClassNumber	Grade
1	60	3.3
2	60	3.5
5	70	3.7
6	70	2.7
7	80	3.0
7	90	3.3

The screenshot displays the Microsoft Access interface. On the left, the 'All Access Objects' task pane shows a tree view with 'Tables' containing 'CLASS', 'GRADE' (selected), and 'STUDENT'; 'Queries' containing 'QBE-Query-A-01', 'QBE-Query-A-02', and 'SQL-Query-A-02'; and 'Forms' containing 'Class Data Input Form', 'Grade Data Input Form', and 'Student Data Input Form'. The main window shows the 'GRADE' table in Datasheet View. The table has four columns: 'StudentNumber', 'ClassNumber', 'Grade', and 'Click to Add'. The data is as follows:

StudentNumber	ClassNumber	Grade	Click to Add
1	10	3.7	
1	40	3.5	
1	60	3.3	
2	20	3.7	
2	60	3.5	
3	30	3.1	
4	40	3.0	
4	50	3.5	
5	70	3.7	
6	70	2.7	
7	80	3.0	
7	90	3.3	
*		0.0	

The status bar at the bottom left indicates 'Primary key of GRADE'.

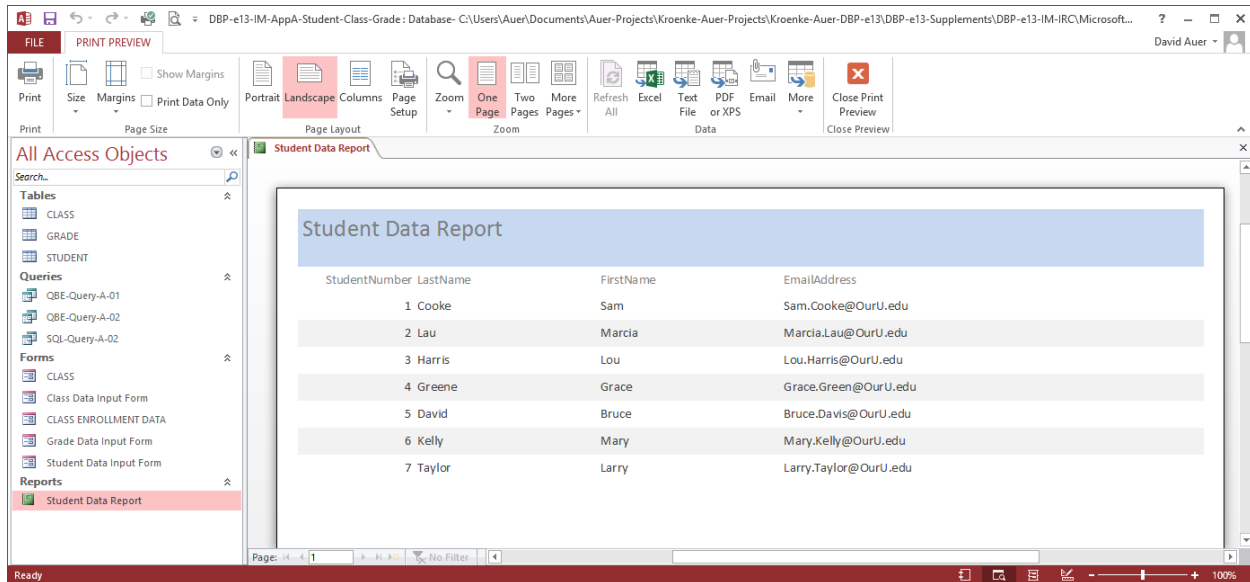
- E. Use the Form Wizard to duplicate the CLASS form in Figure 1-9. Note that this form uses more than one table.

Formatting this form requires the use of Design View.

