

Basics of ANSYS Macros

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ANSYS Macros

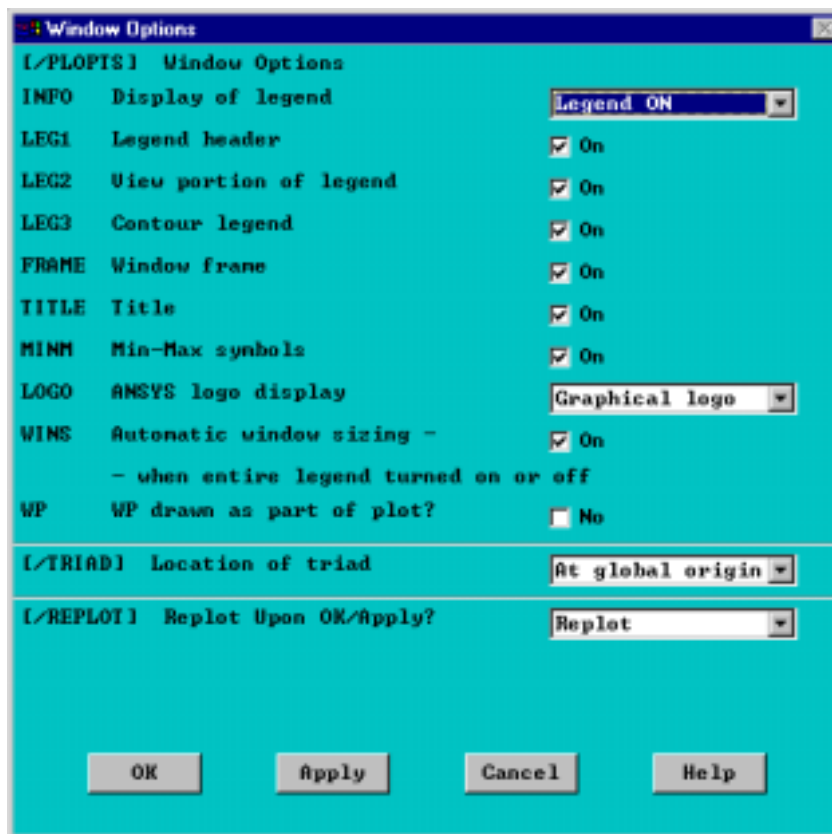
- Outline
 - Creating Macros in ANSYS
 - Running Macros
 - Editing Macros with a Text Editor
 - Passing Parameters to Macros
 - Interacting with Macros (*ask)
 - Setting up a Macros Directory (macro search path)
 - Other Macro topics not discussed in the Seminar

ANSYS Macros

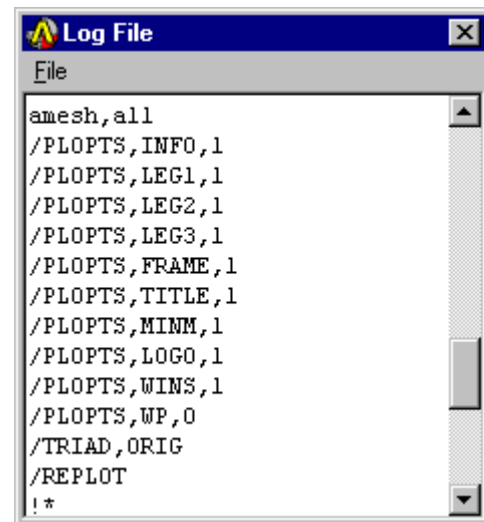
- Creating Macros in ANSYS
 - The following are the Rules to creating an ANSYS Macro
 - The file name cannot exceed 32 characters.
 - The file name cannot begin with a numeral.
 - The file extension cannot contain more than eight characters (if you are executing the macro as if it were an ANSYS command it should have the extension .mac.)
 - The file name or extension cannot contain spaces.
 - The file name or extension cannot contain any characters prohibited by your file system and for portability should not contain and characters prohibited by either UNIX or Windows file systems.

