Date	April 8, 2000	Memo Number	STI37:000408A
Subject	**ANSYS Tips & Tricks: Text and Compression Utilities**		
Keywords	General: Systems: Utilities		

1. Introduction:

There are several third-party software programs which help allow the ANSYS user become more productive in his/her work. The memo provides a description of some of these utilities that the author uses on a daily basis.

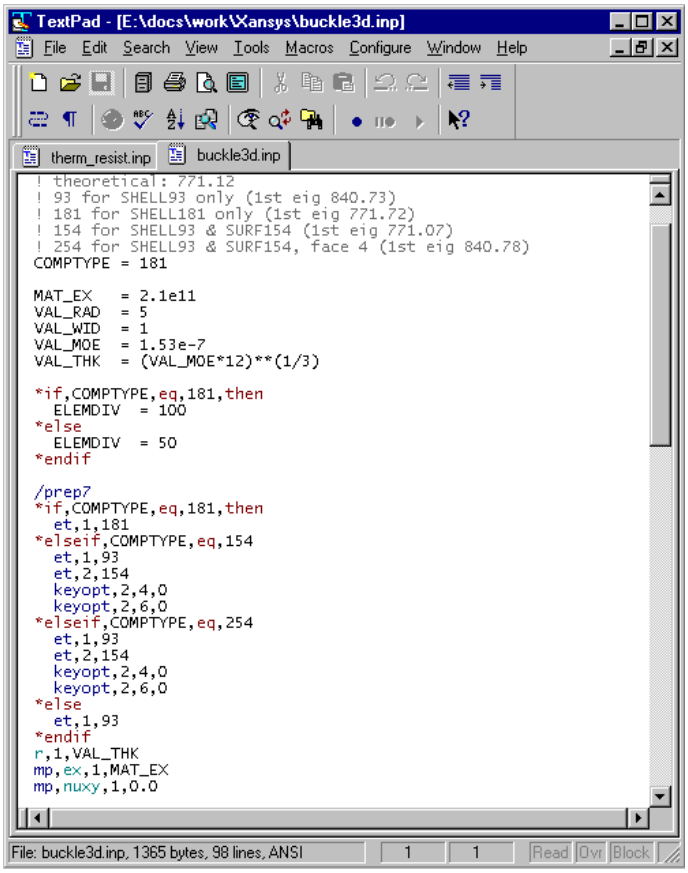
2. Summary:

For ANSYS users writing macros and input files with APDL, text editors such as TextPad and XEmacs allow for syntax coloring, offering better readability and ensuring that commands are written correctly.

Compression utilities such as WinZip or gzip provide means of archiving large amounts of data on disk, tape, or CD-ROM.

3. Text Editors:

On UNIX, the standard editors people use include "vi", "jot" (SGI), and "textedit" (SUN). On Windows, "notepad" and "wordpad" are most commonly used. However, none of these allow the user to color-code APDL macros or input files. Most of these editors also lack other features such as automatic backup, storing backup revisions, and opening multiple documents.



On Windows, the author finds TextPad (http://www.textpad.com/) a very useful shareware text editor. An example screenshot is shown on the right.

Many text editors have built-in color highlighting for C, Fortran, or HTML programming. However, TextPad allows for easy and flexible custom highlighting. The syntax highlighting was provided as a TextPad syntax definition file by Bob Weathers and can be downloaded from http://www.textpad.com/add-ons/syntax.html

One may notice that comments (preceded by "!" or "C***") are shown in light gray to "hide" it from the user, such that it does not clutter the view.

Control statements including *DO loops or *IF statements are highlighted in dark red, ensuring that the user can easily determine if the appropriate keywords (and closing keywords such as *ENDIF) are entered.

Commands are shown in dark blue or light blue, also ensuring that commands are entered correctly (only correctly-entered commands change from black to blue text).

On UNIX, XEmacs is a very similar tool available free (http://www.xemacs.org/) on any UNIX platform. Windows NT versions, in beta form, are also available by other contributors as of the time of this writing. XEmacs has long been a very popular editing tool, based on Emacs. Like TextPad, customized syntax color-coding provide very powerful editing capabilities. An Emacs lisp ANSYS major-mode filter file written by Tim Read to color-code APDL files can be downloaded

from the eGroups/ONElist website at http://www.onelist.com/files/xansys/emacs/. One must be a subscriber to the XANSYS mailing list in order to access the above URL[1].

In XEmacs, one can also create various "rules" to provide for easier readability for macros – for example, the contents of every *IF statement can be automatically indented to separate those sections from the rest of the code (as shown in the TextPad example above).

There are numerous other features[2] of TextPad and XEmacs which make them very convenient editors. Both allow users to save backup copies of edited files, even to a special "backup" directory so as not to clutter up one's working directory. Customization of font faces and colors as well as scripting provide for very powerful text editors, handy for editing APDL macros, input files, C or Fortran code, or HTML pages. TextPad also allows for easy DOS-UNIX conversion – changing LF (line-feeds) to CR (carriage returns) and vice-versa.

Two other free editors for UNIX which also have many features, including syntax highlighting, are vim/gvim, available at http://www.vim.org, and nedit, downloadable from http://www.nedit.org.[3]

4. File Compression Utilities:

The ANSYS database and results files ("jobname.db" and "jobname.rst") can become very large. While many users save the ASCII log and/or input files and macros, one may also want to keep the binary database and results files for future use. The author recommends "zip" and "gzip" utilities for this purpose -- usually, a filesize reduction of 30-40% can be obtained.

