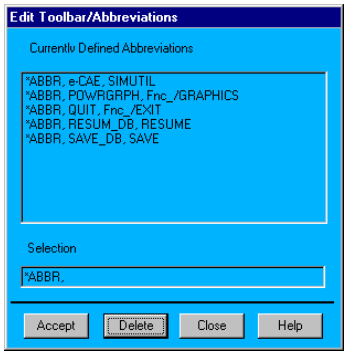
Date October 6, 2001 Memo Number STI:01/03
Subject **ANSYS Tips and Tricks: Using the Abbreviations to Customize the Toolbar**
Keywords *ABBR, Fnc_, ~eui

## 1. Introduction:


The ANSYS Toolbar provides a useful means of accessing commonly-used functions, especially for users who use the GUI rather than typing in commands.

This memo hopes to provide a brief introduction to the ANSYS Toolbar and, more importantly, how to assign macros or specific dialog boxes to the Toolbar buttons, including Fnc_ UIDL granules or ~eui Tcl/Tk dialog boxes.

## 2. Background Discussion:




The ANSYS Toolbar is a window which contains buttons which execute ANSYS commands or other functions. The buttons are referred to as *abbreviations* and are defined by up to eight characters.

The Toolbar can be modified via "Utility Menu > MenuCtrls > Edit Toolbar…" menu item (or *ABBR command), as shown on the right. The format of this is to specify **`*ABBR,button_name,ansys_command`**. After entering an appropriate button name (1st argument) and ANSYS command (2nd and later arguments), click on "Accept," and the button will appear in the Toolbar.

To delete an abbreviation, enter **`*ABBR,button_name`**. By leaving the ANSYS command blank (2nd argument), any existing button with the same name will be deleted. This is useful, for example, to delete any predefined ANSYS abbreviations – the author finds deleting the **`RESUM_DB`** (database resume) abbreviation is helpful since a user can easily mistakenly click on **`RESUM_DB`** instead of **`SAVE_DB`** when trying to save a database. This would erase any previously saved data in memory.[1]

The Toolbar is saved with the ANSYS database. However, if a custom toolbar is desired every time ANSYS starts up, the start5x.ans file can be modified to include the abbreviations the user may want. This file is usually found in the user's home directory or in the DOCU subdirectory in the ANSYS installation directory. The default start5x.ans file for ANSYS 5.7 (start57.ans) contains some abbreviations which are commented out, as shown below:

```
! Suggested ANSYS abbreviations for the Toolbar:
!
!*ABBR,REPLOT   ,/REPLOT           ! Replots the last graphics display
!*ABBR,ISO      ,/VIEW,,1,1,1      ! Changes the view to isometric
!*ABBR,FRONT    ,/VIEW,,0,0,1      ! Changes the view to front view
!*ABBR,VECTOR   ,/DEVICE,VECT,ON   ! Specifies vector mode for graphics displays
!*ABBR,RASTER   ,/DEVICE,VECT,OFF  ! Specifies raster mode for graphics displays
!*ABBR,NOERASE ,/NOERASE           ! Does not erase the screen between plots
!*ABBR,ERASE    ,/ERASE            ! Erases the screen between plots
!*ABBR,HID_LINE,Fnc_Pl_Hidden      ! Brings up dialog box for hidden-line options
!*ABBR,INFO-ON ,/PLOPTS,INFO,ON    ! Turn the legend information on
!*ABBR,INFO-OFF,/PLOPTS,INFO,OFF   ! Turn the legend information off
!*abbr,RESU_ABR,Fnc_ABBRESU        ! Brings up a dialog box to read an
```

Remove the "!" comment if you want to use these example abbreviations. Then, the next time you start up a new ANSYS session, these abbreviations will be available for use.

[1] Another common alternative is to map the `RESUM_DB` abbreviation to a macro which prompts the user to ensure he/she really wants to resume a database, based on whether any existing solid model or FE mesh exists.

