

ANSYS-Mode for GNU Emacs, an introductory Tutorial for version 16.1.1

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Introducing ANSYS-Mode – an APDL environment

This project supports your APDL workflows with the FEA suite ANSYS.

It provides an editor mode to GNU Emacs for investigating and coding APDL. The mode offers also managing and communication capabilities for various ANSYS processes, like interactive code debugging with the solver or inquiring the license manager status, etc. Some features are quite sophisticated but its documentation is accessible for ANSYS users with little APDL and Emacs experience.

GNU Emacs is an up-to-date, powerful and extensible - yet free - editor. High quality software available for every operating system where ANSYS is running.

In the following C-c or e. g. M-c means typing the <CTRL> or <ALT> key together with the <c> key.

Download ANSYS-Mode together with the Emacs editor

Remarkably there are **no** costs and license restrictions also for commercial use

Most convenient is taking the pre-configured ANSYS-Mode in conjunction with the latest Emacs distribution for Win32/64 from the [ANSYS-Mode releases page](#) on [GitHub](#).

The screenshot shows the GitHub interface for the repository `dieter-wilhelm / ansys-mode`. The repository has 1 Unwatch, 0 Stars, and 1 Fork. The 'Releases' tab is selected, showing a 'Pre-release' section with the release `release-16.1.1-beta.1` (8e288ed). The main content area displays the title 'Test release of ANSYS-Mode for Ansys V16' by `dieter-wilhelm`, released 2 days ago with 5 commits. Below the title, it shows the release version `release-16.1.1-beta.1` and the description 'Test release for Ansys 16'. The 'Downloads' section lists the file `ansys-mode-16.1.1-beta.1.emacs-24.5-bin-i686-mingw32.zip` (48.5 MB) and the 'Source code (zip)' link.

GitHub repository page for `dieter-wilhelm / ansys-mode`.

Navigation: Releases (selected), Tags, Draft a new release

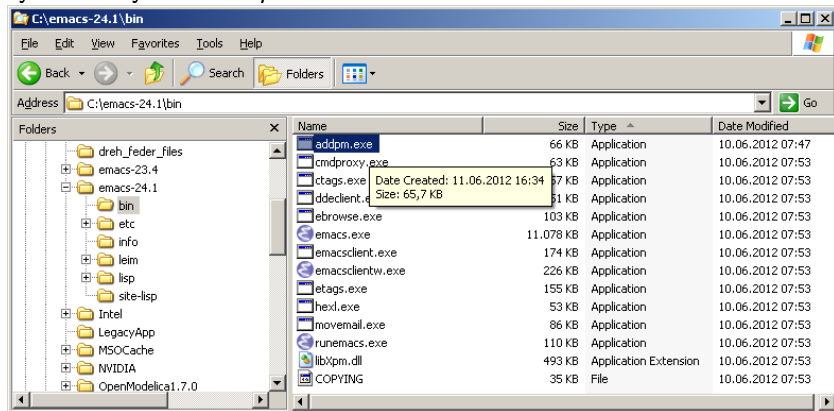
Repository status: Unwatch (1), Star (0), Fork (1)

Release details:

- Pre-release**
- release-16.1.1-beta.1 (8e288ed)
- Test release of ANSYS-Mode for Ansys V16** (Edit)
- dieter-wilhelm released this 2 days ago · 5 commits to master since this release
- release-16.1.1-beta.1
- Test release for Ansys 16
- Downloads**
- ansys-mode-16.1.1-beta.1.emacs-24.5-bin-i686-mingw32.zip (48.5 MB)
- Source code (zip)

Install ANSYS-Mode together with Emacs

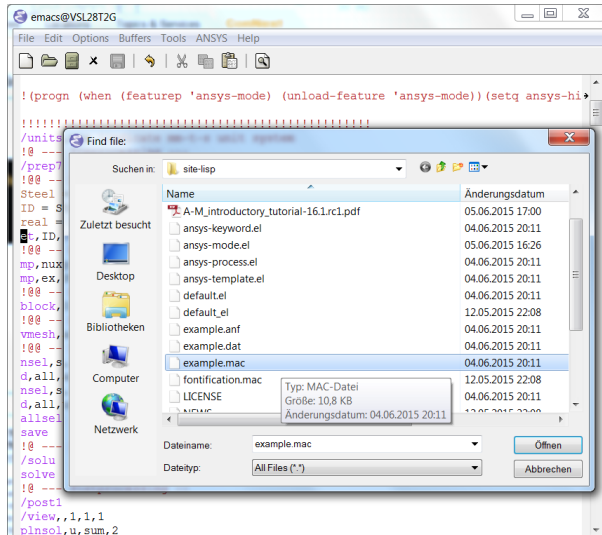
Extract the former zip archive to an arbitrary location on your file system. Optionally you might install Emacs shortcut icons for the system tray with *addpm.exe* in Emacs' *bin* folder.



In this list *runemacs.exe* is the actual editor executable.

Open an APDL macro file with Emacs

Start the editor and open *example.mac* in Emacs' *site-lisp* folder or any other APDL file (with the extensions *mac*, *inp*, *dat* or *anf*, otherwise additionally type **M-x ansys-mode** and <RET>).



Explore the ANSYS-Mode menu

If ANSYS is installed in its default folder *C:\Program Files* under Win64 also system dependent functions are working, like browsing the APDL help with **C-c C-b**, otherwise, you can easily configure this. All described features can be executed through the ANSYS-Mode menu or with keyboard shortcuts.

The screenshot shows an Emacs editor window with the title bar "emacs@VSDTQ80D". The menu bar includes "File", "Edit", "Options", "Buffers", "Tools", "ANSYS", "Outline", and "Help". The "ANSYS" menu is open, displaying a list of commands and their shortcuts. The "ANSYS-Mode menu" is also visible, showing a list of commands and their shortcuts. The main window displays the command `/UNITS, Label, LENFACT, MASSFACT, TIMEFACT, TEMPPACT, TOFFSET, CHA` and its documentation. The documentation explains that the command annotates the database with the system of units used. It lists several systems: USER (User-defined), SI (International), MKS (MKS system), uMKS (μMKS system), CGS (CGS system), MPA (MPA system), BFT (U. S. Customary using feet), and BIN (U. S. Customary using inches). A tooltip is visible over the `mpa` argument, stating "Open the original ANSYS help to a command or element name near the cursor in your default browser".

ANSYS-Mode menu

Command	Shortcut
Comment/Un- Region	M-;
Complete Symbol	M-TAB
Copy Code Line/Region to system clipboard	C-c C-c
Copy above Code	C-c C-u
Close Block	C-c]
Insert Parentheses	M-{
Preview Macro Template	C-c C-s
Align region/section	C-c C-a
Insert Template	
Navigate Code Lines	
Work with Logical Blocks	
Manage ANSYS Tasks	
Show ANSYS Command Help	C-c ?
Open APDL help in Browser	C-c C-b
Start ANSYS help system	C-c C-h
Start License Utility	C-c C-v
Insert Temporary Ruler	C-c C-l
Outline Minor Mode	
Show Paren Mode	
Delete Selection Mode	

ANSYS Mode Version: 145.1

Command	Shortcut
List Mode Abbreviations	
ANSYS Mode Help	C-h m
Customise ANSYS Mode	
ANSYS Mode Bug Report	
Reload ANSYS Mode	

/UNITS, Label, LENFACT, MASSFACT, TIMEFACT, TEMPPACT, TOFFSET, CHA
Annotates the database with the system of units used.

