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Chapter 1

Getting Started

MODLER is a powerful software package, yet it is nonetheless easy-to-use. This chapter demonstrates that ease of use, illustrated by some straightforward applications. The examples that are shown can be replicated using the demonstration data bank supplied with the program. In addition, you may wish to generate other practice examples as a means of becoming better acquainted with the program's features and capabilities. In that case, on the www.modler.com website you will find documented examples of models that can be created and used with MODLER, together with data banks and other supporting facilities that are designed to provide step-by-step instruction in the use of the program. These generally assume knowledge of the information in the present user guide.

Setting Up for the First Session

The process of installing MODLER, and keeping it up-to-date as new versions are released, is not described here, but in the separate *Getting Started and Maintenance Guide*. You should have received a copy of both guides, but if the *Getting Started and Maintenance Guide* is not immediately available, you can download the latest Word or Acrobat-formatted version from the website www.modler.com. Similarly, whenever MODLER is installed, a number of supplementary files, including the demonstration data bank mentioned above and the macro files referred to in later chapters of this user guide, are also each automatically copied to the directory (or folder) designated by the directory settings then in force. The demonstration data bank, in particular, is provided so that you can immediately begin to operate MODLER, without first having to create a data bank; for this reason, the discussion of data bank creation and maintenance is put off until the fourth chapter. However, if these files do not seem to be loaded onto your machine, they too can be downloaded from the MODLER website. They are contained in the supplemental program file, **WModSup.EXE**.

For present purposes, it is assumed that MODLER has been installed on your machine and is properly configured. An indication that this assumption is likely to be valid is if the name MODLER appears in the list of programs on your machine. In this case, you will often also see a program icon displayed on your desktop.

Executing MODLER

Usually, in a Windows environment, MODLER is executed either from a prompt or by clicking on the program's icon on your Windows desktop. In response to either of these actions, you should immediately see MODLER's Central Control Screen, as displayed in Figure 1-1. Considering this screen, there are several obvious features. Near the top is a menu bar, which displays a number of action categories, most of which are likely to be generally familiar from other Windows programs you have used. Below the menu is a double row tool bar. At the bottom is a status bar, which, as shown in Figure 1-1, here indicates four things in particular: specifically, that there are No banks open, No Memory File open, that the default date range is 1947-2001 and that the observation frequency has not yet been set, the N indicating none. This status bar obviously also shows the time; less obviously, if you click your mouse on the time, it will show you the current date. The dominating light-colored space in between the menu and status bars on your monitor is likely to be pale yellow or pastel in color. It will be referred to as the *command space* or *blotter* because, although initially blank, it can be used as a place to type commands, which then will be acted on by the program.

As you begin to use the program, you will discover that the screen components just

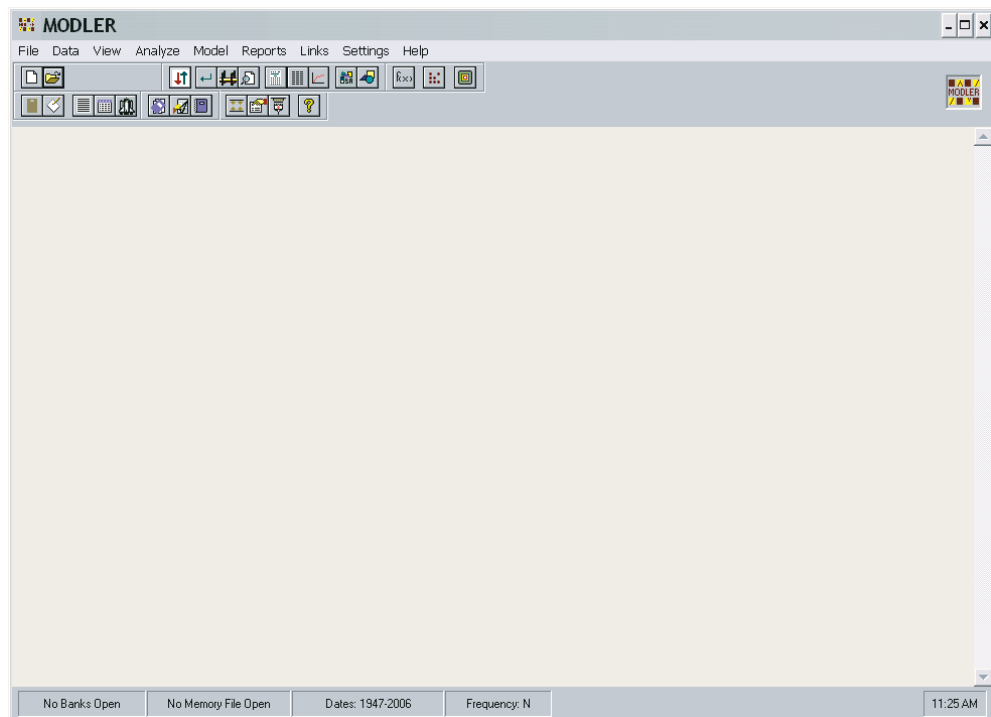


Figure 1-1 MODLER Opening Screen

identified are all active program control elements. In particular, if you click on the status bar items, you will find that they are “live.” Initially, a click will elicit an offer to open a data bank or permit you to set the date range or specify the observation frequency for your work. Subsequently, clicking on the status bar will display information about the open data banks and other relevant details. Clicking on the menu keywords offers an alternative way to open data banks, set the observation frequency, or specify the date range, as well as a wide range of additional options.

The same can of course be said for the tool bar items. For many of the menu elements, there is a corresponding tool bar item. However, these have sometimes been grouped in a slightly different way and the emphasis in their creation is not upon completeness, but instead the likely frequency of use. In general, in this user guide, the tool bar items will not be discussed individually, the presumption being that you will learn to use these as you use the program, simply by knowing that you would like to perform a particular operation and having realized the correspondence between a particular icon button and that operation.

Menu Categories: A Brief Overview

The menu categories generally obey the standard windows conventions. The first of these, **File**, broadly refers to file operations, and clicking on it reveals the dropdown choice list shown in Figure 1-2. As usual, grayed-out choices indicate operations that cannot be selected currently.

Issue Command	
New	Ctrl+N
Open...	Ctrl+O
Close	
Manage Files	
Edit Display Using Internal TextEditor	
Print to Printer	
Copy Display to WINWORD	
Execute Another Program	
Exit	

The first choice, **Issue Command**, discussed later, is used for the purpose of executing a new command, among other things. The next three permit you to create new files, open existing files, and close any open files. **Manage Files** allows you to execute a file manager appropriate to your operating system, such as Windows Explorer. **Execute Another Program** obviously executes other Windows or DOS programs. **Exit**, as usual, terminates the program.

Figure 1-2 File Menu

The menu category, **Data**, is more specific to MODLER, and refers generally to Data Management operations. Some of these take the form of data entry, others copy and display data, yet others permit you to import external data files or export to other environments.

Key In Series
Generate by Transform
Seasonal Adjustment
Copy Series
Rename
Delete
Print Series
Tabulate Series
Convert Local Data File
Import Spreadsheet Data
Open Internet Download Connection
Update from Textfile using DataClip
Export Data File
Create New Macro
Make Group File
Edit Group File

Figure 1-3. Data Management

The following five, **Convert Local Data File**, **Import Spreadsheet Data**, **Open Internet Connection**, **Update from Textfile using DataClip**, and **Export Data File**, essentially manage the import and export of data and, as relevant, launch your Internet browser.

The **Create New Macro** command launches MODLER's text and data file editor and thereby permits you to create command and other macros.

The **Make** and **Edit Group File** options are explained later, but essentially permit you to create files that specify particular groupings of series names. Groupfiles are used in a number of context and, among other things, allow you to group series other than in alphabetic order. For instance, these Groupfiles can be used in conjunction with the Copy, Print, and Tabulate series commands. Inasmuch as data banks and models can contain even thousands of time series variables, the ability to identify and work with sub-groupings for particular purposes obviously can be very useful in a number of contexts.

