

Exploring Field Rules

- Reviewing Field Rules
- Using Expressions and Conditions
- Assigning Data Entry Formatting
- Using Lookup Tables

Module Objectives

Reviewing Field Rules

- In the Alpha Five v9, Level 1 course, you learned how to access the Field Rules Editor and set field rules such as auto-incrementing fields, setting a default value for a field, and defining a simple list lookup for a field. In this section, you will review these features.

Using Expressions and Conditions

- Alpha Five gives you the ability to build simple expressions and complex calculations to evaluate, display, and determine the value for a field. The expression can be composed of functions, literal strings, and operators. You can use the DATE() function as the default value for a date field where you want the system date to automatically be stored. In addition, you can program specific fields to be required or conditionally required.

Assigning Data Entry Formatting

- You can build input masks to regulate the form and content of field data. Alpha Five has several built-in simple masks for fields that store data such as social security numbers, phone numbers, and US and Canadian zip codes. In addition, you can create your own custom masks for fields. You can use Transformation rules to control letter casing, i.e. uppercase/lowercase during data entry.

Using Lookup Tables

- Alpha Five also lets you create lookups of appropriate values for fields that can contain only one of a limited selection of entries to control the information entered into records. Lookups can be done with simple lists, cascading lists, and table lookups. A field can be provided data from a field in another table using a lookup table style. In addition, you can also auto-fill other fields in the target table based on values in the lookup table.

Reviewing Field Rules

You can define field rules to control the information that can be entered into fields. A field can be set to automatically generate a data value in a sequential or patterned format. In addition, you can build input masks to regulate the form and content of field data. Alpha Five also lets you create lookups of appropriate values for fields that can contain only one of a limited selection of entries to control the information entered into records.

Field Rules provide the ability to...



- Maintain data integrity
 - Change letter casing of field values such as names
 - Eliminate spelling errors
 - Use masks to ensure certain types of data are entered uniformly
 - Validate data entry such as minimum or maximum allowed values
 - Enter default values that can save time and ensure information is consistent
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- Lookup data from a list or a data table during data entry
 - Ensure that certain fields are required
 - Ensure that no one can deliberately or inadvertently change data once it is entered
 - Create calculated fields that evaluate expressions or combine the values of multiple fields
 - Employ Xbasic to perform certain actions based upon different events

Accessing the Field Rules Editor

Field Rules are defined using the Field Rule Editor window shown in Figure 1. You can access the Field Rule Editor in several ways. From the Control Panel, on the Tables/Sets tab, right-click the table containing the field to define and choose Edit Field Rules or select the table, click the Design button on the Control Panel toolbar, and choose Field Rules from the Design menu. If you are already working in design mode, you can click the Field Rules button on the Table Design toolbar.

Field Rules can be created for use at the table level or at the form level. Form level field rules differ from table level fields rules in that field rules are applied only when the custom form is in use. A table level field rule is applied whenever the table is in use whether it's used with a form, browse, query, or report. The use of form level field rules will be discussed in a later module in the course.

