

4D View

User Reference
Windows/Mac OS



4D View

User Reference

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1

Presentation

4D View

4D View — 4D's built-in spreadsheet

A spreadsheet is an application containing a grid of cells into which you can enter information, execute calculations, or display pictures. 4D View is a plug-in written for 4th Dimension and 4D Server, allowing you to use classic spreadsheet functions within your database as well as to execute simulation, projection, analysis or specific presentation operations to this type of software. Also, 4D View offers advanced functions allowing multiple types of data presentation.

For the user, total integration of 4D View into 4th Dimension means being able to take full advantage of 4D View's power and interface while having the specific functions of an advanced spreadsheet available.

4D View directly uses information contained in the database without having to re-enter it – one of the most powerful elements of the program. In fact, once you make reference to values stored in the database, you will save a considerable amount of time since any changes in the database are immediately made in your spreadsheet and vice versa. You can create applications that will help you with calculations, preparation of budgets or simulations.

4D View — a complete spreadsheet

4D View's two-dimensional configuration, a set of columns and rows, integrates into any database and allows creation of reports or execution of quick calculations. Formulas can be used for these calculations. They can contain references to cells and execute calculations with data from these cells. If the data changes, the calculations are updated.

4D View allows you to enhance your spreadsheet by incorporating different fonts, borders and colors for cells and pictures. Your presentations will take on an efficiently professional look.

To customize your print jobs, you can add headers and footers and insert the current date and time as well as the page number. You can also set column and row repetition during printing.

4D View — a powerful list editor

4D View also allows insertion of advanced scroll-down areas in your 4D forms. Using its built-in language, it allows you to handle otherwise-impossible manipulations by using 4D database commands: horizontal scroll-down bars, user-resized columns, automatic column formatting, copy to clipboard, drag and drop, etc. The content of the list can be directly modified either by direct entry in the 4D View area or by control objects (pop-up menus, buttons...) with total control of entered data. Operations are very quick and control objects respect the interface.

Data can be passed to 4D View by using 4D arrays or fields. If two columns must be displayed in a screen list form, create two arrays or specify two fields that you will pass to 4D View. No area delimiter or additional manipulation is necessary.

4D View and 4th Dimension

4D View is more than a simple spreadsheet: built in to the 4th Dimension environment, it can function with database data.

You can even associate a spreadsheet to each record of your database. The spreadsheet data will be updated at the same time as the record. Since you can insert as much data as you would like into your spreadsheet, it can be used as a multi-valued field.

If you want to use the same document for several spreadsheets, simply create a template, into which you can insert text, formulas or pictures. This template can perform the same calculations on every record in your database.

4D View can also be used in an external window as if it were a stand-alone application, but still having access to the 4D database. You can enter information coming from the database into cells and use a formula to summarize them.

Also, 4D View has a programming language — containing over 100 routines— which, combined with the richness of the interface and the functional power of 4th Dimension, allows you to manage totally customized 4D View spreadsheets. The description of these commands, as well as their usage within your databases, are detailed in a separate manual: refer to the 4D View *Language Reference* manual.

About this Manual

Windows®/ Mac™ OS

This manual is for users of 4D View for both Windows and Mac OS. The information in this manual applies to both platforms. Any differences in usage between the Mac OS and Windows version of 4D View are detailed within the text.

Screen shots are primarily from the Windows version. Both versions are presented only in cases where there is a major difference.

Manual content

This manual constitutes the 4D View *User Reference*. It details dialog boxes and menu commands of the program as well as all available functions in the User environment. Please pay special attention to the [chapter “Using 4D objects” on page 133](#), which explains how to take full advantage of 4D View’s integration into 4th Dimension.

4D View contains a set of additional commands which are integrated into the 4th Dimension language, allowing execution, via programming, of any action that can be done in the User environment, and providing access to a variety of additional functions. These commands give the programmer the ability to guide and analyze user actions within a customized application.

The 4D View programming language is detailed in a separate manual, the *Language Reference* manual.

2

Interface

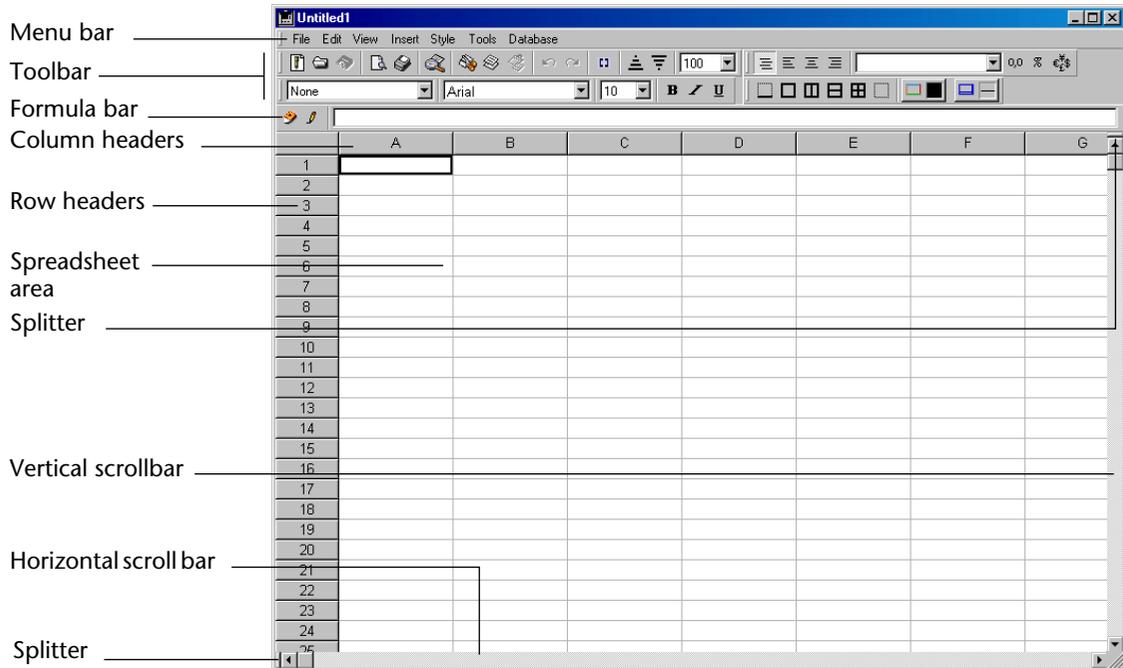
Introduction

4D View can be used in an included area within a form or in an external window. Regardless of the mode used, the available interface elements are the same. This chapter will describe the 4D View interface and its many features.

Note In this chapter, the term “window” will be used invariably to describe an external 4D View window or a 4D View included area. If a particular comment or note applies specifically to either an included area or a window, it will be clearly noted.

The 4D View Window

By default, the 4D View window is presented as follows:



The 4D View window contains:

- A visible spreadsheet area,
- A menu bar and four toolbars, located in the top portion of the window,
- A formula bar,
- Column headers, located above the spreadsheet area,
- Row headers, located to the left of the spreadsheet area,
- Two scroll bars with splitters.

Splitting the 4D View window

4D View allows splitting of the spreadsheet area into several panes. Once the spreadsheet area has been split, you can view and scroll through each pane of the same document independently from the other panes. The spreadsheet area can be split vertically and horizontally which is useful for simultaneously entering, editing, or viewing portions of a table found in different locations of the 4D View document.

Splitting the document area vertically allows you to display several areas of the current document side by side.

- ▶ To split a 4D View window vertically:

- 1 In the 4D View window, place the cursor over the split box located to the left of the horizontal scroll bar.

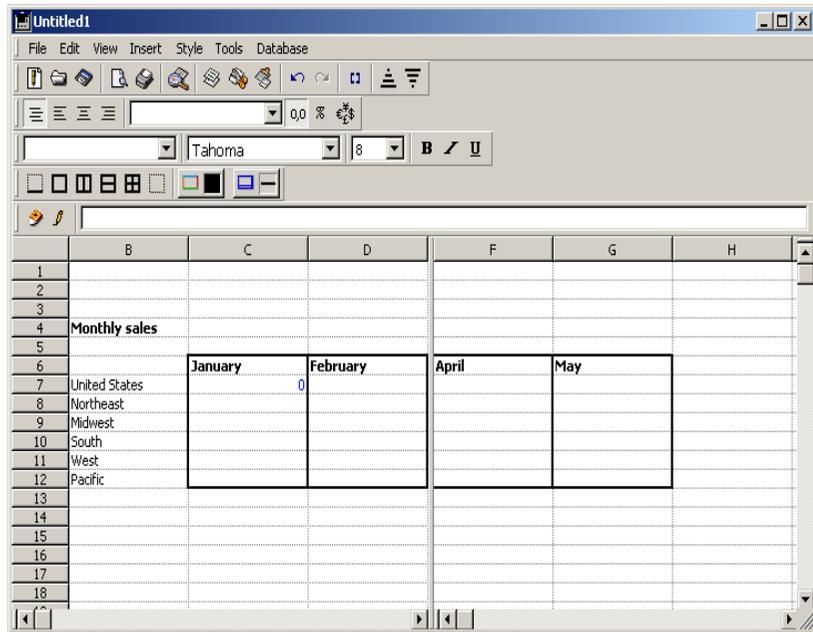


The cursor changes into a split indicator:



- 2 Drag the split cursor to the desired location of the new pane border.

There are now two independent sub-windows:



- ▶ To split a 4D View window horizontally:

- 1 In the 4D View window, place the cursor over the split box located above the vertical scroll bar:

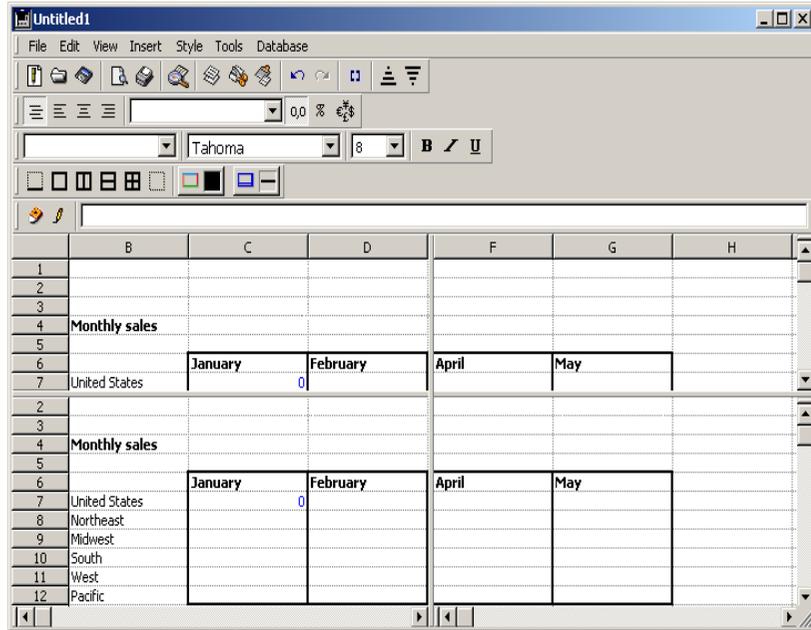


The cursor changes into a split indicator.

2 Drag the split indicator to the desired location of the new pane border.

There are now two independent sub-windows.

Vertical and horizontal divisions can easily be combined:



Any changes made in one window are immediately reflected in the other.

► To remove a pane:

1 Place the cursor over the border separating the two panes.

The cursor changes into a split indicator:



2 Double-click the border.

OR

Drag the line to the starting point of the sub-window, as if you were going to close it.

The pane disappears.

► To resize a pane:

1 Place the cursor over the border separating two panes.

The cursor changes into a split indicator:



2 Drag the split indicator to the new desired location.

The Menu Bar and Toolbars

The menu bar is displayed at the top of the 4D View window. It contains seven menus:



There are four toolbars in 4D View:



The toolbars are designed to provide quick access to certain features that would otherwise require the use of menu commands.

For more information on the functions of these toolbars, refer to the [paragraph “4D View Toolbars” on page 40](#).

The formula bar appears below the spreadsheet area:



It allows editing of the formula of the cell being modified.

Moving the Menu Bar or a Toolbar

The 4D View menu bar, as well as any toolbar, can be moved to any side of the window. They can also be displayed as a floating palette above the spreadsheet area or outside the 4D View window.

Settings will be saved for each new 4D View window.

- To move the 4D View menu bar or a toolbar:

1 Click the handle located to the left of the bar and hold down the mouse button.

A cross-like cursor will appear; the bar is surrounded by a gray frame:



2 Drag the bar to another location in the upper part of the window. OR

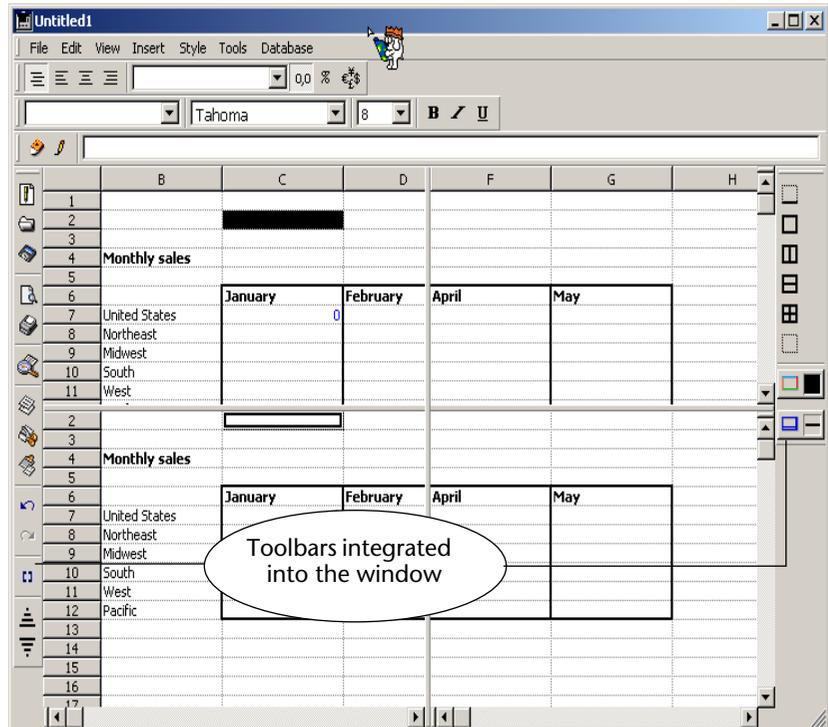
Drag the bar to the border of the left, right, or lower part of the spreadsheet area.

OR

Move the bar above the spreadsheet area or any other screen area.

3 Release the mouse.

- The bar will appear in its new location if it was placed in the upper part of the window.
- If the bar is placed on the border to the left, right, or lower part of the spreadsheet area, it is built into the window.



- If the bar is placed above the spreadsheet area, or any other screen area, it is displayed as a palette:



Hiding a bar

The menu bar or a toolbar can be hidden if you do not use it or want to customize the interface. Note that your parameters are saved for each new 4D View window.

- To hide the menu bar or a toolbar:

- 1 **Deselect the name of the bar in the Toolbar submenu of the Display menu, or deselect the Menu bar command in the View menu.**

A checkmark (✓) is placed next to the command when the corresponding bar is displayed.

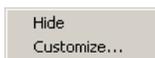
OR

If the bar is displayed as a palette, click on the close box.

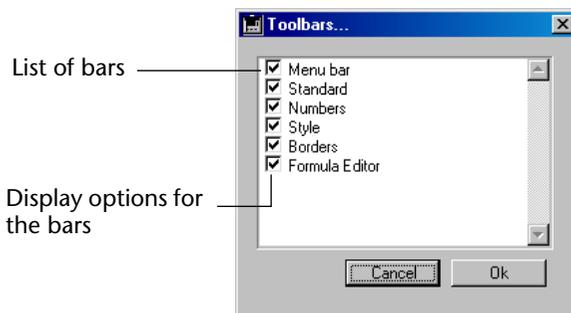
OR

Under Windows, right-mouse click on one of the bars. Under Mac OS, right-click or Control+click on one of the bars.

A pop-up menu will appear for the latter. You can either **Hide** the bar on which you have clicked, or **Customize** the bars.



If you selected the **Customize...** option, a dialog box appears allowing you to deselect the bar(s) that you want to hide.



Re-displaying a bar

- To re-display a bar:

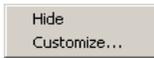
- 1 **Select the name of the bar to display in the Toolbar submenu of the View menu.**

A checkmark (✓) is placed next to the command when the corresponding bar is displayed.

OR

Under Windows, right-mouse click one of the displayed bars.

Under Mac OS, right-click or Control+click one of the bars.



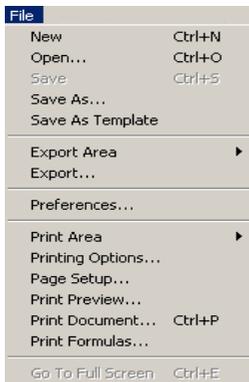
- 2 Select the **Customize...** option from the pop-up menu that is displayed.
- 3 In the dialog box displaying the bars, check the option corresponding to the bar that you wish to display.
OR
To re-display the menu bar, use the **Ctrl+Shift+M (Windows)** or **Command+Shift+M (Mac OS)** keyboard shortcuts.

4D View Menus

4D View includes seven menus:

- The **File** menu
This menu is used for printing, exporting, file management and accessing preferences.
- The **Edit** menu
This menu is used to access standard features, such as Copy/Cut/Paste, Undo or Re-do operations, and to access Find/Replace features. It also allows setting of names, moves within a document and cell sorting.
- The **View** menu
This menu is used to select display options for the spreadsheet, interface elements, pictures, scrollbars, as well as references.
- The **Insert** menu
This menu is used to insert cells, column, rows, and page breaks.
- The **Style** menu
This menu is used to define style attributes of selected cells, borders, column width, and row height. It also allows changing of style sheets.
- The **Tools** menu
This menu is used to view and edit document attributes (title, subject, author and notes), and to access cell security and calculation mode. It also allows updating or freezing of references present in the 4D View document.
- The **Database** menu
This menu is used to import fields and reports. It also allows linking of cells or columns.

The File menu



The **File** menu allows you to access standard document management features, exports, print features as well as preferences. The commands for this menu are as follows:

- **New**

Selecting this command displays a new blank document in the spreadsheet area, replacing the current document. If the document is not saved, a confirmation dialog box allows you to save it before displaying the new document.

- **Open...**

Selecting the **Open...** menu command displays the standard Open File dialog box for your operating system. Selecting a document with this dialog box opens the document and displays it in the 4D View window.

- **Save**

Selecting the **Save** menu command saves the current document in its current location. If the current document is a new document, the **Save** command acts the same as the **Save As** command.

- **Save As...**

Selecting the **Save As...** command displays the standard Save File dialog box for your operating system.

- **Save As Template**

This command creates a document template on your disk. A template is a document that serves as a document starting point for each record. No Save File dialog box is shown; the document template will be saved automatically at the same level as the database structure file. The name of the template will be the same as the area, followed by .4PV (for example, "MyArea.4PV").

- **Export Area**

Selecting the **Export Area** displays a hierarchical submenu that allows defining of the area of cells to export:



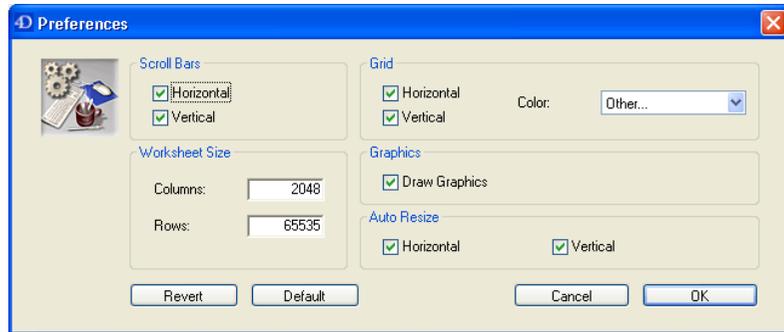
- **Set** sets the set of selected cells as an export area.
- **Clear** cancels a previously defined export area.
- **Show** displays the selection of cells of the area to export.

■ **Export...**

Selecting the **Export...** command displays the standard create file dialog box. The created file contains information related to cells selected as an export area.

■ **Preferences...**

Selecting the **Preferences...** command displays the preference setting dialog box:



This dialog box allows defining of document preferences, such as vertical and horizontal scrollbar display, the number of columns and rows of a document, grid characteristics, graphics, and auto resizing. For more information on using this dialog box, refer to the [paragraph “Setting Preferences” on page 74](#).

■ **Print Area**

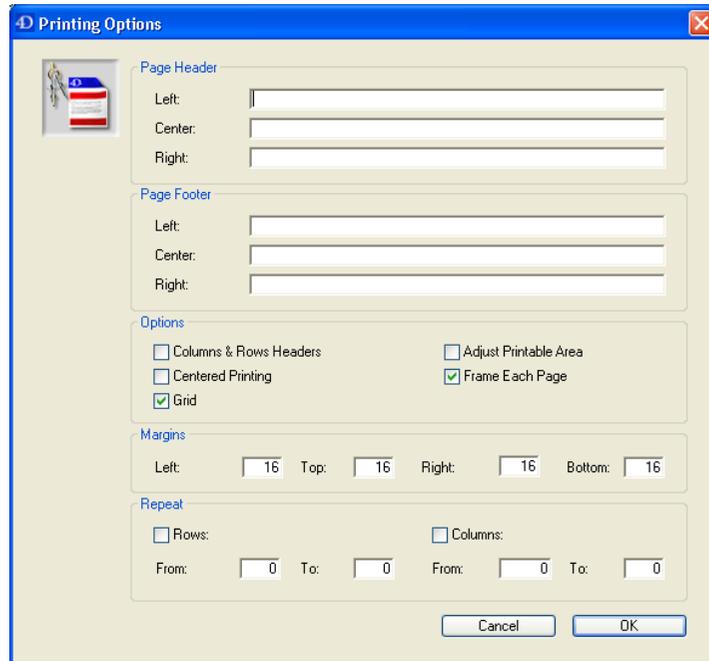
Selecting the **Print Area** command displays a hierarchical submenu allowing setting of the area of cells to print.



- **Set** sets the set of selected cells as a print area.
- **Clear** cancels the previously defined print area.
- **Show** displays the selection of print area cells.

■ Printing Options...

Selecting the **Printing Options...** command displays the 4D print settings dialog box:



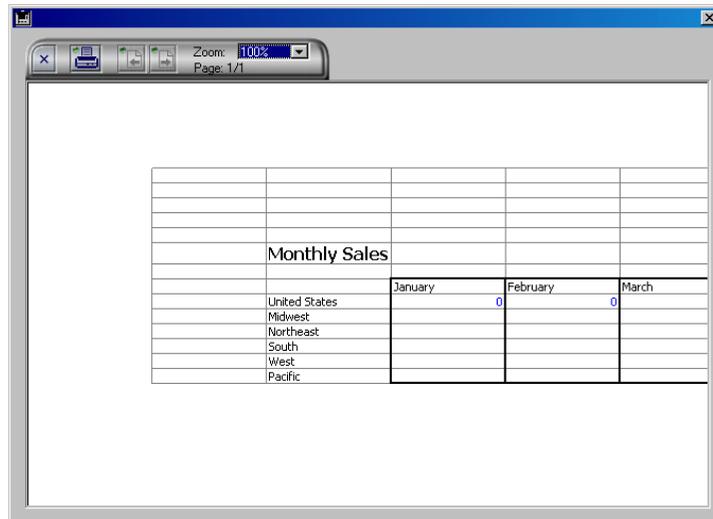
This dialog box allows setting of print parameters, such as header and footer contents, options, margins and repeats.

■ Page Setup...

Selecting the **Page Setup...** command displays the print setting dialog box for the current printer.

■ **Print Preview...**

Selecting the **Print Preview...** command displays the print preview window:



The print preview window displays the document as it will be printed. It also allows visualizing of the document page by page and starting of printing. For more information, refer to the [paragraph “Print Preview...”](#) on page 170.

■ **Print Document...**

Selecting the **Print Document...** command displays the print dialog box for the current printer.

■ **Print Formulas...**

Selecting the **Print Formulas...** command allows printing of spreadsheet formulas.

■ **Go To Full Screen**

When the 4D View area is included in a form, this menu command expands the text area to the size of your screen (Mac OS) or of the application window (Windows). The 4D View menu bar replaces the 4th Dimension menu bar.

The Edit menu

The **Edit** menu is used to:

- Cut/Copy/Paste cells,
- Cancel or repeat the last operation executed by the program,
- Select all cells of a document,



- Automatically find and replace a value, a color, a font, or a format,
- Re-copy, move, clear, name, or sort cells.

The **Edit** menu contains the following commands:

■ **Undo Action**

Selecting the **Undo Action** menu command reverses the last action taken by the user. If the last action cannot be undone, the menu command is dimmed.

■ **Redo Action**

Selecting the **Redo Action** menu command restores the last action canceled by the **Undo** command. If this action cannot be restored, the menu command is disabled.

■ **Repeat Action**

Selecting the **Repeat Action** menu command repeats the last action taken by the user. If this action cannot be repeated, the menu command becomes **Cannot Repeat Action**.

■ **Cut**

Selecting the **Cut** menu command deletes the current selection and places it on the clipboard.

■ **Copy**

Selecting the **Copy** menu command copies the current selection and places it on the clipboard.

■ **Paste**

Selecting the **Paste** menu command places the clipboard content into the selected cell.

■ **Paste Special...**

Selecting the **Paste Special...** menu command displays the paste special dialog box:



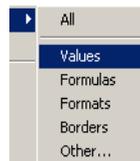
- **Values** pastes the result of formulas of previously copied cells.

- **Formulas** pastes the formulas of previously copied cells. Their results may vary depending on where they were pasted in the area.

- **Formats** pastes the formats of the copied cells.
- **Borders** pastes the borders of the copied cells.
- **Select All**
Selecting the **Select All** menu command selects all the cells in the spreadsheet.
- **Fill**
Selecting the **Fill** menu command displays a hierarchical submenu to define the direction in which to copy:

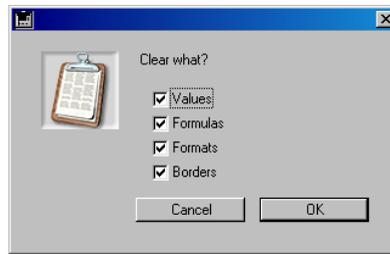


- **Down** copies, within a selection, the content of the top cell(s) into the rest of the selection.
- **Right** copies, within a selection, the content of the left-most cell(s) into the rest of the selection.
- **Move**
Selecting the **Move** menu command combines the **Cut** and then **Paste** commands. However, borders are not taken into account. For more information, refer to the [paragraph “Moving cells” on page 79](#).
- **Clear**
Selecting the **Clear** menu command displays a hierarchical submenu to set which elements to clear.



- **All** clears values, formulas, formats and borders for the current selection,
- **Values** only clears values in the current selection. Formulas, formats and borders are not touched.
- **Formulas** only clears formulas in the current selection. Values, formats and border are not touched.
- **Formats** only clears formats in the current selection. Formulas, values and borders are not touched.
- **Borders** only clears borders in the current selection. Formulas, formats and values are not touched.

- **Other...** displays the clear options dialog box:



The choices in this dialog box are the same as in the hierarchical submenu. This dialog box allows combining of various options into a single operation.

- **Delete...**

When one or more cells are selected, choosing the **Delete...** command menu displays a delete cells dialog box:

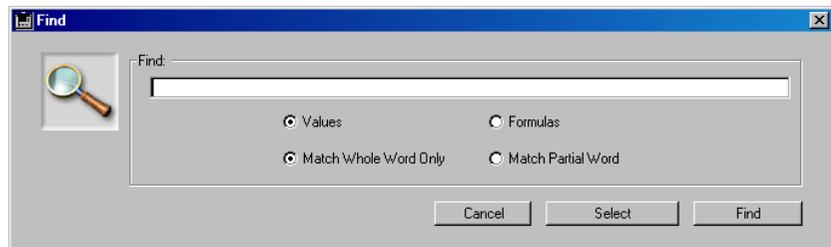


- **Up** deletes the cell selection and shifts the cells located below the current selection in the document.
- **Left** deletes the cell selection and shifts the cells located to the right of the current selection in the document.

When a column or an entire line is selected (by clicking the header), the column or the row is immediately deleted; no dialog box is displayed.

- **Find...**

Selecting the **Find...** menu command displays the Find... dialog box:



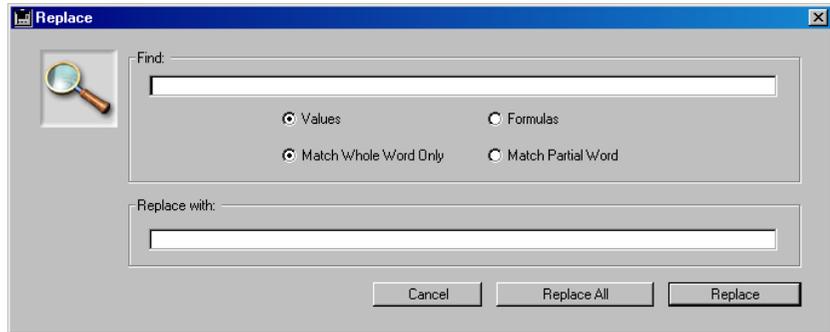
This dialog box allows searching of the entire document for a value. For more information, refer to the [paragraph “Find” on page 80](#).

■ **Find Next**

Selecting the **Find Next** menu command triggers a new search using the last search criteria. This command is disabled if there are no prior searches.

■ **Replace...**

Selecting the **Replace...** command displays the replace dialog box:



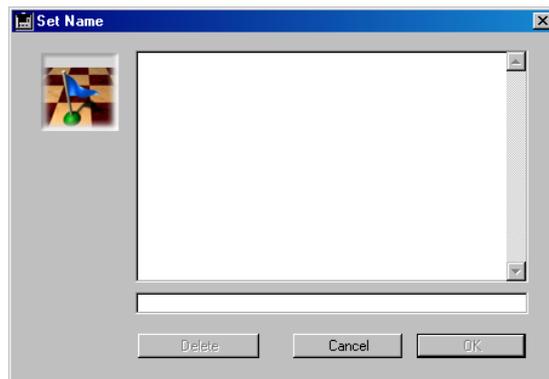
This dialog box allows searching and replacing of a value. For more information, refer to the [paragraph “Replace” on page 81](#).

■ **Replace Next**

Selecting the **Replace Next** menu command triggers a new replace based on the last criteria used. This command is disabled if there are no prior replacements.

■ **Set Name...**

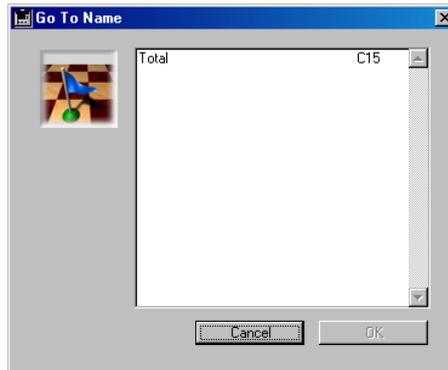
Selecting the **Set Name...** menu command displays the set cell name dialog box:



This dialog box allows setting a name for a selected cell. For more information, refer to the [paragraph “Set name” on page 82](#).

- **Go to...**

Selecting the **Go to...** command displays the navigation dialog box:



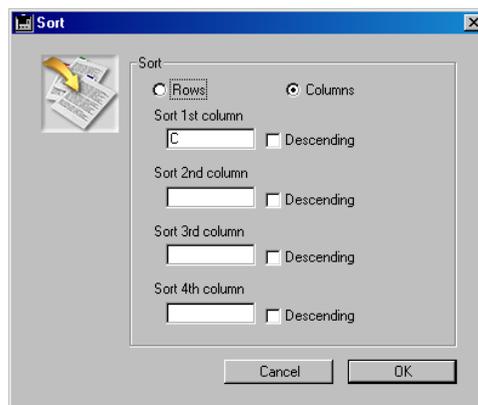
This dialog box allows choosing of the cell to select from the list of names of cells previously defined. Validating this choice shifts the spreadsheet vertically and horizontally, if necessary, to display the target cell. This command is disabled when no cell names have been defined in the document.

- **Go To Last Cell**

Choosing this command selects and displays the last cell in the spreadsheet. The last cell is located at the intersection of the right-most column and the bottom-most row containing a non-empty cell.

- **Sort...**

Selecting the **Sort...** menu command displays the sort cells dialog box:



This dialog box allows sorting of rows and columns of cells with four different sort parameters. For more information, refer to the [paragraph “Executing Sorts” on page 84](#).

The View menu



The **View** menu allows selecting the display of menu bars, formula bars, row and column headers, grids, scroll bars, toolbars, page breaks, references and pictures.

A checkmark (✓) appears in front of displayed elements. To hide an element, select its label and the checkmark disappears. To display a hidden element, repeat this step: the checkmark re-appears.

The commands for this menu are as follows:

■ **Menu Bar**

Selecting the **Menu Bar** menu command hides the menu bar. If the menu bar is hidden, you can display it using the **Ctrl+Shift+M** (Windows) or **Command+Shift+M** (Mac OS) shortcuts.

Note For more information on managing bars, refer to the [paragraph “The Menu Bar and Toolbars” on page 17](#).

■ **Formula Editor**

The **Formula Editor** command displays or hides the formula bar at the top of the external window or included area.

■ **Column Headers**

The **Column Headers** command displays or hides spreadsheet column headers.

■ **Row Headers**

The **Row Headers** command displays or hides the spreadsheet row headers.

■ **Grid**

The **Grid** command displays or hides the grids in the spreadsheet.

■ **Vertical Scrollbars**

The **Vertical Scrollbars** command displays or hides the vertical scrollbar.

■ **Horizontal Scrollbars**

The **Horizontal Scrollbars** command displays or hides the horizontal scrollbar.

■ Toolbars

The **Toolbars** command displays a submenu listing the 4D View toolbars.

In this submenu, toolbars with a checkmark in front of their name are displayed. Selecting the name of a toolbar preceded by a checkmark will hide it. Selecting a toolbar not preceded by a checkmark displays the corresponding toolbar.

Displaying the menu bar and formula bar is managed by an individual menu command.

Note For more information on managing bars, refer to the [paragraph “4D View Menu” on page 20](#).

■ Page Breaks

The **Page Breaks** command displays or hides the page limits used during printing.

Note To modify the location of page breaks, refer to the [paragraph “The File menu” on page 21](#).

■ References

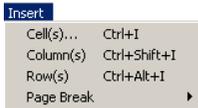
Selecting this command displays the references of variable elements of the spreadsheet in place of their values.

Note For more information on inserting variables, refer to the [chapter “Using 4D objects” on page 133](#).

■ Pictures

Selecting this command displays pictures as they appear in the spreadsheet. Pictures are invisible when this command is deselected.

The Insert menu

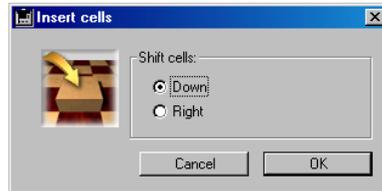


The **Insert** menu allows you to insert cells, columns, rows and page breaks.