The first three choices provide access to forms that respectively manage the capture of time series observations, the creation of series by transformation, and the seasonal adjustment of monthly or quarterly frequency series.

The next three permit time series to be copied from one place to another, or else renamed or deleted. Either individual series or groups can be copied.

In turn, **Print Series** and **Tabulate Series** are mainly used to display groups of series, either progressively or comparatively.

The next category, **View**, provides evidence that major menu groupings are inevitably somewhat arbitrary. The operations under this heading range from the tabular or graphical display of observations on specific series to viewing (and editing) text files.

Single Series or Transformation
Tabulated Series
Plot
Model Equations
Index
Log
Find
Macro, Table, and Plot Files
Group and other MODLER Textfiles
ASCII and other related files
MODLER WINWORD Document

Individual series (or expressions) can be arrayed in tables or plotted as single or multiple series (or expressions) by choosing **Single Series**, **Tabulate Series**, or **Plot** respectively. If a model is attached, **Model Equations** provides the capability to display some or all its equations.

The middle three choices, **Index**, **Log**, and **Find**, provide access to information about series currently accessible.

Figure 1-4. Display Operations

In contrast, the next three choices, referring to Macro, Group, Ascii and related files, provide a means of viewing and editing files of these named types, whether or not specifically MODLER-related.

Macros are composite MODLER-related commands used to define batch operations. Commands are commonly collected into such files for production runs in order to minimize repetitive work. As indicated earlier, Groupfiles are textfiles that contain sets of series names; such files are used in various contexts in order to reference series as defined groups. ASCII files are of course generic text files. A reason to distinguish these file types is that often they are placed in particular directories. As will be explained later, whenever any such textfile is viewed, a text editor screen appears, with the characteristics to support text processing.

An additional aspect of MODLER is that it can execute other Windows programs, such as word processors like Word (that is, WinWord). Once your default word processor has been specified, it can be used both generally and to display MODLER-related documents that you have created. The last item in Figure 1-4, if selected, permits you to display one or more of these documents. You will know from the *Getting Started Guide* that a particular directory or folder is designated as containing these.

Occasionally, when MODLER begins execution, you may have previously put text on the Clipboard. In this case, an additional menu category may sometimes appear, by the name of **Edit**, to let you know of its presence, depending on the operating system you are using and its specific settings..

<u>U</u> ndo	Ctrl+U
R <u>e</u> do	Ctrl+R
Cu <u>t</u>	Ctrl+X
<u>C</u> opy	Ctrl+C
<u>P</u> aste	Ctrl+V
<u>D</u> elete	Del
Select <u>A</u> ll	Ctrl+A
<u>F</u> ind	Ctrl+F
<u>R</u> eplace	Ctrl+H

Figure 1-5. Edit Category

Irrespective of the appearance of the **Edit** menu item or not, provided that this text takes the form of command-related text, the first element of the **File** menu, **Issue Command**, mentioned earlier, can be used to paste this text directly into the MODLER command stream.

Otherwise, the text editor screen just mentioned in connection with the **Create Macro** command can be used as a general text editing facility.

The **Analysis** category, as its name implies, provides access to various “number crunching” operations, which range from analysis of the properties of time series to displaying growth rate triangles to correlation analysis or performing regressions.

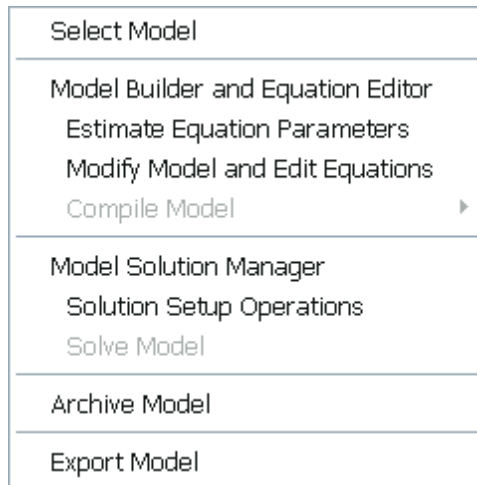
Evaluate Single Series
Trend Statistics
Unit Root Statistics
Plot Autocorrelation Function
Autocorrelation Matrix
Growth Rate Triangles
Multivariate Analysis
Correlation/Covariance
Regression

Figure 1-6. Analysis Options

Except for regressions, which are the subject of Chapter 5 of this *User Guide*, the various Analysis options represented here are specifically described in Chapter 3.

However, these are not the only MODLER “analysis” options. Other options also include those, like seasonal adjustment, that are more specific and appear in other menu categories.

The **Model** category provides access to MODLER's extensive model building and use facilities, managed by separate screens that include the Model Builder & Equation Editor and the Model Solution Manager screens. Some aspects of the model building facilities, and relevant screen(s), are described in Chapter 5 of this Guide. Otherwise, Chapter 6 considers model building in detail. Chapter 7 describes the use of models.



Select Model permits you to select an existing model, including related files. The items in the second section of this menu generally relate to model building and editing. The third section obviously refers to model use.

Using the **Archive Model** and **Export Model** commands, you can respectively Archive or Export a model and its pertinent supplementary files, as is explained in Chapter 7.

Figure 1-7. Model Options

The **Reports** category manages the process of developing and producing tabular reports. The options include producing draft tables within the context of MODLER and presentation tables in concert with spreadsheet packages such as Excel, Lotus 123, or Quattro Pro.



Although the elements of this file menu are to a degree self-describing, their particular use is explained in the second half of Chapter 2. The use of additional specialty tables is described in later chapters, including Chapters 5, 6, and 7.

Figure 1-8. Report Options

The **Links** category provides access to a variety of external programs likely to be on your computer, as well as permitting linking to the MODLER.COM website via your designated Internet browser.

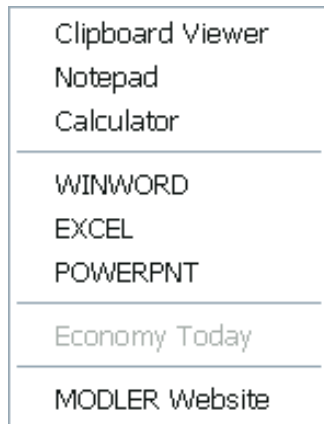


Figure 1-9. Links Option

MODLER is able to launch a variety of external programs, including the Clipboard viewer, notes editors (here Notepad), a calculator, word processors (here WinWord), spreadsheet programs (here Excel) and presentation managers (here Powerpoint).

In addition, it can launch your browser and connect to the Economy Today, MODLER.COM and other Internet sites.

The **Settings** category is used to establish both session settings and general settings that define your working environment. The Boundaries and Print Destination Settings are session related, the latter controlling the effect when the Print button on various forms is pushed; the others are environmental.

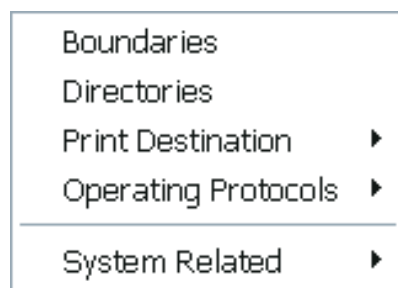
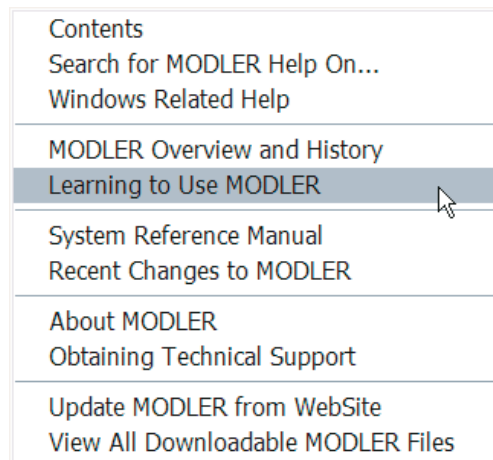


Figure 1-10. Settings

The settings associated with **Directories**, a *very important topic*, are considered at the end of this chapter. These are fundamental to the way in which MODLER for Windows operates. **System Related** settings provide access to the Control Panel and other general Windows facilities.