The screenshot shows the Microsoft Access 2013 interface. The ribbon at the top includes FILE, HOME, CREATE, EXTERNAL DATA, and DATABASE TOOLS. The left pane shows 'All Access Objects' with a search bar and categories: Tables (CLASS, GRADE, STUDENT), Queries (QBE-Query-A-01, QBE-Query-A-02, SQL-Query-A-02), and Forms (CLASS, Class Data Input Form, CLASS ENROLLMENT DATA, Grade Data Input Form, Student Data Input Form). The 'CLASS' form is selected and shown in Design View. The form has a title bar 'CLASS' and a header section. Below the header are four text boxes: 'Class Number' (containing '40'), 'Class Name' (containing 'ACCT 101'), 'Term' (containing '2014-Fall'), and 'Section' (containing '1'). Below these is a table titled 'CLASS ENROLLMENT DATA'. The table has four columns: 'StudentNumber', 'LastName', 'FirstName', and 'EmailAddress'. The first row contains '1', 'Cooke', 'Sam', and 'Sam.Cooke@OurU.edu'. The second row contains '4', 'Greene', 'Grace', and 'Grace.Green@OurU.edu'. The third row is a new record, indicated by an asterisk in the 'StudentNumber' column and '(New)' in the 'LastName' column. The table has a status bar at the bottom that says 'Record: 14 of 2' and 'No Filter'.

StudentNumber	LastName	FirstName	EmailAddress
1	Cooke	Sam	Sam.Cooke@OurU.edu
4	Greene	Grace	Grace.Green@OurU.edu
*	(New)		

F. Use the Report Wizard to create a report of the data in the **STUDENT** table. Name the report **Student Data Report**.



- G. Use the Report Wizard and the CLASS, STUDENT and GRADE tables to duplicate the **Class Grade Report** shown in Figure 1-11. Note that your version of this report will display additional data because of the data you added to the database in steps B, C and D above.

Formatting this report requires the use of Design View.

**All Access Objects**

- Tables
  - CLASS
  - GRADE
  - STUDENT
- Queries
  - QBE-Query-A-01
  - QBE-Query-A-02
  - SQL-Query-A-02
- Forms
  - CLASS
  - Class Data Input Form
  - CLASS ENROLLMENT DATA
  - Grade Data Input Form
  - Student Data Input Form
- Reports
  - Class Grade Report**
  - Student Data Report

**Class Grade Report**

ClassNumber	ClassName	Term	Section	LastName	FirstName	Grade
10	CHEM 101	2014-Fall	1	Cooke	Sam	3.7
20	CHEM 101	2014-Fall	2	Lau	Marcia	3.7
30	CHEM 101	2015-Spring	1	Harris	Lou	3.1
40	ACCT 101	2014-Fall	1	Cooke	Sam	3.5
				Greene	Grace	3.0
50	ACCT 101	2015-Spring	1	Greene	Grace	3.5
60	MATH 105	2014-Fall	1	Cooke	Sam	3.3
				Lau	Marcia	3.5
70	MATH 105	2014-Fall	2	David	Bruce	3.7
				Kelly	Mary	2.7
80	MATH 105	2014-Fall	3	Taylor	Larry	3.0
90	MATH 110	2015-Spring	1	Taylor	Larry	3.3

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## PART 2 REVIEW QUESTIONS

- A.2. *Part 2 of assignment you will create and submit a separate database. In this exercise, you will build the Cape Codd database used for the SQL examples in Chapter 2. The Access 2013 tables and relationships are shown in Figure 2-2.*
- A. *Create a new Access 2013 database named Cape-Codd.accdb.*
- B. *The column characteristics for the RETAIL\_ORDER table are shown in Figure A-51. Create the RETAIL\_ORDER table.*

### RETAIL\_ORDER

Column Name	Type	Key	Required	Remarks
OrderNumber	Number	Primary Key	Yes	Long Integer
StoreNumber	Number	No	No	Long Integer
StoreZip	Text (9)	No	No	
OrderMonth	Text (12)	No	Yes	
OrderYear	Number	No	Yes	Integer
OrderTotal	Currency	No	No	

Figure A-52 — Column Characteristics for the Cape Codd RETAIL\_ORDER Table

- C. *The column characteristics for the SKU\_DATA table are shown in Figure A-53. Create the SKU\_DATA table.*

### SKU\_DATA

Column Name	Type	Key	Required	Remarks
SKU	Number	Primary Key	Yes	Long Integer
SKU_Description	Text (35)	No	Yes	
Department	Text (30)	No	Yes	
Buyer	Text (30)	No	No	

Figure A-53 — Column Characteristics for the Cape Codd SKU\_DATA Table

- D. The column characteristics for the ORDER\_ITEM table are shown in Figure A-54. Create the ORDER\_ITEM table.

