
Lesson 2 Advanced Table Design

Lesson Topics

- Customizing Field Formats
- Captions
- Default Values
- Input Masks
- Validating Field Data
- Review Exercise

Lesson Objectives

At the end of the lesson, you will be able to:

- Use the Format property to change the way in which numbers, dates, and text values are displayed;
- Create custom formats for Number, Currency, and Date/Time data types;
- Use the Caption property to specify the way in which a field is identified on a datasheet;
- Specify a default value for a field when a new record is added to a table;
- Create an input mask to ensure that data entered into a field follow a specific pattern;
- Use the Input Mask wizard to create an input mask;
- Create a validation rule for a field to ensure that only appropriate values are entered in the field;
- Create a custom message if a value does not verify the validation rule for a field;
- Require that a value be entered in a field.

Student Files Used

You will use the following file from your student folder:

- Properties

Customizing Field Formats

By modifying its properties in Table Design view, you can customize the way in which a field appears in a datasheet and form. The available properties depend upon the type of field that is selected. For example, you can adjust the number of decimal places that appear for Number data types, or you can adjust the way in which the date is formatted for Date/Time data types.

Access has many different field properties that can be customized. You are going to look at some of the most common options.

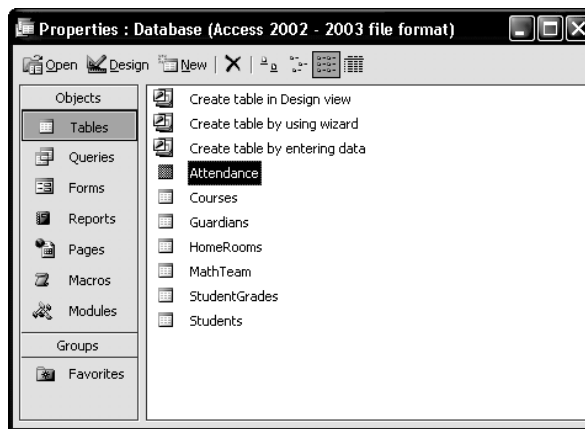
1. **Open the *Properties* database file. Remember, all database files are stored in the *FLS Access2003 Student Files* folder on the C drive.**

Note: If you cannot locate the file, make sure that you have followed the steps (beginning on page vi) to install the student files on your computer.

Note: If a security warning alert box like the one on page 2 appears, click Open.

2. **If necessary, select the *Tables* tab to display the table objects.**

Notice the different tables in the database. The tables and fields have been designed using the guidelines in the previous lesson.



Number and Currency Formats

The *Format* property alters the way in which information appears in your tables and forms. Number and Currency data types have the same format properties.

1. Double-click the *StudentGrades* table object to open it in Datasheet view.

Notice the table datasheet. In particular, notice the values in the *CourseGrade* field. As displayed, the lack of consistency can make these values difficult to read. You are going to change the format for this field so that all of the values will be displayed with two decimal places.

StudentID	CourseID	Semester	CourseGrade
1001	ELE001	941	4
1001	ELE003	931	4
1001	ELE012	951	2.67
1001	ELE014	952	3.67
1001	ELE022	932	4
1001	ELE024	942	3.33
1001	ENG100	931	3.33
1001	ENG150	932	3.67
1001	ENG200	941	3
1001	ENG250	942	3
1001	ENG300	951	3.33
1001	ENG350	952	3.67
1001	HIS101	931	3.67
1001	HIS151	932	4.67

↑
These values would be easier to read if they had similar formats.

2. Switch to Design View. (If an Indexes window appears on top of the Design window, close it.)

By default, the *StudentID* field is selected (in the top pane) and its properties are displayed in the Field Properties pane.

- 3. In the top pane, click in the *CourseGrade* row to select the field.**
- 4. Tap the F6 key to switch to the Field Properties pane.**
- 5. The *Field Size* options (which you used in the Beginning Course) affect what type of numbers can be entered into the field. The *Format* options affect only how the numbers are displayed.**

Tap the F4 key to display the *Format* list box.

