UltraEdit – The Editor for SAS Programming

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ABSTRACT

The use and features of UltraEdit, a powerful and practical Program Editor application, are described for creating, editing and saving SAS program code when working on the PC and remote servers. UltraEdit is a Windows application, which runs on a PC and has a familiar and user-friendly interface. It has common for-Windows-editors features like text highlighting with the mouse and shift-arrow keys; same commands for copy, paste, cut; etc.

What makes UltraEdit unique is its ability to work with files on any remote server transparently for users, as if you are working with files on your local hard drive. Using a built-in FTP engine, UltraEdit allows programmers to easily open/save/reload files residing on any PC-based or mainframe server and in any operating system (Unix, VMS, Windows NT, etc.).

While some other editors (MultiEdit, SlickEdit) provide similar FTP features, UltraEdit has by far the most convenient, intuitive and complete implementation of remote work with files.

UltraEdit combines transparent FTP with other practical features essential for day-to-day SAS programming such as color syntax highlighting, powerful search, column block processing, project files and many others. This shareware program (www.ultraedit.com) has a good chance to boost the productivity of any SAS programmer.

INTRODUCTION

SAS programmers work on a plethora of different computing platforms. While small companies can enjoy working with SAS on a PC in Windows, it is common for larger companies and corporations to use mainframe computers such as Sun, VAX, IBM, HP servers using different operating systems (UNIX, VMS, MVS, etc.).

The variety of programming platforms forces SAS programmers to learn and use different Program Editor applications to create, modify and save their code. Every programmer knows how frustrating it could be to change their programming tools and habits, and thus the search for a better program editor, a programmer's main tool, continues.

There are two main approaches for editing programs.

Use of platform-specific Editor:
For Unix it could be VI, Emacs, X-windows Editor or SAS Editor for Unix. It gives a programmer very easy access to files (open/save/reload) but platform-specific Editors are usually limited in features, not intuitive and require program specific skills to learn compared to Windows-based applications.

Use of Windows-based Editor:
Good examples in this category are PC SAS Enhanced Editor, Notepad, etc. Windows-based Editors are feature rich, have common Windows interface but access to files on a server requires the use of File Transfer Protocol (FTP). It normally involves many steps: saving files from Windows-based Editor to local hard drive; using a special FTP program to transfer files from PC to Unix servers and back; running the SAS System on a server. Working with 3 common SAS files: .SAS, .LOG, .LST multiplies FTP use and the number of manual operations to perform.

During recent years, few Windows-based Editors evolved to incorporate FTP engines inside the application, thus greatly facilitating the work with files on servers through FTP and eliminating the need for a separate FTP program.

The purpose of this article is to introduce the SAS community to UltraEdit, the Program Editor which is, in the author's opinion, best suited for SAS programming, rich on practical features and has the easiest and most intuitive work implementation with SAS files on a remote server.

Two other Windows based Editors with built-in FTP abilities: MultiEdit and SlickEdit are briefly described and compared with UltraEdit.

For simplicity, all examples in this article will be in a UNIX server environment.

1. ULTRAEDIT MAIN FEATURES

1.1 Working with SAS Files on a Server Through FTP

The elegance of the FTP interface and its ease of use with files on a remote server make it worthwhile to learn about UltraEdit.

The SAS programmer must constantly work with at least three files: SAS program file (.SAS), Log file (.LOG) and output List file (.LST). In a server environment all these three files are stored on a UNIX server. A typical SAS programming task involves opening and editing program files, saving them to the UNIX server, running the SAS System on UNIX, and opening and analyzing updated LOG and LST files. This SAS programming cycle includes three main file operations OPEN/SAVE/RELOAD, which are repeated an endless number of times during program development.

