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Section I: Introduction

Where to Begin

If you are new to RATS, we recommend that you begin by reading through this guide. In particular, be sure to read Section IV on using RATS in interactive mode. Then work through the tutorial in Chapter 1 of the *User's Guide*.

If you are an experienced RATS user, we recommend that you look over this guide to see what is new and different about the RATS interface, and then turn to page xii in the *User's Guide* for an overview of the new features in Version 7.

What's Included in Your RATS Package

In addition to this guide, your RATS package should include a CD ROM containing the RATS software, as well as the *User's Guide* and *Reference Manual* books (except for Classroom RATS, which is available without the hard-copy versions of the manuals). The *User's Guide* provides general instructions on using RATS, discusses a variety of topics, and includes extensive examples. The *Reference Manual* provides a detailed description of each instruction and function in RATS, as well as other elements of the RATS language.

Estima offers two versions of RATS for most platforms: RATS and RATS Professional. The two versions are identical except that the Professional version includes the Census Bureau's X11 seasonal adjustment routine and support for some additional database formats, including ODBC/SQL and (except on Macintosh systems) FAME[®] format databases.

In addition to the RATS software itself, your RATS CD includes

- Copies of the *User's Guide* and *Reference Manual* in Adobe PDF format.
- A menu-driven data handling utility called RATSDATA. This is of less importance these days, because most of its functionality has been incorporated into RATS itself. However, some users may still find the stand-alone version useful.
- A large selection of full example programs (many of which are discussed in the manuals), including worked examples from many popular econometrics textbooks (installed in the folder "TextbookExamples") and programs replicating results from some well-known econometric papers (in the "PaperResults" folder).
- Dozens of RATS procedures. These are routines written in the RATS language that make it easy for you to implement complex tasks, such as unit-root testing, automated model selection, and so on, with a single call to the procedure. Many other procedure and example programs are available for downloading free of charge from our web site at www.estima.com. Many of these have been written by RATS users from around the world.
- Additional PDF files listing all of the procedure and example files included with RATS, including with a brief description of each.

System Requirements

WinRATS

- A Pentium or better CPU.
- Windows 98 or later. RATS 7 has been tested on 98, NT, 2000, XP, and Vista.
- A minimum of 8 Mb of available RAM. The amount of memory available to RATS determines the amount of data you can handle. See “How RATS uses Memory” on the next page for more information.
- A hard disk drive with at least 50 Mb of space available (100Mb if you want to install all the examples and procedures).
- A CD-ROM drive.

MacRATS

- A PowerPC- or Intel-based Mac, running OS X 10.3 or later.
- A hard disk drive with at least 50 Mb of space available (100Mb if you want to install all the examples and procedures).
- A CD-ROM drive.

UNIX/Linux RATS

- Please see the UNIX RATS installation guide.

Your Serial Number

Your serial number is printed on the CD jacket. It has a form such as WExxxx, WXxxxx, or NExxxx depending on which version you purchased, and whether it is a single-user license or a network license. The serial number is your key to getting updates and technical help. On some platforms, you will be prompted for your serial number when installing the program. You can then view the serial number at any time by selecting the *About RATS* operation (found on the *Help* menu on Windows/UNIX, on the RATS menu on Macintosh).

If you are not prompted for the serial number during installation, you can also use *File-Preferences (RATS-Preferences* on Macintosh) to enter and save your serial number. You may also want to record this number where you can find it easily, such as in the front of your manual.

Please use the convenient on-line registration form available on our web site (www.estima.com) to register your software. This is especially important if you bought the program through a dealer or through your purchasing department, as we will be unable to send you newsletters and other notices without an address.

Please note: We *never* sell or give out contact information to anyone.

How RATS Uses Memory

RATS performs all of its computations on data stored in memory, which allows RATS to run very quickly. This means that you will need to have enough memory available for RATS to store your data, as well as arrays, scalars, strings, and other variables you define. RATS will also need some temporary space for doing calculations (such as inverting arrays).

Each real number (series entry, array or formula element, etc.) requires 8 bytes of memory storage. To estimate the memory requirements of a given program, just multiply the total number of series you will be using by the number of observations per series, and multiply by 8. For example, 200 series of 200,000 observations each (for a total of 40,000,000 data points) would require approximately $(200 \times 200,000 \times 8) = 320,000,000$ bytes, or approximately 320 Mb, of memory.

As you can see, most modern personal computers will allow you to handle fairly large data sets. For example, on a machine with 1 Gb of RAM, your operating system and other applications may use as much as half of the available memory or more. However, you are likely to still have 400 Mb or more available for handling your data, which would allow you to work with several million data points. Virtual memory can provide additional capacity, but will slow down computations significantly.

Section II: Installing RATS

For UNIX/Linux Users

Please see the UNIX RATS installation guide included with your software.

For Macintosh Users

To install RATS on your system, just drag the MacRATS folder from the CD to your hard drive.

If you do not want to install all of the files included with RATS, first create a new folder for RATS on your hard drive, then open the RATS folder on the CD and copy over only the components you wish to install. See “What Is Included?” on the next page for descriptions of the various components.

For Windows Users

To install RATS on your system:

1. Insert the CD in your CD ROM drive.
2. In most cases, the installation program still start automatically. If the installation program does not start automatically, you can run it manually by selecting the *Run* operation from the *Start* menu, typing in “d:setup” (where “d” is the drive containing the CD), and clicking on “OK”.

The installation software will ask you where you want the software to be installed. By default, WinRATS will be installed in the subdirectory:

C:\Program Files\Estima\WinRATS 7

This conforms with standard practice for Windows applications.

However, you may find it more convenient to install RATS in a directory that is easier to locate and work with, such as:

C:\rats

After selecting the drive and directory on which you wish to install RATS, you will be given the choice of doing a standard, minimum, or custom installation. The standard installation installs all the items described on the next page. The minimum installation installs only the RATS and RATSDATA application files, omitting the examples, procedures, and documentation files. The custom installation allows you to select the components you wish to install.

See “What Is Included?” on the next page for descriptions of the various components.

What Is Included?

In addition to the RATS software itself, your RATS CD includes many other components, including a PDF-format copies of the manuals and other documentation as well as extensive collections of example programs and procedures. Below is an overview of the various components provided with RATS:

Program Files	This includes the RATS program itself and the RATSDATA data-handling utility program.
Auxiliary Files	These are additional support files required by RATS. You should install these if you are installing the Program Files.
Documentation	This includes copies of this <i>Getting Started</i> booklet, the <i>User's Guide</i> , and the <i>Reference Manual</i> , lists of procedure and example files, and other documents in Adobe PDF format files. You will need a copy of Adobe Acrobat® Reader or a compatible utility to view these. You can download the software free of charge from www.adobe.com .
Examples and Procedures	This includes a variety of complete example programs and data sets, and a number of RATS “procedures”—pre-written callable routines for performing tasks that require a sequence of RATS instructions. These are ordinary text files you can open and examine with the RATS Editor. We strongly recommend that you install these, as they are a very useful resource for using and learning various techniques in RATS. Additional procedures and examples are available from our web site (www.estima.com).
Enders Book	The <i>RATS Programming Manual</i> , by Walter Enders, is included with RATS in Adobe PDF format. This is a very useful guide to more advanced programming techniques, which Professor Enders has graciously provided free of charge to the RATS community. This was written for Version 5 of RATS, but most of the information applies equally well to Version 7.
Textbook Examples	These are complete worked example programs and data sets for many popular econometric textbooks.
Help Files	The Help files for RATS and RATSDATA. These provide quick references to all of the instructions and functions in RATS and general instructions on using RATS and RATSDATA.
Paper Results	These are example programs replicating results from some important econometric papers.