#### ORDER\_ITEM

Column Name	Type	Key	Required	Remarks
OrderNumber	Number	Primary Key, Foreign Key	Yes	Long Integer
SKU	Number	Primary Key, Foreign Key	Yes	Long Integer
Quantity	Number	No	Yes	Integer
Price	Currency	No	Yes	
ExtendedPrice	Currency	No	Yes	

Figure A-54 — Column Characteristics for the Cape Codd ORDER\_ITEM Table

The diagram illustrates the relationships between three tables in the Cape Codd database:

- RETAIL\_ORDER**: Contains columns OrderNumber, StoreNumber, StoreZIP, OrderMonth, OrderYear, and OrderTotal. It has 3 records.
- ORDER\_ITEM**: Contains columns OrderNumber, SKU, Quantity, Price, and ExtendedPrice. It has 7 records.
- SKU\_DATA**: Contains columns SKU, SKU\_Description, Department, and Buyer. It has 8 records.

Relationships shown by arrows:

- ORDER\_ITEM OrderNumber (1000) points to RETAIL\_ORDER OrderNumber (1000).
- ORDER\_ITEM SKU (201000) points to SKU\_DATA SKU (201000).

**RETAIL\_ORDER Data:**

OrderNumber	StoreNumber	StoreZIP	OrderMonth	OrderYear	OrderTotal
1000	10	98110	December	2014	\$445.00
2000	20	02335	December	2014	\$310.00
3000	10	98110	January	2015	\$480.00

**ORDER\_ITEM Data:**

OrderNumber	SKU	Quantity	Price	ExtendedPrice
1000	201000	1	\$300.00	\$300.00
1000	202000	1	\$130.00	\$130.00
2000	101100	4	\$50.00	\$200.00
2000	101200	2	\$50.00	\$100.00
3000	100200	1	\$300.00	\$300.00
3000	101100	2	\$50.00	\$100.00
3000	101200	1	\$50.00	\$50.00

**SKU\_DATA Data:**

SKU	SKU_Description	Department	Buyer
100100	Std. Scuba Tank, Yellow	Water Sports	Pete Hansen
100200	Std. Scuba Tank, Magenta	Water Sports	Pete Hansen
101100	Dive Mask, Small Clear	Water Sports	Nancy Meyers
101200	Dive Mask, Med Clear	Water Sports	Nancy Meyers
201000	Half-dome Tent	Camping	Cindy Lo
202000	Half-dome Tent Vestibule	Camping	Cindy Lo
301000	Light Fly Climbing Harness	Climbing	Jerry Martin
302000	Locking Carabiner, Oval	Climbing	Jerry Martin

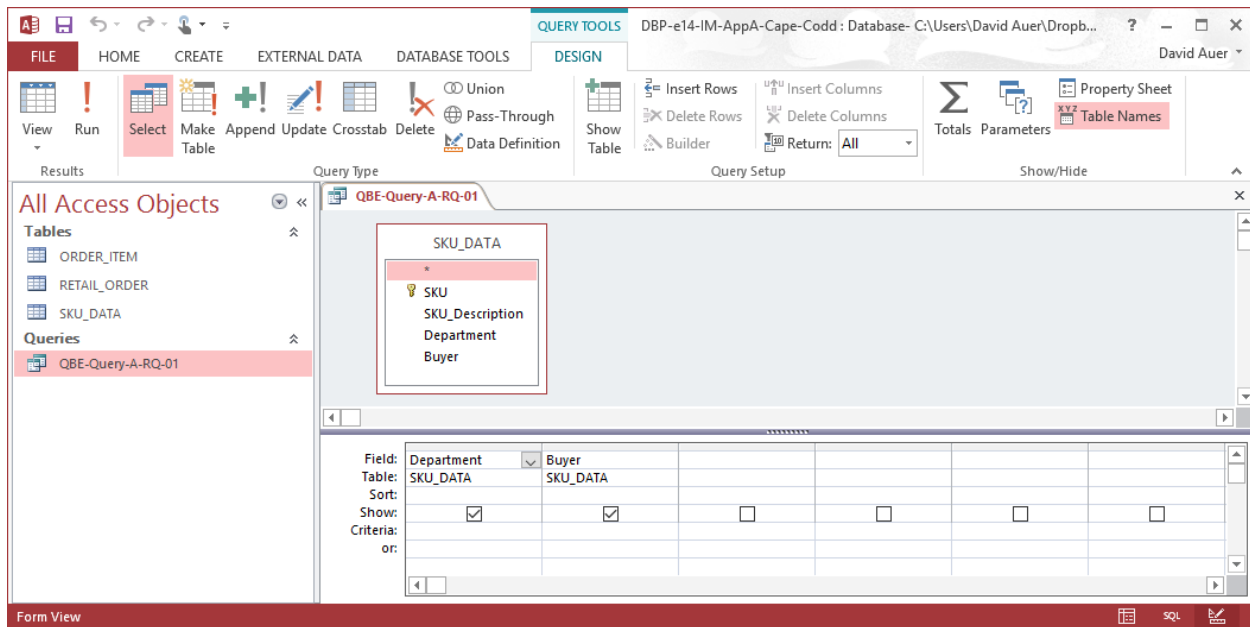
**FIGURE 2-6**  
Sample Data in the Cape  
Codd Extracted Retail Sales  
Database