The commands for this menu are as follows:

- **Cell(s)...**

Selecting the **Cell(s)...** command displays an insert cells dialog box:



- **Down** moves cells located under the current selection in the document and inserts a selection of empty cells.
- **Right** moves cells located to the right of the current selection in the document and inserts a selection of empty cells.

The number of empty cells created is equal to the number of cells contained in the current selection.

- **Column(s)**

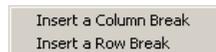
Selecting the **Column(s)** command moves, from the left-most cell of the current selection, the set of spreadsheet columns to the right and inserts one or more column(s). The number of empty columns created is equal to the number of columns contained in the current selection of cells.

- **Row(s)**

Selecting the **Row(s)** command moves, from the top-most cell of the current selection, the set of spreadsheet rows to the bottom and inserts one or more column(s). The number of empty rows created is equal to the number of rows contained in the current selection of cells.

- **Page Break**

Selecting the **Page Break** command displays a submenu allowing you to select the type of page break to insert:



- **Insert a Column Break** inserts a column break to the left of the left-most cell of the current selection
- **Insert a Row Break** inserts a row break above the top-most cell of the current selection.

The Style menu

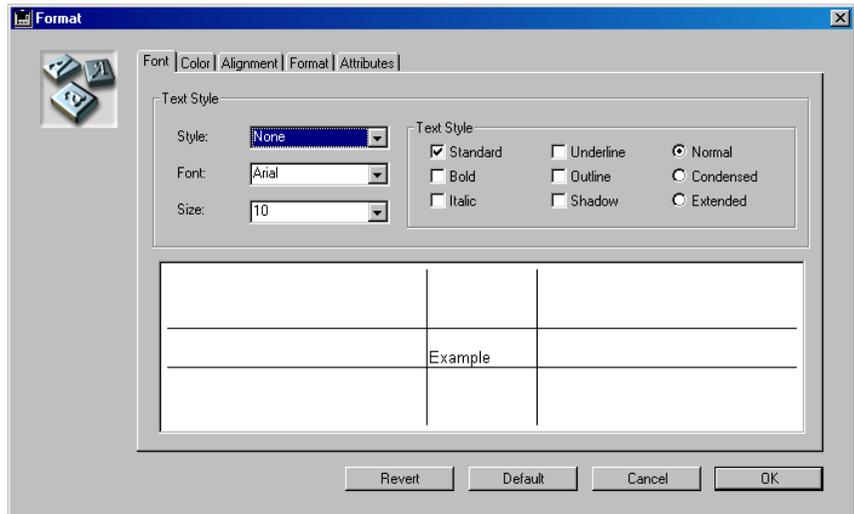


The **Style** menu allows setting of styles for cells, frames, columns and rows. It also allows accessing the style sheet definition dialog box.

The commands for this menu are as follows:

- **Cell(s)...**

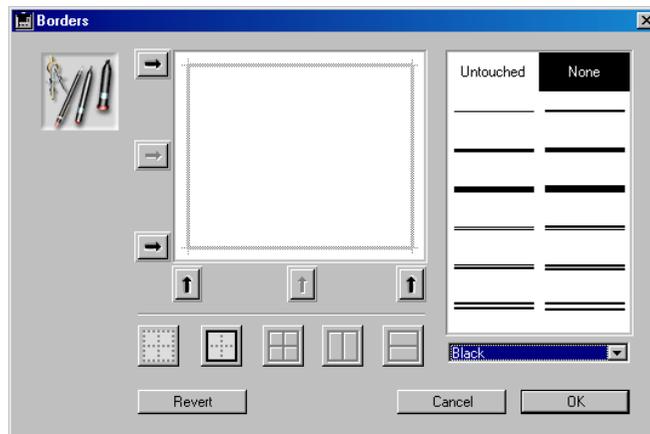
Selecting the **Cell(s)...** command displays the cell format dialog box:



This dialog box allows setting the font, color, style alignment and attributes of selected cells. For more information on using this dialog box, refer to the [paragraph “Defining Cell Appearance” on page 91](#).

- **Border(s)...**

Selecting the **Border(s)...** command displays the cell border dialog box:

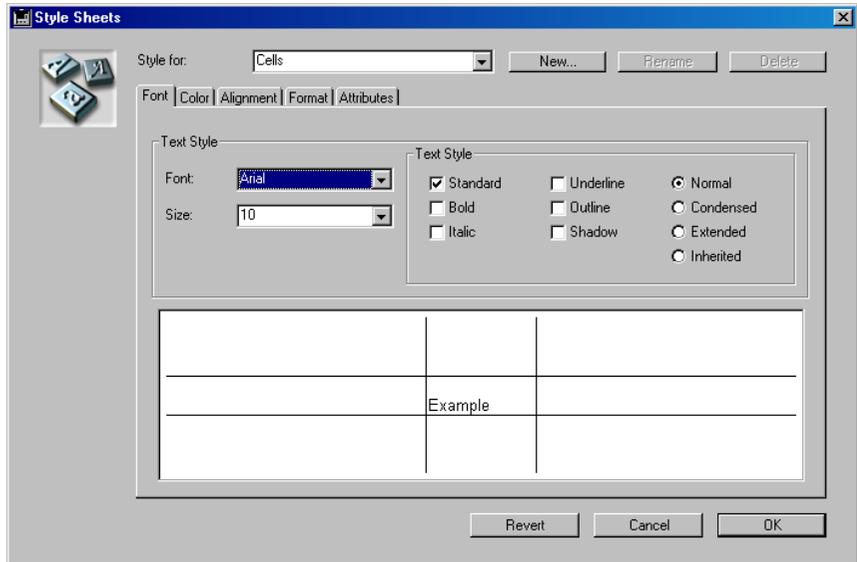


This dialog box allows setting of the location, color and thickness of selected cell borders.

For more information on using this dialog box, refer to the [paragraph “Defining Cell Borders”](#) on page 100.

■ **Style Sheets...**

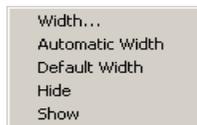
Selecting the **Style Sheets...** command displays the style sheet dialog box:



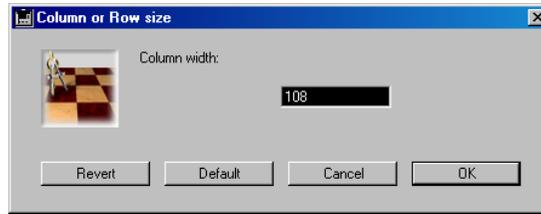
This dialog box allows creating, modifying, or removing style sheets defined in the document. For more information, refer to the [paragraph “Using Style Sheets”](#) on page 101.

■ **Column(s)**

Selecting the **Column(s)** command displays a hierarchical submenu allowing setting of the width and display of selected columns.



- **Width...** displays the dialog box to set the width of columns in pixels (points).



If the group of selected columns contains uneven sizes, no reference size will be specified in the "Column width" area.

Clicking the **Default** button resets the default value (108 pixels).

The **Revert** button resets the value defined prior to opening the dialog box, without having to close it.

- **Automatic Width** sets the column width, adjusting it to its widest content.
 - **Default Width** sets the column width to the default size (108 pixels).
 - **Hide** hides the selected columns.
 - **Show** displays the selected columns previously hidden with the **Hide** command.
- **Row(s)**

Selecting the **Row(s)** command displays a hierarchical submenu allowing setting of the width and display of selected rows.

- **Height...** displays the dialog box to set the height of rows in pixels (points).

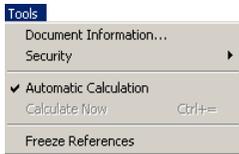
If the selected group of rows contains uneven sizes, no reference size will be specified in the "Row width" area.

Clicking the **Default** button resets the default value for the platform.

The **Revert** button resets the value defined prior to opening the dialog box, without having to close it.

- **Automatic Height** sets the row height, adjusting it to its greatest content.
- **Default Height** sets the row height to the default size for the platform (19 pixels under Windows, 15 under Mac OS).
- **Hide** hides the selected rows.
- **Show** displays the selected rows previously hidden with the **Hide** command.

The Tools menu

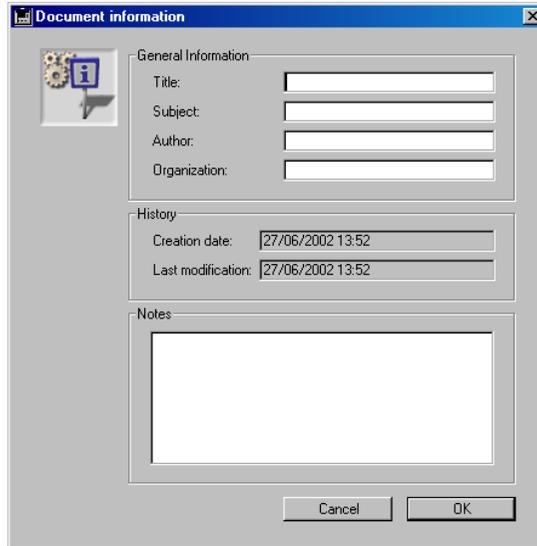


The **Tools** menu lets you access document information, cell security, set formula calculations and freeze references.

This menu contains the following commands:

- **Document Information...**

Selecting the **Document Information...** command displays the dialog box allowing you to view and modify document information:



This dialog box allows you to enter and view additional statistics related to the current document. For more information on this dialog box, refer to the [paragraph “Managing Document Information” on page 75](#).

- **Security**

Selecting the **Security** command displays a submenu allowing you to set the display and lock selected cells.



- **Hide** hides the cell content.
- **Show** displays the cell content.
- **Lock** prohibits modifying the cell content.
- **Unlock** re-authorizes modifying cell content.

■ Automatic Calculation

Selecting the **Automatic Calculation** command alternatively sets calculating as either automatic or manual. If the **Automatic Calculation** option is selected, 4D View calculates cell formulas any time one is modified. If the **Automatic Calculation** is disabled, re-calculating all formulas is done on command.

When calculating is automatic, a checkmark (√) appears in front of the command.

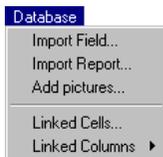
■ Calculate Now

Selecting the **Calculate Now** menu recomputes all document cell formulas. This command is disabled if the **Automatic Calculation** option is enabled.

■ Freeze References

The **Freeze References** command replaces the dynamic references within the document with their current values. These values are no longer dynamic. For more information, refer to the [paragraph “Calculating Dynamic References” on page 162](#).

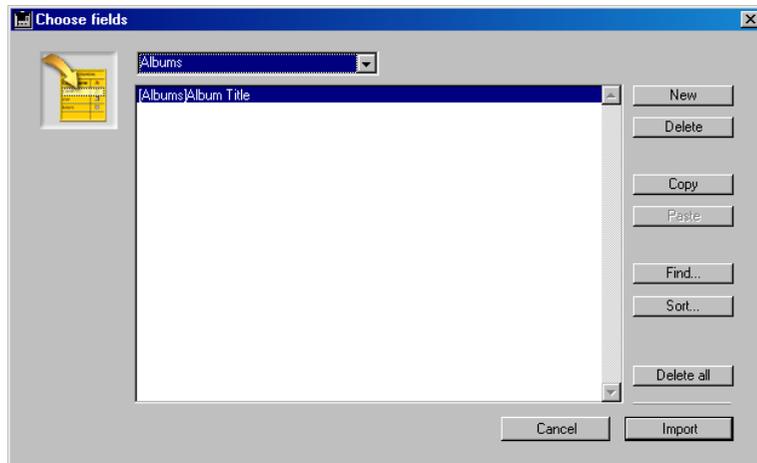
The Database menu The **Database** menu allows importing of fields and reports, and linking of cells and columns.



The **Database** menu contains the following commands:

■ Import Field...

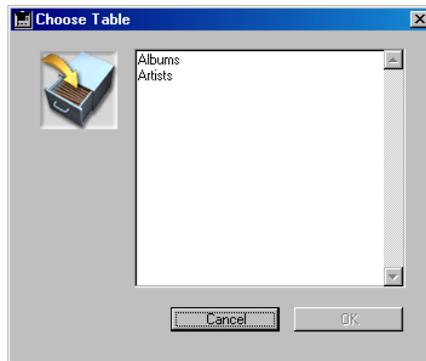
Selecting the **Import Field...** command displays the import fields dialog box:



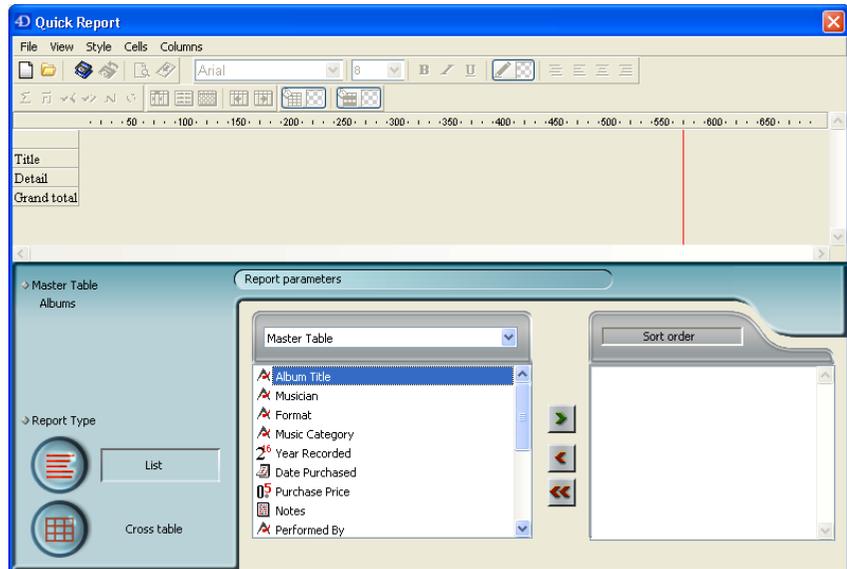
This dialog box lets you select the fields to import into database tables. It also allows searching and sorting of these fields. For more information on importing fields, refer to the [paragraph “Importing Fields” on page 134](#).

■ **Import Report...**

Selecting the **Import Report...** command will first display a dialog box allowing you to choose on which table the report will be carried:



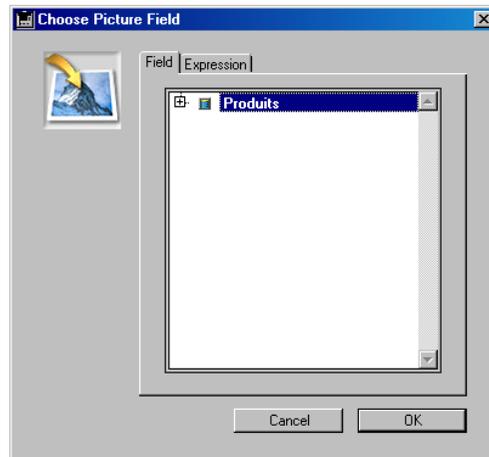
Once you have made your choice, the 4D Quick Report Editor dialog box is displayed, allowing you to create a report or use an existing template.



For more information on using the Quick Report Editor, refer to the 4th Dimension *User Reference* manual. For more information on importing reports, refer to the [paragraph “Importing Reports” on page 138](#).

- **Add pictures...**

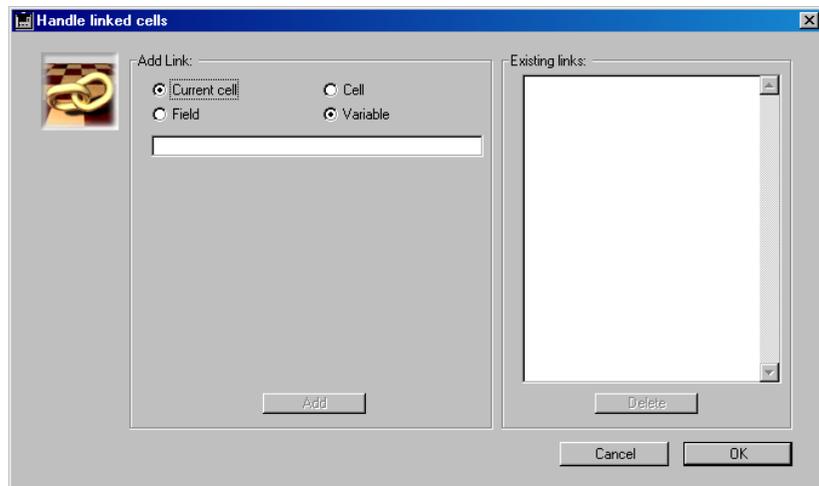
Selecting the **Add pictures...** command displays the Choose Picture Field dialog box:



This dialog box allows inserting of dynamic picture references in your 4D View areas. For more information, refer to the [paragraph “Inserting Pictures” on page 145](#).

- **Linked Cells...**

Selecting the **Linked Cells...** command displays the linking cells dialog box:

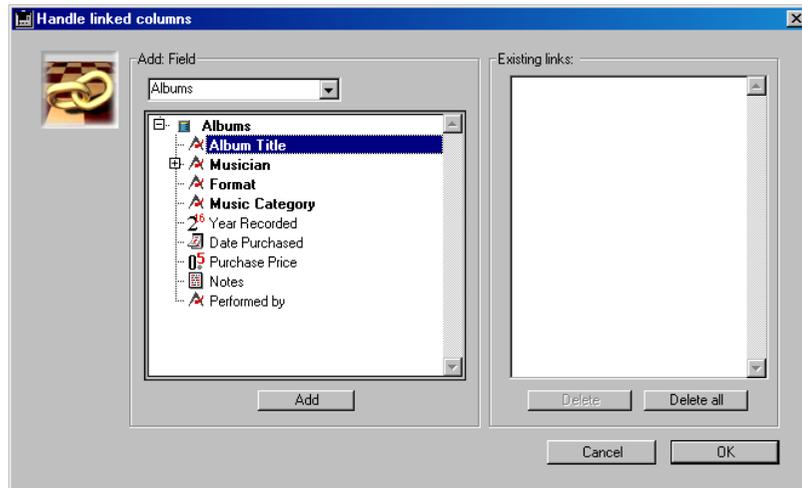


This dialog box allow creating and removing of links between spreadsheet cells and 4th Dimension fields or variables.

For more information on linking cells, refer to the [paragraph “Dynamically Referencing Fields”](#) on page 142.

■ Linked Columns

Selecting the **Linked Columns** command displays a hierarchical sub-menu allowing the linking of columns to **Fields** or **Arrays**. If you select, for example, the **Fields** subcommand, the following dialog box appears:



This dialog box allows creating and deleting of links between columns and database fields. The **Arrays** subcommand displays a dialog box allowing you to create and delete links between columns and database arrays. For more information on linking columns, refer to the [paragraph “Linking Columns to Fields or Arrays”](#) on page 154.

4D View Toolbars

4D View toolbars are located in the upper part of the plug-in window.



Toolbars provide quick access to certain often-used features. These toolbars can be moved and/or hidden easily in the 4D View window.

This is detailed in the [paragraph “The Menu Bar and Toolbars” on page 17](#).

There are four toolbars and a formula editor in 4D View:

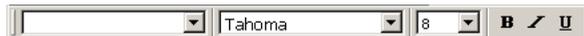
- The Standard toolbar:



- The Numbers toolbar:



- The Style toolbar:



- The Borders toolbar:



- The Formula editor:



The Standard toolbar

The Standard toolbar is organized into eight groups of buttons:

- File management buttons,
- Print management buttons,
- Find buttons,
- Cut/copy/paste buttons,
- Undo and Redo buttons,
- View management buttons,
- Sort management buttons,
- Zoom combo box.

The File Management Icons

The file management buttons consist of three buttons:



From left to right, these buttons are: the **New Document** button, the **Open Document** button and the **Save Document** button.



Clicking the **New Document** button displays a new 4D View document in the current window. If the current document is not saved, a dialog box is shown and proposes saving it before the new document is displayed. This button has the same effect as the **New** command in the **File** menu.



Clicking the **Open Document** button displays a standard Open file document. The document selected using this dialog box will be opened in a 4D View window. If the current document is not saved, 4D View allows you to save it before displaying the open document dialog box. This button has the same effect as the **Open...** command in the **File** menu.



Clicking the **Save Document** button saves the current document in its current location if it has already been saved. Otherwise, a standard Save file dialog box is displayed, allowing you to name and set a location for your document. This button has the same effect as the **Save** command in the **File** menu.

The Print Management buttons

The print management buttons consist of two buttons:



From left to right, these buttons are: the **Print Preview** button and the **Print Document** button.



Clicking the **Print Preview** button displays the print preview window. This is the same as selecting the **Print Preview** menu command in the **File** menu.



Clicking the **Print Document** button displays the print dialog box. This is the same as selecting the **Print Document** menu command in the **File** menu.

The Find button



Clicking the **Find** button displays the search dialog box. For more information on using this dialog box, refer to the [paragraph “Find” on page 80](#).

This is the same as selecting the **Find** menu command in the **Edit** menu.

The Copy/Paste Management buttons

The cut/copy/paste buttons consist of three buttons:



From left to right, these buttons are: the **Cut** button, the **Copy** button and the **Paste** button.



Clicking the **Cut** button clears the current selection and places it on the clipboard. This is the same as selecting the **Cut** menu command from the **Edit** menu.



Clicking the **Copy** button copies the current selection and places it on the clipboard. This is the same as selecting the **Copy** menu command from the **Edit** menu.



Clicking the **Paste** button pastes the contents of the clipboard where the cursor is located. This is the same as selecting the **Paste** menu command from the **Edit** menu.

The Undo and Redo buttons

The undo and redo buttons consist of two buttons:



From left to right, these buttons are: **Undo** and **Redo**.



Clicking the **Undo** button cancels the last operation. This icon can be used successively because 4D View stores several successive operations in memory. This is the same as selecting the **Undo action** command in the **Edit** menu.



Clicking the **Redo** button restores the previously undone operation. This icon can be used successively because 4D View stores several successive operations in memory. This is the same as selecting the **Redo action** command in the **Edit** menu.

The View management buttons



Clicking the **Show references** button displays the 4D reference in place of the current values.

If the view references option is already selected, the references will be replaced with their current values.

This is the same as selecting the **Show References** command in the **View** menu.

The Sort management buttons

The sort management buttons consist of two buttons:



From left to right, these buttons are: **Ascending Sort** and **Descending Sort**.



Ascending sort (increasing)



Descending sort (decreasing)

Clicking on one of these icons sorts the cells of the selected column(s). Depending on the icon selected, the cell sort will either be ascending or descending. For more information on detailed sorts, refer to the [paragraph “Executing Sorts” on page 84](#).

The Zoom combo box

The Zoom combo box allows you to apply an enlargement or reduction rate to the display.



You can define a rate included between 25 and 1000.

The Number toolbar

The Number toolbar is organized into two groups of buttons:

- Justification management buttons,
- Format management buttons.

The Justification management buttons

The justification management buttons consist of four buttons:



From left to right, these buttons represent the **Automatic Alignment** button, the **Align Left** button, the **Center** button, and the **Align Right** button.



Clicking the **Automatic Alignment** button automatically aligns the content of each cell of the selected range (to the left for alphanumeric characters and to the right for numbers)



Clicking the **Align Left** button aligns the content of each cell in the current range to the left



Clicking the **Center** button centers the content of each cell in the current range.



Clicking the **Align Right** button aligns the content of each cell in the current range to the right.

The Format management buttons

The format management buttons consist of a drop-down list and three buttons:



The drop-down list contains all the available formats in the 4D database.

From left to right, the three buttons correspond to the most-used pre-defined formats:

- Scientific,
- Percentage,
- Monetary.

The Style toolbar

The Style toolbar is organized into three drop-down lists and a group of buttons:

- Style sheet drop-down list,
- Font name drop-down list,
- Font size drop-down list,
- Character style selection buttons.

Style sheet drop-down list



The style sheet drop-down list allows selecting of a customized style sheet and applying it to cells in the selected range. Style sheets in this list were created by the user. For more information on style sheets, refer to the [paragraph “Using Style Sheets” on page 101](#).

Font Name drop-down list



The font selection drop-down list allows selecting of a font and applying it to cells in the selected range. Fonts in this list are installed system fonts (as well as current printer fonts under Windows). These fonts are the same as those displayed in the **Font** tab in the formatting dialog box.

Font Size drop-down list



The font size drop-down list allows entering or selecting of the font size to apply to cells in the selected range. The available font sizes are the same as those displayed in the **Font** tab in the formatting dialog box.

Character style selection buttons The character style buttons consist of three buttons:



From left to right, these buttons are: the **Bold** button, the **Italic** button and the **Underline** button. These buttons are the same as the style options available in the **Font** tab in the formatting dialog box.



Clicking the **Bold** button applies the Bold style to cells in the selected range.



Clicking the **Italic** button applies the Italic style to cells in the selected range.



Clicking the **Underline** button applies the Underline style to the cells in the selected range.

The Borders toolbar The Borders toolbar is organized into two groups of buttons:

- Border display buttons
- Border attribute buttons

The Border Display buttons

The border display buttons consist of six buttons:



From left to right, the buttons are: the **Bottom Border** button, the **Outside Borders** button, the **Border Columns** button, the **Border Rows** button, the **Border All** button and the **No Border** button.

These buttons allow displaying of different cell borders in the selected range.



Clicking the **Bottom Border** button displays the bottom border of the range of selected cells.



Clicking the **Outside Borders** button displays the outside borders of the range of selected cells.



Clicking the **Border Columns** button displays the borders of each column in the selected range.



Clicking the **Border Rows** button displays the borders of each row in the selected range.



Clicking the **Border All** button displays the borders of each cell of the selected range.



Clicking the **No Border** button clears all borders of the range of selected cells.

The Border Attribute buttons

The border attribute buttons consist of two buttons:



From left to right, these buttons are: the **Border Color** button and the **Border Settings** button.



Clicking the **Border Color** button displays the palette of available colors (256 colors in 4D).



Clicking the **Border Settings** button displays a drop-down list containing the 12 types of borders.

Note For more information on managing borders, refer to the [paragraph “Defining Cell Borders” on page 100](#).

The Formula toolbar The Formula toolbar is organized into a group of buttons and an input area:

- Formula input cancellation and validation buttons
- Formula input area.

The Formula Modifications cancellation and validation buttons

The formula input cancellation and validation buttons consist of two buttons:



From left to right, these buttons are: the **Cancel Formula Modifications** button and the **Validate Formula Modifications** button.



Clicking the **Cancel Formula Modifications** button restores the formula as it was at its last save.



Clicking on the **Validate Formula Modifications** button validates the input in progress.

The formula input area For more information on entering formulas, refer to the [paragraph “Entering a Formula, a Function or a Reference” on page 113](#).

Monthly Sales

3

Managing 4D View Documents

4D View documents can be inserted into database records or external windows. This chapter describes creating, opening, and saving of 4D View documents in these two locations.

4D View also provides various tools to set general use preferences for documents and to obtain various document information.

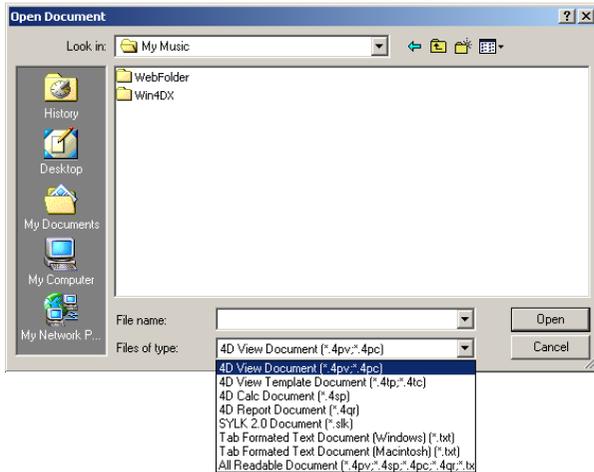
This chapter will discuss the following principles and 4D View document management tools:

- Document formats
- Opening a document in an external window
- Create, open and save a 4D View area in a form
- Create, open and save 4D View documents
- Define document preferences

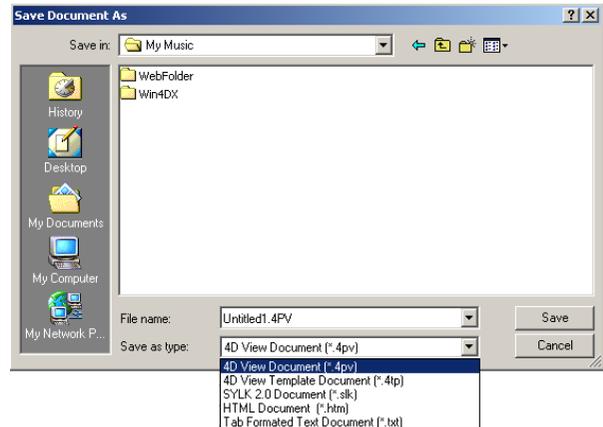
Document Formats

4D View documents can be opened and saved in different formats. These formats appear in the drop-down list in the standard File open and File save dialog boxes:

Open file dialog box



Save file dialog box



Below is a description of the available file formats in 4D View:

- **4D_View Documents**

Native format of 4D View documents. 4D View documents saved in this format preserve all features. This format is available when saving and opening documents.

- **4D View Template Documents**

Format of 4D View template documents. This format is available when saving and opening documents.

- **4D Calc Documents**

Format compatible with the 4D Calc spreadsheet. Features unique to 4D View are not preserved when saved in this format. This format is available when saving and opening documents.

- **4D Report Documents**

This format corresponds to semi-automatic 4D reports saved to disk. It is only available when opening documents.

■ SYLK 2.0 documents

Format used for spreadsheet exchanges between applications. This format is used by the Microsoft Excel[®] spreadsheet. This type of document does not preserve 4D View formulas. Only values and their appearance are preserved (if the equivalent exists in Excel).

4D reads SYLK 2.0 Mac OS and Windows, by accepting:

- Borders, translated as 4D View graphics; the rows are left as is (and not as a series of dashes).
- Cell styles, alignments, fonts and colors.
- Column widths and row heights
- Global options (hide or show grid, hide or show scrollbars).

This format is available when saving and opening documents.

■ Tabulated Text Documents

Format for tabulated text under Mac OS or Windows. This type of document does not preserve any enhanced character features and uses the extended ASCII table for Mac OS or Windows (depending on the platform). Columns are separated by tabs and advancing to the next row is done using a carriage return. This format is available when saving and opening documents.

■ HTML Documents

HTML stands for *HyperText Mark-up Language*. This format allows putting the content of a 4D View page into a Web browser. Only values of non-empty cells are recorded. Enhanced cell features are not preserved (font, style, border, format, etc.). This format is only available when saving documents.

Opening a 4D View Document in an External Window

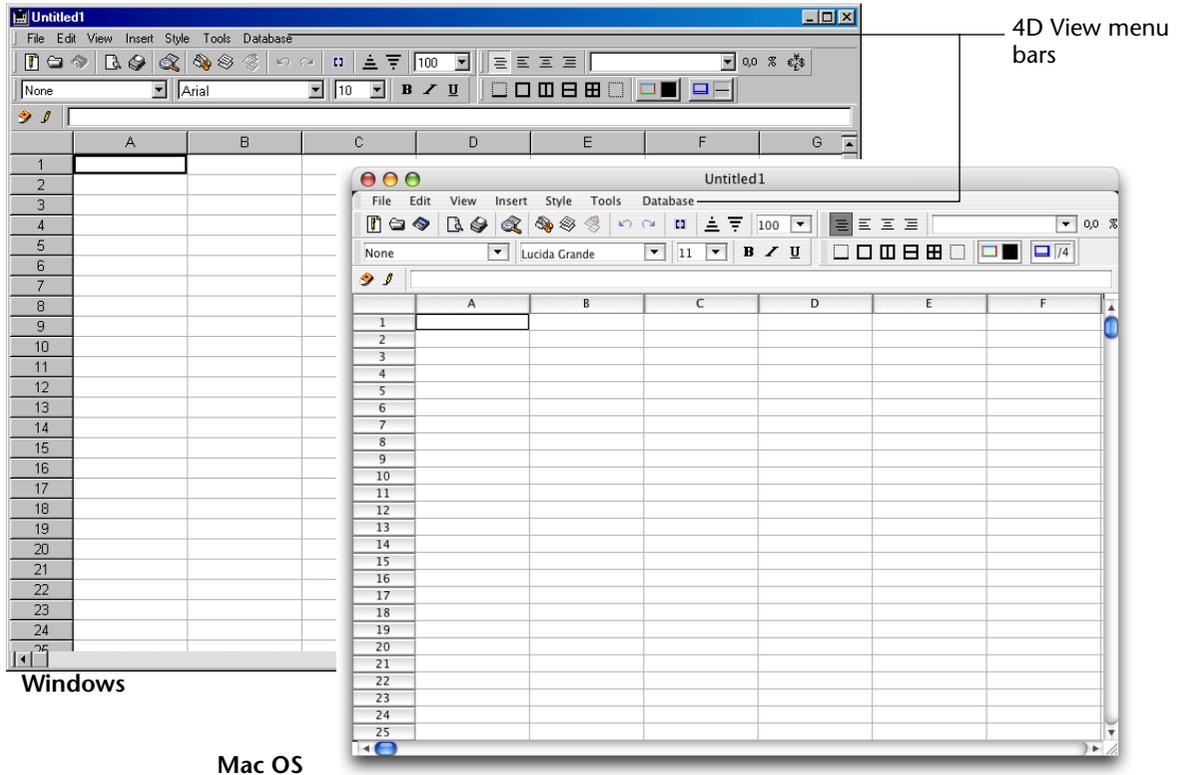
A 4D View document can be opened in its own window.

Used in an external window, 4D View behaves exactly like an independent application.

- ▶ To open a 4D View document in an external window:
 - 1 **Select User in the Mode menu, if you are not already in the User environment.**
 - 2 **Choose the 4D View command in the Tools menu.**

If the **4D View** command does not appear in the **Tools** menu, 4D View has not been correctly installed in your 4D environment. In this case, refer to the instructions in the *4th Dimension Installation Guide*.

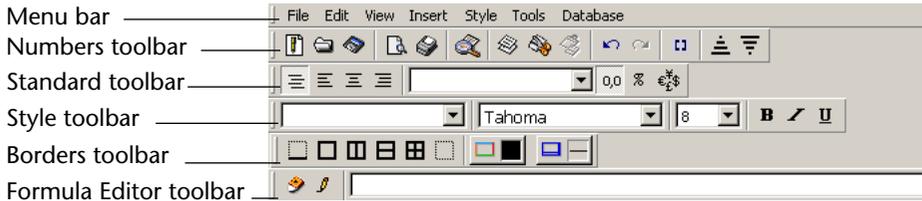
A new 4D View document appears in an external window:



The external window contains the 4D View menu bar. The menus of this bar allow managing of your 4D View documents. For example, you can use the **Edit** menu commands to launch a search of an active 4D View area. The 4th Dimension menus can still be selected in the standard menus, in the upper part of the screen.

The external 4D View window also contains five toolbars. These toolbars are designed to provide quick and easy access to basic 4D View functions. For example, to launch a search in a 4D View area, select the **Find...** command in the **Edit** menu, or click the  button in the Standard 4D View toolbar.