Finally, MODLER incorporates an extensive Help facility. **Help** incorporates both context specific help, keyed to particular operations and forms, and a complete reference to all the program's operations. Press the function key F1 at any time to obtain screen specific help.



The Help facility is designed for all users. It supports the new user, offering both background and specific learning modules. For the experienced user, it incorporates an encyclopedic System Reference Manual. For everyone, technical support information, including email and other pertinent addresses, is also supplied.

The Update facilities items shown are those visible when Internet Explorer is the default browser.

Figure 1-11. Help Facilities

Supporting files, instructional macros, and updated information about MODLER are available at all times on the MODLER.COM website. This site is increasingly being used as a means to provide both downloadable files and general information about econometric models and techniques. During the past ten years plus, MODLER has increasingly incorporated features that assume Internet access, including its present-day option updating facility, which is described in the MODLER *Getting Started Guide*. Although optional, as just indicated, the use of this facility insures that your copy of MODLER will always be up-to-date.

Concepts

The foregoing brief review of MODLER's opening screen and menu system is intended to provide an indication of the range of program facilities. This review also incidentally demonstrates that the program is designed to be operated in conformity with the standard "Windows" conventions. An essential characteristic of any "Windows" compatible program is that it should obey the standard conventions of the environment to a relatively high degree. This does not mean that MODLER is slavish in its adoption of the Microsoft precepts, for there are necessarily a number of stylistic differences, but where departures occur they have been considered carefully.

You should also be aware that MODLER is designed to be a powerful tool, not a black box. Specifically, it is not intended to foster ignorance. To the contrary, MODLER generally requires you to understand the nature of the operations it performs; there are not a lot of “wizards” cloaking the individual program steps. Furthermore, to make best use of the program, you are encouraged to expend effort in order to become familiar with these operations. At the same time, you will discover that MODLER does incorporate a number of defaults and automatic features that are intended to permit you to operate the program without constantly clicking the OK button.

It is nevertheless a virtue if a program like this is as easy as possible to learn to use. As just indicated, this is a qualified characteristic. The assumption that its users will have the appropriate training to use its capabilities means that, on its own, the program is not designed to teach economics nor statistics nor econometrics. Nevertheless it is a MODLER design concept that what the program does and how it does it should be relatively intuitive to anyone with the appropriate training. Essentially, the aim is to provide a convenient, comprehensible, and comprehensive productivity tool.

In the Introduction, the point was made that MODLER can be viewed as a resource manager, where the essential resource is the available data base. The program is also very much a facility to apply a series of operators to that data. Among other things, MODLER generates Plots and produces Tabular reports. It performs regressions and provides other facilities that permit the creation, maintenance, and use of small or large scale econometric models. These involve specific operations and in a general sense you need to understand what is happening at each stage of the process. The underlying operations that are performed are essentially statistical/mathematical in nature, so that there is little point in trying to hide the fact that the purpose of regression is to estimate the (presumably constant) parameters of an equation, or that a model is made up of sets of equations. Equations consist of constants, named variables and operators, such operators taking the form of both arithmetic operators (+, -, *, / and **) and intrinsic functions (Log, Exp, Sin, Cos, and the like) and even various relational and logical operators.

A further fundamental characteristic of today’s versions of MODLER is that these are only the latest in a line of development that extends back to 1968. A certain amount of MODLER source code dates to that time and the development of the software since has been evolutionary. More to the point, inasmuch as functioning models, table templates, macro files, and data banks still exist that date back to as early as the mid-1980s and before, and a considerable legacy of user models and macros exist from throughout the 1990s, one of the most basic goals in the recent development of MODLER is that it should support continuous use with essentially no forced obsolescence of its users’ earlier work. Fortunately, it has been possible to achieve this goal without limiting the extensive development of the program.

MODLER: the basics

As a first step towards learning MODLER's operating characteristics it is helpful to consider the nature of specific actions the program performs and why. A typical MODLER action is the retrieval of time series data to be used in the subsequent performance of some task. Such data consist of observations that are both dated in time and defined with reference to particular, standard intervals of time that take the form of weeks, months, quarters, years, and the like. The observations also have a conceptual definition that relates to a single or collective economic activity: Gross Domestic Product, Consumption Expenditures on Services, Employment in Durable Manufacturing, and such. Obviously, the data used with MODLER need not be macroeconomic, but in practice many time series are.

In order to be able to instruct a computer program to retrieve particular data series, it is evident that certain information must either be known in advance or easily discoverable. In particular, such information as:

- where the data are, generally and specifically,
- what concepts are represented,
- at what frequency or frequencies, and
- for what overall date range, such as 1947 to 2004.

The issue of data location is obviously a matter of which file and where that file is located, but it is also more specifically a question of the manner in which the observations will be retrieved.

In the context of any software environment, data series generally must be stored in a particular way in order to be immediately usable. As a general organizational principle, in the MODLER environment, data are stored in the form of distinct portable historical collections known as *data banks*, which moreover are specifically configured so as to permit data series to be retrieved rapidly. A single data bank can contain as many as 10,000 series, so that it is reasonable to suppose that you may obtain fairly comprehensive collections of data in this form. Sometimes these are well-defined, consistent collections, such as the historical Flow of Funds data for the United States from the late 1940s to the present day. Such data banks ordinarily contain 400-600 data series. At other times, they can be large and somewhat more conceptually amorphous, each containing as many as 2000 or more series, and be part of a set of banks defined by name as US monthly, quarterly, and annual frequency data banks that together contain in excess of 6000 series. At a different scale, containing only 60 data series, is the DEMOBANK.BNK data bank that is provided with each new copy of MODLER specifically so that you can recreate the examples shown in this User Guide.

MODLER data banks are configured so that the size of the bank does *not* noticeably affect the speed of retrieval of the data it contains. Even if you use a stopwatch, you are unlikely to be able to determine easily whether a series came from a 5000 series bank or a 50 series bank. It would in fact be possible to permit MODLER data banks to contain even hundreds of thousands of series with very little, if any performance penalty, considering just the speed of retrieval of a given series. This is a statement of technology, and reflects not only MODLER's algorithms but also the fact that today's microcomputers operating at clock speeds of 1 GHz and more provide the basis for good performance.

Access to Data and Information

There is nevertheless a sense in which bank size does matter: your ability to choose from among many series. That is, the real performance problem is not how to extract a given selected series, but rather how to make it possible for you to select easily the series that should be extracted. A property of any MODLER data bank is that it is physically organized to contain not only the observations but also descriptive information about its constituent time series. Clearly, if each data series were to have associated with it a single line of descriptive information, then a bank containing 50 series could display these descriptions using a single high resolution screen's worth of space, or at worst 2 to 3 screens. In contrast, to display the information on a 5000 series data bank would take at least 100 screens. Quite clearly, the more comprehensive the data base you have at your fingertips, the greater the potential difficulty in using it.

But before tackling head-on the issue of discovering which series to retrieve, let us first consider the prior step in this process: opening a given data bank for access. One or more data banks (up to a maximum of 15 at a time) can be opened simply by clicking on **File** and then **Open** progressively. The form shown in Figure 1-12

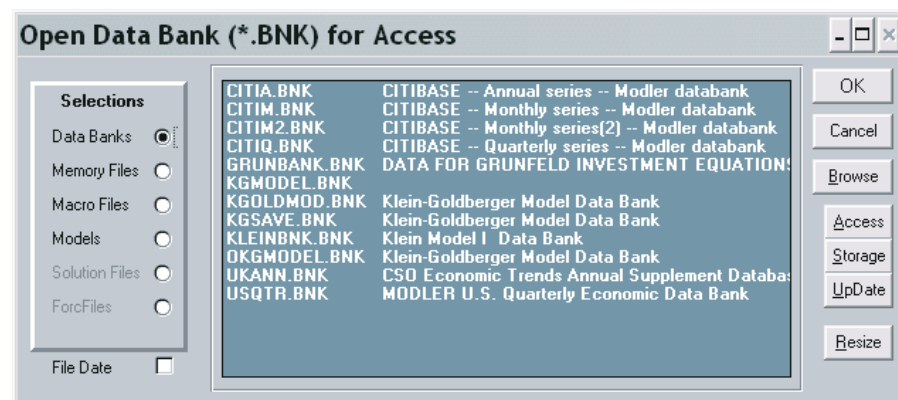


Figure 1-12 Open Data Bank for Access

should then appear, listing the available data banks. In order to permit you to read the complete bank descriptions, which may be chopped off by the form, its rightmost edge can be stretched using your mouse; the **Resize** button returns the form to original size. Double click on the particular bank you wish to open and you should immediately see that the status bar tells you that there is at least “1 bank open.” Alternatively, you can open a data bank using the command word **Access** followed by the name of the bank:

ACCESS bankname

although in this case you may need to provide the path as well as the bankname. To use commands, simply enter them in the blotter, although initially you may wish to focus on the menu choices.