(a) The Linked RETAIL\_ORDER, ORDER\_ITEM and SKU\_DATA Tables

- E. The data for the RETAIL\_ORDER table are shown in Figure 2-6(a). Populate the RETAIL\_ORDER table.*
- F. The data for the SKU\_DATA table are shown in Figure 2-6(a). Populate the RETAIL\_ORDER table.*
- G. Create the relationship between the RETAIL\_ORDER and ORDER\_ITEM tables. Be sure to enforce referential integrity.*
- H. Create the relationship between the SKU\_DATA and ORDER\_ITEM tables. Be sure to enforce referential integrity.*
- I. The data for the ORDER\_ITEM table are shown in Figure 2-6(a). Populate the RETAIL\_ORDER table.*
- J. Why did you enter the ORDER\_ITEM data only after creating the relationships between the tables?*



K. Create a QBE query to display Department and Buyer in the SKU\_DATA table. Save the query as QBE-Query-A-RQ-01.



QBE-Query-A-RQ-01			
Department	Buyer		
Water Sports	Pete Hansen		
Water Sports	Pete Hansen		
Water Sports	Nancy Meyers		
Water Sports	Nancy Meyers		
Camping	Cindy Lo		
Camping	Cindy Lo		
Climbing	Jerry Martin		
Climbing	Jerry Martin		
*			
Record: 1 of 8		No Filter	Search

- L. The column characteristics for the CATALOG\_SKU\_20## table are shown in Figure A-55. Using this data, create the CATALOG\_SKU\_2014 and CATALOG\_SKU\_2015 tables.

CATALOG\_SKU\_20##

Column Name	Type	Key	Required	Remarks
CatalogID	Number	Primary Key	Yes	Surrogate Key
SKU	Number	No	Yes	Integer
SKU_Description	Text (35)	No	Yes	
Department	Text (30)	No	Yes	
CatalogPage	Number	No	No	Integer
DateOnWebPage	Date	No	No	

Figure A-55 — Column Characteristics for the Cape Codd CATALOG\_SKU\_20## Table

**CATALOG\_SKU\_2014**

CatalogID	SKU	SKU_Description	Department	CatalogPage	DateOnWebSite
20140001	100100	Std. Scuba Tank, Yellow	Water Sports	23	1/1/2014
20140002	100300	Std. Scuba Tank, Light Blue	Water Sports	23	1/1/2014
20140003	100400	Std. Scuba Tank, Dark Blue	Water Sports		8/1/2014
20140004	101100	Dive Mask, Small Clear	Water Sports	26	1/1/2014
20140005	101200	Dive Mask, Med Clear	Water Sports	26	1/1/2014
20140006	201000	Half-dome Tent	Camping	46	1/1/2014
20140007	202000	Half-dome Tent Vestibule	Camping	46	1/1/2014
20140008	301000	Light Fly Climbing Harness	Climbing	77	1/1/2014
20140009	302000	Locking Carabiner, Oval	Climbing	79	1/1/2014

**CATALOG\_SKU\_2015**

CatalogID	SKU	SKU_Description	Department	CatalogPage	DateOnWebSite
20150001	100100	Std. Scuba Tank, Yellow	Water Sports	23	1/1/2015
20150002	100200	Std. Scuba Tank, Magenta	Water Sports	23	1/1/2015
20150003	101100	Dive Mask, Small Clear	Water Sports	27	8/1/2015
20150004	101200	Dive Mask, Med Clear	Water Sports	27	1/1/2015
20150005	201000	Half-dome Tent	Camping	45	1/1/2015
20150006	202000	Half-dome Tent Vestibule	Camping	45	1/1/2015
20150007	203000	Half-dome Tent Vestibule - Wide	Camping		4/1/2015
20150008	301000	Light Fly Climbing Harness	Climbing	76	1/1/2015
20150009	302000	Locking Carabiner, Oval	Climbing	78	1/1/2015

