

Cal4D Component - User Reference

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Abstract

This is part one of a two part Technical Note that provides information regarding the Cal4D Component written by Dave Batton. This package will allow a 4D Developer to add a full-featured Calendar into any 4th Dimension 2004 (4D 2004) database. Part one discusses the installation and the basic use of the component. Part two will provide the language reference for the public methods within the component.

A sample database is provided, which also includes the source code for the component.

Introduction

In order to fulfill most of our daily activities, we all use some type of organizing system. It can simply be an organizer in ones wallet, some "stickies" or Post-it notes that get placed on a desk at work, or even a secretary that provides verbal reminders. Because our days are so busy and hectic we rely on these things to help us get through our daily activities. Fortunately, the 4D community can now ease the pain of their busy customers by providing a calendar within 4D applications.

The Cal4D Component supplied with this Technical Note is exclusive to the 4D 2004 product line. The code was originally written in 4D version 6.8. This updated version is now packaged as a component, supports multiple calendars, and takes advantage of 4D 2004 features.

How to use this Technical Note

This Technical Note accompanies a sample database, which also contains the source code for the Cal4D Component. Additionally the installation of Cal4D into a 4D database is covered. As mentioned, this is a two part Technical Note. The Language Reference will be part two.

Note that the component is provided "open source". The developer is free to modify the source in the example database as needed.

What is the Cal4D Component?

The Cal4D Component consists of a 4D Component, 4D Object Library, and several image files. This package will allow a 4D Developer to add a full-featured calendar into any 4D 2004 database.

Features and Requirements

Enhancements from Version 6.8

- Multiple calendar groups
- Graphical appearance improved
- Improved handling of smaller calendar sizes
- Selected day is now highlighted
- Increased number of events for each day
- Days of the week are displayed
- A single day may contain multiple picture events
- Calendar window's default size has been increased
- Designed for multi-user environment
- Offers both private and public (shared) calendars
- Procedurally modifiable database
- Callback methods for more developer control
- Component packaging
- A variable naming convention has been implemented.
- Improved image handling
- New selection of images from which to choose from
- The calendar maybe inherited by any 4D form, moved to any position, and hidden at any time.
- Button that allows to view events in a scrollable list if there are too many events to display within a day

Taking Advantage of 4D 2004

- The calendar window updates as it is resized, rather than after the mouse is released
- Using the new hierarchical list colors feature, group names are drawn in color in the Manage Calendars window
- Sheet windows are used on Mac OS X.
- The new APPEND TO ARRAY command is used extensively
- A single PlugIns folder is used rather than separate Win4DX and Mac4DX folders
- The new Pop Up type window is used to select a picture for an event.
- The new Select document command allows you to import multiple calendar files in a single step.
- The new On Long Click form event is used for spinner buttons in the Go To Date dialog.

- The new 3D Button style is used to display the buttons on the calendar and the spinners in the Go To Date dialog.
- Radio buttons are now grouped in the form editor, rather than relying on the variable names.
- A list box is used to display scrollable events when there are too many events to display for a single day.
- The images are now stored in the 4D's new Extras folder.

Requirements

- 4D 2004 Developer Edition License (for installation)
- 4D 2004 Interpreted database
- 4D Insider (for installation)
- 4D 2004 Cal4D Component Package (see below)
- 4D Pack and 4D Internet Commands plug-ins

What is in the Cal4D Package?

In order to implement the calendar and all of its features the following items are needed:

- Cal4D Component files (Cal4D.4CP and Cal4D.RSR)
Purpose: Contains objects, forms and methods.
- Cal4DTable Library files (Cal4D Tables.4IL and Cal4D Tables.RSR)
Purpose: Contains the tables [Cal4D_Event], [Cal4D_Group] and [Cal4D_User] that are used to store calendar data.
- Cal4D_Images folder
Purpose: Folder containing pictures that can be associated with calendar events.

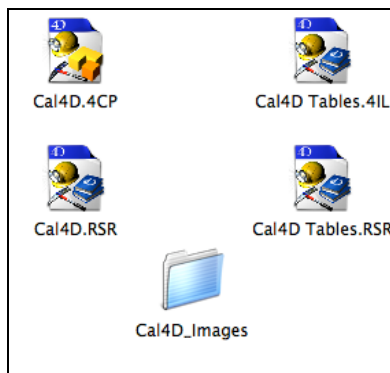


Fig. 1

Installation

The following steps describe how to install the Cal4D Component.