Toolbars also allow customizing of the 4D View interface since — except for the formula editor— they can be moved within the application window, can be used separately as floating palettes, or can even be removed from the 4D View window.



The **Standard** toolbar also provides shortcuts, helpful for using standard features, which are located in the **File** and **Edit** menus.

The **Numbers** toolbar allows setting of cell content alignment and formatting.

The **Style** toolbar allows assigning of cell formats and selecting of a style for these cells.

The **Borders** toolbar allows setting of complete or partial borders for cells or cell ranges.

The **Formula** Editor toolbar allows entering of the content of a cell and validating or cancelling of formula modifications.

For more information, refer to the [paragraph “4D View Toolbars” on page 40](#).

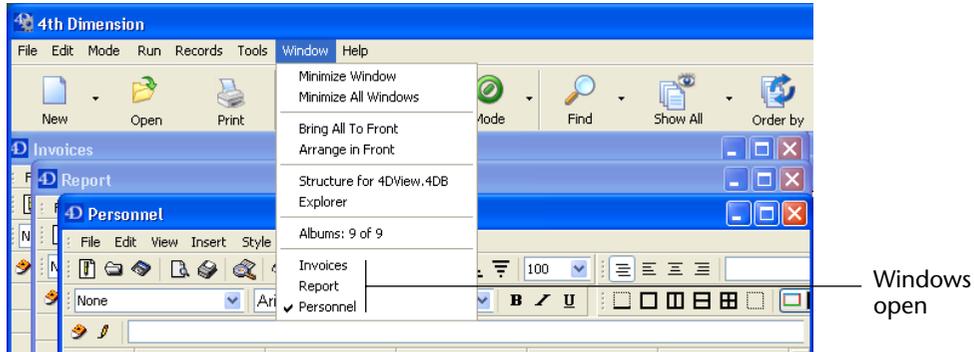
4D View windows also contain splitters which are used to divide a document into several areas and thus simultaneously view different parts of the same document. For more information on this feature, refer to the [paragraph “Splitting the 4D View window” on page 14](#).

Opening several documents

To open an additional 4D View window, choose the **4D View** command in the **Tools** menu.

This feature makes comparing or copying/pasting between different documents easier; you can switch from one document to another by clicking its window. The names of all open 4D View windows are displayed at the bottom of the **Window** menu.

A document can be brought into the foreground by choosing its name from this menu:



Once saved, 4D View document names appear in the window title.

Adjusting the size of the window

- ▶ To increase or decrease the size of a window:
 - 1 **Click in the lower right corner of the window.**
Under Windows, the cursor turns into a double-arrow.
 - 2 **Adjust the size by dragging the mouse.**

Note Under Windows, you can also change the height or width by clicking its sides.

Go To Full Screen

To view an expanded portion of your document, the 4D View window can be viewed in *full screen*:

- 1 **Under Windows, click the Maximize button, or choose Maximize in the System menu.**
Under Mac OS, click the zoom box.

Note that the 4th Dimension menu bar remains at the top of the screen.

Closing the document

An external window can be closed at any time:

- 1 Click the close box of the window.
- OR
- Under Windows, choose the Close command in the System menu.



Creating a 4D View Area in a Form

A 4D View spreadsheet can be inserted into a 4th Dimension form. A 4D View area can be created in an input form, giving the user the means to enter invoicing rows, labeling rows, lists or any other kind of information, into each record. A 4D View area can also be placed in an output form used to display or print data

The following screen presents an included 4D View area in an input form: a list of current loans for a customer, John Smith. The list will be automatically saved with John's record once it has been validated:

The screenshot shows a window titled "Entry for Customers" containing a form for "Customers" and a 4D View area. The form fields are: ID: 14, Address: 122 Darwin Lane, Title: Mr., City: Charlotte, First name: Joseph, State: NC, Last name: Hunt, Zip Code: 28277. The 4D View area contains a table with the following data:

| | A | B | C | D | |
|---|----------|-----|---------|-------------|-----|
| 1 | Date | Qty | Article | Return Date | Dep |
| 2 | 05/04/05 | 1 | Scooter | 05/05/05 | |
| 3 | 05/04/05 | 2 | Helmets | 05/05/05 | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |

Labels on the left side of the image point to the following elements:

- 4D record: points to the top icon of the 4D View area.
- GoToFullScreen check box: points to the second icon of the 4D View area.
- 4D View plug-in area: points to the bottom icon of the 4D View area.

Once a 4D View area is included in a form, it has the same features as the external windows, except that it does not have a close box. By default, the four 4D View toolbars (Standard, Numbers, Style, and Borders) are displayed.

Creating the 4D View area

- ▶ To create a 4D View area in a form:
 - 1 Choose the Design command in the Mode menu in 4D, if you are not already in the Design environment.**

To save the content of a 4D View area with each save, a BLOB type field must be created, which will be linked to the area. In fact, the plug-in area content is saved in a BLOB field.

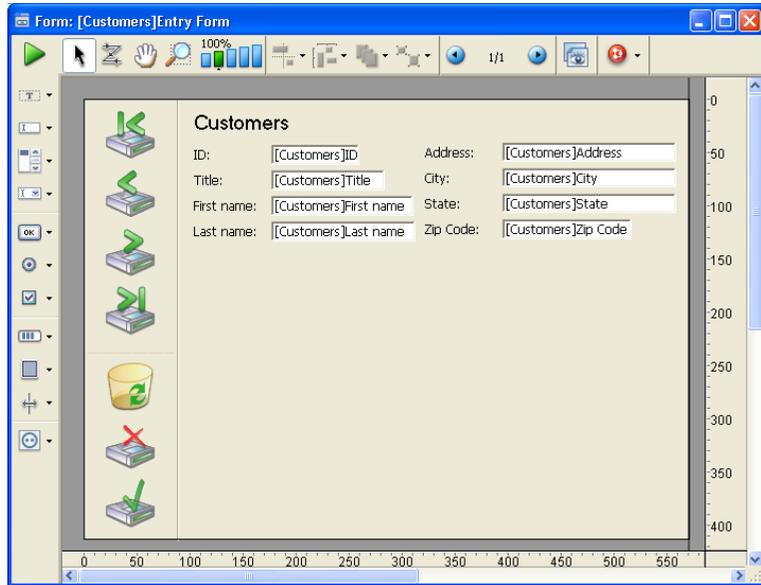
Steps 2, 3 and 7 below are not necessary if you wish to save the area content with each save.

- 2 In the Design window, create a BLOB type field in the table that will host the 4D View area.**

For more information on creating a field, refer to the 4th Dimension *Design Reference* manual.

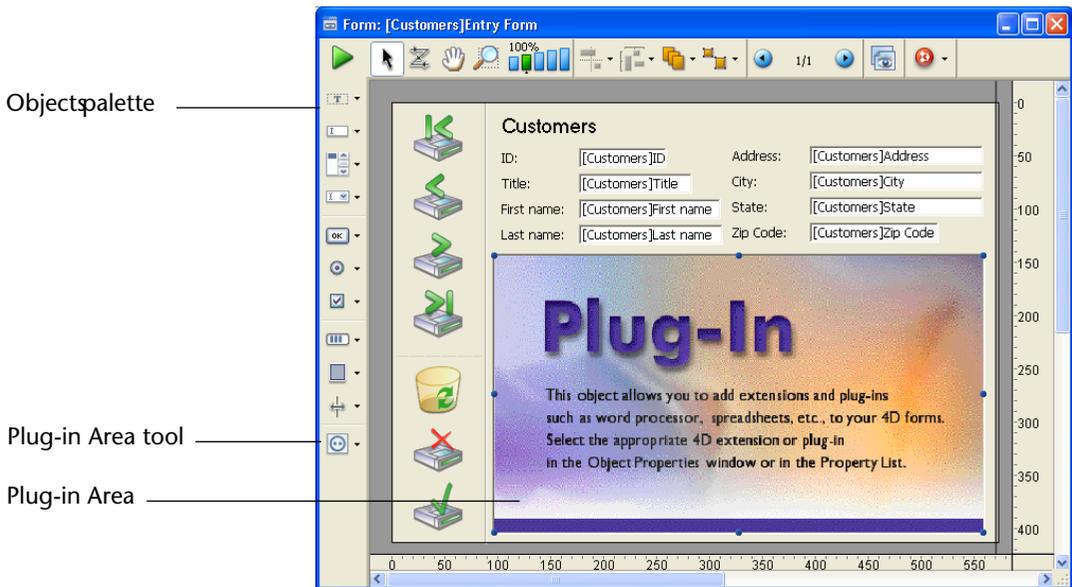
- 3 Name the field and place an underscore (_) at the end of the name.**
For example, you can name the field PowerArea_.
- 4 In the Form editor, open the form where you want to add a 4D View area.**

This form must belong to the table containing the BLOB field associated to the area..



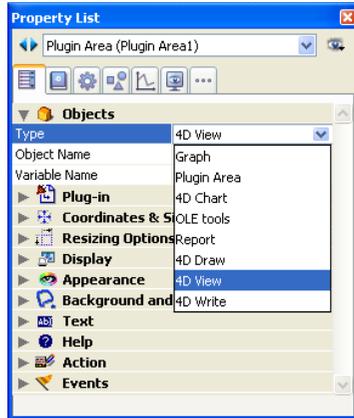
The area may need to be resized to adapt to the form.

5 Select the Plug-in Area tool from the Objects palette and trace the area:



6 Select 4D View from the Type drop-down list of the Property List:

Properties List



This drop-down list contains all plug-ins installed in the database.

In the form editor, the inserted area displays the following message:

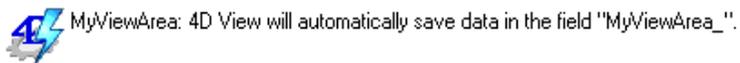


7 In the “Variable name” area, write the name of the BLOB field that you created in the Design environment, without entering the underscore.

For example, if the BLOB field is named PowerArea_, enter “Power-Area”.

However, if you do not use this system, 4D View will allow saving of the 4D View area content to the disk when the record is validated.

The plug-in area of the form displays the 4D View icon, the name of the area, as well as a message indicating that it will be saved in the BLOB field:



Verifying the name of the area

If the name of the 4D View area does not exactly match the name of the BLOB field, or if this field does not exist, the message in the area will then indicate that it will not be saved with the document — 4D View *could* save the document in the BLOB field *if* it existed.

Note The name of the 4D View plug-in area is a variable. This variable can only be a variable process. Interprocesses (names starting with <>) or local variables (names starting with \$) cannot be used as plug-in area names. For more information on the different types of variables in 4D, refer to the 4D *Language Reference* manual.

Saving a 4D View document as a separate file

In certain cases, the 4D View area does not need to be saved for each record. For example, you may wish to save your documents to the disk and load them by programming.

In this case, there is no need to create a BLOB field to save documents.

Renaming the area

If the 4D View area is not associated with a field, you can “back up” and rename the area at any time so that it is saved in a database field. To do this, simply follow the instructions found in the preceding paragraph.

If the BLOB field does not exist

If the BLOB does not exist, it can be created in the Design environment window. In fact, it does not matter if you create the area and then the field, or vice versa. The result is the same.

Setting properties for the 4D View area

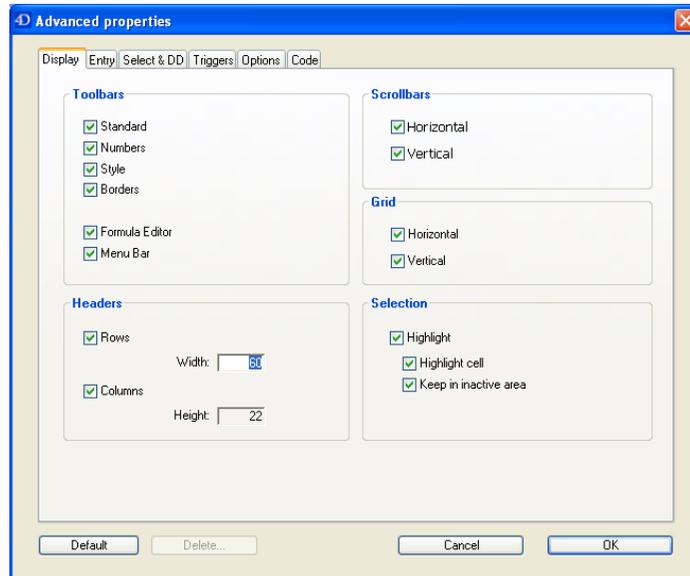
The properties of included 4D View areas can be set using the “Advanced Properties” dialog box.

To display this dialog box, select a 4D View area in the Form editor and click on the **Edit...** button in the “Plug-in” theme of the Property List:



Access to Advanced Properties dialog box

The following dialog box appears:



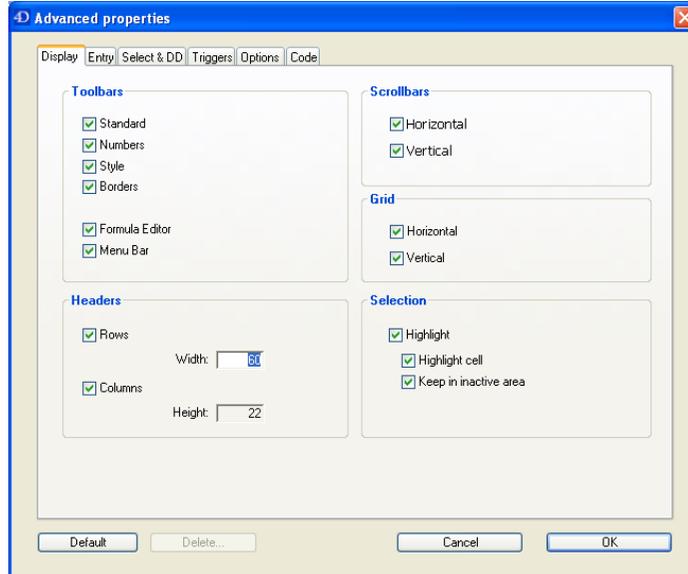
The properties of the area can be set using options and entry areas. The dialog box includes several pages. The last page can be used to build the 4D View code corresponding to the settings made in the dialog box.

- The **Default** button is used to reset all the properties of the current page to their default value.
- The **Delete...** button deletes all the advanced properties set for the area using the dialog box. Keep in mind that this button has no effect on properties set by programming. This button is dimmed if the Advanced Properties dialog box has not been validated at least once.
- The **Cancel** button cancels any modifications made and closes the dialog box.
- The **OK** button validates any modifications made and closes the dialog box.

The parameters of this dialog box are described in the following paragraphs. For more details about certain mechanisms, refer to the description of the PV SET AREA PROPERTY command in the *Language Reference* manual of 4D View.

Display Page

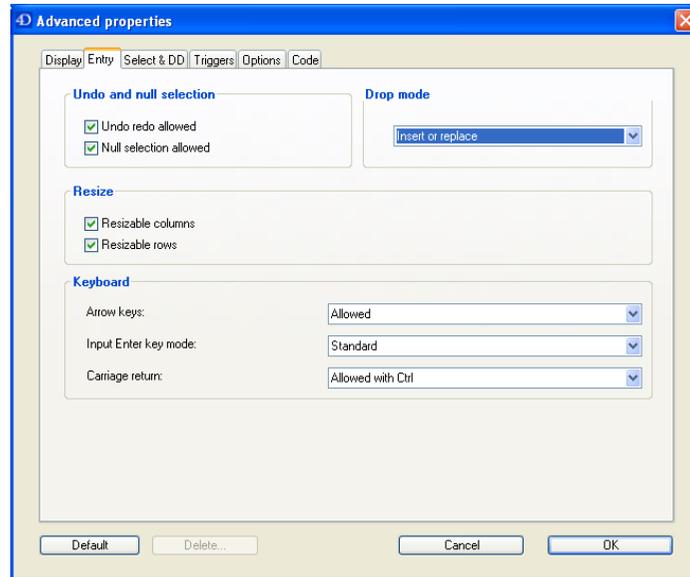
The options of this page are used to determine the display of interface elements of the area.



- **Toolbars, Scrollbars and Grid:** Options used to display (option checked) or hide (option not checked) the corresponding elements of the area.
- **Headers:** Options used to display or hide the header areas of rows and columns.
The associated entry areas are used to set the width of row headers and the height of column headers respectively in pixels.
- **Selection:** Option used to set the highlighting mode of a selection.
When the **Highlight** option is checked, the selection in the area is delimited by a highlight. In this case, the **Highlight cell** option indicates whether the active cell must be visually identified within the selection. The **Keep in inactive area** option indicates whether the highlighting must remain displayed when the area is inactive.

Entry Page

This page is used to determine data entry options for the area.



- **Undo and null selection:** Options used to allow (or forbid) respectively the cancelling of an action (using the **Undo** command of the **Edit** menu) and areas with null selections.
- **Drop mode:** Menu used to set the type of data drop allowed in cells of the area during drag and drop operations. Keep in mind that this property only sets what it is possible to carry out in the area; data copying must be managed separately.
- **Resize:** Options used to set whether rows and columns of the area can be resized manually by the user.
- **Keyboard:** Menus used to define or forbid the use of arrow keys, the Enter key during data input and the Carriage return key.
 - *Arrow keys:* Sets the use of arrow keys for entry validation (validation of data entry and exit from cell). Validation is only carried out if the cursor is placed at the beginning or end of the cell contents.
 - *Input Enter key mode:* Sets the effect of the Enter key (numeric keypad) during data input.
 - “Standard” indicates that the key validates the entry then selects/switches to entry mode the same cell.
 - “As Tab” indicates that the key validates the entry then selects/switches to entry mode the next cell to the right. The Shift+Enter combination has the same effect on the cell to the left.

- “As Carriage Return” indicates that the key validates the entry then selects/switches to entry mode the cell located directly below it. The Shift+Enter combination has the same effect on the cell directly above it.

- *Carriage return*: Sets the conditions for using the Carriage return key when creating a new line in the same cell.
 - “Not allowed”: The creation of multi-line cells is forbidden.
 - “Allowed”: The Carriage return key creates a new line.
 - “Allowed with Ctrl”: The Ctrl+Carriage return (Windows) or Command+Carriage return (Mac OS) combination creates a new line.
 - “Allowed with Shift”: The Shift+Carriage return combination creates a new line.

Select & DD Page

This page is used to set the types of cell selections that will be possible and whether or not they can be dragged and dropped:

| | Selection | Drag | Drop |
|------------------|----------------------------------|-------------------------------------|-------------------------------------|
| None | <input type="radio"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Single cell | <input type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Adjacent cells | <input type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Multiple cells | <input checked="" type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Single column | <input type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Adjacent columns | <input type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Multiple columns | <input type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Single row | <input type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Adjacent rows | <input type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Multiple rows | <input type="radio"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Signatures

Drag: [List Box] [-] [+]

Drop: [List Box] [-] [+]

Default Delete... Cancel OK

- **Selection** column: Used to set the type of cell selections that can be created in the area. The “Multiple cells” type provides the greatest liberty.
- **Drag** column: Used to set the type(s) of cell selections that can be dragged in the area. You can select several options in order to allow several types of selections to be dragged. If you check the “None” option, no selection can be dragged — any other options that were checked will automatically be unchecked.

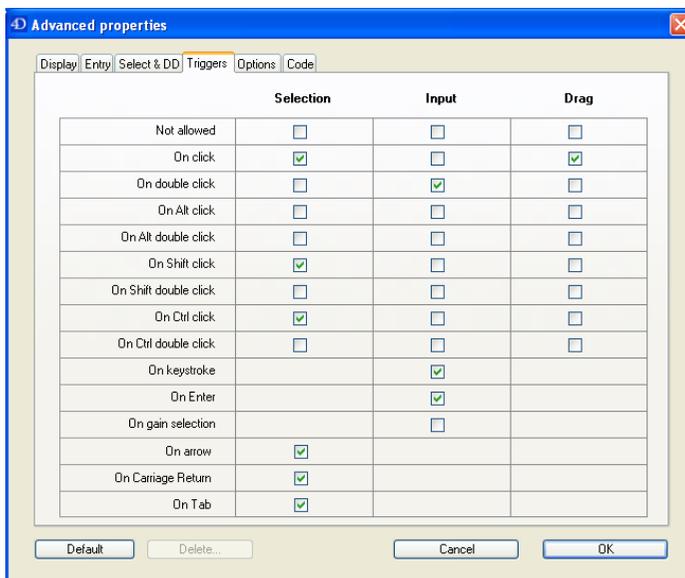
- **Drop column:** Used to set the type(s) of cell selections into which data can be dropped in the area. You can check several options in order to allow several types of selections into which data can be dropped. If you check the “None” option, data cannot be dropped into any type of selection — any other options that were checked will automatically be unchecked.
- **Signatures:** Used to set the “drag” and “drop” signatures for an area. Signatures are alphanumeric strings (32 characters maximum) whose contents can be set freely.

When drag and drop is allowed, it can take place between two areas (or within the same area) on the condition that they have at least one common signature, of the “drag” type for the source area and of the “drop” type for the target area. You must use the [+] and [-] buttons to add and delete signatures.

For more information, refer to the “Drag and Drop, Introduction” section of the 4D View *Language Reference* manual.

Triggers Page

The options of this page are used to set the triggers concerning selection, input and drag operations in the area:



A trigger is an “initiating event.” This page can be used to designate the events which can trigger selection, input and dragging operations in the area.

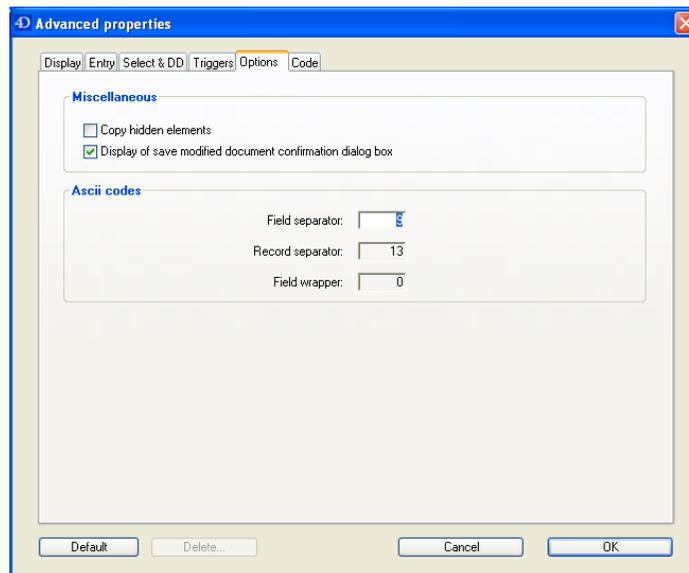
When the same trigger is set for both selection and input, the input trigger has priority. When the same trigger is set for both selection and drag, the drag trigger has priority.

Note Under Mac OS, the Command key is substituted for the Ctrl key.

- **Selection** column: Used to set the mode for triggering a selection in the area.
If you check the “Not allowed” option, it will not be possible to set a selection — any other options that were checked are automatically unchecked.
- **Input** column: Used to set the mode for triggering input in the area.
Input can only be carried out in the active cell.
If you check the “Not allowed” option, input is disabled (no event can trigger input) — any other options that were checked are automatically unchecked. Input is still possible in the formula bar.
- **Drag** column: Used to set the mechanism to trigger dragging in the area. There is no trigger for dropping.
If you check the “Not allowed” option, dragging will not be possible in the area — any other options that were checked are automatically unchecked.

Options Page

This page is used to set various options concerning the operation of the area:



- **Copy hidden elements:** Used to set whether or not hidden elements should be taken into account during copying.
- **Display of save modified document confirmation dialog box:** Used to set whether or not to display the save confirmation message of the 4D View document when it has been modified.
- **Ascii codes:** The options of this area are used to set the Ascii code for field and record separator characters as well as for field wrapper characters.

These characters are only used when importing/exporting data.

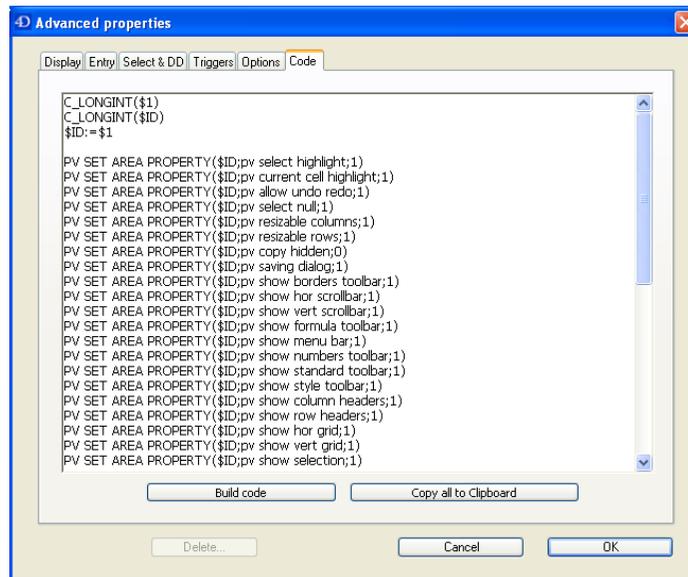
In the following example:

"E1Field1", "E1Field2", "E1Field3"; "E2Field4", "E2Field5";

- the comma is the field separator
- the semi-colon is the record separator (2 records: E1 and E2)
- the quotes are the field wrappers.

Code Page

This page is used to build the 4D code corresponding to the options set in the Advanced Properties dialog box:



To build the code, click on the **Build code** button. The code then appears in the window as a list of statements. You can select all or part of it, copy it, etc.

The **Copy all to Clipboard** button can be used to copy the code directly into the Clipboard; you can then paste it, for example, into an area initialization method. The area is referenced by the *\$ID* variable, which receives the value of *\$1*.

To use this code with other areas, you can, for instance, paste it into a project method named *PV_Init_area*, which you can call using the statement *PV_Init_area(MyArea)*.

If you have made modifications in the Advanced Properties window, you can rebuild the code at any time by clicking the **Build code** button.

Priority of properties

To configure a 4D View area, it is possible to use either the Advanced Properties dialog box or programming (PV SET AREA PROPERTY command). Since both solutions can be used simultaneously and in a contradictory manner, 4D View applies the following order of priority:

- 1 PV SET AREA PROPERTY executed in a form method.**
- 2 Advanced Property dialog box — applies properties to a specific area.**
- 3 PV SET AREA PROPERTY(0;...) — applies a property to all the 4D View areas — for example in the "On Startup" database method.**

Modifications made using the dialog boxes in the User mode do not affect the Advanced Properties settings.

Note When an area is duplicated, its advanced properties are also duplicated.

Using 4D View in a form

When using 4D View in a form (in the User environment), the program menu bars appear above the 4D View area. 4D View menu commands, as well as those of 4th Dimension menus, can be selected. For more information on this, refer to the [chapter "Using 4D objects" on page 133](#).

4D View allows use of the included area in full screen, as with any document.

Expanding the 4D View area to Full Screen

- ▶ To view a 4D View area at full screen size:
 - 1 **Click the full screen box in the upper right corner of the included area.**
OR

Select the Go To Full Screen command in the 4D View File menu.

The document expands to fill the entire screen and the 4D View menu bar temporarily replaces the 4th Dimension menu bar.

If a 4D View area in a form is too small to be used without being expanded, it is displayed as a button.



If this button is clicked during data input, the 4D View area automatically expands to full screen size.

Returning to the Form When a 4D View area is expanded, the **Return to Form** command replaces the **Go To Full Screen** command in the **File** menu.

- ▶ To return to the 4D form containing an included area:
 - 1 **Select the Return to Form command in the 4D View File menu.**
OR
Click the close box for the window.

Creating a New Document

A new, blank 4D View document can be created in an external window or in an area at any time. In either case, the new document replaces the current document. If changes have been made to the current document, you will be prompted to save the changes before 4D View opens the new document.

- ▶ To create a new document:
 - 1 **Choose New in the 4D View File menu.**

Opening Documents in 4D View

Documents can be opened in any external window or 4D View area. The file formats that 4D View can open are described in the [paragraph “Document Formats” on page 50](#).

- ▶ To open a document in an external window or 4D View area:
 - 1 Choose the Open... command in the 4D View File menu.**
A standard Open file dialog box appears.
 - 2 If you wish to restrict the display of files to a certain format, select a file format in the Files of type pull-down list.**
 - 3 Select the file to open.**
 - 4 Click Open.**
The newly-opened document replaces the current document in the 4D View window.

Note Only 4D View type documents (“4DPV”) remain “open” and locked at the operating system level: when displayed in the 4D View window, they cannot be opened from another application. However, a non-native document is read and then closed. When such a document is displayed in the 4D View window, the standard Save file dialog box is displayed if the user selects the **Save** menu command, as for a new document.

Saving 4D View Documents

4D View document can be saved regardless of whether you are working in an external window or in a form. There are three ways to save 4D View documents:

- As part of a record
- As a Mac OS or Windows file
- As a template of a 4D View area

Saving a document with records

If you created a 4D View area in a form with automatic buttons and have associated a BLOB field to it, any information entered in the area is automatically saved with the record when the record is validated. For more information on this, refer to the [paragraph “Creating a 4D View Area in a Form” on page 55](#).

A 4D View document can always be saved as a separate file to the disk (refer to the following paragraph).

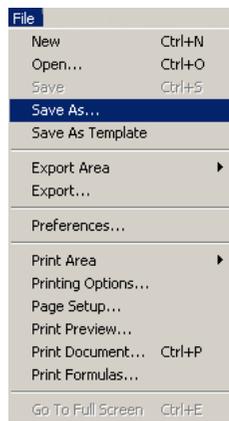
Saving a document as a file

Any document created with 4D View can be saved as a separate file by using the standard **Save** and **Save As...** commands located in the 4D View **File** menu.

Documents you have saved can then be opened using the **Open** command in the 4D View **File** menu, regardless of how the program is used — either as an external window or a form.

- ▶ To save a 4D View document as a file:

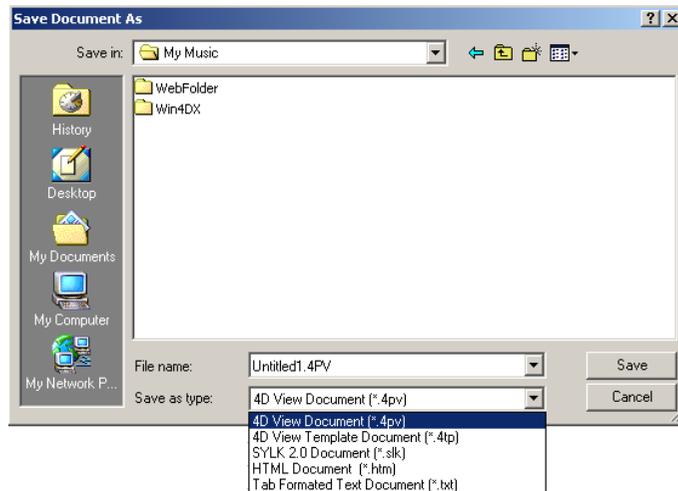
1 Select the **Save As...** command in the 4D View **File** menu.



Note that you must choose the 4D View **File** menu and not the 4th Dimension **File** menu.

4D View displays a standard Save file dialog box.

- 2 If necessary, choose the desired file format to save the document from the Save as type drop-down list.



By default, 4D View documents are saved in the standard 4D View file format. However, the document can also be saved in other formats. For more information on document formats available in 4D View, refer to the [paragraph “Document Formats” on page 50](#).

- 3 Enter a name and location for the document.
- 4 Click Save.

► To update a saved document:

- 1 Select Save in the 4D View File menu.

The original document is updated.

Saving a document as a template

A **template** is a document, linked to a 4D View area, that serves as a starting point for each newly created record. Such documents may be necessary for, as an example, standard report formats or invoices. Instead of recreating the elements each time, the document can be saved as a template used by every document displayed in a particular 4D View area in a form.

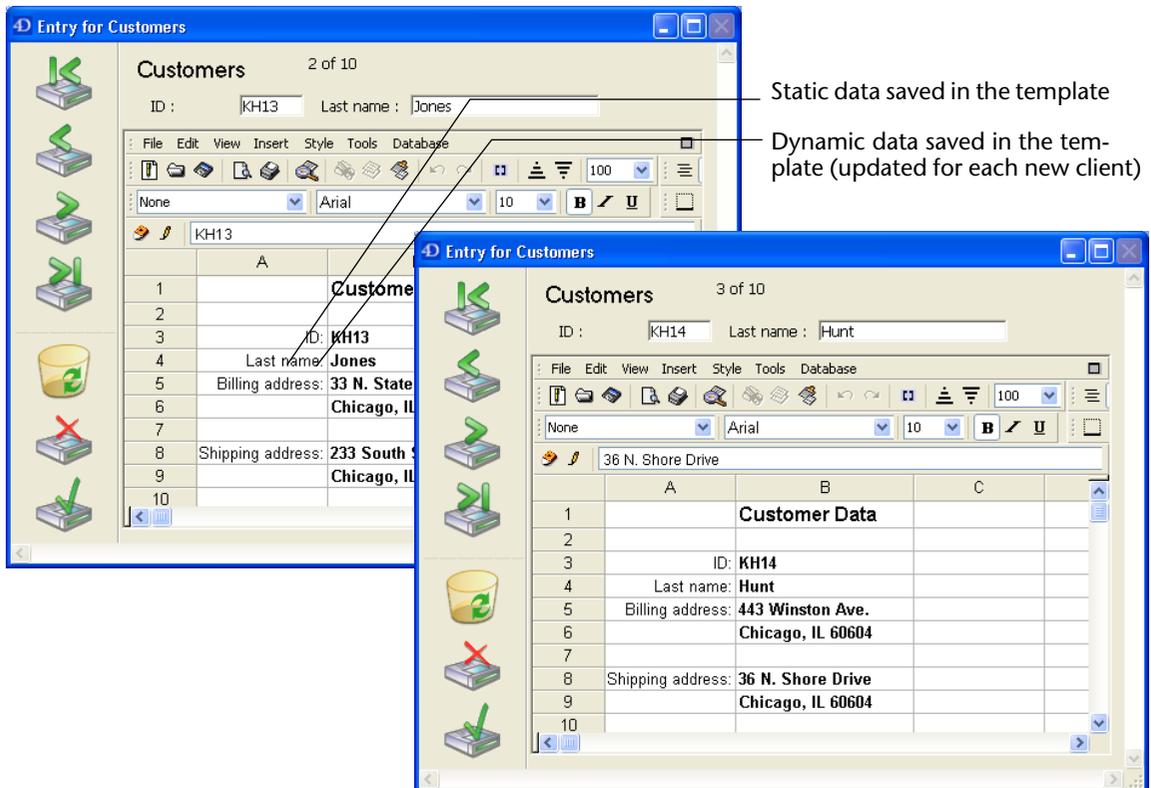
Note Templates can be created for 4D View areas in forms. If an external window opened from the **Tools** menu is used, the **Save as Template** command is disabled.

When a 4D View document is saved as a template:

- Static areas (labels, pictures, etc.) will be displayed as they were saved.
- Variable areas (data from database fields, functions, etc.) will be dynamically updated depending on current record data.

