



A package for simulation, statistics, plotting and curve fitting.  
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## 1 Introduction

### 1.1 Using mouse hover and right-click in sv\_simfit

*Note that allowing the mouse to hover over any button on the file-open-save dialogue or on a SIMFIT graph displays a message about what the function of the button is. Also a mouse right-click on any SIMFIT graph opens an extensive help document.*

### 1.2 The reason for a simplified version

The SIMFIT package contains some forty programs each dealing separately with different aspects of simulation and data analysis that can be run separately but are usually opened from the main program manager **x64\_simfit.exe**. Because of the extensive range of options provided by this program manager there is a simplified version of SIMFIT opened by a program manager called **sv\_simfit.exe** available to inexperienced users to practise before using the main SIMFIT package. This document describes the functionality of the simplified version and first-time users are recommended to read it before attempting to use the main package.

### 1.3 How the simplified version works

The main program manager has a blue icon while the simplified version has a red icon allowing users to make desk-top shortcuts to either, but the simplified version can also be opened reversibly from the main program manager which is probably the best way.

The simplified version allows users to open a selected subset of the most-used of the forty programs but where some of them only provide a restricted set of options. For instance, the linear regression program called **linfit** offers a choice from 22 types of linear regression but the simplified version only offers 7 linear regression options. Clearly, if the linear regression type you want is not available from the simplified version, then you will need to investigate the main program.

So, to emphasize, the simplified version opens the same programs as the main program but in some cases only a sub-set of procedures are offered.

## 2 Features shared with the main version

There are several operations that are common to both versions and these should be understood as now explained in order to use the simplified version.

### 2.1 Test files

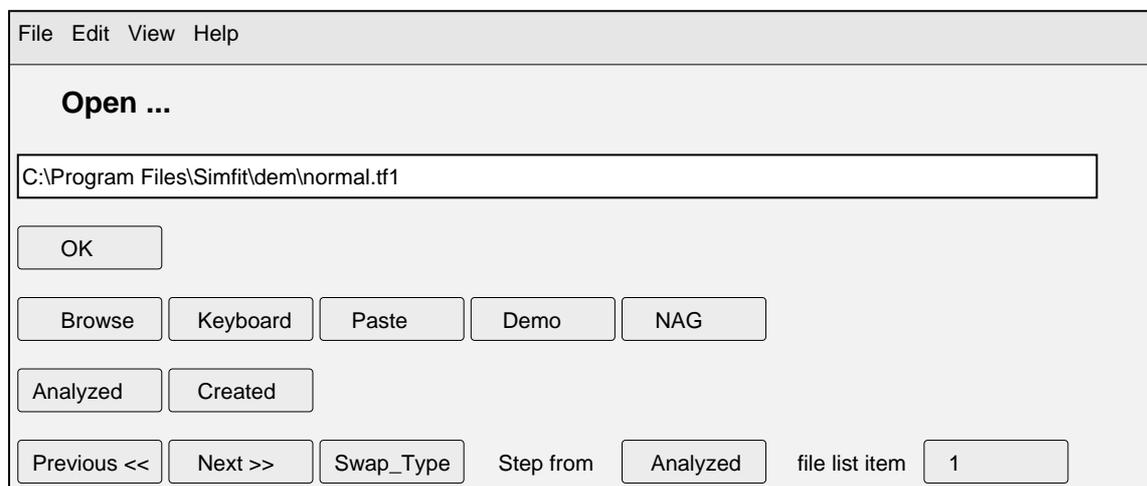
Distributed with the SIMFIT package is a comprehensive set of test files demonstrating the format required in order to practise with a program before attempting to analyze your own data. These files and their use are described in the tutorials.

- Data files. These contain rectangular tables containing numerical data but with a mandatory title to explain the data set followed by the number of rows and number of columns in the data table, followed by the numerical data. It is possible to add further details after the table which are not strictly necessary as such but which greatly enhance the usefulness of the file by passing information to the chosen program in order to avoid the necessity of being required to provide such information interactively. When a program is in use the [Demo] button on the file-opening dialogue provides appropriate examples.
- Library files. These contain a title followed by a list of data files required for some types of analysis such as plotting several data sets on the same graph.
- Model files. These contain examples of how to provide your own mathematical models for simulation or curve fitting.

Note that when a program is started it provides an appropriate collection of test files that you can use to view for formatting or import to test the chosen program as described next.

## 2.2 The file opening dialogue

Most users will be familiar with the Windows File–Open and File–Save–As dialog which requires searching for folders which can be tedious. To avoid this SIMFIT uses a specialized technique to open or close files as illustrated below, where mouse hover on a button displays help about the what pressing the button does.



This control helps you to create new files (i.e., in the Save As ... mode) or analyze existing files (i.e., in the Open ... mode). The top level [File], [Edit], [View], and [Help] menus allow you to select appropriate test files to use for practise or browse to understand the formatting. Below this is an edit box and a set of buttons which will now be described.