Once a bank has been opened, displaying the observations on any of the series it contains is as simple as clicking **View** and then **Series**. MODLER should respond by displaying the form shown as Figure 1-13. In principle, all that you then need do is to provide a series name, although as the form tells you, you could instead type in a complete expression, in which case MODLER will evaluate it and display the computed results.

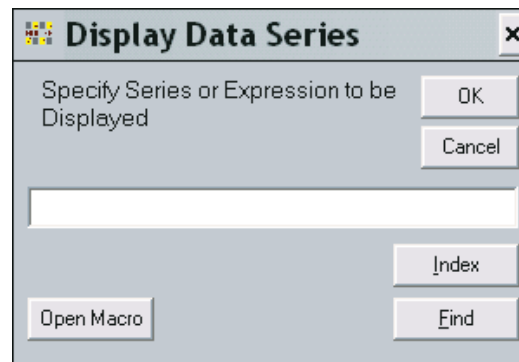


Figure 1-13. Series Selection Form

But before you type in some series name, look at the form and note the three buttons **Index**, **Find**, and **Open Macro**. In order to provide you with sufficient information exactly when you need it, whenever a form (or dialog box) appears that asks you for the name of a series or to type an expression, you will find at least the first two of these buttons near at hand.

The **Index** button, if pressed, immediately causes the display of a separate form like that shown in Figure 1-14. This one provides the names of all open data banks and, as you click on each, gives you the choice of displaying for it any of three types of indexes: a brief index, a standard index, or a fully documented (Full Doc) index. The brief index consists of simply the names of the series in the bank, arranged in

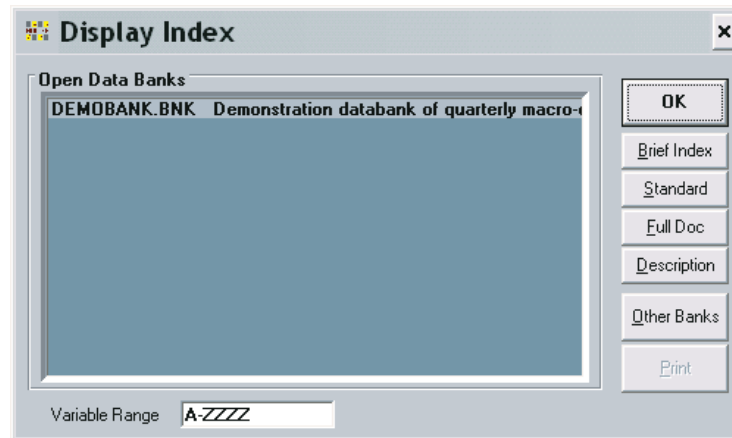


Figure 1-14. Index Control Form

alphabetic order; it is obviously most useful when you already know by sight the series names in the bank, but have not memorized these names. The standard and Full Doc indexes provide detail on each series in the bank, organized alphabetically. An example of a Full Doc index is shown as Figure 1-15. The standard index differs by not including the frequency transformation codes for the series, nor the latest dates of revision and extension of those series. The form also provides access to a general description of the bank, obtained by pressing **Description**.

Series	Description	Frq	Available
AVHRS	Average weekly hours, production workers Source:Census Units:HR/W FHL: Avg FHL: Linear Last Extended: 6/13/99 Revised: 6/13/99	4	6501-8402
CAPI	Fixed capital investment Source:BEA Units:\$72b FHL: Avg FHL: Linear Last Extended: 6/13/99 Revised: 6/13/99	4	6501-8402
CAPI\$	Fixed capital investment Source:BEA Units:\$b FHL: Avg FHL: Linear Last Extended: 6/13/99 Revised: 6/13/99	4	6501-8402
CONS	Consumers expenditure Source:BEA Units:\$72b FHL: Avg FHL: Linear Last Extended: 6/13/99 Revised: 6/13/99	4	6501-8402
CONS\$	Consumers expenditure Source:BEA Units:\$b FHL: Avg FHL: Linear Last Extended: 6/13/99 Revised: 6/13/99	4	6501-8402
CONSD	Consumers expenditure, durables Source:BEA Units:\$72b FHL: Avg FHL: Linear Last Extended: 6/13/99 Revised: 6/13/99	4	6501-8402
CONSD\$	Consumers expenditure, durables Source:BEA Units:\$b FHL: Avg FHL: Linear Last Extended: 6/13/99 Revised: 6/13/99	4	6501-8402
CONSDND	Consumers expenditure, non-durable goods Source:BEA Units:\$72b FHL: Avg FHL: Linear Last Extended: 6/13/99 Revised: 6/13/99	4	6501-8402
CONSDND\$	Consumers expenditure, non-durable goods Source:BEA Units:\$b FHL: Avg FHL: Linear Last Extended: 6/13/99 Revised: 6/13/99	4	6501-8402
CONSSV	Consumers expenditure, services Source:BEA Units:\$72b	4	6501-8402

Figure 1-15. Fully Documented Index

An additional characteristic of the form shown in Figure 1-15 is that if you double click on the name of any series and then press the OK button, that series name will be transferred to the command space of the original form. Pressing the OK button on the original form then causes the operation to be performed that uses the identified variable. The aim of course is to provide you not only with the information you require but also to minimize effort. Once you have selected the series you wish to use, it is easy for MODLER to move the relevant mnemonic to the command space; the benefit is that there is then no need for you to type the name. The mnemonic is moved to the location of your cursor at the time you pressed the Index button, so that in fact the placement is precise, thus allowing you to insert it exactly where you wish.

The Data Bank Index is obviously useful when you know generally what you are looking for among the data series contained in a bank. However, when you first access a new bank, you may know roughly what sort of series it contains but you may not know the exact contents or the series naming conventions. The alphabetic ordering of an index is of course both its strength and its weakness. The benefit, because of the alphabetization, is that you know where to find the name of a particular series in the index. The drawback, as with any dictionary, is both that you must know the name, to a high degree of approximation, and that you must go to the point in the index where that name is.

In contrast, the **Find** button offers the capability to discover one or more series in the currently open data bank(s) that have some identifiable characteristic, whatever the name and wherever located. Procedurally, when this button is pressed, you are asked to type a character string, which could be a complete word, such as “income” or “rate” or “price.” It also can be some fragment such as “consum” or “inves.” MODLER searches both the alphabetic index and the series descriptions, looking for a case-insensitive match.

Note that the longer the keyword string, the more restrictive the choice: for instance, the string “inv” can refer to both inventories and investment, whereas “inves” refers only to the latter. You should also be aware that MODLER will find embedded strings, as well, such as: disINVESTment.

Once **Find** has found a series you wish to use, the series’ name can be moved automatically to the command space in much the same way as in the case of **Index**: simply doubleclick on the series mnemonic and it will be copied.

There are a few caveats. In order for the **Find** facility to work properly, data banks must be properly documented. If series are not described, or are badly described, then what you will find is anyone’s guess and may be misleading. Note also that one of the aspects of a well documented data base is consistency in abbreviation, and that each user knows how abbreviations are made. Ideally, the **Find** facility is

very powerful, but in practice you may also be glad to have the Index button even if you are working with large data banks.