When a document is saved as a template, it is displayed by default in all new database records. Any changes made in the document are saved with the record. There can only be one template for each 4D View area.

The 4D View area in the following figure uses a template to automatically display the name and address of the customer for the current record. Every time the current record changes, the name and the address of the customer is displayed in the 4D View area:



- ▶ To save a 4D View document as a template:
 - 1 Choose the **Save As Template** command in the 4D View File menu.

4D View automatically assigns the file name and location of the templates, so that no Save File dialog box is displayed when you choose **Save As Template**.

The file has the same name as the 4D View area followed by an underscore (and, under Windows, the “.4PV” extension). For example, the MyAreaPV template will be named MyAreaPV_ under Mac OS and MyAreaPV_.4PV under Windows.

By default, with both 4th Dimension and 4D Server (if templates are saved on the server), templates are stored in the database folder.

However, in client-server configuration, it is possible to store and/or load templates on client machines using the PV SET PLUGIN PROPERTY command. In this case, each client machine will contain its own templates. These templates are then stored as follows:

- Under Mac OS, in the *(User)Library:Application Support:4D:4D View Templates:Database*name folder
- Under Windows, in the Documents and settings*User*\Application data\4D\4D View Templates*Database*name folder

Templates can also be created by saving a 4D View document in the 4D View template format (.4TP extension under Windows). In order to be activated, a template must have the same name as the 4D View area, followed by an underline (and, under Windows, the “.4PV” extension), and be placed in the templates folder.

Similarly, you can temporarily deactivate the operation of a template by changing its name or location.

- ▶ To save changes applied to a template:
 - 1 **Select again the Save as Template command in the 4D View File menu.** 4D View will ask you to confirm replacement of the older template. Click the **OK** button to update the template.

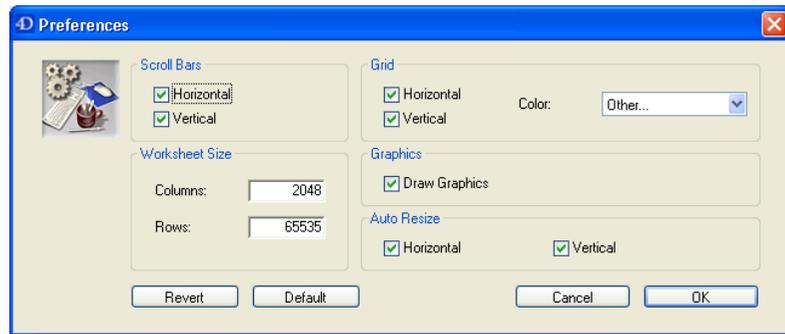
Setting Preferences

4D View allows you to set preferences for a document. You can set options for displaying scroll bars, displaying grids and their color, number of columns and rows for a 4D View document, picture display and automatic resizing of rows and columns.

- ▶ To define preferences for an open document:

1 Choose Preferences... in the 4D View File menu.

The Preferences dialog box is displayed:



You can set the following options:

- **Scroll bars:** check boxes allowing whether or not to display horizontal/vertical scroll bars.
- **Worksheet Size:** input area for setting the number of columns and rows for a 4D View document.
- **Grid:** check boxes allowing whether or not to display cell separators (horizontal and/or vertical rows). A color can be set for the grid using the Color drop-down list.
- **Graphics:** check boxes allowing whether or not to display graphics in a 4D View document.
- **Auto Resize:** check boxes allowing disabling of the optimal resizing feature for row height and column width by double-clicking on a title area.

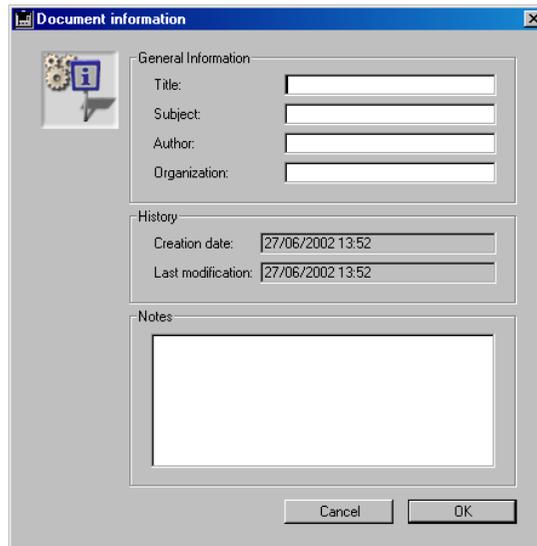
Managing Document Information

The **Document Information...** command in the **Tools** menu allows setting the author, title and subject of your 4D View document, as well as the organization for whom you work. You can also write additional notes about the document.

- ▶ To display information for a 4D View document:

- 1 Select the Document Information... command in the 4D View Tools menu.**

The “Document Information” dialog box is displayed:



Note 4D View automatically inserts the creation and modification dates and times of your documents in the “History” area.

4

Editing Cells

4D View offers various methods of navigating among cells and selecting them. The selection can be done manually or come from a search. A multi-level sort is also available.

This chapter will detail the following functions:

- Selection, input and navigation basics
- Copy and move cells
- Find and replace
- Executing sorts.

Selection, Input and Navigation Basics

Selection

To select a cell, simply click on it or use the direction arrows on the keyboard. Its content (or formula) is displayed in the formula bar.

To select several continuous cells, drag the mouse from one end of the selection to the other. You can also click on the two ends of the selection while holding down the **Shift** key.

To select all cells in the spreadsheet, choose **Select All** in the 4D View **Edit** menu. The content of the spreadsheet (in other words, all cells) is then selected.

To select a column, click on the corresponding letter (or set of letters). To select a row, click on the corresponding number.

To select a groups of cells that are not continuous, hold down the **Ctrl** key (Windows) or **Command** key (Mac OS) and click on each cell to be selected.

To deselect cells, simply click anywhere within the spreadsheet.

Input and navigation

By mouse

Double-clicking on a cell allows passing into input mode in the relevant cell. If the cell is not empty, the insertion cursor is placed after the content of the cell.

Data can be entered directly once a cell is already selected, even if the insertion cursor is not visible in the formula bar. The input then replaces the content of the cell.

By keyboard

The **Tab** key validates the cell input and selects the cell to its right.

Combining the **Shift + Tab** keys validates the cell input and selects the cell to its left.

The **Carriage return** key validates the cell input and selects the cell below it.

Combining the **Shift + Carriage return** keys validates the cell input and selects the cell above it.

The **Enter** key from the number pad allows validating of the input while maintaining the cell as the selected cell.

The direction keys (arrows) allow you to move a cell in the direction indicated by the arrow.

Note These default features can be modified using the 4D View language.

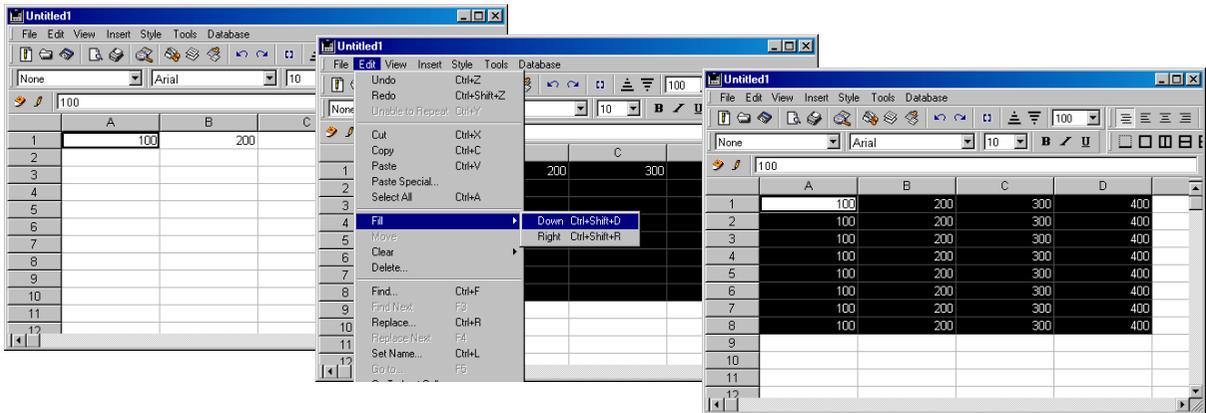
Copy and Move Cells

4D View proposes specific features to copy or move cells inside an area.

Copying Cells to Adjacent Cells

You can use the **Fill** menu items to copy values to immediately adjacent cells (to the right or below). The **Fill Down** command copies the topmost row of selected cells onto the remaining selected cells. The **Fill Right** command copies the left-most column of cells into the remaining selected cells. The Clipboard is not affected.

Suppose you want to fill rows 2 to 8 with data entered in row 1. You just have to select cells from rows 1 to 8, then choose **Fill >Down** from the **Edit** menu:



Note These commands copy the cell values, formulas and styles, but not the borders.

Moving cells

The **Move** command in the **Edit** menu allows you to move a cell selection within an area.

- ▶ To move information from one place to another on your area:

- 1 **Select the cells you want to move.**

The selected cells must be adjacent.

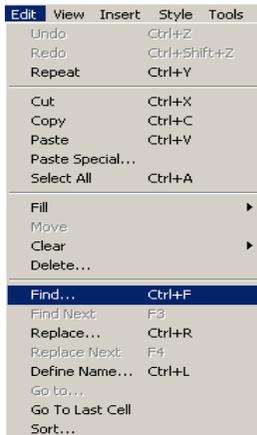
- 2 **Press the Ctrl key (Windows) or Command key (Mac OS) while you click the cell at the upper-left corner of the area to which you will move the selected cells.**

- 3 **Choose Move from the Edit menu.**

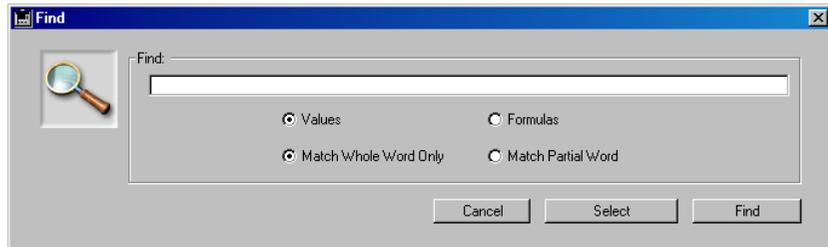
4D View moves the selected cells to the new location. The moved cells overwrite any values in cells in the new location. All the information in a cell is moved, including values, formulas and styles, except for borders.

Find and Replace

Find



Selecting the **Find...** command in the **Edit** menu displays the search dialog box:



This dialog box allows searching of the entire document for a value. Several search options are available.

The dialog box contains two buttons for two types of searches:

- The **Find** button provokes the selection of the first cell matching the selected criteria. The search is carried out from top to bottom then from left to right starting from the current cell. Once the end of the document is reached (if no cell is found), the search starts from the beginning of the area and continues up to the current cell.
- The **Select** button provokes the selection of all cells of the spreadsheet that correspond to the selected criteria. The search is carried out in the entire spreadsheet, regardless of the current cell's location.

Note that the search does not take capital letters into account ("a" will find "A"). On the other hand, accented characters are taken into account ("à" will not find "a").

The special character *at sign* (@) can be used to execute only "starting with" searches: for example, "Inv@" will find "Invoices".

If the search does not find any match, 4D View generates a beep.

Search options

- **Values or Formulas**
The **Values** and **Formulas** radio buttons allow setting of the search destination.
Values means that the search will be executed on the cell content, for example, on a function result.

Formulas means that the search will be carried over to formula elements, for example, a cell reference.

- **Match Whole Word or Match Partial Word**

The **Match Whole Word** and **Match Partial Word** radio buttons allow setting of the degree of search precision.

Match Whole Word means that 4D View must find cells containing only what has been entered as search criteria.

Match Partial Word means that 4D View must find cells containing at least a portion of what has been entered as search criteria.

Find Next

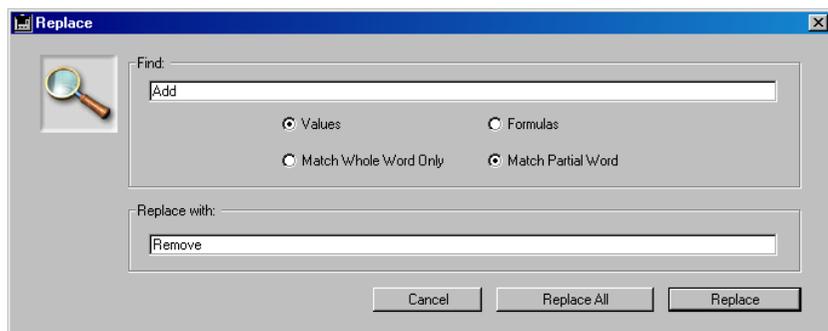
The **Find Next** command executes a new search using the last search criteria. This command is disabled if there has not been a previous search.

The new search is executed from bottom to top and then from left to right starting from the current cell.

Replace

The **Replace...** command displays the replace dialog box. This dialog box allows searching and replacing of a value.

The dialog box contains a search area and a replace area. The search area works exactly as the search area in the “Find” dialog box. For more information, refer to the [paragraph “Find” on page 80](#).



Enter the value to search for in the “Find” area and the replacement value in the “Replace with” area.

- The **Replace** button replaces the contents of the first cell matching the find criteria with the replacement value. The search is done from bottom to top then from left to right starting from the current cell.

■ **Replace all**

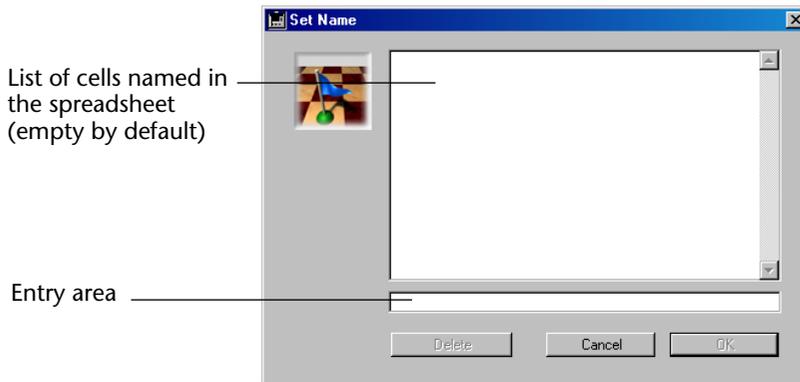
The **Replace all** button replaces all cell contents matching the find criteria with the replacement value. The replacement is done in the entire spreadsheet, regardless of the current cell's location.

Replace Next

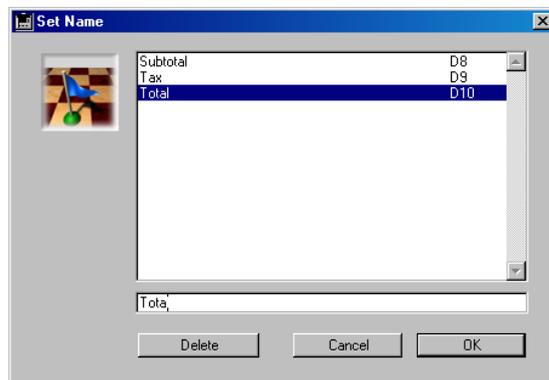
Selecting the **Replace Next** menu command executes a new replacement using the last replace criteria. This command is disabled if there has not been a previous replace.

Set name

The **Set name...** command displays the set cell name dialog box:



This dialog box allows attributing of a name to the current cell: once a name is entered into the entry area, it is displayed in relation to the current position of the cell in the list.



Note The first three characters of a cell name must not be numbers.

To delete a cell name, select it from the list and click the **Delete** button. To modify a name, select it and enter the new name in the entry area.

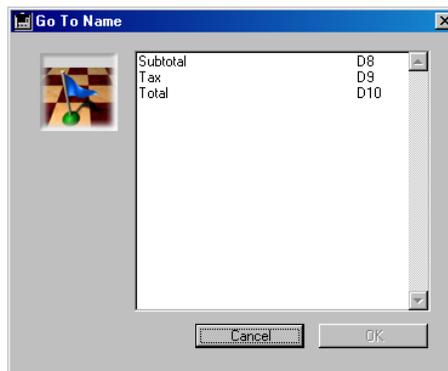
If rows or columns are inserted or deleted in the spreadsheet, the name will remain associated with the cell, regardless of its new coordinates. If the cell appears in the deleted selection, its name will disappear from the list.

This function is primarily useful when combined with the following command, **Goto...**, because it allows simultaneously selecting specific cells without needing to know their location.

In addition, cell names can be used in formulas to define absolute references (see the [paragraph “Using Absolute Reference” on page 120](#)).

Goto

The **Goto...** menu command displays a dialog box listing the cells with an associated name:



This dialog box allows choosing of a cell to select from the list of defined cells using the previous command (**Set name...**).

Validating this choice moves the spreadsheet vertically and horizontally, if necessary, to display the target cell. This command is disabled if no cell names have been set in the document.

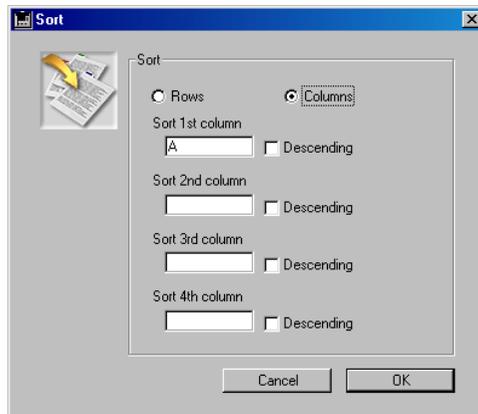
► To sort cells:

1 Select the range of cells to be sorted:

| A | B | C |
|-----------|------------|-----|
| Last name | First name | Age |
| Roberts | Anne | 45 |
| Klein | Carl | 36 |
| Smith | Andy | 27 |
| Reynolds | Elizabeth | 15 |
| Martin | Ralph | 24 |
| Garcia | Juan | 56 |
| Thompson | Sandra | 45 |
| Blair | Ted | 34 |
| Ericson | Gwen | 23 |
| Murphy | Vern | 31 |
| McCarol | Wes | 37 |
| Townsend | Maria | 34 |
| Philips | Patricia | 28 |

2 Choose the Sort... command in the Edit menu.

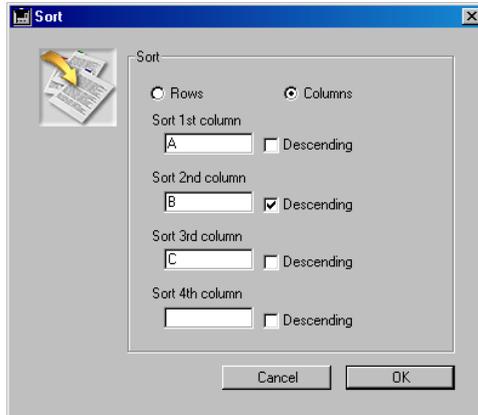
The sort cells dialog box is displayed:



3 Set sort parameters.

- Using the radio buttons, select whether rows or columns will be sorted.
- Write the row number or column letter for the first sort level.
- Enter the row number or column letter for the following sort levels, if necessary.

- For each sort level, select the sort order (ascending or descending) by checking the appropriate option.



In this example, the “Last name” column will be sorted in an ascending manner; the “First name” column in descending order; and the “Age” column in ascending order.

4 Click the OK button to validate parameters.

The selection is then sorted according to your criteria.

| A | B | C |
|------------------|-------------------|------------|
| Last name | First name | Age |
| Blair | Ted | 34 |
| Ericson | Gwen | 23 |
| Garcia | Juan | 56 |
| Klein | Carl | 36 |
| Martin | Ralph | 24 |
| McCarol | Wes | 37 |
| Murphy | Vern | 31 |
| Philips | Patricia | 28 |
| Reynolds | Elizabeth | 15 |
| Roberts | Anne | 45 |
| Smith | Andy | 27 |
| Thompson | Sandra | 45 |
| Townsend | Maria | 34 |

5

Formatting 4D View Documents

4D View allows customizing of the appearance of your documents. Basic cell characteristics, such as fonts, color, alignment, format, attributes and borders can be modified.

Customized style sheets can also be used to apply a set of changes to cells, titles or page headers and footers.

This chapter will detail the following functions:

- Cells in the spreadsheet,
- Setting the appearance of cells,
- Setting cell borders,
- Using style sheets,
- Using pictures,
- Protecting cells and cell content.

Cells in the Spreadsheet

Spreadsheets are composed of rows and columns. A number is associated with each row. A letter (or group of letters once the number of rows surpasses the number of letters in the alphabet) is associated with each column.

The intersection of a row and a column makes a cell.

The appearance of a cell varies depending on its context:

- Non-selected cell:



- Single selected cell. It also has thicker borders:



- Selection of several cells:



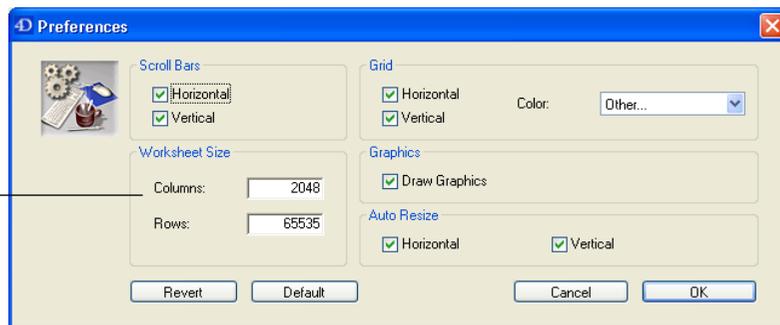
Note The appearance of cells, such as cell selections, varies depending on the colors selected.

Resizing the spreadsheet

By default, cells are presented in a table that is 65535 rows by 2048 columns. This is the maximum size of a spreadsheet. Tables of this size are rarely used; you can stay within the limits that are better adapted to your work by restricting the number of rows and columns.

To modify the number of rows and columns, choose the **Preferences...** command in the 4D View **File** menu. In the Preferences dialog box, set the number of columns and rows for the table in the “Worksheet Size” area:

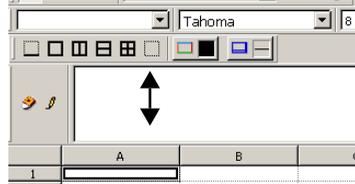
Table size definition



Resizing the data input area

If entered cell data requires more than one line, the data input area (formula editor) can be resized to accommodate the desired number of lines.

To resize the data input area, place the cursor on the lower border of the input area and drag the mouse toward the bottom, until the necessary number of lines appears.



Types of cells

4D automatically determines cell type depending on the cell content. For example, a cell containing the value “1256” will be a numeric type. When the cell content comes from 4D or field calculations, the type is determined by the data source.

Cells can be of the following type:

- **Number:** all numeric values up to 15 significant digits.
- **Date:** all date formats.
- **Time:** all time formats.

Note Dates and times can be combined.

- **Boolean:** as in 4th Dimension.
- **Text:** Cells containing characters can expand several cells to the left and to the right, if these cells are not already occupied, or across several lines in the same cell.

These cells can be formatted to the user’s liking (see the [paragraph “Defining Cell Appearance” on page 91](#)).

- **Picture:** 4D pictures can be inserted in the cells using the linked fields or arrays feature (see the [chapter “Using 4D objects” on page 133](#)). In this case, cells containing pictures are picture cell types. Resizing the cell containing the picture will modify the appearance of the picture, depending on the applied format. For more detailed information on formatting pictures, refer to the [paragraph “Format tab” on page 95](#).

Note

- In 4D View areas, static pictures (imported or pasted pictures) are floating, appearing “above” the spreadsheet—they are not linked to a cell. For more information, refer to the [paragraph “Using Pictures” on page 105](#).
- It is possible to disable the automatic recognition of cell contents using the **Forced text** option (see the [paragraph “Format tab” on page 95](#)).

Cell content

Information contained in cells can come from:

- direct input of information in the formula bar.
The information present in the selected cell is displayed in the formula bar.
- the cut/copy/paste of values.
The cut/copy/paste functions are detailed in the [paragraph “The Edit menu” on page 24](#).
- 4th Dimension fields or calculations in these fields.
The various capabilities are covered in the [chapter "Formulas, Operators, Operands and Functions” on page 113](#).
- importing 4D View spreadsheets, Tab/Tab/Return (ASCII file) or SYLK.

Note The document formats that 4D View can open are listed in the [chapter "Managing 4D View Documents” on page 49](#).

Cell characteristics

A cell is composed of four types of information:

- values or cell content,
- formulas,
- formats,
- borders.

You must mark off these characteristics when you select the **Paste Special...** or **Clear** commands in the **Edit** menu. You can also specify which characteristics you want 4D View to apply.

Formulas are detailed in the [chapter "Formulas, Operators, Operands and Functions” on page 113](#).

Formats are detailed in the [paragraph “Defining Cell Appearance” on page 91](#).

Borders are detailed in the [paragraph “Defining Cell Borders” on page 100](#).

Cell attributes

Certain cells in your spreadsheet can be protected to prevent them from being modified or deleted.

One or more visible cells can be made invisible, to improve the appearance of your work sheet

By default, cells are visible and unprotected.

Refer to the [paragraph “Protecting Cells and Cell Content”](#) on [page 112](#) for more information on this.

Cell attributes are detailed in the [paragraph “Attributes tab”](#) on [page 100](#).

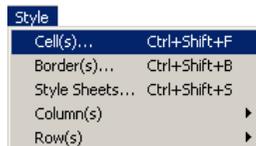
Defining Cell Appearance

- ▶ To format the content of a selection of cells:

1 Select the cells to format.

If more than one cell, row or column is selected, they will be formatted at the same time, in the same manner.

2 Choose the Cell(s)... command in the Style menu.

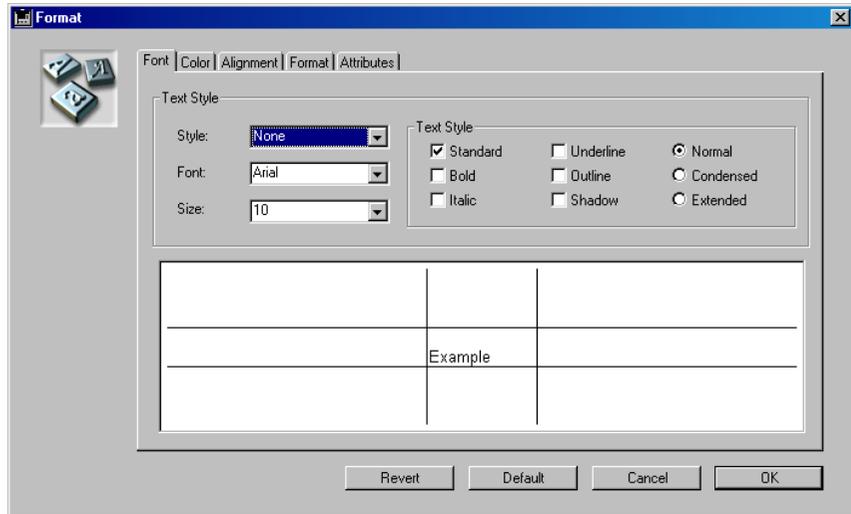


The “Format” dialog box appears allowing you to modify the attributes of your selection.

Note You can go back to the default appearance at any time by clicking the **Default** button or revert back to the original appearance by clicking the **Revert** button.

Font tab

In the “Font” tab page, you can use a style sheet, select a font and modify its size, as well as choosing the text style.



Any modifications made are reflected in the example area.

Note If you set and applied the **Cells** style, selecting style attributes (with the exception of the “style sheet” attribute, see below) adds to the appearance set in the style sheet for the selection.

Style

The **Style** option allows you to select a previously created style sheet. This style sheet is applied to the set of selected cells.

Note If you have already defined and applied the **Cells** style sheet, the application of another style sheet will replace it. For more information on creating and modifying style sheets, refer to the [paragraph “Using Style Sheets” on page 101](#).

Font

The **Font** option allows you to select a font available on your machine. This modification is applied to the set of selected cells.

Size

The **Size** option allows selecting a font size or to enter one using the **Other...** option. This modification is applied to the set of selected cells.

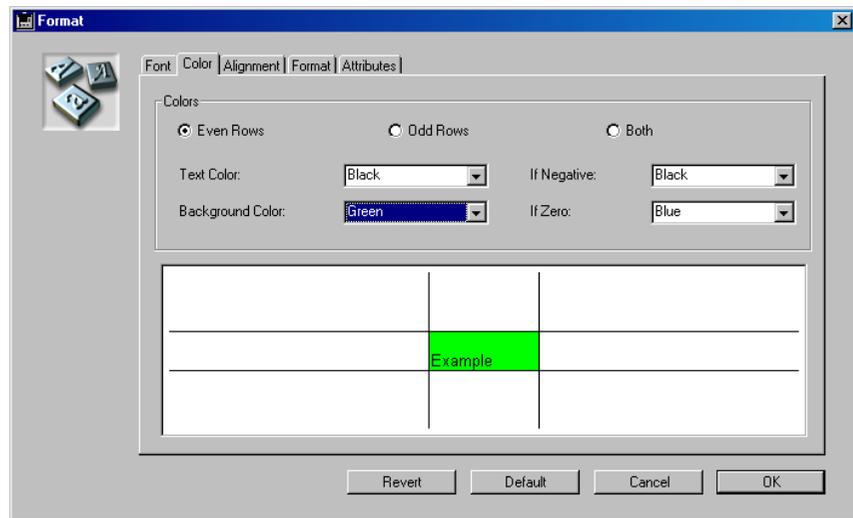
Text Style

The **Text Style** option allows selecting of typographical attributes to apply to your selection.

Note Advanced typographic settings (Shadow, Outline, Condense and Extended) have no effect under Windows. However, they can be selected in this environment in light of cross-platform database usage.

Color tab

In the “Color” tab page, you can set colors for text, background, negative numbers and zeros -- for even- and odd-numbered rows:



Note If you defined and applied the **Cells** style sheet, selecting a color adds to the appearance set in the style sheet for the selection.

Even- and odd-numbered rows

The “Even Rows”, “Odd Rows” and “Both” radio buttons allow you to select which rows will receive the color modifications. Color settings made in the dialog box will apply to even rows, to odd rows, or to both rows (default selection).

Text color

The “Text Color” option allows you to select a color (preset or customized) for the text in selected cells, for the type of rows selected.

Background Color

The “Background Color” option allows selecting of a color (preset or customized) for the background of selected cells, for the type of rows selected.

Choosing **None** (selected by default) means that the cell background will be transparent.

If Negative

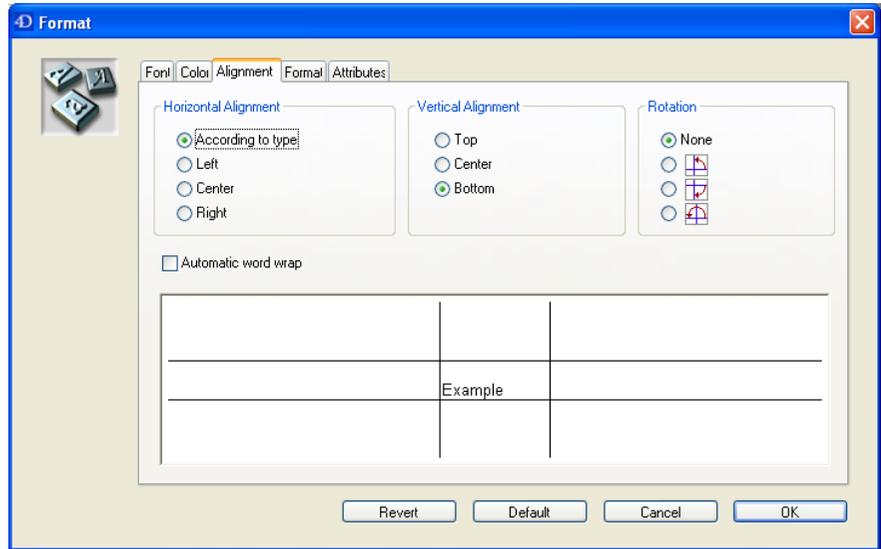
The “If Negative” option allows you to set a color (preset or customized) for negative numbers in the selection, for the type of rows selected.

If Zero

The “If Zero” option allows you to select a color (preset for customized) for zeros in the selection, for the type of rows selected.

Alignment tab

In the “Alignment” tab page, you can horizontally and vertically align the content of selected cells, as well as rotate cell content:



Note If you defined and applied the **Cells** style sheet, selecting an alignment option adds to the appearance set in the style sheet for the selection.

Horizontal Alignment

The “Horizontal Alignment” option allows you to set the horizontal alignment of the cell content. This modification applies to the set of selected cells.

The **According to type** option corresponds to the default alignment for the type of entered cell data (to the right for numbers, dates and times; to the left for text).

Vertical Alignment

The “Vertical Alignment” allows you to select the vertical alignment for the content of your cells: on top, in the center or to the bottom. This parameter applies to the set of selected cells.

Rotation

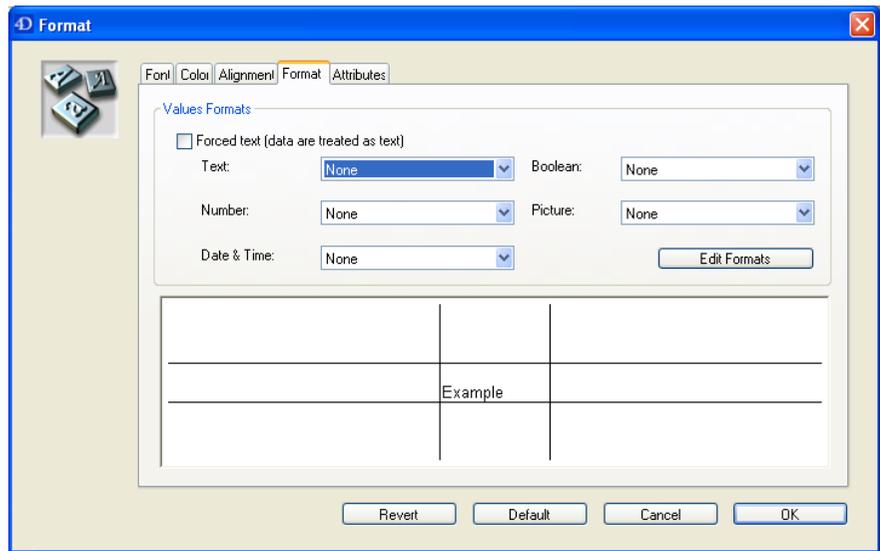
The “Rotation” option allows you to rotate the content of your cells 90, 180° or 270°. Cell content can be set back to normal by selecting **None**. This modification applies to the set of selected cells.

Automatic Word Wrap

The “Automatic Word Wrap” option causes automatic wrapping of the contents of a cell when they exceed its width. By default, when this function is not enabled, the contents of cells run over onto adjacent cells.

Format tab

In the “Format” tab page, you can define the display format for number, text, date and time, boolean and picture data types:



Note If you defined and applied the **Cells** style sheet, selecting a format adds to the appearance set in the style sheet for the selection.

Several display formats can be defined for several data types in the same cell. For example, you can define simultaneously a boolean format, a text format and a number format. 4D View will use the appropriate format depending on the actual cell data type.