Section III: Using RATS—An Overview

Introduction

RATS is, for the most part, a command-driven application. You work in RATS by supplying an instruction, or set of instructions, for RATS to process. For example, you use the command **LINREG** to tell RATS to estimate a least squares regression. You can save your work as a program file, and you can rerun these saved programs at any time with just a couple of mouse clicks.

The great advantage of this approach is that as you are doing your analysis, you are creating a sequence of RATS instructions that you can use to reproduce and verify your results at any time—quickly, easily, and reliably. We believe that this ability to reproduce results is a vital, but often overlooked, aspect of any useful statistical research.

Version 7 also offers many menu-driven *Wizards* for many common tasks, including reading in data, doing transformations, estimating models, and doing hypothesis tests. You simply select the desired options from a dialog box, and the Wizard will generate and execute the appropriate RATS instructions.

These point-and-click Wizards simplify the learning process and help you get work done quickly, while still providing you with a complete “program” of instructions you can rerun at any time, either to reproduce your results or expand your analysis.

Interactive Mode vs. Batch Mode

RATS can be used in two modes: interactive and batch.

In interactive mode, you work with the RATS Editor. This is a special text-editor that can interpret and execute RATS instructions, and provides access to the menu-driven Wizards. We call this interactive mode because it makes doing your analysis an interactive process.

For example, suppose you execute a few instructions to estimate a regression model. After viewing the output, you decide to change your model slightly. With the RATS Editor, you can simply modify and re-execute the regression instruction itself, without having to re-run your entire program. You can also execute existing programs with just a couple of mouse clicks.

In batch mode, you supply RATS with a complete RATS program. RATS automatically executes all of the instructions in the program in order, and saves the resulting output to a file.

Instructions on using RATS interactively begin on page 9. See page 33 for details on batch mode.

Section IV: Using RATS in Interactive Mode

Starting RATS

To start WinRATS in interactive mode, click on the *Start* menu, open the “WinRATS 7” folder, and click on the WinRATS icon. For MacRATS, click on the MacRATS program icon. For UNIX, click on the “ratsx” executable file or type `ratsx` at the command prompt.

This loads the RATS interactive interface, which we call the RATS Editor. You will see the RATS menu bar, the toolbar, and an empty worksheet window called `NONAME00.PRG`. Whether or not RATS opens the empty worksheet at start-up is something you can control using the *Preferences...* operation on the *File* menu (on the *RATS* menu for Macintosh users).

The RATS Editor

The RATS editor is a text editor and interface to RATS, which allows you to:


- execute, modify, and re-execute RATS instructions. You can execute instructions line-by-line, or select a whole set of instructions and then execute them with a single keystroke or mouse-click.
- use menu- and dialog-driven *Wizards* to perform a variety of tasks.
- edit any text file. For example, you can store RATS instructions on a file for later execution in batch mode, examine and edit output files, and so on.
- access extensive on-line help information covering the editor and all RATS instructions (Windows only—help is accessed externally on Mac and UNIX).
- display, save, load, and print RATS graphs. You can also export graphs to other common graphics file formats for importing into other applications.
- create or edit data series on RATS format files.

In the next few pages, we’ll walk you through some basic features of the RATS Editor, and then provide more detailed information.

Executing Instructions and Ready/Local Mode

The RATS editor is a standard text editor with a twist: if you hit the `<Enter>` key on a line of text, that line will be executed as a RATS instruction. To try this, start RATS and type **SHOW MEMORY** followed by `<Enter>`. You will get output showing some statistics on the amount of memory available to RATS.

You will find there are times when you want RATS to stop bothering you and just let you edit your text. On the Macintosh, just hit the `<Return>` key. This inserts a line break without executing the current command.

In Windows and UNIX, just click on the “Ready/Local” toolbar icon () or type `<Ctrl>+L`. This switches you into “Local” mode, where hitting `<Enter>` simply

inserts a carriage return. For example, if you enter local mode, type **SHOW MEMORY**, and then hit <Enter>, nothing will happen, except that the cursor will move to the next line. To go back to Ready mode, click on the “Local/Ready” icon or hit <Ctrl>+L again. If you use the arrow keys to put the cursor anywhere on the **SHOW MEMORY** line, and hit the <Enter> key, RATS will execute the instruction.

Important Note: RATS allows you to have several windows open at a time, but it will only execute instructions from the window designated as the *input* window. See page 13 for details.

Executing Existing Commands

Chapter 1 of the *User’s Guide* includes a step-by-step example which introduces many of the key RATS instructions. Right now, we’ll show you how to execute some of that example. Don’t worry about what these instructions do—we explain that in Chapter 1.

First, type in the following lines without executing them (by putting RATS in Local mode, or by using the <Return> key on the Macintosh) :

```
calendar(m) 1959:1
allocate 1996:2
open data basics.xls
data(format=xls,org=columns)
table
```


If you are using Windows or UNIX, now put RATS back into **Ready** mode.


One way to execute these commands is to do it one line at a time. Just use the mouse or arrow keys to put the cursor on the first line (the **CALENDAR** line). The cursor can be anywhere in the line. Now hit the <Enter> key. RATS will execute the first command, which sets the frequency and starting date for this session, and the cursor moves to the second line. Keep hitting <Enter> to execute each line in succession. The **TABLE** command should generate a table of basic statistics for the series read in by the **DATA** command.

However, when you need to execute a block of instructions, it is usually easier and faster to select (highlight) the whole block of instructions and execute them all with a single keystroke or mouse click. You can select text using standard keyboard or mouse techniques:

- With the keyboard: Hold down the <Shift> key, and then press ↑, ↓, <PgUp> or <PgDn>. For this example, move the cursor up to the line beginning with **CALENDAR** (using ↑). Hold down the <Shift> key and press the ↓ key five times. All five lines should be marked in inverse video or in color.
- With the mouse: You can select text in several ways. For example, you can point the cursor at the **CALENDAR** line, press and hold down the mouse button, and drag the cursor until you’ve selected all five lines. Or, you could click on the first line, then hold down the <Shift> key and click on the last line.

To try this, select all the lines from **CALENDAR** down to **TABLE**, and either hit the <Enter> key or click on the “Run” icon () on the toolbar to run the commands again.

You may have noticed that the “Run” icon changes to the “Stop” icon () while RATS is executing the instructions. This indicates that RATS is busy executing instructions, and that you can click on “Stop” to interrupt the execution of these instructions. The “Run” icon returns as soon as the task is complete and RATS is ready to accept more instructions.

If you want to select all of the text in a window (if, for instance, you want to run a complete program), you can choose the *Select All* operation from the *Edit* menu, or click on the “Select All” icon ()

The process of selecting text is key to many operations, such as printing or saving selected portions, cutting and copying text, and so on.

Saving and Opening Programs and Output

You can use the *Save* or *Save As...* operations on the *File* menu to save your programs or output to disk.

To open a program or output file you’ve saved to disk, just choose the *Open...* operation from the *File* menu. You can also use the *Recent Files* operation on the *File* menu to open files used previously.

Printing Text

You can print your programs and output by selecting the *Print...* operation from the *File* menu. This prints the contents of the active window. To print just a portion of the text in a window, first select (highlight) the text with the keyboard or the mouse, then select *Print....* RATS will ask if you want to print just the selected text or the entire window contents.

