

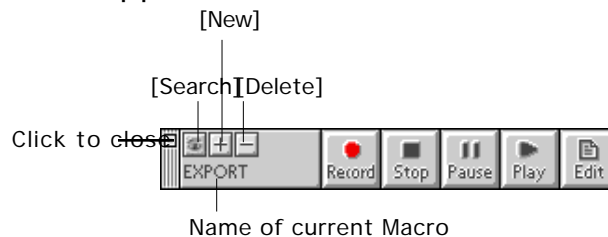


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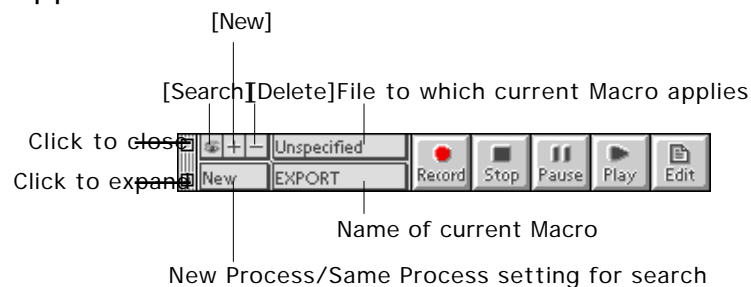
Modulus contains a comprehensive Macro facility allowing the automation of repetitive tasks and the manipulation of data in ways which would otherwise be unavailable. Macros can be recorded as you carry out the task to be automated, or they can be programmed using a Macro language. This Technical Note is intended as a basic introduction to Macros: for full details please refer to the manual.

THE MACRO PALETTE

The Macros Palette is brought up using the option on the Modules menu in the Data Manager. Its appearance and functionality varies with the different versions of Modulus. In Modulus Silver, it appears as follows—



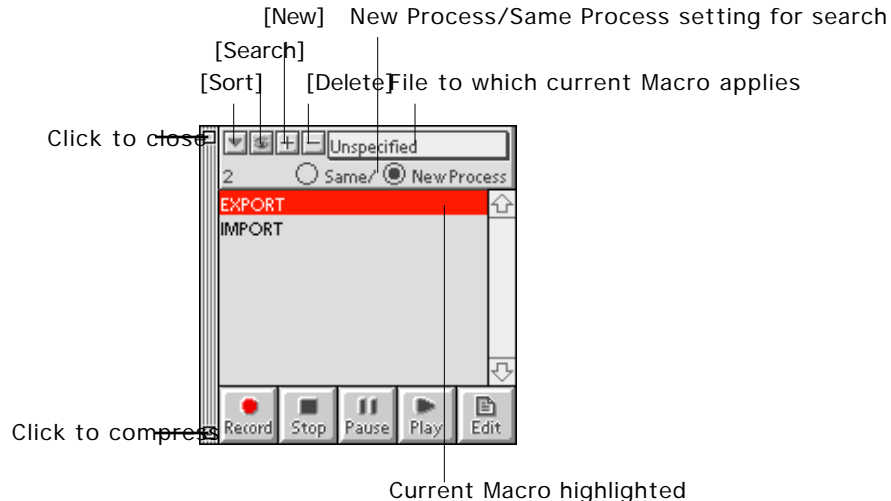
In Modulus Gold, the Macros Palette has a compressed form and an expanded form. Its compressed form appears as follows—



Clicking the grow box in the bottom left, or selecting the 'Macros Palette' option on the Modules menu with the <Option> or <Alt> key held down brings up the expanded version—



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In all cases, hold down both the <Command> and <Control> keys to drag the bar around the screen (Macintosh only). Click the close box on the left of the palette to put it away.

RECORDING MACROS

You can create Macros to carry out oft-repeated tasks for you. The best way of doing this is to record yourself carrying out the task in question. Click the [Record] button on the palette, and each mouse click and keystroke will then be recorded until the [Stop] button is pressed. A new Macro will be created and saved with the Macro Code of 'Untitled001' (or with a later number as the suffix if a Macro with that Code already exists). You should then overwrite this Code with a more informative description - click the [Edit] button in the Macros Palette to do this.

WRITING MACROS

You can also write Macros: this is more practical if you need a Macro to carry out a one-off task or if you wish to attach a Macro to a report, in which case recording will be impractical. Click the [+] button in the Macros palette and an entry screen will appear. This screen is described in detail below. Click [] in the buttons palette to save the Macro or [X] to cancel. Modulus has its own Macro Language (a full list of commands and syntax can be found in the manual) and all 4th Dimension commands can also be used.