Notice the predefined formats.

General Number	
General Number	3456.789
Currency	\$3,456.79
Euro	€3,456.79
Fixed	3456.79
Standard	3,456.79
Percent	123.00%
Scientific	3.46E+03

General Number is the default format. The number is displayed exactly as entered.

Currency will display the value with a dollar sign (\$), a thousand separator (if needed), and two decimal places. The number .5 would be displayed as \$0.50.

Euro is just like *Currency* except that the dollar sign is replaced with the European currency symbol.

Fixed causes the number to be displayed with at least one digit to the left of the decimal place and two digits to the right. The number .5 would be displayed as 0.50.

Standard is similar to *Currency*, without the dollar symbol. The number .5 would be displayed as 0.50.


Percent displays the value as a percentage by multiplying it by 100. By default, two decimal places are used. The number .5 would be displayed as 50.00%.

Scientific uses standard scientific notation to display the value. By default, two decimal places are used. The number .5 would be displayed as 5.00E-01, meaning 5×10^{-1} .

6. Choose *Fixed*.

The values in the *CourseGrade* field will be displayed using the *Fixed* format. By default, each value will have at least one digit to the left of the decimal and two digits to the right. You will look at this in a moment.

Note: The Property Update

Options icon  that appears allows you to automatically change the field's format in forms and reports you may have already designed."/>

7. You can use the *Decimal Places* property to change the number of decimal places that are displayed according to the *Format* property.

Click the *Decimal Places* drop-down list box.

Notice the options. You can choose to display from zero to



fifteen decimal places. Except for the *Auto* option, these settings override the default settings of the selected *Format*.

8. **If necessary, select *Auto*.**
9. Before looking at the changes to the field, you must save changes to the table design.

On the Table Design toolbar, click the Save button to save changes to the table design.



10. **Click the Table View button.**



Notice the changes to the *CourseGrade* field. Once again, only the display of the values has changed. The original values are stored in the table just as they were entered.

	StudentID	CourseID	Semester	CourseGrade
▶	1001	ELE001	941	4.00
	1001	ELE003	931	4.00
	1001	ELE012	951	2.67
	1001	ELE014	952	3.67
	1001	ELE022	932	4.00
	1001	ELE024	942	3.33
	1001	ENG100	931	3.33
	1001	ENG150	932	3.67
	1001	ENG200	941	3.00
	1001	ENG250	942	2.00

The same values as before, but the Fixed format provides consistency.

Note: If necessary, Access will round values. For example, if you were to set the *Decimal Places* property to 1, a grade of 2.67 would be displayed as 2.7. The actual grade, however, would continue to be stored as 2.67.

11. **Close the datasheet.**

Date/Time Formats

Access allows you to format dates and times in a variety of ways. You are going to switch tables and look at some of the predefined date formats.

1. **Double-click the *Students* table to open it in Datasheet view.**

Notice the values in the *DOE* field.

StudentID	LastName	FirstName	DOE
1001	Young	Jamaal	9/7/2001
1002	Williams	Latonya	9/7/2001
1003	Feliciano	Jose	9/7/2001
1004	Ying	Jing	2/1/2003
1005	Williams	Sherrill	9/7/2004
1006	Barr	Debra	2/1/2004

These are the dates on which the students entered the school. You will change the way in which these dates are displayed.

2. **Switch to Design View.**
3. **In the top pane, select the *DOE* field.**
4. **Tap F6 to switch to the Field Properties pane.**
5. **Tap F4 to display the *Format* drop-down list box.**

Notice the available Date/Time formats.