Working with the RATS Editor

The RATS editor allows you to work with multiple “windows” of information. For example, you can enter RATS instructions in one text window and send the output to another text window, or have several files open at one time. In addition to text windows, RATS uses several other types of windows for displaying information. In the next few pages, we describe the basics of working with windows, and then cover each of the menu operations in detail.

Definitions

RATS uses six types of windows to display information:

Text window	Text windows are used to view and edit text files and execute RATS instructions. See the preceding pages for details.
Graph window	Graphs are displayed in graph windows. When a graph window is active, you can use <i>File–Save As...</i> to save the graph in any of several formats, <i>File–Print</i> to print the graph, and <i>Edit–Copy</i> to copy the graph to the clipboard.
Series List window	The Series List window displays a list of the series currently stored in memory. You can open this by selecting <i>Series Window</i> from the <i>View</i> menu (or <i>Show Series Window</i> from the <i>Data</i> menu). From this window, you can double-click on a series to edit it; use the toolbar icons or <i>View</i> menu operations to generate graphs and summary statistics; or export data using <i>File–Export...</i>
Spreadsheet/Report	Many RATS instructions, such as FORECAST , IMPULSE , and REPORT include a WINDOW option that allows you to direct output to a spreadsheet-style window. You can copy and paste information from these windows into other applications, or use <i>File–Export...</i> to export the data into a variety of different file formats.
Series Editing window	Series Editing windows are used for editing individual data series. You can edit series stored in memory (by double-clicking on a series in a Series List window) or series stored on RATS format data files (by using the <i>Open RATSDATA</i> or <i>New RATSDATA</i> operations on the <i>File</i> menu, or by using the DEDIT and EDIT instructions). The RATSDATA utility also uses these windows for creating or editing series.
Datafile List window	If you open or create a RATS format file (using <i>File–Open RATSDATA</i> or <i>File–New RATSDATA</i>), RATS displays the contents of the file in a Datafile List window. The window shows the names, number of observations, frequency, entry range, and comments (if any) for each series. You can double-click on a series to view or edit the series, while toolbar operations and corresponding <i>View</i> menu operations allow you create new series, rename existing series, generate several types of graphs, and compute summary statistics. RATSDATA also uses datafile list windows to display series lists.

Here are some other terms that we will use:

Active window	This is the front or top window—the window you are currently working with. You can switch windows by clicking on the window you want or by using the <i>Window</i> menu (see page 27). You can only edit text in a window when it is active.
Input window	At any given moment, one and only one of the open text windows is designated as the “input window.” RATS will only execute instructions from that window. To execute instructions, this input window must be the active (front) window. To make a different window the input window, switch to the desired window (make it the active window) and select the <i>Use for Input</i> operation from the <i>Window</i> menu or the I icon.
Output window	RATS sends any output it generates to the window designated as the “output window.” This can be the same window as the input window (output is inserted immediately after an instruction or block of instructions), or a different one. You can use the <i>Use for Output</i> operation on the <i>Window Menu</i> (or the O icon) to make the active window the output window.

RATS shows which windows are input and output by appending {i} (for input), {o} (output), or {io} (both input and output) to the window title, both on the window title bar and on the window list in the *Window* menu.

Window Basics

When you start RATS in interactive mode, the program normally opens an empty window labelled `NONAME00.PRG`. Since it is the only window, this window is the *active* window, the *input* window and the *output* window. RATS will execute any instructions you type in, and will insert any output in this window.

If you want to work with a specific file, the simplest procedure is to first close the empty window and then open your file. The new window will be *active*, *input* and *output*.



If you open a new window without closing `NONAME00.PRG` first, the new window will be the active window, but *not* the *input* or *output* window. You cannot execute instructions in this new window until you make it the input window, which you can do using the *Use for Input* operation on the *Window* menu, or the **I** icon.

Similarly, *Window–Use for Output* (or the **O** icon) makes the active window the output window.

Three Window Setups



We tend to use the text windows in one of three ways:

1. For quick work, we simply start up RATS and work with the NONAME window. If you aren't really interested in developing a set of RATS instructions to execute later and just want some quick answers, this is the simplest setup.
2. To test or run existing programs, we close NONAME (or configure RATS not to open a NONAME window—see page 15), open our file and run it as the sole window. We save or print whatever segments of the output that we need.
3. To develop a new (or existing) program, we designate one window as the input window, and a second window as the output window. With input and output in separate windows, it is much easier to keep a copy of the instructions that we decide we like.

The  and  toolbar icons provide easy ways to get this split-window setup—they automatically open a second window, designate it as the output window, and tile the two windows horizontally or vertically, respectively.

Working With Graphs

RATS normally associates each graph you create or load from disk with its own graph window. This allows you to keep several graphs in memory at a time.

To print or save a graph, you just need to bring the desired graph window to the front and select *File-Print* or *File-Save As...* or click on the “Print” () or “Save” () icons. You can also save graphs using the **OPEN PLOT** or **ENVIRONMENT GSAVE** instructions prior to drawing the graphs—see Chapter 3 in the *User's Guide* for details.

You can configure RATS to use only one graph window. In that case, the first graph opens a new graph window. Any later graphs simply replace the previous graph in the same window. See “Customizing the RATS Editor” on page 15.

See the “Graphics” chapter in the *User's Guide* for further information.

The Toolbar

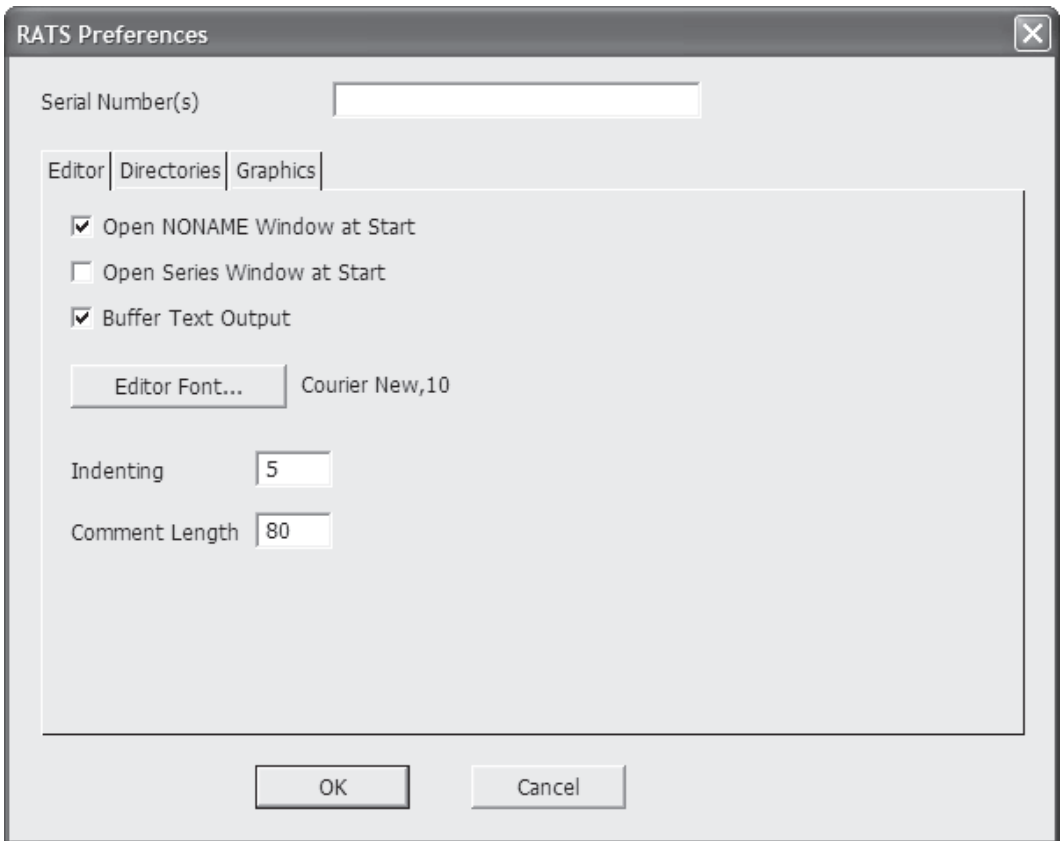
RATS includes a “Toolbar” that allows you to accomplish many operations quickly by simply clicking on icons with the mouse. See page 28 for details on the toolbars.