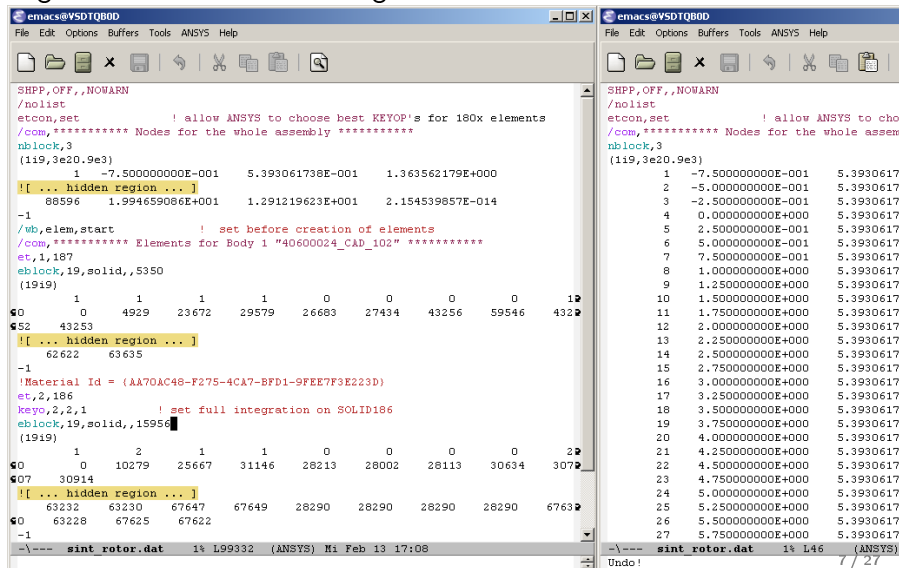
Label
Label to denote the system of units used in this job:

- USER** — User-defined system (default).
- SI** — International system (m, kg, s, K).
- MKS** — MKS system (m, kg, s, °C).
- uMKS** — μMKS system (μm, kg, s, °C).
- CGS** — CGS system (cm, g, s, °C).
- MPA** — MPA system (mm, Mg, s, °C).
- BFT** — U. S. Customary system using feet (ft, slug, s, °F).
- BIN** — U. S. Customary system using inches (in, lbf*s²/m, s, °F).

If **Label** = USER, the remaining fields on this command may be used to enter c.

Inspect easily WorkBench solver input files (*example.dat*)

ANSYS-Mode hides the normally uninteresting but usually very large number blocks. On the right hand side is the unhidden content.

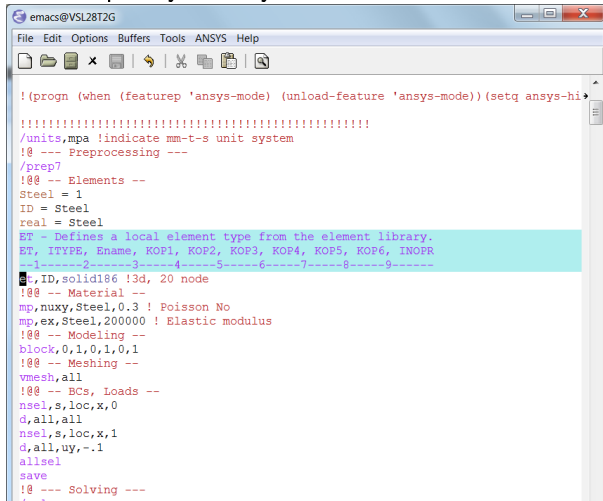


```
SHPP,OFF,,NOWARN
/nolist
etcon,set          ! allow ANSYS to choose best KEYOP's for 180x elements
/com,***** Nodes for the whole assembly *****
nblock,3
(1i9,3e20.9e3)
      1      -7.500000000E-001      5.393061738E-001      1.363562179E+000
! [ ... hidden region ... ]
      88596      1.994659086E+001      1.291219623E+001      2.154539857E-014
-1
/wb,elem,start          ! set before creation of elements
/com,***** Elements for Body 1 "40600024_CAD_102" *****
et,1,187
eblock,19,solid,,5350
(19i9)
      1      1      1      1      0      0      0      0      1
50      0      4929      23672      29579      26683      27434      43256      59546      432
52      43253
! [ ... hidden region ... ]
      62622      63635
-1
!Material Id = {AA70AC48-F275-4CA7-BFD1-9FEE7F3E223D}
et,2,186
keyo,2,2,1          ! set full integration on SOLID186
eblock,19,solid,,15956
(19i9)
      1      2      1      1      0      0      0      0      2
50      0      10279      25667      31146      28213      28002      28113      30634      307
07      30914
! [ ... hidden region ... ]
      63232      63230      67647      67649      28290      28290      28290      28290      6763
50      63228      67625      67622
-1
-\\--- sint_rotor.dat      1% L99332 (ANSYS) Mi Feb 13 17:08
```

```
SHPP,OFF,,NOWARN
/nolist
etcon,set          ! allow ANSYS to choose best KEYOP's for 180x elements
/com,***** Nodes for the whole assembly *****
nblock,3
(1i9,3e20.9e3)
      1      -7.500000000E-001      5.393061738E-001      1.363562179E+000
      2      -5.000000000E-001      5.393061738E-001      1.363562179E+000
      3      -2.500000000E-001      5.393061738E-001      1.363562179E+000
      4      0.000000000E+000      5.393061738E-001      1.363562179E+000
      5      2.500000000E-001      5.393061738E-001      1.363562179E+000
      6      5.000000000E-001      5.393061738E-001      1.363562179E+000
      7      7.500000000E-001      5.393061738E-001      1.363562179E+000
      8      1.000000000E+000      5.393061738E-001      1.363562179E+000
      9      1.250000000E+000      5.393061738E-001      1.363562179E+000
     10      1.500000000E+000      5.393061738E-001      1.363562179E+000
     11      1.750000000E+000      5.393061738E-001      1.363562179E+000
     12      2.000000000E+000      5.393061738E-001      1.363562179E+000
     13      2.250000000E+000      5.393061738E-001      1.363562179E+000
     14      2.500000000E+000      5.393061738E-001      1.363562179E+000
     15      2.750000000E+000      5.393061738E-001      1.363562179E+000
     16      3.000000000E+000      5.393061738E-001      1.363562179E+000
     17      3.250000000E+000      5.393061738E-001      1.363562179E+000
     18      3.500000000E+000      5.393061738E-001      1.363562179E+000
     19      3.750000000E+000      5.393061738E-001      1.363562179E+000
     20      4.000000000E+000      5.393061738E-001      1.363562179E+000
     21      4.250000000E+000      5.393061738E-001      1.363562179E+000
     22      4.500000000E+000      5.393061738E-001      1.363562179E+000
     23      4.750000000E+000      5.393061738E-001      1.363562179E+000
     24      5.000000000E+000      5.393061738E-001      1.363562179E+000
     25      5.250000000E+000      5.393061738E-001      1.363562179E+000
     26      5.500000000E+000      5.393061738E-001      1.363562179E+000
     27      5.750000000E+000      5.393061738E-001      1.363562179E+000
-\\--- sint_rotor.dat      1% L46 (ANSYS)
Undo!
```

Use the ANSYS-Mode APDL command help

Please type **M-?**, alternatively: **C-c ?**, on a code line and you will see the APDL command's description and number of parameters (even when the line is commented out). You can continue editing, this temporary overlay - here in blue - remains visible for a while.