Short Date	
General Date	6/19/1994 5:34:23 PM
Long Date	Sunday, June 19, 1994
Medium Date	19-Jun-94
Short Date	6/19/1994
Long Time	5:34:23 PM
Medium Time	5:34 PM
Short Time	17:34

Most of these formats are explained through the sample date and time that is provided. The default value is the *General Date* format, which is a combination of the *Short Date* and the *Long Time* formats. The *General Date* format will display only what was entered. If a time was not entered, only the date will be displayed. Likewise, if a date was not entered into the field, only the time will be displayed.

6. **Choose *Medium Date*.**
- Once again, the Property Update Options icon appears. You can ignore it for now.
7. **Save the changes to the table design.**
 8. **Switch to Datasheet View.**
 9. **Increase the width of the *DOE* column by double-clicking the right border of the field header.**

Notice the format of the dates.

No matter how the dates were actually

DOE
07-Sep-01
07-Sep-01
07-Sep-01
01-Feb-03
07-Sep-04
01-Feb-04

entered in the table, they are displayed in a medium date format. A time is not displayed in the field.

Text/Memo Formats

There are no predefined formats for Text or Memo data types. As with all formats, however, Access allows you to create your own custom formats. You are going to set a custom Text format so that all characters are displayed in uppercase characters. In the next section you will create some custom formats for Number and Date/Time data types.

1. **Switch to *Design View*.**
2. **In the top pane, select the *LastName* field.**
3. **Tap the F6 key to switch to the **Field Properties** pane.**
4. **In the *Format* box, tap F4 to display the drop-down list box.**

Although a drop-down list box appears, it does not contain any items. Text data types do not have predefined formats.

5. Two common custom format symbols are the less than symbol (<) and the greater than symbol (>). The first causes all text to be displayed in lower case letters; the second causes all text to be displayed in upper case characters.

In the *Format* box, type: >

6. **Save changes to the table design and then switch to **Datasheet View**.**

Notice that the last names are displayed in upper case characters. →

LastName	
1	YOUNG
2	WILLIAMS
3	FELICIANO
4	YING
5	WILLIAMS
6	RAEZ

7. If necessary, you can see how the text was originally entered.

Click an insertion point in the *LastName* field of any record.

Notice that the text is displayed as it was originally entered. →


ID	LastName	F
01	YOUNG	Ja
02	WILLIAMS	Lj
03	FELICIANO	Jc
04	Ying	Jr
05	WILLIAMS	Sl
06	RAEZ	D

Note: If you cannot see this, tap the EDIT key (F2) to enter Edit mode.

Custom Formats

In addition to the predefined formats that are available, you can create customized formats. You already created a custom format for the *LastName* field (using the > character). You are going to create a custom format for a Number data type and a Date/Time data type.

1. The *Students* table should be open in Datasheet view.

Notice the contents of the *Grade* field.  You are going to change the format so that all numbers are displayed using two digits.

Grade
12
12
12
11
9
10
9
12
11

2. Switch to Design View.


3. In the top pane, select the *Grade* field.

4. Tap F6 to switch to the Field Properties pane.

5. The zero character (0) is used to specify that a digit must be displayed. To make sure that two digits are always displayed, enter a format of 00.

Change the contents of the *Format* box to: 00

6. Save changes to the table design and switch to Datasheet view.

Notice that each grade is now displayed with two digits. For students in the ninth grade, a leading zero was added to the field. 

Grade
12
12
12
11
09
10
09
12
11

Below are a few other characters that can be used to create custom formats for Number data types.

Character	Function
.	Decimal separator
,	Thousand separator
0 (zero)	Digit placeholder (displays a digit or zero)
#	Digit placeholder (displays a digit or nothing)
\$	Display a dollar symbol
%	Display the value as a percentage (with the symbol)

You can also create custom formats for Date/Time data types. You are going to create a custom date format so that the DOE field will be displayed in the format: *Wednesday, 8 July 1998*. Following are some of the symbols used to create custom date and time formats:

Symbol	Description
d	Day of month (1 to 31)
dd	Day of month, 2 digits (01 to 31)
ddd	First 3 letters of weekday (Sun to Sat)
dddd	Full weekday name
dddddd	Short Date predefined format
dddddd	Long Date predefined format
w	Day of week (1 to 7)
ww	Week of year (1 to 53)
m	Month of year (1 to 12)
mm	Month of year, 2 digits (01 to 12)
mmm	First 3 letters of month (Jan to Dec)
mmmm	Full month name

- 1. Switch to Design View.**
- You can combine the symbols above with literal text (in quotation marks), a colon (:) for a time separator, and a slash (/) for a date separator. Here are some examples of the formats you can create:

Format	Example
m/d/yy	7/8/04
mm/dd/yyyy	07/08/2004
dd mmm yy	08 Jul 04
d-"mmm"-yy	8-Jul-04
ddd", " mmmm d", " yyyy	Wed, July 8, 2004
mmmm d", " yyyy	July 8, 2004
m/d/yy h:n AM/PM	7/8/04 2:35 AM
mm/dd/yy hh:mm AM/PM	07/08/04 02:35 AM

Select the DOE field.

- 3. Change the contents of the *Format* box to:**
dddd", "d mmmm yyyy
- 4. Save the changes to the table design and switch to Datasheet view.**

5. Point to the right border of the *DOE* field header and double-click to expand the column.

Notice the custom format for the *DOE* field.

DOE
Friday, 7 September 2001 E
Friday, 7 September 2001 IS
Friday, 7 September 2001 IS
Saturday, 1 February 2003 S
Tuesday, 7 September 2004 IS
Sunday, 1 February 2004 S

6. Save changes to the datasheet.

You have saved the larger column width.

7. Close the datasheet.

Tip: For more help on custom formats, click in the Format field property box in Table Design view and tap the F1 key.

Captions

As you have seen, Access uses the name of a field in the heading row of a datasheet as well as in the label for a form. By modifying the *Caption* property, you can specify a custom label to be used in these cases. The *caption* property allows you to create more descriptive field references without altering the field name (which could adversely affect other database objects). You are going to change the *DOE* caption to *Date of Entry*.

- 1. Open the *Students* table in Design View.**
- 2. Select the *DOE* field and then tap F6 to switch to the Field Properties pane.**
- 3. Click an insertion point in the *Caption* text box and type: Date of Entry**

This caption provides a good description of the field while still keeping the field name brief.

- 4. Save the changes to the table design and then switch to datasheet view.**

Notice the field header at the top of the datasheet. Although you have not changed the name of the field, Access will now use your custom caption as the default label in datasheets, queries, and forms.

↓

Date of Entry
Friday, 7 September 2001 E
Friday, 7 September 2001 IS

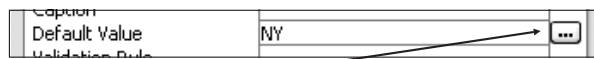
- 5. Close the datasheet.**

Default Values

It is not uncommon for most records in a table to have the same value for a particular field. You can use the Field Properties pane to specify a *default value* to be entered automatically when a new record is created. Since all of the students are from New York state, you are going to use *NY* as a default value for the *State* field.

1. **Open the *Guardians* table in Design View.**
2. **In the top pane, select the *C1State* field.**
3. **Tap F6 to switch to the bottom pane and then click an insertion point in the *Default Value* box.**
4. **Type: NY**

From now on, Access will enter *NY* in the *C1State* field automatically when a new record is created. Once you move the insertion point away from this field, Access will surround *NY* with quotation marks in order to indicate that this exact text should be used.



Note: The Build button is used to create a default value that is the result of an expression. You will work with expressions later.

5. **Save changes to the table design and then switch to Datasheet view.**
6. Setting a default value for a field does not alter existing records – only new ones. You are going to start adding a new record in order to see how the default value works.

At the bottom of the datasheet, click the Add New Record button.



Without actually entering anything in the fields, notice that the *C1State* field already contains the default value of *NY*. (You may need to scroll to see this.) By comparison, notice that the *C2State* field does not contain any default value.