Pop-Up Menus

RATS also provides contextual, or “pop-up”, menus for the various types of windows. If you right-click on a window or object (Ctrl+click on Macintosh), the program displays a short menu of operations that you can apply to that window or object. Just click on an operation to select it. For example, on text windows you can use pop-up menus to do most of the operations available on the *Edit* menu with a minimum of effort.

Customizing the RATS Editor

The *Preferences...* operation on the *File* menu (on the *RATS* menu for Macintosh users) lets you customize various aspects of the RATS environment. Selecting the *Preferences* operation brings up this dialog box:



You can use the **Serial Number** field at the top to store your RATS serial number in the registry. This allows you to view the serial number at any time by doing *Help>About RATS* (*RATS>About RATS* on Macintosh). For convenience, you can also store serial numbers for other RATS products (such as the CATS cointegration procedures)—just separate the serial numbers by semi-colon (;).

Note: in some cases, the installation program may be able to save the serial number in the registry automatically.

The remaining fields are described on the following pages.

The Editor Tab

The first tab in the dialog box, labelled “Editor”, controls various settings affecting the text editing features of the interactive mode interface.

Open NONAME Window at Start

This controls whether or not RATS automatically opens up an empty text window each time you start the program.

Open Series Window at Start

Turn this on if you want RATS to automatically open the Series List window (displaying the series in memory) when the program starts.

Buffer Text Output

Turn this *off* if you want RATS to display each line of output as it is generated. Turn it *on* if you want RATS to save output in a “buffer”, and only update the screen periodically. The latter is usually much faster for programs that generate a great deal of output.

Editor Font Button

You can change the font and type size used in the RATS editor by clicking on this button. This controls the appearance of text both on the screen and when printed. The current font and size are shown in the dialog to the right of the button.

Indenting

This controls how far (in terms of number of characters) lines will be indented if you use the *Indent Lines* operation on the *Edit* menu.

Comment Length

This sets the maximum line width (in number of characters) that will be used if you do the *Format Comments* operation on the *Edit* menu.

The Directories Tab

The “Directories” tab offers the following fields:

Default Directory

The Default Directory field allows you to change the default startup directory. If you select a directory here, and answer “Yes” when RATS asks if you want to make the changes permanent, that directory will be the default directory each time you start the program. Note: use the *File-Directory* operation if you just want to change the default directory for the current session.

Procedure Directory

If you try to execute a procedure that RATS has not yet compiled, it will automatically search the current directory and the directory containing the RATS executable file for a “.SRC” file with a name matching that of the procedure. You can use this field to supply an additional search directory. So, if you have procedures you use regularly, you may want to collect them in a specific directory, and enter the name of that directory in this field. See Section 6.2.1 of the *User’s Guide* for details.

Procedure Library

The Procedure Library field allows you to specify a file of procedures that you want RATS to load automatically each time you start the program or clear the memory. See Section 6.2.1 of the *User's Guide* for details.

CATS Directory

If you have version 2.0 or later of our CATS cointegration analysis procedure, enter the directory containing your CATS files here. This will allow you to use the *CATS Cointegration* operation on the *Statistics* menu to launch the CATS procedure.

Global Insight (Citibase/DRI Basics) Directory

If you have a copy of the Global Insight (formerly DRI/Citibase) Basics Economics database, you can use the “Global Insight Directory” field to tell RATS where these files are located so that you can read data from those files into RATS using the `FORMAT=DRI` option on the **DATA** instruction.

Batch Output .ext

This field lets you specify the extension that is appended to output files when running in batch mode.

The Graphics Tab

The Graphics tab provides the following fields:

Fonts for Label Types

You can use this field to set the default font, size, and style for the various labels available on graphs generated by RATS. To change the settings for a label, select (highlight) a label type and then click on the “Change” button. This displays a standard font selection dialog box which you can use to select the font.

Note that you can override these defaults using the **GRPARM** instruction or the *Graph Settings* operation on the *Wizards* menu.

One Graph Window Only

If this is on, RATS re-uses the same window each time you generate a new graph. Otherwise, it displays each new graph in its own window. This can be handy when running a “batch” program.

The RATS Menu Bar


The RATS Editor provides eight menus: *File*, *Edit*, *View*, *Wizards*, *Data*, *Statistics*, *Window*, and *Help*. Most of these are very similar to those available in many other Windows applications. We describe the menu operations briefly below. The on-line help provides additional details on many of the menu operations.

The File Menu

The *File* menu provides standard file-handling and related operations.

<i>New</i>	opens a new, empty, text window.
<i>Open...</i>	opens an existing text file and displays its contents in a new window. This will only be the input window if there are no other open text windows. Use the <i>Open Graph...</i> operation to open a graph file and <i>Open RATSData</i> to open a RATS data file.
<i>Recent Files</i>	provides a list of the most recently used files. The list is preserved from one session to the next, so you can easily reopen files you were using in a previous session.
<i>Close</i>	closes the active window. RATS will give you a chance to save any changes before closing the window. If you close the input window, RATS does a <i>Clear Program</i> operation (see next page).
<i>Merge...</i>	inserts the contents of an existing file into the active window.
<i>Save</i>	saves the entire contents of the active window to disk using the current file name (<i>Save</i> will prompt you for a file name if the file hasn't been saved previously).
<i>Save As...</i>	saves the contents of the active window to disk, using a filename you select. If you have text selected in the window, <i>Save As</i> will ask if you want to save the selected block, or the entire window.
<i>Export...</i>	exports the contents of the active window to a file. This operation is supported for most windows other than text windows (where you just use <i>File-Save As...</i>). <i>Export</i> allows you to choose from a variety of file formats.
<i>Open Graph...</i>	opens a RATS graph (saved in RGF format) and displays it in a graph window.
<i>New RATSData</i> , <i>Open RATSData</i>	open a new or existing RATS format data file and display a Datafile List window associated with that file. Toolbar operations allow you to create new series, rename, view, or edit existing series, and display graphs and summary statistics.

The *Open RATSData* operation is also the first step in using the RATS format *Data Wizard* to read data from a RATS data file into memory. See Chapter 1 of the *User's Guide* for details.

<i>Page Setup...</i>	selects a printer, and allows you to set printer-specific options.
<i>Print</i>	prints the contents of the active text or graph window. To print just a portion of a text window, select the desired lines before doing <i>Print</i> .
<i>Directory...</i>	lets you change the default drive and directory for the current session.
<i>Preferences...</i>	customizes the behavior of the RATS editor. See page 15 for details. On Macintosh versions, this operation is located on the <i>RATS</i> menu.
<i>Batch Mode</i>	puts RATS into “batch” mode. See page 33.
<i>Clear Program</i>	clears the current RATS “program” (all data series, other variables, CALENDAR and ALLOCATE settings, etc.) from memory. Use <i>Clear Program</i> (or the  icon) when you want to enter a new program, or re-execute a program from the beginning. This does <i>not</i> delete any text, close any windows, or close open data files.
<i>Exit</i>	closes all windows and exits the RATS program. RATS will give you an opportunity to save any changes before quitting. On Macintosh versions, this operation is called <i>Quit</i> and is located on the <i>RATS</i> menu.