Forced Text

The “Forced text” option is used to force the display of a cell as raw text, i.e. without formatting carried out by 4D View according to its contents (number, date, text, etc.). Selecting this option disables all the display format pop-up menus (except for Text type data).

- Text** The “Text” option only provides user-created formats (refer to the paragraph [“Create a customized format” on page 98](#)).
- Number** The “Number” option puts several numeric formats at your fingertips. Below is a description of these options:
- **# type**
Pounds keys are replaced by numbers when displaying numeric values. When the number of digits is less than the number of pound keys, the pound keys to the left are deleted as well as the unnecessary accompanying text.
For example ### millions ### thousand ### applied to 21245 will read: 21 thousand 245.
 - **^ type**
Circumflex accents are replaced by numbers, but if the number of digits is less than the number of circumflex accents, the remaining accents are replaced with hard breaks.
 - *** type**
Stars are replaced by numbers, but if the number of digits is less than the number of stars, the remaining stars will appear in the display. The accompanying text between the left-hand stars and the left-most number will be replaced with stars.
 - **0 type**
Zeros are replaced with numbers but if the number of digits is less than the number of zeros, the remaining zeros will appear in the display.
 - **###,##0;(###,##0) / \$###,##0.00;\$(###,##0.00)**
When you choose this format, the appearance of the right value will change depending on if the result is positive or negative. With this type of format, you can also use colors to differentiate positive numbers from negative numbers. Refer to the paragraph [“Color tab” on page 93](#).
 - **Positive;Negative;Null**
When you choose this format, the values themselves are not displayed, but rather notification that the result is negative, positive or null.
 - **##_##_##_##_**
Displays two numbers_two numbers_ (etc.)
This format is intended for displaying telephone numbers. Enter the numbers without worrying about the format. In your own formats, you can modify the number of pound keys.

Date & Time

The “Date & Time” option makes several specific date and time formats available, as in 4D.

Also, you have access to mixed date and time formats. These particular formats can be used to display a date and time in the same cell. You can, for example, specifically indicate the time and date when an operation took place and then format this data.

In order for 4D View to “understand” that you are entering a date and time in the same cell, you must follow the rules below:

- 1 **Select the cell before entering any information.**
- 2 **Enter the “=” sign.**
- 3 **Enter the date between exclamation points (!).**
- 4 **Add the “+” sign.**
- 5 **Enter the time between question marks (?) under Windows or † (option+t) under Mac OS.**
- 6 **Validate input.**

The following is an illustration of some available 4D View formats:

| Format name | Result |
|-------------------------------|--|
| long to h:mn AM/PM | Tuesday 7 June 2005 at 11:06 PM |
| abbreviated to h:mn AM/PM | Tue 7 June 2005 at 11:06 PM |
| short to H:MN:SEC | 6/7/05 at 23:06:15 |
| Month, day year to H:MN AM/PM | June 7 2005 at 11:06 PM |
| special and H:MN:SEC | 6/7/05 and 23 hours 6 minutes 15 seconds |

Boolean

The “Boolean” option only provides user created formats (refer to the [paragraph “Create a customized format” on page 98](#)).

These formats must be of the “True;False” type, “Yes;No” or even “Open;Closed”, etc.

Picture

The “Picture” option provides different picture formats:

- **Truncated (non-centered)**
This format truncates the picture in the cell and crops any portions that do not fit in the cell.

- **Truncated (centered)**
This format centers the picture in the cell and crops any portions that do not fit in the cell.
- **Replicated**
This format fills the cell with as many copies of the picture as needed, placed side by side, without modifying the original picture size.
- **Scaled to Fit**
This format completely fills the cell by enlarging/reducing the picture. Since this operation is not proportional, the final result may be considerably different from the original.
- **Scaled to Fit (proportional)**
This format tries to fill the cell by enlarging/reducing the picture in a proportional manner. If this is not possible, it will leave a white area at the bottom or to the right of the picture.
- **Scaled to Fit (centered)**
Like the Proportional format, this format tries to fill the cell by enlarging/reducing the picture in a proportional manner. It also centers the picture within the cell. If the cell cannot be completely filled, it leaves a white area above and below or to the left or right of the picture.

Note Only pictures inserted using the linked cells or linked rows features will be affected by the cell picture format. Other pictures can only be formatted using the Picture Attributes dialog box (see the [paragraph “Picture attributes” on page 107](#)).

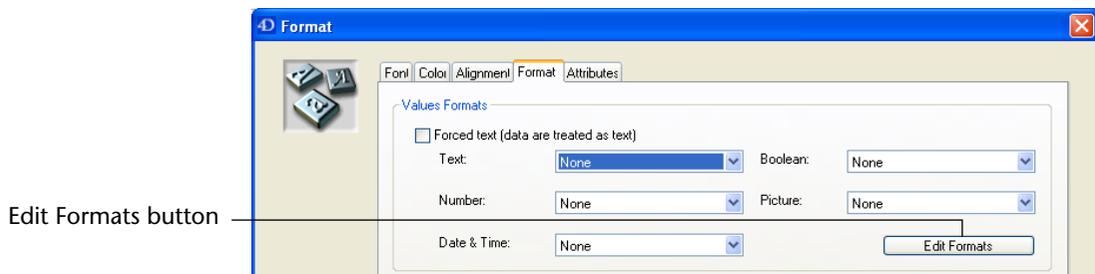
Create a customized format

You can create your own customized formats — if you follow the rules listed above (relating to the #, ^, *, and 0 symbols). Customized formats can be selected for each data type.

Note that Text and Boolean type data only accept customized formats.

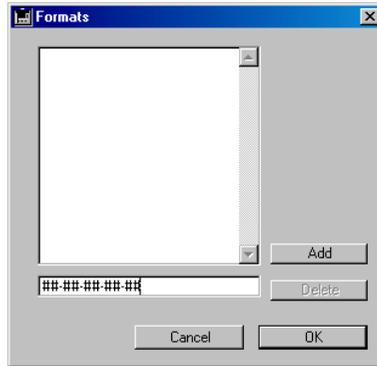
- ▶ To create a customized format, for example, “##-##-##-##-##”:

1 Click the Edit Format button:



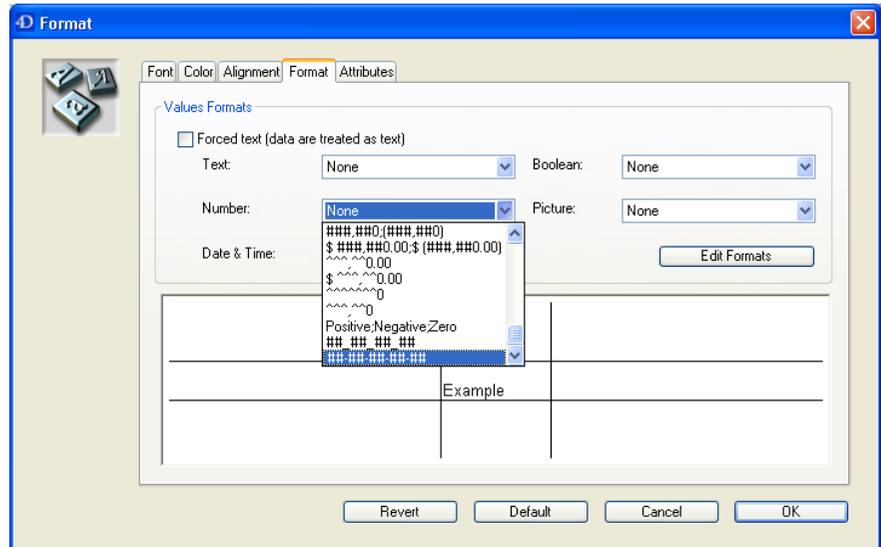
The edit format dialog box appears, empty by default.

- 2 Enter the ##-##-##-##-## format in the area at the bottom of the dialog box.



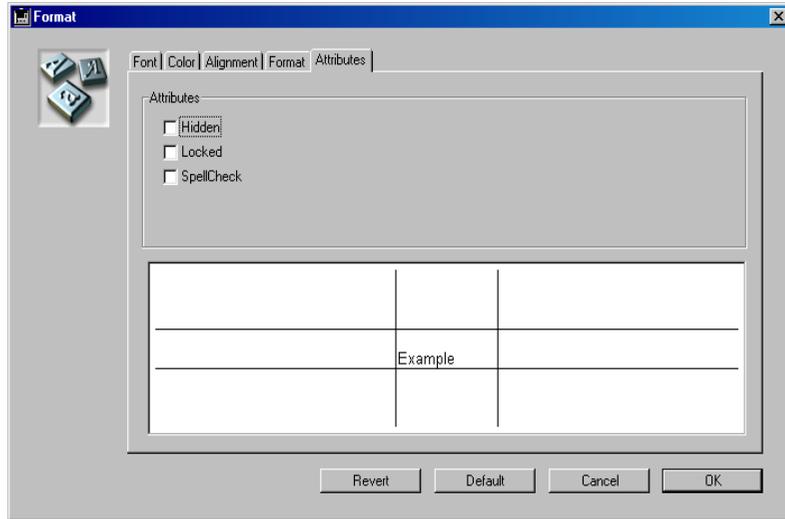
- 3 Click the Add button to validate your new format.
- 4 Click OK to validate your dialog box.

Your format will now appear at the bottom of the drop-down bars:



Attributes tab

In the “Attributes” tab page, you can modify attributes of the cell selection:

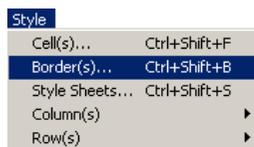


The Attributes options allow you to:

- **hide cell content**
- **lock cells**
Refer to the [paragraph “Protecting Cells and Cell Content” on page 112](#) for more information on these attributes.
- **enable spell check features**
This option requires the installation of an additional plug-in.

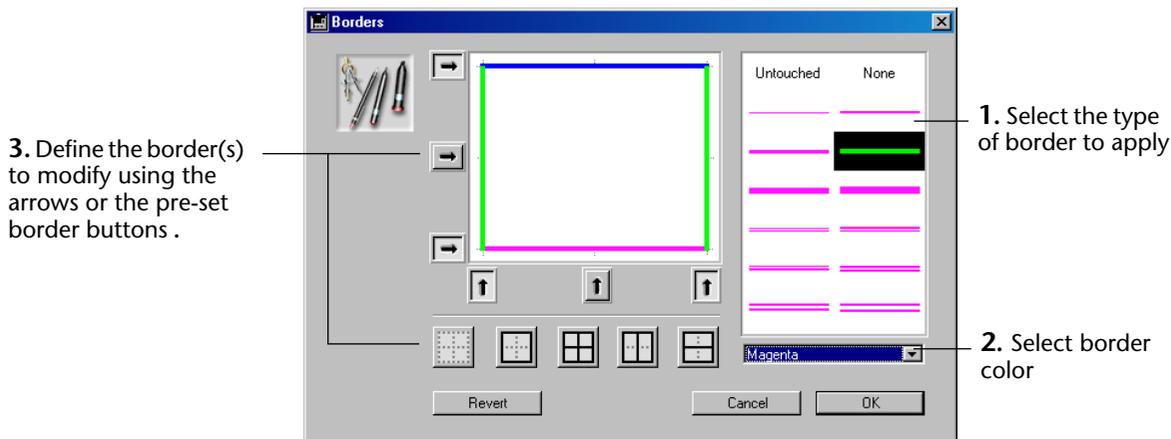
Defining Cell Borders

- ▶ To set the border for a selection of cells:
 - 1 **Select cells to border.**
If you select several cells, rows or columns, they will be formatted at the same time in the same manner.
 - 2 **Choose the Border(s)... command in the Style menu.**



The “Borders” dialog box appears allowing you to modify the attributes of your selection.

You can individually choose the presence and color of each of the six borders.

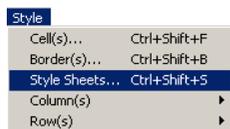


Certain buttons and arrows are disabled when the cell selection does not contain inner borders.

The five buttons allow the use of pre-set border layouts.

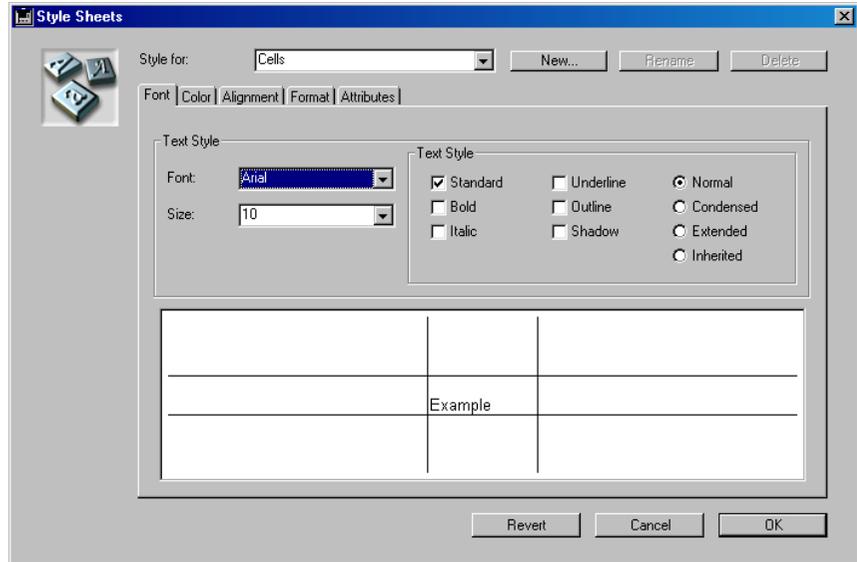
The six arrows allow the selection of the corresponding border.

Using Style Sheets



The **Style Sheets...** command in the **4D View** menu allows you to choose a general style for the 4D View document and to set most appearance parameters in a single operation.

Once this command is chosen, the style sheet parameters dialog box appears:

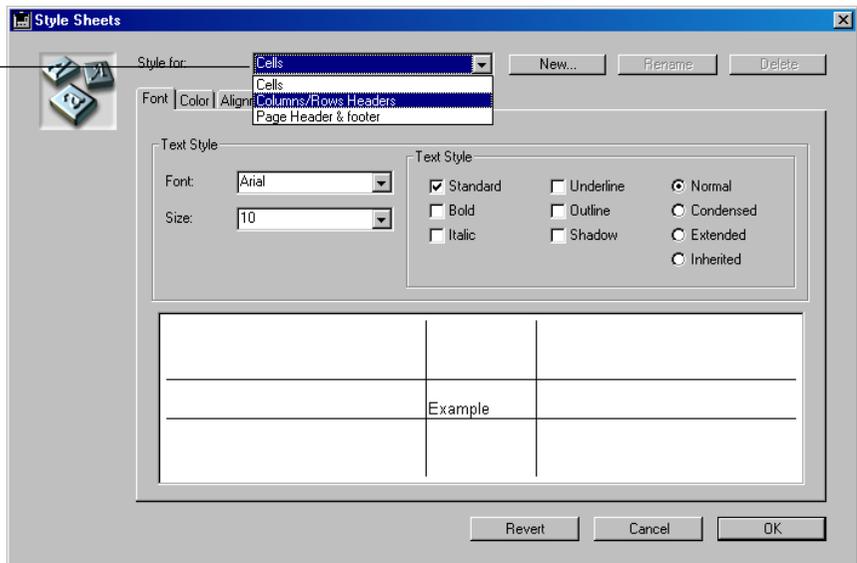


This dialog box offers the same features as the “Format” dialog box (accessible using the **Style>Cell(s)...** command). For more information, refer to the [paragraph “Defining Cell Appearance” on page 91](#).

Default style sheets

The **Style for** drop-down menu allows you to select one of three default style sheets:

Choice of style sheet



Default style sheets are automatically applied to the document once the dialog box is validated.

- **Cells**

This style sheet is applied to the set of cells in the spreadsheet. It can be combined with a specific format for certain cells. Refer to the [paragraph “Defining Cell Appearance” on page 91](#), for a detailed description of the different formats and how they interact with style sheets.

- **Columns/Rows Headers**

This style sheet applies to row and column headers.

- **Page Header & Footer**

This style sheet applies to the header and footer of your 4D View documents. Refer to the [paragraph “Print Options...” on page 168](#), for a detailed description of page header and footer contents.

Note Unlike customized style sheets, default style sheets can neither be renamed nor deleted.

Customized style sheets

You can create your own customized style sheets.

To apply these style sheets, select the cells then choose the style sheet in the menu in the Style toolbar:



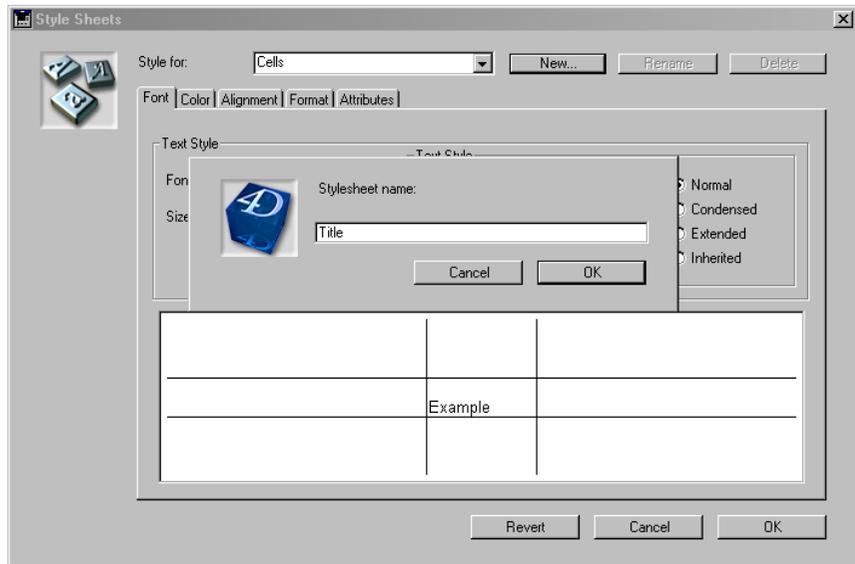
Once created, the customized style sheets also appear in the **Style for** menu in the “Style Sheets” dialog box. These new style sheets can now be modified:



► To create a customized style sheet:

- 1 In the “Style Sheets” dialog box, click the **New...** button.

A dialog box allows you to name the style sheet:



2 Enter a name and validate the dialog box.

- Click the **Rename** button to rename a customized style sheet.
- Click the **Delete** button to definitively delete a customized style sheet.

Priority of the styles

The final style of a cell may be the result of style applications at several different levels: the standard “Cell” style sheet, a customized style sheet and a style directly applied using 4D View menu commands.

In 4D View, this layering is managed in a hierarchical manner: priority is first given to the style defined by the user, then to the customized style sheet and finally to the standard style sheet;

| | Styles defined | Cell content |
|-----------------------------|--------------------------------|-----------------------|
| Standard style sheet (cell) | Bold, Underline | <u>My Text</u> |
| Customized style sheet | Color blue | <u>My Text</u> |
| User style | Not bold, Italic, Color red | <i>My Text</i> |

Using Pictures

4D View enables you to insert pictures into your spreadsheets. Three types of pictures may be used:

- **Static pictures:** 4D View inserts a static picture when you copy and paste a picture into the area or import a 4D picture field (see the [paragraph “Importing Fields” on page 134](#)). In this case, the picture is not associated with any particular cell, it “floats” in the area. You can only move it using the mouse or by modifying its coordinates in the Picture attributes dialog box.
- **Dynamic references:** pictures which result from the referencing of 4D Picture type fields or variables. When the current value of the field or variable is modified, the picture inserted in the area automatically reflects this modification (see the [paragraph “Dynamically Referencing Fields” on page 142](#)). In this case as well, the picture is not associated with any particular cell and “floats” in the area. You can only move it using the mouse or by modifying its coordinates in the Picture attributes dialog box.
- **Dynamic links:** this type of picture comes from dynamic links with 4D Picture type fields or variables (see the [paragraph “Dynamic Links” on page 148](#)). According to the principle of dynamic links, any modification made on the 4D field will be reflected in the 4D View area and vice versa: when you double-click on a picture which results from a dynamic link, it becomes enterable. You can then paste in another picture which replaces the previous one in the 4D View area and in 4D as well.

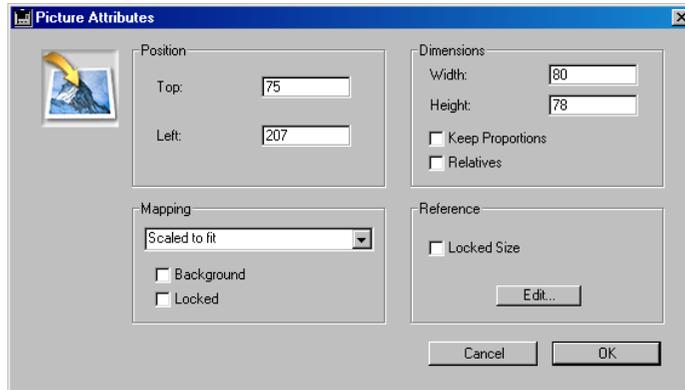
In this case, the pictures are associated with the cells that contain them. It is not possible to modify them using the Picture attributes dialog box. Only cell formatting (see the “Format tab” on page 95) is taken into account.

Different kinds of pictures

The image shows two screenshots of a 4D View document window titled 'Untitled1'. The top screenshot, labeled 'Standard display (Values)', shows a table with columns A, B, C, and D, and rows 1 through 5. Row 1, column A contains four linked pictures of a woman. Row 1, column B contains a field reference picture. Row 1, column C contains a pasted picture. Labels with arrows point to these elements: 'Linked picture (Replicated format)' points to the four pictures in A1; 'Field reference (Add pictures... menu)' points to the picture in B1; and 'Pasted picture' points to the picture in C1. The bottom screenshot, labeled 'References display', shows the same table but with the pictures replaced by their respective references: '[Albums]Cover' in cell A1, a picture icon in cell B1, and another picture icon in cell C1. The text '[Albums]Cover' is also visible in cell A2.

Picture attributes

When you double-click on a static picture or a picture reference, the “Picture Attributes” dialog box appears:



This dialog box allows you to modify the picture characteristics:

Position

The **Top** and **Left** entry areas show the location of the picture. These coordinates (in pixels) indicate the top left corner of the picture and are calculated starting from the top left corner of the spreadsheet.

Mapping

This area allows you to modify the picture display within the spreadsheet:

- **Mapping menu:** this menu allows you to define the picture appearance when it is resized. For more information on the values of this menu, see the [paragraph “Picture” on page 97](#).
- **Background:** by default, pictures are placed “in front of” the spreadsheet and thus hide any other information that it contains. If you check this box, the picture will be placed “behind” the spreadsheet.
- **Locked:** when you check this box, the size and position of the picture are locked in the spreadsheet: it is not possible to move or resize it using the mouse (on the other hand, double-clicking on it will display the “Picture attributes” dialog box). This option also enables you to select cells located “in front of” a background picture using the mouse.

Dimensions

This entry area enables reading and modification of the picture **width** and **height** (in pixels).

- **Keep Proportions:** if you check this box, the initial proportions of the picture are restored when you validate the dialog box.

- **Relatives:** when you check this box, the picture **width** and **height** values are expressed as a percentage with respect to the initial size of the picture.

Reference

This area is only active for dynamic pictures referencing a 4D field or variable (pictures inserted using the **Add pictures...** menu command).

When a picture reference is inserted, for example, in a template document, the displayed picture is modified each time the actual record is changed.

It is possible that the size of the pictures contained in the records are not all the same. By default, 4D View displays the picture in its original size which may vary from one area to another.

If you check the **Locked Size** box, all the picture references will be displayed within the frame originally defined for the area. In this case, the display options set in the dialog box define the way in which pictures will be resized within the set frame, if necessary.

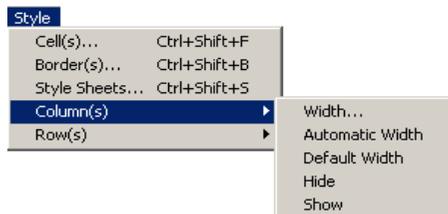
The **Edit...** button displays the Choose Picture Field dialog box (see the paragraph “Inserting Pictures” on page 145).

Managing Columns

Double-clicking a column header adjusts the column width depending on its largest content.¹

Double-clicking the right-hand separator of a column applies the default 4D View column width—108 pixels.

The **Column(s)** hierarchical sub-menu of the **Style** menu allows setting or enabling of certain characteristics of the columns in the spreadsheet.

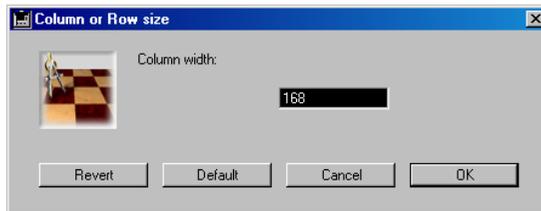


1. This function can be disabled in the Preferences dialog box. Refer to the paragraph “Setting Preferences” on page 74.

The commands of this sub-menu are only applied to columns of selected cells in the document.

Width

Selecting the **Width...** command displays a dialog box allowing you to set the width, in pixels, of selected columns:



You can enter the desired width in the available input area.

To return to the default 4D View column width (108 pixels), click the **Default** button.

To cancel your input and return to the last width set for the selected columns, click the **Revert** button.

To validate the dialog box, click the **OK** button. Click the **Cancel** button if you do not wish to save changes.

Automatic Width

You can automatically adjust column widths depending on the width of its largest content. There are two ways in which to do this:

- Use the **Automatic Width** command. In this case, all selected columns will be resized.
- Double click a column header.
This function can be disabled in the Preferences dialog box. Refer to the [paragraph “Setting Preferences” on page 74](#).

Default Width

The **Default Width** command allows you to return the selected columns to the default width of 108 pixels. This menu command completes the same action as the **Default** button in the column width dialog box.

Double-clicking the right-hand separator of a column applies the default 4D View column width.

Hide

The **Hide** command allows you to hide selected columns. Do not confuse this function, which makes selected columns from the spreadsheet disappear, with the “Hidden” cell attribute, which only hides the content (see the [paragraph “Protecting Cells and Cell Content”](#) on page 112).

Show

The **Show** command allows you to show previously hidden columns within the selection.

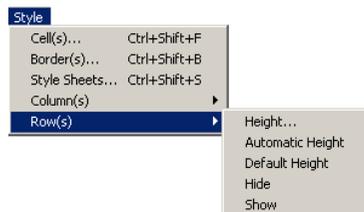
For example, if you hid column D in your spreadsheet, select columns C and E, then choose the **Show** command to make it reappear.

Managing Rows

Double-clicking a row header adjusts the size of the row depending on its largest content¹.

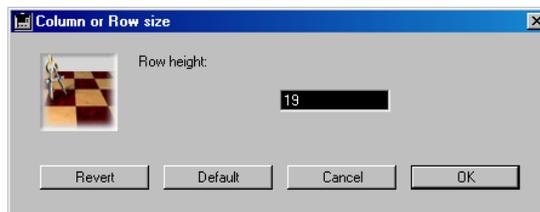
Double-clicking the bottom-hand separator of a row applies the default 4D View row width—19 pixels under Windows and 16 pixels under Mac OS.

The **Row(s)** hierarchical sub-menu in the **Style** menu allows setting or enabling certain characteristics of the rows in your spreadsheet:



Height

The **Height...** command displays a dialog box allowing you to set the height, in pixels, of selected rows:



1. This function can be disabled in the Preferences dialog box. Refer to the [paragraph “Setting Preferences”](#) on page 74.

You can enter the desired height in the available input area.

To return to the default 4D View row height (19 pixels under Windows and 16 pixels under Mac OS), click the **Default** button.

To cancel your input and return to the last height set for the selected rows, click the **Revert** button.

To validate the dialog box, click the **OK** button. Click the **Cancel** button if you do not wish to save changes.

Automatic Height

You can automatically adjust row height depending on the height of its largest content. There are two ways in which you can do this:

- Use the **Automatic Height** command. In this case, all selected rows will be resized.
- Double click a row header.
This function can be disabled in the Preferences dialog box. Refer to the [paragraph “Setting Preferences” on page 74](#).

Default Height

The **Default Height** command allows you to return the selected rows to the default height of 19 pixels under Windows and 16 pixels under Mac OS. This menu command completes the same action as the **Default** button in the row height dialog box.

Double-clicking the bottom-hand separator of a row also applies the default 4D View row height.

Hide

The **Hide** command allows you to hide selected rows.

Do not confuse this function, which makes selected rows from the spreadsheet disappear, with the “Hidden” cell attribute, which only hides the content (see the [paragraph “Protecting Cells and Cell Content” on page 112](#)).

Show

The **Show** command allows you to show previously hidden rows within the selection.

For example, if you hid row 5 in your spreadsheet, you should select rows 4 and 6, then choose the **Show** command to make it reappear.

Protecting Cells and Cell Content

4D View allows hiding of cells or making them non-enterable.

Once the content of a cell is hidden, it is no longer visible and the cell is automatically protected, in other words, non-enterable.

If you make a cell non-enterable, it remains visible but its content can no longer be modified.

Hiding cell content

- ▶ To hide the content of cells:
 - 1 **Select the cell(s) to hide.**
 - 2 **Select the Hide command in the Security submenu of the Tools menu.**



Once the content of your cells is hidden, 4D View displays a different cursor in the formula editor when attempting to modify them.

Note Be sure not to confuse this function with the Hide function for rows and columns which makes them disappear from the spreadsheet (see the [paragraph “Hide” on page 110](#) and the [paragraph “Hide” on page 111](#)).

- ▶ To display previously hidden cell content:
 - 1 **Select the cell(s) whose content is hidden.**
 - 2 **Select the Show command in the Security submenu of the Tools menu.**
The content of cells is once again visible.

Locking cells

- ▶ To lock cells:
 - 1 **Select the cell(s) to lock.**
 - 2 **Select the Lock command in the Security submenu of the Tools menu.**



The content of locked cells is still visible, but 4D View displays a different cursor in the formula editor when attempting to modify their content.

- ▶ To unlock previously locked cells:
 - 1 **Select the locked cell(s).**
 - 2 **Select the Unlock command in the Security submenu of the Tools menu.**

6

Formulas, Operators, Operands and Functions

This chapter describes the entering of formulas and their components, operators and operands (constants, cell references, as well as specific 4D View functions).

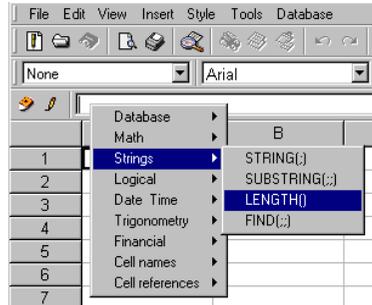
This chapter is broken down into the following parts:

- Entering a formula or a function
- Operators, Operands and Constants
- Cell references
- 4D View functions

Entering a Formula, a Function or a Reference

- ▶ To enter a formula or a function in a 4D View area:
 - 1 Select the cell into which you will enter the formula or function.
 - 2 Enter = (the equal sign).
 - 3 Enter the formula then hit the Enter key.
- OR
- Under Windows, right-click in the input area of the formula bar.
 - Under Mac OS, right-click or Control+click in the input area of the formula bar.

A pop-up menu listing the formula categories and available references appears, allowing you to select the desired elements:



Operators and Operands

Every 4D View formula is an expression that returns a value. All expressions are comprised of operands and operators.

Operators available in 4D View are generally identical to those for 4th Dimension.

Operands are divided into several categories:

- constants,
- references to other cells (relatives, absolutes, mixed or by name),
- 4D variables, fields and functions,
- Internal 4D View functions.

Data Types

4D View supports five types of data:

- numbers (real to 15 precise numbers),
- dates (same as 4D),
- times (same as 4D),
- character strings (one or more rows),
- booleans (same as 4D).

Operators

| | |
|---|--|
| Numeric operators | <ul style="list-style-type: none"> +: addition -: subtraction *: multiplication /: division \: remainder ÷ (Alt+0247 under Windows, Option+: under Mac OS): whole division ^: exponent (raise it a power) %: percentage (divide the number before the operator by one hundred) |
| Boolean operators | <ul style="list-style-type: none"> &: and logic : or logic ¬ (Option+l) under Mac OS or ~ (tilde, AltGr+2) under Windows: negation |
| String operators | <ul style="list-style-type: none"> +: concatenation -: destruction \: position |
| Date operators | <ul style="list-style-type: none"> +: date + number of days -> date +: date + time -> date + time of day -: date - number of days -> date -: date - date -> number of days between the two. |
| Duration operators | <ul style="list-style-type: none"> +: addition -: subtraction *: duration * number -> duration /: duration / number -> duration |
| Comparison operators (2 operands of the same kind) | <ul style="list-style-type: none"> =: equal to ≠ (Mac OS) or # (Windows): different than >: greater than <: less than >=: greater than or equal to <=: less than or equal to |
| Operator priority | <p>List of operators from most to least important:</p> <ol style="list-style-type: none"> 1. ¬ (Mac OS) and ~ (Windows)% 2. * / \ ÷ ^ & 2. + - 3. = ≠ (Mac OS) and # (Windows) > < >= <= |

| Constants | <p>A constant is a value that does not change during execution.</p> <p>The writing conventions are described in the following paragraphs.</p> | | | | | | | | | | | | | | |
|---|--|----------|--------------|---|----------------|---|-----------|---|------------------|---|----------------|---|------------|---|----------|
| Numeric constants | <p>A numeric type constant is written without a separator:</p> <p>1,2 1,2 E3 1,2E-3 0,3x</p> | | | | | | | | | | | | | | |
| Date constants | <p>A date type constant is still written between two exclamation points:</p> <p>!10/12/01!</p> | | | | | | | | | | | | | | |
| Time constants | <p>A time type constant is still written between two question marks under Windows (or two † under Mac OS):</p> <p>?10:12:10? †10:12:10† (Mac OS only)</p> | | | | | | | | | | | | | | |
| Text constants | <p>Character strings (or texts) are written between the ' (straight apostrophe) or " (straight quotation mark) symbols:</p> <p>'Sophie' or "Sophie"</p> <p>If you use one of these characters in your string, use the other one as a separator.</p> | | | | | | | | | | | | | | |
| Booleans | <p>Booleans only have two possible values: true or false.</p> <p>This type of value is primarily used for the If function and to read 4th Dimension boolean fields.</p> | | | | | | | | | | | | | | |
| Priority of Operands in Formulas | <p>When two or more different operands have the same name, 4D View determines the type of each element according to the following order of priority:</p> <table><thead><tr><th>Priority</th><th>Element type</th></tr></thead><tbody><tr><td>1</td><td>Cell reference</td></tr><tr><td>2</td><td>Cell name</td></tr><tr><td>3</td><td>4D View function</td></tr><tr><td>4</td><td>Project method</td></tr><tr><td>5</td><td>4D command</td></tr><tr><td>6</td><td>Variable</td></tr></tbody></table> | Priority | Element type | 1 | Cell reference | 2 | Cell name | 3 | 4D View function | 4 | Project method | 5 | 4D command | 6 | Variable |
| Priority | Element type | | | | | | | | | | | | | | |
| 1 | Cell reference | | | | | | | | | | | | | | |
| 2 | Cell name | | | | | | | | | | | | | | |
| 3 | 4D View function | | | | | | | | | | | | | | |
| 4 | Project method | | | | | | | | | | | | | | |
| 5 | 4D command | | | | | | | | | | | | | | |
| 6 | Variable | | | | | | | | | | | | | | |

For instance, if the string "MyTotal" used in a formula corresponds to a project method and a cell name, 4D View will consider, at the time of formula analysis, that it consists of a cell name.