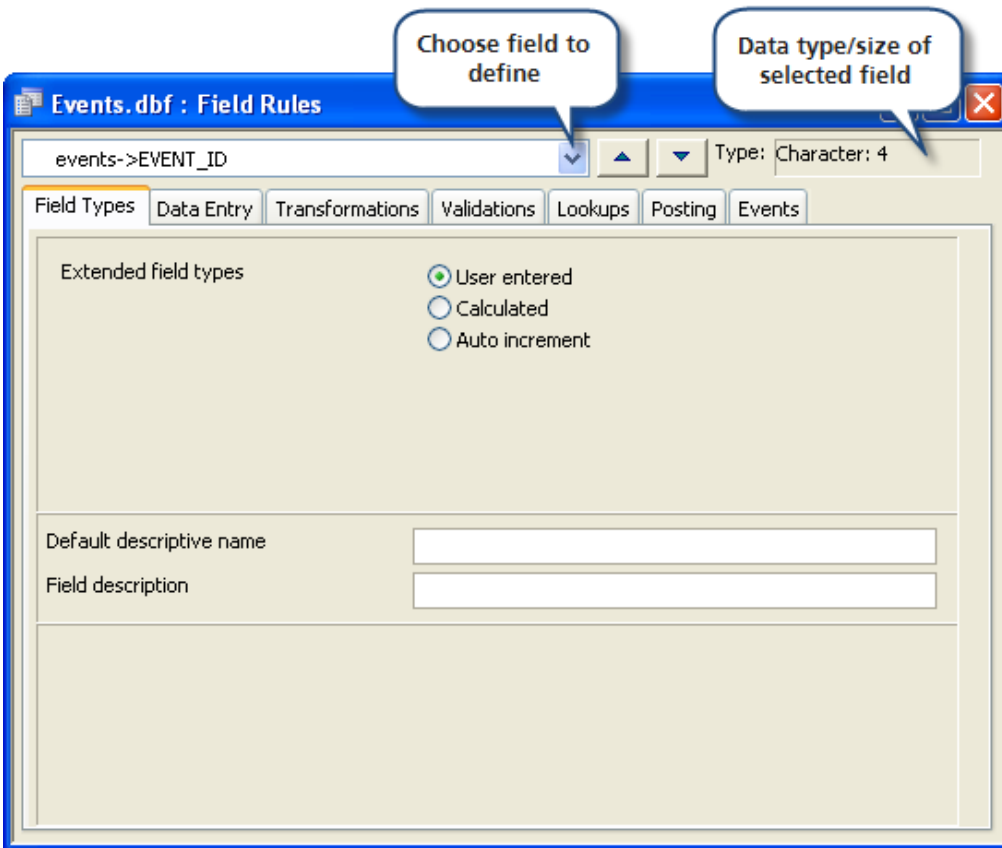


Figure 1: Field Rules Editor Window - Events Table


The Field Rules Editor window contains tabbed pages you use to define a field. The Field Rules Editor tabbed pages are described in Table 1. You do not have to make selections on all of the tabs, just the ones that you want for the selected field. Each tab consists of several options from which to choose for the selected field. Be sure to resize or maximize the Field Rules Editor window so that the entire tabs' contents are visible.

Tabbed Page	Description
Field Types	Used to define field formatting such as auto-incrementing, add descriptive field names and descriptions that are displayed in forms, browses, and on the status bar.
Data Entry	Used to format, and validate data such as making a field required, defining an input mask, and setting field advancement.
Transformations	Used to automatically change entries to uppercase or lowercase, and define shortcut abbreviations for entering commonly used words and phrases.
Validations	Used to ensure data entry accuracy such as requiring a field value to be entered twice, field value uniqueness, or a field value crosschecked against the value in another table.
Lookups	Used to set field entry based on a selection from either a lookup table defined using the Field Rules Editor or from an existing table. This option is used with Character, Numeric, or Date data type fields.
Posting	Used to set field entry based on the value of a matching record in another table. The table to which values are posted must have fields in common with the current table.
Events	Used to define an event(s) to be performed for a field or record. This process is commonly called "Action Scripting."


Table 1: Field Rules Editor Window - Tabbed Pages Described

Steps

To access the Field Rules Editor from the Control Panel:

1. In the Control Panel window, right-click the table containing the field to define.
 2. From the shortcut menu, choose Edit Field Rules.
- or
1. In the Control Panel window, click the table containing the field to define.
 2. On the Control Panel toolbar, click the Design button. 
 3. From the Design menu, choose Field Rules.

To access the Field Rules Editor in table design mode:

1. If necessary, open the table containing the field to define in design mode.
2. On the Table Design toolbar, click the Field Rules button 

-Exercise ————— ●

In the following exercise, you will access the Field Rules Editor for the Events table from the Control Panel.

<p>1. In the Data2 folder on drive C, open the Planner2.adb database</p>	<p><i>The Planner2.adb database opens.</i></p>
<p>2. If necessary, display the Tables/Sets tab</p>	<p><i>The Table/Sets tab is active in the Control Panel.</i></p>
<p>3. In the Control Panel window, right-click the Events table</p>	<p><i>A shortcut menu appears.</i></p>
<p>4. From the shortcut menu, choose Edit Field Rules</p>	<p><i>The Field Rules Editor window appears for the Events table. The Event_Id field is selected and the Field Types tab is active.</i></p>



Auto-Incrementing a Field

You can use the *auto-increment* feature to have Alpha Five automatically assign an incremented value to a field as new records are added to a table. Auto-increment is useful for fields where sequential numbering is needed, such as an identification number for an event, attendee number, activity ID, or reservation ID. Auto-increment can be defined for character, date, and numeric fields. You can specify the starting value by setting a default value for the first record. The next record is assigned an incremented value based on the highest value in the table record. This process continues as records are added to the table. You use the Field Types tab shown in Figure 2 to define an auto-incremented field.