ANSYS Macros

- Creating Macros in ANSYS
 - Utility Menu> PlotCtrls> Window Controls> Window Options



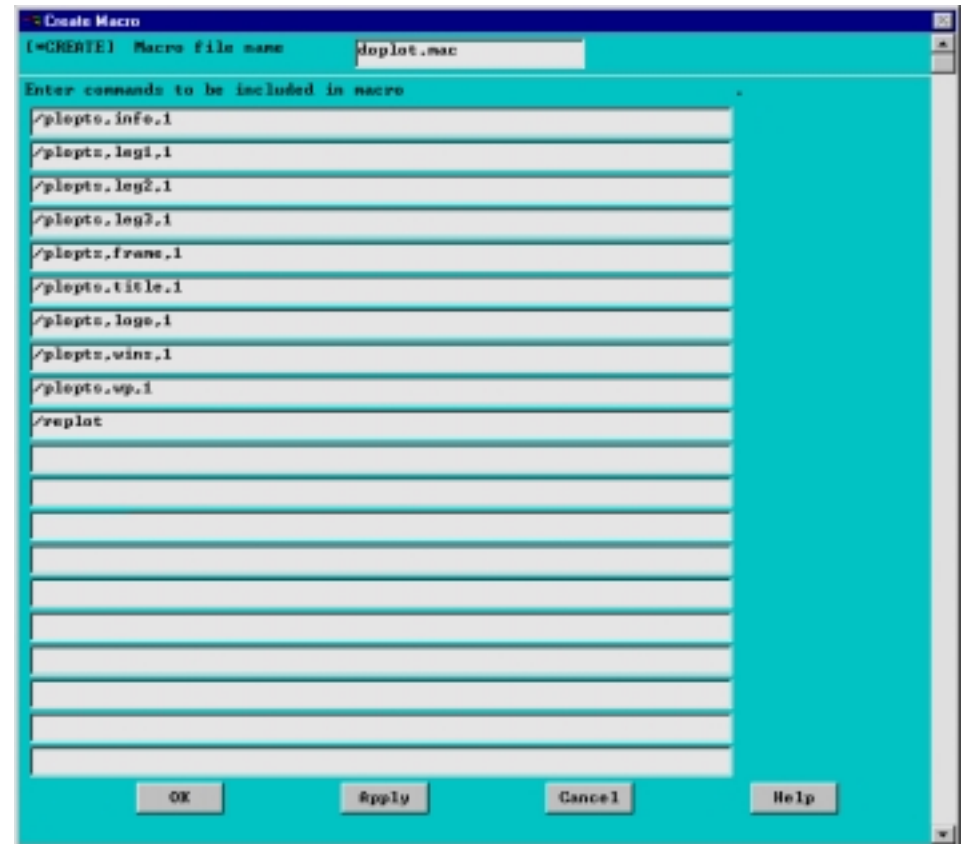
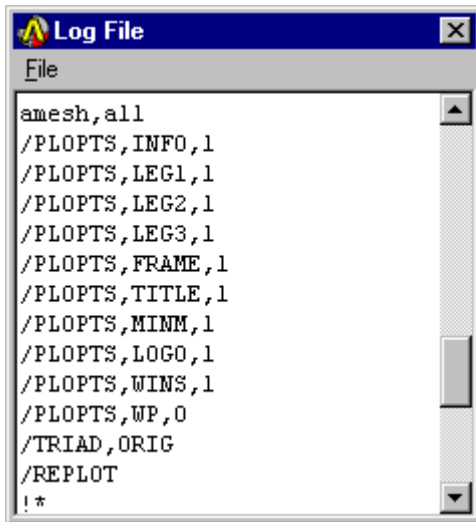
The ANSYS commands which will “drive” the macro need to be known. If the commands are unknown issuing the appropriate commands will create a log file with the necessary commands.



ANSYS Macros

- Creating Macros in ANSYS
 - Utility Menu> Macros> Create Macro ...

Using the .log file a macro is created. Be sure to use the extension mac.