FIGURE 2-6

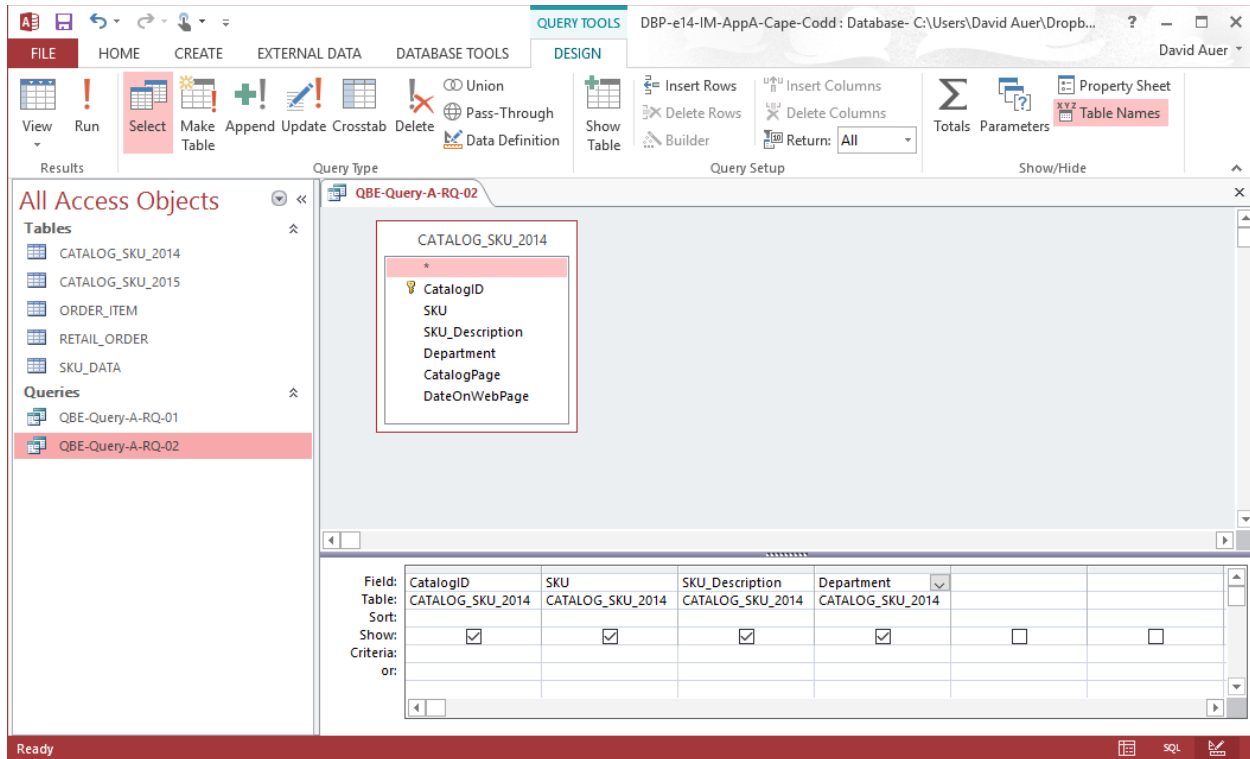
Sample Data in the Cape Codd Extracted Retail Sales Database

(b) The Non-Linked CATALOG\_SKU\_2014 and CATALOG\_SKU\_2015 Tables

- M. The data for the CATALOG\_SKU\_2014 table is shown in Figure 2-6(b). Populate the CATALOG\_SKU\_2014 table.