The Edit Menu

The *Edit* menu provides cut and paste and other editing functions. See the on-line help for further details.

<i>Undo</i>	“undoes” the recent changes. For example, if you have <i>Cut</i> a block of text, <i>Undo</i> will replace the text. <i>Undo</i> also works with data editing windows. You can “undo” up to the twenty most recent changes in each window. Note that <i>Undo</i> never reverses calculations—it applies only to editing operations.
<i>Redo</i>	“redoes” the results of the most recent <i>Undo</i> .
<i>Cut</i>	for a text window, this deletes the selected text and copies it to the Clipboard. This can also be used to delete series from a RATS format file when applied to a Datafile List window (the deleted series can be pasted to another file if desired).
<i>Copy</i>	copies the selected information to the clipboard for later pasting, but does not delete it from the window. You can use <i>Copy</i> to copy text, graphs, or the contents of a spreadsheet window, or to copy-and-paste series from one RATS format file to another.
<i>Paste</i>	copies the contents of the clipboard into the active window. Most commonly used for copying text, you can also copy-and-paste (or cut-and-paste) series from one RATS format file to another using Datafile List windows. Note that you cannot paste graphics into RATS.
<i>Delete</i>	deletes the selected text (does <i>not</i> copy it to the clipboard).
<i>Select All</i>	selects every line in the window. To execute every instruction in the input window, you can do <i>Edit-Select All</i> (or click on the “Select all” icon) and hit <Enter> (or click the “Run” icon).
<i>Find...</i>	searches for a string of text. You can search from the top of the window, or forward or backward from the current cursor position. Turn on the “Case Sensitive” check box for a case-sensitive search.
<i>Find Next</i>	repeats the most recent <i>Find...</i> operation.
<i>Replace...</i>	does a find-and-replace operation, locating a specified string in the active window, and replacing it with another string.
<i>To Lower Case</i>	converts the selected lines to all lower-case.

<i>Format comments</i>	Takes the selected line(s) and turns them into a block of comments (lines prefixed with an * that RATS will ignore rather than execute as commands). The lines will be reformatted to be of approximately uniform length. You can change this length with the “Comment Length” box on the <i>Preferences</i> dialog box.
<i>Comment-Out Lines</i>	This turns the selected lines into comment lines, that will be ignored by RATS when executing instructions. This is done by adding the * symbol to the beginning of each line.
<i>Uncomment Lines</i>	The opposite of the <i>Comment-Out Lines</i> operation, this removes the * symbols from the beginning of the selected lines.
<i>Indent Lines</i>	Indents the selected lines. You can change the width of the indenting with the “Indenting” box on the <i>Preferences</i> dialog box.
<i>Unindent Lines</i>	Removes indenting from the selected lines. The amount of indenting that will be removed is the indenting amount set via the <i>Preferences</i> operation.
<i>Show Last Error</i>	moves the cursor to the line (instruction) that caused the most recent error.

The View Menu

The *View* menu allows you to view lists of the variables and series currently stored in memory and quickly generate simple graphs and statistical tables for series displayed in a Series List and Datafile List windows.

The following operations are always available:

<i>All Symbols</i>	Displays a list of all global variable and function names, including reserved variables and functions defined by RATS as well as user-defined variables.
<i>Series Window</i>	This brings up a window showing all the series currently in memory. From this window, you can use the other <i>View</i> menu operations or the toolbar icons to graph the series, display basic statistics, export series, edit the series, and more.

The following operations are only available for certain types of windows.

<i>Change Layout</i>	Reserved for future development.
<i>Reset List</i>	When a Datafile List is active, this allows you to change which series are listed, and whether the series are sorted by name.
<i>Show as B&W</i> <i>Show as Color</i>	When a Graph Window is active, you can use these operations to change the graph from color mode to black and white mode or vice versa.

The following operations are only active when a series list or datafile list window is active. These serve the same function as the corresponding toolbar icons (see pages 28-29). The last two operations apply only for a list of series in memory.

<i>Time Series Graph</i>	Produces a time series graph of the selected series.
<i>Histogram</i>	Produces a histogram plot of the selected series (can only be applied to one series at a time).
<i>Box Plot</i>	Produces box plots for the selected series.
<i>Autocorrelations</i>	Produces a plot of the autocorrelations and partial autocorrelations for the series.
<i>Statistics</i>	Produces basic descriptive statistics for the selected series
<i>Covariance Matrix</i>	Produces a covariance\correlation matrix of the selected series
<i>Data Table</i>	Displays the selected series as columns in a spreadsheet-style window, similar to doing PRINT with the WINDOW option. Note that you cannot edit series values using this data view—double click on a series if you want to edit values in the series.

The Wizard Menus

RATS offers more than two dozen menu-driven *Wizards*, which provide easy point-and-click access to many of the most important tasks available in RATS, including reading in data, estimating regressions, generating forecasts, and much more.

With Version 7, the Wizard operations have been divided into three separate menus, grouped by basic function:

- The *Wizards* menu provides some general tools, including access to lists of reserved variables and functions, and the ability to control fonts and type sizes for graph labels.
- The *Data* menu provides tools for working with data series, including reading data in from a file and doing various data transformations.
- The *Statistics* menu is where you will find wizards for computing summary statistics, doing least squares regressions, estimating various non-linear models, testing hypotheses, and more.

These menu operations are described briefly beginning on the next page. Please see Chapter 1 of the *User's Guide* and the RATS Help system for full details on using the Wizards.

Note: For some instructions, we have omitted some of the more esoteric options from the corresponding Wizard, to keep the wizards from becoming cluttered or unwieldy. For example, the **GARCH** and **GRAPH** instructions both offer options that are not available via their respective Wizards.

If you need some of these additional capabilities not provided via the Wizards, you can either type in the appropriate command(s) directly, or use a Wizard to generate a basic version of the instruction(s) which you can edit as desired.

The Wizards Menu

Paste AND Execute

This is a “switch” controlling how the other Wizards behave. When this switch is on, clicking OK in a Wizard dialog box automatically executes the instruction(s) generated by the Wizard. If you would prefer that the Wizard only insert the instructions without executing them, select *Paste AND Execute* to turn off this setting.

Show All Symbols

Displays a list of all global variable and function names, including reserved variables and functions defined by RATS as well as user-defined variables.

Function

This opens the Function Wizard, which you can use to browse through the built-in functions, check the function syntax, and paste a function into the input window.

RATS Variable

This provides access to all of the reserved variables defined by various RATS instructions. You can view an alphabetical list of all the variables, or list variables by category.

Graph Settings

This generates a **GRPARM** instruction, allowing you to set the font, style, and size of labels used on graphs.

The Data Menu

Show Series Window

This brings up a window showing all the series currently in memory. From this window, you can use toolbar buttons to graph the series, display basic statistics, export series, edit the series, and more.

Calendar

provides an easy way to enter the desired periodicity and starting date for the current session. Note: If you will be using one of the Data Wizards, there is no need to do the Calendar Wizard.