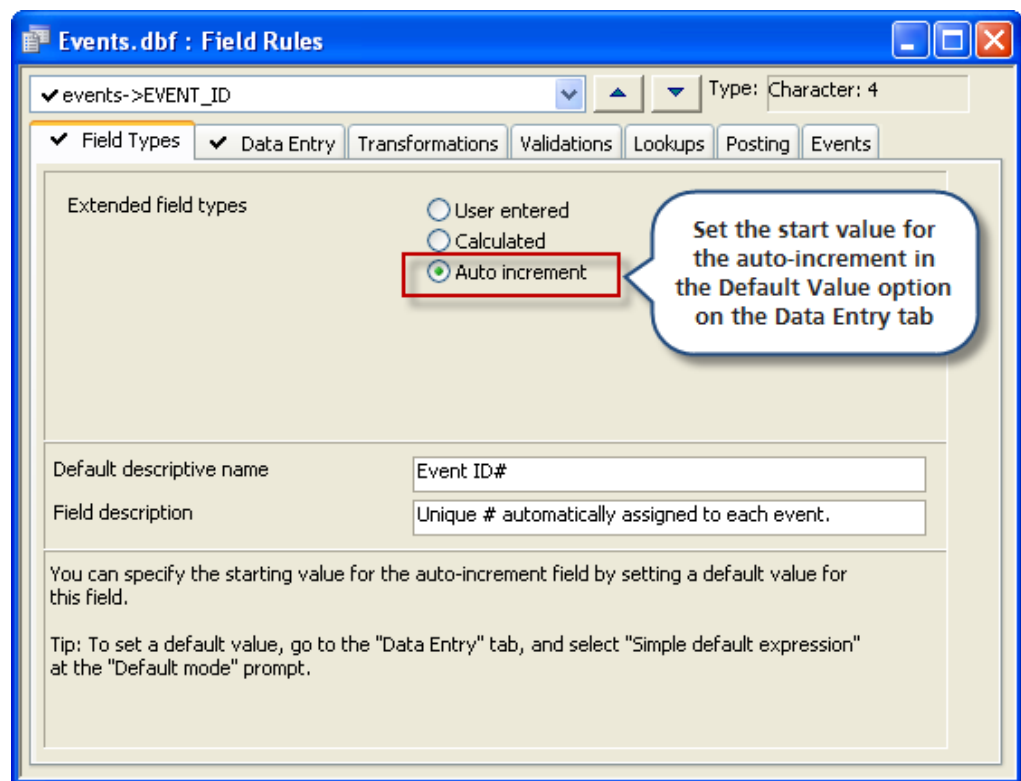


Figure 2: Field Rules Editor Window—Field Types Tab

Steps ¹ ² ³

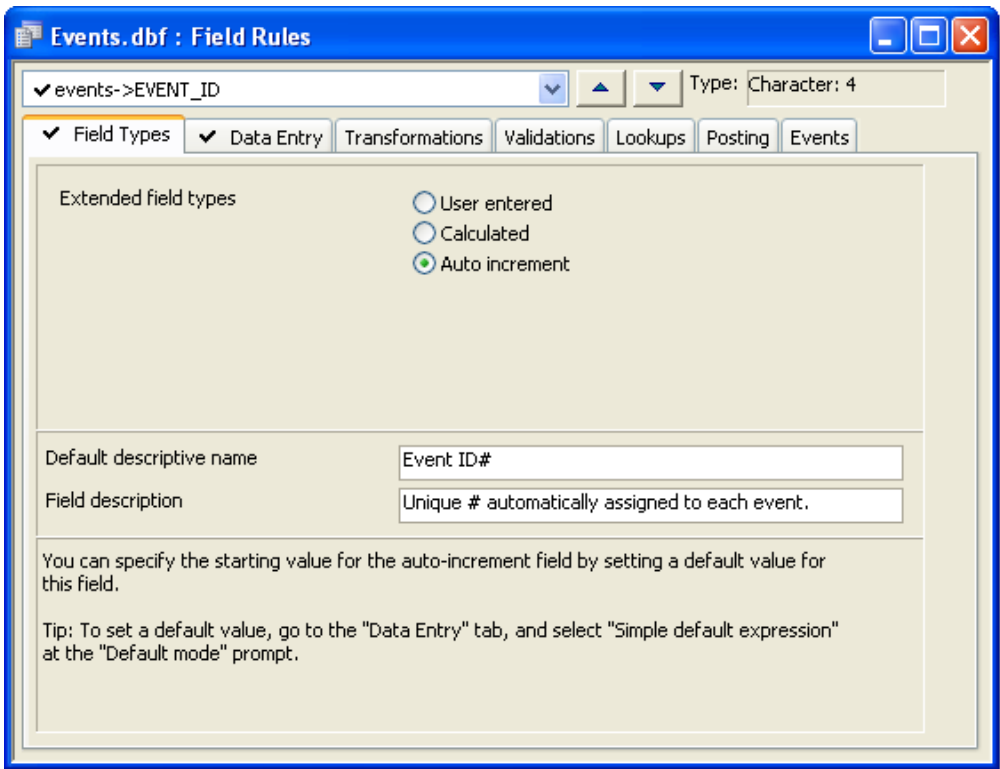
To set a field to auto-increment:


1. If necessary, open the Field Rules Editor window.
2. In the Field Rules Editor window, select the field to auto-increment.
3. On the Field Types tab, select the Auto increment option.

Exercise ————— ●

In the following exercise, you will set the EVENT_ID field to auto-increment and save the changes.

1. If necessary, select the EVENT_ID field	
2. Make sure the Field Types tab is active	
3. On the Field Types tab, select Auto-increment	<i>The Auto-increment option is selected.</i>



4. On the Field Rules Editor toolbar, click the Save button 	
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Setting a Default Value

If you've defined a field as auto-increment, you can enter a default value that will be used as the starting value for the first record entered in the table. For example, if you want to assign 4-digit Event ID numbers with the starting number of **0001**, you would enter "0001" in the Default value field. The first new record in the table will be assigned Event ID#0001.

When specifying the default value, you can also choose when the default value is entered into the field; at the start of data entry or at the end of entry. You can even have the field bypassed for data entry to prevent a user from entering an erroneous value. Bypassing a field is done with the *"Skip"* option on the Data Entry tab. In order to "skip" over a field for data entry, you must specify an expression of .T. (true). If you choose to "Skip" over a field, you can set the "Auto advance after field filled" option to instruct Alpha Five to position the cursor in the next field for data entry. By activating this option, the end user doesn't have to press the **ENTER** key or the **TAB** key to advance to the next field.

To set a default value for a field, use the Default mode option on the Data Entry tab shown in Figure 3. There are four types of default modes. The default modes are explained in Table 2.