7. **Tap the UP ARROW key to prevent a new record from being added to the table.**
8. **Close the datasheet.**

A common default value for Date/Time fields is the current date. You are going to use the current date as a default value for the date of entry of new students.

1. **Open the *Students* table in Design View.**
2. **Select the *DOE* field and then tap F6 to switch to the Field Properties pane.**
3. **Click an insertion point in the *Default Value* field.**
4. **Type: =Date()**

This is a special function that tells Access to insert the current date.

5. **Save changes to the table design and then switch to Datasheet view.**
6. Once again, changes to the *Default Value* property affect only new records.

At the bottom of the datasheet, click the Add New Record button.

In the *DOE* field, notice that the current date is entered in the new record automatically. Of course, you can always change the value.

7. **Close the datasheet without adding a new record.**

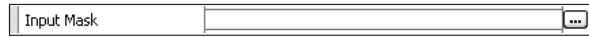
Input Masks

You can use an *Input Mask* to save time as you enter data or to help ensure that the data in a particular field has a similar appearance in all records. For example, you can use an input mask to make sure that all ZIP codes are entered using the ZIP+4 format, with the hyphen being entered automatically by the mask.

The school has determined that all course identifications consist of exactly three letters (representing the department) followed by two or three digits. You are going to use an input mask to make sure that all courses follow this format.

1. **Open the *StudentGrades* table in Design View.**
2. **Select the *CourseID* field and then tap the F6 key to switch panes.**
3. **Click an insertion point in the *Input Mask* box.**

Notice that a Build button appears. You will use this when you work with the Input Mask wizard.



4. The Input Mask uses characters to specify a pattern. These characters are listed below.

Mask Character	Function
0	Digit 0 to 9 (required)
9	Digit 0 to 9 (or space) (optional)
#	Digit or space (optional)
L	Letter A to Z (required)
?	Letter A to Z (optional)
A	Any letter or digit (required)
a	Any letter or digit (optional)
&	Any character or space (required)
C	Any character or space (optional)
.	Decimal point
,	Thousand separator
;- /	Date and time separators
>	All characters to the right are converted to uppercase
<	All characters to the right are converted to lowercase
!	Fill the mask from right to left
Password	Displays an asterisk for each character typed

Type: >LLL009

You have told Access that data in this field must be all uppercase and must consist of exactly three letters followed by two or three digits.

5. You are going to test out your Input Mask.

Save the changes to the table and then switch to Datasheet view.

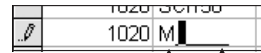
6. The mask affects only new records. You are going to add a course for one of the students.

On the Table Datasheet toolbar, click the New Record button.



7. In the *StudentID* field, type: 1020
8. Tap the TAB key to move to the *CourseID* field.
9. You are going to try to enter the course *MATH200*, which does not follow the Input Mask pattern.

Type (in lowercase): m



Notice that Access converted the lowercase *m* to an uppercase *M*. In addition, notice the underscore characters in the field. Access uses these as placeholders.

10. **Type:** ath

You are not allowed to type the *h*. According to the mask, this fourth character must be a digit.

11. **Type:** 200

Since the three digits fit into the mask, the field accepts them.

12. **Finish adding the new record by entering a Semester of 961 and a CourseGrade of 3.**

13. **Use SHIFT/ENTER to save the record.**

An Input Mask will also prevent you from changing existing records to an incorrect format.

1. **Use CTRL/HOME to go to the first field of the table.**

Note: If CTRL/HOME does not take you to the first field, you are in Edit mode. Tap the EDIT key (F2) to get out of Edit mode and then try again.

2. **Tap the TAB key to move to the *CourseID* field.**

3. **Tap the EDIT key (F2) to enter Edit mode.**

Instead of a thin, blinking insertion point, notice that the first character is high-lighted. This indicates that the field uses an Input Mask.