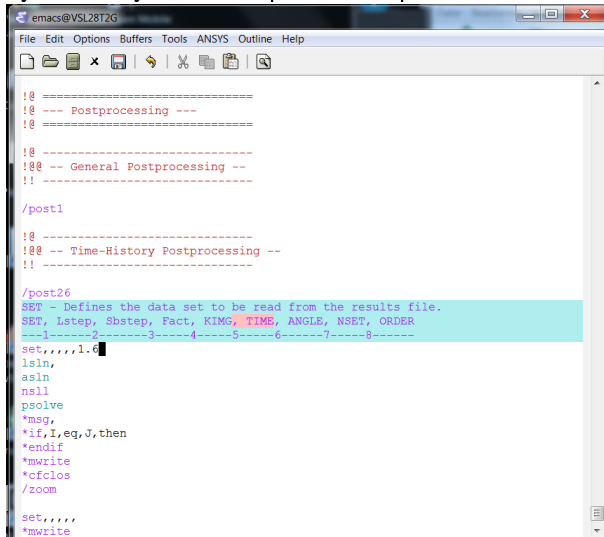
```
emacs@VSL28T2G
File Edit Options Buffers Tools ANSYS Help

!(progn (when (featurep 'ansys-mode) (unload-feature 'ansys-mode))(setq ansys-hi

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
/units,mpa !indicate mm-t-s unit system
!@ --- Preprocessing ---
/prep7
!@@ -- Elements --
Steel = 1
ID = Steel
real = Steel
ET - Defines a local element type from the element library.
ET, ITYPE, Ename, KOP1, KOP2, KOP3, KOP4, KOP5, KOP6, INOPR
--1-----2-----3-----4-----5-----6-----7-----8-----9-----
ET, ID, solid186 !3d, 20 node
!@@ -- Material --
mp,nuxy,Steel,0.3 ! Poisson No
mp,ex,Steel,200000 ! Elastic modulus
!@@ -- Modeling --
block,0,1,0,1,0,1
!@@ -- Meshing --
vmesh,all
!@@ -- BCs, Loads --
nsel,s,loc,x,0
d,all,all
nsel,s,loc,x,1
d,all,uy,-.1
allsel
save
!@ --- Solving ---
```


NEW: Check your cursor position in the parameter list

For commands with a large number of arguments it is cumbersome to count the arguments, **C-?** facilitates this for you and visualises dynamically at which parameter position the cursor currently is.



The screenshot shows the Emacs editor window titled 'emacs@VSL28T2G'. The menu bar includes 'File', 'Edit', 'Options', 'Buffers', 'Tools', 'ANSYS', 'Outline', and 'Help'. The toolbar contains icons for file operations and editing. The main text area displays a command file with several sections separated by dashed lines. The line 'SET, Lstep, Sbstep, Fact, KING, TIME, ANGLE, NSET, ORDER' is highlighted in light blue. The cursor is positioned at the end of the word 'TIME' in this line. Below this line, there is a table with 8 columns labeled 1 through 8. The first row of the table contains the values 'set', '1', '6', and then four empty cells. The rest of the file contains various commands like 'lsln', 'asln', 'nsll', 'psolve', 'msg', 'if', 'endif', 'mwrite', 'cfclose', 'zoom', and another 'set' command at the bottom.

```
!@ =====
!@ --- Postprocessing ---
!@ =====

!@ -----
!@@ -- General Postprocessing --
!! -----

/post1

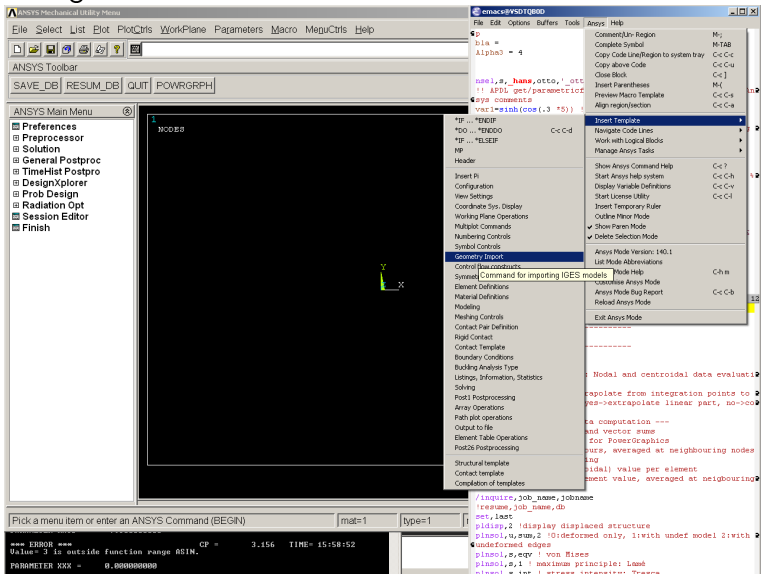
!@ -----
!@@ -- Time-History Postprocessing --
!! -----

/post26
SET - Defines the data set to be read from the results file.
SET, Lstep, Sbstep, Fact, KING, TIME, ANGLE, NSET, ORDER
--1-----2-----3-----4-----5-----6-----7-----8-----
set,1,6
lsln,
asln
nsll
psolve
msg,
if,I,eq,J,then
endif
mwrite
cfclose
zoom

set,
mwrite
```

Select and insert templates from the menu into your code

Screenshot with the ANSYS Classics GUI on the left and Emacs on the right on Win64



Preview the extensible APDL code templates

Before inserting an entire template you are able to inspect its content in a preview window (C-c C-s) and might just copy the most relevant snippets, please see below and next slide.

```
VALUES ARE FOR ENTIRE COIL (NOT JUST THE MODELED SECTOR)

!@@@ - loads -
f,all,fx,1
flist,all
fini $ /eof
!eof --- WARNING: /eof crashes the Ansys GUI in interactive mode ---
!@@@ - inertia relief -

cgomga,x,y,z, ! rotational velocity about globia coord. sys.
dcgomg,x,y,z ! rotational acceleration about global coord. sys.

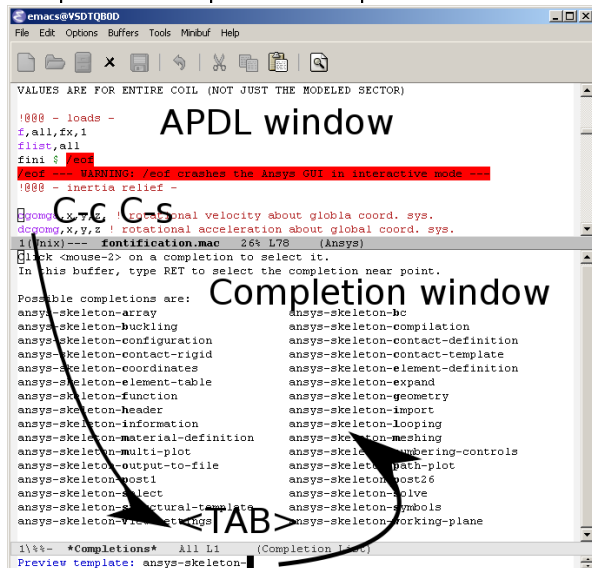
!@@@ - coupling -
nset,s,loc,x,1
cp,next,uy,all !couple dofs

! (Unix)--- fontification on. mac 26% L78 (ansys)
--*-- Ansys template: ansys-skeleton-view-settings --*--
!! -----
!@ -- view settings --

immed,1 !immediate display of generated screen <1> /repl?
/uis,replot,0 !suppress automatic redraw
/view,,1,1,1 !viewing direction vector
/triad,off !orig,lbot,rbot,ltop,rtop
/angle,1,10,xs,1!rotation (x,y,z)m global (x,y,z)s screen 1:cumulative 0: absolute
st
/dist,1,1/2.,1 $ /repl !1/2:distance (zoom) to object <1> nearer/larger,1:use multiplier
stiplier
/focus,1 $ /repl !focus wn 1 to csys,0
/plopts,minm ! switch off min max
/udoc...bottom !show legend on bottom
```