UltraEdit provides an easy and familiar interface to perform all three file operations through FTP. When accessing a server for the first time, the user should fill out a few fields in a submenu specific for FTP: User ID, Password, directory on a server to access, and the server's host name (see Fig. 2). Then save these parameters with a meaningful name (FTP account name). This task is familiar to anybody who uses FTP programs and is done only once. After that access to files on a server is like access to files on a local hard drive.

To access files on a server, commands "File FTP Open" and "File FTP Save As" are used. A Windows style "File Open" dialog menu shows the file tree of the server and files to open/save are chosen in a regular way with all the Windows features (see Fig. 3).

Now programming work begins. The user opens SAS, LOG and LST files from the server in multiple tabbed windows in UltraEdit using the File FTP Open command (see Fig. 1).

Saving an edited, modified program file to the server is even easier. Regular Windows commands Alt-F, S (File/Save) or Ctrl-S will automatically save the file to the server if it was opened through FTP.

After running the SAS System on Unix we need to reload LOG and LST files. There is no need to use the File FTP Open dialog again. Just click Alt-F, D for each file and they will be reloaded from a server!

SAS users, who know how many operations FTP may involve, should try this trick in UltraEdit just to feel the thrill and elegance of this ingenious solution.

Here are a few comments on work with files on a server with FTP in MultiEdit and SlickEdit programs.

MultiEdit has complicated and a nonintuitive interface with a set of enclosed submenus for setting up FTP accounts and less detailed representation of files on a server. SlickEdit has a good view of a server's file tree and a better FTP interface. In both programs the FTP interface is similar to a regular FTP program with all its manual operations just sitting on top of the Editor compared to the seamlessly integrated Windows-like FTP interface in UltraEdit.

Neither MultiEdit nor SlickEdit have the simplicity of saving files to a server, which requires more operations than in UltraEdit.

The FTP File Reload operation is unique for UltraEdit. Similar operations in the other two programs require closing a file and opening it again from a server.

The FTP File Reload feature alone makes it a far better choice when considering working with files on a server. Just remember how many times a day SAS programmers reload LOG and LST files.

1.2 Windows-Like Interface for Program Editing

All practical features of Windows word processing (copy, paste, cut, delete, insert, select with mouse or arrow-keys, etc.) are present in UltraEdit, as well as in the other two Editor Programs. UltraEdit also has a built-in Spell Checker, Bookmarks and Function Lists (to show functions used in the program).

1.3 Universal Program Editing Environment for Work on Any Server

The simplicity and ease of working with remote files on a server makes UltraEdit a universal programming Editor. Programmers can use exactly the same interface and editing features when working with SAS files on any server (Sun, VAX, IBM, HP) or operating system (UNIX, VMS, MVS, CMS, etc.).

Changing the programming environment requires only a modification of server access account settings, while once-learned programming habits remain the same.

1.4 Using UltraEdit at Office, Home or on a Trip

Working remotely away from the office (at home or on a business trip) using a slow dial-up connection reveals another advantage of UltraEdit compared to Editors like VI, Emacs, X-Windows Editors, which are running on a remote server and communicate with a PC through a console-like or graphics interface.

In UltraEdit all word processing and editing happens on a PC with instant feedback while remotely running Editors shows noticeable and annoying delays in response to key strokes.

The only difference in working with UltraEdit at the office and remotely is when a real file transfer happens (FTP open/save/reload). Limiting size of LOG and LST files to only essential parts significantly accelerates this process and makes the remote programming experience acceptable and similar to one at the office even over slow dial-up connections.

2. ULTRAEDIT PRACTICAL EDITING FEATURES

2.1 SAS Color Syntax Highlighting
UltraEdit uses a simple text file to assign colors to keywords of SAS language. Users can easily modify this file to suit their preferences. Changing the extension of this file to .SAS makes editing it in UltraEdit an interactive and amusing process with instant feedback on colored keywords.

2.2 Search With All Occurrences
UltraEdit has a convenient text pattern search engine with regular expressions, which could be used for a search in a current file, all open files, or files with a name mask (see Fig. 4).