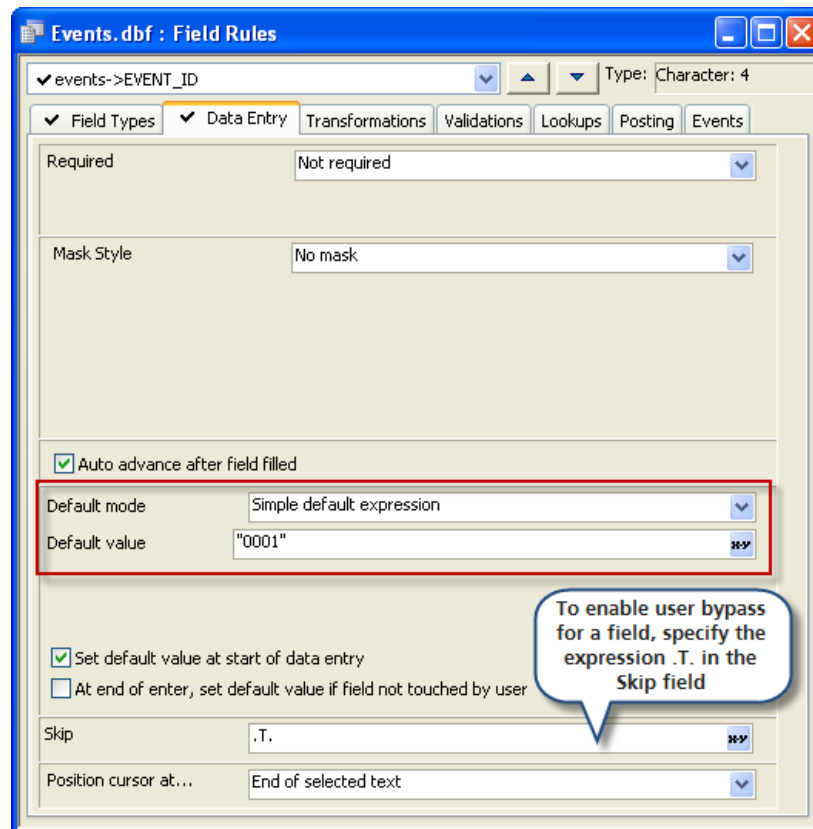


Figure 3: Field Rules - Data Entry Tab

Default Mode	Description
No defaults	Indicates that a default value has not been assigned to the field. (default)
Simple default expression	Default value is evaluated or calculated with a simple expression; i.e. a STATE field can have a default value of "MD." The STATE field for all new records will automatically have a value of "MD."
Conditional default values	Default value is evaluated or calculated using a conditional expression; i.e. in the CUSTOMER.SALES_REP field a field may be computed based on the value in the CUSTOMER.STATE field.
Use previous value as default	Default value is set based on the field value of the previous record.

Table 2: Field Rules - Data Entry Tab: Default Modes Described

**Note:* Depending on the options chosen on the Data Entry tab, additional fields may appear on the tab. Here you can provide additional specifications for the field rule.

Steps

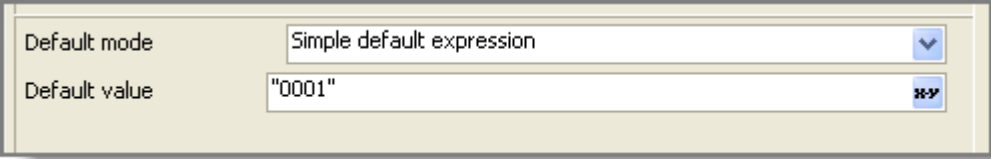
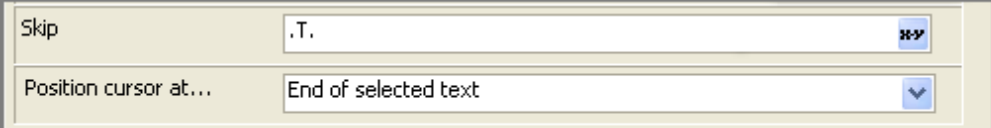


To set a default value for a field:


1. If necessary, open the Field Rules Editor.
2. In the Field Rules Editor, select the field in which to assign a default value.
3. Click the Data Entry tab.
4. In the Default mode drop-down list box, select the default mode.
5. In the Default value field, enter an expression.
6. Make remaining selections as needed.
7. Save the changes to the field rules.

-Exercise

In the following exercise, you will set default value options for the EVENT_ID field in the Events table. In addition, you will also set the default value option for the ATTENDEE_ID field in the Attendees table.