IntID	CourseID	Ser
1001	LE001	941
1001	LE002	931

4. **With the first character highlighted, type: 5**

You are not allowed to replace this character with a digit.

5. **Type:** h

Since the mask allows characters at this position, Access replaces the *E* with an *H*.

6. **Tap the ESC key to undo the changes to the record.**
7. **Close the datasheet.**

You are going to create an Input Mask for phone numbers.

1. **Open the *Guardians* table in Design View.**
2. **Select the *C1PhoneH* field and then click an insertion point in the *Input Mask* text box.**
3. If you enter a character other than one of the Input Mask characters, it will appear automatically in the field. This allows you to have the parentheses and hyphen appear in the field without being entered.

In the *Input Mask* field, type: (000) 000-0000

4. **Save the changes to the table design.**

Notice that the *Input Mask* text box now contains `\(000)"000\)-0000`.



Access uses the backslash character (\) to indicate that the next character is literal (i.e., should be displayed). The quotation marks are used to indicate more than one literal character (in this case, the right parenthesis and a space).

5. **Switch to Datasheet view so you can test out the mask.**
6. **On the Insert menu, choose *New Record*.**
7. You are not going to actually enter a new record. You are simply going to look at the *C1PhoneH* field.

Tap the TAB key seven times, until the *C1PhoneH* field is selected.

8. **Type: 212**

Notice that once you type a digit, the parentheses for the area code appear, along with the hyphen and the placeholders for the mask.

024	212 787-2090	21
028	212 242-9050	
	(212) -	

- Using a mask allows you to enter any part of the field in any order.

Tap the RIGHT ARROW key a few times.

Notice that the insertion point moves in the field. You could enter any part of the field.

- Type: 9**

The digit is inserted over the active placeholder.

- Anything that is entered in this field must match the Input Mask format. You cannot leave the field partially entered.

Tap the TAB key to try to move to the next field.

Notice the alert box that appears, indicating that the value entered does not match the mask.



- On the alert box, click OK.**
- Tap the ESC key two times to prevent the record from being added to the table.**

Input Mask Wizard

For some of the more common Input Masks — such as those for phone numbers or social security numbers — Access provides a wizard to take you through their creation. You are going to use the Input Mask wizard to create a mask for the *C1PhoneW* field.

- In order to use the Input Mask wizard, the table must be saved.

Save changes to the *Guardians* table and switch to Design view.

- Select the *C1PhoneW* field and then click an insertion point in the *Input Mask* text box.**

- To the right of the text box, click the Build button.** 

After a few moments, the first step of the Input Mask wizard appears.

Input Mask:	Data Look:
Phone Number	(206) 555-1212
Social Security Number	831-86-7180
Zip Code	98052-6399
Extension	63215
Password	*****
Long Time	1:12:00 PM

Notice the different input masks that are available. Access provides an example of what the data will look like with the mask and it provides the *Try It* box so that you can test the selected mask with your own sample data.

4. In the list box, verify that *Phone Number* is selected and then click the *Next* button.

The second step of the Input Mask Wizard appears.

Do you want to change the input mask?

Input Mask Name: Phone Number

Input Mask: (999) 000-0000

What placeholder character do you want the field to display?
Placeholders are replaced as you enter data into the field.

Placeholder character: _

In the *Input Mask* text box, notice the format of the mask that you selected. You can use this dialog box to change the current format. For example, you might change the 999 to 000 so that the area code is required.

The *Placeholder character* drop-down list box allows you to choose a placeholder other than the underscore symbol (_).

5. **Click the Next button to go to the next step in the wizard.**

The third dialog box appears.



As you have seen, you can use an input mask to display characters that are not actually entered. This dialog box gives you the option of storing the data with these symbols or without these symbols. The default is to store the data without the symbols, which means that it takes up less space.

6. **Verify that the second option is selected and then click the Next button.**

The last dialog box in the wizard appears. Access is prepared to create the input mask.