1. Launch 4D Insider.

2. Open the structure into which Cal4D will be installed.
3. Add the required tables. Note: Proceed with part "a)" to automatically add the tables. Proceed to part "b)" to manually add the tables within a structure.

a) Automatically adding tables using the Cal4D Object Library:

- From the file menu select Open->Locally...

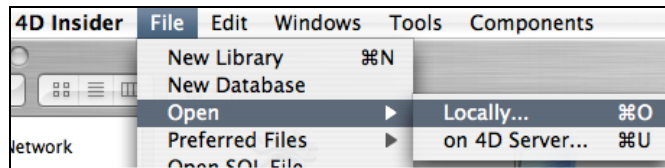


Fig. 2

- Select "Cal4D Tables.4IL" from the files provided. A new window appears after selecting the file:

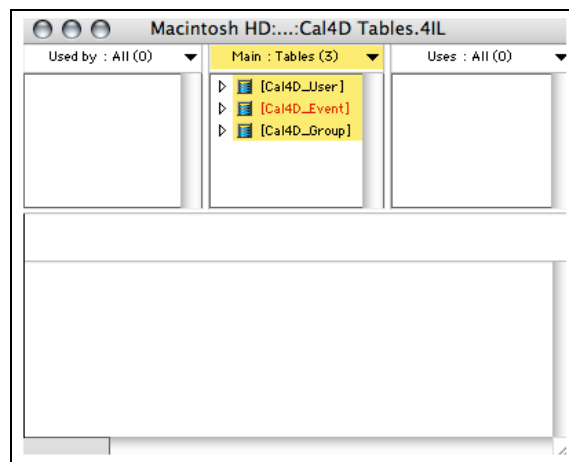


Fig. 3

- Copy the three tables [Cal4D_Event], [Cal4D_Group] and [Cal4D_User] into the target structure. To do so, simply drag them from the Object Library window to the target structure window.

b) Manually adding tables for Cal4D:

The following should only be done if part 3.a) was not completed. Step 3.a) may be skipped if a developer decides to use existing tables in the structure rather than create new ones. If this is the case, the following needs to be done:

- Modify three tables in the structure to match the following:

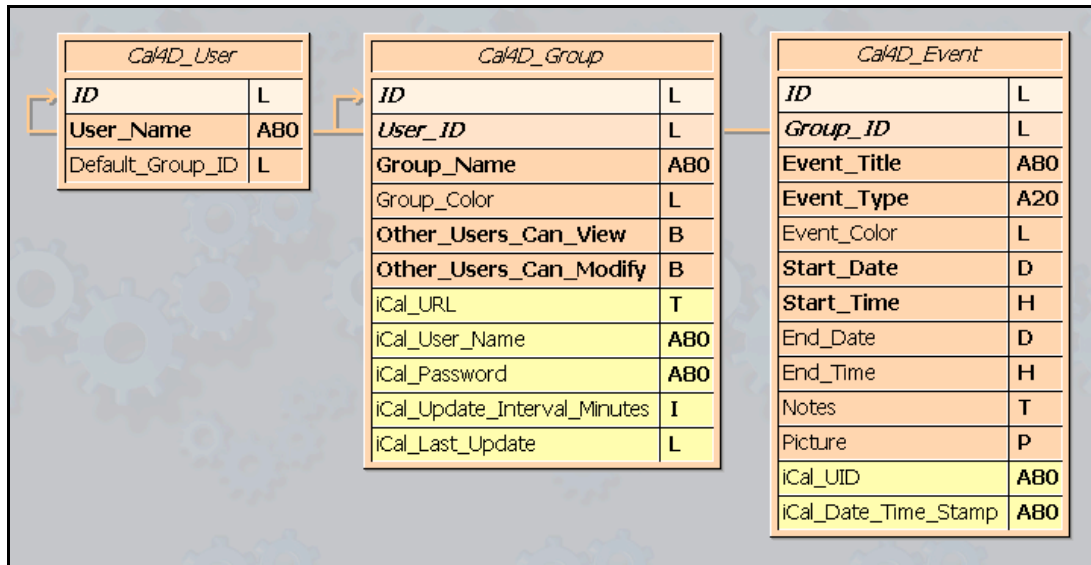


Fig. 4

- Add the following line of code to the [Cal4D_Event] table trigger so it calls the Cal4D_Event_Trigger :