Data (RATS format)

The Data Wizards simplify the process of setting up your RATS session, including setting the **CALENDAR** and **ALLOCATE** commands, opening a data file, and reading in data. If you will be working with a RATS format file, first do *File-Open RATSData* to open the data file, select the series you want to read in from the file, and then do the *Data (RATS Format) Wizard* to read in the data.

Data (Other formats)

If you will be working with any format other than RATS format, just select the *Data (Other Formats) Wizard*. From the dialog box, select the desired file format and open the file you want to read.

Trend/Seasonals/Dummies

generates trend series, seasonal and 0/1 dummies, or a series of draws from a random normal distribution.

Transformations

provides a convenient way to do a variety of data transformations, from taking logs or square roots to generating growth rates, and more.

Differencing

allows you to difference series using regular, seasonal, and/or fractional differences.

Filter/Smooth

implements several types of time-series filters.

Moving Window Statistics

extracts means, variances, fractiles, and extreme values from a moving window of data.

X11 (Pro version)

implements the X11 seasonal adjustment process. Note: This feature is only supported in the Professional version of RATS.

Graph

generates time series graphs.

Scatter (X-Y) Graph

generates scatter plots.

The Statistics Menu

<i>Univariate Statistics</i>	generates descriptive statistics for a single series.
<i>Cross Correlations</i>	computes cross correlations and covariances for a pair of series.
<i>Covariance Matrix</i>	computes a variance/covariance matrix for a set of series.
<i>Equation/FRML definition</i>	defines an equation or formula. For formulas, you can define the list of nonlinear parameters.
<i>Regressions</i>	performs a variety of linear regressions, including OLS, instrumental variables, GMM, and AR1.
<i>Limited/Discrete Dependent Variables</i>	performs estimations involving limited and discrete dependent variable models, such as probit and tobit.
<i>Panel Data Regressions</i>	performs panel data regressions, including fixed and random effects.
<i>Regression Tests</i>	does hypothesis testing on the most recently completed regression.
<i>ARCH/GARCH</i>	estimates univariate and multivariate ARCH, GARCH, and related models.
<i>Box-Jenkins (ARIMA) Models</i>	estimates ARIMA models.
<i>Exponential Smoothing</i>	implements exponential smoothing.
<i>VAR (Setup/Estimate)</i>	defines and estimates VAR models.
<i>CATS Cointegration</i>	If you have version 2 of the CATS cointegration analysis procedure (sold separately), you can use this operation to execute the procedure.
<i>Single-Equation Forecasts</i>	generates forecasts for a single equation.
<i>VAR (Forecast/Analyze)</i>	generates forecasts, impulse responses, variance decompositions, and historical decompositions for VARs and other multi-equation models.

The Window Menu

The *Window* menu offers several operations for working with RATS windows. Also, a list of all open windows appears at the bottom of the *Window* menu. You can switch to a window by selecting it from this list.














- Tile Horizontal* “tiles” the open windows so they are all visible on the screen, using a horizontal orientation (windows will be wider than they are tall).
- Tile Vertical* tiles the open windows, using a vertical orientation (windows will generally be taller than they are wide).
- Cascade* stacks the open windows so the title bar of each window is visible.
- Close All* closes all open windows. RATS will give you a chance to save any changes to text windows.
- Close All Graphs* closes all graph windows. You will not be asked if you want to save changes, so if you want to save any of your graphs, be sure to do so before selecting this operation.
- Close All Reports* closes all spreadsheet windows created using WINDOW options.
- Use for Input* makes the active text window the input window.
- Use for Output* makes the active text window the output window.
- Restore Report* displays a recent “report” in a window. You can use this to re-display the formatted output produced by instructions like **REPORT**, **LINREG**, **TABLE**, **STATISTICS**, and many others. You can restore (in reverse order) up to twenty reports. From the report windows, you can copy, paste, and export information to spreadsheet programs and other applications.

The RATS Toolbars

The RATS and RATSDATA toolbars provide icons you can click on to accomplish a variety of tasks. The toolbar appears at the top of the screen, just below the menu bar. Note that many of the graph window and series list operations are also available via the *View* menu.

Text Editing Windows

The following icons appear in the toolbar when a text window is active. Some icons are disabled (and appear dimmed) under certain conditions.

- | | | |
|---|---------------|--|
|  | (Open) | Shortcut for <i>File–Open</i> . Opens a text file. |
|  | (Save) | Shortcut for <i>File–Save</i> . Saves the contents of the active window. |
|  | (Print) | Shortcut for <i>File–Print</i> . Prints the contents of the active window. |
|  | (Functions) | This opens the <i>Function Wizard</i> . See Chapter 1 of the <i>User’s Guide</i> for details. |
|  | (Input) | This designates the active (front) window as the Input window. It is equivalent to the <i>Window–Use for Input</i> operation. |
|  | (Output) | This designates the active (front) window as the Output window. It is equivalent to the <i>Window–Use for Output</i> operation. |
|  | | These set up split Input and Output windows, tiled horizontally or vertically—see page 14. |
|  | (Select All) | Shortcut for the <i>Edit–Select All</i> operation. Selects all the text or items in the active window. |
|  | (Run) | Runs the selected instructions, or the instruction on the cursor line, if any (equivalent to hitting <Enter>). Disabled if the active window is not the input window. |
|  | (Stop) | While RATS is processing instructions, the “Run” icon changes to this “Stop” icon. You can click on this to halt the processing of the instructions. |
|  | (Ready/Local) | This switches RATS from Ready to Local mode. The icon will change to “Local/Ready” () , indicating that RATS is in Local mode. Click the icon again to change back to Ready mode. You can also hit <Ctrl>+L to switch between modes. See page 9 for details. This is omitted on Macintosh versions, where you can insert a carriage return by hitting the <Return> key. |
|  | (Clear Mem.) | This clears the memory. It is equivalent to <i>File–Clear Program</i> . |

Graph Windows

When a graph window is active, RATS will display the “Save” and “Print” icons described above, along with the following icons (see Chapter 3 of the *User’s Guide* for more details on these):



(Fix)

Clicking on this icon “fixes” the graph proportions. Resizing the graph window will change the size of the graph, but not its proportions or general appearance. If you then print or save the graph (in any of the available file formats), the graph will be printed or saved using these fixed proportions.



(Unfix)

When you fix the proportions of a graph, the “Fix” icon changes to the “Unfix” icon. If you click on “Unfix,” RATS will be free to change the proportions of the graph whenever you re-size the graph window.



(Grayscale)

By default, graphs are displayed in color (unless you use the `PATTERNS` option). Clicking on this button switches the graph to black and white mode. The icon will change to a multi-colored version, indicating that clicking the button again will switch the graph window back to color mode.

Series List Windows

The following icons are available when you display a Series List window (a list of the series stored in memory) by selecting the *View-Series Window* or *Data-Show Series Window* operations:



(Select All)

Shortcut for the *Edit-Select All* operation. Selects all the series in the list.



(Graph)

displays a time series plot for the series.



(Histogram)

displays a histogram plot for the series.



(Box Plot)

displays a box plot for the selected series.



(Autocorr.)

computes and graphs the autocorrelations and partial autocorrelations of the series.



(Statistics)

computes and displays descriptive statistics for the selected series, including the number of observations, mean, standard error, and maximum and minimum values of each series.



(Cov./Corrr.)

computes and displays a covariance and correlation matrix for the selected series.



(Data View)

displays a spreadsheet-style window showing the selected series. In addition to viewing the series, you can copy and paste the contents of the window into another application, or use *File-Export...* to export the contents to a file. Although this Wizard does not generate an instruction, it is equivalent to doing a **PRINT** instruction with the WINDOW option.