Select an interesting template from a completion window

Type **C-c C-s** to choose a template name, use the **<TAB>** key to complete or to open the completion window of available items.



The screenshot shows an Emacs editor window titled 'emacs@VSDTQB00'. The menu bar includes 'File', 'Edit', 'Options', 'Buffers', 'Tools', 'Minibuf', and 'Help'. The toolbar contains icons for file operations and editing. The main text area displays an APDL window with the following content:

```
VALUES ARE FOR ENTIRE COIL (NOT JUST THE MODELED SECTOR)

!000 - loads -
f,all,fx,1
flist,all
fini $ /eof
!eof --- WARNING: /eof crashes the Ansys GUI in interactive mode ---
!000 - inertia relief -

!gcomg,x,y,z ! rotational velocity about global coord. sys.
!dcomg,x,y,z ! rotational acceleration about global coord. sys.
!1(hix)--- fontification.mac 264 L78 (Ansys)

Click <mouse-2> on a completion to select it.
In this buffer, type RET to select the completion near point.
```

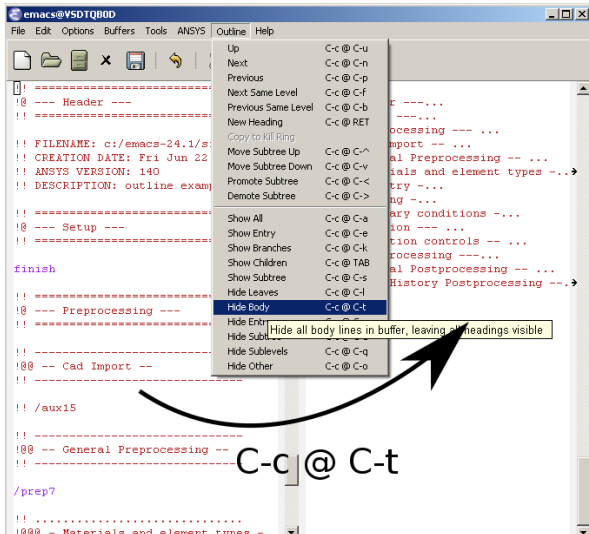
Below the APDL window, a completion window is displayed, listing possible completions for the command 'ansys-skeleton-'. The completions are:

- ansys-skeleton-array
- ansys-skeleton-buckling
- ansys-skeleton-configuration
- ansys-skeleton-contact-rigid
- ansys-skeleton-coordinates
- ansys-skeleton-element-table
- ansys-skeleton-function
- ansys-skeleton-header
- ansys-skeleton-information
- ansys-skeleton-material-definition
- ansys-skeleton-multi-plot
- ansys-skeleton-output-to-file
- ansys-skeleton-post1
- ansys-skeleton-select
- ansys-skeleton-structural-template
- ansys-skeleton-view-settings
- ansys-skeleton-bc
- ansys-skeleton-compilation
- ansys-skeleton-contact-definition
- ansys-skeleton-contact-template
- ansys-skeleton-element-definition
- ansys-skeleton-expand
- ansys-skeleton-geometry
- ansys-skeleton-import
- ansys-skeleton-looping
- ansys-skeleton-meshing
- ansys-skeleton-numbering-controls
- ansys-skeleton-path-plot
- ansys-skeleton-post26
- ansys-skeleton-solve
- ansys-skeleton-symbols
- ansys-skeleton-working-plane

The completion window is titled 'Possible completions are:'. The status bar at the bottom of the Emacs window shows '1%%- *Completions* All L1 (Completion List)' and 'Preview template: ansys-skeleton-'. A large arrow points from the text 'C-c C-s' to the Emacs window, and another large arrow points from the text '<TAB>' to the completion window.

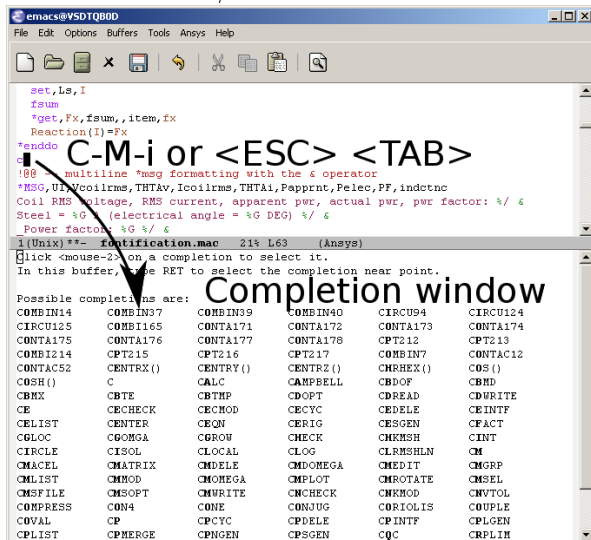
Check auto-insertion and outline your code (tree view)

Create a new APDL file with the suffix `.mac` and let Emacs auto-insert a skeleton with 'outline' headings. Collapse the content to a tree view with **C-c @ C-t** and open all (**C-c @ C-a**) again.



Utilise completions of all – around 2000 – APDL symbols

Move the cursor behind a character - here 'c' - or word fragment and type <ESC> <TAB> or **C-M-i** for completing up to date APDL command-, element- and function names.



The screenshot shows the emacs editor window titled 'emacs@VSDTQB0D'. The menu bar includes 'File', 'Edit', 'Options', 'Buffers', 'Tools', 'Ansys', and 'Help'. The toolbar contains icons for file operations and editing. The main text area displays an APDL script snippet:

```
set,ls,i
isum
*get,Fx,isum,,item,ix
Reaction(i)=Fx
*enddo
c
```

A large black arrow points from the text 'C-M-i or <ESC> <TAB>' to the cursor position at the end of the 'c' command. Below the script, a status bar shows '1(Unix)**- fontification.mac 21% L63 (Ansys)'. A message box is visible, stating: 'Click <mouse-2> on a completion to select it. In this buffer, type RET to select the completion near point.'