1. In the Field drop-down list box, make sure the EVENT_ID field is selected	
2. Click the Data Entry tab	<i>The Data Entry tab is active.</i>

3. In the Default mode drop-down list box, select Simple default expression	<i>The Default mode is set to Simple default expression. Additional fields are displayed for selection.</i>
4. In the Default value field, type "0001"	<i>The Default value is set to 0001.</i>
	
5. In the Defaults area, click the Set default value at start of data entry option	<i>The Set default value at start of data entry option is checked.</i>
6. On the Data Entry tab, click the Auto advance after field filled option	<i>The Auto advance after field filled option is checked.</i>
7. In the Skip field, type .T.	<i>The Skip field is set to true. The EVENT_ID field will be skipped for data entry.</i>
	
8. On the Field Rules Editor toolbar, click the Save button 	<i>Field rule settings are saved.</i>
9. On the Field Rules Editor toolbar, click the Close button 	<i>The Field Rules Editor window closes.</i>
10. In the Control Panel on the Tables/Sets tab, right-click the Attendees table	<i>A shortcut menu appears.</i>
11. From the shortcut menu, choose Edit Field Rules	<i>The Field Rules Editor window opens. The ATTENDEE_ID field is selected.</i>

<p>12. Set the ATTENDEE_ID field to Auto-increment with a default value of "00001"</p>	
<p>13. On the Data Entry tab, click the Auto advance after field filled option</p>	<p><i>The Auto advance after field filled option is checked.</i></p>
<p>14. In the Skip field, type .T.</p>	<p><i>The Skip field is set to true. The ATTENDEE_ID field will be skipped for data entry.</i></p>
<p>15. On the Field Rules Editor toolbar, click the Save button </p>	<p><i>The Field Rules settings are saved. The Field Rules Editor window remains open.</i></p>



Defining a Field Lookup List

If your table contains a field for which a limited number of valid entries exist, you can create a simple *lookup list* for that field. For example, when entering a new reservation record into the Reservations table, you can use a lookup to display a list of attendee types from which to choose. An attendee type can be a staff, regular, speaker, or sponsor. A lookup list is a list of appropriate entries for the selected field. When you are entering data into a table, choosing a value from a list can be easier than typing in a long entry and helps ensure that data is entered exactly as required. A Lookup can be defined for a character, numeric, or date field. To define a lookup list for a field, select the Lookups tab in the Field Rules window shown in Figure 4.

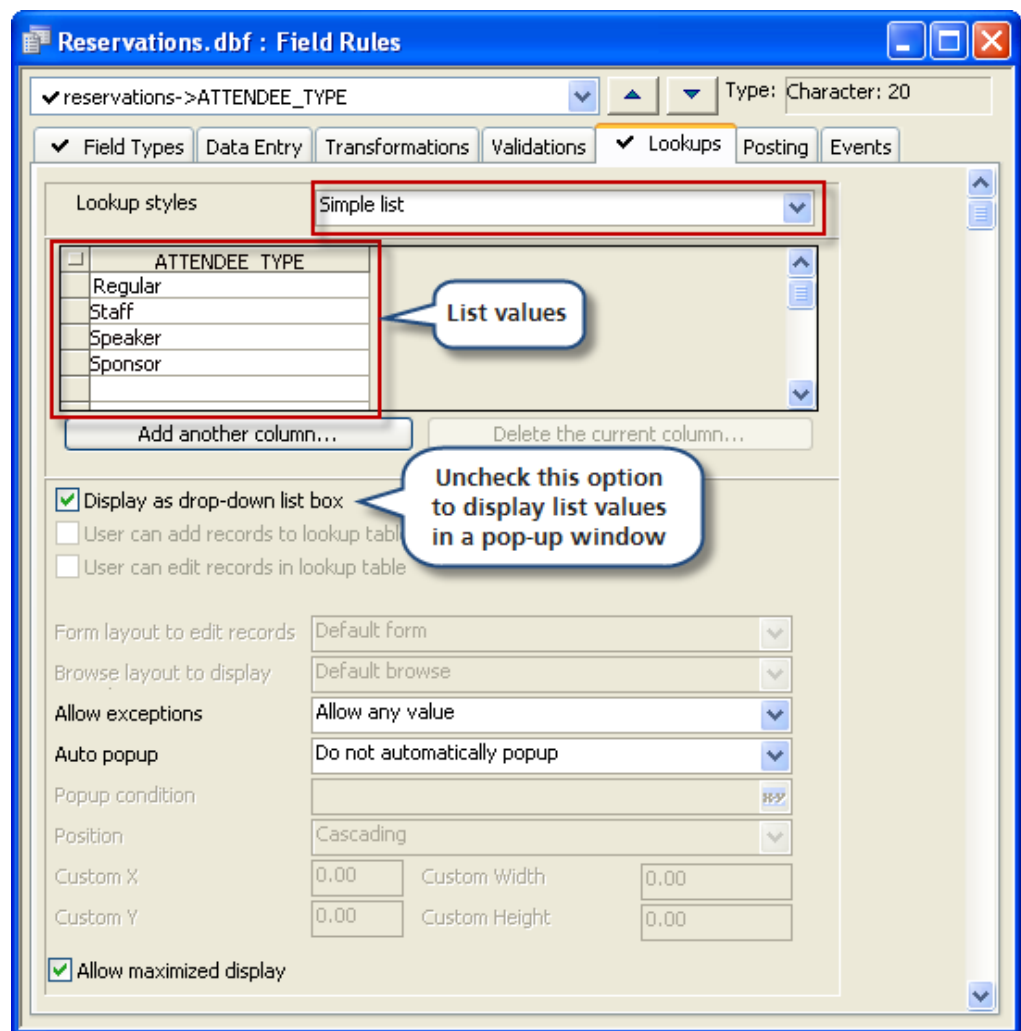


Figure 4: Field Rules Editor Window - Lookups Tab: Simple List Style Selected

Alpha Five provides five Lookup styles from which to choose for the list. The styles are described in Table 3. Once you select the lookup style, you can make additional selections for the lookup list such as the appearance of the list, position of the list, and the display of the list.