Finally, **Open Macro**, the third button, permits you to gain access to previously created command files. This option is generally of little use if all you wish to do is to view a series. It is of greatest use if you wish to view a previously created complex expression, for if you highlight a string of code in an opened macro this code will be copied immediately to the command space of the form shown earlier as Figure 1-13.

Simple Data Display

The foregoing discussion has focused upon facilities that can aid in discovery, but once you have determined the variable to display—by the process of clicking on **View**, then **Series**, having specified its name, and then either pressed the <Enter> key or **OK**—the resulting display itself will generally be similar to that shown above in Figure 1-16. Notice the various aspects of this display, including the description, the specification of the dates for which the series is available in the bank from which it has been retrieved, as well as the capability to print the series, as implied by the Print button. As with most such MODLER displays, you can increase the range of observations displayed (when relevant) either by stretching the display top or bottom or by pressing the maximize button at the upper right hand corner of the form, and of course you can scroll line by line.

The screenshot shows a window titled "Display Selected Series" with a standard Windows-style title bar (minimize, maximize, close buttons). The window contains the following information:

- Series: GNP
- Source: BEA
- Units: \$72b
- Available: 196501-198402
- Description: Gross national product
- Last Extended: 6/13/99
- Last Revised: 6/13/99

Below this information is a table titled "Quarterly Data" with columns for years and quarters (I, II, III, IV). The data is as follows:

	I	II	III	IV
1975	1204.30	1218.90	1246.10	1257.30
1976	1285.00	1293.70	1301.10	1313.10
1977	1341.30	1363.30	1385.80	1388.40
1978	1400.00	1437.00	1448.80	1468.40
1979	1472.60	1469.20	1486.60	1489.30
1980	1496.40	1461.40	1464.20	1477.90
1981	1513.50	1511.70	1522.10	1501.30
1982	1483.50	1480.50	1477.10	1478.80
1983	1491.00	1524.80	1550.20	1572.70
1984	1610.90	1638.80		

At the bottom of the window are two buttons: "Print" and "OK".

Figure 1-16. Simple Time Series Display

The purpose of this type of display is to provide in a space-economical form the maximum amount of information about the series displayed. Note in particular, the Last Revised and Last Extended dates. Last Revised refers to the last time observations within the date range of the series were changed, presumably revised. Last Extended refers to a change in the earliest or latest date of availability. These dates can provide you with important information concerned the currency of the observations displayed.

An important MODLER capability is implicit in this display, which is that the program will automatically adjust the default date range to suit the operation performed, whenever the date range set exceeds that for which observations are available. Thus, for instance, if the default date range is set for the period from 1947 through 2000, the fact that the latest observation date shown in Figure 1-16 is the second quarter of 1984 implies that there are no observations on the series since that date—at least to the degree that the bank is regularly and carefully updated.

What is not obvious from this display, but is an equally important MODLER characteristic is the search order for series when two or more banks have been opened for access. The bank opened first is the first searched, and if a series name is found that matches the one you have provided, the series displayed will be from this bank. If no such series is found in the first bank, the second bank is searched, and so on, until the first match occurs. There are exceptions to this selection rule: for instance, in the case that a particular data bank is being updated, as described in Chapter 4, or in the case that a Memoryfile is open, as described in Chapter 3. But you need to be aware that, in all cases, MODLER searches data banks for series in a specific order.

Transformations can also be displayed easily. To display a transformation, simply type it into the command space of the form shown in Figure 1-13. The fact that you will have clicked on **Series** does not preclude your specifying an expression instead, such as, for example:

$$100*(CONS+GOVP)/GNP$$

This command will cause observations to be retrieved on the three variables CONS, GOVP and GNP, the specified transformation to be performed, and the results to be displayed, as illustrated by Figure 1-17 on the next page.

The transformation will be performed for the mutually longest period of data availability of all the variables, within the bounds of the default date range. The rule that MODLER follows for all transformations is that, for any observation, if any constituent variable lacks a valid observation, the result for that date will be recorded

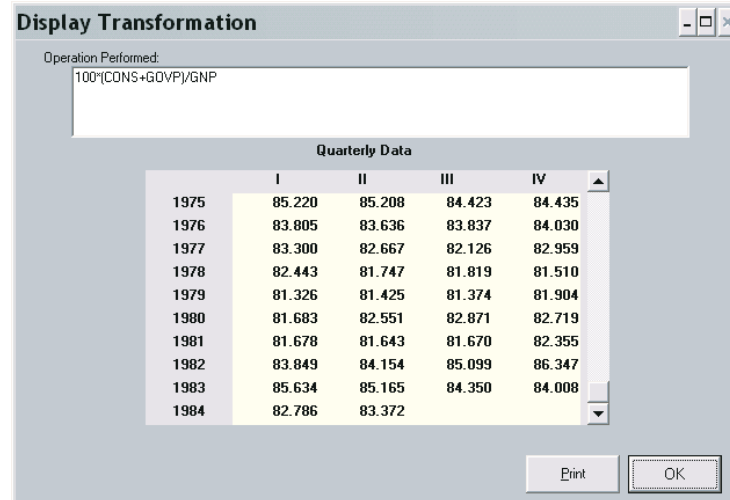


Figure 1-17. Display of a Transformation

immediately as NA, Not Available. When transformations are performed, it is consequently possible to find the results displayed for a shorter period than that for any series used in that transformation. Certain result observations within the overall data range may also be NA. Furthermore, given the search rules described earlier, it is also obviously quite possible to perform transformations for which the variables used have been retrieved from different data banks; this is normally desirable, but you need to be aware that the possibility also opens the door to error if the same named series appear in two or more banks yet are different, or if not all copies of the same series, in two or more banks, are equally up-to-date in their revision cycles.

Note also in Figures 1-16 and 1-17 that the observation frequency is stated prominently in the display. A specific aspect of a transformation is that you must generally specify the observation frequency in advance. If only a series is displayed, MODLER can infer the observation frequency from the characteristics of the series as it is retrieved inasmuch as its documentation includes this information. In contrast, a transformation can begin with an explicit constant value, as in the example used, which provides no indication of the frequency of observation of the variables; in this case, if the frequency has never been set, MODLER will request that you set it. If the frequency is incorrect for the series retrieved, then by default MODLER will note the “error.”

It is also possible of course that you may wish to display a series, or a transformation, at an observation frequency different from that of the series as retrieved. MODLER permits on-the-fly frequency conversion, provided that you have indicated that you wish this to occur. Click on **Settings**, then **Boundaries** (or, more directly, click on the status bar item labeled “Frequency”) Then, on the resulting form, check “Automatic Frequency Conversion,” if you wish to be able to convert

automatically from higher to lower frequency (for instance, months to quarters). The other check box labeled “Automatic Distribution of Observations” permits lower to higher frequency conversion (for instance, years to months). But, whenever you do this, you should be aware of two things in particular. First, that in both cases the conversion method is determined series by series from the data bank documentation for that series, although there is a way to override this convention. Second, that conversion from lower to higher frequency involves interpolation and thus a new source of measurement error for any series so converted.

Tabulate Series

Tables produced by MODLER generally take one of two forms: specialty tables and user-designed. The specialty tables, such as the default model solution table, are produced automatically by the program, and are designed to be produced quickly in particular contexts, with minimum effort on your part. For instance, when you are in the process of first solving a new model, you are unlikely to want to stop and spend a lot of time designing a table; at that stage, you will not even be sure that you do not wish to make further major changes in the model, once you have seen the first solution. So the idea behind MODLER’s specialty tables is not so much beauty as simply being able to produce a reasonable table quickly.

In contrast, the user-designed tables are as fancy as you wish to make them, but require you to develop table templates. This template development process can be quite automated, and may involve the creation of a spreadsheet based table, but will nevertheless take a bit of time. It may even take a concerted effort. The benefit is that you will be able to control the specific format, including the line descriptions. Furthermore, once you have developed one or more table templates, these can be used repeatedly to produce the tables, every week, every month, every quarter, or each year. The second half of the next chapter, Chapter 2, introduces this subject.