\$0:=Cal4D_Event_Trigger

- Add the following line of code to the [Cal4D_Group] table trigger so it calls the Cal4D_Group_Trigger like this:

\$0:=Cal4D_Group_Trigger

- For both of these tables ([Cal4D_Event] and [Cal4D_Group]), make sure the On Saving New Record Event, On Saving Existing Record Event, and On Deleting Record Event checkboxes are selected, as highlighted below:

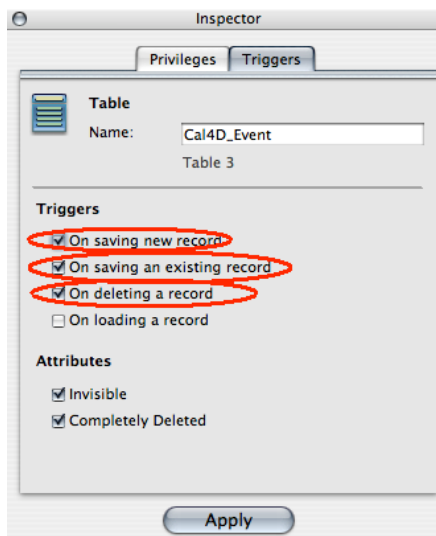


Fig. 5

4. Install the component.

From Components menu select Install/Update...

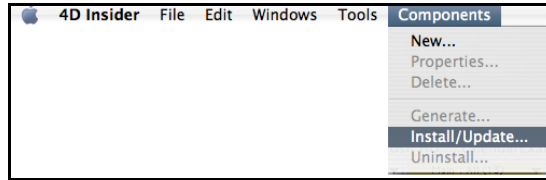


Fig. 6

The following dialog will appear:

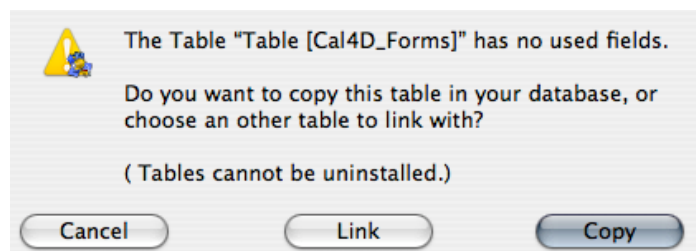


Fig. 7

Either link the table or copy the table. Linking the table will add the Cal4D forms to an existing table. Copying the table will create a new table for the forms. This is the developer's decision.

Quit 4D Insider when done.

5. Install the Plug-ins.

Copy the 4D Internet Commands and 4D Pack plug-ins to the "Plugins" folder.

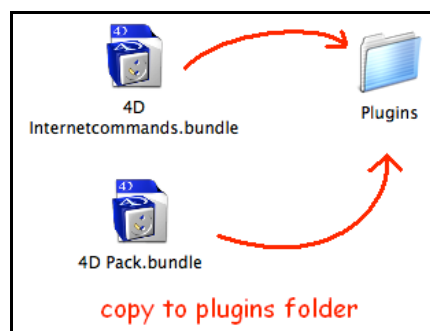


Fig. 8

Latest versions of the plug-ins can be downloaded here:

http://www.4d.com/products/downloads_4d.html

6. Install the images into the Extras Folder.

Copy the Cal4D_Images folder to the structure's Extras folder. If the current database does not use the Extras folder, it will need to be created.

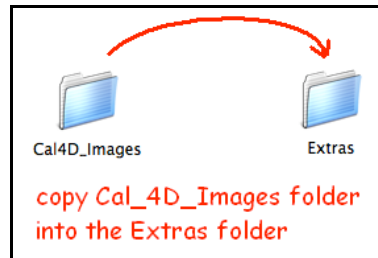


Fig. 9

7. Modify the On Startup and On Exit database methods.

In the On Startup database method add the following method:

Cal4D_Startup

In the On Exit database method add the following method:

Cal4D_Quit

Displaying the Calendar

The Cal4D calendar should be treated as a form object. There are three ways to display the calendar, two of which allow you to specify the size and position:

- As a new window in its own process.
- As a form object, size based on a rectangle.
- As a form object, size based on coordinate values.