THE CURRENT MACRO

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Switchboard: 01580 766666 E-mail: info@modulus.co.uk Fax: 01580 766667



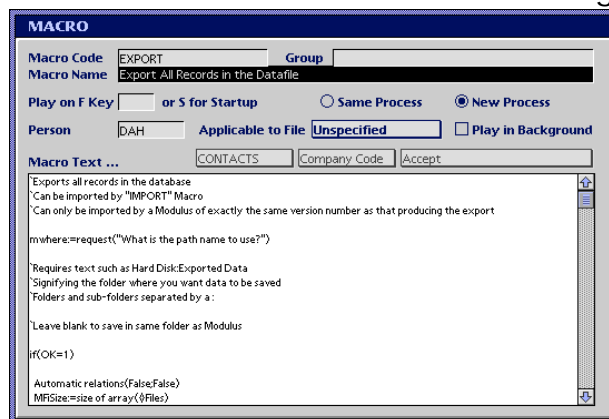
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The current Macro is the Macro currently in memory. It is the Macro that will be run if you click the [Play] button in the Macros Palette or edited if you click the [Edit] button. Its Macro Code will be shown in the bottom left-hand corner of the Silver and compressed Gold palette, or highlighted in the expanded palette.

If you have just created or edited a Macro, that will be the current Macro. Otherwise, you can perform a search using the [Search] button in the upper left of the palette. If a single Macro is found as a result of the search, it will become the current Macro and its Macro Code will be shown on the palette. If the search finds more than one Macro, a small pop-up will appear, from which you can make a selection by clicking.

THE MACRO SCREEN

To edit the current Macro, click the [Edit] button in the palette. If you have just recorded a Macro, that will be the current Macro. Otherwise, you can search for a particular Macro using the [Search] button on the palette before clicking [Edit]. Alternatively, you can use the 'Macros' function in the Data Manager to produce a list of Macros. Double-click on one to edit it. The following screen will appear—



The Macro Code should be used to define a unique code for the Macro by which it can later be found when viewing. Modulus offers no default (other than 'Untitled') for this code so that the codes can be meaningful to each user. You can also assign a Name, further describing the Macro.

The number of Macros used can grow very rapidly. If they were stored on a hard disk, they would be organised using folders or directories. The Macro Group field is provided to help with this purpose. The field has a Lists lookup table, that you can

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add to in the Data Manager or directly if you have 'Data Manager Additions' access. The field can be searched on in both the Quick Find and More Choices windows.

A Keyboard Function Key number can be assigned to a Macro. Simply type a number between 1 and 15 in the Play on F Key field - don't press the Function Key itself. Subsequently, this Macro will automatically Play when that Function Key is pressed.

As an option, you can assign a person's initials to the Macro, so that different users can have different Macros attached to their Function Keys. Macros without a Person assigned will be played for everyone without their own specific F Key definitions.

If you would like a Macro to be played every time Modulus is started up (A 'Startup Macro'), type an "S in the Play on F Key field. You can allocate more than one S, and can make use of an "S1", "S2", "S3" ... "Sn" sequence if you need them to be played in a specific order. You can also specify different Startup Macros for different Persons. If you <Option>/<Alt>-Click the [OK] button (but not <Option Return>/<Alt-Return>) in the 'Who are you?' window, the Startup Macros are disabled.

To aid with the editing of the Macro text, three pop-up menus are provided. That on the right provides a list of Macro Commands from which the appropriate one can be chosen. Modulus contains its own Macro language and the available commands are listed here. Although not listed, you can also include any 4th Dimension command in your Macro. The other pop-ups provide methods by which Modulus Files and Fields can be included in your Macro with the correct name and spelling.

There are two radio buttons, 'Same Process' or 'New Process'. The default is to 'New Process'. If you click on 'Same Process', then this Macro will be run in the process currently on screen. This will enable it to use the same variables and records used by that process.

You can allocate a Macro to a File using the Applicable to File pop-up menu, or you can choose to leave the File 'Unspecified' by choosing the item at the top of the list. 'Same Process' Macros will usually be relevant only to one File, and will almost certainly not work if called from another File because they will probably refer to data in their relevant File. You can also allocate a 'New Process' Macro to

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a given File -even if only for the convenience of subsequently finding it. For example, a Macro that launches a 'View Companies' Process and lists all new Customers could obviously be allocated to Companies, although it could in fact be launched at any time from anywhere in the system.