**File Name** You can type the name of a file into the edit box but, if you do this, you must type in the full path. If you just type in a file name you will get an error message, since SIMFIT will not let you create files in the SIMFIT folder, or in the root, to avoid confusion.

**OK** This option indicates that the name in the edit box is the file name required.

**Browse** This option simply transfers you to the Windows control but, when you know how to use the SIMFIT file selection control properly, you will almost never use the Windows control.

**Keyboard** This option allows you to type in a data set from the keyboard. It is only useful if you understand the file format required and have very small samples. It creates a temporary file in your usr folder.

**Paste** This option is only activated when SIMFIT detects ASCII text data on the clipboard and, if you choose it, then SIMFIT will attempt to analyze the clipboard data. If the clipboard data are correctly formatted, SIMFIT will create a temporary file, which you can subsequently save if required. If the data are not properly formatted, however, an error message will be generated. When highlighting data in your spreadsheet to copy to the clipboard, write to a comma delimited ASCII text file, or use a with a macro like

simfit6.xls, you must be very careful to select the columns for analysis so that they all contain exactly the same number of rows.

**Demo** This option provides you with a set of test files that have been prepared to allow you to see SIMFIT in action with correctly formatted data. Obviously not all the files displayed are consistent with all the possible program functions. With programs like **simstat**, where this can happen, you must use the [Help] option to decide which file to select. When you use a SIMFIT program for the first time, you should use this option before analyzing your own data.

**NAG** This option provides you with a set of test files that have been prepared to allow you to use SIMFIT to see how to use NAG library routines.

**Analyzed** This history option allows you to choose from a list of the last files that SIMFIT has analyzed, but the list does not contain files recently saved.

**Created** This history option allows you to choose from a list of the last files that SIMFIT has created, but the list does not contain files recently analyzed. Of course, many files will first be created then subsequently analyzed, when they would appear in both Analyzed and Created lists.

**Previous** This option allows you to scroll backwards through recent files and edit the filename, if required, before selecting.

**Next** This option allows you to scroll forwards through recent files and edit the filename, if required, before selecting.

**Swap Type** This option toggles between Created and Analyzed file types.

If you name files sensibly, like results.1, results.2, results.3, and so on, and always give your data short meaningful titles describing the data and including the date, you will find the [Back], [Next], [Created] and [Analyzed] buttons far quicker and more versatile than the [Browse] option.

## 2.3 Multiple file selection

There are many occasions when it is required to input several collected files for plotting, etc. and this is facilitated by the library file technique. This is simply a title followed by a list of files to be used. Filenames must be fully qualified with paths and are most easily prepared using the SIMFIT program **maklib**.

## 2.4 Results files

The method SIMFIT provides for archiving results is by creating tables of parameters and important statistical conclusions. These are copied to a results files e.g., **f\$result.001**, etc. for viewing and saving if required later as now explained.

## 3 The results files

### 3.1 The need for results files

When analysis of a data set is performed tables of results are displayed and sometimes there is a need to use such results retrospectively. However often there will be no need for retrospective results, for instance when experimenting with test files and it is inconvenient to have to specify which tables may be required on exit from a program and wasteful to save all results which requires unnecessary storage and extra work to identify important results. SIMFIT has a special solution to this problem as now described.

### 3.2 Recovering results retrospectively

When an analysis is conducted the SIMFIT program saves all results to a results file which is added to a list of recently created results files. Each time this happens the results file at the bottom of the list is deleted, the remaining files are renamed, and the new file becomes top of the new list. These can be accessed by choosing the [Results] option from the main SIMFIT page which offers the option to view or copy chosen results so that, if some results are likely to be required later, that results file must be saved as it will eventually be deleted.

## 4 Graphics hardcopy

### 4.1 Windows quality hardcopy

It is possible to save the typical Windows bitmap and compressed bitmap hardcopy such as \*.bmp, \*.jpg, \*.png, \*.pdf, etc.

### 4.2 High quality vector hardcopy

However there is also option to use vector graphics such as \*.svg or \*.eps which are much superior as they do not save multiple repeated pixels as, for instance, background colour, or pixels to emphasize segments of a piechart. In addition, vector graphics are smaller and device-independent which means they will not pixelate on expansion. In particular, using the [EPS] graphics option opens up the possibility to create superior quality encapsulated PostScript files \*.eps, and make from them better quality \*.png, \*.jpg and especially \*.pdf files.

### 4.3 Editing vector hardcopy

One of the valuable features of EPS and SVG files that they can be edited using a simple text editor such as **notepad**. Some features such as changing titles, legends, labels, unwanted plotting symbols, etc. are obvious and easy to change. Other features such as colours, symbol types, line thickness, or line types are slightly more complicated with EPS than with SVG because specialised and compact expressions are used for such matters. For this reason there is an extensive section in the SIMFIT reference manual with numerous worked examples and the program **editps** can perform editing and creating collages. The rule is simple: work on a copy of the graphics file viewing the results at every step.