## 3. Mapping ANSYS Commands and Macros to Abbreviations:

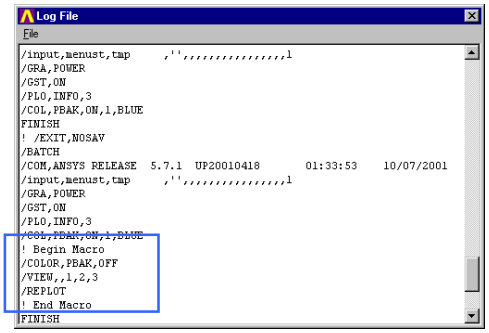
To map ANSYS commands to abbreviations, simply enter the appropriate ANSYS command as the 2nd argument in the *ABBR command. For example, as in the previous section, a "REPLOT" abbreviation can be defined as:

```
*ABBR,REPLOT  ,/REPLOT           ! Replots the last graphics display
```

On the other hand, if you want to use multiple ANSYS commands for a single abbreviation, you need to create an ANSYS macro to accomplish this. If a user may not be familiar with ANSYS commands, an easy way of writing a macro is to perform the following:

1) Enter "`! Begin Macro`" in the Input Window. This is a comment which we will use later.
2) Perform the actions you want to capture as you would normally do (access via menus)
3) Enter "`! End Macro`" in the Input Window.

Upon doing this procedure, the contents of the Log file will contain the necessary ANSYS commands to create a macro which will perform the actions we want. Since the Log file records everything we have done, it can be cluttered with much information. The comments we entered manually in steps 1 & 3 are used to differentiate the necessary commands for our macro. For example, in the figure shown on right, the section marked with the blue rectangle is the commands performed via menus, and this can be cut and paste into a text editor to create our macro. The text file can be saved as any filename with the *.mac extension, such as "MYMACRO.MAC". The macro name (minus the .mac file extension) will then be used to create an abbreviation:




```
*ABBR,MYPLOT  ,MYMACRO           ! The button "MYPLOT" will run a macro "MYMACRO"
```

The macro should reside in the working directory or a user's "macro library" directory, specified with either the /PSEARCH command or ANSYS_MACROLIB environment variable.

## 4. Mapping ANSYS Dialog Boxes and Tcl/Tk Interfaces to Abbreviations:[2]

A more useful way of using toolbar abbreviations is by mapping UIDL or Tcl/Tk dialog boxes to the toolbar buttons. UIDL and Tcl/Tk are ways in which ANSYS dialog boxes are built. Most ANSYS dialog boxes and menus are written with a language called UIDL, whereas some of the newer interfaces are written with Tcl/Tk.[3]

Because ANSYS has so much functionality and so many commands, many of the menus are organized in such a manner that a user may have to go through several cascading submenus to obtain a command they want. For users who rely on the GUI, this can become a tedious process. A common example is changing the contour levels via "Utility Menu > PlotCtrls > Style > Contours > Uniform Contours…" If a user wants to define custom contour colors for displacement, stress, and strain plots, the user would have to issue this command many times and go through a long series of submenus. By assigning this dialog box to a toolbar abbreviation, this can simplify things considerably.

Another common reason to assign dialog boxes to toolbar abbreviations is because some dialog boxes execute multiple ANSYS commands. Even users who may like to type all of their commands in the Input Window may find using certain dialog boxes much faster than issuing a series of commands. By assigning abbreviations to these dialog boxes, it may make it easier for the user.

The user may note from looking in the default start5x.ans file that there are some abbreviations which are assigned to ANSYS commands beginning with "Fnc_," such as "Fnc_/EXIT" or "Fnc_Pl_Hidden". Any of these commands beginning with "Fnc_" brings up a UIDL dialog box.

Similarly, any command beginning with "~eui" is associated with the ANSYS Tcl/Tk interface, such as the Contact Wizard which is brought up with "~eui,'euidl::contactWizard'".

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[2] This section was the original purpose/intent of writing this memo.