N. The data for the CATALOG\_SKU\_2015 table is shown in Figure 2-6(b). Populate the CATALOG\_SKU\_2015 table.

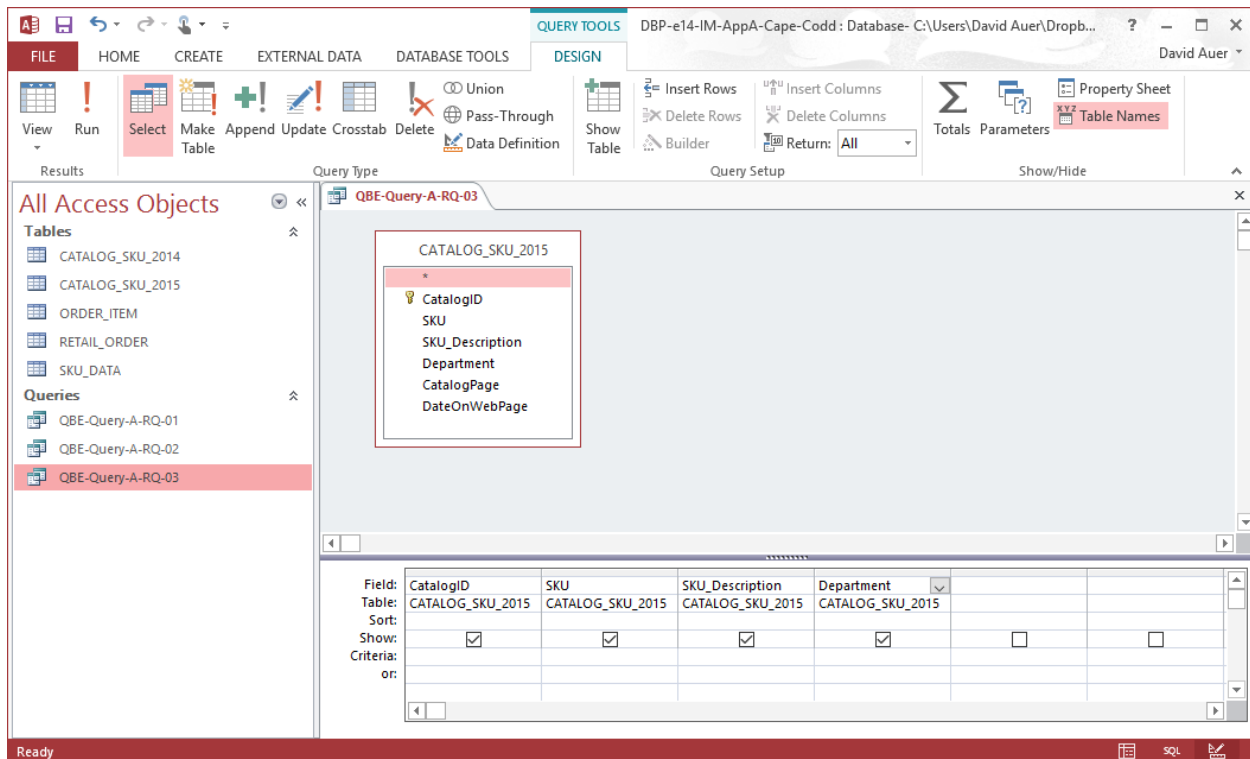
O. Create a QBE query to display CatalogID, SKU, SKU\_Description, and Department from the CATALOG\_SKU\_2014 table. Save the query as QBE-Query-A-RQ-02.



CatalogID	SKU	SKU_Description	Department
2014001	100100	Std. Scuba Tank, Yellow	Water Sports
2014002	100300	Std. Scuba Tank, Light Blue	Water Sports
2014003	100400	Std. Scuba Tank, Dark Blue	Water Sports
2014004	101100	Dive Mask, Small Clear	Water Sports
2014005	101200	Dive Mask, Med Clear	Water Sports
2014006	201000	Half-Dome Tent	Camping
2014007	202000	Half-Dome Tent Vestibule	Camping
2014008	301000	Light Fly Climbing Harness	Climbing
2014009	302000	Locking Carabiner, Oval	Climbing
*	0	0	

Record: 1 of 9

P. Create a QBE query to display CatalogID, SKU, SKU\_Description, and Department from the CATALOG\_SKU\_2015 table. Save the query as QBE-Query-A-RQ-03.



CatalogID	SKU	SKU_Description	Department
2015001	100100	Std. Scuba Tank, Yellow	Water Sports
2015002	100200	Std. Scuba Tank, Magenta	Water Sports
2015003	101100	Dive Mask, Small Clear	Water Sports
2015004	101200	Dive Mask, Med Clear	Water Sports
2015005	201000	Half-Dome Tent	Camping
2015006	202000	Half-Dome Tent Vestibule	Camping
2015007	203000	Half-Dome Tent Vestibule - Wide	Camping
2015008	301000	Light Fly Climbing Harness	Climbing
2015009	302000	Locking Carabiner, Oval	Climbing
*	0	0	

Record: 1 of 9