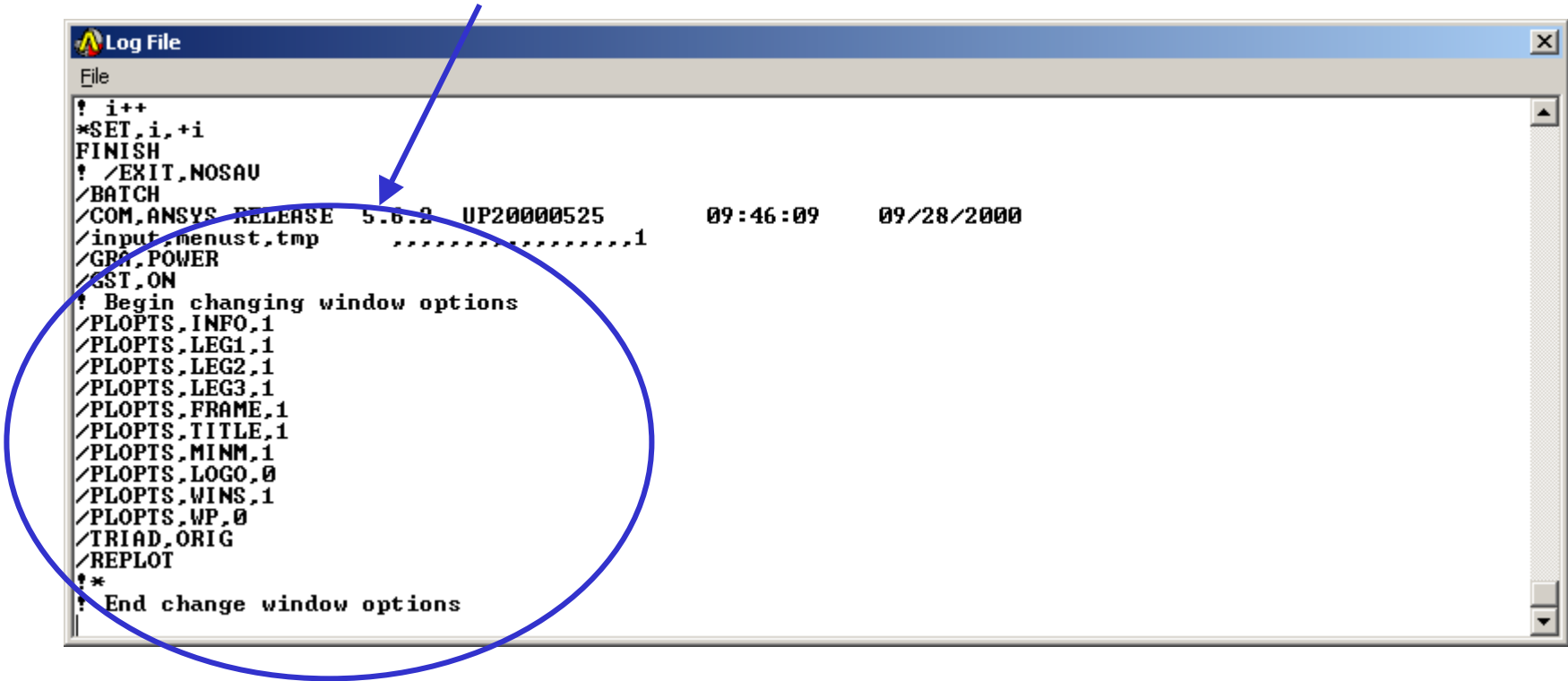
ANSYS Macros

- If one is not familiar with the ANSYS commands:
 - The log file may be confusing with all the recorded commands, and it may be difficult to determine what are the necessary commands to perform the desired operation
 - One can perform the following steps to make the log file more “readable”
 - Type in the Input Window “! Begin changing window options” where “!” tells ANSYS this is a comment, recorded in the log file
 - Perform the desired action, such as changing window options as shown in the previous slide
 - Type in the Input Window “! End changing window options”
 - Everything in between the comments in your log file are the commands necessary to create your macro.

ANSYS Macros (cont.)