Displaying the calendar on its own...

To simply display the calendar on its own in a window in a new process, call the command:

Cal4D_Cal_Calendar

See fig.11 for an example.

Using a rectangle to size the calendar

The following steps will allow the developer to use a rectangle object as a placeholder for the calendar. An example is shown below:

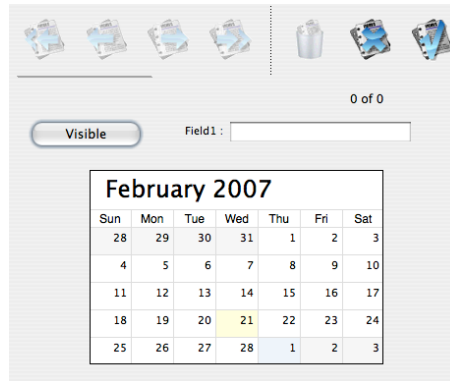


Fig. 10

1. Inherit the form "Cal4D_Cal_Objects" within a 4D form.
2. Insert a rectangle object on the form where the calendar will appear.
3. Pass the object name of the rectangle object to the command:

`Cal4D_Cal_SetPositionByObject("rectangelname")`

(this command might called during the On Load form event)

4. Within the form method, add the following command:

`Cal4D_CalFormMethod`

Note: be sure to place this command outside of any event handling block. In addition, verify that the following form events are enabled:

- On Load
- On Unload
- On Activate
- On Outside Call
- On Clicked
- On Double Clicked
- On Timer
- On Resize

5. Call ***Cal4D_Cal_SetVisible***(True) to make the calendar visible. For example, you can call this command within a button or during the On Load form event.

Specifying coordinates to size the calendar

1. Inherit the form "Cal4D_Cal_Objects" within a 4D form.
2. Set the position and size of the calendar by calling the command:

`Cal4D_Cal_SetPosition(left;top;right;bottom)`

(this command might called during the On Load form event)

3. Within the form method, add the following command:

Cal4D_CalFormMethod

Note: be sure to place this command outside of any event handling block. In addition, verify the following form events are enabled:

- On Load
- On Unload
- On Activate
- On Outside Call
- On Clicked
- On Double Clicked
- On Timer
- On Resize

4. Call **Cal4D_Cal_SetVisible**(True) to make the calendar visible. For example, you can call this command within a button or during the On Load form event.

Using the Calendar Object

Below is an example view of the calendar (with annotations in red). This portion of the Tech Note explains how to use the navigation buttons, adding and removing events, importing calendars from iCal, as well as subscribing to iCal.