Datafile List Windows

When you display a Datafile List window (a listing of the series stored in a RATS format data file) by selecting the *File-Open RATSData* operation, the first six icons for the Series List window are available, plus three additional icons:



(Layout)

This brings up the “List Which Series” dialog box, which allows you to control which series are listed based upon their names or comments, and choose whether the list will be shown by name, or the order in which the series are stored on the file.



(New Series)

Adds a new series to the file. RATS will display a dialog box allowing you to specify the structure and frequency for the series, and then will open a Series Editing Window to enter values for the series. When you are finished entering values, close the editing window. RATS will prompt you for a name for the series, and then will add the series to the file.



(Rename)

allows you to change the name of the selected series.

The menu-driven RATSDATA utility program uses the same window format. You may find it handy to use RATSDATA for converting data to and from RATS format files, or for quickly creating or editing series or generating graphs (see the Help system in RATSDATA for details). However, virtually all of the functionality of RATSDATA has now been incorporated in RATS itself. So, in most cases you will probably find it easiest to just use the *File-New RATSData* and *File-Open RATSdata* operations in RATS to do this kind of work.

Series Editing Windows

The following icons are available when editing a series (either a series in memory or a series on a RATS format file):









(Insert)

Inserts a new cell at the current cursor position (cell value is set to NA).



(Remove)

Removes the current cell and shifts the remaining data one position to the left to fill its place.

 (NA)	Sets the current cell to the missing value code (NA, or Not Available).
 (Undo)	“undoes” the current operation. Equivalent to <i>Undo</i> on the <i>Edit</i> menu.
 (Max. value)	moves the cursor to the cell containing the largest (maximum) value in the series.
 (Min. value)	moves the cursor to the cell containing the smallest (minimum) value in the series.
 (Graph)	displays a time series plot for the series.
 (Histogram)	displays a histogram plot for the series.

Please see the on-line help for further details on using data editing windows.

Interactive Help

RATS includes an extensive help facility. The Windows version uses the standard Windows help system, which makes it easy to search for help on a topic, jump to related topics, move back and forth through previously viewed help topics, and so on. You can even copy information (such as the syntax for a RATS instruction) from a help window into a RATS window.

The help system provides information on using the RATS editor, brief descriptions of every RATS instruction, and general tips on getting started with RATS.

Accessing Help (Windows)

On Windows systems, you can open the main RATS help screen by hitting <F1> while RATS is active, or selecting *Contents* from the RATS *Help* menu. This provides a brief introduction to the help system, and provides a choice of a number of general help categories. Just click on any of the links to jump to that topic.

Menus and toolbar icons at the top of the window allow you to access various special features of the Help system. For general instructions on using the help system, select *Using Help* from the RATS *Help* menu or, if you've already opened the help screen, choose *How to Use Help* from the help screen's *Help* menu. To get help on a particular topic, select *Help-Search*. This allows you to do a keyword search through the available help topics.

Accessing Help (Macintosh, UNIX, Linux)

On Macintosh, UNIX, and Linux systems, the Help system is supplied in the form of HTML format files. Clicking on the "help" icon in your RATS folder will open the main Help page in your Web browser. You can then use the links to access the various help topics. Note that you do not need to be connected to the internet for this to work. The help files are all stored in the RATS directory on your computer.

Section V: Using RATS in Batch Mode

Batch Mode

In *batch mode*, RATS automatically reads instructions from a text file and stores the resulting output in another (new) file. This is very convenient for running long programs, because you can start RATS and then leave the computer unattended while it executes the program. You can create these programs using the RATS editor or any word-processing program that can save files as plain (unformatted) text. Similarly, you can view the output with RATS or any other word-processor.

Running Programs in Batch Mode

There are three ways to run WinRATS in batch mode (please see the “ReadMe” file included with MacRATS and the UNIX/Linux installation guide for details on running in batch mode on those platforms).

One method is to start RATS, put it into batch mode using the *Batch Mode* operation on the *File* menu, and then drag and drop your program files from Windows Explorer or a similar utility onto the active RATS application. This is most useful if you have several programs that you want to run.

Another method is to run from a command prompt—either via the *Run* operation on the *Start* menu, or by opening the “Command Prompt” shell. You simply type the name of the RATS application itself, followed by the name of the program you want to execute and the command-line switch “/RUN”.

Finally, you can execute RATS in batch mode from a short cut icon. This method is most useful if you have a particular program that you need to run frequently.

In any case, RATS will automatically run the specified program(s), and save the output in a new file (or files) with the name *filename.ext*, where *filename* is the name of the input file, and *ext* is the “batch mode extension” specified in the *File-Preferences...* operation in RATS (the default extension is LIS). The file(s) will be saved in the same directory as the program file(s).

Details on all three methods follow:

Drag and Drop Method

To run a program as a batch job using the drag and drop method, do the following:

1. Start RATS.
2. Switch RATS into batch mode by selecting the *Batch Mode* operation from the *File* menu.
3. Open Windows Explorer and arrange the screen so that you can see both the WinRATS window and the Explorer window on the screen at the same time.
4. Select one or more program files from Explorer, drag the file icon(s) over to the WinRATS window, and release the mouse button.

You can drag and drop the files one at a time, or you can drag and drop several files simultaneously. Note that a check mark appears next to the *Batch Mode* operation on the menu while RATS is in batch mode. To switch back to interactive mode, just select the *Batch Mode* operation again.

If you use batch mode frequently, you may want to create a copy of the WinRATS icon that will automatically start RATS in batch mode. Here's how:

1. Make a copy of the WinRATS program icon (see your Windows documentation or help for details).
2. Right-click on the RATS icon to display the properties dialog for the new icon.
3. Set the icon to "Run minimized" and click on OK.

Now, when you double click on this new icon, RATS will automatically start up with the *Batch Mode* switch turned on. You will need to click on the minimized icon to open it up into a window. You can then drag and drop program files onto the window.

Command Prompt Method

If you are comfortable with using the Command Prompt shells in Windows, or are used to using the older DOS version in batch mode, you may find this method useful. You simply need to open the Command Prompt window from within Windows, and then type in the name of the RATS executable file (RATS32S for WinRATS, RATS32SX for WinRATS Professional), the name of the input file, and the "/RUN" switch, separated by spaces. For example, the command line for WinRATS might look like:

```
c:\winrats\rats32s c:\test\myprog.prg /run
```

This will run the job and save the output to MYPROG.LIS (unless you have used *File-Preferences* in WinRATS to change the default output filename extension). You can include commands like this in a DOS batch (.bat) file if desired.

Short Cut Icon Method

There are several ways to create shortcut icons—see your Windows on-line help or documentation for details. One method is to right-click on the desktop, and select *New-Shortcut* from the pop-up menu.

In the command line, enter the command to run the desired program, just as shown under "Command Prompt Method" above.

Click on the "Next" button, enter a name for the icon, and click on the "Finish" button. This will create the batch job icon on your desktop—you can double-click on this to run the job.

Command Line Switches

RATS offers several command line “switches” to control batch mode operation—these can be used with both the “Command Prompt” and “Shortcut Icon” methods of running in batch mode:

<code>/NOSHOWGRAPHS</code>	Suppresses display of graphs in batch mode.
<code>/PRINTGRAPHS</code>	Prints graphs as they are generated.
<code>/PLOT=filename</code>	Saves graphs to the specified plot file. Equivalent to putting an OPEN PLOT instruction in your program.
<code>/DATA=filename</code>	Opens the specified file as the DATA unit. Equivalent to an OPEN DATA instruction.
<code>/COPY=filename</code>	Opens the specified file as the COPY unit. Equivalent to an OPEN COPY instruction.
<code>/PROC=filename</code>	Designates <i>filename</i> as a Procedure Library file—the commands in this file will automatically be processed before the specified program file is executed.