Lookup Style	Function
Simple list	Used to provide a pre-defined list of choices for a field.
Cascading list	Used to provide a pre-defined hierarchical structure of categorized values from which to choose for a field.
Table lookup	List values are provided by a record in another table.
Conditional table lookup	List values are provided by two or more tables from which to choose for a field.
Previous values	List values are built based on values already entered in previous records' fields.

Table 3: Lookup Styles Described

You can use the "Allow Exceptions" field to indicate the values allowed in the lookup field and what will happen when an invalid value is entered. The Allow Exceptions choices are described in Table 4.

Allow Exceptions	Result
Allow any value (default)	Allows choices from the lookup as well as entries typed during data entry.
Force closes match	Allows only lookup choices. Values that are typed are matched to the closest lookup value.
Pop-up on mismatch	Allows only lookup choices. An invalid entry will trigger a pop-up window that displays valid lookup entries from which to choose.

Table 4: Allow Exceptions Options Described

***Note:** *If you want to prevent a lookup list value from being replaced with an invalid entry, you can set the "Skip" option to true. You can also define a lookup to simultaneously fill any other field in the table. This topic will be covered later in the module.*

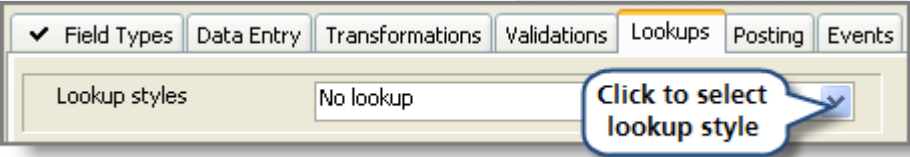
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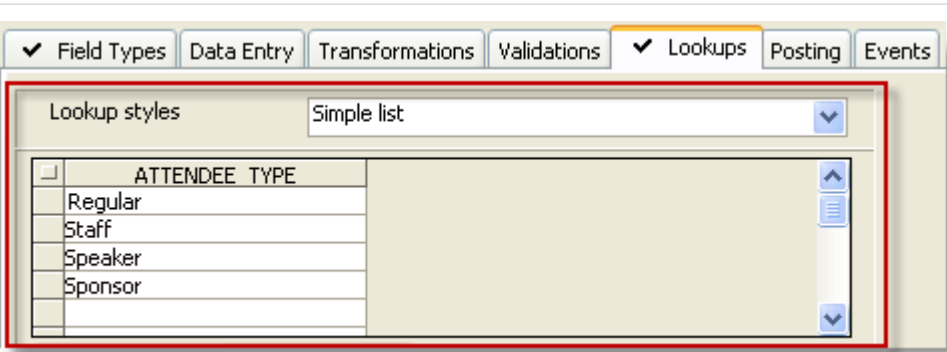
To define a field lookup list:

1. If necessary, open the Field Rules Editor window.
2. In the Field Rules Editor window, select the field to define a lookup.
3. On the Lookups tab, select the Lookup style for the field.
4. Complete the Lookups tab as needed.
5. Save the changes to the Field Rules.

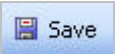
-Exercise

In the following exercise, you will define a field lookup list for the ATTENDEE_TYPE field in the Reservations table.

1. In the Control Panel window, right-click the Reservations table	<i>A shortcut menu appears.</i>
2. From the shortcut menu, choose Edit Field Rules	<i>The Field Rules Editor window appears.</i>
3. In the Field drop-down list box, select the ATTENDEE_TYPE field	
4. In the Field Rules window, click the Lookups tab	<i>The Lookups tab is active.</i>
	
5. In the Lookup styles drop-down list box, select Simple list	<i>Additional lookup options are displayed.</i>
6. In the first ATTENDEE_TYPE lookup cell, type Regular	
7. In the second ATTENDEE_TYPE lookup cell, type Staff	
8. Complete the entries as follows: Speaker Sponsor	



9. In the Allow exceptions drop-down list box, select Pop-up on mismatch

10. On the Field Rules Editor toolbar, click the Save button 



Using Expressions and Conditions

Alpha Five gives you the ability to build simple expressions and complex calculations to evaluate, display, and determine the value for a field. The expression can be composed of functions, literal strings, and operators.

Using the DATE() Function in an Expression

If you would like a field to have or reference a common value such as a preset date the same value whenever you add new data to a table, you can set a *default value* to appear in the field when you add a record. For example, working in the Reservations table, you might set the default value of the RESERVATION_DATE field to be the current date (See Figure 5). Once you do this, Alpha Five automatically enters the current date into the field whenever you enter a new reservation into the table.

To enter the current date into a field, you can use a *function*. A function is a predefined procedure that calculates a value. Many functions that perform a variety of calculations are available for use when you work in Alpha Five. In the example discussed above, you can use the *Date()* function to define the default value. The Date() function automatically enters the current date, as stored in your computer.