Using Cell References

Formulas often refer to other cells by means of cell addresses. You can copy such formulas into other cells. When you copy or move these cells to new locations, each cell address in that formula will either change or stay the same, depending on how it is typed. A reference that changes is called a relative reference, and refers to a cell by how far left/right and up/down it is from the cell with the formula. A reference that always points to a particular cell is called an absolute reference.

You can also create a mixed reference which always points to a fixed row or column.

For example, the following formula, entered in cell C8, adds the values in the two cells above it and displays the result.

= C6 + C7

This formula refers to cells C6 and C7. That is, 4D View is instructed to refer to these other cells for values to use in the formula.

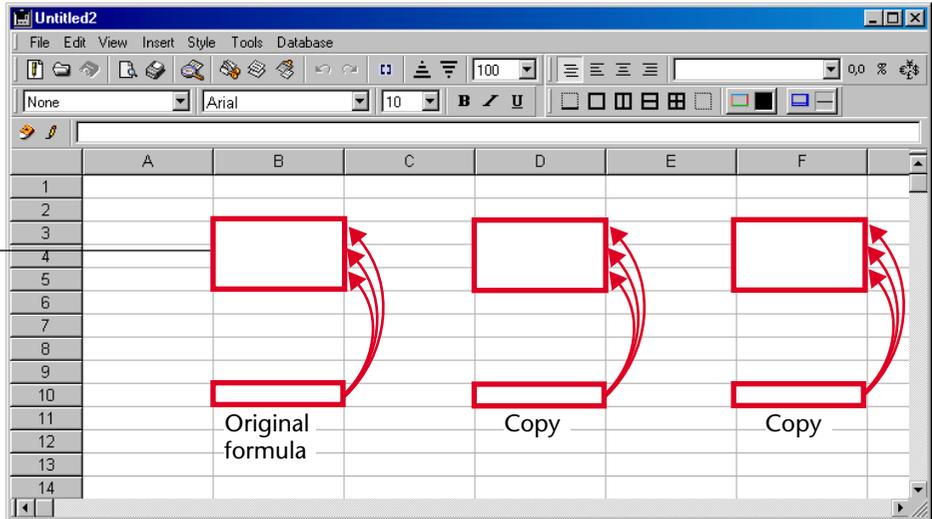
Relative Reference

A relative reference modifies itself automatically when the formula that contains the reference is copied and pasted, or when the **Fill Down** or **Fill Right** menu items are used to copy the formula to other cells. In the example, the formula in cell C8 refers to cells C6 and C7, the cells one row up and two rows up. If you copy the formula in cell C8 to cell B10, the formula modifies itself to refer to cells B8 and B9, maintaining the same relative reference as the original formula—to the two cells above it in the same row.

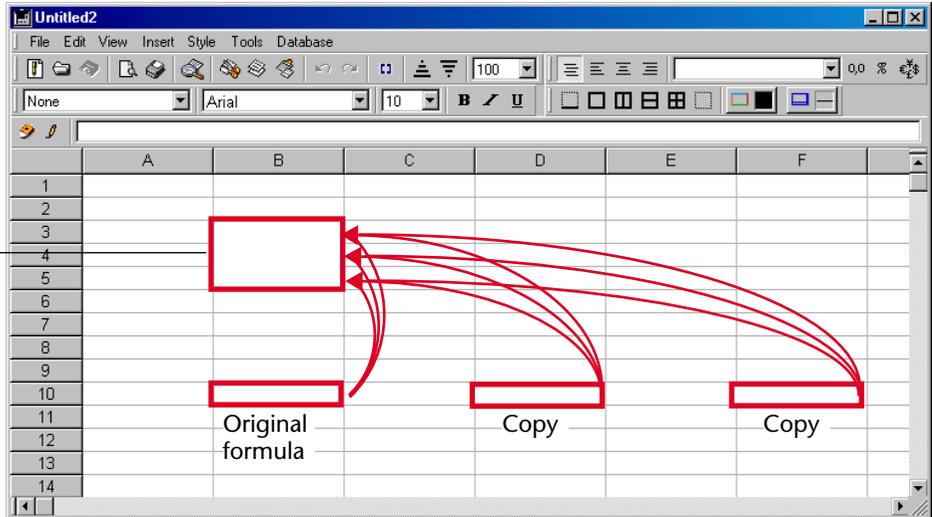
Absolute Reference

An absolute reference, by contrast, does not change when it is copied or pasted. If the formula in C8 refers to cells C6 and C7 with absolute reference and you copy it to cell B10, the formula in cell B10 still refers to cells C6 and C7.

Relative reference is to cells in the same relative position



Absolute reference is to the specific cells themselves



By default, cell reference is relative. You can make the reference absolute when you want a formula always to refer to the same cell no matter where the formula is copied.

Reference Notation If you use only cell coordinates, for example, C5, 4D View interprets the reference as relative. You may make the reference absolute by putting a dollar sign in front of the letter and the number, as in \$C\$5.

You can mix absolute and relative references by inserting a dollar sign in front of the letter or the number alone, for example, \$C5 or C\$5. A mixed reference allows you to specify either the row or the column as absolute, while allowing the other portion of the address to refer relatively.

A convenient, fast and accurate way to specify an absolute reference is to name the cell and use that name in place of the cell address. A reference to a named cell is always absolute. For information about naming cells, see the [paragraph “Set name” on page 82](#).

The following table shows the effect of the different notations:

| Example | Type of reference | Result |
|-----------|-------------------|--|
| C5 | Relative | Reference is to the relative location of cell C5, depending on the location of the cell in which the reference is first used |
| \$C\$5 | Absolute | Reference is absolute. Will always refer to cell C5 no matter where it is used. |
| \$C5 | Mixed | Reference is always to column C, but the row reference is relative to the location of the cell in which the reference is first used. |
| C\$5 | Mixed | Reference is always to row 5, but the column reference is relative to the location of the cell in which the reference is first used |
| Cell name | Absolute | Reference is absolute. Will always refer to the named cell no matter where the reference is used. |

Using Relative Reference

Relative reference enables you to copy a single formula into several cells without having to edit it. The formulas are automatically modified to perform the same calculation on the cells in the same relative location as the original formula.

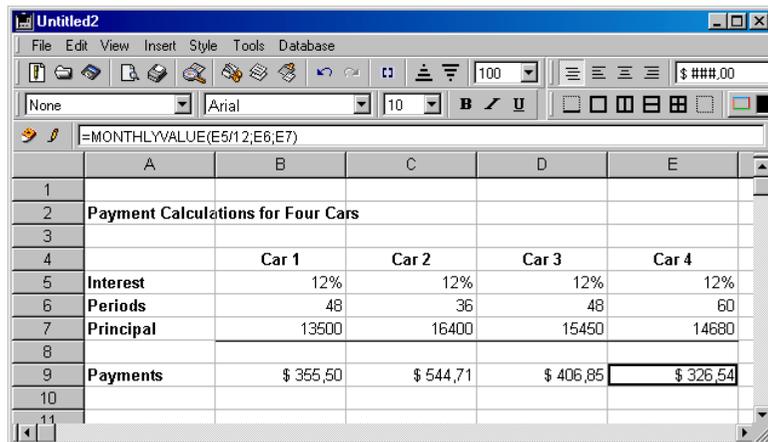
This operation is especially useful when you build a spreadsheet that performs the same calculation over several different cells. Instead of having to create the same formula several times, you can create it once and copy it as many times as necessary.

- ▼ Suppose you are planning to purchase an automobile. You construct a spreadsheet that calculates the payment on a loan. You enter the following formula in cell C9:

=MonthlyValue (B5/12; B6; B7)

In this formula, the annual interest rate (B5), the number of payments (B6) and the amount of the loan (B7) are used to calculate the amount of each payment.

You then copy the formula to cells C9, D9 and E9. By entering the rates, months and amounts for each car, you can compare the monthly payment for each one.



Because of relative reference, you can write the formula only once, then copy it and paste it twice. The formula changes so that the same operation is performed on new cells.

Using Absolute Reference

Use absolute reference when you want to refer to a specific cell no matter where the formula is copied.

- ▼ Again, suppose you are buying a car and suppose you have set aside one cell, B5, specifically to contain the interest rate. You could then enter the following formula in cell B9:

=MonthlyValue (\$B\$5/12; B6; B7)

This formula performs the same calculation to determine the amount of each payment. When you copy the formula to cells C9, D9 and E9, however, the absolute reference to cell B5 remains in effect.

| | A | B | C | D | E |
|----|---|--------------|--------------|--------------|--------------|
| 1 | | | | | |
| 2 | Payment Calculations for Four Cars | | | | |
| 3 | | | | | |
| 4 | Interest Rate | 12% | | | |
| 5 | | Car 1 | Car 2 | Car 3 | Car 4 |
| 6 | Periods | 48 | 36 | 48 | 60 |
| 7 | Principal | 13500 | 16400 | 15450 | 14680 |
| 8 | | | | | |
| 9 | Payments | \$ 355,50 | \$ 544,71 | \$ 406,85 | \$ 326,54 |
| 10 | | | | | |
| 11 | | | | | |

Because of absolute reference, you need to enter the interest rate only once. The cell reference to B5 remains the same in each formula. Wherever you paste the formula on the spreadsheet, it always refers to cell B5. To test the effect of different interest rates on your monthly payment, you can enter the new rate in cell B4; 4D View will recalculate the payment for each car.

Functions

4D View has its own functions. These functions can be accessed using the pop-up menu in the formula bar entry area.

Note that the **Cell name** hierarchical menu provides direct access to user-named cell names and the **Database** hierarchical menu allows making direct reference to table fields in your database.

Mathematical functions

Sum

Sum (number1;number2...) or Sum (interval1;interval2...) returns the sum of the numbers of the selection.

The selection can be continuous or discontinuous.

| | |
|---------------------|--|
| Average | Average (number1;number2...) or Average (interval1;interval2...) returns the average value of the selected cells. The selection can be continuous or discontinuous. |
| Min | Min (number1;number2...) or Min (interval1;interval2...) returns the minimum value among the values of the selected cells. The selection can be continuous or discontinuous. |
| Max | Max (number1;number2...) or Max (interval1;interval2...) returns the maximum value among the values of the selected cells. The selection can be continuous or discontinuous. |
| Abs | Abs (TheDigit) returns the absolute value of <i>TheDigit</i> . Abs returns <i>TheDigit</i> without the preceding + or - symbol. |
| Rounding | Rounding (TheDigit;NumDecimal) returns the rounded number of <i>TheDigit</i> with a precision equal to <i>NumDecimal</i> . |
| SquareRoot | SquareRoot (TheDigit) returns the square root of <i>TheDigit</i> . <i>TheDigit</i> must be positive or null, otherwise 4D View returns an error message. |
| Log | Log (TheDigit) returns the base <i>e</i> logarithm (also called natural logarithm) of <i>TheDigit</i> . <i>TheDigit</i> must be greater than 0, otherwise 4D View returns an error message. |
| Exp | Exp (TheDigit) returns the exponential for <i>TheDigit</i> . |
| Random | Random sends back a random number between 0 and 0,9999999... |
| Count | Count (Interval) returns the number of non-empty cells found in <i>Interval</i> . |
| Variance | Variance (number1;number2...) or Variance (interval1;interval2...) returns the variance of selected cells. The selection can be continuous or discontinuous. |
| StdDeviation | StdDeviation (number1;number2...) or StdDeviation (interval1;interval2...) returns the standard deviation of a population based on a sample of this population. Standard deviation is a measure of the dispersion of values in relation to the average (average value). |

number1, number2,... represent the numeric arguments corresponding to a sample of the population. You can also substitute a single matrix or a matrix reference to arguments separated by semicolons.

Logical values, such as True and False and the text are ignored.

The StdDeviation function works on the hypothesis that arguments represent only a sample of the population. The standard deviation is calculated using the “without bias” method, or “n-1”. The StdDeviation function uses the following formula:

$$\sqrt{\frac{n\sum x^2 - (\sum x)^2}{n(n-1)}}$$

String functions

String

String(TheDigit;{TheFormat}) returns a string of characters composed of *TheDigit* numbers formatted according to *TheFormat*.

This function also applies to dates.

When a numeric or date value has been converted into a string, 4D View considers it as a character type string.

SubString

SubString (TheString;StartingFrom;Length)) returns a string of characters composed of characters from *TheString* starting from the *StartingFrom* character and with a number of characters equal to *Length*.

If *StartingFrom* is greater than the length of *TheString*, SubString does nothing. If *Length* is omitted, SubString returns all characters starting from the *StartingFrom* character.

Length

Length (TheString) returns the number of characters of *TheString*.

Find

Find (value_to_find;interval_to_search;return_interval) searches for a value in an interval and returns the corresponding value used in the return interval.

value_to_find must contain the reference of a cell that actually contains the value to find.

Search interval must be sorted since Find uses the first value higher or equal to the value set as *value_to_find*.

▼ Example:

| =FIND(A8;B1:B6;C1:C6) | | | | |
|-----------------------|-----|---|-----|--|
| | A | B | C | |
| 1 | | 1 | 520 | |
| 2 | | 2 | 380 | |
| 3 | | 3 | 697 | |
| 4 | | 4 | 437 | |
| 5 | | 5 | 578 | |
| 6 | | 6 | 185 | |
| 7 | | | | |
| 8 | 3 | | | |
| 9 | 697 | | | |
| 10 | | | | |

“3”, located in the A8 cell, is the value to find. B1:B6 is the interval to search. C1:C6 is the return_interval. The B3 cell contains the value to find. The corresponding value in the return interval is in the C3 cell, that is, “697”.

Logical functions

If

If (logic_test; value_if_true; value_if_false) returns *value_if_true* if the result of *logic_test* is true and *value_if_false* if the result of *logic_test* is false.

Use If to run conditional tests on values and formulas of cells. The result of *logic_test* determines the value returned by the function If. *value_if_true* and *value_if_false* can contain any value. If can be called several times in the same method to run more complex tests.

▼ Example: You want cell B1, giving the value of Sales, to be equal to 250. The function:

=If(B1<200;"Declining result";"Good result")

write “Good result” in the cell.

And

And(logical_value1; logical_value2;...; logical_valueN) returns True if the evaluation of all the parameters is true.

And returns False if the evaluation of at least one of the parameters is false.

Or

Or (logical_value1; logical_value2;...; logical_valueN) returns False if the evaluation of all parameters is false.

Or returns True if the evaluation of at least on the parameters is true.

True

True always returns True.

| | |
|--------------|--|
| False | False always returns False. |
| Not | Not (logical_value) returns the opposite of the logical value passed as a parameter. No(True) returns False. No(False) returns True. |
| Empty | Empty (Cell) tests if a cell is empty or not. ▼ Example: =If(Empty(A1);"Error";0) write "Error" if A1 is empty. |

Date and time functions

| | |
|--------------------|---|
| CurrentDate | CurrentDate returns the current date. |
| CurrentTime | CurrentTime returns the current time. |
| AddToDate | AddToDate(date; day_increment; month_increment; year_increment) increments a date value depending on the values passed as parameters. |

Note In 4D View, the day is the unit of measure for date, and seconds for time.

Trigonometric functions

| | |
|---------------|---|
| Pi | Pi returns the value of Pi with a precision of 18 decimals. |
| Sin | Sin(Angle) returns the sine of <i>Angle</i> . <i>Angle</i> is expressed in radians. |
| Cos | Cos(Angle) returns the cosine of <i>Angle</i> . <i>Angle</i> is expressed in radians. |
| Tan | Tan(Angle) returns the tangent of <i>Angle</i> . <i>Angle</i> is expressed in radians. |
| ArcSin | ArcSin(Angle) returns the arc sine of <i>Angle</i> , expressed in radians. <i>Angle</i> must be included in the range -1 to +1, otherwise 4D View returns an error message. |

ArcCos ArcCos(*Angle*) returns the arc cosine of *Angle*, expressed in radians. *Angle* must be included in the range -1 to +1, otherwise 4D View returns an error message.

ArcTan ArcTan(*Angle*) returns the arc tangent of *Angle*, expressed in radians.

Financial functions

CVCompound CVCompound (*i*; *n*; *m*) calculates the current value of a sum using the composed interests.

i is the interest rate for a period, *n* is the number of periods and *m* the monthly payment at the end of each period. CVCompound returns the current value of this investment, if the monthly payments are paid at the end of the period.

- ▼ Example: you have a loan with an 12% annual interest rate (thus 1% per month) over 5 months with monthly payments of 1 000 euros.

$$\text{CVCompound}(1\%;5;1000) = 4853,4312393251$$

Here is the formula for CVCompound:

$$\text{CVCompound}(i;n;m) = m \times \frac{1 - (1 + i)^{-n}}{i}$$

CVSimple CVSimple (*i*; *n*; *f*) calculates the current value of a sum using single interest rates.

i is the interest rate for a period, *n* is the number of periods and *f* the final value at the end of a period. CVSimple returns the current value of this investment, if the monthly payments are paid at the end of the period.

- ▼ Example:

$$\text{CVSimple}(1\%;5;5*1000) = 4757,328438033744$$

Here is the formula for CVSimple:

$$\text{CVSimple}(i;n;f) = \frac{f}{(1 + i)^n}$$

FVCompound FVCompound (*i*; *n*; *m*) calculates the final value of a sum using composed interests.

i is the interest rate for a period, n is the number of periods and m the monthly payment at the end of each period. FVCompound returns the value acquired during this investment, if the monthly payments are paid at the end of the period.

- ▼ Example: you plan on depositing 1 000 euros each month in a savings account, which earns you 12% annual interest, for 35 months.

$\text{FVCompound}(1\%;35;1000) = 41660,275603126$

Here is the formula for FVCompound:

$$\text{FVCompound}(i;n;m) = m \times \frac{(1+i)^n - 1}{i}$$

FVSimple

FVSimple ($i;n;f$) calculates the final value of a sum using single interests.

i is the interest rate for a period, n is the number of periods and f the final value at the end of a period. FVSimple returns the current value of this investment, if the monthly payments are paid at the end of the period.

- ▼ Example:

$\text{FVSimple}(12\%;35;35*1000)=1847986,69$

Here is the formula for FVSimple:

$$\text{FVSimple}(i;n;f) = f \times (1+i)^n$$

PeriodNumber1

PeriodNumber1($i;m;p$) returns the number of periods needed to reimburse a loan.

i is the interest rate for a period, m is the monthly payment paid at the end of the period and p is the current value of the loan.

- ▼ Example: you borrowed 6500 euros with 10.5% annual interest and you reimburse 166.42 euros per month.

$\text{PeriodNumber1}(10.5\%/12;166,42;6500) = 48$

Here is the formula for PeriodNumber1:

$$\text{PeriodNumber1}(i;m;p) = \frac{\log((m-1 \times p)/m)}{\log(1+i)}$$

PeriodNumber2

PeriodNumber2($i;f;p$) returns the number of periods needed to reimburse a loan.

i is the interest rate for a period, f is the acquired value of the loan and p is the current value of the loan.

- ▼ Example: you borrowed 3000 euros with 10.5% annual interest and you know that the total monthly payments will be 5000 euros.

$$\text{PeriodNumber2}(10.5\%/12;5000;3000) = 58$$

Here is the formula for PeriodNumber2:

$$\text{PeriodNumber2}(i;f;p) = \frac{\log(f/p)}{\log(1+i)}$$

Rate1

Rate1 ($n;m;p$) returns the interest rate corresponding to these values.

n is the number of periods, m is the monthly payment paid at the end of the period and p is the current value of the loan.

- ▼ Example: you borrowed 3000 euros and your monthly payments are 1 000 euros over 5 months.

$$\text{Rate1}(5;1000;3000) = 0.19$$

Here is the formula for Rate1:

$$i = \frac{m \times (1 - (1+i)^{-n})}{p}$$

Rate2

Rate2 ($n;f;p$) returns the interest rate corresponding to these values.

n is the number of periods, f is the acquired value and p is the current value of the loan.

- ▼ Example: you borrowed 2800 euros and your monthly payments are 6 000 euros over 5 months.

$$\text{Rate2}(5;6000;2800) = 0.16$$

The following is used to solve Rate2; if it does not converge, 4D View returns an error:

$$u_{n+1} = \frac{m \times (1 - (1 + u_n)^{-n})}{p}$$

MonthlyValue

MonthlyValue($i;n;p$) returns the value of the monthly loan payments.

i is the interest rate for a period, n is the number of periods and p is the current value of the loan.

- ▼ Example: you borrowed 6500 euros over 48 months with 10.5% interest.

MonthlyValue(10.5%/12;48;6500) = 166,42

Here is the formula for MonthlyValue:

$$\text{MonthlyValue}(i;n;p) = \frac{i}{1 - (1 + i)^{-n}}$$

Cell references (functions)

Type

Type (value) returns the value type as a character. Use the Type function when the execution of another function depends on the type of value contained in a specific cell.

The Type function is particularly useful when calling functions that accept different types of data. Use the Type function to see the type of data returned by a function.

value can be any value accepted by 4D View, for example, a number, text, logical value, etc.

| If the value argument is: | Type returns: |
|---------------------------|---------------|
| Number | N |
| Text | S |
| Date | D |
| Time | H |
| Date and time | T |
| Picture | P |
| Boolean | B |

FindCell

FindCell (value_to_find;search_range) searches for a value in a range of cells and returns the reference of the cell in which the value was found. This internal reference cannot be displayed; it can only be used by other functions that accept a cell reference as parameter. If the search is unsuccessful, an error is returned.

value_to_find must contain the reference of a cell that actually contains the value to find.

- ▼ Example: Assuming cell C3 contains 10.

=FindCell(C3;A1:B9)

... returns 10 if the value is actually found in the A1:B9 cell range, otherwise it returns an error.

Column

Column{(reference)} returns the column letter of *reference*. The *reference* argument can be a cell or a range of cells.

If the *reference* argument is omitted, the default argument is the reference of the cell in which the Column function is placed.

- ▼ Example: Assuming cell C3 contains 10, as well as cells A4 and B2.

=Column(FindCell(C3;A1:B9))

... returns column A. The search starts from cell A1 to A9, then B1, etc. Searches stop when the search value is found.

Row

Row{(reference)} returns the row number of *reference*. The *reference* argument can be a cell or a range of cells.

If the *reference* argument is omitted, the default argument is the reference of the cell in which the Row function is placed.

- ▼ Example: Assuming cell C3 contains 10, as well as cells A4 and B2.

=Row(FindCell(C3;A1:B9))

... returns row 4. The search starts from cell A1 to A9, then B1, etc. Searches stop when the search value is found.

Cell

Cell(cell1) returns the contents of *cell1*. The *cell1* parameter (mandatory) is a character string. This function allows referencing a cell in an absolute manner, equivalent to \$A\$1.

- ▼ To obtain the value contained in cell A1:

=Cell ("A1")

... returns the contents of cell A1

- ▼ Cell A1 contains the string C10. If you enter the following function in cell B2:

```
=Cell(A1)
```

...the function returns the value contained in cell C10. If the string contained in cell A1 is modified, the function will return the value of the new cell “pointed” by cell A1.

- ▼ Cell A1 contains the string C10. If you enter the following function in cell B2:

```
=Column(Cell($A$1))
```

...the function returns C. If the string contained in cell A1 is modified, the function will return the name of the new column “pointed” by cell A1.

Range

Range (cell1; cell2) returns the internal reference of a range of cells (reference cannot be displayed but can be used by other 4D View functions). The cell1 and cell2 parameters are character strings.

- ▼ Examples:

```
=Column(Range ("A1";"A3"))
```

... returns column A.

```
=Row(Range ("A1";"F1"))
```

... returns row 1.

Area

Area returns the identifier, Longint type, of the 4D View area in which this function is used.

Eval4D

Eval4D(“4DCommand”) executes a 4th Dimension command.

This extremely powerful command allows you to perform any operation not only by calling 4th Dimension commands but also with methods that you have created or plug-ins.

Suppose that you want to call the 4D command BEEP and hear a beep every time 4D View recalculates your spreadsheet. Simply write:

```
=Eval4D("BEEP").
```

When you use Eval4D and quotation marks, you are in 4th Dimension. You will not be able to make reference to a cell in the spreadsheet because, at this level, 4th Dimension cannot recognize it. In this case, you can use an alternative syntax: call the 4D command directly, as if it was a formula:

```
=Name_of_4D_Command(A1)
```

For example, to return in cell A1 the number of the month written in cell B1, directly use the 4th Dimension function Month of preceded by the equal sign, in cell A1:

```
=Month of(B1)
```

In this manner, you can also call a method created in 4th Dimension. If you created a method called *Factorial*, directly input the name of this method, preceded by the equal sign, in the 4D View edit area:

```
=Factorial(10)
```

7

Using 4D objects

One of the most powerful features of 4D View is its ability to call and use data from 4D database fields.

4D View provides three levels of interaction between database data and the content of cells in your spreadsheets:

- **Import data:** 4D View imports into cells the current values of 4D fields at the moment they are imported. No dynamic link is kept—once the import is completed, cells contain static values.
- **Dynamic referencing:** 4D View inserts field references into cells or formulas and uses their current value. If the referenced data is modified in 4th Dimension (new field value, modification of the current selection, etc.), the spreadsheet automatically reflects any changes.
- **Dynamic linking:** In this case, data from the database and data written in the spreadsheet are closely linked. When a dynamic link is created between a 4D field and a cell, any changes made in one of two environments (4th Dimension database and 4D View spreadsheet) is immediately made in the other.

You can select which type of interaction to use depending on your needs and the interface that you wish to use.

Note Interactions between 4th Dimension and 4D View are not limited to database data: 4D View can use any 4th Dimension command, function or method. For more information on this, refer to the [chapter “Formulas, Operators, Operands and Functions” on page 113](#) and to the *4D View Language Reference* manual.

Importing data

Importing data is the first level of interaction between a 4th Dimension database and a 4D View spreadsheet. Once the import is done in your 4D View area, there is no dynamic link with the data. If you modify the values of the fields imported in 4D, your spreadsheet will not reflect any of these changes.

4D View allows you to import two types of data in your spreadsheet:

- Values of fields in the database,
- Quick reports.

Importing Fields

The **Import Field...** command in the **Database** menu allows you to display values from the current record selection in a 4D View area.

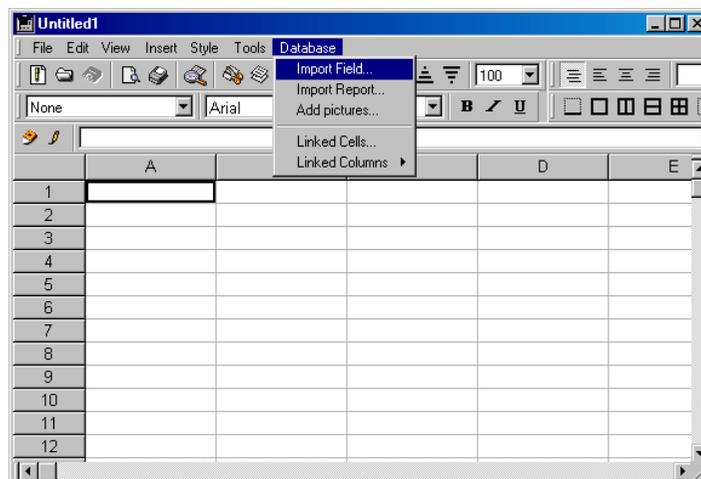
You can work with any records of any table, whether you use 4D View in an external window (in a window created from the **Tools** menu) or included in a form of this table.

- ▶ To import fields in your spreadsheet:

1 Select the cell into which you will import fields.

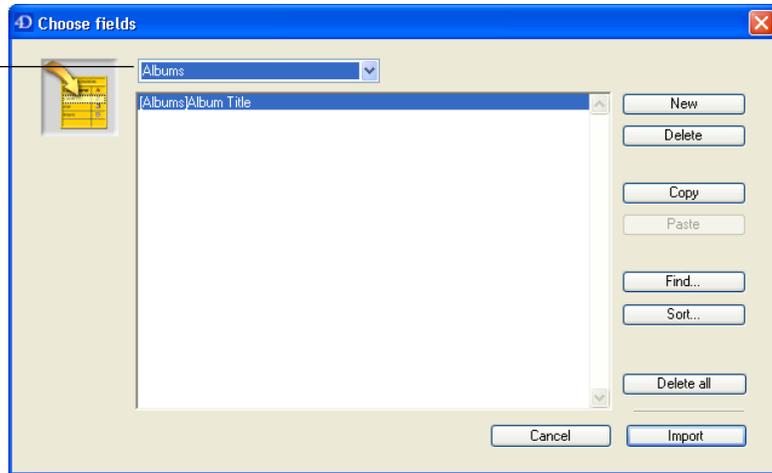
The selected cell is considered as the entry point for the import: imported values will be inserted toward the bottom, starting from this cell. If you import several fields, additional fields will be added in the columns to the right of this cell.

2 Choose the **Import Field...** command from the **Database** menu.



The “Choose fields” dialog box appears:

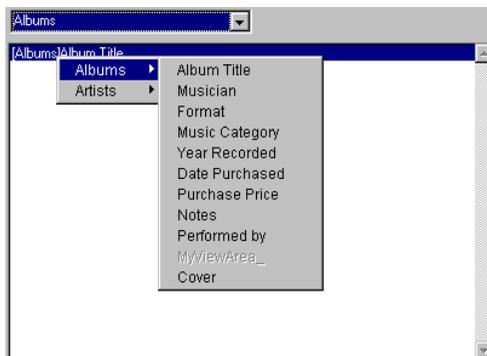
Menu of database tables



By default, a first import row is displayed, which contains the name of the first field of the first table.

3 Click on the row.

A hierarchical pop-up menu appears displaying all tables and fields of the database.



4 Select the table and then the field to import in the hierarchical menu.

5 If you wish to import an additional field, select the table containing the field to import from the menu located at the top of the window.

6 Click the New button to create a new import row.

7 Repeat steps 3-6 for each new row.

Each field will be imported in a new column in the 4D View area.

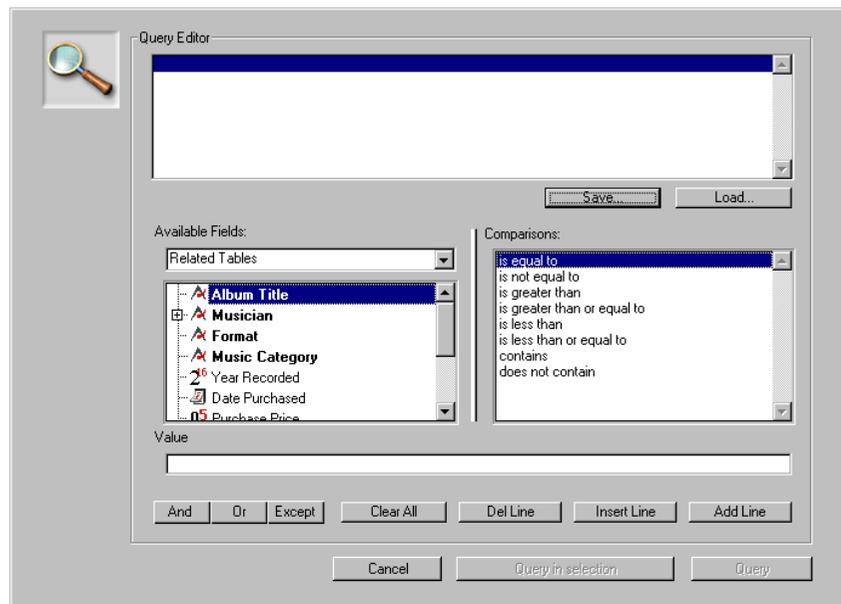
You can also modify the import list using the following commands:

- **Delete:** Remove the selected row.
- **Copy:** Copy the content of the selected row into memory.
- **Paste:** Replace the selected row with the row stored in memory using the **Copy** command.
The Copy/Paste combination allows you to add several rows whose content varies only slightly.
- **Delete all:** Removes all previously-defined rows.

8 If you wish to create a sub-selection of records before importing values, select the import row and click the Find... button.

By default, if you do not perform a search, all values belonging to the current selection of the selected table will be displayed in the 4D View area.

When you click the **Find...** button, the 4th Dimension Query editor dialog box appears allowing you to define the records to import:

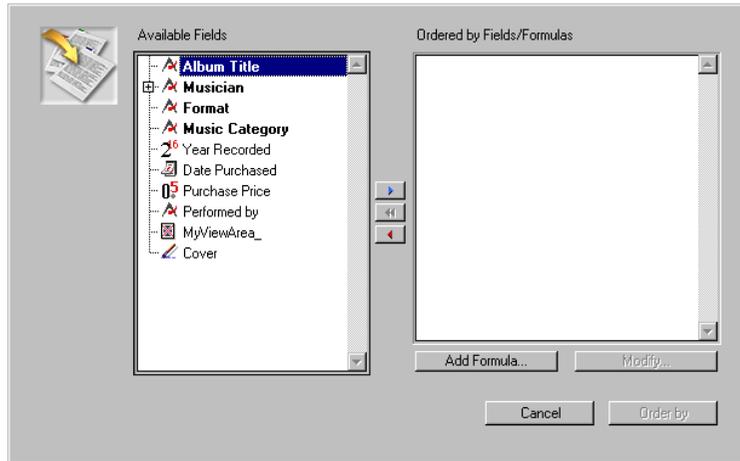


Note For more information on this dialog box, refer to the 4th Dimension *User Reference* manual.

9 If you wish to sort the selection of records to import, select a row and click the Sort... button.

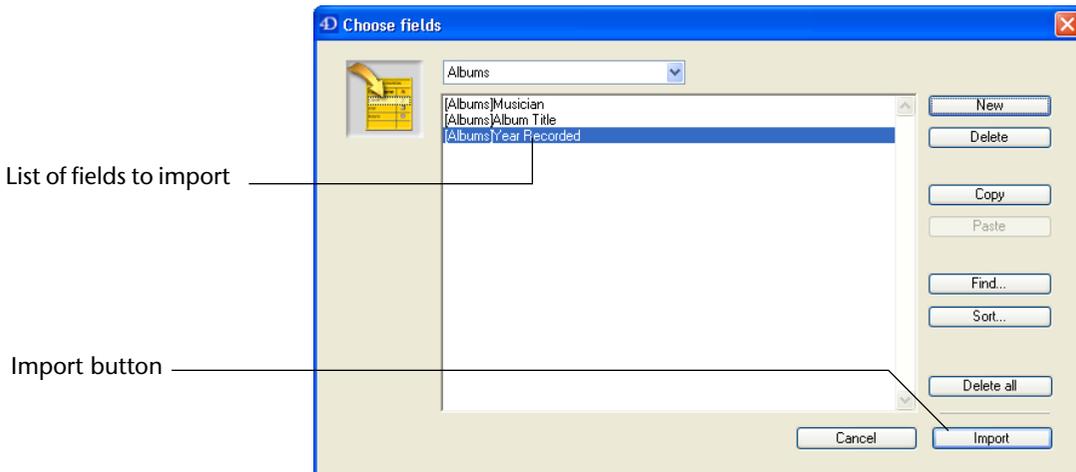
By default, if you do not perform a sort, the imported values will be displayed in the order of the current selection.