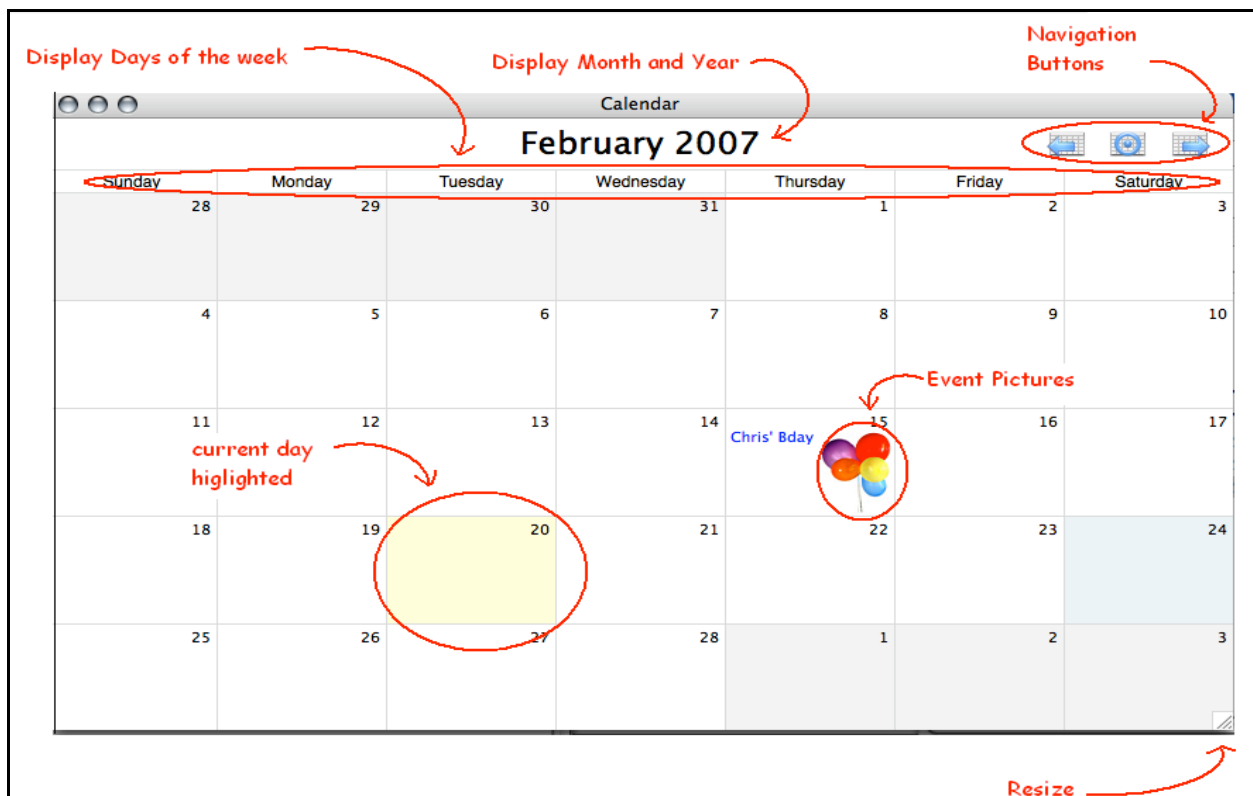




Fig. 11


The Navigation Buttons



Fig. 12

Previous Month: This button will allow the user to traverse to previous months in chronological order. Using Fig 11. from above, continually clicking  will display the months January 2007, December 2006, November 2006 and etc.

Next Month: This button will allow the user to traverse to the next month in chronological order. Using Fig 11. from above, continually clicking  will display the months March 2007, April 2007, May 2007 and etc.

Go To: This button will allow the user to go to a specific date. Clicking on  will display the following dialog:

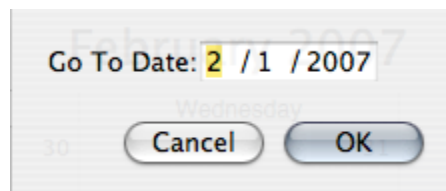


Fig. 13

Note: The default Go To Date will be the current date.

Entering the specified date and clicking OK will display the calendar month for that specified year with the day highlighted. For instance, if entering 7/4/1984, the following calendar will display:

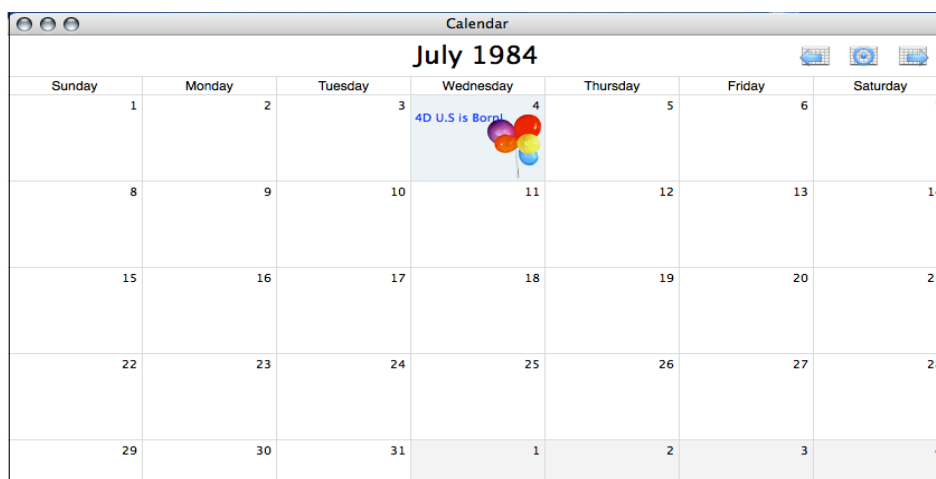


Fig. 14

Creating and Editing Events

The main use of the calendar will be creating and editing events.