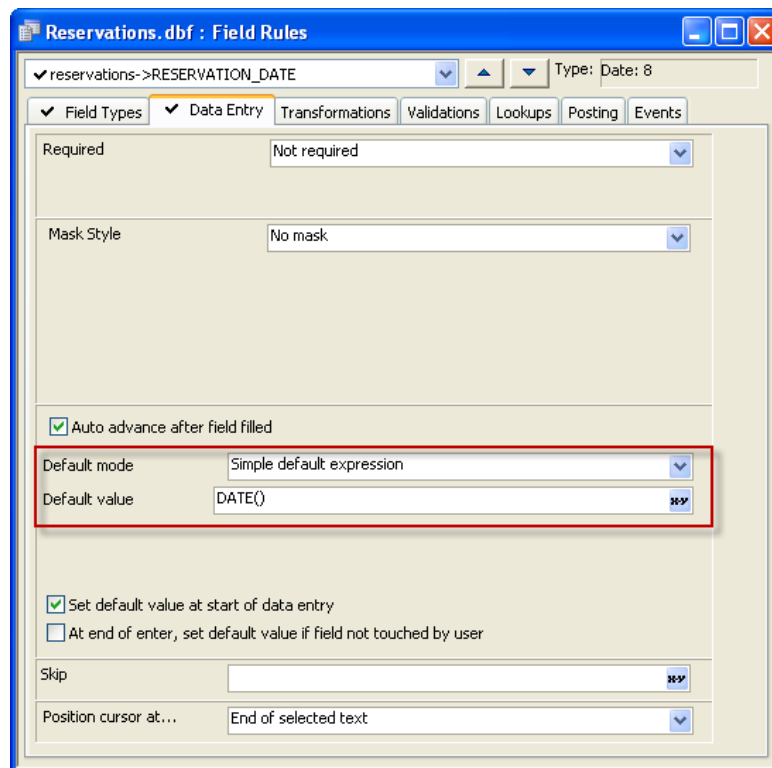


Figure 5: Field Rules - Data Entry Tab for RESERVATION_DATE Field




Steps

To enter a simple expression:

1. If necessary, open the Field Rules Editor.
2. In the Field Rules Editor, select the field in which to enter a simple expression.
3. Click the Data Entry tab.
4. In the Default mode drop-down list box, select simple default expression.
5. In the Default value field, enter an expression.
6. Make remaining selections as needed.
7. Save the changes the Field Rules.

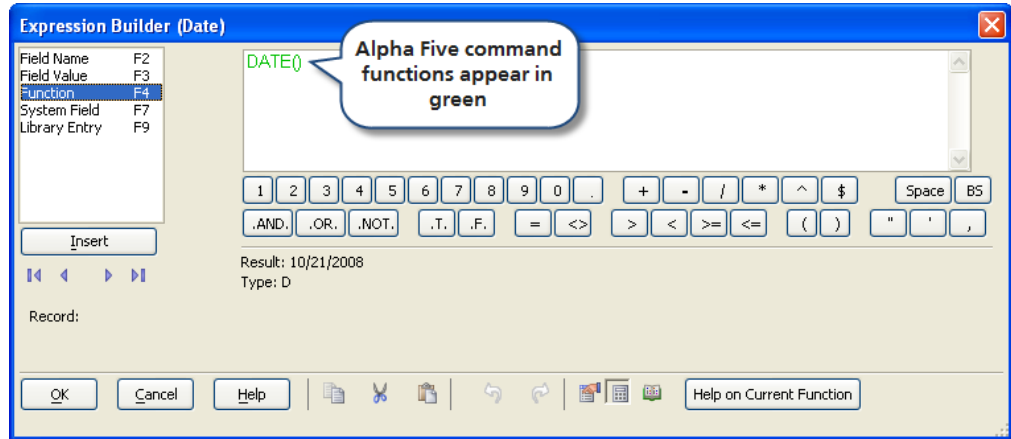
Exercise

In the following exercise, you will set default value options for the RESERVATION_DATE field. You will also set the RESERVATION_NO field to auto-increment with a default value of "00001".

1. In the Field drop-down list box, select the RESERVATION_DATE field	
2. Click the Data Entry tab	<i>The Data Entry tab is active.</i>
3. In the Default mode drop-down list box, select Simple default expression	<i>The Default mode is set to Simple default expression. Additional fields are displayed for selection.</i>
4. In the Default value field, click the Expression Builder button 	<i>The Expression Builder (Date) window opens.</i>
5. In the Expression Builder (Date) window, select Function	
6. Choose 	<i>The Function Finder window appears.</i>
7. In the Category drop-down list box, select Date	<i>A list of Alpha Date functions appear.</i>
8. From the Date functions list area, select date()	<i>The date() function appears in the Select Function text box.</i>
9. Choose 	<i>The Function Finder window closes. In the expression area, date(appears.</i>

10. In the Expression Builder window, type)

The expression is complete and displays the date() function.



11. In the Expression Builder (Date) window, choose OK

The Expression Builder window closes.

12. In the Defaults area, click the Set default value at start of data entry option

The Set default value at start of data entry option is checked.

13. On the Data Entry tab, click the Auto advance after field filled option

The Auto advance after field filled option is checked.