When you click the **Sort...** button, the 4th Dimension Order by dialog box appears allowing you to set the order of the records to import:

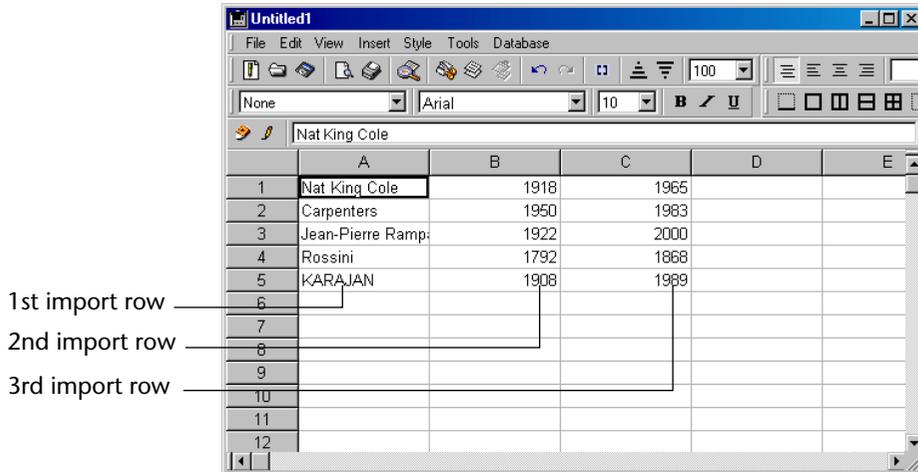


Note For more information on this dialog box, refer to the 4th Dimension *User Reference* manual.

10 Once the import list has been set, click on the Import button:



The current values of the selection are then inserted into the 4D View area:.



You can see that the values are pasted “as is” in the area; no references are included. Once the data has been imported, the values located in the 4D View area and those in the fields are completely independent. If you select the **References** command in the **View** menu, the imported data is not modified.

Importing Reports

The **Import Report...** command in the **Database** menu allows you to display, in a 4D View area, values from calculations made in the current record selection. These values are imported using a quick report that can be loaded from your hard drive or created.

Note For more information on quick reports, refer to the 4th Dimension *User Reference* manual.

As with the previous command (see the [paragraph “Importing Fields” on page 134](#)), the result of this import is not dynamically linked to data. It is simply a “photograph” of the data at the moment it is imported.

The interest of using quick reports in a 4D View area is in their ability to save to disk and load report parameters, to include aggregate calculations (mean, sum, etc.), styles, etc.

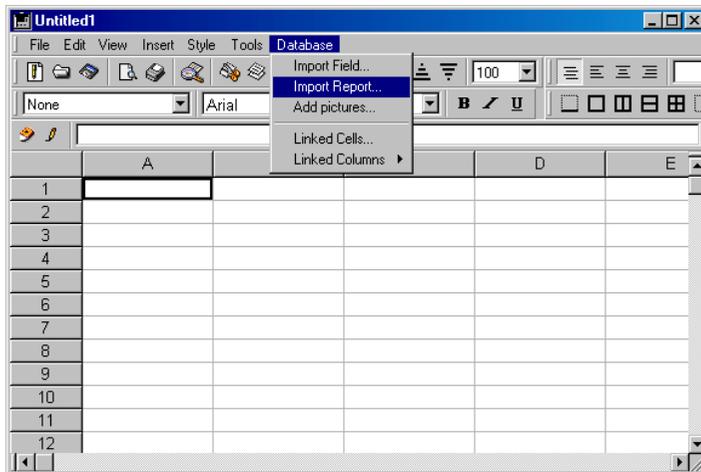
Unlike with importing fields, importing reports does not allow you to directly modify the current selection of tables during an operation using a search. You need to make sure that the current selection contains the data to import.

► To import a report in your spreadsheet:

- 1 **Set the current selection of 4D records whose values you wish to use.**
- 2 **Select the cell from where you will import the report.**

The selected cell is considered as the entry point for the import: imported values will be inserted toward the bottom, starting from this cell. If you import several columns, they will be added in the columns to the right of this cell.

- 3 **Select Import Report... from the Database menu.**



A dialog box appears listing the tables of the database:



4 Select the table to apply the imported report.

The quick report editor allows creating of reports using the fields of a table as well as possibly those of linked tables (if the link is automatic).

5 Define your report using the 4D Quick report editor.

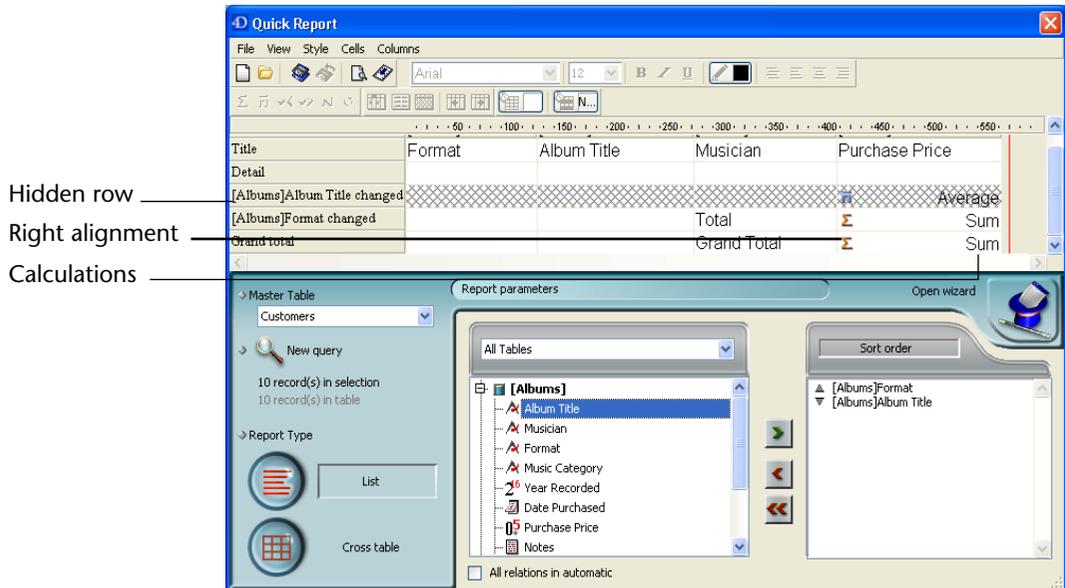
For more information on this editor, refer to the 4th Dimension *User Reference* manual.

4D View allows you to use any 4D Quick report editor functions:

- Any type of rows, including headers, footers, page breaks,
- Hidden rows or columns (do not appear in imported columns),
- Calculations (sum, mean, etc.)
- Columns calculated using the 4D formula editor¹,
- Sort and repeated values options for columns.

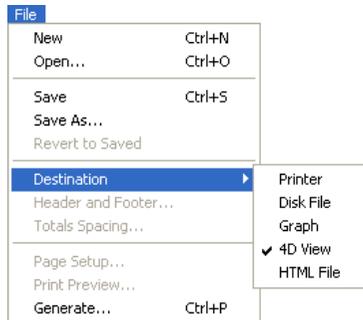
Note Columns are not automatically resized when importing a report.

- Character styles.



1. Calling methods or specific commands from the formula editor requires a specific configuration. For more information about this, refer to the description of the SET ALLOWED METHOD command in the ans le manuel 4th Dimension *Language Reference* manual.

6 Select 4D View in the File>Destination sub-menu of the Quick Report editor.



7 Choose Generate... in the File menu of the Quick Report editor to generate the report.

The 4D View area now displays the report:

The screenshot shows the '4D View Quick Report 2' window. The report is displayed in a table format with the following data:

| | A | B | C | D | E |
|----|---------------|--------------------|-------------------|-----------------------|---|
| 1 | Format | Album Title | Musician | Purchase Price | |
| 2 | Cassette | Thriller | Michael Jackson | 15.05 | |
| 3 | | Greatest Hits | Aretha Franklin | 15.25 | |
| 4 | | Classics - Bach | Bach | 12.99 | |
| 5 | | Best of | Miles Davis | 15.45 | |
| 6 | | Bad | Michael Jackson | 20.05 | |
| 7 | | | Total | 78.79 | |
| 8 | CD | Jagged Little Pill | Alanis Morissette | 12.25 | |
| 9 | | Faith | George Michaels | 12.27 | |
| 10 | | Eponymous | REM | 14.75 | |
| 11 | | Back to Bedlam | James Blunt | 9.99 | |
| 12 | | | Total | 49.26 | |
| 13 | | | Grand Total | 128.05 | |

You can now modify the appearance of the area or the inserted values. As when importing fields, the values are pasted “as is” in the area, no references are included.

Saving and loading the report

The parameters of the last generated report are kept throughout the session. If you wish to save the report, select the **Import Report...** command and then choose the **Save** or **Save as...** commands in the 4th Dimension **File** menu. To open the report later on, simply use the **Open...** command to load a previously saved report.

Dynamically Referencing Fields

Dynamically referencing fields allows a higher level of interaction between 4th Dimension and 4D View.

This consists of inserting a field reference in your cells, either directly (cell value) or inside a formula used to calculate the value of a cell. For inserting images (**Add pictures...** command), the reference is not attached to a cell but to the entire spreadsheet.

When displaying a 4D View area, this reference is replaced by the current cell value. A dynamic link is kept between the area and the 4D data: if the value of the field is changed, the 4D View area will use the new value.

This behavior is particularly useful in cases where included areas use document templates: simply insert field references in the template, the values will be automatically updated when viewing records:

Database field

Field reference

4D View area saved as a template

Entry for Products - Sales Forecast

ProductID: VH52
Name: Japanese Tree
Prices: Direct: 175,75 Network: 157,25 Phone: 181,3

File Edit View Insert Style Tools Database

None Arial 10 B U

= [Products]Name

| | A | B | C | D | E |
|---|-----------------|-----------------|--------------------|-----------------|----------------------|
| 1 | Product: | Japanese Tree | | Date : | 03/07/02 |
| 2 | | | | | |
| 3 | | | Sales Price | Exp. Qty | Exp. Turnover |
| 4 | | Direct Sales | 175,75 | 100 | 17575 |
| 5 | | Network Sales | 157,25 | 750 | 117937,5 |
| 6 | | Telephone Sales | 181,3 | 250 | 45275 |

Entry for Products - Sales Forecast

ProductID: C587
Name: Cleisticactus jujuye
Prices: Direct: 202,24 Network: 190,99 Phone: 210,55

File Edit View Insert Style Tools Database

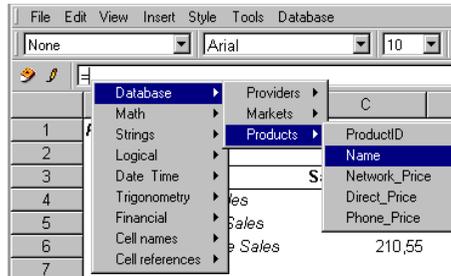
None Arial 10 B U

= [Products]Name

| | A | B | C | D | E |
|---|-----------------|-----------------------------|--------------------|-----------------|----------------------|
| 1 | Product: | Cleisticactus jujuye | | Date : | 03/07/02 |
| 2 | | | | | |
| 3 | | | Sales Price | Exp. Qty | Exp. Turnover |
| 4 | | Direct Sales | 202,24 | 100 | 20224 |
| 5 | | Network Sales | 190,99 | 750 | 143242,5 |
| 6 | | Telephone Sales | 210,55 | 250 | 52637,5 |
| 7 | | | | | |
| 8 | | Forecast Sales Total | | | 216104 |
| 9 | | | | | |

Note For more information on document template, refer to the [paragraph "Saving a document as a template" on page 71.](#)

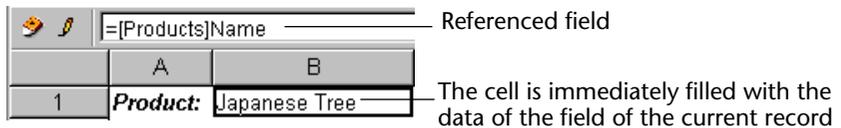
- ▶ To insert a 4th Dimension field reference in a 4D View area:
 - 1 **Select the cell where you will insert the field.**
 - 2 **In the 4D View formula bar input area, insert the “=” character.**
 Inputting the = character is necessary when you insert a direct field reference (the cell displays the current content of the field).
 When you insert a field reference within a formula, the = character is no longer required.
 - 3 **In the same area, right-click or Control+Click (under Mac OS only).**
 The hierarchical pop-up menu of formulas and references appears. The **Database** command lists all tables and fields of the database.
 - 4 **Choose the Database command, then the table and the field to insert:**



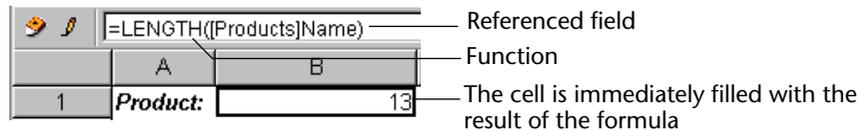
- 5 **Validate your selection by holding down the Enter key or by clicking the validate icon in the formula bar.**

The field reference is then inserted in the cell or the formula as [TableName]FieldName].

Direct reference



Reference used in a formula



If a current record is defined in the table, the current value of the field replaces the reference in the call, unless you have deselected the **Automatic Calculation** command in the **Tools** menu of the area (see the [paragraph “Calculating Dynamic References” on page 162](#)).

Inserting Pictures

The **Add pictures...** command in the **Database** menu allows insertion of a 4D picture reference in your spreadsheet, which comes either from a field, a variable or the Picture library.

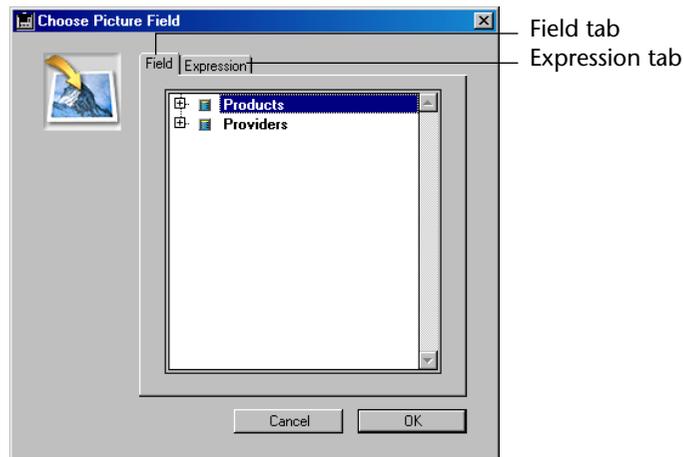
The inserted reference is not linked to a cell but to the entire spreadsheet. However, you can modify its display using the “Pictures Attributes” dialog box. This dialog box is detailed in the [paragraph “Using Pictures” on page 105](#).

- ▶ To insert an picture field reference:

1 Select the **Add pictures...** command in the **Database** menu.



The following dialog box appears:



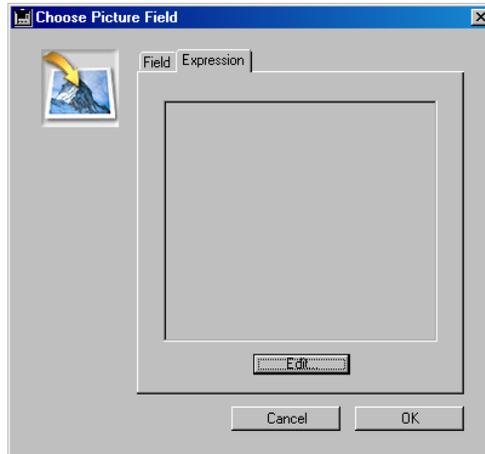
The Field tab displays the list of database tables containing at least one Picture field.

2 To insert a Picture field reference, expand the table containing the field and select it (see step 5).

OR

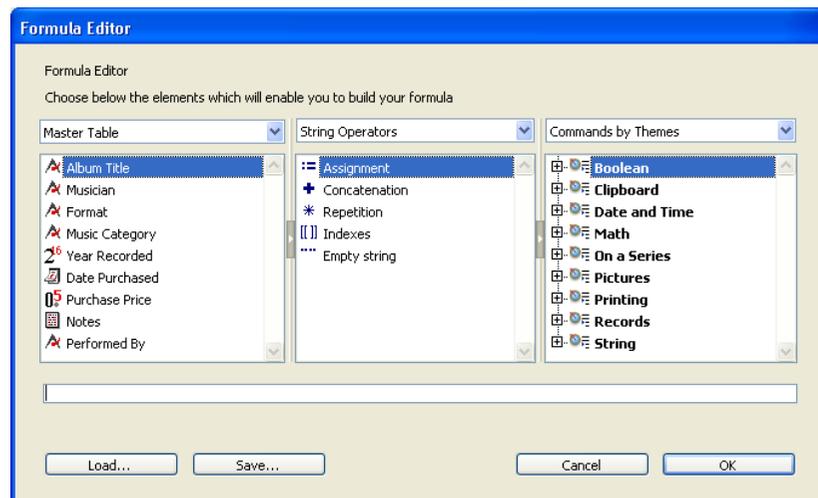
To insert an Picture reference from a 4D expression, click on the Expression tab.

The following page appears:



3 Click on the Edit... button

The 4th Dimension formula editor is displayed:



This editor displays a list of database fields, a list of operators and a list of 4D commands that are allowed in formulas by default.

This third list also contains, where applicable, the names of project methods that are “allowed” in formulas. If you want for the 4D View user to be able to use project methods, you must declare them explicitly using the SET ALLOWED METHODS command. Similarly, if you want for the user to be able to access 4D View commands or 4D commands that are not allowed by default, you must create and allow project methods that specifically call these commands. For more information, refer to the 4th Dimension *Language Reference* manual.

4 Enter a formula and click OK.

You must enter a formula returning a Picture type expression. For more information on the formula editor, refer to the 4th Dimension *User Reference* manual.

5 Validate the “Select an image field” dialog box by clicking on the OK button.

The picture reference is inserted in the spreadsheet.

You can move it or resize it using your mouse. You can also modify its properties by double-clicking on it.

To remove an image reference, select it and then hold down the **Return** or **Del** key.

Viewing Field References

You can view field references inserted in your 4D View area at any time (as well as other dynamic references): select the **References** command in the **View** menu. All inserted references appear in the area:

| | A | B | C | D | E |
|----|--------------------------|-------------------|-------------|---------------------|---------------|
| 1 | Product: =[Products]Name | | | Date : =CURRENTDATE | |
| 2 | | | | | |
| 3 | | | Sales Price | Exp. Qty | Exp. Turnover |
| 4 | Direct Sales | = [Products]Dire | | 100 =C4*D4 | |
| 5 | Network Sales | = [Products]Netw | | 750 =C5*D5 | |
| 6 | Telephone Sales | = [Products]Phor. | | 250 =C6*D6 | |
| 7 | | | | | |
| 8 | Forecast Sales Total | | | | =SUM(E4:E6) |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |

Field References in External Windows

You are perfectly able to insert field references in 4D View areas in an external window. The value of the current record of the referenced table (opened in its own window) is used.

However, in this environment, you will need to keep in mind the following:

- When the table of the referenced field does not contain a current record, 4D View displays an error message in the cell containing the reference: *“error: this field does not exist.”*

- If the current value of the field is modified while the 4D View window is in the foreground, the redrawing of this window is not automatic: it must be provoked using the **Calculate now** command in the **Tools** menu, or the PV REDRAW language command.

Dynamic Links

4D View allows, without programming, establishing of a direct connection between a 4D View area and 4th Dimension. Once this connection or *link* has been established, there is an interdependence between the two environments: the link acts upon the selection.

During link creation, the values of the current selection determine those of the linked cells. Later on, one will influence the other and vice-versa.

4D View allows defining of four types of dynamic links:

- Link between a cell and a 4D field,
- Link between a cell and a 4D variable,
- Link between a column and a 4D field,
- Link between a column and a 4D array.

Linking Cells to Fields or Variables

When you link a cell to a field or a variable, the modification of the cell content is reflected in the field linked to the current record or the value of the linked variable.

This mechanism also works in the other direction: any modification of field or variable values linked to cells, or changes in the current record, cause modification of the linked cell content.

This feature is particularly useful for user interfaces based on arrays.

Defined links are saved at the same time as the 4D View area. They remain active for the area as long as they are not removed.

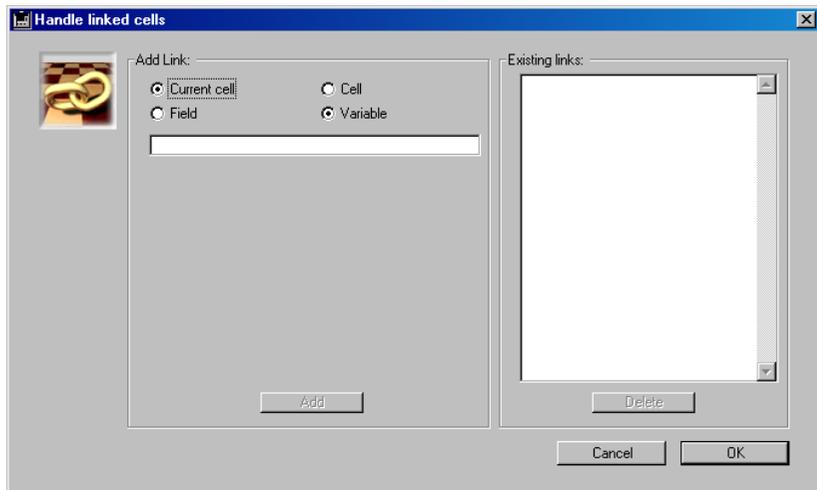
Creating a cell link

You can link a cell to a field or a variable of the 4D database. In this case, the 4D View area will display the current value of the field or the variable. Any changes in this value in 4D will be immediately made in the 4D View area. Conversely, the linked cell remains enterable: any modification made to the value of the cell will be made in 4D.

- ▶ To link a cell to a field or a variable:
 - 1 Select the cell to link (if you wish to link the current cell).
 - 2 Select the **Linked Cells...** command in the **Database** menu.



The linked cells management dialog box appears:



You can link either the selected cell (current cell) or a cell whose reference you may enter.

By entering the cells reference, you can simultaneous create as many links as desired.

- 3 If you do not want to create a link with the current cell, click on the **Cell** button.

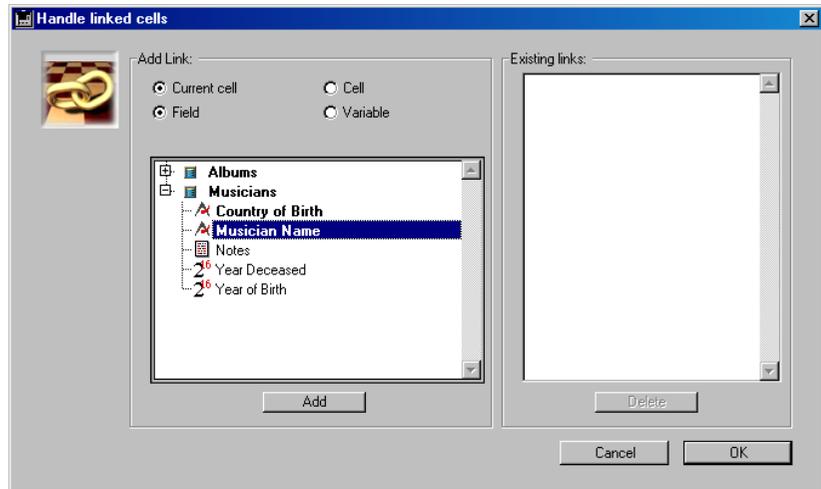
An additional field appears, allowing you to enter the cell to link:



You must enter the coordinates of the cell as LetterColumnRowNumber, for example, "E12".

- 4 If you want to create a cell/field link, click on the **Field** button.

An area displaying the list of tables and fields of the database appears, allowing you to set which field to link to the cell:

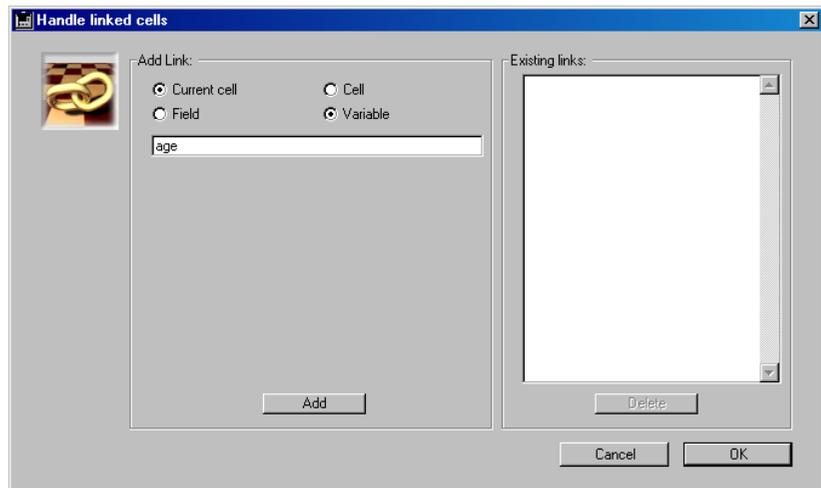


You can link any type of 4D field to a cell, with the exception of BLOB type fields.

OR

If you want to create a cell/variable link, click the Variable button.

In this case, an input area appears, allowing you to enter the name of the variable to link:

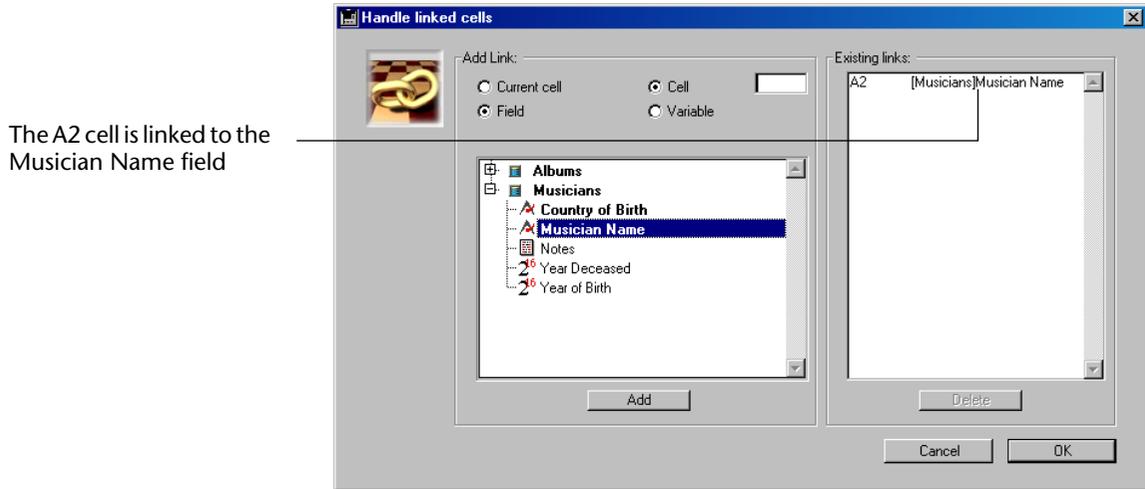


You can use any type of variable process or interprocess, with the exception of BLOB type variables.

If you create a link in a 4D View area in an external window, you must use interprocess variables (variables whose name starts with the <> character).

- Notes*
- Array type variables cannot be used.
 - For more information on variables, refer to 4th Dimension documentation.

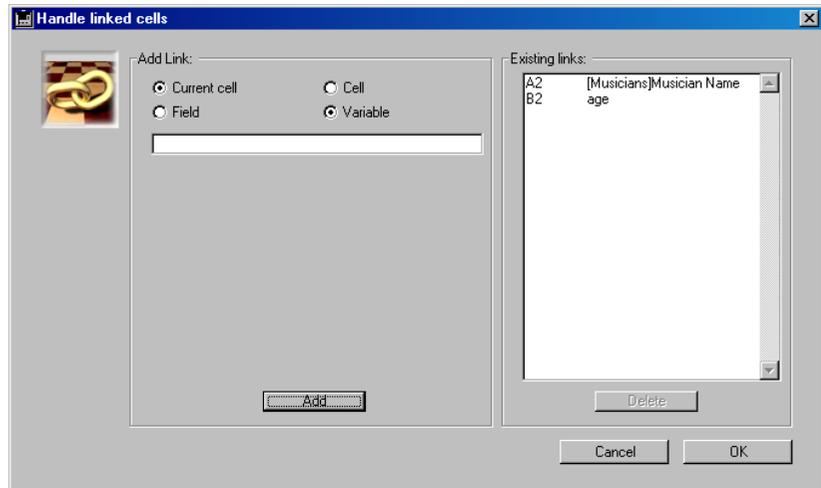
5 Click the Add button to create the link:



Note The right side of the window does not display the links of columns that may already be defined for the area (see the [paragraph “Linking Columns to Fields or Arrays” on page 154](#)). If you try to create a field link in a cell already used for a column link, 4D View does nothing.

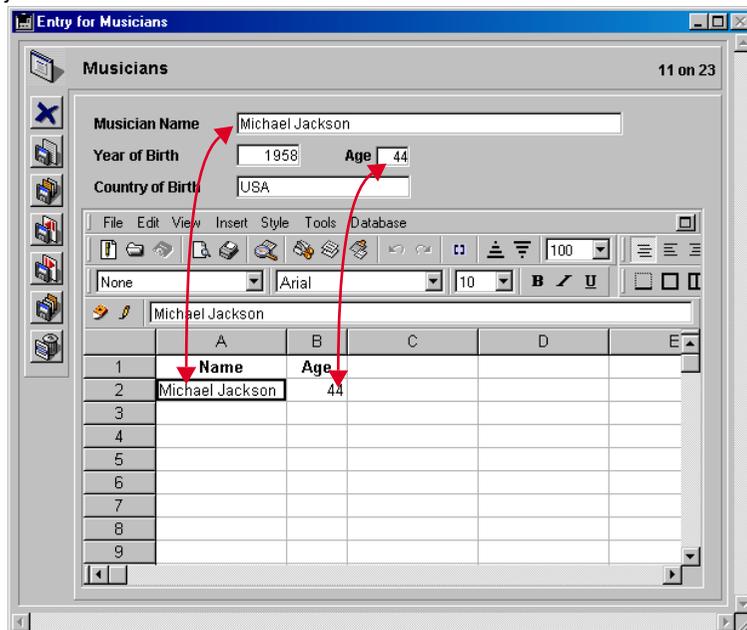
6 Repeat steps 3-5 as many times as necessary.

You can simultaneously define cell/field links and cell/variable links in the same 4D View area:



7 Validate the dialog box using the OK button.

The linked cells are then filled with the values of fields of the current record of the selected table, or with the values of variables whose name you entered:

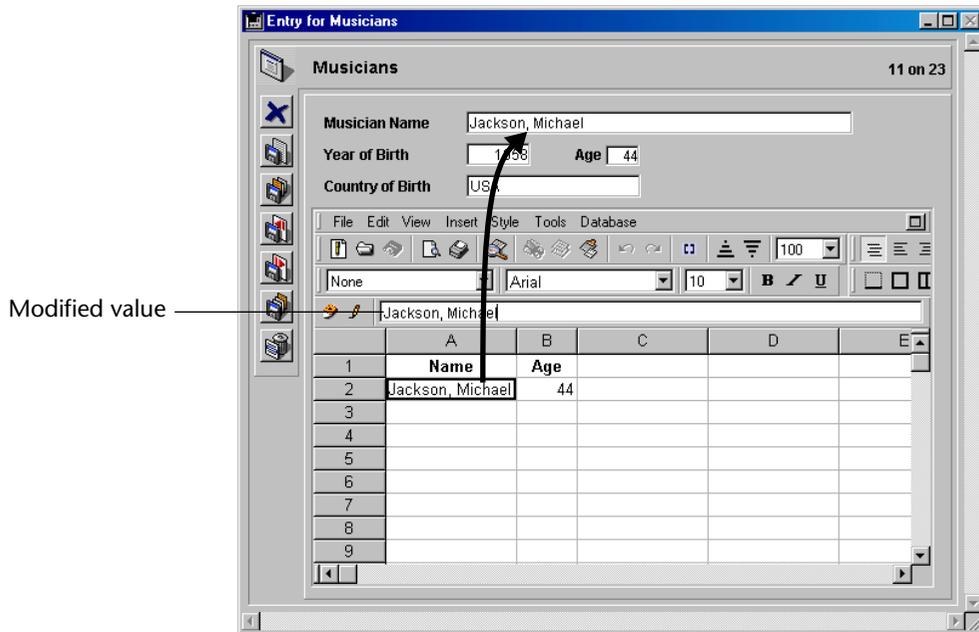


Note No value appears if there is no current record in the defined table or if the linked variable does not exist.

You can see that the input area of the 4D View formula bar displays the value contained in the cell, and not a reference:

| | A | B |
|---|-----------------|------------|
| 1 | Name | Age |
| 2 | Michael Jackson | 44 |

This value can be modified: any modification is carried out in the linked field as soon as the cell is validated:



To view links in a spreadsheet (as well as other dynamic references), select the **References** command in the **View** menu. The links appear as follows:

| | A | B |
|---|-----------------|------------|
| 1 | Name | Age |
| 2 | [Musicians]Name | Age |

Cell linked to the Musician name field

Cell linked to the Age variable

Removing a cell link

If you want to unlink certain cells from your database:

- 1 **Select the Linked Cells... command in the Database menu.**
- 2 **In the list of linked cells, select the row containing the link that you would like to remove.**
- 3 **Click the Delete button.**
- 4 **Validate the dialog box using the OK button.**

Note You can also apply the **Delete...** command or **Clear>Formulas** in the **Edit** menu to a linked cell to remove the link.

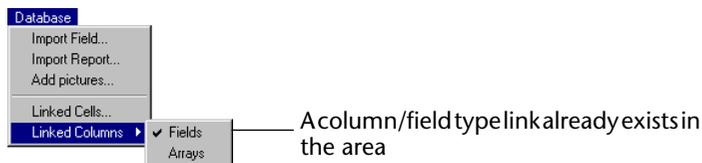
Linking Columns to Fields or Arrays

As with the links described above, the columns/fields and columns/arrays links allow creation of dynamic relations in both directions between a 4D View area and 4D database data: any modifications of linked cell content is immediately carried over to 4th Dimension and vice-versa.

This type of link allows filling of several rows of the 4D View area:

- If you create a column/field link, the values of all current selection records are inserted in the column.
- If you create a column/array link, all elements of the array are inserted into the column.