[3] More information on UIDL can be found at: http://ansys.net/ansys/ansys_uidl.html, whereas information on Tcl/Tk customization in ANSYS can be found at: http://ansys.net/ansys/ansys_tcl.html

These commands are 'hidden' in the ANSYS *Granule Files*. The granule files (*.GRN) are located in the following directories:

```
C:\Program Files\Ansys Inc\ANSYS57\docu\english\Uidl          (Windows)
/ansys_inc/ansys57/docu/english/UIDL                          (UNIX/Linux)
```

In earlier versions of ANSYS (such as ANSYS 5.6), the GRN files were located in:

```
C:\ANSYS56\docu                                               (Windows)
/ansys56/docu/                                                (UNIX)
```

The granule files are text files with the *.GRN (or *.AUI) file extension. The author finds the following procedure useful in finding the appropriate Fnc_ or ~eui command:

1. Note the name of the dialog box exactly as shown in the ANSYS GUI.
2. Use the "grep" utility to search for which *.GRN file contains that dialog box name[4] This will usually be found in either UIFUNC1.GRN or UIFUNC2.GRN.
3. Open the appropriate *.GRN file in any text editor
4. Search for the occurrence of the menu name from Step 1 above.
5. In that section/area, you should see a line starting with **`:N Fnc_name`**. That will designate the appropriate **`Fnc_name`** command to bring up that dialog box.
6. Use **`*ABBR,mybutton,Fnc_name`** to create a toolbar abbreviation to call up that UIDL or Tcl/Tk dialog box.

Some common granule functions which the author finds useful to map to toolbar abbreviations are listed below:

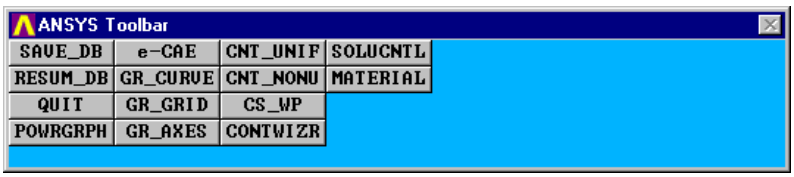
```
Graph:
Utility Menu > PlotCtrls > Style > Graphs > Modify Curve …              Fnc_Pl_ModCurv
Utility Menu > PlotCtrls > Style > Graphs > Modify Grid …               Fnc_Pl_ModGrid
Utility Menu > PlotCtrls > Style > Graphs > Modify Axes …               Fnc_Pl_ModAxes

Contours:
Utility Menu > PlotCtrls > Style > Contours > Uniform Contours …        Fnc_Pl_ContUni
Utility Menu > PlotCtrls > Style > Contours > Non-uniform Contours …    Fnc_Pl_ContNon

Workplane:
Utility Menu > WorkPlane > Local Coordinate Systems > Create Local CS > At WP Origin …
                                                                        Fnc_CSWPLA
Tcl/Tk interfaces:[5]
Main Menu > Preprocessor > -Modeling- Create > Contact Pair > Contact Wizard …
                                                                     Fnc_CWz_Entry
Main Menu > Solution > -Analysis Type- Sol'n Control …                Fnc_EuidlSol
Main Menu > Preprocessor > Material Props > Material Models …         Fnc_EuidlMat
```

By using the example Fnc_ commands noted above, you can modify your toolbar via the following commands, so you can conveniently access these dialog boxes from the toolbar:

```
*ABBR,GR_CURVE,Fnc_Pl_ModCurv          ! Modify Curve dialog box
*ABBR,GR_GRID ,Fnc_Pl_ModGrid          ! Modify Grid dialog box
*ABBR,GR_AXES ,Fnc_Pl_ModAxes          ! Modify Axes dialog box
*ABBR,CNT_UNIF,Fnc_Pl_ContUni          ! Uniform Contour dialog box
*ABBR,CNT_NONU,Fnc_Pl_ContNon          ! Non-uniform Contour dialog box
*ABBR,CS_WP   ,Fnc_CSWPLA              ! Create CS from WP dialog box
*ABBR,CONTWIZR,Fnc_CWz_Entry           ! Contact Wizard dialog box
*ABBR,SOLUCNTL,Fnc_EuidlSol            ! Solution Control dialog box
*ABBR,MATERIAL,Fnc_EuidlMat            ! Material Models dialog box
```



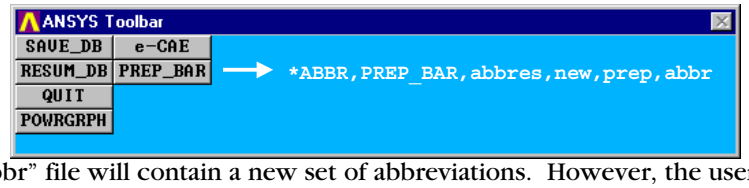

[4] Although "grep" is specific to UNIX, utilities ported to Windows are available for free, such as at http://www.cygwin.com/

[5] Could also use ~eui commands instead of Fnc_ commadns, such as `~eui,'euidl::contactWizard'`, `~eui,'euidl::solutioncontrol::create'`, and `~eui,'euidl::material::ModelControl::create'`. Note that some commands require you to be in /PREP7 or /SOLU beforehand.