While the "zip" method of compression is often associated with the PC platform, "zip" is also available on UNIX. One can find source code or compiled versions of "zip" for DOS or any UNIX platform.[4] When using "zip", the command-line argument is:

```
zip -9 zipfile.zip <files>
```

In the above example, one compresses "<files>" to "zipfile.zip" with maximum compression (indicated by the argument "-9"). For zipping up files and directories, one can use

```
zip -9r zipfile.zip <directories> <files>
```

where the "-r" option signifies "recursive" zipping (i.e., zip up directories and their contents, including subdirectories).

A companion tool is "unzip" used to uncompress zip files:

```
unzip -d zipfile.zip
```

This unzips "zipfile.zip" and extracts the contents to the current working directory.

For Windows, WinZip is a very useful shareware tool (http://www.winzip.com/) to provide a GUI for the zip routine. WinZip works within Windows Explorer, so one can easily zip/unzip files and directories to send to colleagues. While the author is not familiar with a good GUI zip program on UNIX, he recommends the use of WinZip on the Windows platform. (There are other similar Windows zip tools such as PkZip)

Another very useful compression tool is "gzip", also available on UNIX and DOS. Unlike "zip", which compresses multiple files/directories into ONE zip file, "gzip" compresses each file individually. This may or may not be useful to a user. For example, a user may want to keep many ANSYS files on disk. Instead of opening one large zip file, he/she may want to selectively uncompress certain sets of files. In this regard, "gzip" is very handy. Also, used in conjunction with "tar" (also available both on DOS and UNIX), one can "gzip" directories and files to ONE tar/gzip file.

To gzip individual files, the following command may be used:

```
gzip -9r <directories> <files>
```

As in the case of "zip", the "-9" option indicates "maximum compression" and the "-r" argument designates recursive action. Note that there is no "gzipfile.gz" specified. This is because "gzip" individually compresses files. All compressed files will have a ".gz" extension automatically appended to the filename.

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[1] Details on the XANSYS mailing list can be viewed on the last page of this document.
[2] Not every useful feature of TextPad or XEmacs can be covered, so readers are encouraged to download and evaluate the usefulness of these text editor for themselves.
[3] Information provided courtesy of A. Danial at TRW.
[4] As of the time of this writing, zip 2.2 and unzip 5.2 are the latest versions.

To decompress files with "gzip":

```
gzip -d *.gz
```

The "-d" option will "decompress" all files ending with the ".gz" extension (as indicated by the wildcard "*.gz" argument). The ".gz" filename extension will automatically be removed after uncompression, thus preserving the uncompressed file in its original state.

When archiving multiple files/directories to a single "gzip" file, one can use tar commands as well, both available for DOS and UNIX. For example, one can use:

```
tar cf - <files> <directories> | gzip -9c > filename.tgz
```

The above command first uses "tar" (Tape ARchiving) to create a tar file. The "cf" arguments (note that there is NO dash preceding these arguments) tells "tar" to "c" create a "f" file. The "-" option means to send it to standard output. The pipe command "|" redirects the standard output to "gzip". For the "gzip" arguments, "-9" is for maximum compression, and "-c" is for taking standard input and output as the file arguments. The redirect symbol ">" redirects the "gzip" output to a file called "filename.tgz". One can use "filename.tar.gz" instead to indicate the compression methods, but because the tar/gzip is used commonly, ".tgz" is also a recognized, shorter file extension.

To decompress the tar/gzip file, use:

```
gzip -dc filename.tgz | tar xvf -
```

Similar to above, "-d" is for decompress, and "-c" tells "gzip" to send output to standard output. This is piped to "tar" which extracts ("x" argument) from standard output ("f" and "-" arguments). The "v" argument is added to indicate "verbose" operation, so "tar" will tell the user which files have been un-tarred to the current working directory.

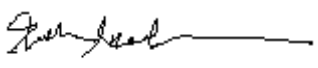
Note that the Windows program "WinZip" can extract "gzip" and "tar" files, also recognizing the ".tgz" extension. WinZip cannot create "gzip" or "tar" files, however.

There are numerous websites where one can obtain "zip", "gzip", or "tar", either as source code or compiled binaries. Since there are too many to list, the reader is directed to internet search engines to find the appropriate sites for his/her platform.

5. Conclusion/Recommendations:

There are many useful utilities, both freeware and shareware, to enhance one's productivity. Specifically, this memo covered some text editing programs and compression utilities which the author finds quite useful. The text editing programs enhance one's ability to write APDL macros and input files while the compression utilities help with storage of ANSYS data.

In closing, the author recommends that, after evaluating shareware programs, if the reader finds them useful, they should pay the appropriate cost for these software. Only by supporting these shareware developers will useful utilities continue to exist, so it is in everyone's best interest to support shareware developers – if one finds a shareware program useful enough to use regularly, one should pay the small cost associated with the software. Shareware costs tend to be less than $50, so it is also not a big price to pay for these productivity-enhancing tools.



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XANSYS Mailing List

The XANSYS mailing list is a forum for questions and discussions of the use of ANSYS. As of 04/00, there are more than 1000 subscribers with topics ranging from Structural, Thermal, Flotran, to Emag analyses, to name a few. Users are encouraged to subscribe to evaluate the usefulness of the mailing list for themselves. Also, either (a) using the mail program to filter [xansys] messages or (b) using the "digest" option to receive one combined email a day is strongly recommended to minimize sorting through the volume of postings.

```
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```

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Fax: 760-431-4824
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