However, it is also possible to produce simple, vertically aligned tables using essentially the same degree of effort required to display a single series. Tabulated Series tables are produced by clicking on the **View** menu item of the Central Control screen, then choosing **Tabulated Series**. The initial effect is to cause the display of a dialogue box very similar to Figure 1-13, into which (in the simplest case) you can type one or more series names, separated by commas, then press OK or the <Enter> key. MODLER will then immediately generate a display like that shown below in Figure 1-18.

Note that this scrollable, columnar table aligns the series horizontally by date. One obvious use of such a table is to allow you to compare the values of series, since comparable observations appear in the same table row. However, you are not restricted simply to producing tabulated series. Rather than entering series names

The screenshot shows a dialog box titled "Tabulate Selected Series" with a date range of 196501-198402. It displays a table of quarterly data for four series: GNP, CONS, EMPL, and UNRATE. The data is organized into columns and rows, with the first column representing the year and quarter (e.g., 198102). The table is scrollable, and an "OK" button is visible at the bottom right.

Quarterly Data				
	GNP	CONS	EMPL	UNRATE
198102	1511.7	949.1	100.8	7.438
198103	1522.1	955.7	100.5	7.3733
198104	1501.3	946.8	100	8.2569
198201	1483.5	953.7	99.7	8.8665
198202	1480.5	958.9	99.8	9.4374
198203	1477.1	964.2	99.5	9.9548
198204	1478.8	976.3	99.1	10.56
198301	1491	982.5	99.2	10.388
198302	1524.8	1006.2	100	10.072
198303	1550.2	1015.6	101.5	9.4558
198304	1572.7	1032.4	102.5	8.4821
198401	1610.9	1044.1	103.7	7.9041
198402	1638.8	1064.2	105.1	7.4824

Figure 1-18. Tabulated Series or Expressions

in the dialogue box referred to earlier, you can instead type expressions, separated by commas. Thus you can also compare expressions, observation by observation. Alternatively, you can in addition mix series and expressions. And should you attempt to display more series or expressions than can fit into the width of your screen, the display will automatically scroll, up or down, or pan, left or right, in order to allow you to view all the columns of the resulting table.

Macro Files

MODLER commands may be entered interactively by making menu selections, as described. However, alternatively, a set of commands such as those typed into the command space of the Central Control screen can be formed into a command file, called a Macro File. Such files individually or collectively can be used to perform repetitive operations—or operations that involve the use of a particular sequence of commands. For example, if each month you wished to make a large number of data transformations using both historical data and the most recently released values, these can be included in a macro file and executed monthly, rather than requiring you to retype them each time. Macros can also be used to produce a set of regressions, tables, and other types of output, perhaps as a follow-on to the execution of the series of transformations performed after updating one or more data banks.

If, as you have read this chapter, you have tried the examples, you will have seen that MODLER automatically displays commands in the command space of the

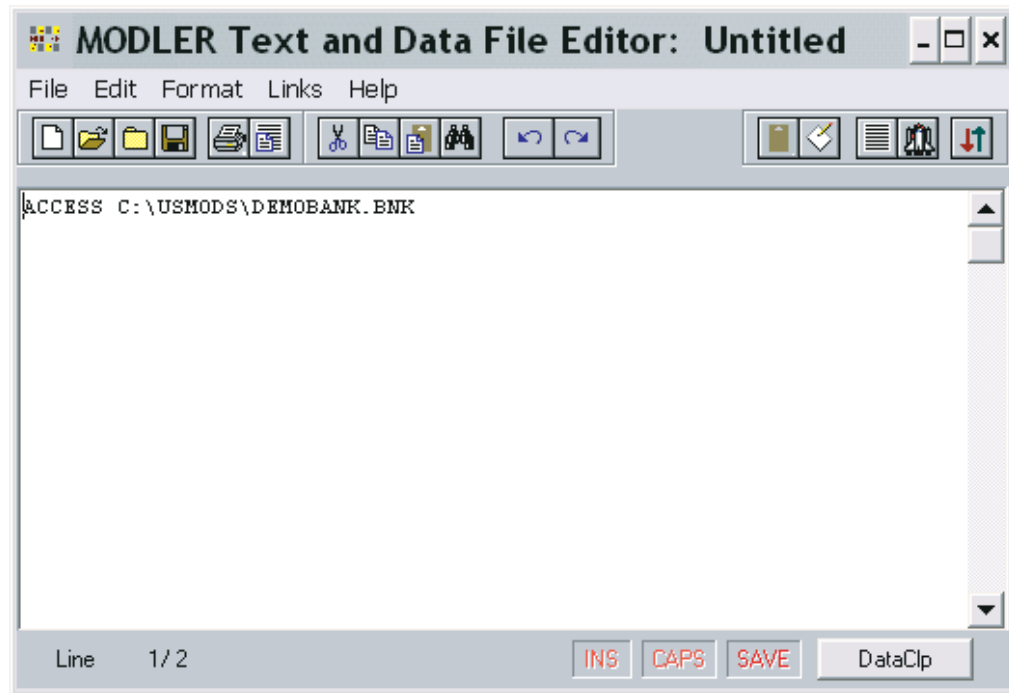


Figure 1-19. Text and Data File Editor screen

Central Control screen, even when you have used the menus or clicked the status bar. Thus, in all cases, working with MODLER results in a set of displayed commands. Furthermore, as you may have discovered, whenever commands are visible in this command space, if you *double click* with your left mouse button while pointing at the space with your cursor, MODLER will respond with the question, “Do you wish to create a text file from the contents of this screen?” If you answer “Yes”, you will immediately see superimposed on the Central Control screen another screen entitled “MODLER Text and Data File Editor: Untitled” with the same blotter display, as demonstrated in Figure 1.19. What has occurred is that MODLER has shifted into text edit mode, and become for the moment a text editor. Initially the file being edited is “Untitled,” until you give it a name.

Using this MODLER facility, you can edit the commands as you see fit and, finally, when you click on **File** and then either **Save As** or **Close**, the program will then permit you to create a macro file (or update an existing one) using the results. Incidentally, when you exit from the editor, saving the file, two things will occur. First, that file operation will be performed. Second, MODLER will then hide the text editor screen *and* redisplay the set of commands displayed when you first left-clicked with your mouse. The original command screen is preserved in original state, whatever you may have done during the editing process, which will affect *only* any file saved.

Note also that the file you will have created or updated will contain only the text of the commands, not the data that may have been used earlier in the MODLER session. But, if in a later session you reopen any relevant data banks or other data sources, and if you then execute the macro (using **File | Open** or the explicit MODLER command **Run**, *typed into the Central Control screen command space*) the program will re-execute the commands in the macro producing once again the same results, *ceteris paribus*.

A macro file so created generally will contain the same commands as you might type in the command space interactively or that are generated automatically by MODLER: in the simplest case, a macro is just a collection of ordinary MODLER commands. However, there are also specific commands for use in macros; these are described in the section of MODLER's help file that discusses the creation of macros. These commands include also those that allow you to do such things as call one macro from another, or deal with the possibility that a macro may fail for some reason during execution, or else cause a table always to begin printing at the top of a page.

Generally, separately from MODLER, such macros can also be created and revised using a text editor, such as Notepad or Wordpad. The limiting restriction on any third party text editor is that it *must* produce an ASCII file without control characters. Some word processors always embed control characters for formatting or selecting type faces and these must not be used.

The PROFILE Macro

The discussion in this chapter has successively considered a series of operations corresponding to commands that open data banks, set the observation frequency, allow on-the-fly frequency transformations, and the like. As a group, these commands are called *environment* commands, since they establish the environment in which other commands are acted upon. An example of a set of environment commands is:

```
ACCess demobank  
SET FREquency=Quarterly, DATES=47-2000  
AUTOFREQ on
```

where the essential portions of the command words are shown in bold capital letters.