Below the message box, a 'Completion window' is open, displaying a list of possible completions for the command 'c'. The list is organized into columns:

Possible completions are:					
COMBIN14	COMBIN37	COMBIN39	COMBIN40	CIRCUI94	CIRCUI24
CIRCUI25	COMBI165	CONTA171	CONTA172	CONTA173	CONTA174
CONTA175	CONTA176	CONTA177	CONTA178	CPT212	CPT213
COMBI214	CPT215	CPT216	CPT217	COMBIN7	CONTA12
CONTA52	CENTRX()	CENTRY()	CENTR2()	CHRHEX()	COS()
COSH()	C	CALC	CAMPBELL	CBD0F	CBHD
CBMX	CBTE	CBTMP	CDOPT	CDEAD	CDWRITE
CE	CECHECK	CECMOD	CECYC	CEDELE	CEINTF
CELIST	CENTER	CEQN	CERIG	CEGEN	CFACT
CGLOC	CGOMGA	CGROW	CHECK	CHKMSH	CINT
CIRCLE	CISOL	CLOCAL	CLOG	CLRMSHLN	CM
CMACEL	CMATRIX	CMDELE	CMDOMEGA	CMEDIT	CMGRP
CMLIST	CMMOD	CMOMEGA	CMPL0T	CMROTATE	CMSEL
CMFILE	CMOFT	CMWRITE	CMCHECK	CMKMOD	CMVTOL
COMPRESS	CON4	CONE	CONJUG	CORIOIIS	COUPLE
COVAL	CP	CPCYC	CPDELE	CPINTF	CPLGEN
CPLIST	CPMERGE	CPNGEN	CPGEN	CQC	CRPLIM

Open a summary window of your APDL variables

Type **C-c C-v** to receive a summary window of all your variable definitions. With an argument (**C-u C-c C-v**) you will get the current value of your variable at the cursor (Linux only, right).

The screenshot shows two Emacs windows. The left window, titled 'emacs@YSDTQB0D', contains APDL code. The right window, titled 'emacs@sbav104x', shows the output of the 'Variables window' command.

Left Window (emacs@YSDTQB0D):

```
*get,Dim
*if,Dim,le,1,then
  *dim,Reaction,array,Ns,1
*endif
*do,I,1,Ns
  set,LS,I
  fsum
  *get,Fx,fsum,,item,Fx
  Reaction(I)=Fx
*enddo
!@@ -- multiline *msg formatting with the & operator
*MSG,UI,Vcoilrms,THTA1,Icoilrms,THTA1,Pappnt,Pelec,PF,indctnc
Coil RMS voltage, RMS current, apparent pwr, actual pwr, pwr factor: %/ &
Steel = %G A (electrical angle = %G DEG) %/ &
Power factor: %G %/ &
1(Unix)--- fontification.mac 20% L60 (Ansys)
*- APDL variables of buffer fontification.mac -*-
Line | Definition
20 otto = 9
26 N = _RETURN ! _RETURN value of k command
27 aaa = 9 !reserved underscore "_" variables
28 Pi=acos(-1) $ True=1 $ False=0
29 Xc = 0 $ Yc = 'char' ! character string variables
30 R1=4$R2=20
32 Alpha1 = rotx( 14.5) - 360./( 2*N)
33 Alpha2 = +360./(2*N)
34 Steel = 1 !
35 Depth = ARG1 !ARG(1-9), AR(10-19) = "use" variables
53 *get,Dim
55 *dim,Reaction,array,Ns,1
57 *do,I,1,Ns
60 *get,Fx,fsum,,item,Fx
11%- *Ansys-variables* Top L1 (Fundamental)
```

Right Window (emacs@sbav104x):

```
!! Tangent_modulus = (True tensile stress-Yield_stress) / True_
!! tbddata,,Yield_stress,Tangent_modulus !biso
!! /com, --- Material %Alu% is Aluminium. ---

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!! elements
ID=1
real,ID
et,ID,plane183,,,3 !2d, 8 node (3)0:plane stress, 1:axisymmetric
r,ID,Pressing_length

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!! Geometry

Th1=90 - Angle
Th2=90
!! shaft
pcirc,II/2,IO/2,Th1,Th2 ! circular area
!! hub
U:--- plane_rotor_interference-fit3.mac 26% L242 (ANSYS Out
PREP7:

PREP7:

PREP7:

PREP7:

PARAMETER STATUS- PRESSING_LENGTH ( 76 PARAMETERS DEFINED
(INCLUDING 9 INTERNAL PARAMETERS)

NAME VALUE
PRESSING_LENGTH 5.60000000

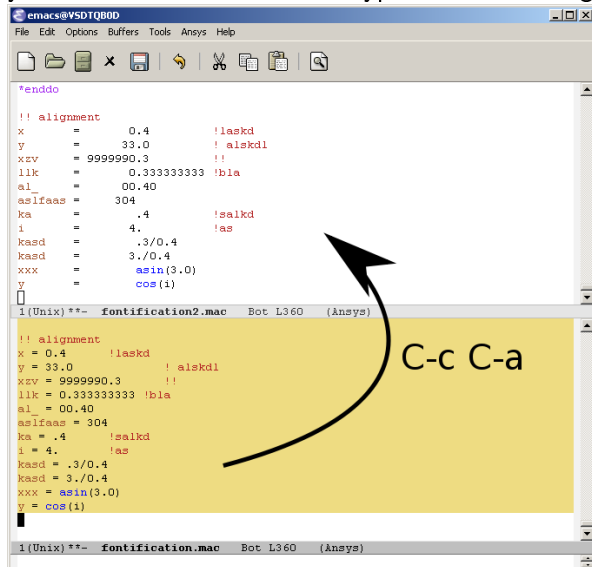
PREP7:

U:--- *ANSYS* Bot L660 (Comint:run) Mon Feb 15 15:15
Scroll-Bar mode enabled
```

Variables window

Structure your variable assignments

Move the cursor to a variable definition paragraph or mark, here in yellow, some definitions and type **C-c C-a** to align them.



The screenshot shows the Emacs editor interface with two buffers open. The top buffer, titled 'fontification2.mac', contains a list of variable assignments. The bottom buffer, titled 'fontification.mac', contains the same list of assignments. A large black arrow points from the text 'C-c C-a' to the first line of the variable definitions in the bottom buffer. The bottom buffer's content is highlighted in yellow.

```
emacs@VSDTQB00
File Edit Options Buffers Tools Ansys Help

*enddo

!! alignment
x = 0.4 !laskd
y = 33.0 ! alskdl
xzv = 9999990.3 !!
llk = 0.333333333 !bla
al_ = 00.40
asifaas = 304
ka = .4 !salkd
i = 4. !as
kasd = .3/0.4
kasd = 3./0.4
xxx = asin(3.0)
y = cos(i)

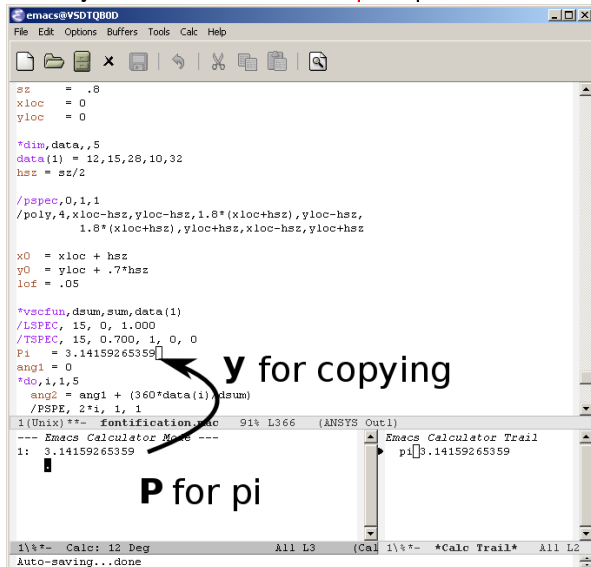
1(Unix)**- fontification2.mac Bot L360 (Ansys)

!! alignment
x = 0.4 !laskd
y = 33.0 ! alskdl
xzv = 9999990.3 !!
llk = 0.333333333 !bla
al_ = 00.40
asifaas = 304
ka = .4 !salkd
i = 4. !as
kasd = .3/0.4
kasd = 3./0.4
xxx = asin(3.0)
y = cos(i)

1(Unix)**- fontification.mac Bot L360 (Ansys)
```


Use the Emacs integrated, programmable RPN calculator

Type **C-x * *** to open the calculator, type **y** for pasting results directly into the APDL file. **q** to quit the 'Emacs Calc' windows.