To edit an event: Double click either on the event title or picture from a calendar day. Clicking on an event or picture will produce an outline around the title and picture:



Fig. 15

To enter a new event: Double click on an empty space. (Empty space is any space not already occupied by another object):

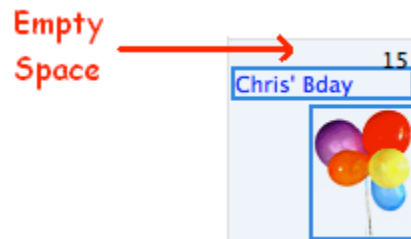


Fig. 16

Entering a new event or editing an existing one will prompt the user with the following form:

A screenshot of a dialog box for creating or editing an event. The dialog box has a title bar and a main content area. At the top, there is a "Title:" label followed by a text input field. Below this, there is a "Type:" label with three radio button options: "All-Day" (selected), "Appointment", and "Banner". To the right of these options is a "Date:" label followed by a date input field showing "02/01/07". Below the "Type:" label is a "Color:" label with a checked checkbox. To the right of the "Color:" label is a "Picture:" label followed by a picture selection area. Below these fields is a "Notes:" label followed by a large text area. At the bottom of the dialog box, there is a "Calendar:" label followed by a dropdown menu showing "Personal Calendar". At the very bottom, there are "Cancel" and "OK" buttons.

Fig. 17

Title: This field will be displayed on the calendar. For instance, Fig.14 displays "4D U.S is Born!". This is the title for the event.

Type: This field allows selection from three different choices.

- *All-day:* This is used for an event that spans throughout a single day. No time frame is needed. The event can either be displayed with or without a picture.
- *Appointment:* This type of event requires a time frame. Therefore, two new fields are displayed when selecting this type of event. The event can either be displayed with or without a picture:

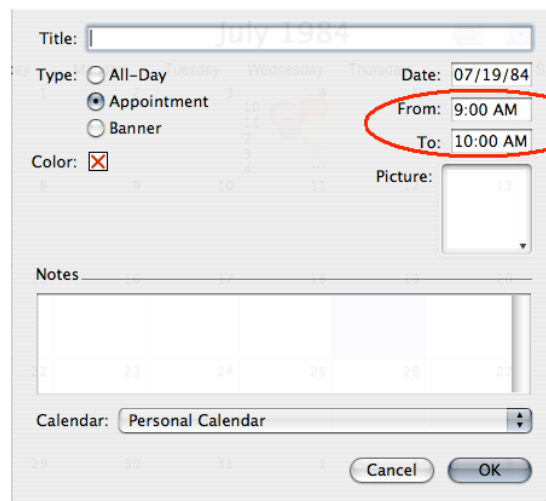
A screenshot of a software interface for creating an event. The 'Title' field is empty. The 'Type' section has three radio buttons: 'All-Day', 'Appointment' (which is selected), and 'Banner'. To the right of the 'Appointment' radio button, the 'Date' is set to '07/19/84'. Below the date, there are two fields: 'From: 9:00 AM' and 'To: 10:00 AM', both of which are circled in red. Below these fields is a 'Picture' field with a small square icon and a dropdown arrow. There is a 'Color' field with a red 'X' icon. Below that is a 'Notes' field with a text area. At the bottom, there is a 'Calendar' dropdown menu set to 'Personal Calendar' and two buttons: 'Cancel' and 'OK'.