A powerful UltraEdit function is "Search with all occurrences". The result of a search is displayed in a scrolling window, showing program text of all lines where the searched text pattern is present (see Fig. 5). Clicking on a line in a search window instantly positions cursor on that line of code! If it is not the line you are looking for, scroll down in a search window and click on another line. If a search was performed on multiple files, clicking on a line in a search window positions the cursor on a line of code in the corresponding file!

2.3 Column Block Processing
Block processing in UltraEdit (copy, paste, insert, delete, etc. of a rectangular highlighted area rather than processing groups of entire lines, see Fig. 7) is very handy when performing the following editing tasks:
- Aligning large and small chunks of code, for example in DO loops.
- Copying lists of variable names and other column-oriented information (type, length of variable, etc.) from PROC CONTENTS into a program
- Copying information from PROC CONTENTS between Excel spreadsheets and a program

2.4 Case Change (UPPER, lower, Capitalized)

The ability to change the case of a highlighted text is a convenient way to make headers, footers and comments look consistent throughout a program.

2.5 Printing SAS Files in Windows with UltraEdit
Printing SAS files on a Unix server can be a challenging task requiring serious shell programming and the help of very experienced users.

UltraEdit provides a very powerful Windows-based printing engine, customizable to produce the same layout, fonts and view as files printed on a network printer from a Unix server. In addition, UltraEdit gives an advantage of previewing files, unmatched when printing from a server. Additional information could also be added to a printout, like line numbers, location of a file, extra footnotes, date/time stamp, etc. While it is not needed for reports, it can make programs more readable and informative.

2.6 Favorite Files and Project Files
Favorite Files in UltraEdit is a list of files, which may have useful information, like SAS tips, project notes, additional program comments, etc. These files are just two clicks away and are very easy to maintain (see Fig. 6). Usually the problem with such files is that over time users tend to forget their location on a hard disk. Having a list of these files similar to bookmarks inside UltraEdit solves this problem.

Project Files allow grouping and the maintenance of a list of files often used in a particular project. These files, for example, can be easily opened, closed with a simple command. Working on multiple projects simultaneously makes this process handy and saves time.

3. OTHER ULTRAEDIT PRACTICAL FEATURES

UltraEdit has many other surprisingly practical features. It is beyond the scope of this article to explain them all. Just a few of them are listed below:
- Compare files with colored coding
- Multistep Undo, even after the file was saved
- Insert Tabs as spaces (to avoid misaligning code when read by different editors)
- Line numbering, line bookmarks, ruler, vertical marker lines for aligning code
- Collapsing code as in PC SAS (makes the logic of a long program more readable)
- Trim trailing spaces (for copying into Excel)
- Macro processing to automate frequently repeated operations

CONCLUSION

UltraEdit is a Windows-based program editor that is powerful, easy to learn and full of practical features. It is particularly suitable for working with SAS files in a server environment. It has built-in FTP, with an elegant and simple interface to simultaneously work with multiple source and output SAS files on any server. UltraEdit has program editing features that are most useful for working with SAS programs. These features are not usually found in the same program editor, but they are in UltraEdit.