- Example usage from previous slide:

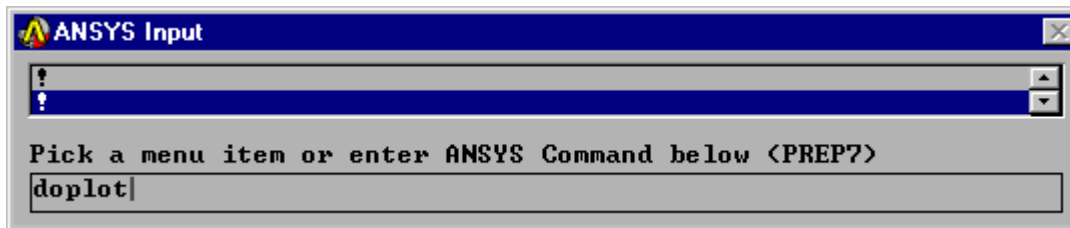
These are the commands required to change window options via menu picks.



```
Log File
File
! i++
*SET,i, +i
FINISH
! /EXIT,NOSAU
/BATCH
/COM,ANSYS RELEASE 5.6.2 UP20000525 09:46:09 09/28/2000
/input,menust,tmp *****1
/GRA,POWER
/GST,ON
! Begin changing window options
/PLOPTS,INFO,1
/PLOPTS,LEG1,1
/PLOPTS,LEG2,1
/PLOPTS,LEG3,1
/PLOPTS,FRAME,1
/PLOPTS,TITLE,1
/PLOPTS,MINM,1
/PLOPTS,LOGO,0
/PLOPTS,WINS,1
/PLOPTS,WP,0
/TRIAD,ORIG
/REPLOT
!*
! End change window options
```

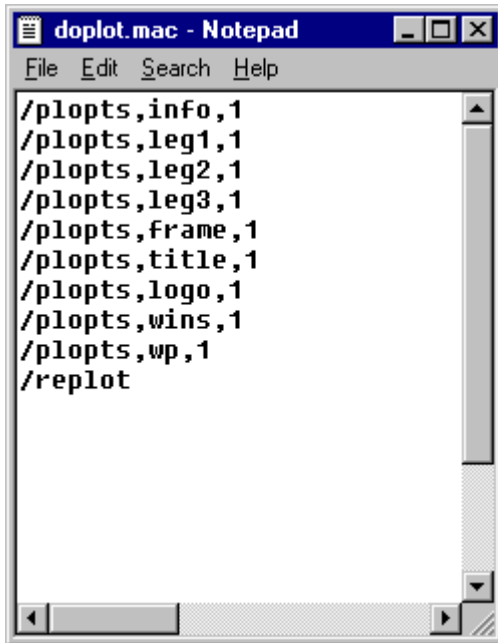
ANSYS Macros

- Running Macros
 - To run the macro type the “filename” in the ANSYS Input window. Note the file doplot.mac must be in the ANSYS working directory.
 - Later you will be shown how to set-up a directory of macros, such that a user can be in any directory and run any one of their macros.



ANSYS Macros

- Editing Macros with a Text Editor
 - Using a text editor (notepad or vi) a user can modify a macro, by adding, subtracting, or comment to the macro.



```
File Edit Search Help
/plopts,info,1
/plopts,leg1,1
/plopts,leg2,1
/plopts,leg3,1
/plopts,frame,1
/plopts,title,1
/plopts,logo,1
/plopts,wins,1
/plopts,wp,1
/replot
```

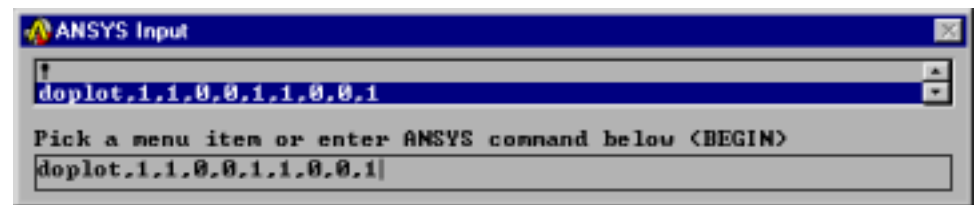
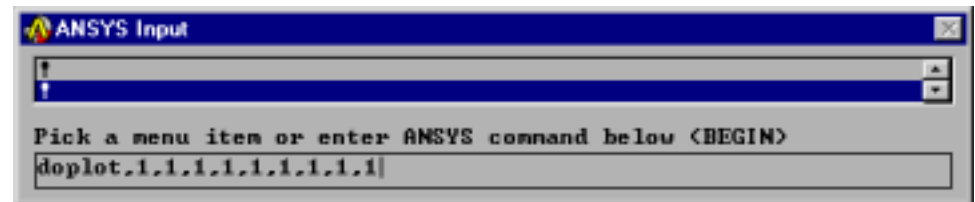
ANSYS Macros