The screenshot shows the Emacs editor window titled 'emacs@VSDTQB00'. The main window contains an APDL file with the following code:

```
sz      = .8
xloc    = 0
yloc    = 0

*dim,data,,5
data(1) = 12,15,28,10,32
hsz     = sz/2

/pspec,0,1,1
/poly,4,xloc-hsz,yloc-hsz,1.8*(xloc+hsz),yloc-hsz,
      1.8*(xloc+hsz),yloc+hsz,xloc-hsz,yloc+hsz

x0      = xloc + hsz
y0      = yloc + .7*hsz
lof     = .05

*vsfun,dsum,sum,data(1)
/LSPEC, 15, 0, 1.000
/TSPEC, 15, 0.700, 1, 0, 0
P1      = 3.14159265359
ang1    = 0
*do,i,1,5
  ang2 = ang1 + (360*data(i)/dsum)
/PSPE, 2*i, 1, 1
1(Unix) **= fontification.muc 91% L366 (ANSYS Out1)
--- Emacs Calculator Mode ---
1: 3.14159265359
```

An arrow points from the text 'y for copying' to the 'y' in the line 'P1 = 3.14159265359'. Another arrow points from the text 'P for pi' to the 'P' in the same line.

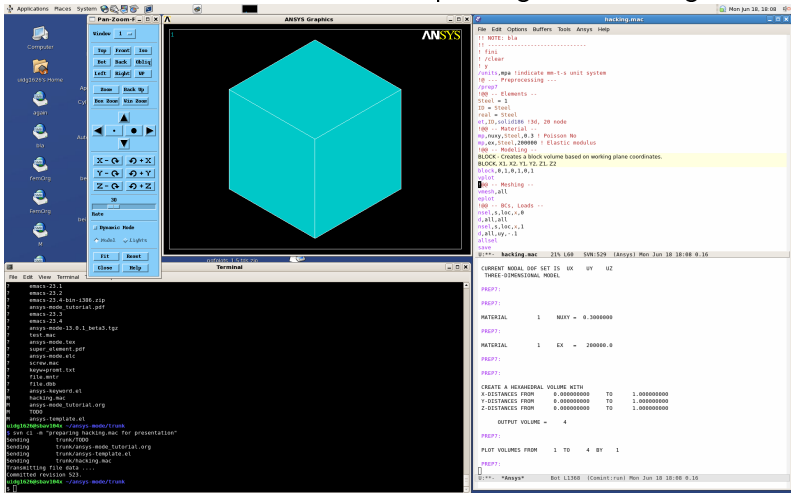
The bottom of the window shows the Emacs Calculator Trail with the following content:

```
Emacs Calculator Trail
pi 3.14159265359
```

The status bar at the bottom indicates '1%*- Calc: 12 Deg All L3 {Cal 1}%*- *Calc Trail* All L2' and 'Auto-saving...done'.

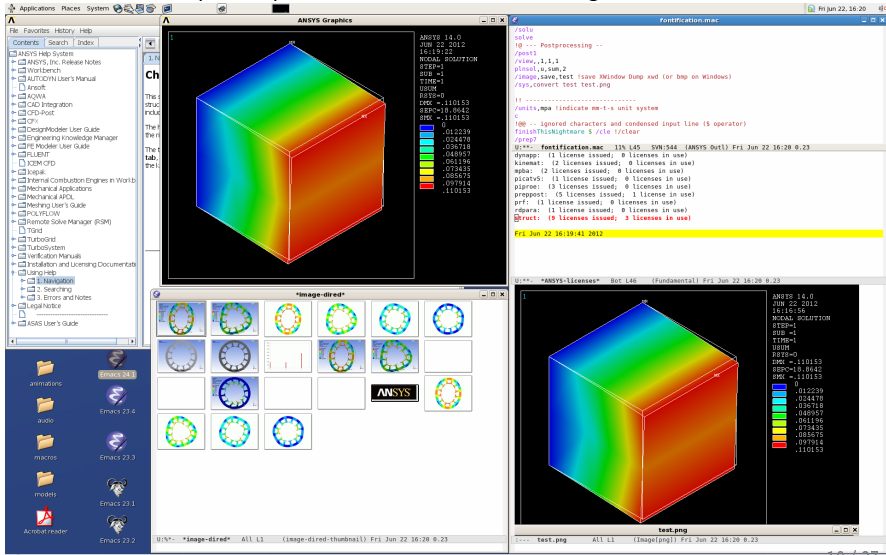
Debug your code interactively with the solver (GNU-Linux)

You can run the ANSYS solver under Emacs and send code lines from above APDL window with **C-c C-j** (**C-c C-c** for whole regions) directly to this process. Below you see the **interactive** solver output and on the left hand side the corresponding ANSYS images.



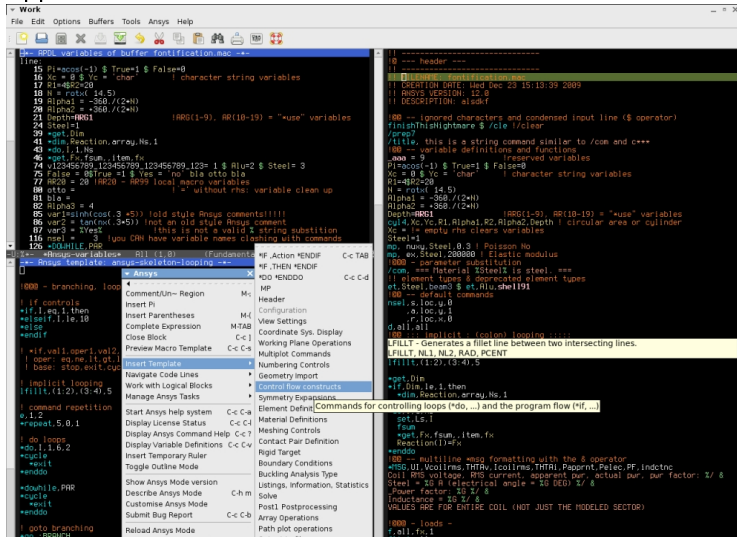
Display the license status and preview images on GNU-Linux

In Emacs' mid-section you see the license state (C-c C-l) and left Emacs window (below) a thumbnail view of images from a folder.