The Macros screen has a Functions menu which includes 'Find' and 'Replace' functions.

PLAYING MACROS

To run the current Macro, press the [Play] button on the palette.

If you need to run a Macro that is not the current Macro (which will usually be the case), if you are using the expanded Gold version of the palette, you can find a Macro in the list and double-click to run it. Otherwise, you can perform a search using the [Search] button in the upper left of the palette. If a single Macro is found as a result of the search, it will become the current Macro and its Macro Code will be shown on the palette. If the search finds more than one Macro, a small pop-up will appear, from which you can make a selection by clicking.

If you do not have the Macros palette open, a quick way of selecting a current Macro and running it is to press <Command-Shift-M> (Macintosh) or <Control-Shift-M> (Windows). This single keystroke is all that is required to bring up a search dialogue and, once you have selected a Macro, to run that Macro.

Macros attached to Functions Keys can be run at any time by pressing the appropriate key.

ATTACHING MACROS TO INPUT LAYOUTS

It is possible to force a Macro to be run on saving a record. Such a Macro is termed a 'Data Entry Macro'. When a record is saved, Modulus will search for a Macro with a specific Macro Code, and will run it if found. That Code should consist of the word 'Accept ' (including trailing space) followed by the File Number of the File to which the record belongs. For example, such a Macro for the Sales Orders File would have 'Accept 24' as its Macro Code. Data Entry Macros will be run if they exist and if the 'Play Data Entry Macros' (Gold) or 'Play Accept Button Macros'

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(Silver) check box in the current user's Personnel record is switched on.

It is possible to have one such Data Entry Macro for each file for each user. If you would like an Data Entry Macro to be universal, leave the Person field blank.

In Modulus Gold only, you can also create Macros that operate before creating a record, before viewing an existing record and after modifying individual fields. The Macro Codes for these types of Macro should have the following formats (in each case, x represents the File Number): 'Enter x' (for example, 'Enter 2' will run before a new, blank, Company record is shown on screen); 'View x', which will run before an existing record that you have double-clicked on is displayed on screen; and 'Modified x/y', where y refers to a specific field. For example, 'Modified 25/2' will run when the value in the Product Code field in an Order Item (ie the second field in the Order Items file) is changed by the user.

When creating these Macros, it is not necessary to know the File or Field Numbers. When the cursor is placed in the Macro Code field on the Macro entry screen, selecting the appropriate File from the File pop-up will cause the Macro Code to be changed to 'Accept x' and the Macro Name to 'Run on Accepting a [x name] record', where x is the File Number. The word 'Accept' can be altered to 'Enter' or 'View' as appropriate, although selecting from the Files pop-up while holding down the <Option> or <Alt> key will cause the word 'Enter' to be brought in automatically. Then, selecting from the Fields pop-up whilst the cursor is still in the Macro Code field will alter the Macro Code field to 'Modified x/y' and the Macro Name to 'Run when [x file]y field is Modified'.

Further details of these Macros, including examples, can be found in the manuals.

ATTACHING MACROS TO QUICKREPORTS AND SUPERREPORTS

If you need to bring extra information into QuickReports and SuperReports, you can do so using Macros.

Within the QuickReport Generator 'Edit a formula' function, or in a script of an object in the body phase of a SuperReport Report, one can simply type:

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Macro ("MACRO CODE")

"MACRO CODE" is the Macro Code of a Same Process Macro written for this purpose.

For SuperReport, examples are given in the Technical Note entitled "SuperReport Forms" and in the manuals.

In QuickReport, such Macros will often need to be attached to hidden columns. For example, to display an item of information for each record in a QuickReport, use 'Insert Column' on the Edit menu to create a new column, then highlight the column and select the 'Edit a Formula' function on the Edit menu. Enter the text

Macro ("MACRO CODE")

and click [OK]. Then, select 'Hide Column' from the Edit menu. Add a second column with a formula of "vText". Do not hide this column.

The Macro "MACRO CODE" will load information into the vText variable whose purpose is to display that information. A simple model for the Macro is as follows—

```
If ([COMPANIES]Company Name>"g@")
  mText:="After G"
Else
  mText:="Before G"
End if
```

Such a Macro might be used to load information in from a related file.