Such commands can be issued manually at the beginning of each MODLER session, either explicitly or using the menu options. However, they do not need to be. Particularly once you have established a routine, you can put commands to SET

FREQUENCY, SET DATES and ACCESS one or more Data Banks into a file called:

PROFILE.MAC

You must put this file in your Macro directory; this directory type is described below on page 24ff. Then whenever you start MODLER subsequently, the PROFILE macro will be executed automatically as soon as MODLER starts. If you organize your work into projects, as described below, page 29ff, you can create a specific PROFILE.MAC for each project. Note that PROFILE.MAC plays an analogous role with reference to MODLER as AUTOEXEC.BAT played with respect to MS-DOS.

File Protection

Short of drastic exits (such as simply turning off the machine) MODLER is designed to provide a high level of data and file protection. Data Banks and model files will almost always survive crashes. Even the Memory File (the temporary workspace file) generates a *Crashfile*, which will be preserved in the Home directory. However, in order to recover this crashfile after a crash, before you re-execute MODLER it is *imperative* that you rename it to some other name than its default, CRASH.MFL. Once this renaming has been done, you can re-start MODLER, load the renamed Crashfile, and in most cases begin exactly where you left off previously. To load, use either **File | Open** or the explicit command:

LOADMF name-of-file

Organizing Your Work

MODLER provides a default setting in most instances, so that generally you can begin without any elaborate program preconfiguration. However, certain settings need to be made for effective operation of the program. If you have not previously read the MODLER *Getting Started and Maintenance Guide* and followed the instructions there, you should now press **Settings** and then click on **Directories**. In response, your screen will display the form shown as Figure 1-20 on the next page. A possible difference between exactly what is shown in this Figure and what your screen shows is that yours may display a different directory than C:\MODFILES in each of the successive categories. But if you have not previously used MODLER for Windows, your display should be similar inasmuch as a single directory will be displayed. Whatever its name, this directory is likely to be the default start up

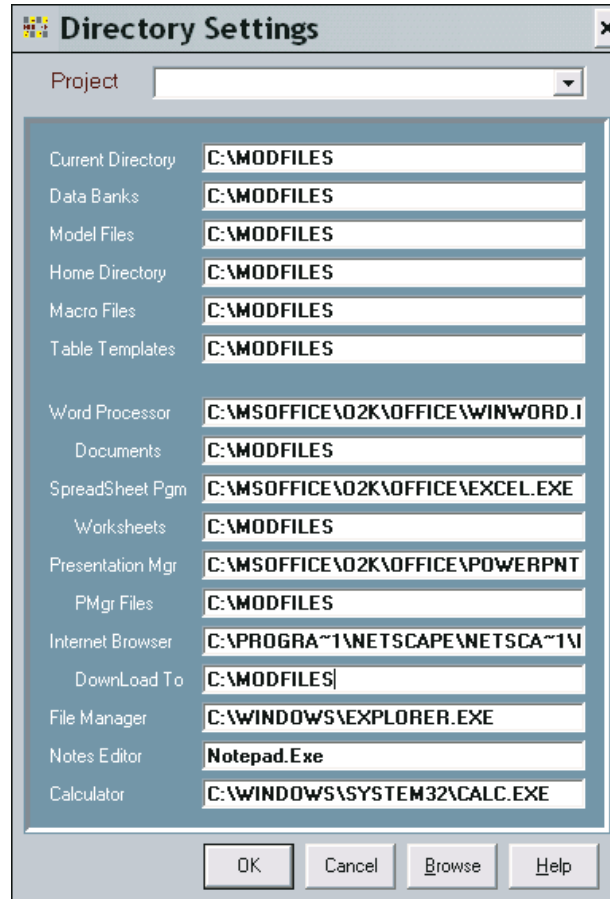


Figure 1-20 Directory Settings

directory, created more or less automatically at the time that you, or perhaps someone else, first installed MODLER.

Configuring External Programs for MODLER

As you look at Figure 1-20, focus initially on the bottom half of the form. In general, the Directories option of Settings has two related, but distinct roles. The bottom half of the Form allows you to identify the word processor, spreadsheet program, presentations manager, file manager, Internet browser, notes editor, and even calculator that you wish to use to perform MODLER-related operations pertinent to these functions. In addition, for the word processor, spreadsheet programs, presentations manager, and browser, these specifications also include the default directories for the directly associated files that will be used with MODLER.

Looking at this half of the form, you will see immediately that it contains text spaces reserved for the paths and executable file names of programs that can be used with

MODLER. In addition, in most cases, MODLER will already have discovered the location of most, if not all of these programs, assuming that they were previously installed on your machine. If it has not, then as a first step, leave this screen and then end your MODLER session. Re-start MODLER and return here; sometimes, when MODLER is used for the first time, the settings will not have been automatically inserted into the program's configuration file. On your return, you are likely to find that these settings have been set.

However, if for some reason MODLER cannot find these program files for you, you can specify them yourself. For example, in the case of a Word Processor, what MODLER expects is a specification something like:

```
C:\MSOFFICE\WINWORD\WINWORD.EXE
```

where the last portion (WINWORD.EXE) provides the name of the program executable and the first (C:\MSOFFICE\WINWORD\) the path, or directory location, of this executable. The path will of course be particular to your machine and can change, so that from time to time you may need to respecify.

Note also that, for both the Word Processor and Spreadsheet programs in particular, a different entry should be made for the default directories for documents and worksheets respectively; these entries should consist only of the path specification; for example:

```
C:\MYDOCS
```

without a trailing \. You will achieve best results if this directory is not a sub-directory and if its name is 8 characters or less. All directory specifications and filenames used with MODLER must be the short form that all versions of Windows actually directly use—not the long form that Windows 9.x and later versions of this operating system provide as indirect references. The reason for this MODLER convention is explained below.

The Internet Browser and presentation manager you may wish to use with MODLER are specified in much the same way as the Word Processor and Spreadsheet programs; however the File Manager and Notes Editor are handled differently. As Figure 1-20 implies, MODLER on its own will initially select what it “thinks” is the most advanced file manager for your particular operating system, but if you wish you can choose another, including a third party file manager. Similarly, MODLER initially selects Notepad.Exe for your working notes, but you can change this to Wordpad or some other simple editor if you wish.

Incidentally, the conceptual distinction between a Word Processor and the “Notes Editor” is essentially a matter of the speed with which they can be invoked and the

degree of complexity of operation; in general, both Notepad and Wordpad are much simpler programs, much more ready to be put into a corner of your screen in order to make notes as you work than are beefier programs such as WordPro, Word, or WordPerfect.

There is also another consideration. MODLER itself creates a number of files as you work, which are often used as display files. Generally, you will be unaware that this occurs but now and then you may see a message to the effect “Insufficient space to display the results, display in X?” where X is the name of your notes editor. If you have chosen a full-fledged word processor as your Notes editor, it will take much longer for such displays to display than if you use Notepad, Wordpad or some other much simpler text editor that is not such a resource hog..

The Why of Short Directory Names

Earlier, the use of short directory (or folder) names was advocated. As will be discussed in later chapters, the directory names that you specify in the textboxes of the *Directory Settings* form will be used in a variety of ways by MODLER. For example, if you build and use one or more models and wish to archive or export the model and its various related files, these directory names may be used in that process. Why this matters, as much as anything else, is that flash drives, network drives, zip drives, and even file compression programs are not yet uniform in their support of the long name directories. In addition, whereas a single directory name may not overwhelm, once long names start to be concatenated with each other, the final result can sometimes be quite formidable.

An example may help to explain. When you archive or export models, for instance, MODLER will use both the name of the model and the name of the file directories in a particular way. In particular, for the documents associated with a model, having created a main (or root) directory using the model name, MODLER will then try to create a documents subdirectory that will be called something like:

X:\MYMODEL\MODDOCS

where X: is the drive specifier, MYMODEL is the name of the main directory (and the particular model) and MODDOCS is the name of the documents subdirectory.

However, because of external requirements, the archiving or export process may in practice involve concatenating this directory structure with a pre-existing structure. Say that you wished to copy to a sub-directory on the X: drive that is already called:

X:\My Computer\My documents

The net result would obviously be:

```
X:\My Computer\My documents\MYMODEL\MODDOCS
```

even before adding on the actual file names. Sometimes, the degree of such concatenation might not even be evident—because of the way that operating systems elide, in a common attempt to hide complexities from users. From such considerations, it is not difficult to see that it is possible for the naming structure to get over-burdened quite fast if instead of adding a couple of 8 character directory names, you instead add two containing 40-50 characters to something that is already 160 characters behind the scenes.