To use a particular switch, just add it to the end of the command line (you can use more than one switch if you wish). For example:

```
c:\winrats\rats32s /run /noshowgraphs /plot=myplot.rgf
```

executes the instructions in `MYPROG.PRG`, saves the graphs in the file `MYPLOT.RGF`, but does not display the graphs to the screen.

Section VI: File Handling and File Names

How RATS Uses Files

RATS uses files for several purposes:

- RATS instructions
- Data input
- Program output
- Data export
- Graphs

If you are working in interactive mode, you open program files with the *File-Open...* operation, and save output or graphs using the *File-Save As...* operation.

Most other file operations are handled using the **OPEN** instruction. For example, opening and reading a data file is handled with an instruction of the form:

```
open data mydata.rat  
data (format=rats)
```

In the **OPEN** command above, “DATA” is the name of the Input/Output unit associated with the file name. We use it here because DATA is the default unit used by the **DATA** command. **COPY** is the command most commonly used to write data to a file, and as you might expect, the default unit name for the **COPY** command is “COPY”, so we normally use a command of the form:

```
open copy export.rat  
copy (format=rats)
```

to write out data. See the **OPEN** command in the *Reference Manual* for more on I/O units and opening files.

Two other instructions, **SOURCE** and **DEDIT**, are also used for working with files:

- **SOURCE** temporarily switches the input source to a file. This is most commonly used to read in and compile procedures stored on separate files, such as the .SRC files supplied with RATS.
- **DEDIT** initiates editing of a RATS format data file.

Specifying File Names

Wherever RATS requires a file name, you can use any legal file name as long as the total length is no greater than 255 characters. If you give the name of a non-existent file for an INPUT, DATA or SOURCE file, RATS will print an error message and prompt you for the proper file name.

If you are writing an instruction that uses a file name or path that includes blank spaces, you need to enclose the entire name in quote marks:

```
source "c:\myfiles\long program name.prg"
```

On Macintosh and UNIX systems, use a forward slash (/) to separate drive and folder names:

```
source "/myfiles/long program name.prg"
```

If you set a default search path (with *File-Directory*), RATS will add that path to any file name which does not include either a drive or path specifier.

While it is not required, we would suggest that you use a .RAT extension for RATS format data files. We also suggest that you use .PRG, .RGF, and .SRC extensions for program, graph, and procedure files, respectively. However, RATS does not make any assumptions about the format of a file based on its extension, so you can use any extensions you like.

Section VII: Technical Support

Introduction

Support is not cheap, but we think it is an important part of what you have paid for. The next three pages describe the procedures for obtaining support and the level of support which you can expect from us.

Your Serial Number

Your serial number will be printed on a label on the CD jacket. This serial number is your key to updates and technical help. As described on page 15, you can use the *File—Preferences* operation to store your serial number in the registry for later reference. You may also want to write the serial number in your manual, or somewhere else handy where you can find it.

If you are a new purchaser, please fill out the “registration/address change” form available on our website. This is especially important if you bought the program through a dealer or through your purchasing department as we will be unable to send you newsletters and other notices without an address.

When contacting technical support, please supply your serial number so we can verify which version of RATS you are using.

Can RATS Do ...?

Many of these questions can be answered by checking the index and the table of contents in the manuals carefully, or by visiting our web site (www.estima.com), where your question may be addressed by the list of Frequently Asked Questions or by one of the many procedures and example programs available for downloading.

If you can't find the answer there, you can e-mail, fax, or call our technical support department with your question. The answers to these sorts of questions generally fall into four categories:

1. Yes (and you should have known it by looking at the index or table of contents). *Please be sure to check these first.*
2. Yes, you can use the instruction ...
3. Yes, but it takes a little work (a short sequence of instructions).
4. No, or at least it would be very difficult and require extensive programming.

Many of the suggestions made by users have helped to improve our product, so we try to be as helpful as we can. With types 2 and 3, we will usually tell you exactly how to do it. However, with type 4, we can only give you a general idea of what you have to do if you decide to press on.

Statistical Questions

RATS has many capabilities which may be unfamiliar to some of you. If you decide to explore some new territory, we will be happy to steer you to some good references or to explain how RATS does particular computations. However, while we can help to clear up basic misunderstandings about the use of the RATS instructions, we cannot give involved statistics lessons over the phone. If you are interested in discovering new techniques, watch the newsletter for information regarding workshops.

Bugs and Potential Bugs

In a program as complex as RATS, there are undoubtedly some bugs remaining. In addition, because RATS has many features of a programming language, it is quite possible for you to experience problems due to errors in your own code. The more complex your program, the more likely it is that the latter is true. If your program is not running correctly, you should do the following:

- Check carefully that you are using the proper syntax on the instruction(s) causing the problem. See the *Reference Manual* in particular.
- If you are doing extensive operations with loops and **COMPUTE** instructions, put in some debugging statements (**DISPLAY** and **PRINT** are the most useful for this) to see where things go awry.
- Check the list of frequently asked questions, and the list of known bugs, available on our web site (www.estima.com).
- If, after all this, you have a strong suspicion that you have located a bug, contact Technical Support. If you have done a thorough job on the preceding steps, you can often ask a direct question such as “Is there a known bug in?”, and we may be able to give you a quick answer. If you have not been able to isolate the problem, we will almost certainly have to ask you to send us the input file and data and as much other information as you can supply.

The RATSletter

The *RATSletter* is a newsletter for registered users. We distribute it (approximately) twice a year. It includes new product announcements, answers to common questions, bug reports, tips on the use of the program, lists of contributed procedures, among others. We would appreciate questions of general interest and suggestions. If you have a program or part of one which you are proud of, send it in and let the rest of the RATS community see it.

The Estima Web Site, User Forum, and the Email Discussion List

We invite you to visit our Web site at: <http://www.estima.com>

The site offers news and information on RATS and other Estima products, answers to frequently asked questions, and many examples and procedures you can download.

You will also find links to our online discussion forum and information on an e-mail discussion list devoted to RATS.

Contacting Estima Technical Support

If you have access to e-mail, this is probably the best way for you to obtain technical support. You can provide us with a copy of your program and data set, and other very specific information about the nature of your question. This makes it much easier for us to resolve the problem or question, and to provide detailed answers. Most questions are answered within just a few hours. You can also contact us by calling the technical support number listed below. Technical support is available from Monday through Friday, 9 am to 5 pm US Central time. You can also reach us by fax or regular mail.

When you contact technical support please be able to provide the following:

1. Your serial number (found on the label on the CD envelope). We do spot checks to make sure that only those who have paid for the product get support.
2. The product name and version number (also from the original disks).
3. As much detail about your question as possible. In particular, if you are getting an error message you don't understand, be sure to include that error message in your e-mail, or have it handy to read to us over the phone. RATS produces fairly specific and detailed error messages, so providing the specifics of any errors you encounter will make it much easier for us to diagnose the problem.

You can contact technical support at:

Voice: (847) 864-1910
E-mail: support@estima.com
Web site: <http://www.estima.com>
FAX: (847) 864-6221

Mail: Estima
1560 Sherman Ave, Suite 510
Evanston, IL 60201

If you write or FAX us with a question, please remember to include your name and a phone or FAX number.