- Passing Parameters to Macros
 - Modify the macro to have arg1-ar19 for passing local parameters to the macro. Once the file is modified be sure to save it.



```
doplot.mac - Notepad
File Edit Search Help
/plopts,info,arg1
/plopts,leg1,arg2
/plopts,leg2,arg3
/plopts,leg3,arg4
/plopts,frame,arg5
/plopts,title,arg6
/plopts,logo,arg7
/plopts,wins,arg8
/plopts,wp,arg9
/replot
```

To run the macros type in the filename followed by the values you would like “passed” to the macro



ANSYS Macros

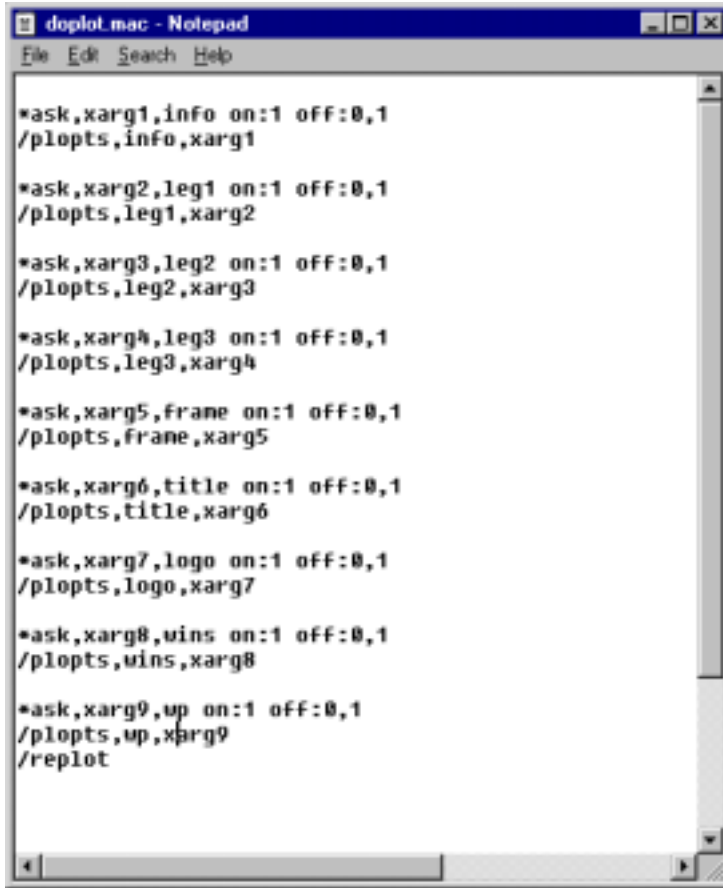
- Interacting with Macros (*ask)
 - *ASK, Par, Query, DVAL — Prompts the user to input a parameter value.
 - Par: An alphanumeric name used to identify the scalar parameter. See *SET for name restrictions.
 - Query: Text string to be displayed on the next line as the query (32 characters maximum). Characters having special meaning (such as \$! ,) should not be included.
 - DVAL: Default value assigned to the parameter if the user issues a blank response. May be a number or character string (up to 8 characters enclosed in single quotes). If a default is not assigned, a blank response will delete the parameter.