Fig. 18

- *Banner:* This type of event allows the display of an event that spans across multiple days. A new field is displayed that allows the user to specify the ending date (labeled as "Through"):

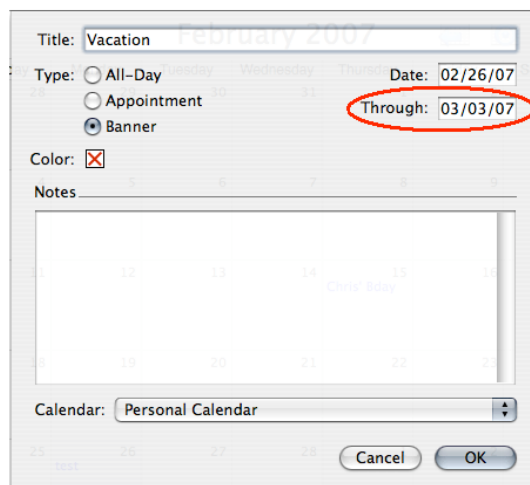
A screenshot of a software interface for creating an event. The 'Title' field is set to 'Vacation'. The 'Type' section has three radio buttons: 'All-Day', 'Appointment', and 'Banner' (which is selected). To the right of the 'Banner' radio button, the 'Date' is set to '02/26/07' and the 'Through' date is set to '03/03/07', both of which are circled in red. Below these fields is a 'Color' field with a red 'X' icon. Below that is a 'Notes' field with a text area. At the bottom, there is a 'Calendar' dropdown menu set to 'Personal Calendar' and two buttons: 'Cancel' and 'OK'.

Fig. 19

The event is displayed as below. In addition, this type of event does not allow the use of pictures. An example one may use this event would be for specifying vacation days:



Fig. 19

Color: Depending on the type selected, color will either be applied to text or background. Users will be able to select the color from the color palette presented:

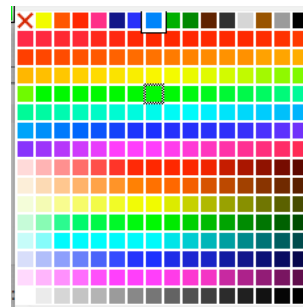


Fig. 20

For event types All Day and Appointment, this color field will apply to the text that is displayed on the calendar.

For the event type Banner, this color field will apply to the color of the banner.

Note: By default the text color is blue and the banner color is black.

Picture: This field is only visible for event types All Day and Appointment. Clicking on the field will display a scrollable list displaying pictures from the Cal4D_Images folder within the Extras folder. The Calendar Component package includes sample pictures (Reference step 6 in the Installation Section). The list of pictures can be modified by simply removing or adding the pictures in the Cal4D_Images folder.

Notes: This text field allows users to provide more information regarding the event.

Calendar: This field contains a drop down list of calendars currently in the database. By default, there is a Personal Calendar and Public Calendar. For more information managing calendars, please view the section Managing Calendars.

Removing Events

To delete an event:

- Click on the object (title, picture, banner) to be deleted.
- -Once highlighted press the delete key.

The event should now be deleted from the calendar.

Managing Multiple Calendars

The Cal4D component allows a 4D user to manage multiple calendars. For instance, a calendar might be created for bills, social events, and work. Having multiple calendars will allow these tasks or events to be grouped in an orderly fashion. The calendar component provides the user with ways to distinguish these calendars from one another with the use of color as well as a feature to allow the calendars to be viewed publicly or privately. Along with these features, Cal4D provides the ability subscribe to, as well as import, iCal calendars.

The picture below shows the Manage Calendars dialog. In the sample database provided, this dialog is displayed by clicking on the Manage Calendars button provided in the Demo palette. To call this dialog procedurally, use the command ***Cal4D_Group_ManageDialog***.

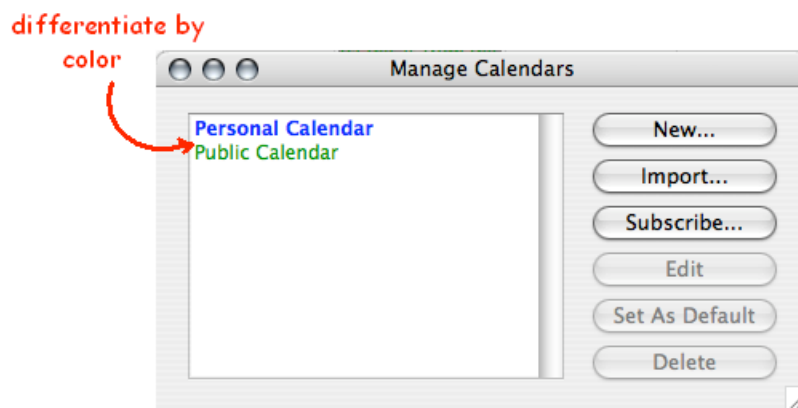


Fig. 21

Creating a New Calendar

Clicking on  will show the following dialog:

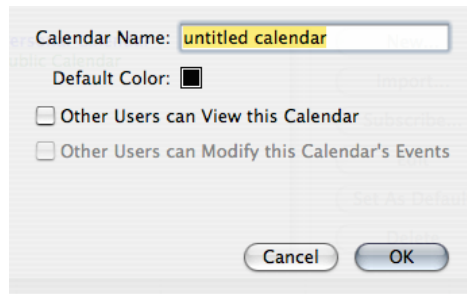


Fig. 22

Calendar Name: This field allows the user to enter a name for the new calendar.

Default Color: This field allows the user to set the default color for the calendar.
Note: this setting can be overridden by the color field in the event editor.

Other Users can View this Calendar: When enabled, allows other 4D users to read only or view the calendar events.

Other Users can Modify this Calendar's Events: This option becomes available when "Other Users can View this Calendar" is enabled. When enabled, allows 4D users to make changes or modifications to the calendar.

Importing a Calendar

Clicking on **Import...** will prompt the user to select an iCal file(.ics). The events from this file will be added to the calendar allowing the user to modify them. To modify this calendar, select it and click on **Edit**. For more information on the Edit feature please see the "Editing a Calendar" section below.

Subscribing to a Calendar

Clicking on **Subscribe...** will prompt the user with the following dialog.

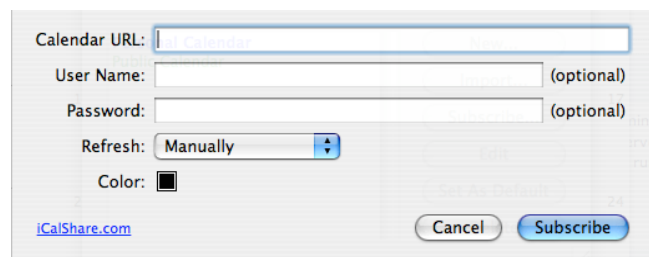


Fig. 23

The component allows subscription to an iCal calendar. When subscribed to a calendar individual events within that calendar cannot be edited, moved, or deleted. The only alternative for deleting an event would be to delete the calendar or subscription.

Calendar URL: This field allows the user to enter the url where the iCal calendar is being published. Note that SSL connections are supported.

NOTE: FTP published calendars is not supported.

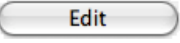
User Name and Password: If authentication is required the user name and password may be entered here.

Refresh: This field allows the selection how often the subscribed calendar will be updated. The choices are:

- Manually
- Every 15 Minutes
- Every Hour
- Every Day
- Every Week

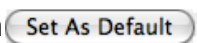
Color: This field determines the color of text for events that are from the subscribed calendar.

Editing a Calendar

With a calendar is selected, clicking on  will open the dialog in Fig. 22. This dialog is used to edit an existing calendar.

NOTE: If the calendar selected is a subscribed calendar, clicking on the edit button will open the dialog in Fig. 23. The subscribed calendar may not be modified. Clicking on the Subscribe button will refresh the calendar.

Setting a Default Calendar

While a calendar is selected, clicking on  will set the selected calendar as default. Therefore, when creating a new event, the calendar field will display the default calendar.

Deleting a Calendar

While a calendar is selected, clicking on  will remove the calendar and its events.

Known Issues

The component does not check maximum boundary for a year entered. When entering a date above 12/31/32,767 the year displays with a negative sign.

Conclusion

With the Cal4D component 4D Developers can add a calendar to any 4D database. This Technical Note provided a user reference for the component. Part 2 of this Technical Note will provide the language reference.

Technical Support and License

Please note that the 4DCal Component is provided "open source" and also includes a License Agreement ("EULA.txt"). 4D, Inc. will not provide Technical Support for problems encountered when using this component. Please feel free to modify the source code as needed.