CONTACT INFORMATION

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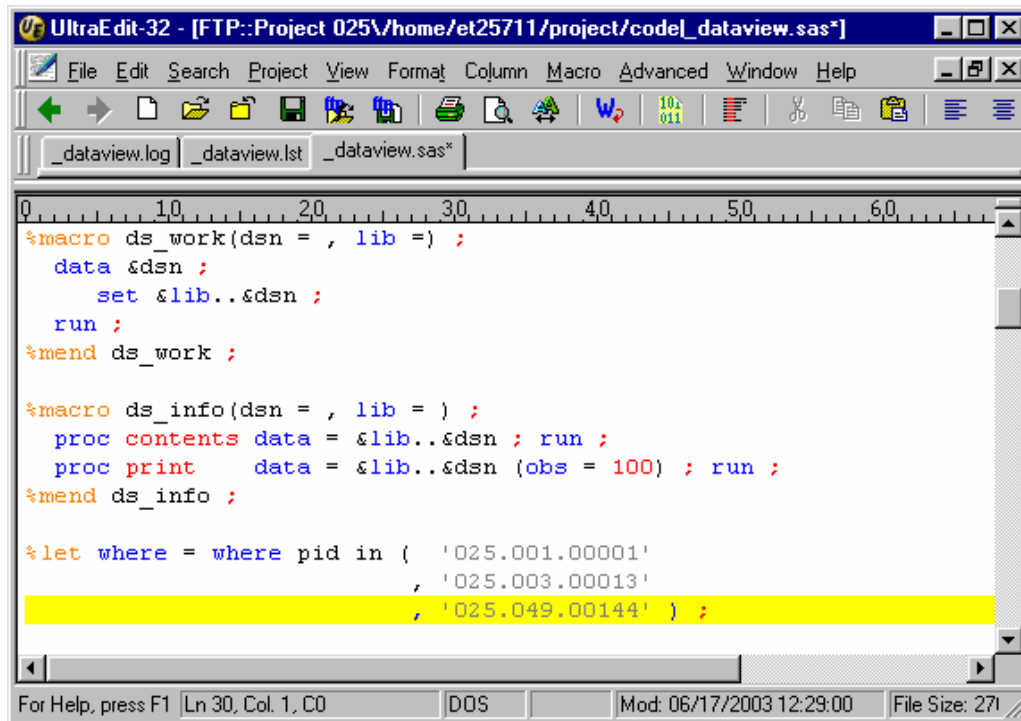
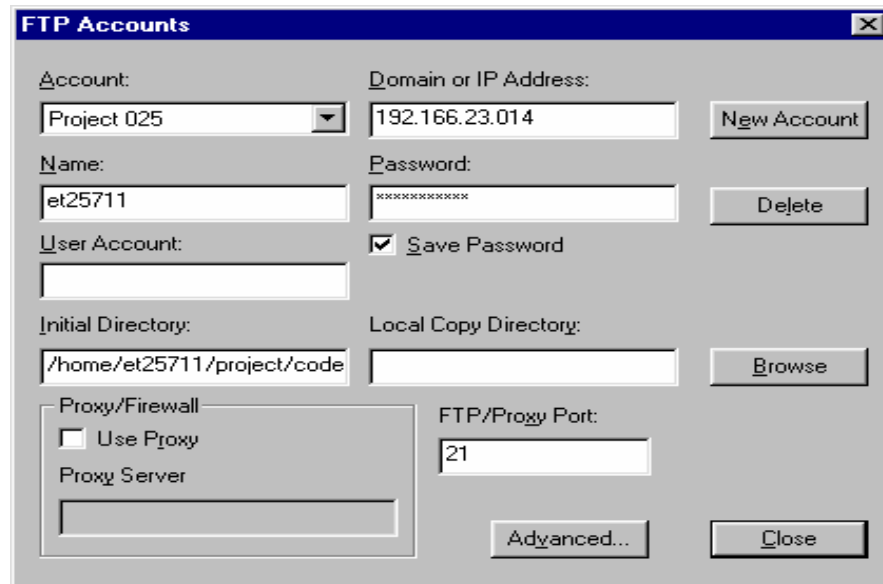**FIG. 1. UltraEdit Main Window with three SAS files opened (.SAS, .LOG, .LST)**