Arrange the ANSYS-Mode windows to your needs

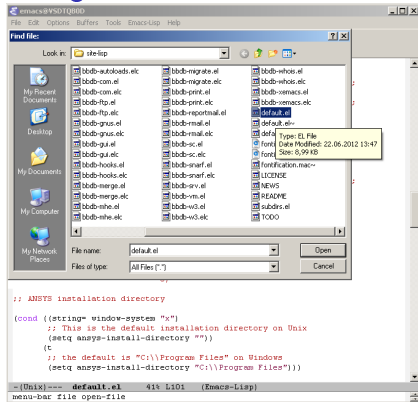
The image shows an Emacs 23.2 frame (in reversed colour mode and compiled with the GTK+ toolkit under GNU-Linux) with a ripped off ANSYS-Mode menu field



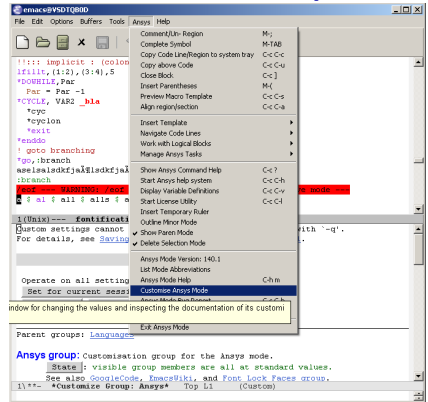
Configure system dependent aspects and user options

The mode comes pre-configured for the default installation of ANSYS for Win64. If something is amiss: Adjust

the well commented configuration file *default.el*



or change the settings with Emacs' customisation system

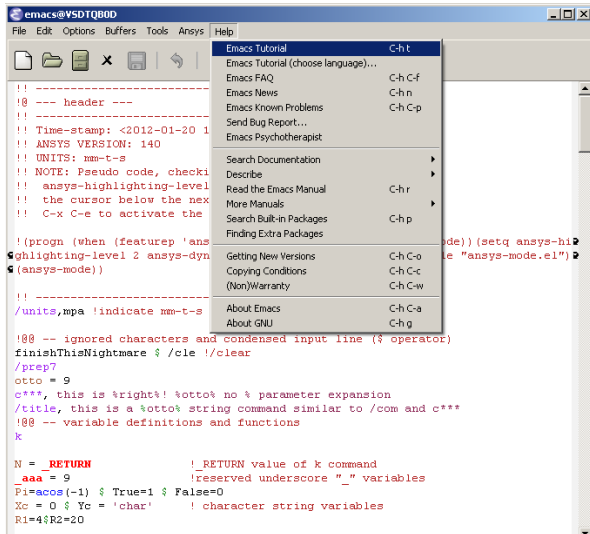


... and restart Emacs.

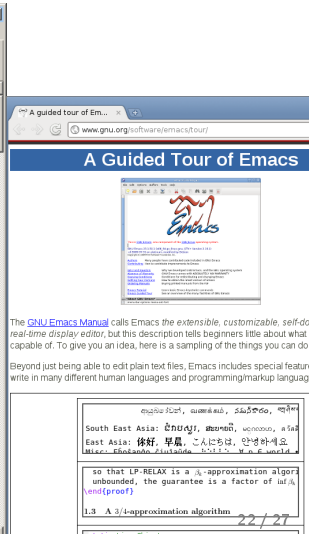
... and reload ANSYS-Mode.

Get to know Emacs and its excellent documentation

Newcomers to Emacs should take the **guided online tour** to get a background of its capabilities and fire up the interactive tutorial (**C-h t**) which is translated to various languages.



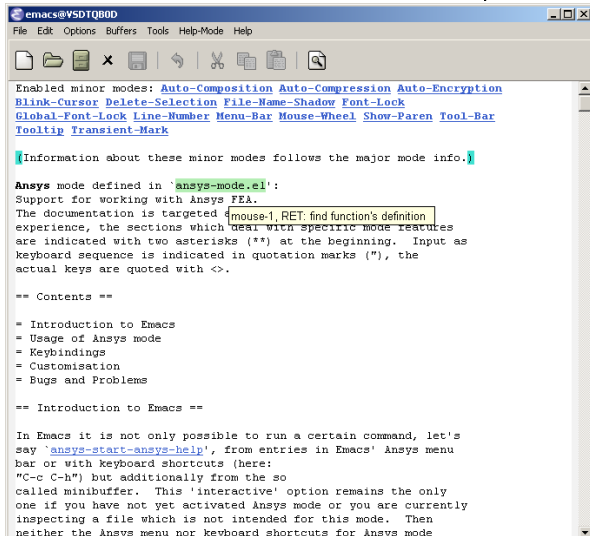
The screenshot shows the Emacs editor window titled 'emacs@YSDTQB0D'. The menu bar includes File, Edit, Options, Buffers, Tools, Ansys, and Help. The Help menu is open, displaying a list of options: Emacs Tutorial (C-h t), Emacs Tutorial (choose language)... (C-h C-f), Emacs FAQ (C-h n), Emacs News (C-h C-p), Emacs Known Problems, Send Bug Report..., Emacs Psychotherapist, Search Documentation, Describe, Read the Emacs Manual (C-h r), More Manuals, Search Built-in Packages (C-h p), Finding Extra Packages, Getting New Versions (C-h C-o), Copying Conditions (C-h C-c), (Non)Warranty (C-h C-w), About Emacs (C-h C-a), and About GNU (C-h g). The background text in the editor window is a mix of C and Fortran code, including comments like '!! --- header ---', '!! Time-stamp: <2012-01-20 1', '!! ANSYS VERSION: 140', '!! UNITS: mm-t-s', '!! NOTE: Pseudo code, checki', '!! ansys-highlighting-level', '!! the cursor below the nex', '!! C-x C-e to activate the', '!(progn (when (featurep 'ans', 'ghlighting-level 2 ansys-dyn', '(ansys-mode))', '!! -----', '/units,mpa !indicate mm-t-s', '!!@ -- ignored characters and condensed input line (\$ operator)', 'finishThisNightmare \$ /cle !/clear', '/prep7', 'otto = 9', 'c***, this is %right%! %otto% no % parameter expansion', '/title, this is a %otto% string command similar to /com and c***', '!!@ -- variable definitions and functions', 'k', 'N = _RETURN !_RETURN value of k command', '_aaa = 9 !reserved underscore "_" variables', 'Pi=acos(-1) \$ True=1 \$ False=0', 'Xc = 0 \$ Yc = 'char' ! character string variables', 'R1=4\$R2=20



The screenshot shows a web browser window with the address bar displaying 'www.gnu.org/software/emacs/tour/'. The page title is 'A Guided Tour of Emacs'. The main content area features a large image of the Emacs logo and a text box with the following text: 'The GNU Emacs Manual calls Emacs the extensible, customizable, self-hosted, real-time display editor, but this description tells beginners little about what Emacs is capable of. To give you an idea, here is a sampling of the things you can do with Emacs. Beyond just being able to edit plain text files, Emacs includes special features for editing many different human languages and programming/markup languages.' Below this text, there is a section titled 'South East Asia: 你好, 早晨, こんにちは, 안녕하세요' followed by a paragraph in English: 'so that LP-RELAX is a 3/4-approximation algorithm, the guarantee is a factor of 1/4 of the LP-RELAX value. (end(proof))'. At the bottom of the page, there is a footer with the text '1.3 A 3/4-approximation algorithm' and a page number '22 / 27'.