7. **Click the Finish button.**

Notice the input mask.

Input Mask	!(999) 000-0000;;
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If you look closely, you will see that the input mask has three parts, separated by semicolons (;).

The *first part* contains the actual input mask — in this case, *!(999) 000-0000*.

The *second part* indicates if the literal characters (i.e., hyphens and parentheses) will be stored with the data. A value of 0 tells Access to store these literal characters with the data. A blank value or a value of 1 tells Access to store only the characters that are actually typed.

The *third part* indicates the placeholder that should be displayed. You can enter any character here. If it is blank, the default character (_) will be used.

8. Save changes to the table design.

As before, notice that Access formats the input mask with backslash characters (\) and quotation marks.

9. You will not test out this input mask.

Close the Table Design window.

Notes

The *Format* property overrides the *Input Mask* property. For example, if the format is < (for lowercase) and the input mask is LL (for uppercase), the text will appear as lowercase.

You can create your own masks to be used with the Input Mask wizard. On the first dialog box of the wizard, click the Edit List button. The Customize Input Mask Wizard dialog box appears, which is basically a form used to display the existing masks. You can customize the existing masks or you can click the Add New Record control button to create a new input mask.

Validating Field Data

You can add a validation rule to a field in order to have Access check the data that you enter against a rule that you have specified. For example, you can add a validation rule so that Access checks that the *Grade* field contains only 9, 10, 11, or 12.

You are going to enter validation rules to make sure that only valid course grades and student identifications are entered.

1. **Open the *StudentGrades* table in Design View.**
2. **With the *StudentID* field selected, click an insertion point in the *Validation Rule* text box.**
3. The *StudentID* must be a number between 1000 and 9999. You are going to enter this as a validation rule.

Type: >=1000 and <=9999

The next time you enter a record, Access will check to see if the *StudentID* field is between 1000 and 9999 (inclusive).

Note: You can use the same comparison operators that you used when working with queries. These include the following: greater than (>), greater than or equal to (>=), less than (<), less than or equal to (<=), equal to (=), not equal to (<>). These operators can be combined with the AND or the OR logical operators.

Tip: By using the Build button in the Validation Rule box, you can enter functions as validation rules.

4. If the data does not satisfy the validation rule, an alert box will appear. You can use the *Validation Text* text box to customize the message that appears.

Click an insertion point in the *Validation Text* text box.

5. **Type:** The StudentID must be between 1000 and 9999.
6. To make sure that data is entered in a field, you can set the *Required* item to *Yes*.

Tap the TAB key to move to the *Required* text box.

7. **Click the drop-down list box and choose *Yes*.**
8. You are going to set a validation rule for the *CourseGrade* field.

In the top pane, select the *CourseGrade* field.

9. **Click an insertion point in the *Validation Rule* text box.**
10. You can use the IN operator to have Access validate the data against a list. When using a grade scale from 0 to 4, grades increment by one third.

Type: In(0, 0.33, 0.67, 1, 1.33, 1.67, 2, 2.33, 2.67, 3, 3.33, 3.67, 4)

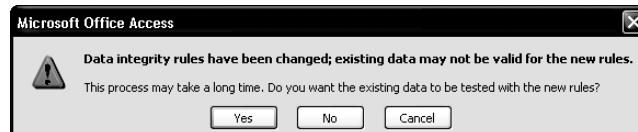
These are the only valid grades. Instead of using the IN operator, you could have used the OR operator between each valid grade.

Tip: To make it easier to enter long validation rules, use SHIFT/F2 to display the Zoom window, or click the Build button to open the Expression Builder dialog box.

11. **Click an insertion point in the *Validation Text* text box and type:** This is not a valid grade. Make sure you are using a grading scale from 0 to 4.
12. **Use the *Required* drop-down list box to make this a required field.**
13. Unlike many of the other field properties, validation rules affect existing records. When you try to save changes to a table for which you have changed the validation rules, Access will alert you to this.