14. Set the RESERVATION_NO field to Auto-increment with a default value of "00001"

15. In the Skip text box, type .T.

16. On the Field Rules Editor toolbar, click the Save button 

Field rule settings are saved. The Field Rules Editor window remains open.

Creating a Calculated Expression

In addition to using simple expressions and auto-increments to define a field rule, you can also use Calculated expressions for automatic data entry. A calculated expression can compute arithmetic equations such as totals and averages; concatenate data, and more. For example, you can create a calculated expression for a table field that is based on other fields in the underlying table. You will add a new field (ATT_FULLNAME) to the Attendees table that will automatically calculate and store the attendees' full name by retrieving the first and last name once it has been entered for the record. After the value has been calculated, this field can be used in forms, browses, and reports. Having the table field automatically calculated will save time later because the calculated expression will not need to be created every time you want to display the attendee's full name. The calculated expression for the ATT_FULLNAME field is shown in Figure 6.

***Note:** The *ALLTRIM()* function removes blanks at the beginning and end of a character/string expression.

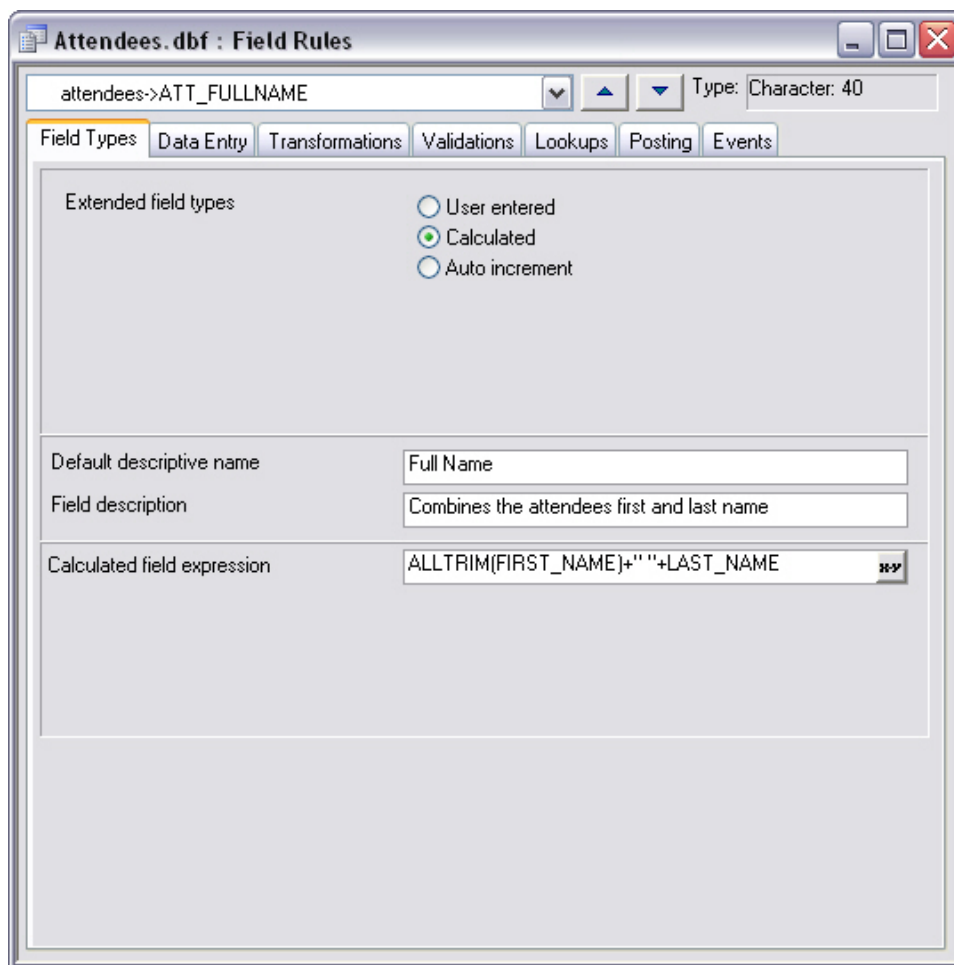


Figure 6: Calculated Expression for ATT_FULLNAME Field


Steps

To create a calculated field expression:

1. If necessary, open the Field Rules Editor.
2. In the Field Rules Editor, select the field in which to enter a calculated expression.
3. On the Field Types tab, in the Extended field types area, select Calculated.
4. In the Default descriptive name text box, type a descriptive name for the field.
5. In the Field description text box, type a description for the field.
6. In the Calculated field expression text box, enter the expression.
7. Save the changes to the Field Rules.

Exercise

In the following exercise, you will create a calculated expression for the new ATT_FULLNAME field in the Attendees table.

1. In the Control Panel window, right-click the Attendees table	
2. From the shortcut menu, choose Edit Structure	<i>The Restructure Table (attendees) dialog box opens.</i>
3. In the last Name cell, type ATT_FULLNAME	
4. From the Type drop-down list, select Character	
5. In the Width text box, type 60	
6. On the Restructure Table toolbar, click the Save button 	
7. Open the Field Rules Editor for the Attendees table	
8. In the Field drop-down list box, select the ATT_FULLNAME field	<i>The Field Types tab is active.</i>
9. In the Extended field types area, select Calculated	<i>The Calculated extended field type is selected.</i>