Use the ANSYS-Mode built-in help

Please type **C-h m** to open the mode help, especially for ANSYS-Mode's usage and keybindings. At the beginning is also a brief introduction of basic Emacs concepts.

The screenshot shows the Emacs editor window titled 'emacs@VSDTQB0D'. The menu bar includes 'File', 'Edit', 'Options', 'Buffers', 'Tools', 'Help-Mode', and 'Help'. The toolbar contains icons for file operations and editing. The main text area displays the help content for ANSYS-Mode, which lists enabled minor modes, provides information about the mode's definition and documentation, and includes a table of contents. The text is formatted with bold for section headers and uses asterisks for keyboard sequences. A mouse cursor is visible over the word 'deal' in the paragraph about documentation targeting.

```

emacs@VSDTQB0D
File Edit Options Buffers Tools Help-Mode Help

Enabled minor modes: Auto-Composition Auto-Compression Auto-Encryption
Blink-Cursor Delete-Selection File-Name-Shadow Font-Lock
Global-Font-Lock Line-Number Menu-Bar Mouse-Wheel Show-Paren Tool-Bar
Tooltip Transient-Mark

[Information about these minor modes follows the major mode info.]

Ansyp mode defined in 'ansys-mode.el':
Support for working with Ansys FEA.
The documentation is targeted \[mouse-1, RET: find function's definition\]
experience, the sections which deal with specific mode features
are indicated with two asterisks (**) at the beginning. Input as
keyboard sequence is indicated in quotation marks ("), the
actual keys are quoted with <>.

== Contents ==

= Introduction to Emacs
= Usage of Ansys mode
= Keybindings
= Customisation
= Bugs and Problems

== Introduction to Emacs ==

In Emacs it is not only possible to run a certain command, let's
say 'ansys-start-ansys-help', from entries in Emacs' Ansys menu
bar or with keyboard shortcuts (here:
"C-c C-h") but additionally from the so
called minibuffer. This 'interactive' option remains the only
one if you have not yet activated Ansys mode or you are currently
inspecting a file which is not intended for this mode. Then
neither the Ansys menu nor keyboard shortcuts for Ansys mode

```

You might read further ANSYS-Mode documentation

Licensing and costs: This is free and open software, there are **no costs** and effectively **no restrictions** for you using Emacs and ANSYS-Mode also commercially. Both are under the **GPL, the Gnu Public License** copied in the *LICENSE.org* file.

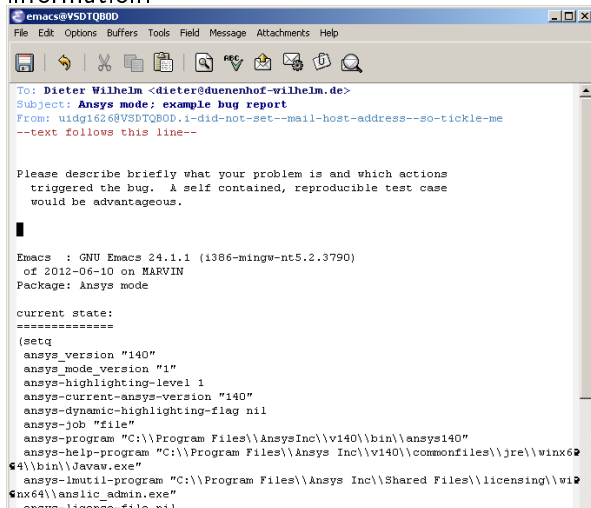
Installation: More detailed instructions are necessary if you are not using the mode bundled with Emacs for Windows. Please have a look in the *README.org* file. An online version is at **ANSYS-Modes's documentation site**.

Hands-on tutorial and reference: You will find these in-depth documentation included in the mode's archives on **GitHub's releases page** or read **online**.

News and project history: They are placed in the mode's accompanying *NEWS.org* file

Search for help, report bugs and issues

Besides the documentation, have a look in the [GitHub's issues site](#) or send an [email to the maintainer](#). Please use the ANSYS-Mode bug report functionality, which might provide helpful status information.

A screenshot of an Emacs window titled 'emacs@VSDTQB0D'. The menu bar includes 'File', 'Edit', 'Options', 'Buffers', 'Tools', 'Field', 'Message', 'Attachments', and 'Help'. The toolbar contains icons for file operations and email functions. The email content is as follows:

```
To: Dieter Wilhelm <dieter@duenenhof-wilhelm.de>
Subject: Ansys mode; example bug report
From: uidgi6268VSDTQB0D.1-did-not-set--mail-host-address--so-tickle-me
--text follows this line--

Please describe briefly what your problem is and which actions
triggered the bug. A self contained, reproducible test case
would be advantageous.

█

Emacs : GNU Emacs 24.1.1 (i386-mingw-nt5.2.3790)
of 2012-06-10 on MARVIN
Package: Ansys mode

current state:
=====
(setq
 ansys_version "140"
 ansys_mode_version "1"
 ansys-highlighting-level 1
 ansys-current-ansys-version "140"
 ansys-dynamic-highlighting-flag nil
 ansys-job "file"
 ansys-program "C:\\Program Files\\AnsysInc\\v140\\bin\\ansys140"
 ansys-help-program "C:\\Program Files\\Ansys Inc\\v140\\commonfiles\\jre\\winx64\\bin\\Javaw.exe"
 ansys-lmutil-program "C:\\Program Files\\Ansys Inc\\Shared Files\\licensing\\winx64\\anslic_admin.exe"
 ansys-licor-file nil
```

Use ANSYS-Mode appropriate to your needs

The relevance of APDL remains tall: 'WorkBench' and 'AIM' operate **exclusively** the ANSYS solver with it! For a **true understanding** APDL is still prerequisite. Furthermore, code APDL only for **repetitive** tasks and WB/AIM snippets.

Basic APDL Viewer

Navigating in WB solver input files, discerning relevant information through highlighting, quickly analysing APDL commands with the built-in help or studying their detailed help in your browser.

Earnest APDL Editor

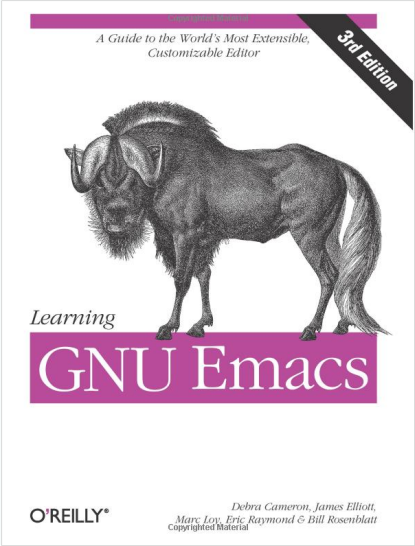
Specific shortcut keybindings, outlining, code templates, completions, auto-indentation, abbreviations, auto-insertion.

Advanced APDL Environment

Solver communication/feedback - hybrid between coding and debugging (GNU-Linux only), retrieving license states, error file viewing, abort file handling, extending APDL templates, ...

Last slide of the ANSYS-Mode tutorial

Hint for the curious:



Thank you for your time
getting acquainted with
ANSYS-Mode!

Have fun...