The two types of column links cannot be mixed in the same area. The **Linked columns** command in the **Database** menu in 4D View indicates the use of a checkmark if a certain type of link already exists in the area:



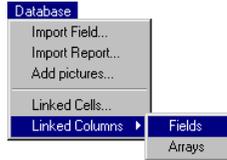
Unlike cell links, you cannot choose the location of linked columns in the 4D View area: the first linked column is column A, the next is column B, and so on. Linked column values also start in row 1. Once the link is defined, a row cannot be inserted or removed using 4D View commands. For more information on this, refer to the [paragraph "Using linked columns" on page 161](#).

Defined links are saved at the same time as the 4D View area. They remain active for the area as long as they are not removed.

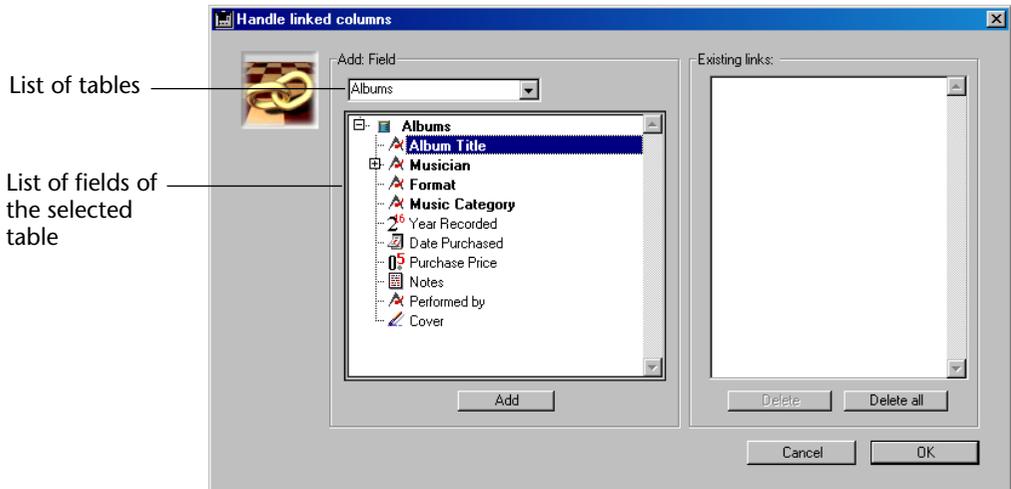
Creating a column/field link

- To link a column to a field:

- 1 In the Database menu, select the Linked Columns then Fields commands.



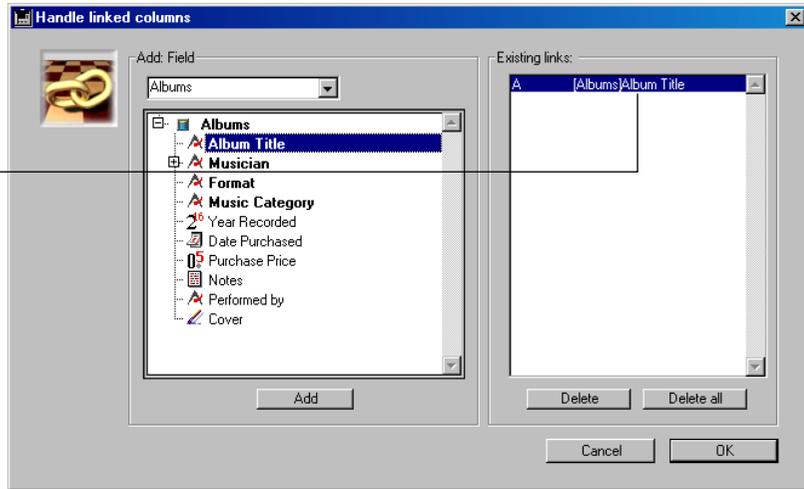
The linked columns management window appears:



- 2 In the list of tables, select the table you want to create a dynamic link with.
- 3 Click on the field to which you will link values.
You can use any type of 4D field, except for BLOB type fields.
- 4 Click on the Add button.

The defined link is displayed in the right side of the window:

The AlbumTitle field is linked to column A



Note The right side of the window does not display cell links that may already be defined for the area (see the [paragraph “Linking Cells to Fields or Variables” on page 148](#)). If the column used contained a linked cell, the latter is moved below the inserted column.

5 Repeats steps 2-4 as many times as necessary.

Additional linked columns will be columns B, C, etc. You may not set a column used for a link.

Different linked columns must contain the same number of values. If you set several links with tables not having the same number of current records, 4D View will display the number of values contained in the smallest selection for each column.

6 Click OK to validate the dialog box.

Linked columns are then filled with the values of fields of the current selection:

4D User environment window

External 4D View window

| | A | B | C | D |
|----|---|--------------------------|---|----|
| 1 | Nat King Cole's Greatest Love Songs | Nat King Cole | | 45 |
| 2 | The Best of the Sylistics | Stylistics, The | | 22 |
| 3 | Johnny Mathis, 16 Most Requested Songs | Johnny Mathis | | 54 |
| 4 | Best of B. B. King | B. B. King | | 78 |
| 5 | Carpenters - Their Greatest Hits | Carpenters, The | | 87 |
| 6 | Jazzis Magazine April 1995 Collectio | Various | | 87 |
| 7 | Virtuoso - Ludwig Van Beethoven | Berliner Philharmoniker | | 87 |
| 8 | Temptations 25th Anniversary Volum | Temptations, The | | 58 |
| 9 | Brahms Piano Quintet - Clarinet Quir | Benda Musicians, The | | 17 |
| 10 | Best of Gladys Knight & the Pips, 1973-1988 | Gladys Knight & the Pips | | 87 |
| 11 | Bad | Michael Jackson | | 72 |
| 12 | Double Good Everything | Smokey Robinson | | 75 |
| 13 | Gettin' Ready | Temptations | | 86 |
| 14 | The Long Run | Eagles | | 88 |
| 15 | Kool & The Gang Spin Their Top Hits | Kool & The Gang | | 68 |
| 16 | Lucille and Other Classics by Kenny | Kenny Rogers | | 44 |
| 17 | Whitney Houston | Whitney Houston | | 87 |
| 18 | Season for Love | London Symphony Orche | | 36 |
| 19 | Johnny Mathis: In The Still Of The Ni | Johnny Mathis | | 63 |
| 20 | Thriller | Michael Jackson | | 54 |
| 21 | | | | |
| 22 | | | | |

Note No value appears if there is no current selection in one of the linked tables.

As with linked cells, the input area of the 4D View formula bar displays the value contained in each cell, and not a reference.

Also, any value can be modified; any modifications are made in the field of the linked record as soon as the cell is validated.

To view the links of columns in a spreadsheet (as well as other dynamic references), select the **References** command in the **View** menu. Columns links appears as follows:

| | A | B | C | D |
|----|-------------------------|----------------------|----------------------------|---|
| 1 | [Albums]Album Title{1} | [Albums]Musician{1} | [Albums]Purchase Price{1} | |
| 2 | [Albums]Album Title{2} | [Albums]Musician{2} | [Albums]Purchase Price{2} | |
| 3 | [Albums]Album Title{3} | [Albums]Musician{3} | [Albums]Purchase Price{3} | |
| 4 | [Albums]Album Title{4} | [Albums]Musician{4} | [Albums]Purchase Price{4} | |
| 5 | [Albums]Album Title{5} | [Albums]Musician{5} | [Albums]Purchase Price{5} | |
| 6 | [Albums]Album Title{6} | [Albums]Musician{6} | [Albums]Purchase Price{6} | |
| 7 | [Albums]Album Title{7} | [Albums]Musician{7} | [Albums]Purchase Price{7} | |
| 8 | [Albums]Album Title{8} | [Albums]Musician{8} | [Albums]Purchase Price{8} | |
| 9 | [Albums]Album Title{9} | [Albums]Musician{9} | [Albums]Purchase Price{9} | |
| 10 | [Albums]Album Title{10} | [Albums]Musician{10} | [Albums]Purchase Price{10} | |
| 11 | [Albums]Album Title{11} | [Albums]Musician{11} | [Albums]Purchase Price{11} | |
| 12 | [Albums]Album Title{12} | [Albums]Musician{12} | [Albums]Purchase Price{12} | |
| 13 | [Albums]Album Title{13} | [Albums]Musician{13} | [Albums]Purchase Price{13} | |
| 14 | [Albums]Album Title{14} | [Albums]Musician{14} | [Albums]Purchase Price{14} | |
| 15 | [Albums]Album Title{15} | [Albums]Musician{15} | [Albums]Purchase Price{15} | |
| 16 | [Albums]Album Title{16} | [Albums]Musician{16} | [Albums]Purchase Price{16} | |
| 17 | [Albums]Album Title{17} | [Albums]Musician{17} | [Albums]Purchase Price{17} | |
| 18 | [Albums]Album Title{18} | [Albums]Musician{18} | [Albums]Purchase Price{18} | |
| 19 | [Albums]Album Title{19} | [Albums]Musician{19} | [Albums]Purchase Price{19} | |
| 20 | [Albums]Album Title{20} | [Albums]Musician{20} | [Albums]Purchase Price{20} | |
| 21 | | | | |
| 22 | | | | |

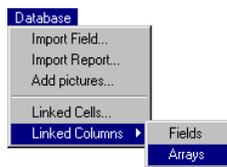
Creating a column/array link

4D View allows you to link columns of your spreadsheet to 4th Dimension arrays. 4D arrays are language objects that can store a large number of variables as an array. For more information on arrays in 4th Dimension, refer to the *4D Language Reference* manual.

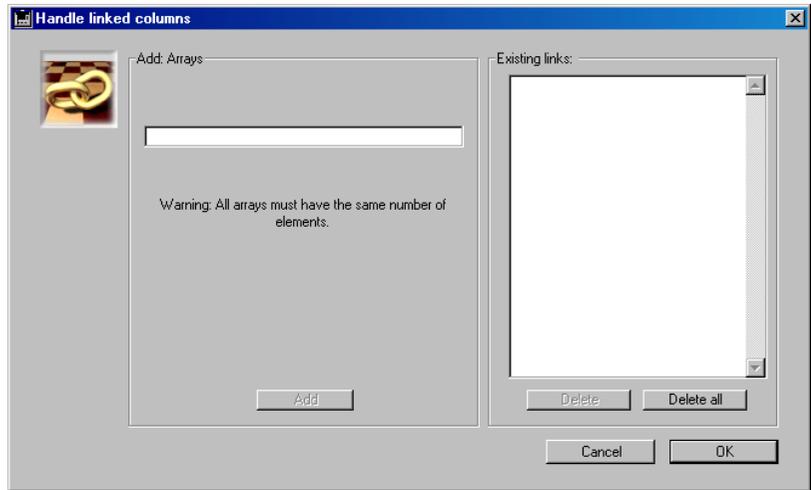
In order to be able to link a column to an array, the array must exist in the process managing the 4D View area.

- To link a column to an array:

- 1 In the **Database** menu, select the **Linked Columns** and then **Arrays** commands:



The linked column management window then appears:



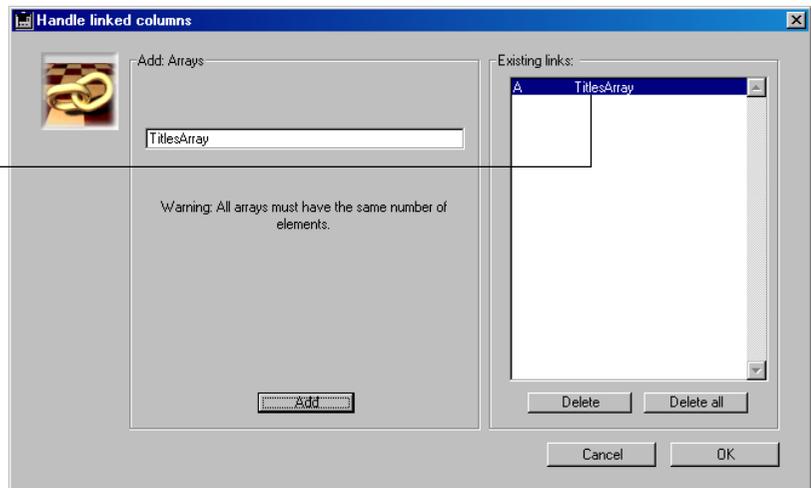
- 2 In the left side of the window, enter the name of the 4D array to link to column A of the area.**

You can use any type of process or interprocess array, with the exception of pointer type arrays. If you create a link from a 4D View external window, you must use interprocess arrays (arrays whose name starts with the <> character).

- 3 Click the Add button.**

The defined link is displayed in the right side of the window:

The TitlesArray array is linked to column A



Note The right side of the window does not display links of cells that may already be defined in the area (see the [paragraph “Linking Cells to Fields or Variables”](#) on page 148). If the column used contained a linked cell, the latter is moved below the inserted column.

■ **Two-dimensional arrays**

You can use two-dimensional arrays. For this, you must enter the `arrayName{NumCol}` syntax in the array name area. For example, for a 2D array named `myArray`, enter `myArray{1}`, click on **Add** then enter `MyArray{2}` and click **Add**. Each “column” of the 4D array will also be inserted into a column of the 4D View area.

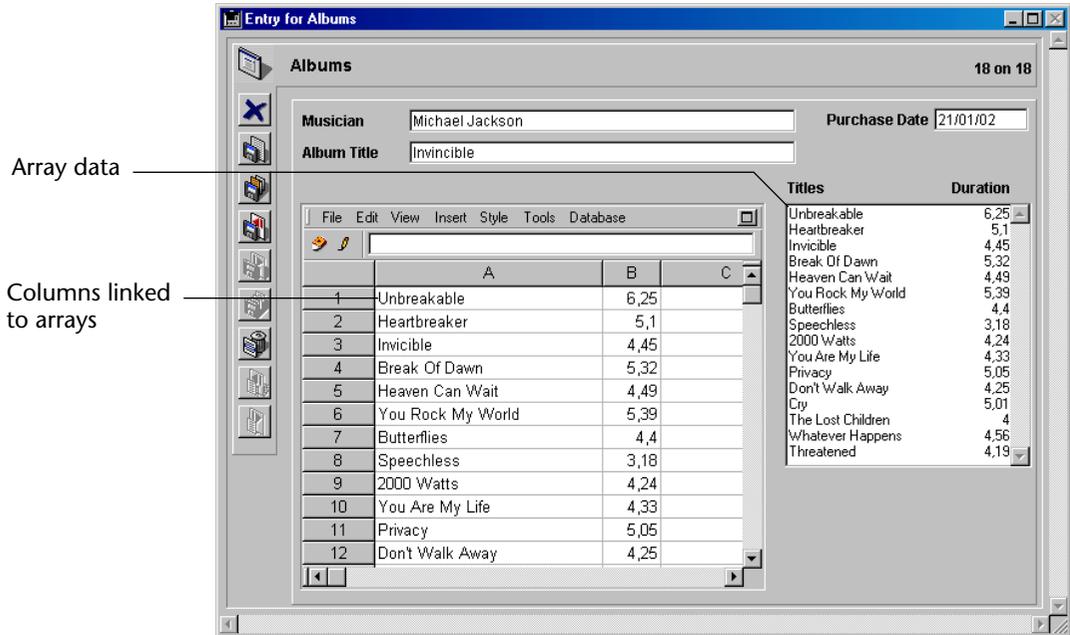
4 Repeat steps 2-4 as many times as necessary.

Additional linked columns will be columns B, C, etc. You may not set a column used for a link.

Different linked columns must contain the same number of values. If you define several links in the same area with arrays not containing the same number of elements, the links will not work correctly.

5 Click on OK to validate the dialog box.

Linked columns will then be filled with array values:

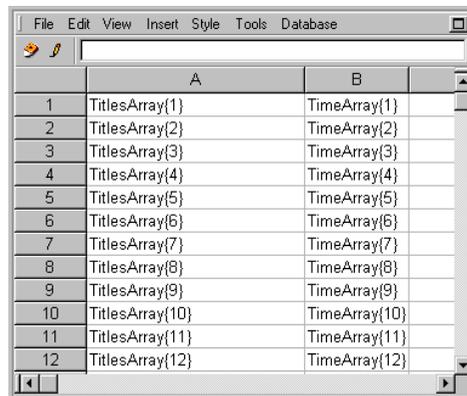


Note In the above example, array data was placed in a scrollbar area for example purposes only.

4D View inserts nothing if there is no linked array in the same 4D process.

As with linked fields, the 4D View formula bar input area displays the value contained in each cell, and not a reference. Also, any value can be modified; any modifications are made in the element of the corresponding array as soon as the cell is validated and vice-versa.

To view column links in a spreadsheet (as well as other dynamic references), select the **References** command in the **View** menu. The columns/arrays links appear as follows:



| | A | B |
|----|-----------------|---------------|
| 1 | TitlesArray{1} | TimeArray{1} |
| 2 | TitlesArray{2} | TimeArray{2} |
| 3 | TitlesArray{3} | TimeArray{3} |
| 4 | TitlesArray{4} | TimeArray{4} |
| 5 | TitlesArray{5} | TimeArray{5} |
| 6 | TitlesArray{6} | TimeArray{6} |
| 7 | TitlesArray{7} | TimeArray{7} |
| 8 | TitlesArray{8} | TimeArray{8} |
| 9 | TitlesArray{9} | TimeArray{9} |
| 10 | TitlesArray{10} | TimeArray{10} |
| 11 | TitlesArray{11} | TimeArray{11} |
| 12 | TitlesArray{12} | TimeArray{12} |

Using linked columns

Data links allow modification of the values of 4D records or array elements from the spreadsheet.

However, you cannot **remove** 4D records or array elements from the spreadsheet, for example by removing a row inserted in the 4D View area. The corresponding commands (Delete, Cut) are dimmed in the **Edit** menu and in the 4D View toolbars.

Removing records or array elements is done from the data source, in other words, the 4th Dimension application.

It is, however, possible to erase the content of one or more cells using the **Clear** command in the **Edit** menu.

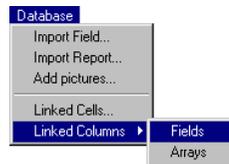
Also, you cannot **add** 4D records or array elements using the spreadsheet, for example by inserting a row in the 4D View area. The corresponding commands are dimmed in the **Insert** menu and in 4D View toolbars. The addition of records or array elements is done from the data source; in other words, the 4th Dimension application.

Sorts cannot be performed directly in columns inserted in the 4D View area. These operations must be done in the data source; in other words, the 4th Dimension application.

Finally, if you want to remove one or more column links in the area:

- 1 **In the Database menu, select Linked Columns then the submenu set off with a checkmark.**

The checkmark indicates what kind of column link is active in the area.



- 2 **In the list of linked columns, select the row containing the link that you would like to remove.**
- 3 **Click Delete.**
OR
If you want to remove all column links, click on the Delete all button.
- 4 **Validate the dialog box using the OK button.**

Calculating Dynamic References

A number of calculations are executed when working with a spreadsheet. The more calculations within the spreadsheet, the more time it will take for the changes to take effect in the cell, since the cell serves several operations.

4D View provides you with two ways of updating references in your documents: automatically and manually.

Automatic calculation

This is the default option for all new 4D View spreadsheets. When this option is selected, 4D View calculates your set of spreadsheets every time data is entered.

Select the **Automatic Calculation** menu command from the **Tools** menu to select/deselect this option (a check mark appears in front of the command when activated).

Calculate Now

If you want to start recalculation at any desired moment or to “force” an area redraw, select the **Calculate Now** command from the **Tools** menu.

Freeze References

Once calculations are complete and you no longer want your spreadsheet to be dynamic, select the **Freeze References** menu command in the **Tools** menu. All references will be frozen, which means that your cells will keep their current data but not their formulas, field references or 4D variables, dynamic links, etc.

Note Once you freeze references, ALL references are frozen, including functions unique to 4D View such as Sum, Length, True, etc.

8

Printing

Printing 4D View documents is handled using six commands in the **File** menu, which are described in this chapter:

- Print Area
- Print Options...
- Page Setup...
- Print Preview...
- Print Document...
- Print Formulas...

Print Area

The print area may contain all information in a spreadsheet or just a portion. To set your print area, simply select the cells that should be printed.

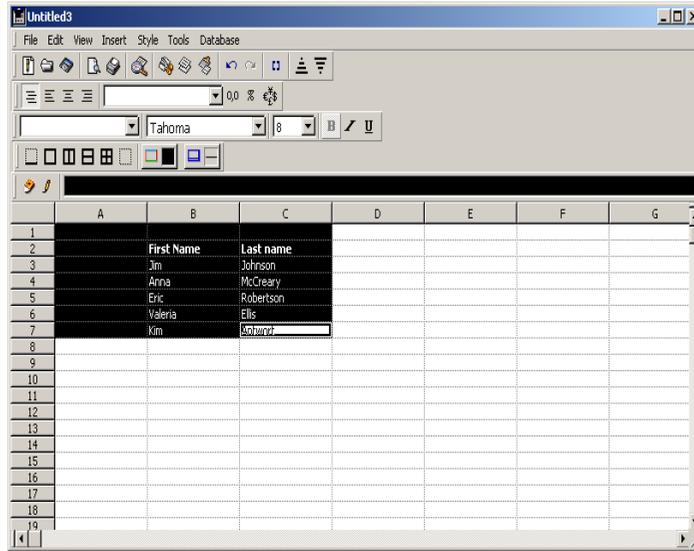
A different print area can be set for each of your 4D View documents.

A 4D View document can only have one print area.

Note If no print area is set, the entire spreadsheet will be printed by default.

Setting the print area

- ▶ To define the print area for the spreadsheet:
 - 1 Select the cells, rows, or columns to print.



- 2 Choose the Print Area command, then Set, in the File menu.



Viewing the print area

- To view a previously set print area:

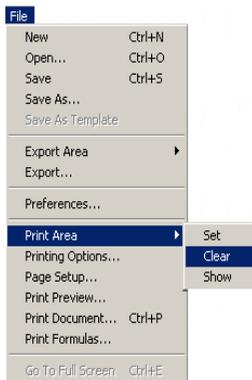
1 Choose the **Print Area** command, then **Show**, in the **File** menu.



Deleting the print area

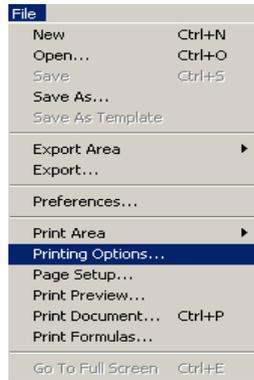
- To delete an existing print area:

1 Choose the **Print Area** command, then **Clear**, in the **File** menu.

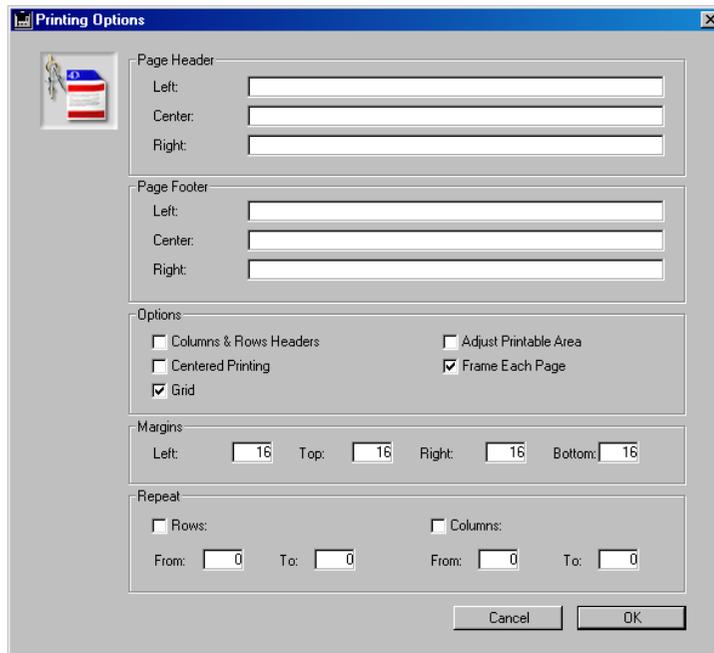


Print Options...

To define print options, select **Print Options...** in the **File** menu.



The following dialog box appears:



Page headers and footers

For page headers and footers, you can add the text of your choice which will be printed to the left, in the center, to the right or all three.

Options

You can set whether or not to print various additional elements:

- **Row and Column Titles,**
- Display a **grid** for cells.
- **Frame Each Page.**

Also, you can set two print centering options.

- **Centered Printing:** allows centering the print area within the page.
- **Adjust Printable Area:** sets the area to print in relation to the non-empty cell in the bottom-most right part of the document.

Margins

In this area, set the margins for the print job.

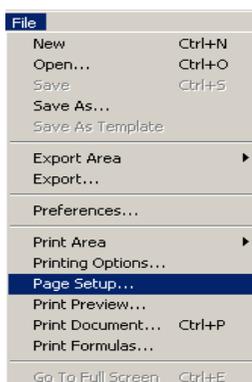
Note Keep in mind the authorized print area for your printer.

Repeat

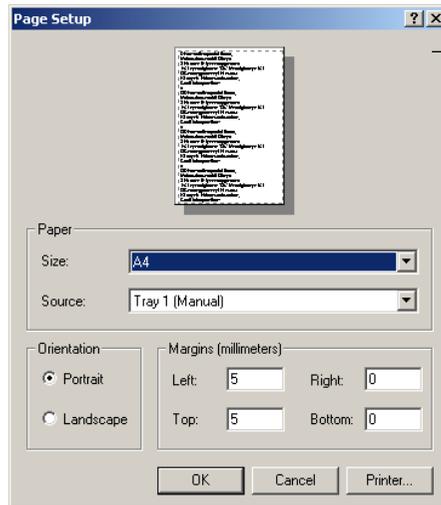
You can specify a range of rows and columns to be repeated on each page during printing.

Page Setup...

The **Page Setup...** command in the **File** menu is used to set printing parameters for the current printer.



The standard printer setting dialog box for your computer appears. This dialog box varies depending on the installed printer drivers and operating system.



Page Setup... dialog box (Windows)

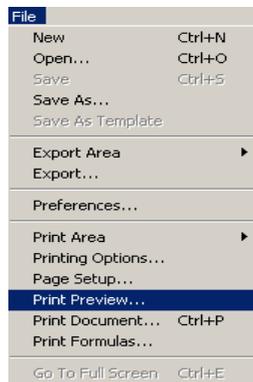
Parameters entered in this dialog box, such as paper size and print percentage, determine the amount of information that can be printed per page.

Once parameters have been set, click the **OK** button to validate them.

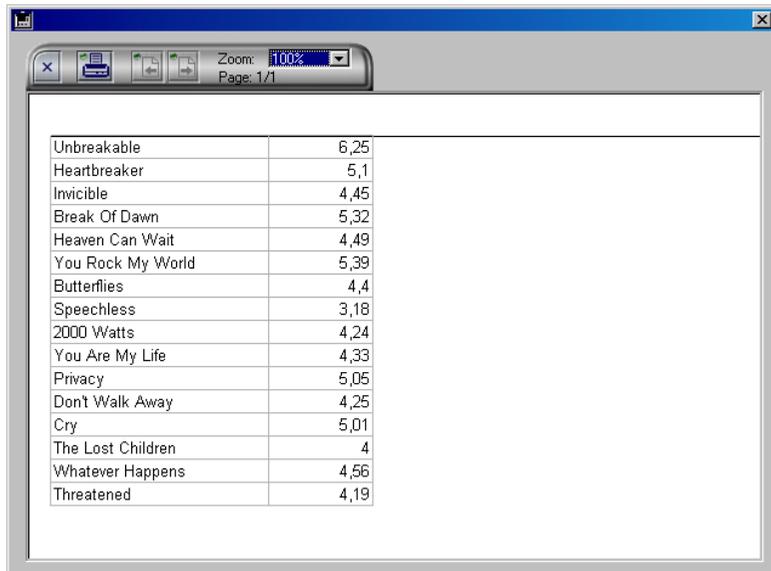
Print Preview...

The print preview feature displays a reduced version of each printed screen on your monitor. You can zoom in on a page area using the drop-down menu. This feature allows you to view with precision what will actually be printed.

For this, select the **Print Preview...** command in the **File** menu:

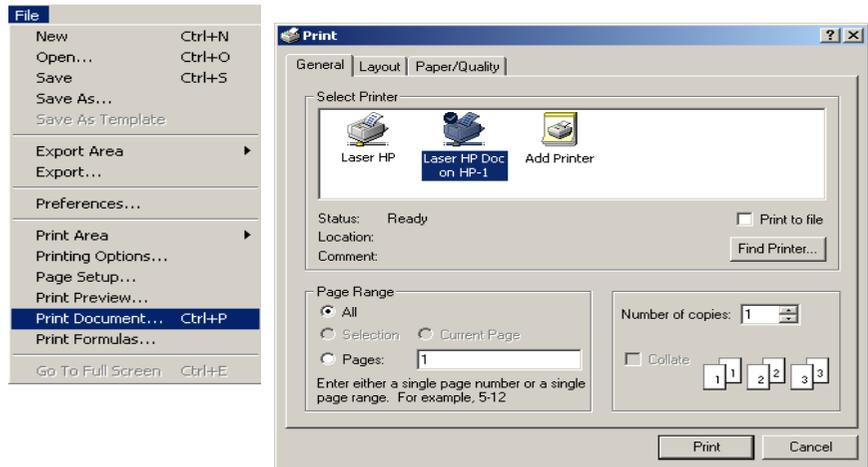


The print preview dialog box allows you to print the page that is currently being viewed, to stop viewing pages in your document and to go to the next/previous page.



Print Document...

The **Print Document...** command in the **File** menu allows you to start printing an entire, or part of, a document, depending on the parameters set using the **Print Area**, **Print Options...** and **Page Setup...** commands.



Print Formulas...

The **Print Formulas...** command in the **File** menu prints only formulas in the spreadsheet.



In this case, the document is printed as a list of cells containing formulas as well as the label of these formulas.

This print job respects the existing print area as well as parameters set in the "Printing Options" dialog box.

9

Exporting

4D View allows exporting of data in several formats. This feature lets you exchange documents between 4D View and other applications.

4D View documents can be exported entirely or partially. Portions of a document can be exported once an export area has been set.

Export Area

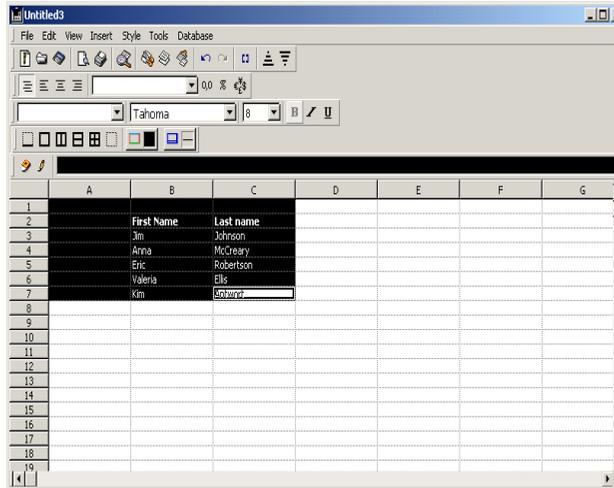
A different export area can be set for each 4D View document.

A given 4D View document can only have one export area.

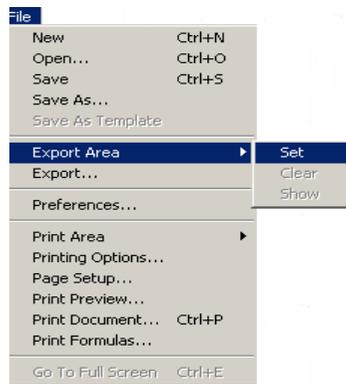
Note If no export area is set, the entire spreadsheet will be exported by default.

Setting the export area

- ▶ To set the export area for a spreadsheet:
 - 1 Select the cells, rows or columns to be exported.



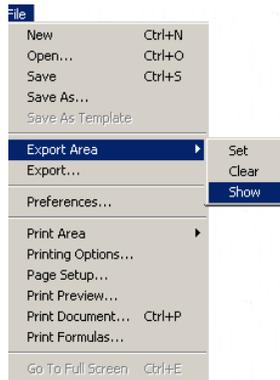
- 2 Choose the Export Area command, then Set, in the File menu.



Viewing the export area

- ▶ To view a previously set export area:

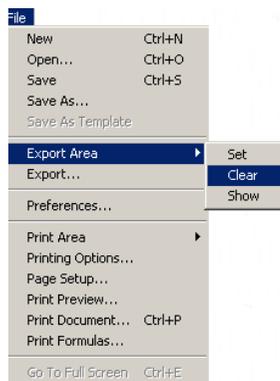
1 Choose the Export Area command, then Show, in the File menu.



Deleting the export area

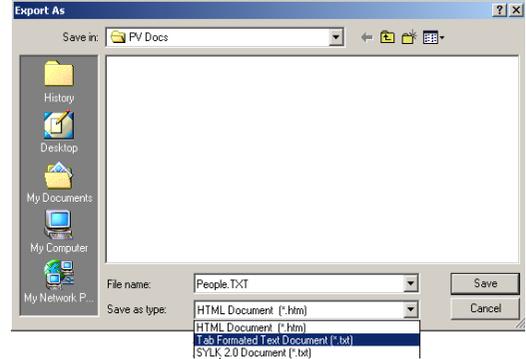
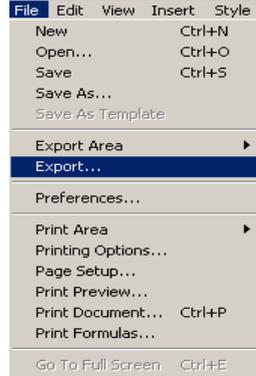
- ▶ To delete an existing export area:

1 Choose the Export Area command, then Clear, in the File menu.



Exporting Data

4D View provides three export formats. Select a format in the export dialog box, which is accessible using the **Export...** command in the **File** menu.



Export format selection menu

HTML Document (*.htm)

This format publishes data from a 4D View area onto your Intranet site or on the Web.

Complete HTML pages can be created from 4D View area data, from a previously defined export area, or by inserting data from 4D View areas into existing HTML pages.

Under Windows, the extension for this type of document is “.HTM”.

Exported 4D View area

| | A | B | C | D |
|----|-------------------|------------------|---|---|
| 1 | First Name | Last Name | | |
| 2 | Jim | Johnson | | |
| 3 | Anna | McCreary | | |
| 4 | Eric | Robertson | | |
| 5 | Valeria | Ellis | | |
| 6 | Kim | Antwort | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |

Display of HTML export in a Web browser

| First Name | Last name |
|------------|-----------|
| Jim | Johnson |
| Anna | McCreary |
| Eric | Robertson |
| Valeria | Ellis |
| Kim | Antwort |

Tab Formatted Text (*.txt) In this format, basic data from the spreadsheet is saved. The export file is generated as a text file.

Columns are separated by Tabs and going on to the next row is done using a Carriage return.

Under Windows, the extension for this type of document is “.TXT”.

SYLK 2.0 document (*.txt) This format is used for spreadsheet exchanges between applications. It is used most notably by Microsoft[®] Excel[®].

Note 4D View formulas are not yet written. Only values and their appearance are kept — in the event that they have a match in Microsoft Excel.

Under Windows, the extension for this type of document is “.TXT”.

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