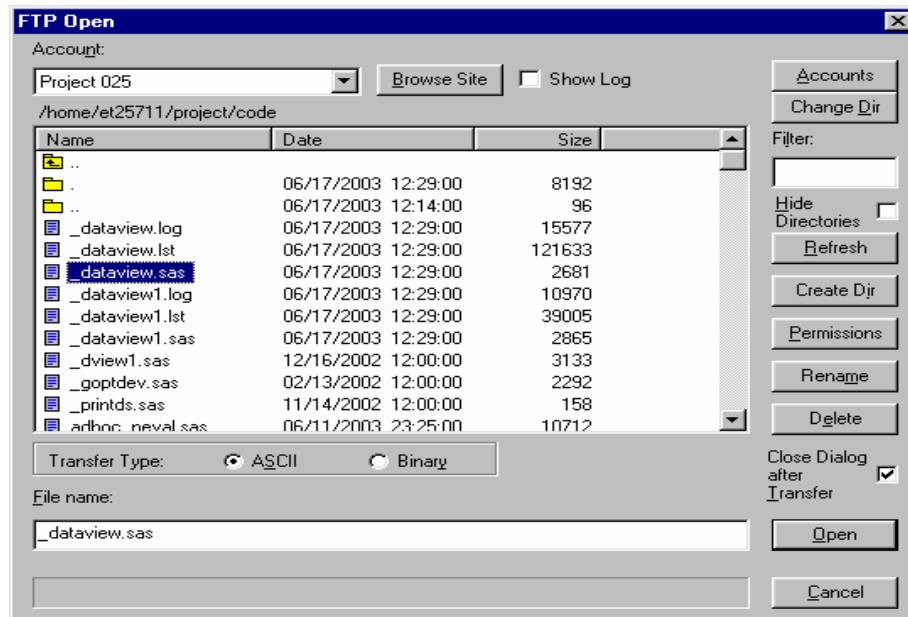**FIG. 2. UltraEdit window for setting server access account through FTP**

FIG. 3. "FTP Open" Dialog Window is used to open files from a server in UltraEdit
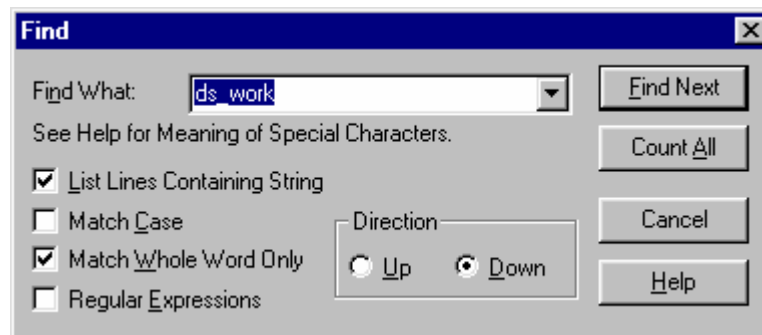