Simply Specifying Directories

Apart from issues of name size, in general, it will be beneficial to be quite logical when you name the MODLER files directories. The files associated with MODLER consist of data banks, model files, and macro files, to cite only the major categories. One option is simply to put all files into a single directory or folder. An alternative, which MODLER just as easily supports, is to specify a particular directory for data banks, another for model files, and yet another for macros. These can either be set up as independent directories or else as subdirectories of some master directory (for instance, \MODFILES). However, in addition to files that you will consciously create, such as these, there are a variety of files that MODLER itself creates, more or less automatically, as needed for special purposes. For example, the Memory File is automatically created whenever the program needs a place to put a transformation or generated variable. There are in addition more esoteric temporary files that MODLER uses and creates as needed.

MODLER usually places these automatically-created files in what is called a *Home Directory*. A characteristic of such a directory is that it generally does not change during a session, no matter how much you move around your hard disk. By original default, the current directory when a MODLER session begins is adopted as the Home Directory; this is also the reason that the Directory Settings form will already contain directory settings when you first look at it—and not be just blanks. Furthermore, note that the Home Directory is therefore not necessarily a physically separate and distinct directory: it is conceptually any directory that MODLER uses in this particular way. It is only a separate directory when you uniquely specify a particular directory to be “the” Home Directory. And it only changes during a session if you explicitly change it.

But be aware that these protocols are simply organizing principles. It is up to you to put them into effect. One option is to use a single directory for everything. If you do nothing, this is the way MODLER will organize your work and, generally, the

single directory that the program will choose will either be the directory selected when the program was first installed, or else the first directory ever used for a MODLER session. MODLER is designed to operate in a can-do fashion in whatever environment it finds itself, but this is not a recommendation that you leave your destiny to the caprices of a machine.

Assuming that you wish to be captain of your fate, begin your first session by clicking **Settings** on the main menu of the Central Control screen and then **Directories**. You will probably find that MODLER has used a single directory, as just described and as illustrated in Figure 1-20. However, whatever you discover, you will also see that the Directories Form exhibits an implicit organization by file type. Note the categories:

- Current Directory
- Data Banks
- Model Files
- Home Directory
- Macro Files
- Table Templates

considering only the top half of the form. Moreover, as mentioned earlier, at the very top, above this list, will be the word Project with a blank drop-down textbox to the right—for the moment, ignore it.

The files types associated with MODLER can be categorized by extent, and on this basis consist of 16 different types, not counting various data transfer files that may be used to import data. Obviously, if you use MODLER intensively, leaving all these files in a single directory may soon yield a mess. One way to organize your work is to establish a parent directory and then a set of subdirectories that identify the types of files. If you wish to work this way, you will first need to create this directory structure and then the subdirectory paths. Once you have created these, fill in the Directories Form during your next MODLER session. At the end of that session, as you exit normally, the program will create (or, subsequently, edit) the textfile called MODLER.INI located in the main Windows directory. Thereafter, when you begin each subsequent session, MODLER will immediately load the specifications from MODLER.INI so as to re-establish this structure; note that MODLER.INI must be located in this particular directory.

If, when working interactively, you use MODLER commands to open data banks, run macros, attach models, and so on, a disadvantage of this organization may be that in some cases you will need to specify path directories as well as filenames. However, if you use the menus, or if you issue command words followed by <Enter> (so that MODLER displays available files of the relevant type), this organization may simplify your work over time. It will certainly organize it better.

Organization of MODLER-related Files: Multiple Projects Support

It is also possible to organize your MODLER files by project, with either mutually separate directories for the individual files used or some degree of overlap. Look once again at the form in Figure 1-20. Its top half obviously controls the directories into which MODLER puts files of various types. As a general matter, filling it in appropriately therefore provides you with the capability to organize your work in a variety of different ways. A fundamental choice, when specifying the directories to use with MODLER, is between organizing your work into distinct “projects” or not.

You will see that near the top of Figure 1-20 the word **Project** appears, followed by an (initially blank) dropdown textbox. If your needs are simple, you can ignore this option. Moreover, later, should you feel that you need to organize your work into projects, you can come back and do this. However, do not use this facility just because it is there: once you have begun to organize along project lines it can be difficult to simplify again, although there is a brute force method to achieve this: deleting the file MODLER.INI from the main Windows directory, which will re-initialize all elements of the Directories Form and wipe out all central references to projects—but if you take this drastic step, you should first save MODLER.INI to another directory or backup medium before deleting it from the Windows directory, just in case. In any case, read the *Getting Started and Maintenance Guide* before you attempt to use the **Project** facility.

Organizing Your Work By Project

Notwithstanding the warning just given, if your work involves the use of distinct sets of files at distinct times, with little or no overlapping use, then organizing your work by project may make sense. If you click on the dropdown Project textbox at the top of the Directories Form, you will immediately see that it has one entry <Add New Project>. If you make this choice an Input Box will appear, asking you to provide the name of a Project, and giving you space for as many as 80 characters. If and when you provide a name and click OK, two things will happen. First, a Project of that name will be created and, second, MODLER will place in the currently-specified Home Directory a file it creates; this file is always named PROJECT.INI. At the same time, MODLER will amend the MODLER.INI file (found in your main Windows directory) to include both the project name and the path for the just-mentioned Home Directory. As you add projects, the PROJECTS section of the MODLER.INI file will grow, and the designated Home Directory for each project will each receive a PROJECTS.INI file. In the future, as appropriate, these files will be dynamically updated whenever you make changes using the Directories Form.

Actually, during the project creation process, nothing permanent happens until you both identify the project and click the OK button at the bottom of the Directories Form. So that once you have provided a project name, and before you click that OK button, you have a chance to set up your various directories appropriately, including the Home Directory. Or, you can set up the directories first, and then click OK. If you are curious, you can inspect both the MODLER.INI file and the PROJECT.INI file, once you have crossed this Rubicon. These are both simple text files, but be careful not to change them unintentionally. It also might be a good idea, periodically, to save backup copies of these files, carefully organized of course, since the name of the PROJECT.INI file is common across projects.

You also need to be aware that, if you adopt this course, once you start working, whenever you open a project and then change some directory or program specification in the Directories Form, these changes will be recorded in the MODLER.INI file and the appropriate PROJECT.INI file. As mentioned earlier, these files are dynamically updated. If you wish to change the name of a project, you need only to change the name in the dropdown text box at the top of the Directories Form, and then click OK at the bottom. However, do not be misled by this simplicity into thinking that these INI files control the actual, physical organization of directories on your machine. They do not: they simply point to existing directories (and programs) and provide a conceptual organizing structure. When you change a project's specifications you do not affect the actual directory(ies) involved. It's also true that if and when you arbitrarily change the actual directory structure of your machine (or, in a network context, change the organization of the network) affecting your projects, you will usually need to make the appropriate changes in your project files, using the Directories Form.

To delete a particular project, by the way, simply erase the project name in the drop-down Project text box at the top of the Directories Form. Then immediately press the OK button at the bottom of the form. MODLER will respond by asking you to confirm that you wish to delete that project. If you answer Yes the deletion will occur provisionally, although no files will yet be affected. It is then best to exit from MODLER immediately and re-start the program. What occurs during the project delete operation is that the list of projects found in MODLER.INI at the start of the session is re-written to omit the deleted project, but this re-writing of MODLER.INI takes place only when the session ends.

As a fail-safe, if you delete a project, MODLER does not delete nor change any files other than MODLER.INI. In particular, the PROJECT.INI file in the Home Directory of the deleted project is not changed in any way. Consequently, if you previously saved the MODLER.INI file from the main Windows directory, after exiting MODLER, you can actually undo the effects of the deletion simply by copying the saved MODLER.INI into the main Windows directory over top the new one generated as the result of the deletion.