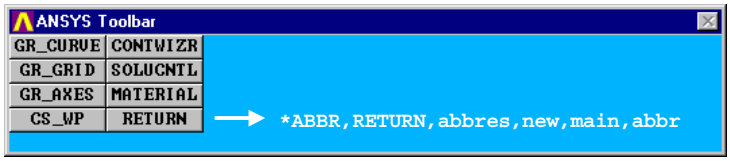
## 5. Nested Abbreviations:

Another useful feature is to create nested abbreviations. This allows you to click on one toolbar button to bring up a 'new' toolbar layout. While the author finds that too many nested toolbars lead to confusion and more difficult maintenance, a few nested toolbars may prove useful, especially when separated into general functionality such as preprocessing, loads & b.c./solution, and postprocessing.

To accomplish this, the user should create toolbars and save them as separate abbreviation files with the ABBSAV command ("Utility Menu > MenuCtrls > Save Toolbar"). Then, subsequent toolbars can 'resume' these abbreviations via the ABBRES command ("Utility Menu > MenuCtrls > Restore Toolbar"). In effect, this procedure creates nested toolbars. For example, we may have a button called "PREP_BAR" to bring up a different toolbar with abbreviations specifically for preprocessing purposes.




The "prep.abbr" file will contain a new set of abbreviations. However, the user should remember to add a "return" abbreviation to return to the original toolbar, specified with a file called "main.abbr."




## 6. Conclusion:

Abbreviations provide a convenient means to access ANSYS commands, user-defined macros, or even ANSYS dialog boxes for both novice and advanced users alike. The author finds assigning dialog boxes to abbreviations are especially helpful in the cases where they may be buried within the cascading submenus of the ANSYS GUI.

## 7. Further References:

- ANSYS 5.7 APDL Programmer's Guide, Chapter 2 "Working with the Toolbar"
- ANSYS 5.7 Command Reference, "ABBRES, ABBSAV, and *ABBR commands"

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ANSYS, Inc.

*This document is not being provided in my capacity as an ANSYS employee. I am solely responsible for the content.*

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Sheldon's ANSYS Tips and Tricks will be emailed to subscribers about once a week (or whenever I have time to write one of these up). You can subscribe by visiting the following URL:

http://ansys.net/ansys/ansys_tips.html

Archives will be posted on that page with password access (which will be mailed with each new issue). General ANSYS Tips and Tricks can also be found at the above URL.

## ANSYS Training

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http://www.ansys.com/services/training/index.htm

New classes which will be offered soon (or offered already) include High-Frequency Electromagnetics and Advanced Structural Nonlinearities. Please contact ANSYS, Inc. or your local ASD for their training schedules and offerings.

## XANSYS Mailing List

The XANSYS mailing list has more than 2300 subscribers (as of 9/25/01) with about 40 postings per day. This is a forum for exchanging ideas, providing/receiving assistance from other users, and general discussions related to ANSYS. (Note that it is recommended to contact your local ASD for issues related to technical support) You can sign up by visiting the following URL:

http://groups.yahoo.com/group/xansys

Otherwise, you can also subscribe/unsubscribe by sending an email to the following address:

```
Post message:   xansys@yahoogroups.com
Subscribe:      xansys-subscribe@yahoogroups.com
Unsubscribe:    xansys-unsubscribe@yahoogroups.com
List owner:     xansys-owner@yahoogroups.com
```

Because the amount of emails is very large, you can also subscribe in "digest mode" or access the postings via a web browser instead:

```
Digest mode:    xansys-digest@yahoogroups.com
Web-based:      xansys-nomail@yahoogroups.com
                http://groups.yahoo.com/group/xansys/messages
```