On the File menu, choose *Save*.

An alert box appears indicating that data integrity rules have changed.



14. **Click *Yes* to have Access check existing records against the validation rules you entered.**

After a few moments, Access finishes checking the existing records. If another alert box appears, you might have made an error entering the validation rules. Click *Cancel*, check both of the validation rules that you created, and then try again.

Tip: You can also check the validation rules by choosing *Test Validation Rules* on the Edit menu.

15. **Switch to Datasheet view.**

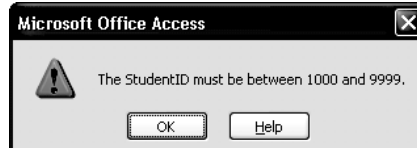
You are going to test out the validation rules.

1. **On the Insert menu, choose *New Record*.**

2. In the *StudentID* field, type: 4

3. Tap the TAB key to move to the next field.

Since the *StudentID* does not meet the validation criteria, an alert box appears with the custom validation text.



4. On the alert box, click OK.

5. Change the contents of the *StudentID* field to 1000 and then tap the TAB key.

Since this is a valid *StudentID*, you are permitted to move to the next field.

6. Enter a *CourseID* of: ELE105

7. Tap the TAB key and enter a *Semester* of: 961

8. Tap the TAB key and enter a *CourseGrade* of: 1.5

9. Use SHIFT/ENTER to save the record.

Since the grade that you entered does not verify the validation rule, an alert box appears with the validation text that you created.



10. Click OK to close the alert box.

11. Change the *CourseGrade* to 2 and then use SHIFT/ENTER to save the record.

12. Close the datasheet.

Note: Text and Memo data types have another option — the *Allow Zero Length* property. Normally, if you do not enter data in a Text or Memo field, Access stores a Null value in the field. The Null value is used to indicate missing or unknown data (such as a work phone number). On the other hand, a zero length string (which consists of two quotation marks with no space between them) is used to

indicate data that does not exist (such as a work phone number if the guardian stays at home).

Review Exercise

To review the concepts presented in this lesson, you are going to change the design of the *Attendance* table to include format options, default values, input masks, and validation rules.

1. **Open the *Attendance* table in Design View.**
2. First, you are going to modify the *StudentID* field.
The *StudentID* field should be exactly four digits long. Create an input mask to indicate this.
3. **Enter a validation rule so that Access checks that the *StudentID* is between 1000 and 9999. Include an appropriate validation text.**
4. **Indicate that the *StudentID* is a required field.**
5. Next, you are going to modify the *Date* field.
Set the *Format* property for the *Date* field to *Short Date*.
6. **Use the *Date()* function to set the current date as the default value for the field.**
7. **Make the field a required field.**
8. Finally, you will modify the *Attendance* field.
Format the contents of the *Attendance* field so that all characters are uppercase.
9. **Indicate a caption of *Absent/Late*.**
10. **Indicate that the default value for this field is *Absent*.**
11. **Use the *Validation Rule* to verify that only a value of *Absent* or *Late* is allowed in this field. Create an appropriate *Validation Text* to indicate this.**
12. **Make the *Attendance* field a required field.**
13. **Save changes to the table design, using the alert box to have Access verify the existing records.**
14. **Switch to Datasheet view.**

Notice the format of the table datasheet.

	StudentID	Date	Absent/Late
▶	1004	9/16/2004	LATE
	1004	9/17/2004	ABSENT
	1006	9/18/2004	LATE
	1005	9/20/2004	LATE
	1004	9/20/2004	LATE
	1001	9/24/2004	LATE
	1012	9/25/2004	LATE
	1008	9/30/2004	LATE
	1002	9/30/2004	LATE
	1005	9/30/2004	LATE
	1008	10/4/2004	ABSENT
	1015	10/4/2004	LATE

- 15. Test out the new field properties by adding a few new records to the table. Be sure to enter values that will not pass the validation rules.**

End of Lesson 2