ANSYS Macros

- Interacting with Macros (*ask) continued
 - Notes
 - Intended primarily for use in macros, the command prints the query (after the word ENTER) on the next line and waits for a response. The response is read from the keyboard, except in batch mode [/BATCH], when the response(s) must be the next-read input line(s). The response may be a number, a character string (up to 8 characters enclosed in single quotes), a parameter (numeric or character) or an expression that evaluates to a number. The scalar parameter is then set to the response value. For example, *ASK,NN,PARAMETER NN will set NN to the value entered on the next line (after the prompt ENTER PARAMETER NN).
 - The *ASK command is not written to File.LOG, but the responses are written there as follows: If *ASK is contained in a macro, the response(s) (only) is written to File.LOG on the line(s) following the macro name. If not contained in a macro, the response is written to File.LOG as a parameter assignment (i.e., Par = "user-response").
 - If used within a do-loop that is executed interactively, *ASK should be contained in a macro. If not contained in a macro, *ASK will still query the user as intended, but the resulting log file will not reproduce the effects of the original run.

ANSYS Macros

- Interacting with Macros (*ask) continued



```
doplot.mac - Notepad
File Edit Search Help

*ask,xarg1,info on:1 off:0,1
/plopts,info,xarg1

*ask,xarg2,leg1 on:1 off:0,1
/plopts,leg1,xarg2

*ask,xarg3,leg2 on:1 off:0,1
/plopts,leg2,xarg3

*ask,xarg4,leg3 on:1 off:0,1
/plopts,leg3,xarg4

*ask,xarg5,frame on:1 off:0,1
/plopts,frame,xarg5

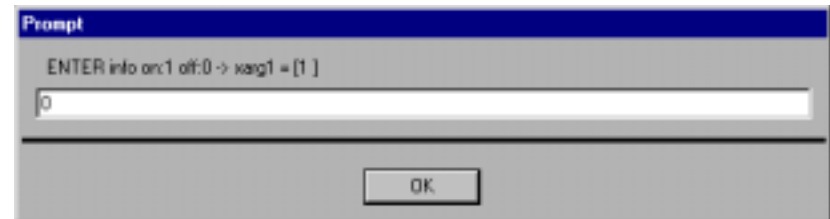
*ask,xarg6,title on:1 off:0,1
/plopts,title,xarg6

*ask,xarg7,logo on:1 off:0,1
/plopts,logo,xarg7

*ask,xarg8,wins on:1 off:0,1
/plopts,wins,xarg8

*ask,xarg9,up on:1 off:0,1
/plopts,up,xarg9
/replot
```

To use the *ask the user is required to modify the macro by adding the *ask and changing the local parameters to scalar parameters. The modification is done using a text editor, in this example notepad was used.



ANSYS Macros

- Setting up a Macros Directory (macro search path)
 - By default, ANSYS searches for a user macro file (.mac extension) in the following locations:
 - 1.The ANSYSnn/docu directory.
 - 2.The directory (or directories) designated by the ANSYS_MACROLIB environment variable (if defined) or the login (home) directory. This environment variable is documented in the ANSYS installation and configuration guide for your platform.
 - 3.The directory designated by /PSEARCH command (if defined). This directory is searched before the login directory, but after the directory designated by the ANSYS_MACROLIB environment variable.
 - 4.The current directory.

ANSYS Macros

- Setting up a Marcos Directory (macro search path)
(continued)
 - Notes
 - You can place macros for your personal use in your home directory. Macros that should be available across your site should be placed in the ANSYS56/docu directory or some commonly accessible directory that everyone can reference through the ANSYS_MACROLIB environment variable.
 - For Windows NT users: The "current directory" is the default directory (usually a network resource) set by administrators and you should ask your network administrator for its location. You can use environment variables to create a local "home directory." The local home directory is checked after the default directory designated in your domain profile.
 - The ANSYS_MACROLIB environment variable can contain multiple directories. This is useful if you have company-wide macros as well as your own personal macros. Another situation is when you have different directories to organize/differentiate the macro functionality. Use a colon ":" as a delimiter on UNIX, and use a semicolon ";" on Windows as the directory delimiter.

ANSYS Macros

- Other Macro Topics not Discussed in the Seminar
 - /TEE command
 - Call subroutines (nested macros).
 - *MSG command (creating messages in macros)
 - Multipro
 - /UIS
 - Status Bars
 - Picking within a Marco
 - Calling Dialog Boxes within a Macro
 - Encrypting Macros