FIG. 4. "Find with All Occurrences" window in UltraEdit. Note "List Lines Containing String" is checked.
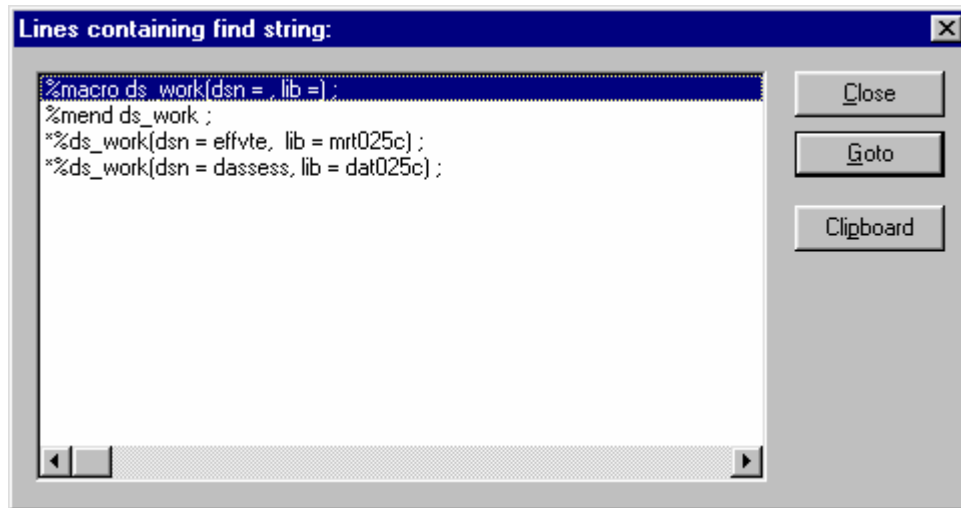
FIG. 5. Results of "Search with all Occurrences". Clicking on the line in this window positions the cursor on the corresponding line of code.
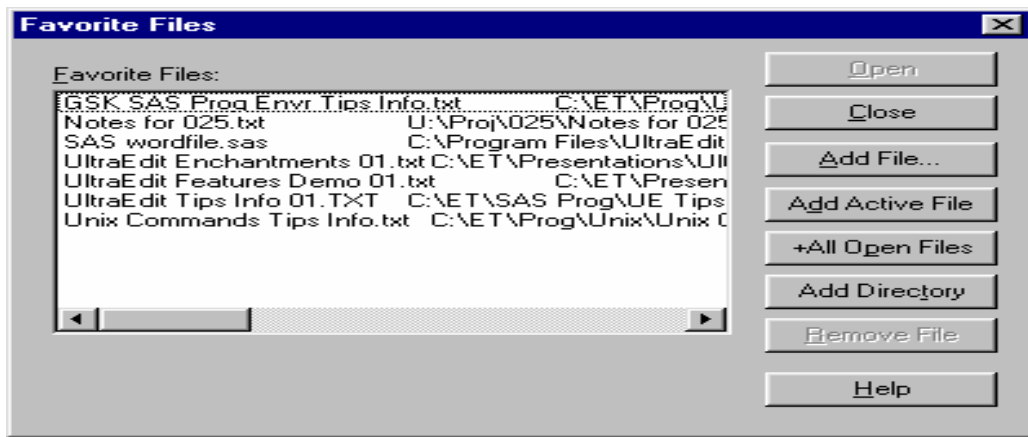

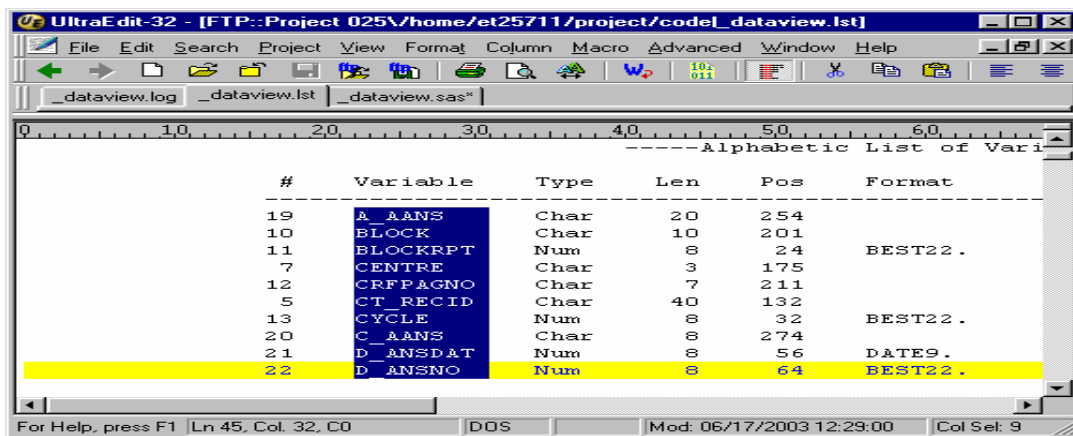**FIG. 6. "Favorite Files" List is just two clicks away.**

FIG. 7. Block processing in UltraEdit. Highlighted area with variables names from PROC CONTENTS could be easily copied into a program or Excel.